Old New City : A Study of Spatial Interactions

in Traditional Neighborhoods of Kolkata

to Identify a New Paradigm for Urban Design

by

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Submitted to the Department of Urban Studies and Planning
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Abstract

This thesis through study and analyses endeavored to demonstrate how various interactions in the urban fabric of old neighborhoods of Kolkata made them more humane, inclusive and ecologically less harmful. It highlighted how these interactions of urban elements and activities of old neighborhoods have the potential to benefit new urban developments. And it calls for modern designers to study and realize the great potential of this new design paradigm which is based on increasing interactions in the urban fabric.

Three different neighborhoods from Kolkata were selected, which provided a comprehensive sample of traditional urban fabric of the city. It was found that in many cases the observed conditions were in contradiction to the principles of the modern urban design. And in some cases certain aspects were observed that are completely ignored or overlooked by modern designers. After subsequent analyses it was inferred that there is one fundamental difference between old and new cites. The modern approach is to segregate different elements and activities, while in old cities these interacted with each other and created the livable conditions.

The study focused on various interactions of the urban elements in the neighborhoods and grouped them into four categories:

1. Nature and urban elements
2. Built and unbuilt spaces
3. Transportation modes
4. Residential and commercial activities

It was observed that these interactions encouraged and facilitated the following positive qualities in the neighborhoods.

1. promote accessibility for all
2. encourage pedestrian movement
3. reduce private motor vehicles
4. reduce fuel consumption
5. reduce pollution
6. increase social interaction
7. create more pleasing environment
8. create employments
9. sustain local economy
10. maintain ecological balance
11. create equity and inclusiveness

The thesis concludes by demonstrating the potentials of the interactive urban fabric of the old neighborhoods. And calls for a process of applying creative design solutions that embody these positive aspects in developing new cities.

Thesis Supervisor : James Wescoat
Title : Aga Kahn Professor of Architecture

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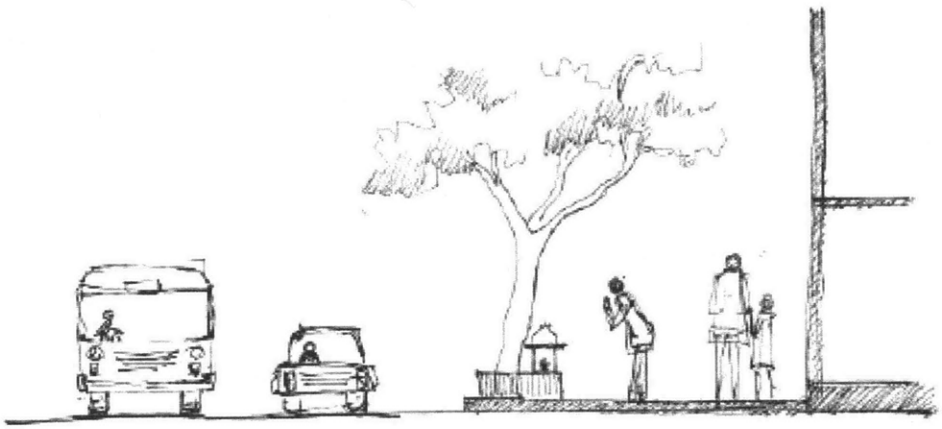

Debmalya Guha
(Master of City Planning 2009)
supervised by
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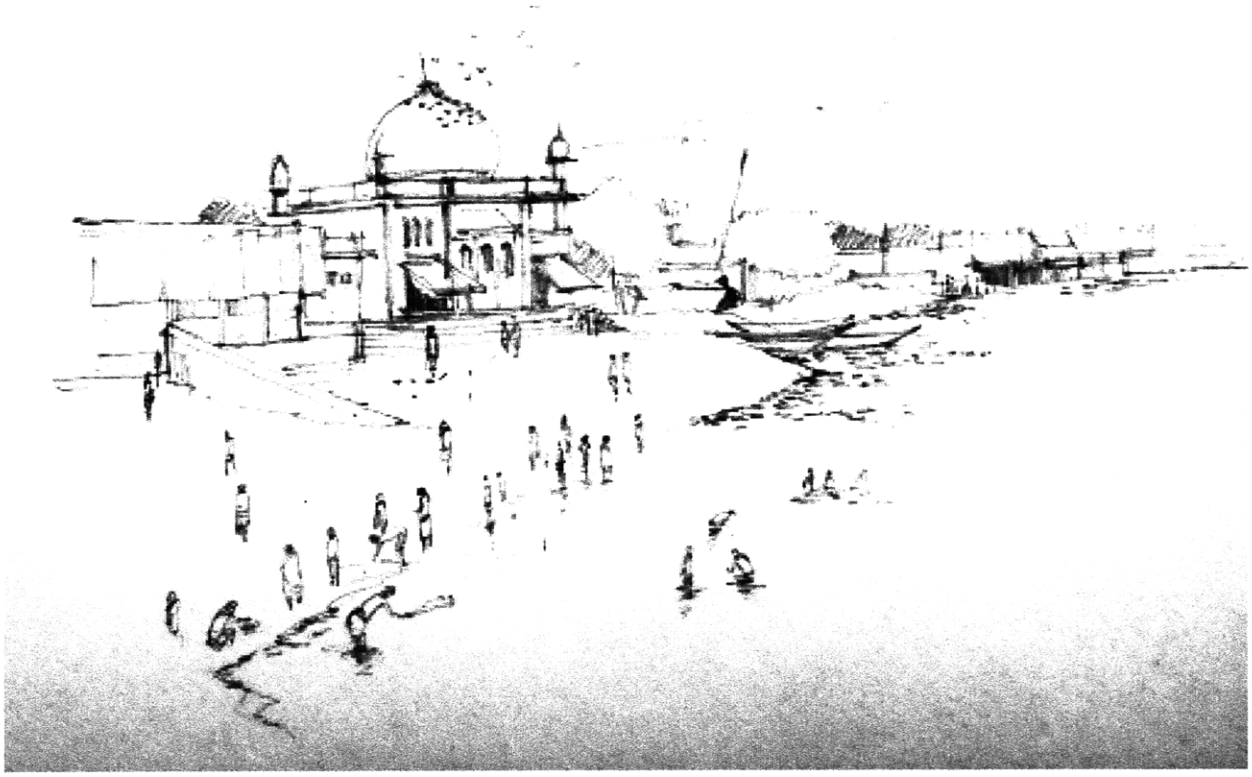
Dedicated to the people of Kolkata



A sketch of Kolkata by Kalyan Chakraborty based on artist Samir Biswas | Source: Author

Acknowledgement

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I need to thank my family specially my parents without whose support I could have never come this far. A special mention goes to my brother Rahuldada, who has been a great source of inspiration all through.

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Fig 1.1 Sketch of street market in Kolkata by Subrata Ghosh | Source: Author

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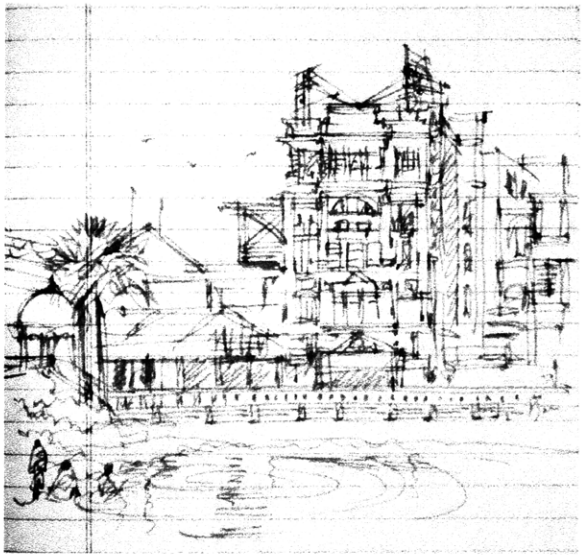
Summary

This chapter presents the introduction to the thesis. It goes through a critical observation and comparison of old and new cities with an emphasis on India. Thereafter it studies the various critiques and limitations of modern urban design. Finally it outlines the methodology and identifies the various categories of interactions that will be observed and analyzed.

A. Introduction

This thesis studies the traditional neighborhoods in Kolkata, India to understand how the interactions of urban elements have created an urban fabric that responds more to the human needs than that of new cities. The study attempts to identify key interactive relationships between urban elements such as private built form and public open spaces, urban and natural elements, different transportation modes, and residential and commercial activities. This study may help us in better understanding of successful aspects of these existing neighborhoods which in turn will help to find a renewed paradigm for designing humane neighborhoods in new cities.

Fig 1.2 | Sketch of people bathing in a water body in the city by Subrata Ghosh | Source: Author



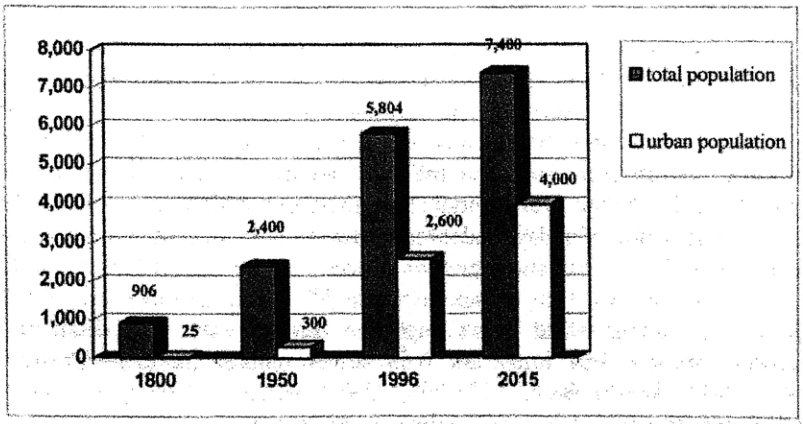
A.i. Critical observation of Old and New cities

Numerous new towns and cities are being created in developing countries as the world undergoes an unprecedented increase in urban population fuelled by a growth in these countries. It is predicted that by 2020 when the world's urban population will be increased by 2.06 billion over that of 1970, 93% of the growth will be due to increase in third world cities as shown in Fig 1.3 (UN 1996:29). With 13 new megacities the third world cities will hold 75% to 80% of the world urban population.

From the above predictions we can summarize the situation as the statement of Enrique Penalosa, the former Mayor of Bogota, Columbia. He claimed that the future of the world is depending on what we do in the cities of the developing world (Penalosa 2007). Thus it is of great importance that we built these new cities to accommodate the growing millions in a humane way with the least ecological footprint.

But unfortunately the new urban areas in India are being designed and built mostly based with design philosophies and models that originated in Europe and America during the twentieth century. These philosophies and models completely disregard the traditional culture and social fabric of the old cities. They impose ways of living on the residents that are foreign and inhumane. Thus these newly created urban areas fail to create conducive living conditions, promote inequity and have large environmental costs.

Fig 1.3 | Chart showing comparison of population explosion in developed and developing countries
Source: Urban development and new towns in the third world, Jaquemins1999, p24



Based on population figures United Nations 1978 (pop. figs. 1800, 1950) and UN 1996

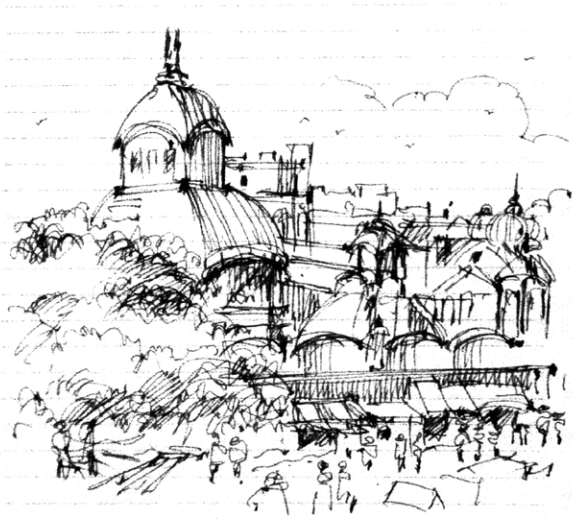
In the case of India, presently the new cities and extensions that are being created have a complete disregard for the vernacular character of the cities (even the modern vernacular that has developed in largely 20th century neighborhoods). These designs are often created as a reaction to some negative elements of the old cities such as congestion. The designers are often inspired by the western models of city which when applied to Indian context results in non-equitable cities dominated by private vehicles. The neighborhoods in these cities are also exclusionary in nature often consisting of gated communities. Though there are large open spaces, they are cosmetic in nature and seldom used by the people. In absence of local markets and schools all travel is dependent on private automobiles resulting in large environmental costs. And finally lack of proper transit connection with the central business district causes increased dependence on private vehicles that aggravate congestion. The urban form of these new communities is not conducive for flexibility and adaptation by the residents. Thus they have very little chance of acquiring the richness of the old ones over time.

This is more important in the present context when advancements in technology and the influence of communication and industrialization have lead to changes in the social and physical structure of many traditional societies. These modern trends have caused expatriation of traditional families and occupations. There has been an emergence of nuclear families and an indifference towards traditional customs and values, resulting in changes in social values and thereby leading to rapid transformation of the physical built environment.

A traditional society like in India has, over the past few decades, been influenced by globalization and has started aping western trends and lifestyles. This has resulted in skyrocketing land values, displacement of vernacular buildings by high density high rise buildings, the replacement of irregular organic streets with straight wider roads, and the replacement of slow moving pedestrian flow with fast moving traffic. These transitions are collectively destroying vernacular urban traditions. Without any intervention the continuation of these uncontrolled growth patterns and their underlying causes could lead to undesirable situations.

By the contrast, if we observe the traditional cities we will be surprised to find that despite the apparent chaos, they often still provide more inclusive humane living conditions (Blake 1974.) This urban fabric that has been created over time, gradually shaped by the various social and economic forces, embodies a rich mix of culture, economical status and land use. People from different religion, culture and financial conditions have learnt to coexist harmoniously with minimum conflict in these fabrics. The neighborhoods are mostly self-sufficient in their day-to-day needs such as daily markets, groceries and other facilities. Schools and play areas for the children are also within the walking distance. Almost all these neighborhoods have areas for religious practices that often serve as local gathering area during the social events. All these varied land uses are connected by an intricate network of streets and lanes that often serve as the lively public spaces for interaction and integration. And finally these neighborhoods are well connected with the central business district of the city through an elaborate transit system.

Fig 1.4 | The Kali temple in Kolkata by Subrata Ghosh
Source: Author



A.ii. Looking through lens of Traditional Urbanism

Interestingly it may be observed that many of the basic principles that the modern urban planners and transportation engineers are aspiring to achieve are already well established. This argument can be supported by using the basic principles of New Urbanism as a bench mark and comparing them with the existing condition in these cities (Charter of Congress for the New Urbanism, www.cnu.org/charter, accessed 07.20.2009)

First, the traditional cities have high densities that create a dense urban matrix with buildings, shops, and services. The density helps to sustain these various amenities and makes an efficient use of services. All these accessible amenities also result in more convenience, ease of walking and an enjoyable place to live.

Second, these neighborhoods invariably have mixed use and a rich diversity of people. There are shops, offices, apartments and individual residences all juxtaposed in a natural balance. This balance is achieved over time as development progresses without intervention, following the natural processes of demand and supply. Moreover, the mixed use pattern can be found not only in the neighborhood but in the block and even in the buildings. The diversity of people in age, income level, culture and race makes these neighborhoods rich in social and cultural values.

Third, these cities are constituted of close-knit neighborhoods which have discernible centers and conducive urban spaces with well-defined edges. The public realms are always dominant in these neighborhoods, which are inclusive in nature and promote social interactions, albeit often along class, gender and social status lines.

Fourth, these traditional neighborhoods are walkable in nature. The daily shops and markets are always within walking distance, and playgrounds and schools are also accessible by foot. The dense urban matrix with lively streets make walking comfortable and enjoyable. Within the neighborhoods pedestrians get natural advantage over vehicles, and in some cases the streets are so narrow that vehicles cannot ply.

Fifth, these cities are endowed with a rich connectivity in their network of roads, streets and lanes. These are of human scale and dominated by pedestrians. In most cases the layout is in a natural grid pattern with variations. This pattern

is devoid of the rigidity of the engineered grid but still retains the efficiency and flexibility.

Sixth, the neighborhoods are bestowed with a variety of housing typologies. As these neighborhoods evolved with time incorporating diverse mix of people they cater to different groups. The houses range in types, sizes and prices so that they can accommodate groups with varying affordability and needs.

Seventh, the quality of architecture and urban design in these neighborhoods, though in most cases not done by professionals achieve a natural quality and beauty. This happens when every element comes with reason and is not superfluous, and forms a structure. And they are enriched with the creative essence embedded in every individual reflecting the spirit of the community.

Eighth, the traditional cities always have a well-developed network of public transportation. Statistics show that individual car ownerships are extremely low and most people depend on transit. The use of non-mechanized modes are also very high.

Ninth, considering all the above factors we can argue that the traditional neighborhoods are more sustainable than their new counterparts. The respect for ecology and value of nature is embedded in the culture and in a totality has significantly less ecological footprint.

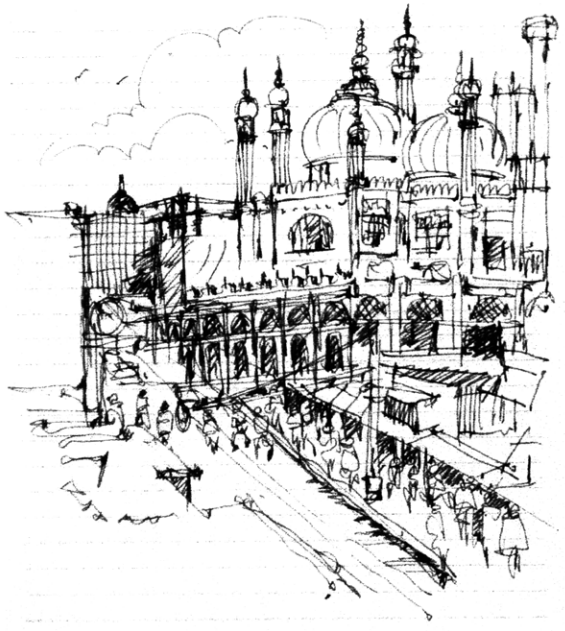
Finally, the tenth factor is that these neighborhoods have strong sense of community and social structure. Despite poor economic conditions many of these neighborhoods have a good quality of life that inspires the human soul.

Thus we can infer that the traditional neighborhoods in cities – at their best -- have the basic principles of good urban design embedded in them. Due to which, despite their poor financial conditions and lack of civil services they can still function much better than newly designed neighborhoods.

A.iii. Looking through lens of Transportation systems

This argument is also supported if we study these cities through the lens of transportation system. Though the traveling conditions are often poor, still these cities have mode shares that the transportation engineers are presently trying to achieve in the developed cities. According to The *UITP Millennium Cities Database for Sustainable Transport* [1] the cities in developing countries like India and China has major amount of travels (30-40%) done by foot or non-mechanized modes of transportations. The public transits like bus and rail have the largest share (50-60%) of all travels made. The share of private vehicles which though escalating fast, are still 3-4% which is much less than any developed city of the world where it ranges between 40-60%. It is also interesting to note that within the neighborhoods the mode of transportation is almost always pedestrian or non mechanized means. Non mechanized means such as rickshaw and cycle-van which are abundant in these areas have multifaceted roles. They provide nonpolluting modes of transportation along with employment opportunities and accessibility in the narrow streets and lanes.

Fig 1.5 | A sketch of Kolkata by Subrata Ghosh showing people walking on the street | Source: Author



1. Millennium cities database for sustainable transport [electronic resource]. [Murdoch, Australia] : ISTP ; Brussels, Belgium : UITP, c2001.

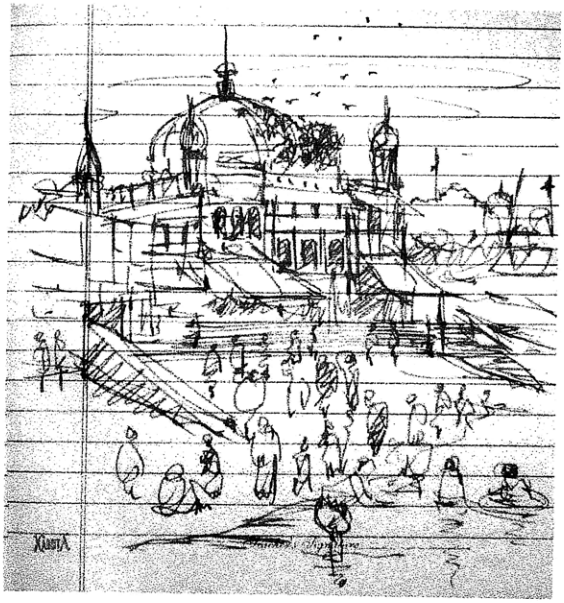
A.iv. Interaction versus Segregation

The thesis argues that the more livable condition of old cities is the result of various interactions of activities and elements that are present in the urban fabric. While the lifelessness of the new cities are attributed to the modern design philosophy which enforce segregations.

During the preliminary study of the neighborhoods different kind of interactions such as integration, overlapping and even encroachment of activities and elements were found to exist. While modern urban design principles enforce stringent rules for segregation such as pedestrian and traffic, private and public domain, residential and commercial activities etc, it was observed that these rules are often violated in these old neighborhoods yet they were more successful and vibrant.

In the case of new areas all the different parts such as the public and private space, interior and exterior, urban and nature are segregated in a surgical manner. On the other hand in the old cities all these elements interact to create a more adaptable space that responds to the needs of the residents.

Fig 1.6 | A sketch of Kolkata by Subrata Ghosh showing interaction between nature and urban elements | Source: Author



It can be claimed that a proper investigation and understanding of the vernacular fabric of the traditional cities is required to identify this difference of paradigm in between vernacular and modern urban design. And thereafter, thoughtful application of this philosophy in the new cities can be attempted to create new urban areas that are more responsive to human needs. This thesis undertakes the first of these tasks by analyzing the vernacular fabric of traditional neighborhoods in Kolkata.

This study focuses on the interactive spaces and activities in the traditional urban fabric and tries to identify how these interactions benefit the neighborhoods and the city at large.

Fig 1.7 | A street vendor encroaching sidewalk selling tea under a tree | Source: Author

B. Methodology

From the above discussion it is inferred that a prudent approach to this issue is to study the historical cities and attempt to create an alternative design philosophy. This philosophy should be rooted to the context and attempt to create livable cities which are less energy intensive and more inclusive.

To approach the research, first a basic review of modern urban design literature is done. Various limitations and critiques are assessed. Thereafter the difference in pattern of development in the two worlds, which are developing and developed world is identified. Next a brief study of the urbanization pattern and history in India and Kolkata is done to comprehend the context. Finally three neighborhoods of Kolkata are selected and studied.

The observations hold true for most historical cities of India which have developed through the ages into a rich urban fabric without major interventions of modern planners and designers. Cities such as Mumbai, Kolkata and Chennai were well-fit for this study. In all these three cities there are neighborhoods which have evolved with time without major intervention of modern planners or designers. New Delhi is an exception and is not considered in this case as the urban character have been significantly modified by modern designers such as Lutyens and others (Prakash, 1969).

In this thesis Kolkata is selected for a number of reasons. First, it is a rapidly developing city that is growing with a phenomenal rate. The city is expanding its boundaries by rapid urbanization which calls for immediate attentions. Second, the city has a defined point of origin which will help to trace the various stages of development. Finally, the author has lived and worked in Kolkata thus knows the city well enough to make intelligible study in a restricted span of time. Moreover, there are existing relationships with some of the neighborhoods and local universities that will save valuable time of study.

Thereafter three different neighborhoods in Kolkata are selected based upon their social and historical significance. These neighborhoods are studied for their liveability and responsiveness to the residents., and different interactions in urban form.

The most important part of the thesis is to identify and analyze the interactions in the neighborhoods. The study is done by physical field survey and photographic viewing at street level. The photographs which are taken at various time of the day to capture the changing activities of the residents with time have been critically analyzed. This is augmented by analyzing the map of the area and satellite images. And the analyses are supported by simple sketches to highlight the focus issues.

The study analyzes the physical form of the area and how it encourages an interactive relation between the following four categories:

a. Urban and Natural elements
b. Built form and open space
c. Different modes of transportation
e. Residential and commercial activities

The objective of the study is to determine to what extent the interactions are facilitating fulfillment of basic needs of the residents within the neighborhood. These needs are responded to through the land use types, spatial organization, built form and transportation modes.

The study of these above mentioned factors in a creative way helped observe and identify how the interactions of these elements add value to the neighborhood. And finally, how the study and analysis might help a future urban designer to conceive and create more humane cities.

C. Failure of modern architecture and urbanism

In 1961 Jane Jacobs (1916-2006) criticized modern architecture and urban design and pointed out how it destroyed the very essence of the city and created spiritlessness that precedes decay. She wrote:

> *"look what we have built with the first several billions: low income projects that become worst centers of delinquency, vandalism, and general social hopelessness than the slums they were suppose to replace. Middle-income housing projects that are truly marvels of dullness and regimentation, sealed against any buoyancy or vitality of city life. Luxury housing projects that mitigate their inanity, or try to, with a vapid vulgarity. Cultural centers that are unable to support a good bookstore. Civic centers that are avoided by everyone but bums, who have fewer choices of loitering place than others. Commercial centers that are luck luster imitations of standardized suburban chain store shopping. Expressways that eviscerate great cities. This is not rebuilding of cities. This is sacking of cities."* (Jacobs 1961, p4).

Unfortunately, after about half a century, if we reassess the present condition of the cities, we will be greatly disheartened. On one hand old cities are still over congested, polluted and riddled with environmental problems. On the other hand, new cities and towns that have been created so far have not only failed to incorporate the natural forces, but have also miserably failed to create conducive socio-economic conditions. In fact most of the ideas and philosophies developed and implemented in the last century about urban design and planning have failed to achieve the desired results. There are numerous critiques and ample literature that analyzes the modern urban design in general and tries to identify the causes of failure.

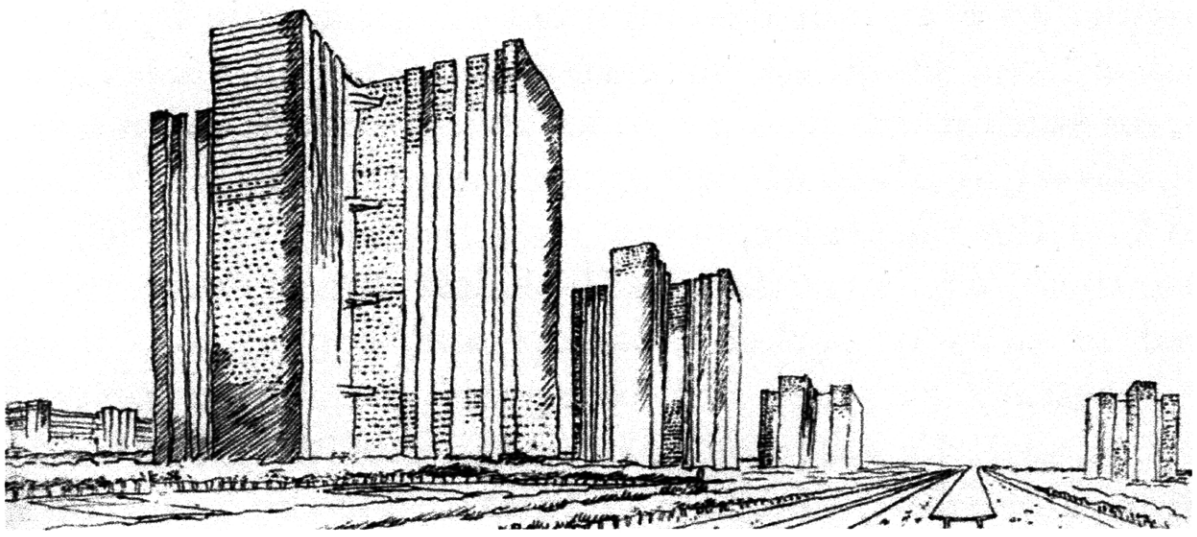
C.i. Striving for efficiency leads to dullness

Lewis Mumford (1895-1990) can be attributed to be the forerunner and one of the most comprehensive critics of the modern city. Mumford in his book ***Highway and the city*** mapped the formation of new towns; and analyzed how the trend of modern architecture, which is "appalling monument of esthetic dullness", is leading to a similar condition in urban design (Mumford, 1963, p3).

He points out that at the beginning of nineteenth century Viennese architect Adolf Loos first proclaimed that ornaments were crime and heralded the advent of modern architecture. The modern architecture which was free from caprice and fantasy reflected the virtues of machine – *"the precise, the calculable and the economic."* (Mumford, 1963,p5). He claimed that the character of modern architecture was restricted to few simple clichés:

> *"The smooth façade, without cornices or columns; the wide expanse of horizontal windows; the external curtain wall supported on cantilevers from an interior row of columns – these were enough to establish the authentically modern, and any departure from them was a violation, indeed an unthinkable regression"* (Mumford, 1963,p5).

Fig 1.8 | The City of towers, where towers were placed amidst gardens and playing fields | Source : www.newworldeconomics.com/archives



He rightfully claims that then onwards the same austerity and simplicity prevailed in urban planning and design. Emphasis on topographical irregularities and curved streets in suburban planning were replaced by rectangular blocks and straight parallel rows in "*an ecstasy of schematic rigor*" (Mumford 1963, p3). Even basic natural principles like orientation to the sun and wind were disregarded for the convenience of "travelling cranes and miniature railroads in building operations." (Mumford 1963, p3) Mumford illustrated how the modern architects ignore the past and create a rational vocabulary devoid of any eclecticism. He cites how,

> *"Le Corbusier acting on these notions, had theoretically wiped out the center of Paris and made it over on a Cartesian plan – high buildings separated by large areas of empty space, an arrangement making pretentious claims to sunlight and modernity but devoid of any urban character except excessive density of population"* (Mumford 1963, p3).

He also shows how the later architects and urban designers such as Mies Van der Rohe, carry on with the style and ends up in *"mere cellophane package, wrapped in Mondrian strings, that ignores or denies its contents"* (Mumford 1963, p5).

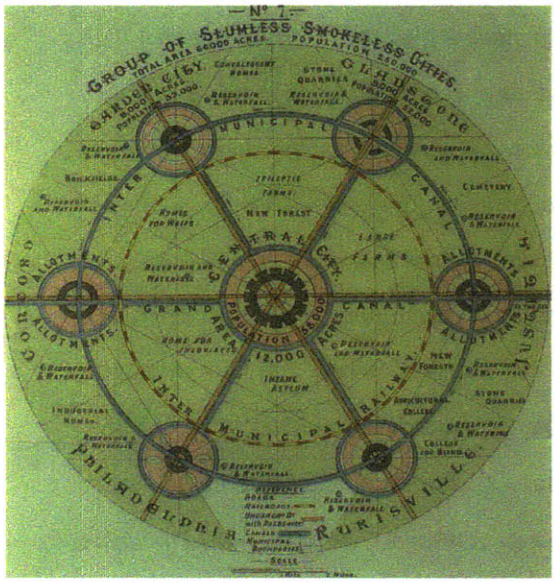
The other corrosive agent on the urban fabric that Mumford points out is the flourish of private motorcars, which according to him, *"brings mobility in the countryside but congestion and frustration, plus a threat of stagnation and blight, to the city"* (Mumford 1963, p9). He claims that the right to access to every building in the city by private cars is equivalent to the right to destroy the city. The unrestricted mobility of motor cars can only be achieved by complete destruction of the city fabric.

To add on to the list of insensitive approach to urban design he mentions about the quality of urban illumination designed by the engineers. He points out how the sodium vapor lamps with extremely low color rendering ability turn *"human beings into ghastly green corpses"* (Mumford 1963, p12). According to him lighting engineers need to understand it is not only the intensity of light but the quality and pleasantness that is important in creating livable urban streets.

C.ii.. Reaction to congestion leading to isolation

Mumford also maps the formation of new towns developed to relieve the congestion of big cities. He claims that though there are examples in the history, such as the proposal of Leonardo Da Vinci, the modern new towns were invention of the British planners. The most distinguished planner was Ebenezer Howard (1850-1928), who wrote the book *Garden Cities of Tomorrow*. According to Mumford, Howard were the first to apply political intelligence to the problem of overgrowth in cities by replacing the planless over-expansion of the big city with planned colonization to draw off the surplus population. Howard suggested self-sustaining communities which have a restricted population, density and size; and surrounded by a green belt. He called them "Garden Cities" and proposed groups of garden cities connected by rapid transit so that they may sustain specialized institutions and provide diversification of industries and employment opportunities that are comparable to big congested cities (Mumford 1963).

Fig 1.9 | The original garden city concept
Source :www.oliviapress.co.uk



But the negative aspect of all these towns according to Mumford was the hunger for more space as a *"revolt against congestion and sordor"* (Mumford 1963, p26). According to him streets were built much larger than they were necessary with wide borders and private front gardens. All these resulted in diluted urban fabric which lacked urban cohesiveness and were economically not viable. The standard pattern of houses though superior to the ones available to the common people in England before 1920 had some inherent defects. As they were a reaction to the congestion and pollution of the cities, they were planned for *"privacy and not sociability, spacious solitude and domestic isolation rather than easy communication and cooperation among neighbors"* (Mumford 1963, p28).

C.iii. Mass production and lack of pluralism

Architect Charles Correa (1930-) in his book the *New Landscape* identifies some other reasons for failure of modern architecture (Correa1989). He claims that despite the architect and urban designer's intention to create livable places for the people they have failed and ended producing faceless and inhumane spaces. According to him the failure is mostly due to the process and methodology in which these problems were addressed. Being influenced by the industrial success of Henry Ford, most architects including stalwarts like Le Corbusier got *"seduced"* by the concept of mass production in the assembly line. They tried to create one ideal house and then clone it, a process that though it succeeded in case of the Model T Ford does not work in case of human residences.

The fundamental reason behind this is that Henry Ford's model does not take into consideration certain basic principles of human settlements that are *"variety, identity and participation – in short pluralism"* (Correa 1989, page 23). Correa refers to Mumford who criticized modern architecture for trying to identify an ideal set of condition through design, and according to him ideal conditions are varying conditions. Thus an approach which attempted to establish an ideal static condition was doomed to fail given the dynamic nature of human society.

Fig 1.10 | Sketch showing repetition of buildings as discussed by Correa | Source: New Landscape, Charles Correa1989, p33

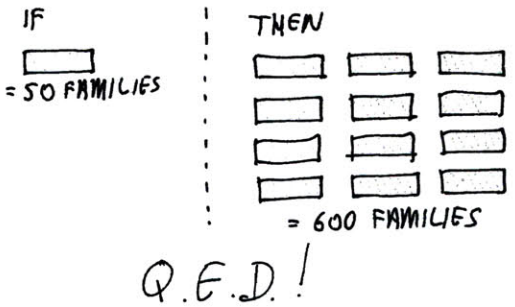


Fig 1.11 | Model T Ford factory at Detroit 1928
Source: http://www.sapiensman.com/old_cars/old_cars1.htm

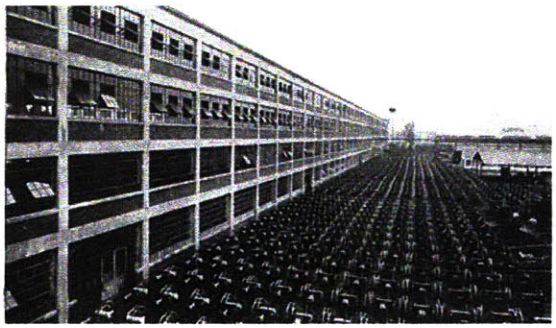


Fig 1.12 | Housing development at Las Vegas, 2005
Source: Alex MacLean

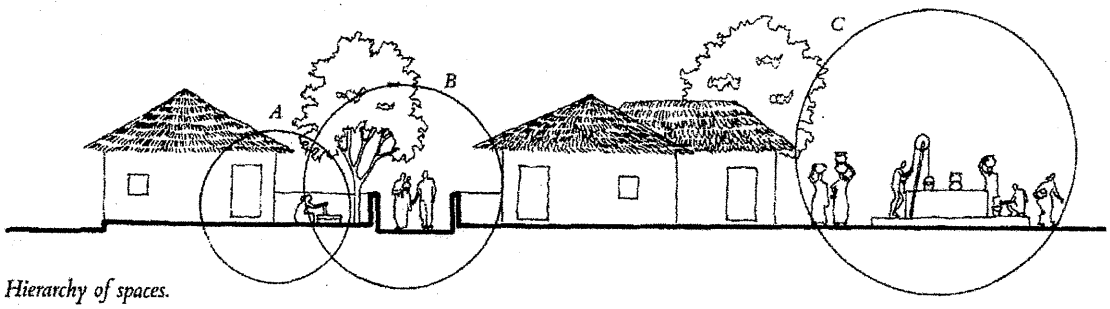
C.iv. Failure to apprehend human nature and culture

Other important factors that Correa highlights are the failure of understanding the historical roots of the people and not assigning spaces according to these requirements. He illustrates a very rudimentary urban space configuration,

> *" ... this system is generally hierarchical. For us, under Indian conditions, it appears to have four major elements: First, space needed by the family for private use, such as cooking, sleeping and storage; Second, areas of intimate contact, such as front doorstep where children play and adults chat with their neighbors; third, neighborhood meeting places, such as village well or city water taps, where people interact and become part of the community; and fourth, the principal urban area, such as the maidan, used by the whole city"* (Correa 1989, p89).

This simple configuration of space though contextual to India, has relevance in every society starting from, "tiny hill towns of Italy to the sprawling metropolis of London or Tokyo- have some analogue of such a system; an analogue which modulates with climate, income levels, cultural patterns, etc of the society concerned." (Correa 1989, p33) Urban designers have mostly failed to identify the relevant structure in the society and incorporated forms that are often irrelevant to the society concerned.

Fig 1.15 | Hierarchy of space in Indian context
Source: New Landscape, Charles Correa1989, p33



Hierarchy of spaces.

Another critique, Peter Blake (1910-2006) in his classic, *Form follows Fiasco*, illustrated the failure of modern urban design through example of a new town in Zagreb, known as the New Zagreb. According to him the gleaming new neighborhoods designed exquisitely according the standards of modern movements are *"dead"* compared to the cities which have *"crooked old streets bursting with people and life and commerce and employment"* (Blake 1974, p62). The explanation according to Blake was the failure to apprehend the nature of human beings and their interaction pattern with fellow humans. He showed how the ideal cities had parks, plazas and vistas but lacked the street, which was the most vibrant, exciting, irritating and yet most stimulating of all outdoor spaces. He also showed how the experiments with *"streets in sky"* and *"sidewalks in sky"* in megastructures did not work due to logistical reasons (Blake1974, p67). As people get distributed in various levels the density gets diffused and the resulting density fails to generate any interest. He also points out that the designs that were produced by the modern designers were scaled to the automobile age and did not cater to the scale and needs of man.

Fig 1.16 | The vibrant city of old Zagreb
Source: www.croatia.org

C.v. Failure in the context of developing countries

Apart from the general reasons for the failure of modern urban design in the developed countries, there are specific reasons for its failure in developing countries such as India.

In the context of developing countries Preston et al (1988) argues that the primary reason of failure is to equate the process of present urbanization with that in the west during the industrial revolution. Many observers and specialists have termed the present phenomenon as the Third Revolution in succession of the agriculture and industrial revolutions. According to the UN this growth will be the single largest influence on the development in the 21st century (UN 1996:1). Thus, it is of extreme importance that we try to apprehend the nature of this "Third revolution" and take appropriate measures.

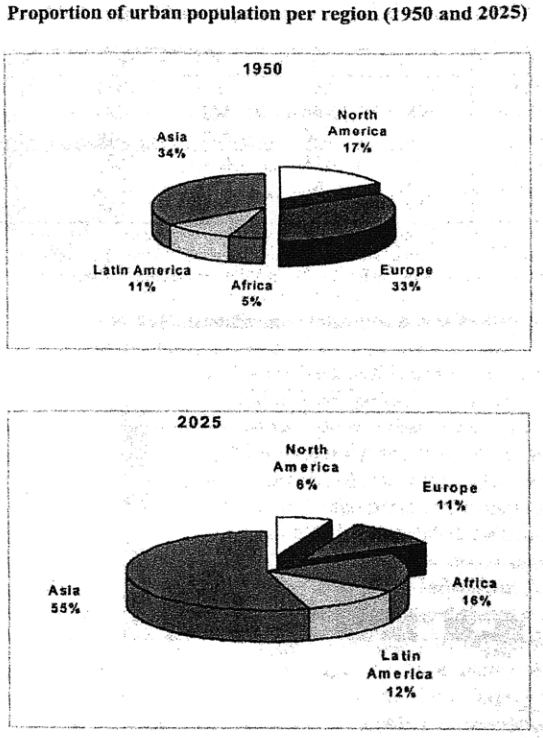


Fig 1.17 | Pie chart showing the population distribution per region | Source: Urban development and new towns in the third world, Jaquemins, p27

Though the processes of urbanization in the two different worlds have certain similarities, there are some major differences. First, in the western world the population growth was caused by industrialization and increasing urban prosperity. This also caused a major change in demographic pattern which was reduction of rural population and an overall slowdown of population growth. In the developing world industrialization is only one of many factors and not even the most important one for the migration. Also in most of the developing countries the natural increase of population is more than migration. (Preston, 1988: 11-31, World Bank 1991:200, UN 1996:35)

A second and more important difference is the sheer number of people involved in this process of urbanization. In India still only 28% of the country's population lives in the cities and the urban growth is only 3% per annum for the last two decades. But even at these low percentages, due to the huge population the total number of urban residents is 286 million, more than the total population of United states, and only second to China in urban population in the world. And it is projected that by 2030 it will rise to 575 million which will be 41% of total population. (India: Urban Poverty Report 2009, Ministry of Housing and Urban Poverty Allevation, Government of India, Factsheet)

In the case of Mumbai, in the last few decades the rate of growth is mostly below 4.5%, but the absolute number is staggering. Within fifty five years the population increased from 1.49 million in 1941 to 16.6 million in 2001. (Population and Employment profile 2001, Mumbai Metropolitan region development authority | Source: http://www.mmrdamumbai.org/).

In the case of Kolkata the rate of growth have been recorded as 4.1%. And the population have increased from 2.1 million in 1941 to 14 million in 2001. (Census of West Bengal, India 2001)

D. Interaction of Urban elements

Christopher Alexander (1936-) in his book *A Pattern Language* attempted to identify the traditional vocabulary of architecture and urban design, and this is what he describes as the *"timeless way of building."* Though his work has been criticized for being rigid and prescriptive, we can gain considerable insight into the basic structure of towns and cities from his elaborate work.

The first important point he raises is the inter-connectivity in the social and natural world, and he rightfully claims that nothing can exist in isolation. Thus architects and urban designers in their process of construction should consider that whatever they build must merge with the world around it and relate to the world within it. The process should be such that in totality tit becomes coherent and wholesome; and the new construction gets its place in the web of nature. Alexander also claims that,

> *"every society which is alive and whole, will have its own unique and distinct pattern language; and further, that every individual in such a society will have a unique language, shared in part, but which as a totality is unique to the mind of the person who has it."* (Alexander 1977, p13).

This is one of the claims that have not been challenged, and we can further state that every society have evolved this language through a natural process with time. The formation of the language is influenced by all forces relevant to the context and the community. On one hand it involves the natural forces like sun, wind and rain; on the other it embodies the social and cultural influence of the context.

Thus during a new addition or alteration in the urban fabric one must identify the local language and work with it and not against it. The idea though it seems simple and well accepted, unfortunately is seldom applied. Alexander observes that,

> *" the languages which people have today are so brutal, and so fragmented that most people no longer have any language to speak of at all – and what they do have is not based on human, or natural considerations"* (Alexander 1977, p13).

Alexander et al claim that one may create the *"magic of the city"* by all these separate elements. One the contrary most of these elements lose their existence or desired impact in a standalone condition. During the field research I realized none of these elements, in itself, can recreate the ambience and livability of the traditional neighborhood. It was interesting to note that it is the integrated effect of the various elements which creates the synergy. The urban fabric is created by the transfusion of these elements.

On close observation it can be identified that it is this interaction between different parts of the urban fabric that is completely missing from the modern designed urban fabric. It can be argued that this segregation is what makes the new cities clinically dead. These rigidly designed areas lack flexibility and adaptability fails to respond the changing human needs.

During the field research different categories of interactions were identified in the traditional neighborhoods. However we can broadly classify them in four groups

Interactions between:

1. Urban and natural elements

It was observed that in the traditional urban fabric the natural elements like water bodies and vegetations were integrated in an organic fashion. This integration created a more sustainable urban character where the dense urban fabric benefited from the natural geomorphology of the region.

2. Built form with open space

In the traditional neighborhoods the private buildings and public spaces often encroach upon each other. These encroachments were result of spontaneous reaction to cater the human needs. Also, the segregation between the exterior and interior space in the traditional fabric is much less defined than that in new designed areas. This transfusion zone of the two spaces make both spaces more livable and interesting.

3. Residential and commercial activities

The importance of mixed growth has been much deliberated on recently. What is important to note is the balance between the variety of uses that are integrated in the traditional fabric.

4. Different modes of transportation

The two different modes provide a wide accessibility in these neighborhoods at a low environmental cost. They integrate large population in the urban sector by providing employment.

Chapter 2.

Introduction to the case

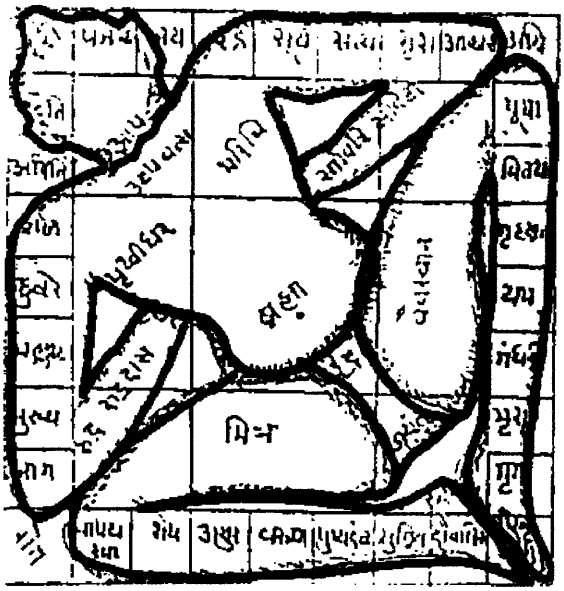


Fig 2.1 | Mandala, an esoteric diagram for city planning
Source : Begde 1978, p29

2. Introduction to the case

A. Evolution of urbanization in India

i. Indo-Aryan era

ii. Muslim era

iii. Colonial era

iv. Post colonial era

B. Selection of Kolkata and its evolution

C. Selection of neighborhoods

Summary

This chapter presents a comprehensive introduction to the case. It starts with a brief study of the process of urbanization in India and thereafter studies the evolution of Kolkata, the selected city for this study. Finally it introduces the three neighborhoods of Kolkata that will be studied in detail

A. Evolution of urbanization in India

The thesis argues that the traditional urban fabric of Indian cities have an inherent flexibility that encourages interaction of various elements in different levels. These interactions are of various kinds like transfusion, integration or even encroachments. These interactions make these areas respond more to the various needs of human society, albeit at times in ways that generate urban problems (e.g. encroachment on public lands). The study tries to identify what these different elements are, what are the different levels of interactions, and how they benefit the city and its inhabitants.

However before commencement of the research it is important to understand the context. It is of outmost importance to realize the process and context by which this rich urban fabric has evolved over the ages in the old Indian cities. The study will help us to realize the significance of the process that has been going on for more than five thousand years. Only through a proper understanding of this process it will be possible to design a new city in Indian context that can strike an harmony with the culture and tradition of the people. Thus we briefly study the evolution of urbanization in Indian context.

India can be claimed to have one of the longest history of urbanization in the world starting from the 3rd millennium BC. This long history can be divided into four major eras.

i. Indo-Aryan era
ii. Muslim era
iii. Colonial era
iv. Post colonial era

A.i. Indo-Aryan era

Any research concerning urban design and city planning in India cannot be completed without considering the ancient and mediaeval principles of town planning in India. It may be claimed that the field of city design and planning was highly evolved during the 3rd millennium BC in India and no other civilization have gone to such extent to define the principles of design. Prabhakar Begde in his book *Ancient and mediaeval town planning in India*, (1978) cites an immense amount of ancient texts and documents such as Shilpa Sastras, Niti Sastras and Vedas to establish that the Indian scholars realized the importance of city planning in enhancing the prosperity and security of the kingdom. Professor Binod Behari Dutt in his book *Town planning in ancient India*, (1925) also clarifies that the Silpa Shastras that have survived the ravages of ages can be classified as a rich collection of sociological treaties, among which Vastu Sastra, the science in residence and abode forms a subdivision.

To the modern designers the most relevant part of this ancient science is the way the ancient scholars have rooted the town planning principles with natural forces and social structure. Both Dutt and Begde illustrates this in the site planning section of the principles. They identify the numerous guiding principles for selecting the appropriate site for the foundation of new towns and villages. The ancient Indian planners were very meticulous in this aspect and they detailed out the principles for selection of location, orientation, soil condition, groundwater and other important factors. Proximity of water source was preferred as for the Indo-Aryans ablution in itself is a religious act and is necessary before any religious rite.

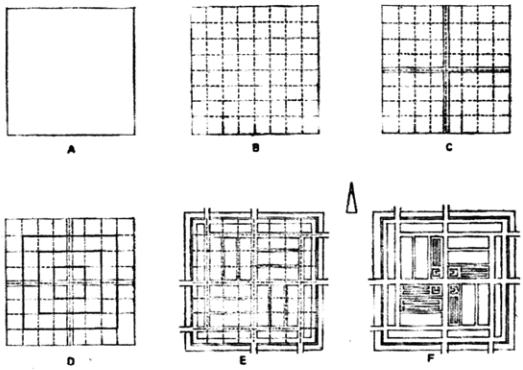
Begde quotes Sukracharya about the ideal site for a capital city, "The capital should be set in a place which abounds in various kinds of trees, plants and should be rich in cattle, birds and other animals, it should be endowed with good source of water and supplies of grain, be adorned with pleasant forest and vegetation, stirred by the movements of boats upto the seas and should not be remote from the hills and it should constitute an even grounded picturesque plain." (Begde1978, p25) It may be noted that the ancient oriental scholar stressed on the significance of ecological interactions in the city with due consideration for biodiversity long before the occidental counterparts have come to recognize the climatic, sanitary and economic importance of nature.

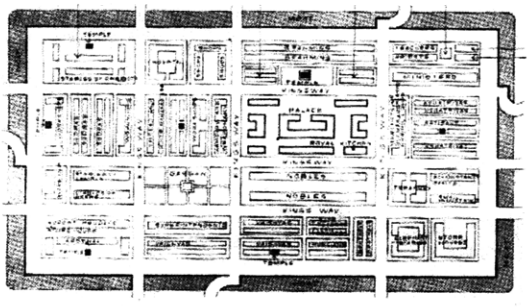
Apart from location, the physical conditions of the site such as soil quality, slope and ground water content was also analyzed in detail. Dutt quotes Manasara where it directs, " the examination of the site as to its fitness from its color, smell, taste, shape, direction, sound and touch. The ground should be level and smooth with a declivity towards the north east, producing a hard sound, with a stream running from left to right, of an agreeable odor, containing a great quantity of soil, producing water when dug to a depth of a man with an arm raised above is head, and situated in a climate of moderate temperature" (Dutt 1925, p73). He also tried to explain the significance of all these specifications, he points out that declivity towards north will provide shade from the harsh summer sun and ensure drainage of sewers away from the lee ward side of the city.

After the meticulous site selection process the ancient planners postulated elaborate principles for site planning and folk planning, many of which are relevant to the modern planners. It may be observed that the ancient principles which are all postulated through religious form have the strong undercurrent of logic and reasons of scientific planning. The primary principle was to bring order and system in the chaos of the city, for which the ancient scholars relied on cosmic diagrams known as Vastu Purusha Mandala. According to Begde, the VastuPurusha is considered as the universe personified and bounded in a perfect square or circle. These esoteric diagrams as shown in fig 2.2 were to assist the Sthapati, the architect and planner who was the embodiment of Brahma the Creator, to create order from disorder.

Next to the efficient road layout came the world's first attempt of city planning by zoning. The Indo-Aryan planners postulated a set of zoning principles that were supposed to guide the layout and development of the city. Begde, claims that the site planning principles expounded by Kautilya and Sukracharya was dominated by sound logic rather than cosmic diagrams.

Fig 2.2 | Different stages of town planning, starting from Mandala to the final layout| Source : Ancient and mediaeval town planning in India, Begde, p29,33,36

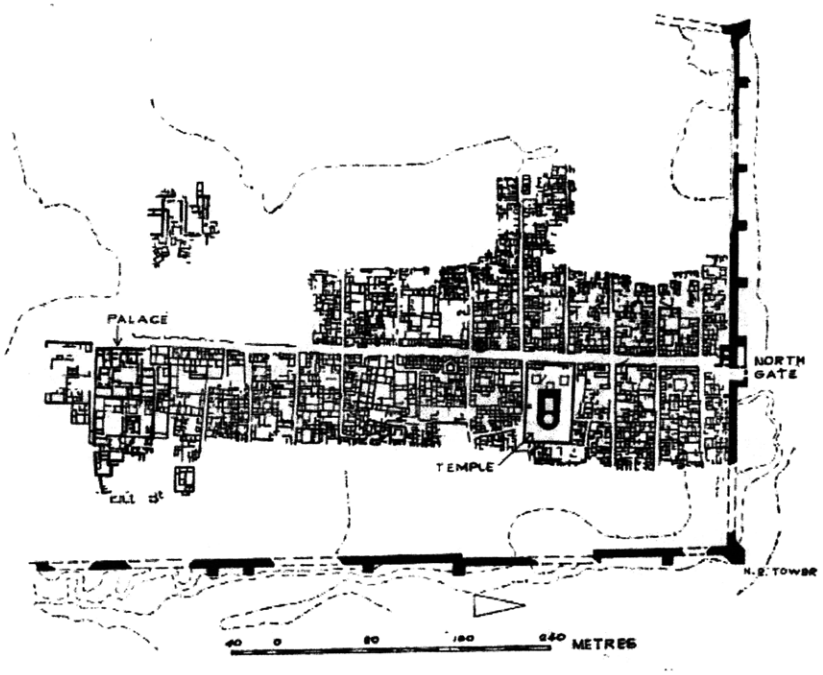




However this zoning by social grouping also have some limitations as they represses certain types of social interactions.

Landscape architecture in the city was extremely important as Hindu principles stressed the need of water and trees for temples and religious rites. The Sthapati was always associated with the landscape architect known as Arama-kratima-vanakarinah in planning pleasure gardens and artificial forests in the site. The sacredness attached to trees in Hindu religion guided them to plants beyond aesthetic values. Begde observes that the ancients towns must have been very picturesque considering that running water bodies, shady trees and artificial tanks were the essential features. (Begde 1978, p37)

Fig 2.3 | The city of Taxila is an example of Town planning principles of Indo-Aryans | Source : Ancient and mediaeval town planning in India, Begde, p20



A.ii. The Muslim era

The advent of Muslim rule in India began with the invasion of Mohammad Bin Qasim in 712 AD, and Muslim rule began from the 12th century AD. Percy Brown (1872-1955) in his book on *Indian Architecture* gave a fascinating description of the effect of Muslim era on existing Hindu society in India. According to him,

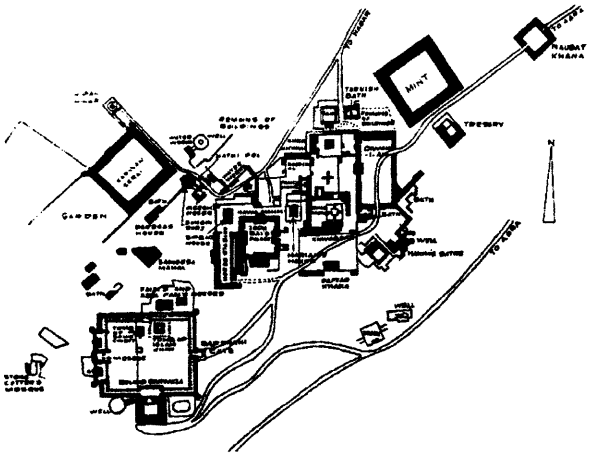
> "*in no country was the monvement of Islamization more epoch making. Of the various civilizations with which the muslims came into contact in the course of their world conquests more could have been more diametrically opposed to their ideals than that of the people of India ... it postulates a clashing of fundamental convictions, a conflict of realism with idealism, of the material with the visionary, of the concrete with the abstract. Nothing could illustrate more graphically the religious and racial diversity or emphasise more decisively the principle underlying the consciousness of each community than the contrast between their respective places of worship, as represented by the mosque on the one hand and the temple on the other ... compared with the clarity of the mosque, the temple breathes mystery in this every particular, is an abode of mystery; the courts of the former are open to light and air with many doorways inviting publicity, the latter encloses "a phantasm of massive darkness" having somber passages to dim cells, jealously guarded and remote .....*" (Brown 1956, p1).

According to Ahmed Ali (1925-) this conflict of ideals led to period of chaos and confusion that has characterized by destruction and annihilation. In this period of fanatical zeal it was common to destruct the forts, cities and temples after the conquest. After this purely destructive phase, followed a second period where systematic demolition was carried out to supply building materials for building mosque and tombs for the conquerors. Often some Hindu structures were merely converted to mosque or tomb. Gradually as the Muslim rule established itself permanently in India, significant contribution is observed in the field of architecture and city planning. (Ali 1971, p 25-27)

The Islamic town planning began with Quttubuddin Aibak in 1206 AD with establishing his capital in Delhi. The mosque was constructed at the central area, as it was not only the center for worship, but also the place for social gathering and education. This tradition can be traced back to the ancient Arabs, who used to mark the site for the mosque and build the city around it during founding "hirahs" or camp cities. Thereafter Tughlakabad was founded in 1320 with a plan resembling the European mediaeval towns. The palace was located in one end within a fort, the mosque at the center and streets and alleys without any set pattern. Many cities were built thereafter by the Muslim rulers for the next five centuries, significant among them were Shah Jahanabad and Fatehpur Sikri (Fig 2.4).

The advent of Islam can be considered to be a new layer of thoughts, cultures and practices on the existing Indo-Aryan fabric. As Richard Eaton puts it "Islam in Bengal absorbed so much local culture and became so profoundly identified with Bengal's long term process...." (Eaton p310)

Fig 2.4 | Plan of Fatehpur Sikri showing the geometry of city layout | Source : Reintroduction of traditional Indian built form into contemporary urban design in India, Wagh, p45



Plan of Fatehpur Sikri showing geometry in city layout and dominant complex (Venkatesh, 1991:74).

A.iii. The colonial era

The colonial period in Indian history began with the increase of Portuguese traders in the sixteenth century. The impact on city planning started as they started seeking permission for port facilities in Goa, as the British did in Mumbai, Kolkata, Surat, Madras etc. Thereafter they requested for protected areas from the local rulers by construction of walled areas for their men and merchandize. By the end of the 18th century taking advantage of the weak Mughal rulers in the center and fragmented political scenario of the country, they soon became rulers from traders. It is interesting to note that the three sites that the British selected as the point of entry in India are the biggest and most important cities of India (Racine, Munshi 1990).

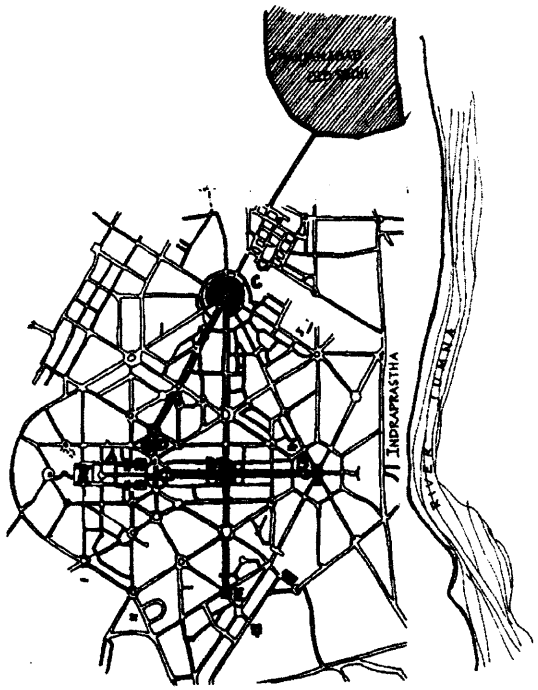
In the first phase the British rulers rarely gave importance to the general wellbeing of the cities that they created or captured. The only infrastructure they built was to facilitate the exploitation of the resources of the country and promote their trading interests. The colonial cities consisted of distinct European sector and the native sector. While the European sector was moderately well maintained the native sector lacked even the minimum urban amenities like drainage. In the next phase as the British settled down gradually and the rule of the country was taken over by the British crown after 1857, they started making planning interventions in the cities. But unfortunately the British planners who were used to well engineered cities of Europe, failed to appreciate the inherent complexities and intricacies of Indian society and city. They perceived the multilayered complex urban conglomerations as chaos and confusion. William Mackintosh wrote in his chronicle of travels " it is truth that from the western extremity of California to the eastern coast of Japan, there is not a spot where judgment, taste, decency and convenience are so grossly insulted as in the streets, lanes, alleys, windings, gullies, sinks and tanks, which jumbled into an undistinguished mass of filth and corruption equally offensive to human sense and health, compose the capital of English Company's Government in India." (Lutz, Salah, 1982, p 183)

Thereafter British planners made many large expansions and developments in the cities of Mumbai, Kolkata, Delhi etc. The present condition of these cities are mostly influenced by the planners and architects of British period. The expansion of Delhi can be termed as the climax of

British town planning in India (Fig 2.5). In 1911 the government decided to transfer the capital from Kolkata to Delhi considering its central position and historical significance. A team of Planners under the Edwin Lutyens (1869-1944) designed the new capital city of India called New Delhi. The ideal of the project was not to create a live able city but "to express within limit of the medium and of the powers of its users, the ideal and the fact of the British rule in India, of which New Delhi must ever be the monument." (Ali 1971, p 60-67)

The completely misdirected approach to urban planning and design by the British was first identified by Patrick Geddes (1854-1932) who studied and worked intensively in the early part of the nineteenth century. The period that Geddes spent in the subcontinent making plans and reports could be classified as one of the best periods of urban planning in the history of modern India. In 1914 on the invitation of Lord Pentland, the Governor of Madras, Patrick Geddes came to India to launch a programme of improvements of towns and cities. For two years he was in Madras Presidency and prepared valued reports on planning of a dozen towns,

Fig 2.5 | Plan of New Delhi | Source : Reintroduction of traditional Indian built form into contemporary urban design in India, Wagh, p62



Layout of New Delhi (Irving, 1981:29).

such as Bellary, Conjeeverum, Guntur, Madura and Vishakapatanam.

He was the first person to apprehend the inherent characteristics of Indian settlements. His plans were realistic, practical and always a source of inspiration and enthusiasm. He is unquestionably acclaimed to be the one of the greatest contributor to Indian urban planning and design. His works need greater elaborations and detailed study and have the potential to provide us with a direction for creating a new paradigm for designing new cities in Indian context.

Geddes' method to approach town planning, though well known, needs to be discussed in this context. He wrote in his report in Madras that,

> " *Town planning is not mere place planning, nor even work planning, but to be successfull it needs to be Folk planning.....Not to coerce people to move against their wishes and interests, but find th right places for each sort of people, places where they really flourish. Why not give them the same care with which we transplant flowers?*" (Geddes 1968, p53)

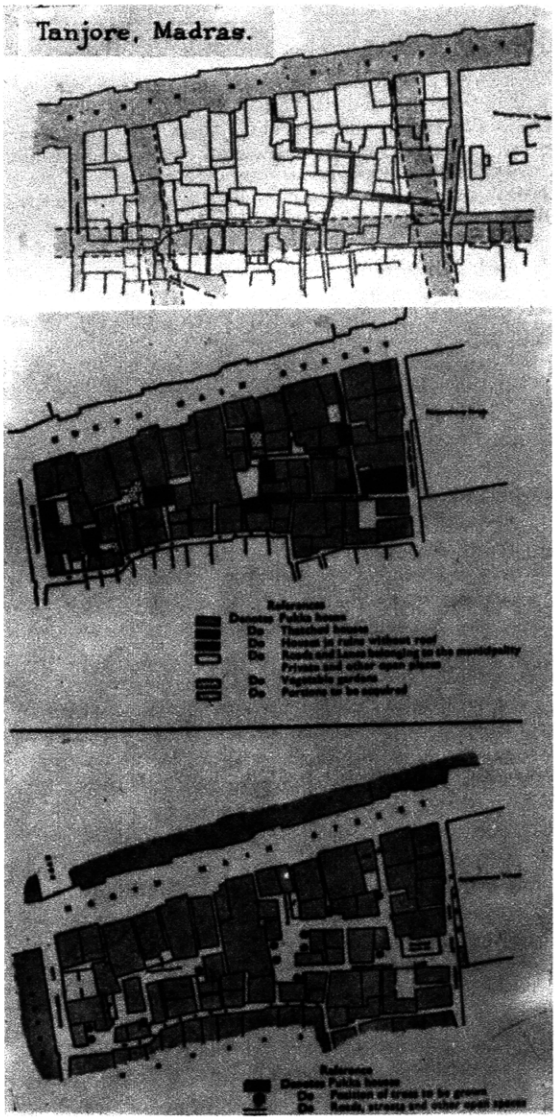
He advocated town planning with a view to preserve human values and traditions rather than destroying them. His approach termed as "conservative surgery" was well illustrated in his proposal for development of a site in Tanjore shown in Fig 2.6, Madras. Here the municipality proposed to drive a gridiron pattern through a congested area of dwelling units at a cost of 30000 Indian rupees. Geddes proposed opening up the area in a few uninhabitable ruined areas strategically and planting trees in the open spaces. The whole scheme was estimated to cost Rs. 5000. His proposal was not only cheaper and therefore more practical, but it also displaced fewer people and relieved congestion of buildings in much better way. (Ali 1971, p 112)

Geddes emphasized the importance of thorough understanding and survey of the affected areas, information beyond the ordinarily available maps. Here he recognized what he called "diagnostic survey" and learnt the traditions of the locals and understood the real problems and offered solutions of greater use and meaning than many western minded Indians.

He visited India a number of times till 1924, and some of the principles in town planning that he used in planning Indian towns are considered as a great contribution to the science of planning. He disliked the rigidity of plans usually prepared by the engineers. In all of his plans he avoided the monotony of straight roads and uniform plots strung along them. He discarded the use of conservancy lanes and encouraged use of parks and gardens in all neighborhoods.

The design philosophy of Patrick Geddes can be one of the most important stepping stones for finding a new paradigm for designing new towns and cities. Most of the work that Geddes did in India was concerning development of existing towns and cities. However his process can be extrapolated to be applicable in designing new cities. In this thesis his "diagnostic survey" is adopted to highlight what the present urban designers and planners are missing.

Fig 2.6 | Comparison of Municipal scheme and Geddes scheme of Tanjore | Source : Historical aspects of Townplanning in Pakistan and India, Ali, p97



A.iv. The post-colonial era

Within two decades after the independence in 1947, more than thirty new towns and city were planned and built in India. These cities were often done to reflect regional pride such as the capital cities of Chandigarh and Bhubneshwar. Some of these cities were to rehabilitate the refugees from Pakistan and Bangladesh. Moreover according to the first five year plan in 1951, many new towns were built in conjunction with new dams and irrigation and power projects. In succeeding planning periods many towns were developed as new industrial towns.

Ved Prakash (1932-) after extensive research in these new towns and cities claims that these were designed for a functional range opposite to the prevalent trend of Indian urbanization. Considering the cost of development and limited impact, he voices the concerns of the planning professionals regarding the policies and standards set for their development. (Prakash, 1969,p, 1-2)

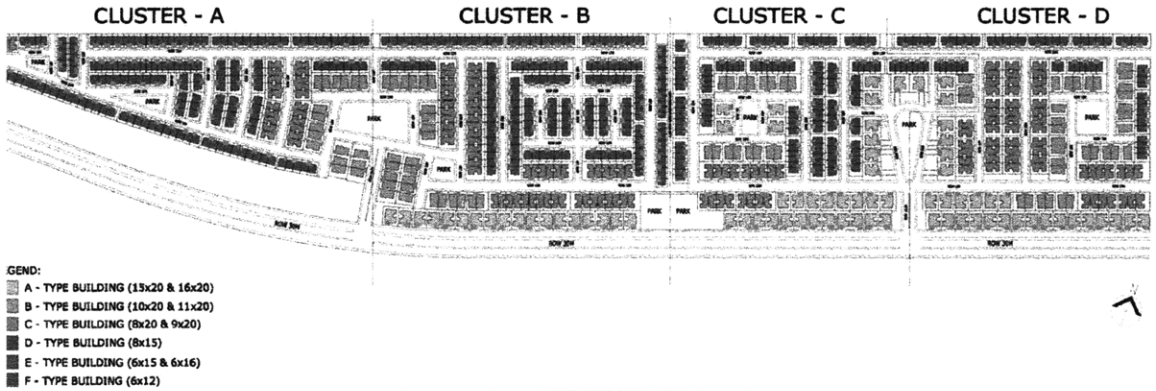
After detailed analysis of the nature of planning in these new towns, he observes that focus was only given to physical aspects, broad land uses, utilities and municipal facilities. But there was gross neglect of the regional economic or social context in which the new town or the city will be located. Densities in these areas are extremely low resulting in distances that are not walk able. These cities provide for the basic requirements of the residents but does not have any provision for the people who serves the ancillary needs of the residents. Thus this category of people consisting of professionals, taxi drivers, rickshaw pullers, petty vendors, mechanics etc. create informal settlements around these areas. These non project population is also denied the basic services such as the school, medical facilities, community centers or clubs. These informal population survive in an extremely negative condition and their condition in turn adversely affects the planned areas. Regarding the housing typologies and the various design standards he concludes that the regional contexts were completely neglected, and the physical standards in the planned towns have generally been derived from ad hoc bases without relating them to the economic considerations. In fact, the planning concepts and the standards are borrowed from western countries, especially the United States and implemented without any modification.

According to him even the richest countries in the west have not been able to implement many of these standards that have been utilized in new Indian towns. He points out that Indian planners and designers rely heavily on the concepts and the techniques of planning evolved in the nineteenth and twentieth centuries in North America and Europe, mostly United States and Britain. Moreover the practice is to transplant rather than transform according to the conditions of India. (Prakash 1969, p 20-23,71-75)

During the last two decades India is experiencing a phenomenal economic development. Government policies changed from public sector dominated pro-socialist economy to market based globalized economy. The economic development is fueling another round of extensive urban expansion. But once again the same misdirected design philosophies are being adapted. The same approach that was proven wrong by Patrick Geddes are being implemented resulting in inhuman living conditions at great environmental cost.

The thesis focuses on Kolkata which is one the four major metropolises of India. The city is expanding its urban boundaries at a tremendous pace with new developments as shown in Fig. 2.7. As evident from the rigid grid iron pattern of the proposed plan, these new developments are not at all influenced by the vernacular urban character. In this situation it is important to study some areas of the city to provide the modern designers with an alternative design paradigm.

Fig 2.7 | West Kolkata International City, one of the many new cities that are being built now | Source : http://www.kolkatawest.com



B. Selection of Kolkata and its evolution

Kolkata was the capital of India during the British rule, and later became the state capital of West Bengal after independence in 1947. Today Kolkata is the third largest city of India with a population over fifteen million. The city is under a rapid process of growth and development fuelled by a thriving IT sector, booming retail market and a fast expanding industrial hinterland. The city aspires to be a modern metropolis but faces a multitude of development challenges.

The city provides a rich urban fabric for the study of various interactions for this thesis. However it should be noted that Kolkata like Mumbai and Chennai is largely a colonial and post colonial city. Thus the "traditional" or "old' terms used in the thesis refer to local adaptation of early modern town planning and not to precolonial settlements.

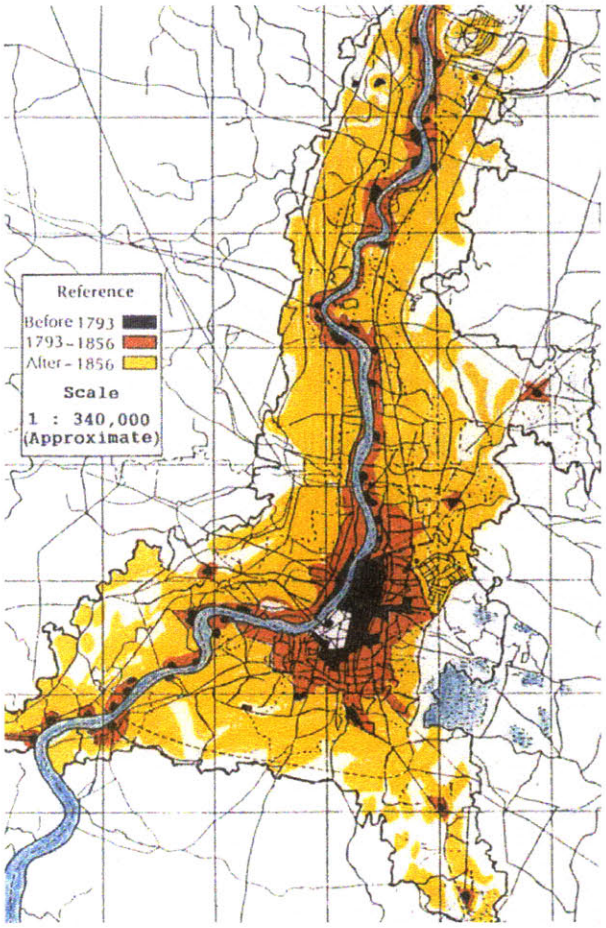
Fig 2.8 | Map of India showing Kolkata in red
Source : http://www.kolkatawest.com

For a comprehensive understanding of the present urban fabric of Kolkata, one needs to know the condition of Bengal and the evolution of the city. Writings of Abul Fazl(1596), the courtesan of Mughal Emperor Akbar, describes Bengal in seventeenth century as one of the richest provinces of India. Accounts of other travelers such as Mannouchi (Catrou 1709) the Venetian traveler, also confirms that the region was richer than Egypt and exported silk, cotton, sugar and indigo to Europe and East Asia. French traveler Bernier mentioned about the flourishing indigenous industries producing cotton cloth and silk and a number of established towns which were important trading centers. Murshidabad was the capital of Bengal, which British General Robert Clive in 1757 reported to be as extensive and populous as London, but the people were infinite times more wealthy. (Racine, Munshi 1990)

A British trader named Job Charnok of East India Company identified the potential of the three hamlets, Sutanati, Kalikata and Gobindapur which already had flourishing foreign trade and a safe anchorage on the river. The potential was even increased due to the presence of a local market in Sutanati and an ancient temple of Goddess Kali, both attracted people all round the year. Job Charnok bought the territorial right of these villages shown in the Fig2.10, from the late Mughal rulers of India and established the city of Kolkata, which became the strong hold of the British for the next 250 years.

The British rule started with establishment of the trading base in Kolkata utilizing the existing trade network through the river waterways. The newly formed city functioned primarily as service and producing centre for the export trade. Kolkata had some advantages over other European settlements in India such as Goa, Surat, Madras etc, which were availability of abundant resources, land for expansion, low cost transportation network and a considerable in-migration process. Due to these reasons the city began to handle more than fifty percent of India's sea trade (Racine, Munshi 1990).

Fig 2.09 | Evolution of Kolkata | Source : Atlas of the city of Calcutta and its environs, p10



In 1697 the British built a fort named after King William III that housed their factory in the village of Kalikata south of Sutanati. The town started growing around it as British and other Europeans came and settled around it for the protection it provided. As the urban settlement developed three basic facilities were built, first a Hospital opposite the company's warehouses, second a Church was built in 1709 on the western part of present writers buildings. And third were a number of taverns with drinking booths that served the traders and the inhabitants. Another most dominant entity was the Kolkata port in the southern part of the city that was already existing but greatly improved by the British traders by addition of dry docks, jetties and augmented by a pilot service. (Racine, Munshi 1990)

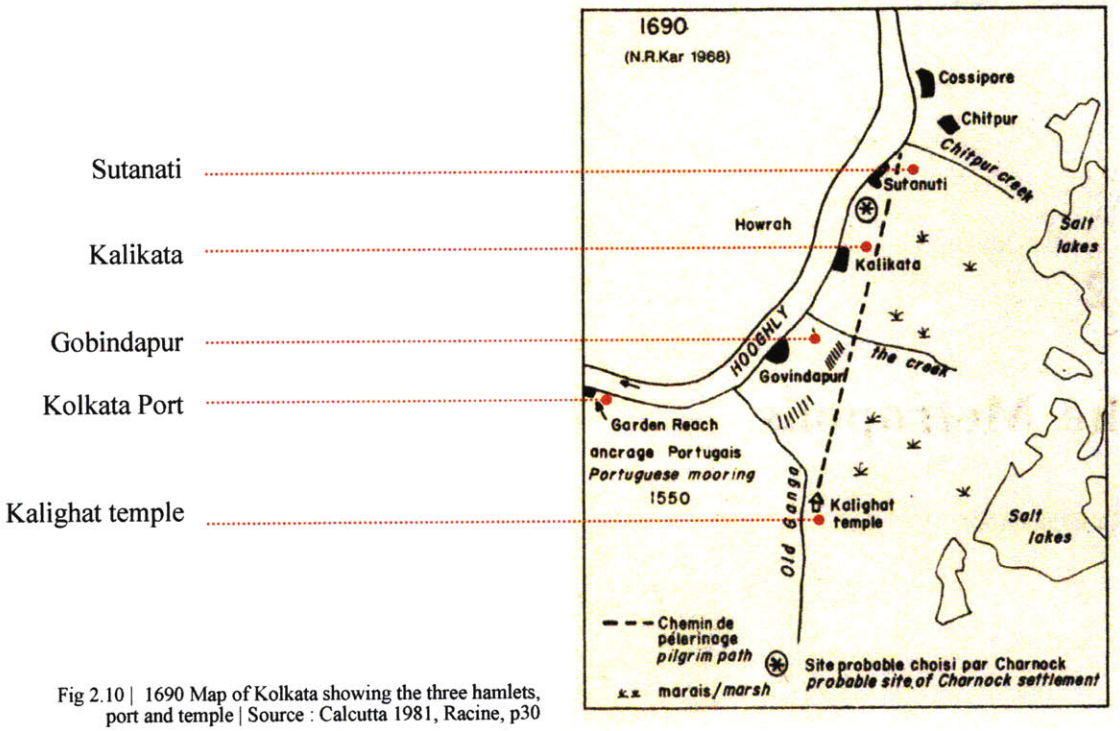


Fig 2.10 | 1690 Map of Kolkata showing the three hamlets, port and temple | Source : Calcutta 1981, Racine, p30

The European part known as White town spread from the ramparts of the fort and around a tank named Lal dighi which supplied the drinking water to all, and extended up to the present Burrabazar area in the north. The Burrabazar which was a big market at that time was known as Bazar Kolkata. The survey conducted on 1707 shows that the vibrant business activities of Bazar Kolkata turned the area into the most congested settlement at that time. The market had small huts vibrant in trading activity and had traders from Europe, Eurasia, Persia, Arab, Abyssinia, China and even Africa.

The traders acquired 3,229 acres of land for the town establishment. The progressive increase of town is shown in Fig.2.11, which consisted both rural and urban parts. The urban parts contained cluster of houses, bazaar areas, factories and warehouses. The rural parts contained jungle ditches, cultivable fields, wastelands and huts. The urbanization was concentrated in the White town and the Bazaar, while Sutanuti and Gobindapur was mostly villages. The white town consisting of the residences of English, Portuguese and extended towards the south as the north and northeast was entrenched.

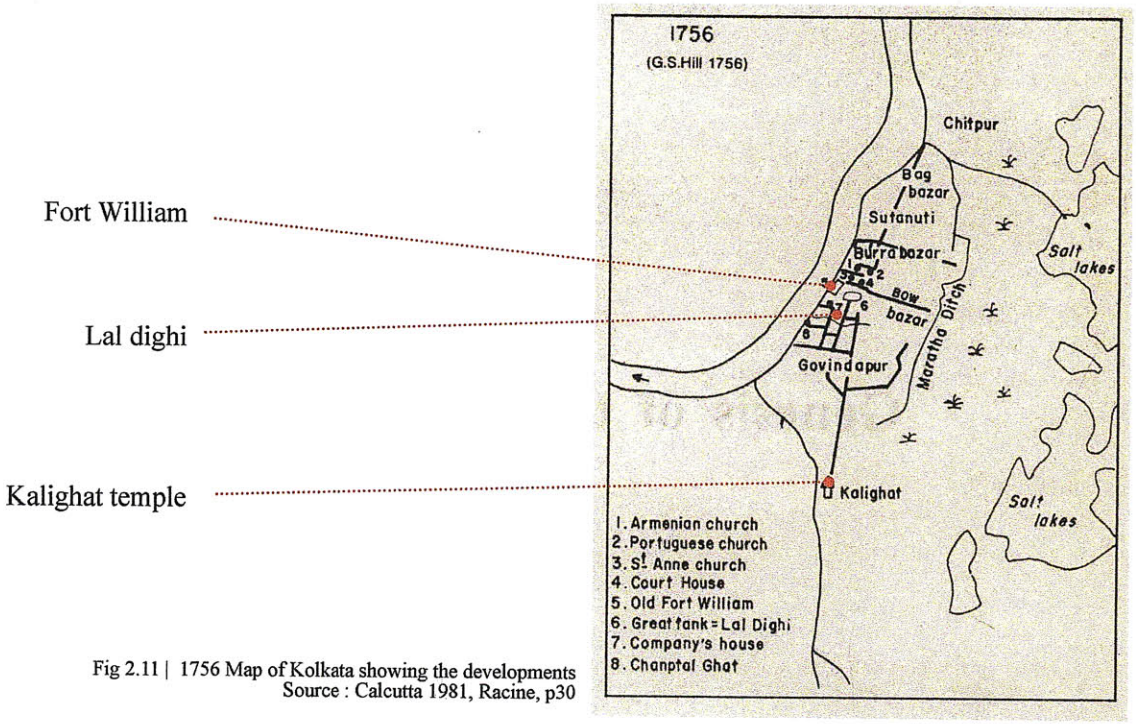


Fig 2.11 | 1756 Map of Kolkata showing the developments
Source : Calcutta 1981, Racine, p30

As the prosperity increased the native people migrated to the trader's sphere of influence and accommodated in Sutanati pushing the original residents, the weavers to the bazaar area. The population increase boosted the markets and trades and the city council procured more lands from neighboring villages to a total of 2350 acres with 332 acres of urban formation. The revenue flow reached the level when municipality works can be undertaken, but all development was concentrated in the White Town. The major road was the Pilgrim Road and all roads branched off from it. A number of garden houses were constructed in an area called Chourighee in the southern side of the town.

In 1774 Kolkata became the seat of government of the British East India Company in India. The administrative and judicial bodies were set up around the Laldighi which gradually developed into the central business district of the city. In 1779 the boundaries of the city were clearly defined and it remained unchanged till 1889. It included the Adi Ganga rivulet as the southern boundary, the Hooghly River in the North West and the Maratha ditch in the North East, and the baghbazar khal was the northern boundary (Racine, Munshi 1990).

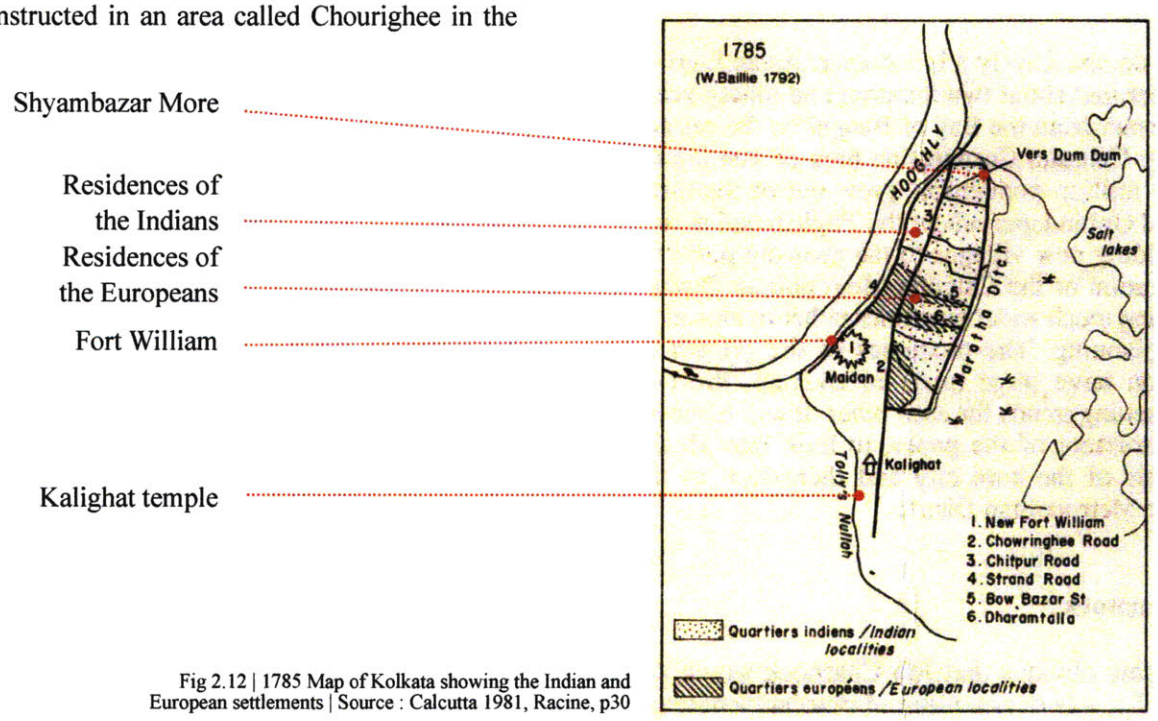


Fig 2.12 | 1785 Map of Kolkata showing the Indian and European settlements | Source : Calcutta 1981, Racine, p30

By the first part of the 19th century Kolkata had become a modernized city up to the mark of the contemporary urban standards. The palaces and huts grew simultaneously. On one hand, the populous parts were swarming with huts clustered along muddy by lanes, and on the other broad roads were constructed on areas like Chowringhee and Esplanade in the White Town. Esplanade being more centrally located possessed the new Government house and in a row with it a series of magnificent buildings while its southern faction extended to Chowringhee.

The first war of independence in 1857 the rule of India passed from the hands of East India Company to that of the British Crown. But the situation of the people and the country did not change, and Kolkata served as the capital till 1911. Thereafter it remained as one of first four major cities of the country (Racine, Munshi 1990).

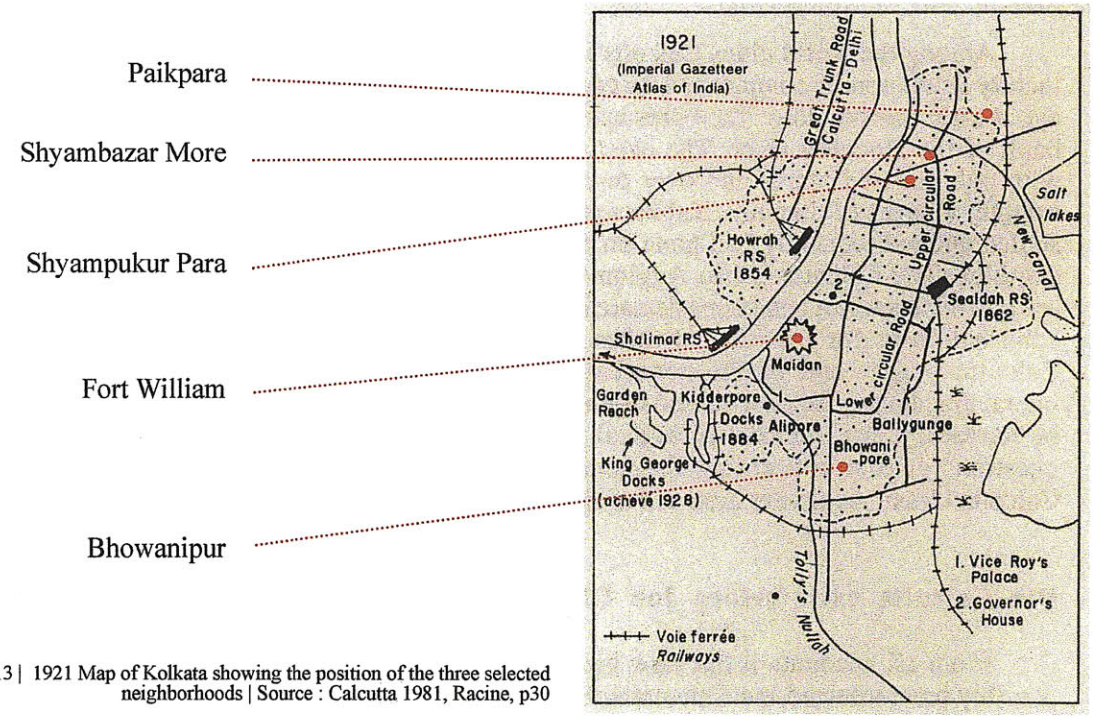
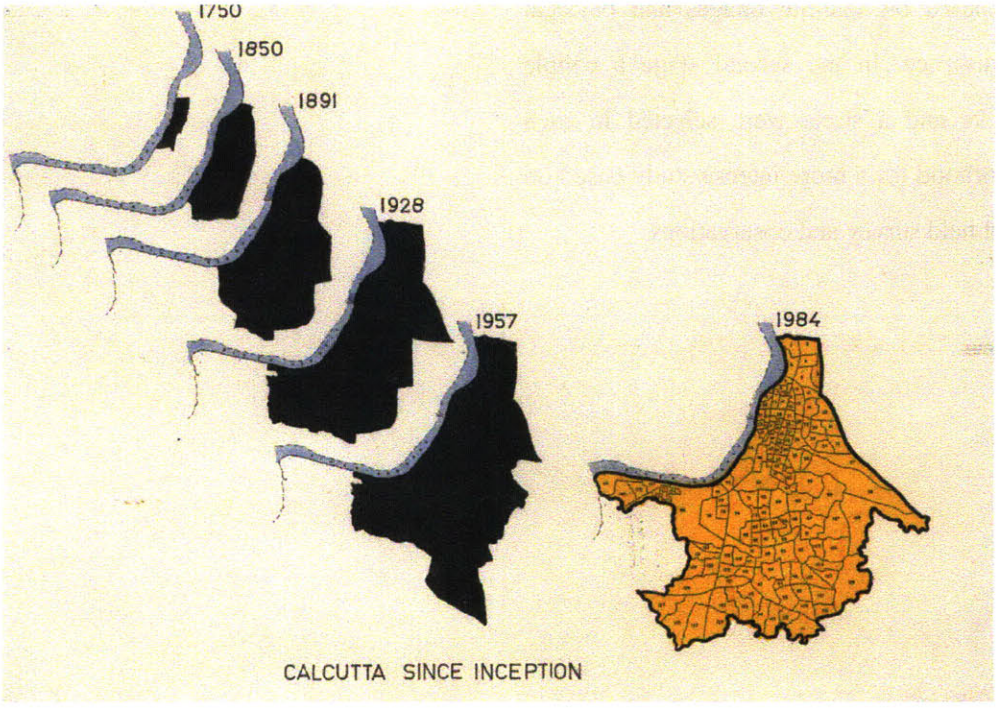


Fig 2.13 | 1921 Map of Kolkata showing the position of the three selected neighborhoods | Source : Calcutta 1981, Racine, p30

After independence the city became the capital of the state West Bengal in 1947 and serves as the primary city for the eastern zone of India. The city has continuted to grow ever since its inception. Presently it has a population over 14 million and an area of 1880 sq.km. At present the city population is growing at a rate of 4.1%. After the economic liberalization of India in 1990s the development of the city was rejuvenated (Urban Development Department Government of West Bengal). Many public and private development projects were launched. The city is expanding at a fast rate but facing a plethora of problems due to urbanization, such as congestion, pollution and poverty.

During this long process of urbanization the city developed a rich urban fabric which is humane and livable. Mostly in those neighborhoods which grew gradually without much interventions we find the most inclusive and satisfying characteristics. From these areas three neighborhoods are selected and analyzed, to identify how they respond to the human needs in much effective way.

Fig 2.14 | The steps of development of Kolkata | Source: Urban Development Department Government of West Bengal, http://www.wburbandev.gov.in



C. Selection of the neighborhoods

Initially six different neighborhoods are selected, each from a significant locality distributed over the entire length of the city. After initial study of these six neighborhoods, three were selected on the basis of their overall felt relevance to the above-mentioned elements of urban interaction. Each neighborhood selected provides a good example of one or more of the type of interactions.

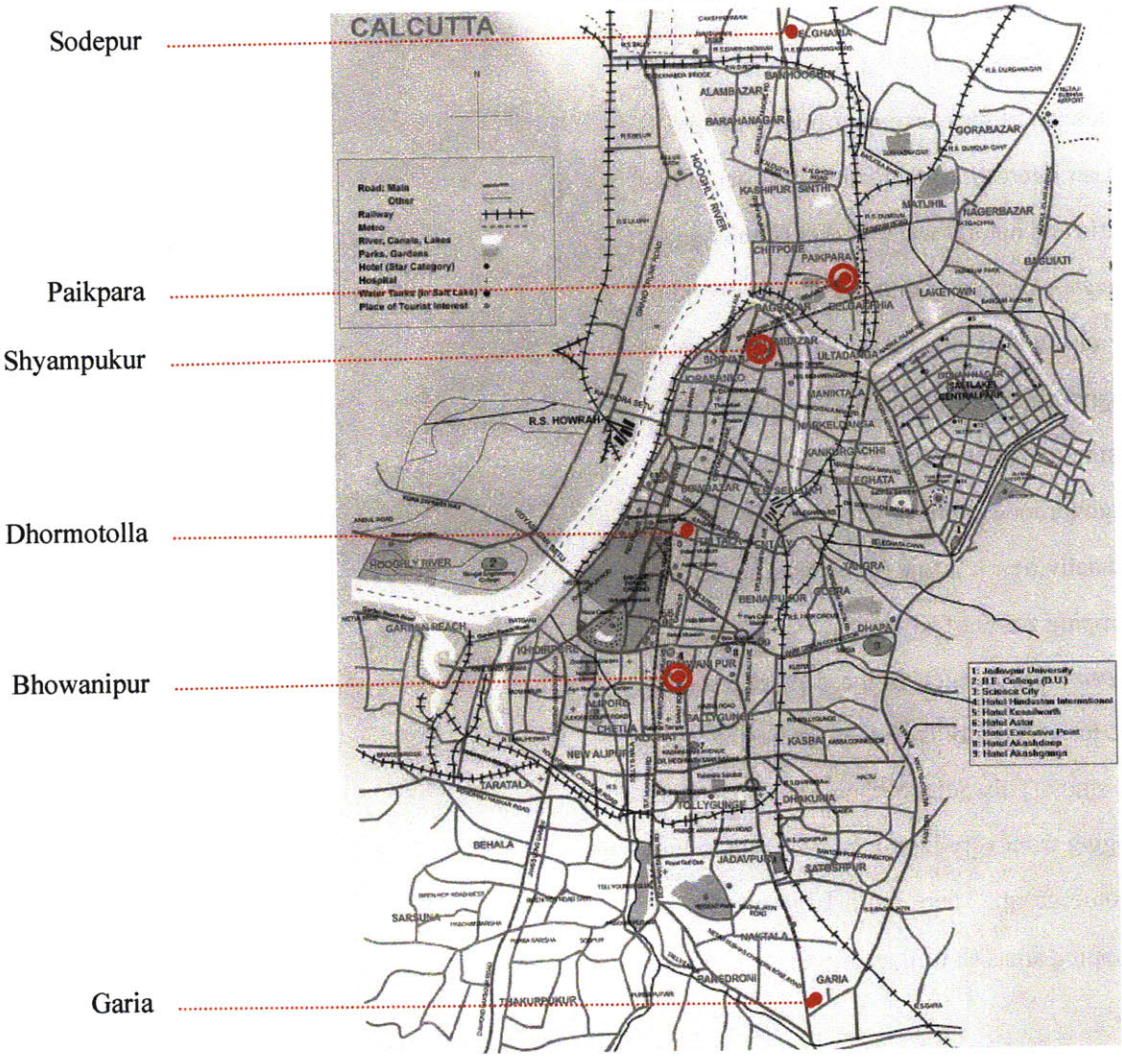
After selection of the three detailed case study neighborhoods, the study was done in two different stages. First, an overall study of the neighborhood was conducted, of a more general nature based on satellite images and physical reconnaissance. In the second stage a couple of blocks and a street were selected in each neighborhood for a more intense study based on detailed field survey and observations.

The initial neighborhoods selected are;

1. *Sodepur* was initially a northern suburb of the city and is presently included in the greater metropolitan area of the city. It is around 15km from the city centre and is connected by suburban rail and road.
2. *Paikpara* is at the northeastern fringe of the core city and is about 10km from the city centre. Predominantly a residential area of middle and lower income group of people. It has an interesting interaction between urban fabric and natural water bodies of the region.
3. *Shyampukur* is a traditional neighborhood of the city and is one of the oldest residential neighborhoods which is 8km from the central business district. It is one of the most vibrant neighborhoods with a wide range of people and activities. It is one of the most successful shopping zones of Kolkata.
4. *Dhormotolla*, which is the central business district of the city is also an interesting area for study. This neighborhood has residents ranging from very high income group to low income group. There are a large number of shopping areas as well as offices.
5. *Bhawanipur* is one of the oldest areas in the southern part of the city. The area due to its proximity to central business district has a large amount of offices.
6. *Garia* which was a southern suburb of the city and is included in the greater metropolitan area. The existing tube rail is being extended upto this region causing a rapid urbanization.

These six neighborhood provided a useful sample of traditional areas of Kolkata for the analysis of the urban character. After selecting three neighborhoods from this list based on the significance and importance detailed study and analysis is done to identify the various interactions.

Fig 2.15 | Map of Kolkata showing the three selected neighborhoods | Source: Urban Development Department Government of West Bengal, http://www.wburbandev.gov.in



After a initial survey, three of them were selected as they provided the most interesting range of traditional urban fabric. These three neighborhoods spread across the city and each highlights different facet of the city fabric. And together they project a complete picture of the urban character of Kolkata.

Shyampukur Para

This is one of the oldest neighborhoods of the city in which the Indians used to live during the British rule. Thus initially it was not very well organized, but as the residents became richer and more powerful the area developed into a more organized area with services. Apart from schools, colleges, hospitals and markets, the area had a lot of theaters and film halls. Gradually the area became one of the most successful shopping area. People from distant areas come here to shop at affordable prices and during the festive seasons the area becomes practically pedestrian. Interestingly despite the crowd and commotion on the main road the inner streets have a peaceful residential character.

Paikpara

This neighborhood on the other hand is a new addition to the Kolkata municipal area. It is in northeastern fringe of the city and still retains a semi-urban character. It is mostly a residential area and people commute from here to different parts of the city everyday to work. Yet the area is self sufficient in all the daily needs and have residents of all economic classes.

Bhowanipur

This neighborhood is different from the other two due to its proximity to the central business district. It was in the "White town" during British rule. Due to which the roads and streets are wider than that of the other two areas. The streets are all well planted with green trees and have nice visual ambience. Apart from residences there are a large number of offices, colleges, markets where people come from all parts of the city. There is a large informal sector that supports this organized commercial sector.

After this brief review of urbanization process of India and Kolkata the thesis hereafter focuses on the three selected neighborhoods. It identifies and analyzes the various interactions in the urban fabric. It attempts to comprehend the influences of these interactions on the activities and lives of the residents. And finally it highlights how the interactive urban fabric of these neighborhoods can provide a new paradigm for the modern designers to create more humane cities.

Chapter 3.

Shyampukur para

Neighborhood Case Study 1

Shyampukur Street | Source : Author

3. Case Study 1 - Shyampukur Para

Abstract

This chapter presents the case study of Shyampukur *para*[1] along Bidhan Sarani and Shyampukur street. It begins with a brief introduction and reference to its connectivity with rest of the city. Then there is a narrative describing the basic observation as one walks through the neighborhood. Thereafter detailed analysis of the various interactions are presented that are identified as the important factors for the richness of the urban fabric of this neighborhood. At the conclusion these various interactions are tabulated for a comprehensive understanding of their impact on the neighborhood.

1. Para - Bengali term for neighborhood

A. Introduction

Bidhan *Sarani*[1] is one of the three main roads that originate from Shyambazar *More*[2] and goes to the Central business district of Kolkata. The study focuses on a stretch of this road from Shyambazar More to Hatibagan *Bajar*[3] on this road demarcated with red in Fig 3.1. This stretch of the road is one of the most vibrant road in the city with shops, markets, schools, auditoriums and residences. There is exciting street life that encourages commerce and sustains the residential areas nearby.

The study also includes Shyampukur street which is one of the secondary streets that originates from this road and that has a rich urban character. And finally some of the narrow lanes which provide tertiary access from the Shyampukur street are also studied. Bidhan Sarani is one of the three main roads that originate from Shyambazar More and goes to the Central business district of Kolkata.

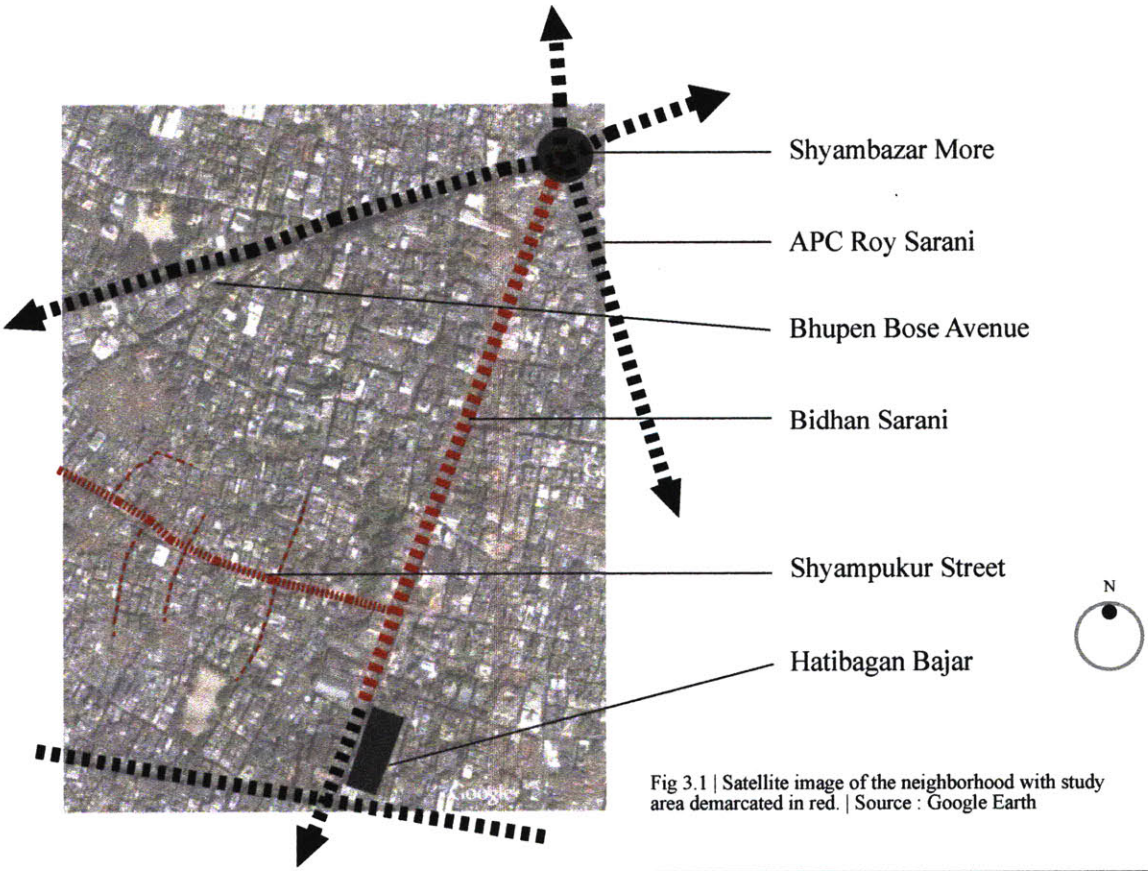
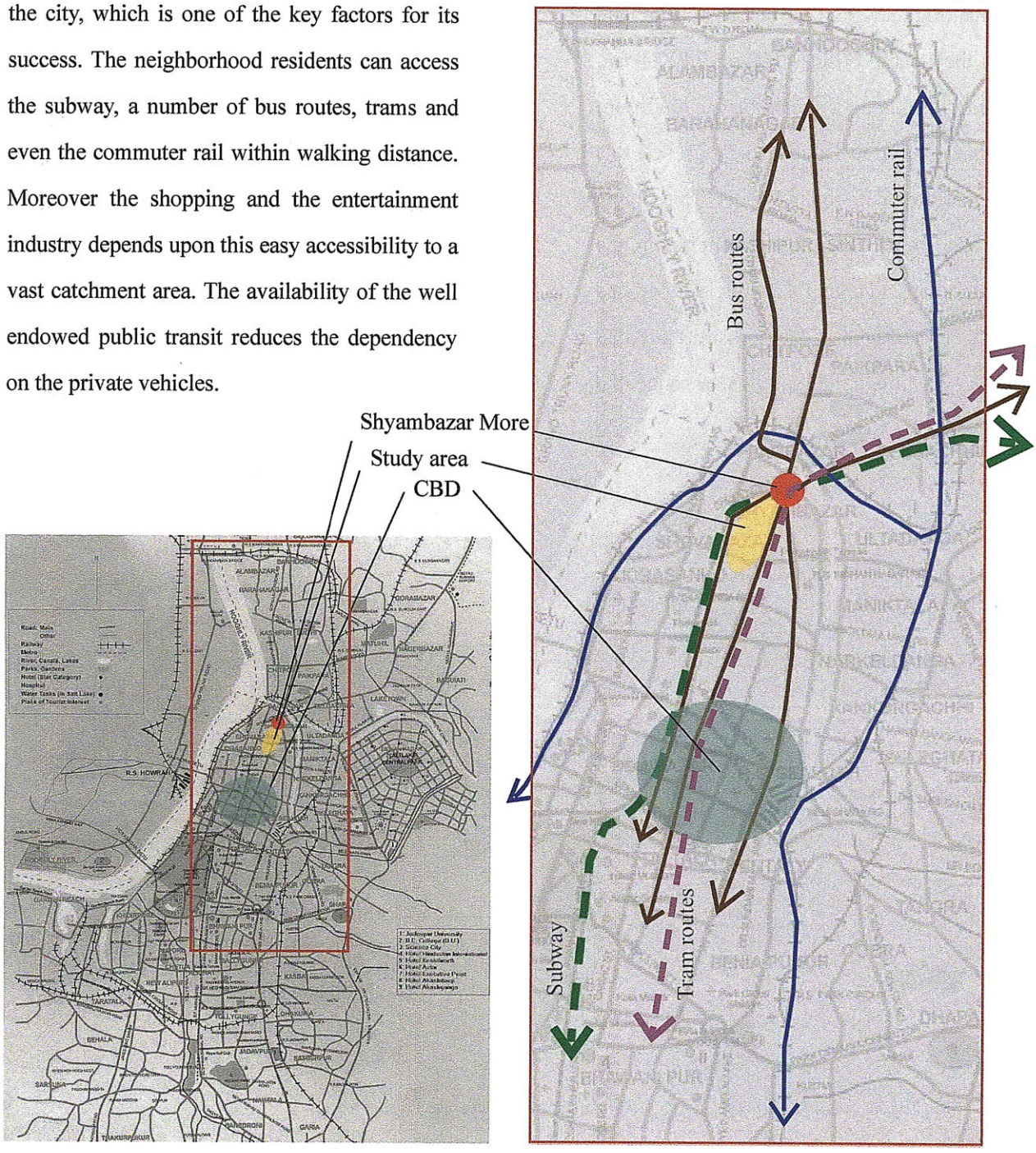


Fig 3.1 | Satellite image of the neighborhood with study area demarcated in red. | Source : Google Earth

1. Sarani - Bengali term for road
2. More - Bengali term for cross road
3. Bajar - Bengali for Market

The area is well connected to the rest of the city, which is one of the key factors for its success. The neighborhood residents can access the subway, a number of bus routes, trams and even the commuter rail within walking distance. Moreover the shopping and the entertainment industry depends upon this easy accessibility to a vast catchment area. The availability of the well endowed public transit reduces the dependency on the private vehicles.

Fig 3.2 | Study area and surrounding enlarged
Source : www.wikimeFig.org



B. Experience of walking through Bidhan Sarani

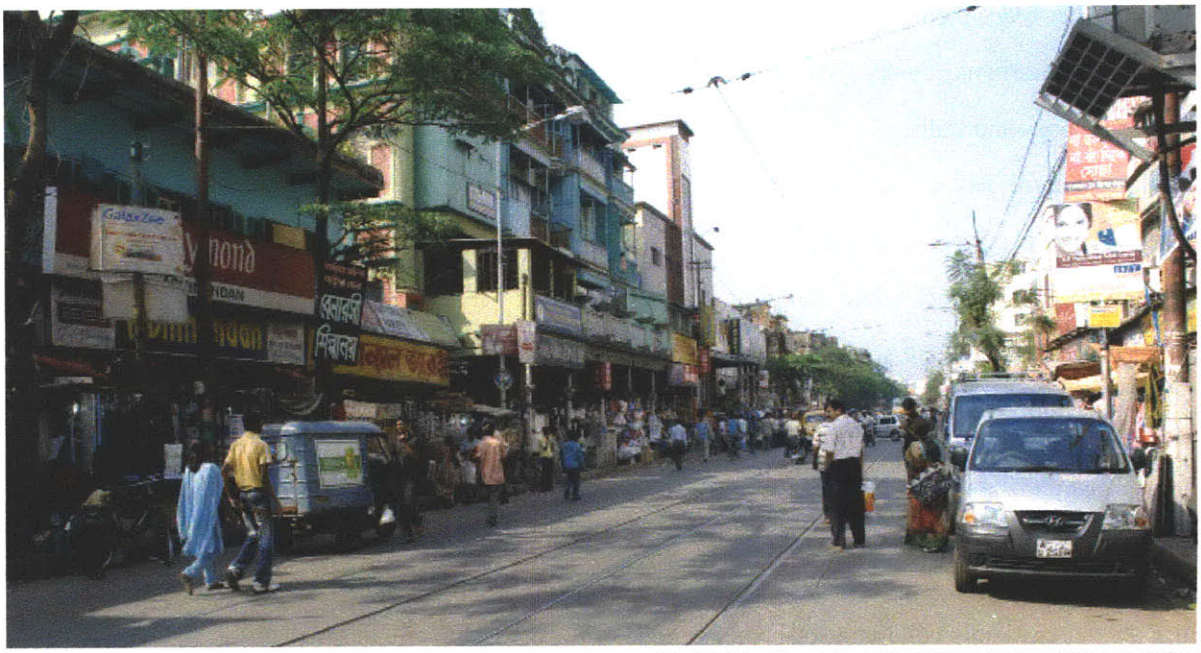


Fig 3.3 |The vibrant street life of Bidhan Sarani. | Source : Author

Bidhan sarani was previously known as Cornwalis Street, and later was renamed to commemorate Dr. Bidhan Chandra Roy a benevolent doctor and Chief-Minister of the state. Shyambazar More is an intersection point of five major roads and is the most important node at the northern part of the city. The road through which a number of buses and trams ply along with taxi and private cars is one of the most successful shopping areas of the city. The area was once also the cultural center of the city as there were innumerous theater and movie halls. At present there are still three movie theaters running in this stretch of road which is less than 750 meters. The underground metro railway stop is in Shyambazar and within ten to twelve minutes walking distance from any part of the neighborhood. Moreover there are the rickshaws, which are omnipresent and provides an easy way of commute for the aged and differently able people. At the other end of this stretch is the Hatibagan Bazar which is a large market catering to the daily needs of fresh food with a wide catchment area.

Along the road there are schools, a nursing home, auditoriums, banks, post office and innumerous shops and stalls.

Bidhan Sarani has a unique land-use pattern with a rich mix of uses. There are mostly residences on the upper floors while shops on the first floor. At times there are some shops on the second floors too. While walking down the street one wonders at the interesting pattern in which the different types of shops are arranged. There are areas where there are mostly jewelry shops, in some there are only children toys, some there are dresses etc. There is even a small lane selling spectacles. The whole area acts as large departmental store, extremely well organized and efficient. The area as mentioned before has three movie theaters which gathers a large audience and disperse them among the shops and stalls. And of course there are plenty of food stalls and restaurants to cater to the needs of the shoppers.

The area is well connected by buses, trams and subway. However the pedestrian definitely dominates on the streets. The average vehicular speed is not more ten to fifteen kilometers per hour and has to make frequent stops as people cross and walk on the street almost always.

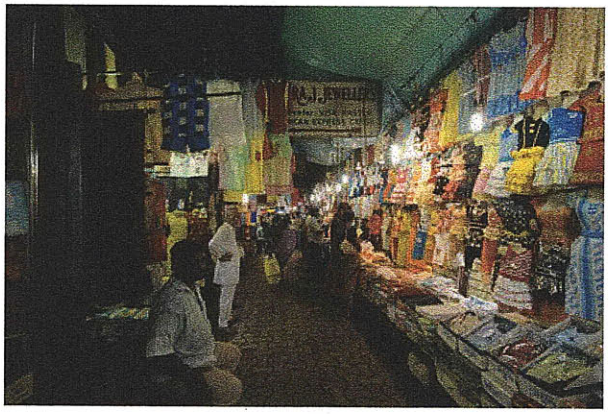
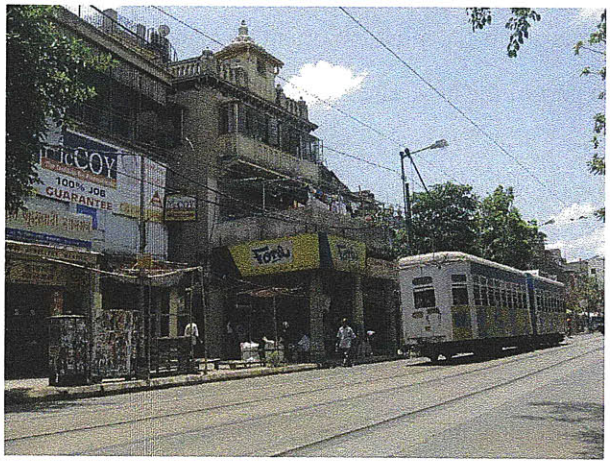


Fig 3.4 | Tram along Bidhan Sarani. | Source : Sonia



The buildings on both sides are mostly two to three stories high and form a strong visual axis that contains the urban space as shown in Fig 3.4. The width of the road is 8 meters. With the sidewalks varying from 3 to 4 meters, however the sidewalks are mostly encroached upon by the stalls and leave hardly a meter space for the pedestrian. but the pedestrians hardly mind that and enjoy walking through these narrow spaces often shaded by over hanging balconies, porticos or temporary shades of the stalls. They move in a relaxed pace often stopping for shopping or window shopping. However some people who want to move faster often get off the sidewalk and walk in the street.

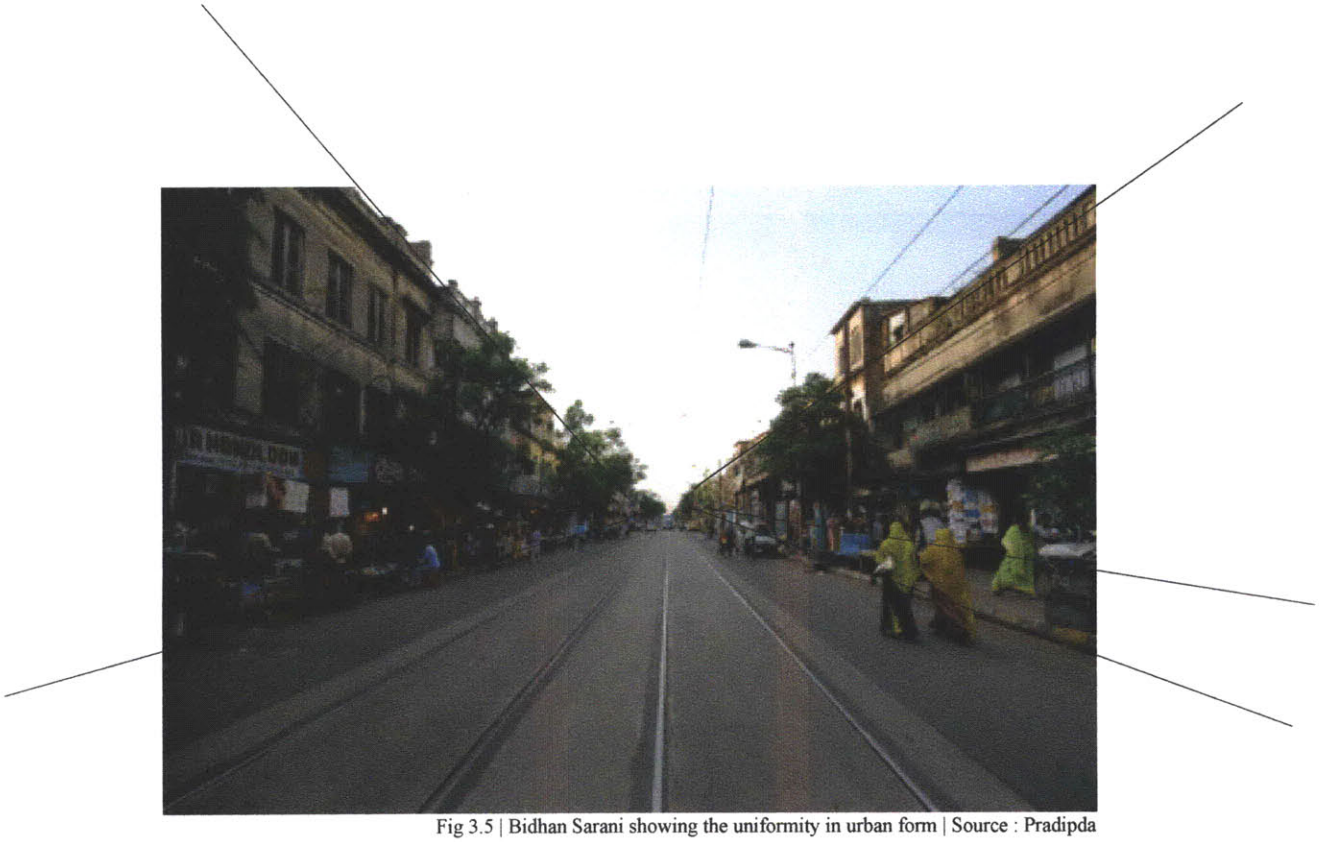
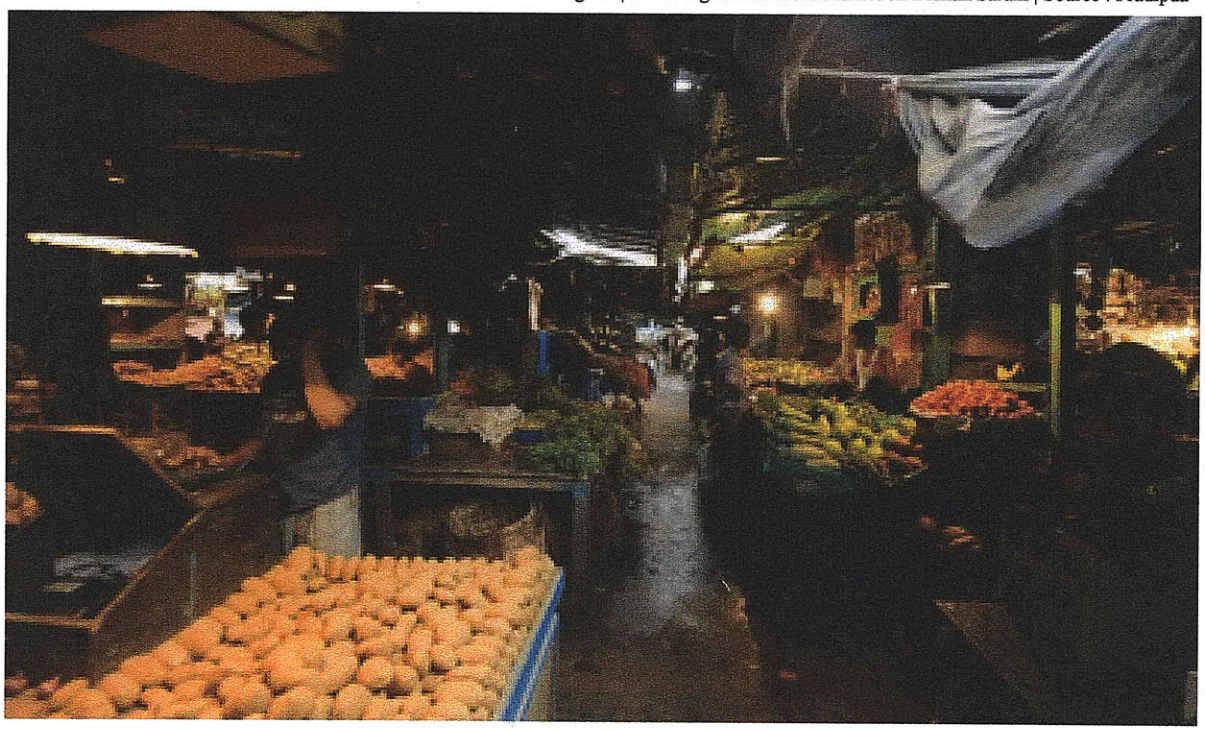


Fig 3.5 | Bidhan Sarani showing the uniformity in urban form | Source : Pradipda

The street sees different activities at different times of day. During the early morning, late evening and night the street caters mostly to the needs of the residents. There are daily market, food stalls and shops that are mostly for the local residents which open very early and stay open till night. During these times the street is occupied mostly by the residents, who often sit and chat with each other. From the afternoon to evening the area is crowded with shoppers who come not only from the adjacent areas but also from distant suburbs who arrive by the buses and subway. Often people travelling from their offices in the CBD get down here for some shopping and snacks before they travel towards their home in further north of the city. A huge crowd also comes for the three movie theaters which are clustered in this stretch and often dine in the numerous restaurants around. The shopping and the auditoriums act as anchor for each other in terms of drawing crowds.

Fig 3.5 | Fresh vegetables in the Market on Bidhan Sarani | Source : Pradipda



C. Walking through Shyampukur Street

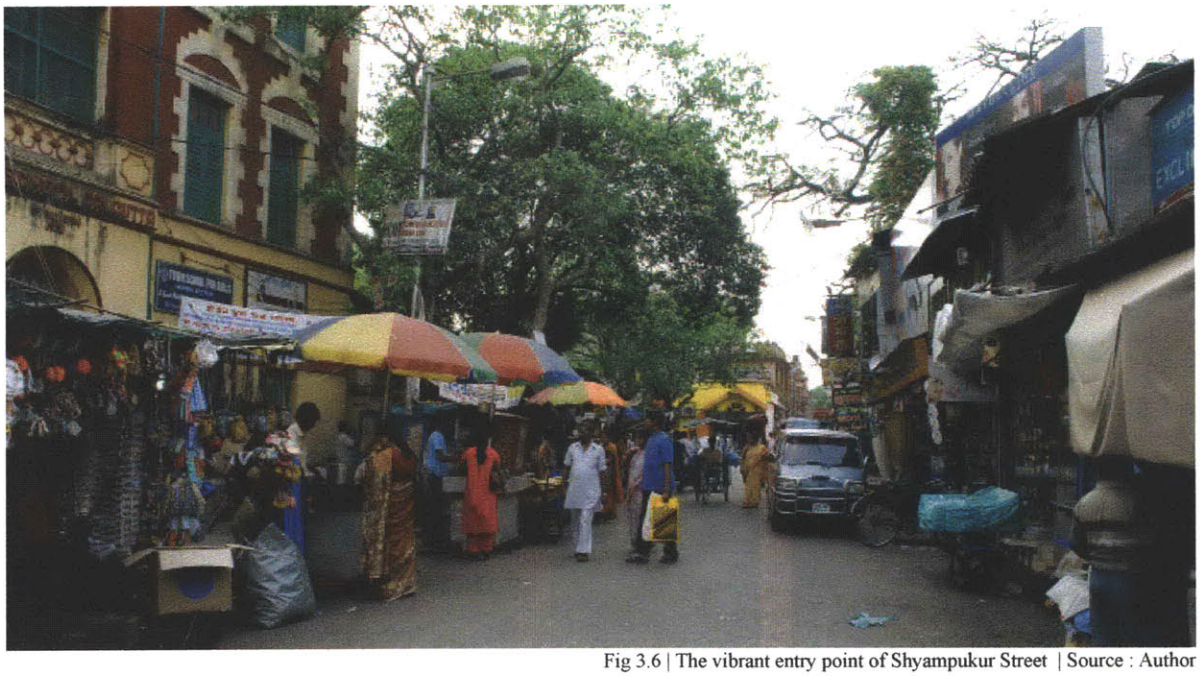


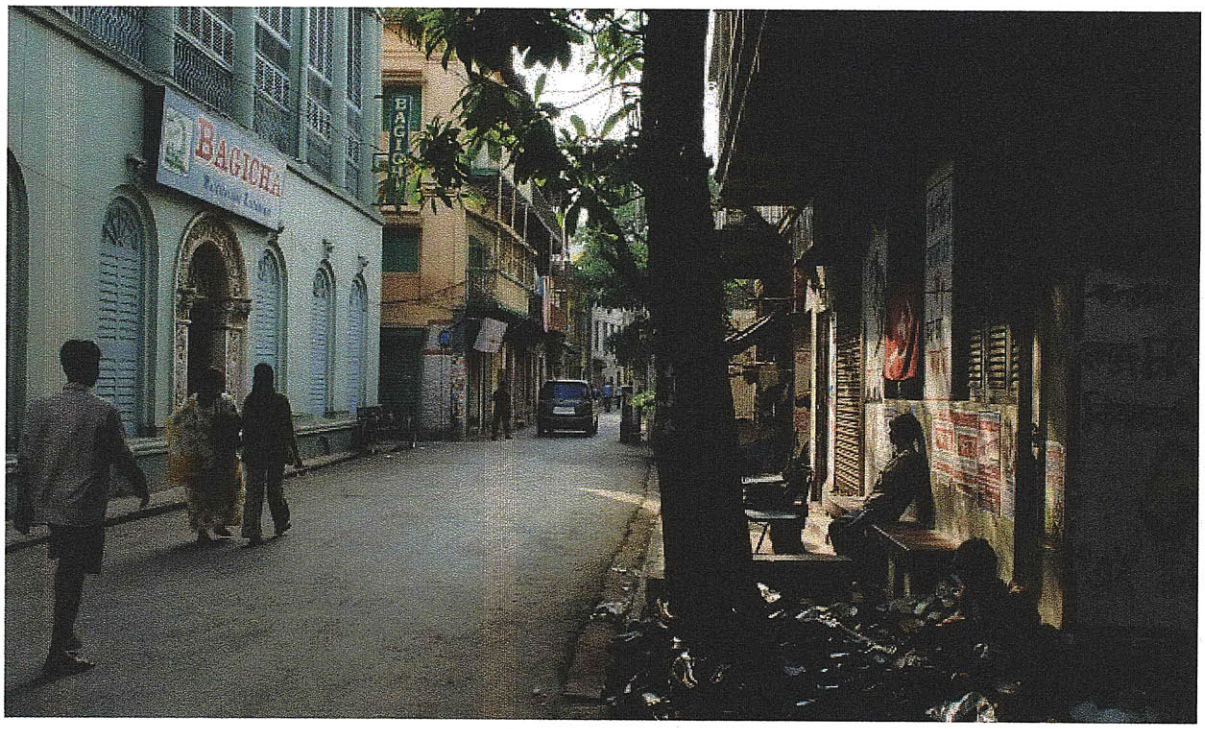
Fig 3.6 | The vibrant entry point of Shyampukur Street | Source : Author

Shyampukur street is one of the most rich streets in terms of urban character that originate from Bidhan Sarani. The most vibrant point of the street is where it starts from the main road shown in Fig.3.6. A niche space is formed by the widened portion of the lane where most of the street food vendors have made the stalls. The pedestrians and the shoppers stop here to enjoy delicious snacks. A number of restaurants also do roaring business in this pocket. The space also provides some area for parking and stand for the rickshaw.

The major residential part of the neighborhood starts from here, as the street narrows down and goes deep inside. The sudden reduction in width of the street causes the busy commercial character to die down. Along this narrow lane the residential character of the neighborhood develops, where there are local shops that cater only to the needs of the residents, such as sweets, groceries and others.

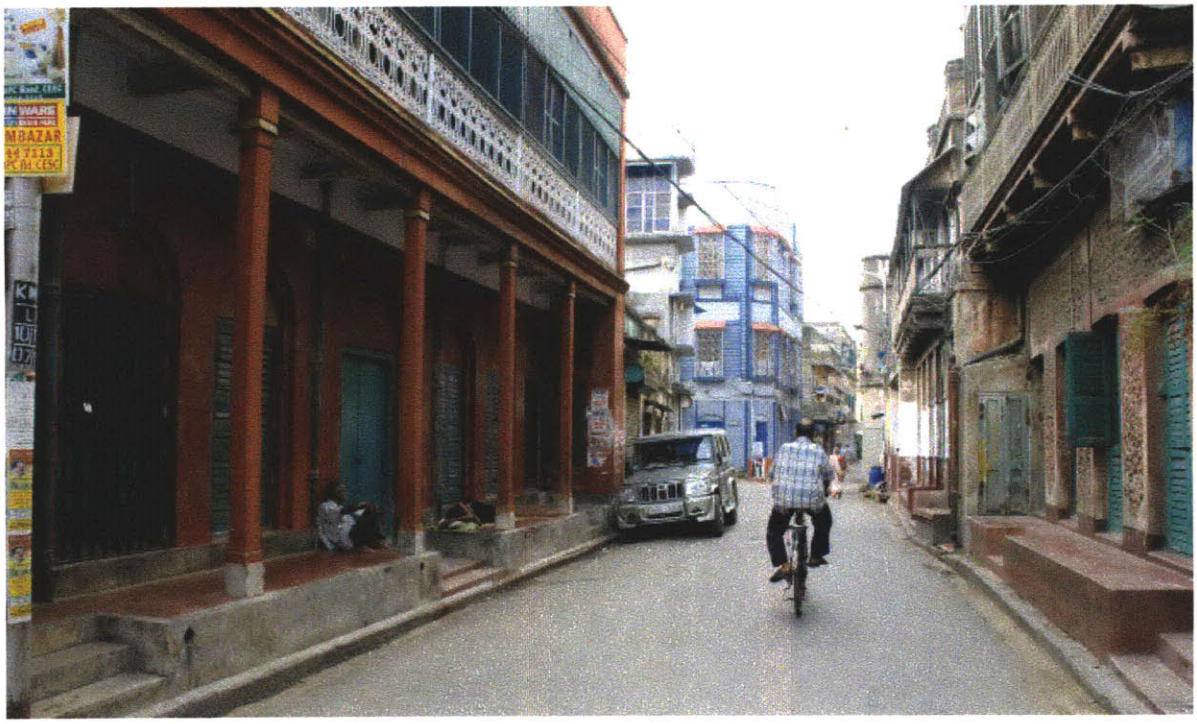
The street goes further inside while its width keeps on varying. As the carriage-way remains more or less constant, the wide areas act as different neighborhood activity spaces. At some points there are small temples and while in others there are shops and sit outs.

Fig 3.7 | An urban space formed by widening of the street | Source : Author



Another important feature along the street that is worth noticing is how the old buildings interact with the streetscape. In most cases the front entrance is directly on the street with a flight of steps in the front. Often there are medium height podiums called *Rowk*[1] in the front as in Fig 3.8. These rowks are an important part of the local culture. It is here that young and old of the neighborhood gather at different times of the day.

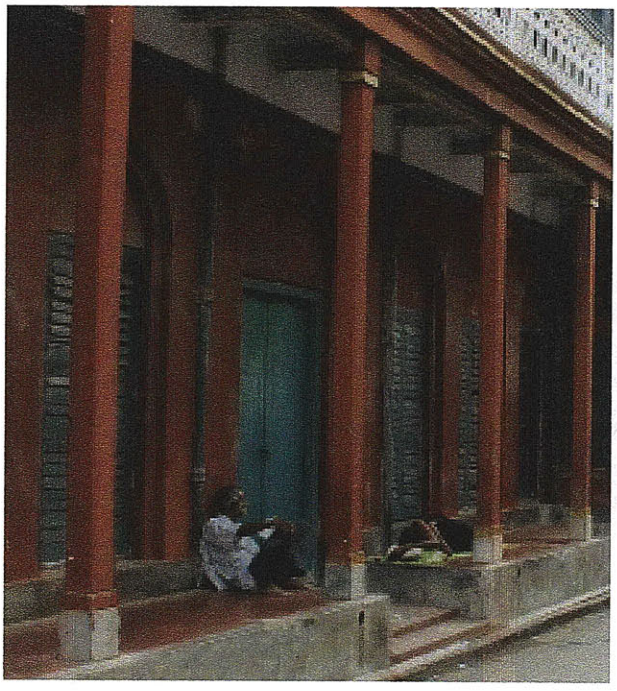
Fig 3.8 | Typical residences on Shyampukur street having Rowks | Source : Author

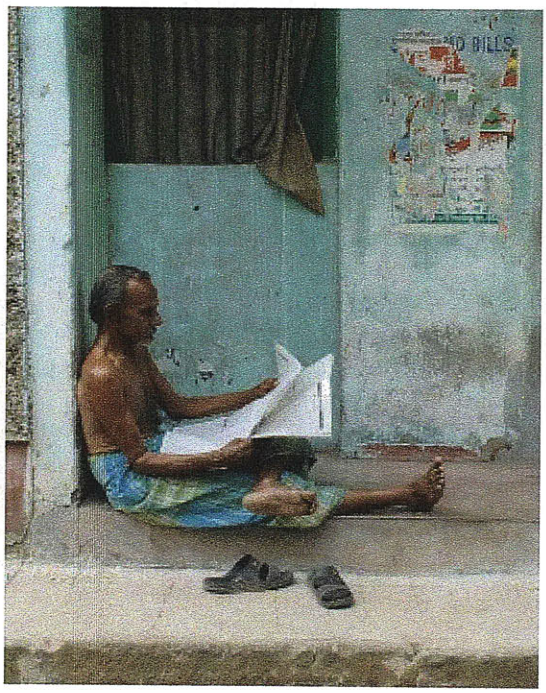


1. Rowk : Plinth height podiums in front of the house

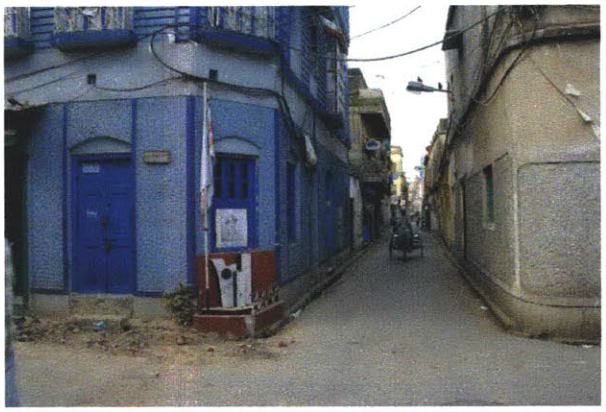
We see the residents of the house sitting in these zones of interaction and enjoying the street while reading, or simply chatting with others. Some times the residents of the area or even the pedestrians take a refuge in these welcoming spaces. At night these spaces are often used by the street dwellers for a safe zone to sleep. It is this transfusion that creates a livable community where all the residents get a chance to meet each other and share the joys and troubles of the area.

Fig 3.9 | Residents of Shyampukur street siting on Rowks | Source : Author





The street then meets the Shyambazar Street and ends. Before that it has innumerous tertiary lanes diverging from it. Most of these tertiary lanes are too narrow for the motor vehicles and people needs to walk up to their individual houses. Interestingly it is not only people of low income group that live here, but often people of middle or upper middle income group have lived here for generations.



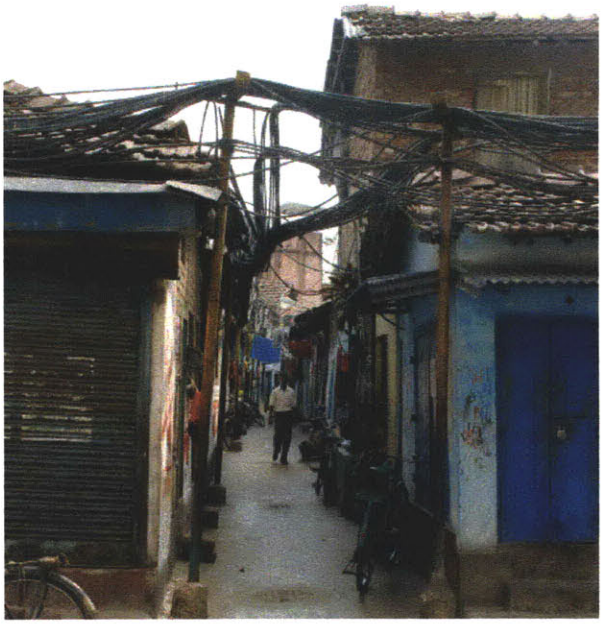
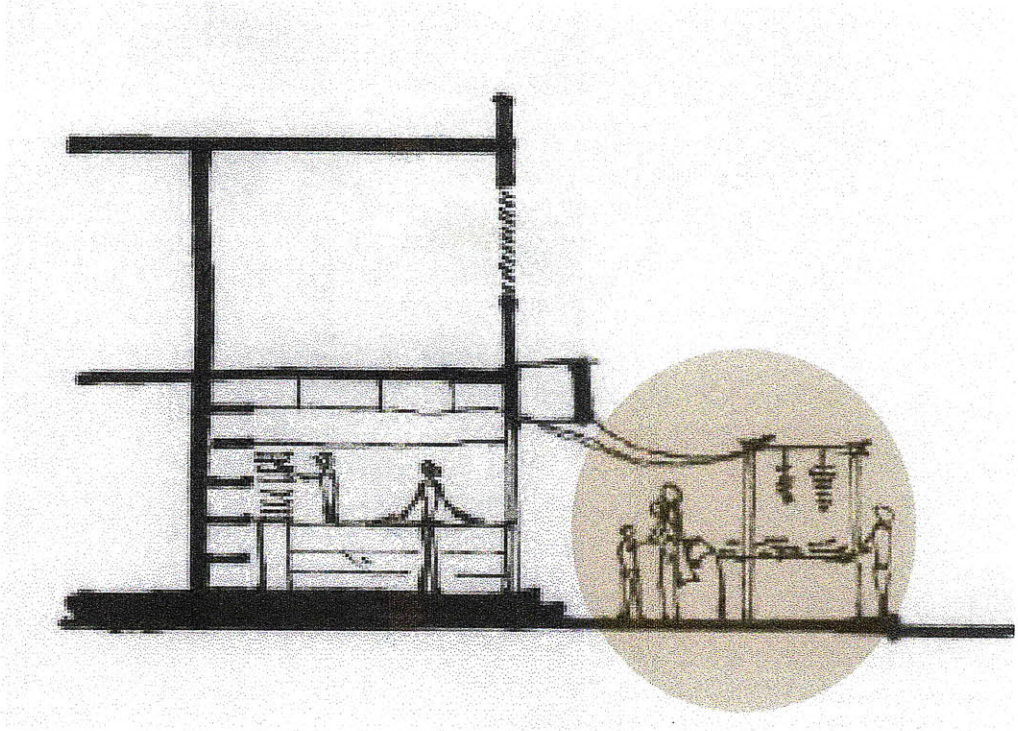


Fig 3.10-12 |The narrow lanes originating from Shyampukur street | Source : Author

D. Analysis of interactions

In the next part of the chapter we will try to identify the various interactions that happen within the neighborhood. A detailed analysis of these interactions is done to identify the reasons behind the richness of the urban fabric of this neighborhood.

Fig 3.13 | Pedestrian walkway encroached by shops and stalls | Source : Chandrani



I. Interaction of pedestrian sidewalk with vehicular carriage way on main road

On Bidhan sarani, the main road shops and stalls have greatly encroached the sidewalks. The sidewalks which were about 3 m. wide are effectively reduced to about 1 m. The situation can be seen in Fig 3.14 where the sidewalk is encroached by stalls selling garments and other merchandize. This narrow passage is usually filled with shoppers who enjoy walking through the semi-enclosed passage with shops on both sides. They usually move at a leisurely pace while window shopping and often stop to bargain or make a purchase. This obstructs the general pedestrians who are more interested to travel along this street. Thus this group of people avoid the sidewalk and walk on the street. Thus we find a large number of the pedestrian walking on the two sides of the street as seen in Fig. 3.15.

Fig 3.14 | Pedestrian walkway encroached by shops and stalls | Source : Author

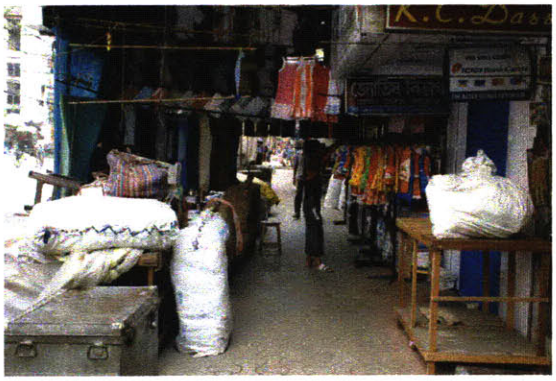


Fig 3.15 | Street encroached by pedestrian sidewalk | Source : Author

This effectively causes the pedestrian sidewalk to encroach over the traffic carriage way and reducing the effective right of way as illustrated in Fig 3.16. This encroachment under normal circumstances is not desirable and is considered to increase risk of traffic casualties. But interestingly in this case it acts more as traffic calmer and helps the pedestrian to dominate. The rate of traffic casualties is much less than other streets of the city where the traffic has wider right of way and moves at much higher speed.

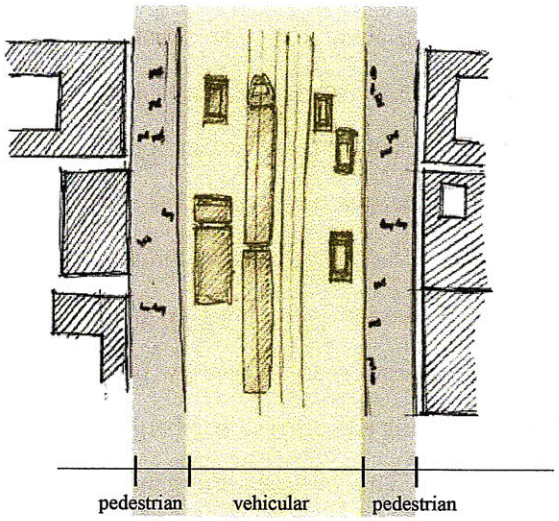
Type of interaction:

Encroachment of vehicular carriage way by pedestrian sidewalk.

Benefit:

These encroachments have actually benefited the area by reducing the average speed of the vehicle and make it more pedestrian friendly. In turn this pedestrian friendly character has catalyzed the development of this area as a shopping arcade. It also helps in reducing the use of private vehicles thus decreasing the pollution emission and fuel consumption.

Designed condition



Present condition

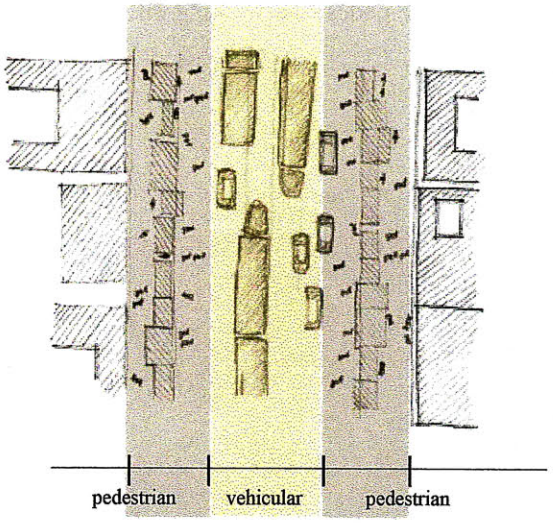


Fig 3.16 | Street encroached by pedestrian sidewalk | Source : Chandrani

II. Interaction of pedestrian sidewalk with vehicular carriage way in inner streets

Along Shyampukur street and other inner streets, the sidewalks are hardly present. But wherever there are some, they are almost always completely encroached by stalls, roadside vendors and often by private cars. Thus the pedestrians are always walking on the street. In the Fig 3.17 and Fig 3.18 we see the sidewalks being encroached by stalls, cars and even by street furniture, and the pedestrians are walking comfortably on the street.

Fig 3.17 | Street encroached by pedestrian sidewalk | Source : Author

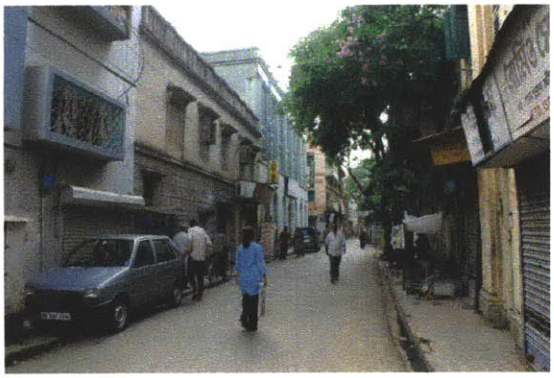


Fig 3.18 | Street encroached by pedestrian sidewalk | Source : Author

Once again according to the present street design standards this is highly undesirable, as it interrupts the traffic and increases the risk for pedestrians. But on second thought these streets function as "Shared streets" where the pedestrians have the right of way. The cars move at a slow rate and there are hardly any case of traffic casualties. The concept of "Shared streets" has recently evolved in the developed countries and have been tried out in different countries in Europe and North America (Fig. 3.19). Sometimes even the sidewalks are being demolished and the whole street is made to the same level where pedestrians and vehicles share the same space. As the drivers are aware of the scenario they drive more cautiously giving priority to the pedestrian.

Fig 3.19 | Shared street in Brugge, Belgium where the cars, pedestrians and bicycles comfortably shares the street | Source : Projects for public spaces,

Interestingly, similar situations occur in the traditional streets of the study area without any planned intervention of traffic engineers or planners. Here the pedestrians, rickshaws, bicycles and cars comfortably share the same space as illustrated in Fig 3.20. The pedestrians and the non-mechnized modes get the right of the way and forces the cars to move slowly. This discourages use of private cars and makes the streets more walkable and safe.

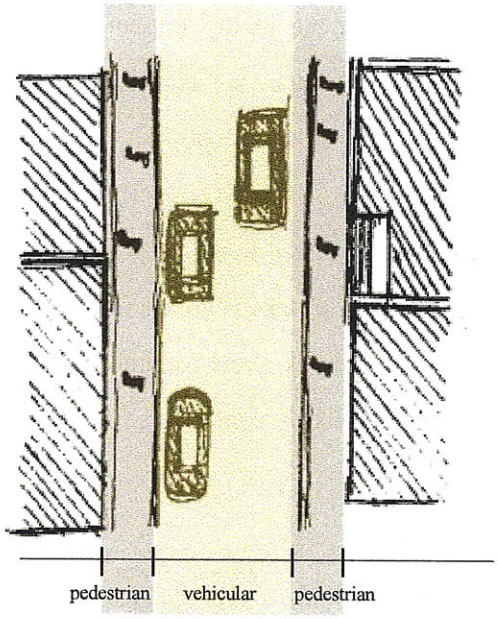
Type of interaction:

Transfusion of vehicular carriage way with pedestrian sidewalk in the inner streets.

Benefit:

This transfusion have made the area more walkable and is not dominated by motor vehicles. This pedestrian friendly character have made this area a more livable residential area with less noise and pollution. And adds to the over all low energy lifestyle of the neighborhood.

Designed condition



Present condition

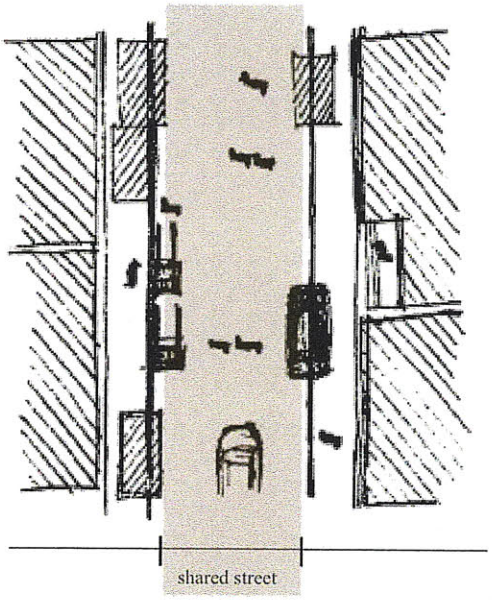


Fig 3.20 | Shared street where street and pedestrian side walk merges | Source : Chandrani

III. Interaction of motorized and non motorized transportation modes

The area has a fascinating mix of transportation modes, which ranges from manually pulled rickshaws to trams. As these various modes interact each other there are number of major benefits. They tend to complement each other in providing a complete range of transit options to the residents of the area. The wide range cater to the different needs of the residents. The bus and the trams connect the residents with the rest of the city and also bring in people from different areas to sustain the shopping zone. The rickshaws and hand carts help in carrying people and goods throughout the area conveniently with minimum ecological cost.

Fig 3.21 | Rickshaw waiting on Shyampukur street | Source : Author

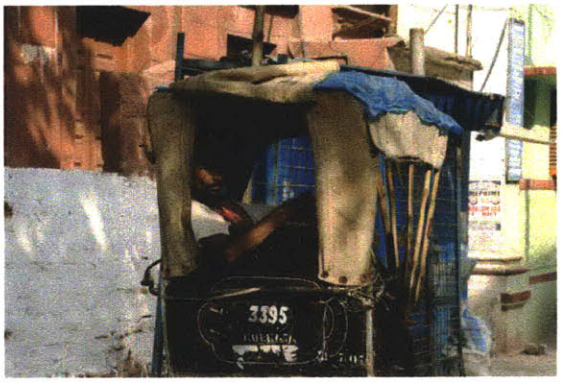


Fig 3.22 | Hand pulled cart carrying goods | Source : Author

Fig 3.24 | Rickshaw in New York | Source : www.mrrickshaw.com

Fig 3.23 | Rickshaw van along Bidhan sarani | Source : Pradipda

These manual transit system is not only a green way of transportation but also provides accessibility to many parts of the neighborhood which are too narrow for the access of motor vehicles. Thus these small and efficient vehicles make it possible for this pedestrian friendly urban fabric to exist. Without these the residents would have been forced to abandon this neighborhood and retreat to ones that are dependent on motor vehicles (Fig 3.25).

It is worth mentioning that rickshaws are being revived in many developed cities such as New York and Munich due to their ecological significance (Fig 3.24).

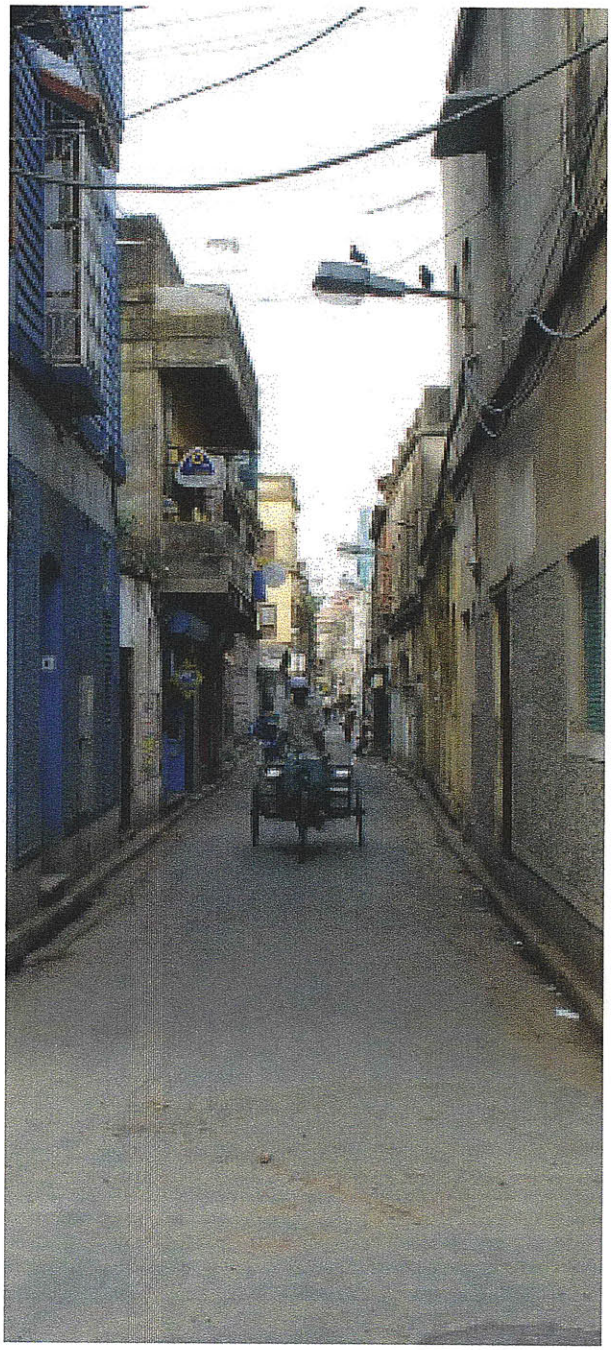
Type of interaction:

Integration of different modes of transportation.

Benefit:

First the slow moving vehicles bring down the speed of the motor vehicles. Second they caters to a wide range of needs and help to reduce the ecological foot print. Third the small manual vehicles can maneuver through the narrow lanes and streets. Finally, they provide employment to a large number of people.

Fig 3.25 | Manually pedalled cart accessing the narrow alleys of Shyampukur street| Source : Author



IV. Interaction of residential area with commercial activity area

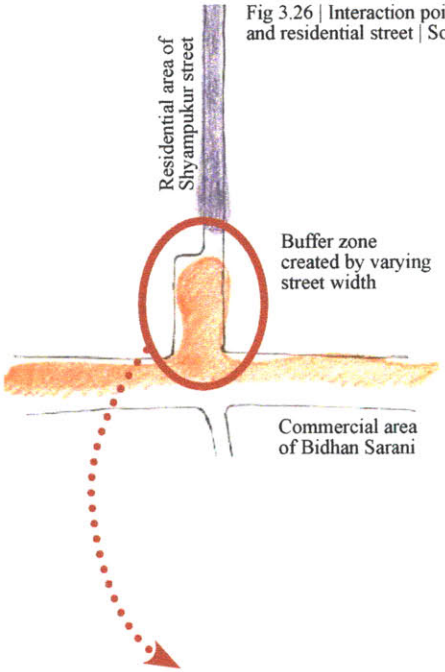


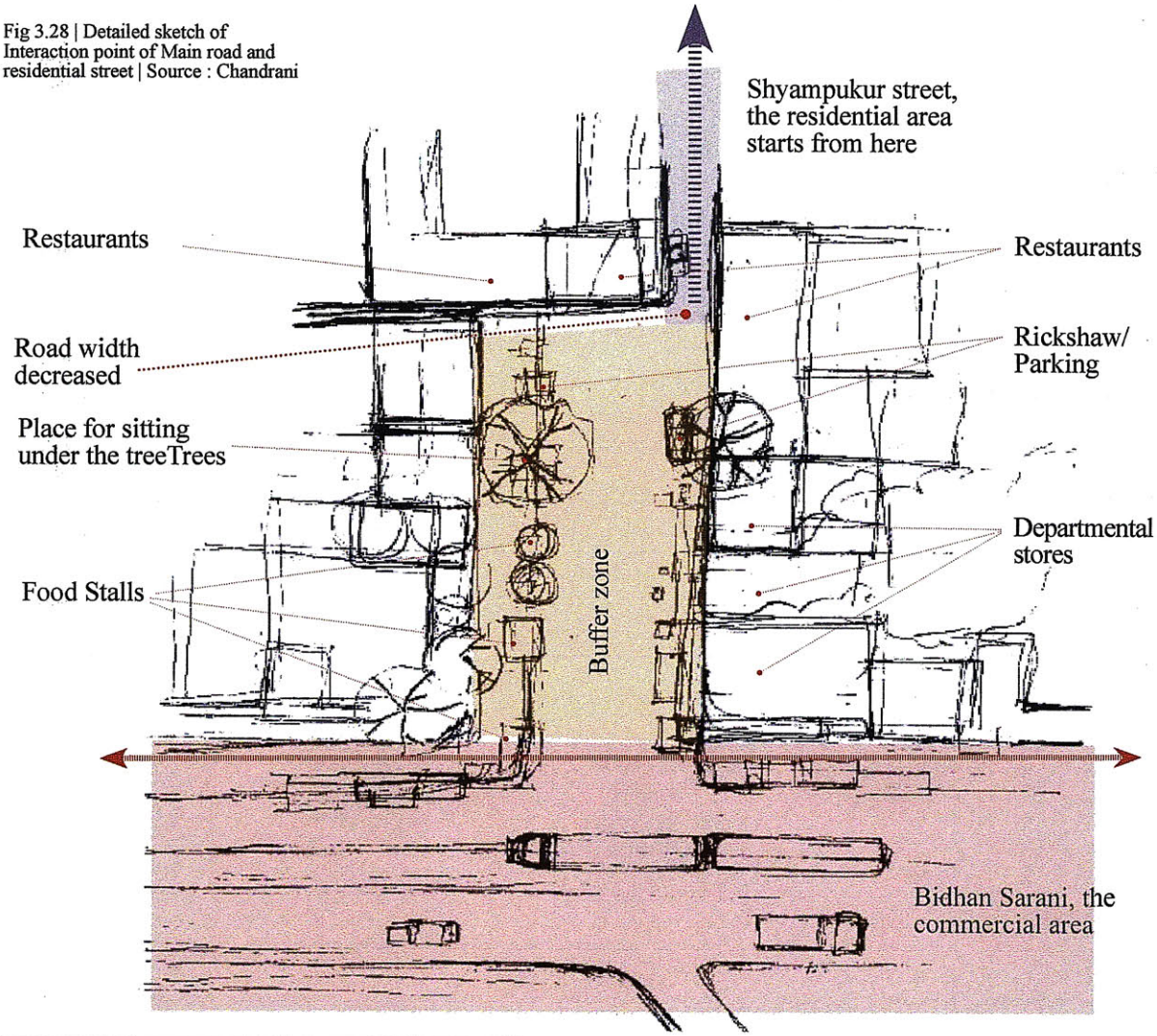
Fig 3.26 | Interaction point of Main road and residential street | Source : Author

The entry to the Shyampukur street demarcated in Fig 3.26 and seen in Fig 3.27, is the most vibrant point of the street. It is worth studying how a small space becomes a urban integration point of the residential and the commercial part of the city. This zone acts as the buffer and helps both the areas to respond better to the need of the people.

Fig 3.27 | The vibrant interaction point of Main road and residential street | Source : Author

The space is formed by the widened portion of the lane. Being off from the road the area provides shelter from the moving traffic and also the flow of the pedestrians. Thus most of the street food vendors have made the stalls here. The pedestrians and the shoppers can stop here and enjoy delicious snacks. A number of restaurants also does roaring business in this pocket. The space also provides some area for parking and stand for the rickshaws. However the large number of pedestrian and the congestion acts as a major deterrent for any private cars. The few that still go by have to go at a dead slow speed giving priority to the pedestrian

Fig 3.28 | Detailed sketch of Interaction point of Main road and residential street | Source : Chandrani



The major residential part of the neighborhood starts from here onwards, as the street narrows down and goes deep inside. The sudden reduction in width of the street causes the busy commercial character to die down. Down this narrow lane the residential character of the neighborhood develops, where there are local shops that cater only to the needs of the residents, such as sweets, groceries and others.

Fig 3.29 | The space has food stalls and restuarants and also provides space for parking of rickshaws and cars | Source : Author

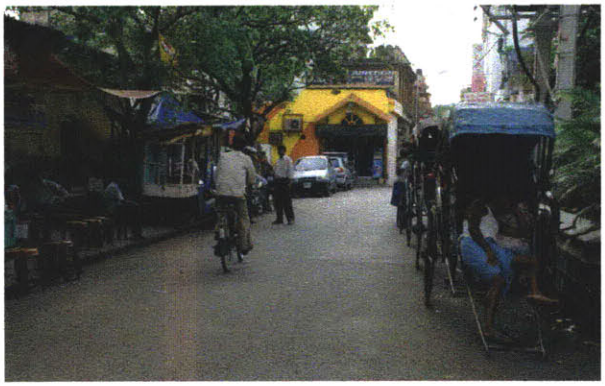


Fig 3.30 | The street narrows down and continues as a residential street | Source : Author

Type of interaction:

Integration of commercial and residential zones of the neighborhood.

Benefit:

The space created by the varying width of the street helps to create an integration zone for the commercial and residential activities. The space catalyzes a wide array of commercial activities but is well contained within it and does not disturb the residential part of the neighborhood.

Fig 3.31 | The same space in the night have different functions as some of the residents even sleep in the open street | Source : Author

V. Interaction of residences with other activities

As Shyampukur street goes further inside its width keeps on varying. As the carriage way remains more or less constant the space that widens up beside it act as different neighborhood activity area. Some of the different activities that get catalyzed are small temples, sitting places, shops, rickshaw stands, parking etc are shown in Fig 3.32, 3.33and 3.34.

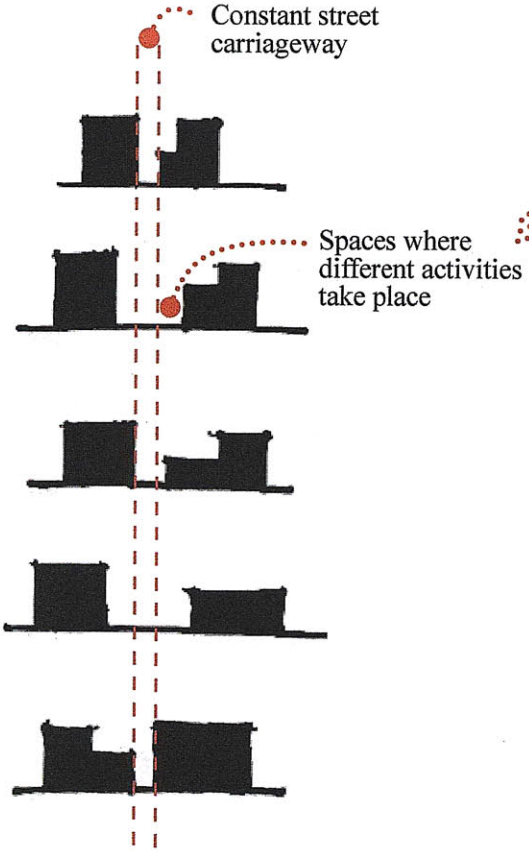


Fig 3.35 | Varying sectional width of Shyampukur street
Source : Author

Fig 3.32 | A wide point of Shyampukur street showing sweet shops, rickshaw waiting, tea stall etc. | Source : Author

Fig 3.33 | A wide point of Shyampukur street showing temple, parking, trees etc. | Source : Author

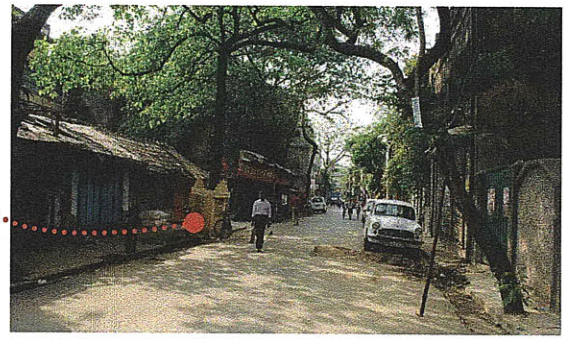
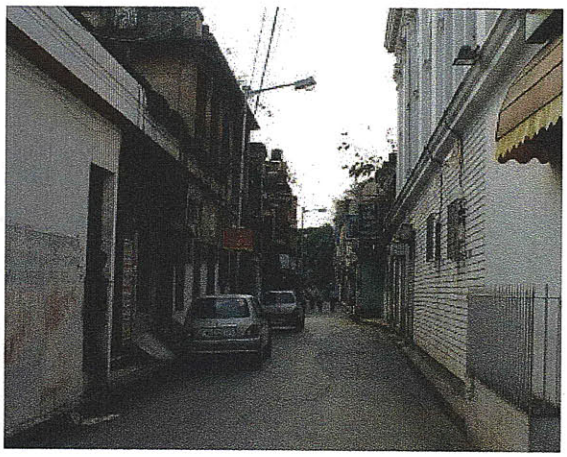


Fig 3.34 | A narrow point of Shyampukur street showing very little activity | Source : Author



Syampukur street at the intersection point with narrow Ramdhon Mitra Lane widens up forming one such small urban space. This area forms an interaction point for the neighborhood with essential services. It is interesting to note how the urban form catalyzes the integration of the various activities with the residential activity of the neighborhood.

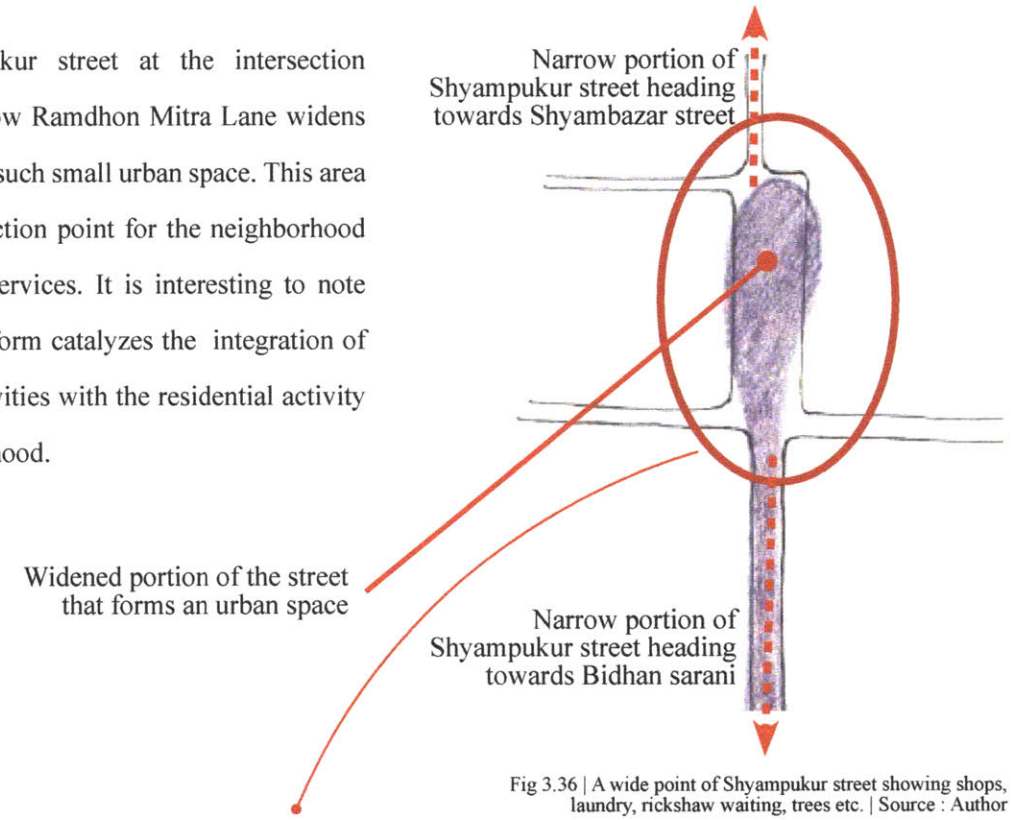
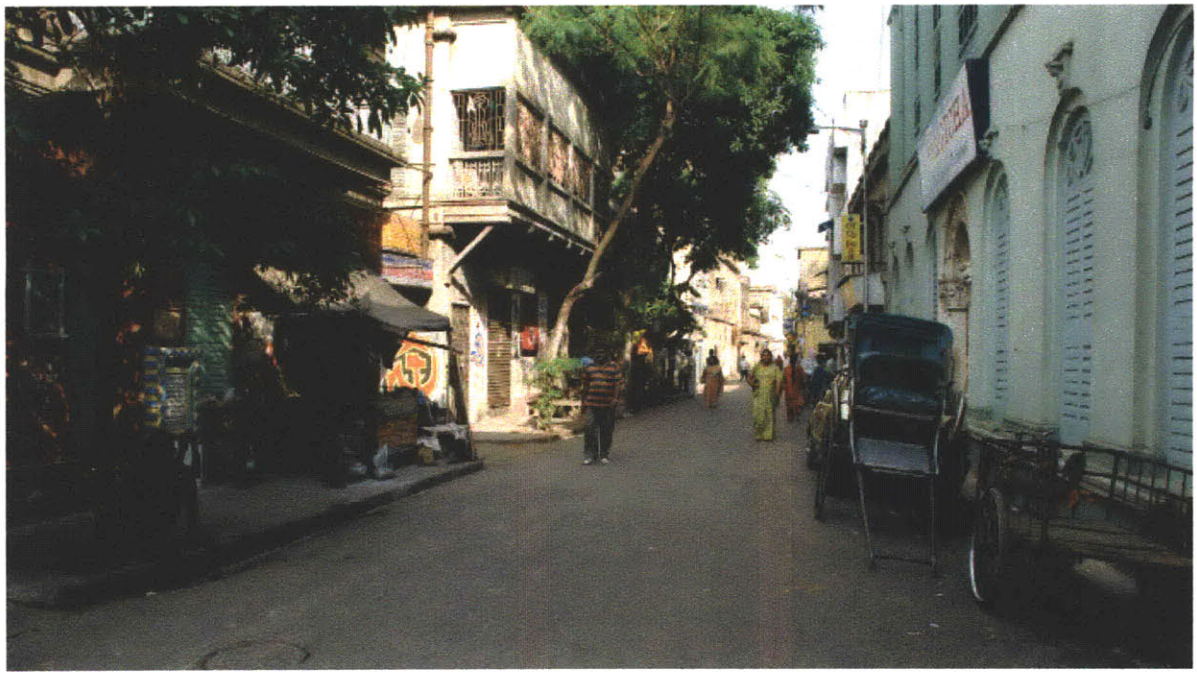


Fig 3.36 | A wide point of Shyampukur street showing shops, laundry, rickshaw waiting, trees etc. | Source : Author



The space illustrated in Fig 3.37 is flanked with the essential shops for the neighborhood. There is a sweet shop, barber, grocery, public phone booth, stationary shop and a pan shop. As the street gets narrow again it forms a enclosed neighborhood space. At the corner on the sidewalk are stalls of laundry and ironing and a cobbler.

Different groups of people are found hanging around here almost at all times of day and night. Here the people walk on the streets while the sidewalks are completely encroached by the small stalls and also a sit out. The overhanging balconies and the trees provide comfortable shaded area for these people.

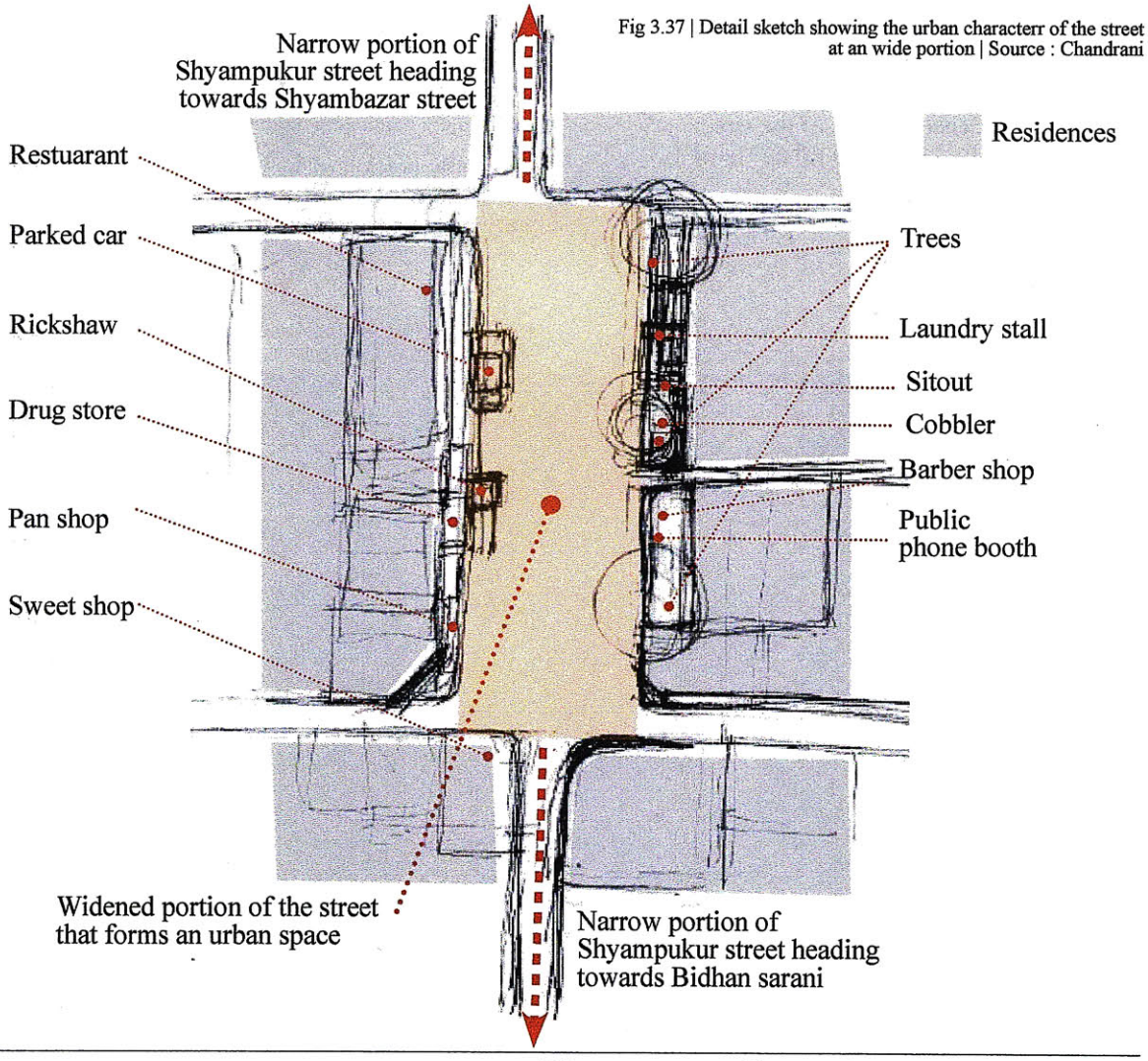


Fig 3.37 | Detail sketch showing the urban characterr of the street at an wide portion | Source : Chandrani

Type of interaction:

Integration of commercial and other activities in the residential zones of the neighborhood.

Benefit:

Integration of the different activities and necessary functions within the neighborhood makes the urban fabric self-sustaining. The various needs of the neighborhoods are satisfied within itself and the residents need not travel outside the locality. This encourages pedestrian movement over vehicular travel and makes the neighborhood ecologically sustainable. Also it helps to sustain the local economy as it encourages employment of large number of people from all strata of society.

Fig 3.38 | A car parked on the sidewalk | Source : Author

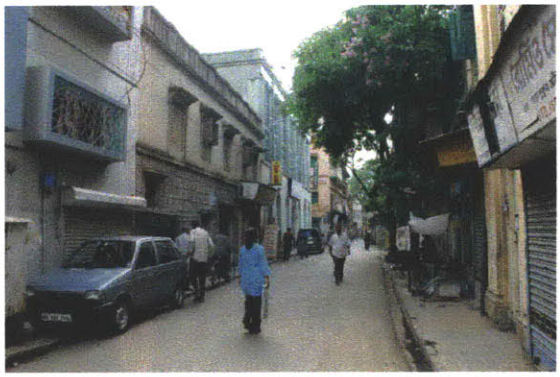


Fig 3.39 | A street cobbler and sitting area on the sidewalk | Source : Author

Fig 3.40 | The residents sitting out late in the night | Source : Author

VI. Interaction of private porticos with public sidewalks

Part of the dominant character of Bidhan Sarani is the porticos of the private buildings that project on the sidewalks. Locally they are called the *Gari baranda*[1] which literarily means the car porch. This can be regarded as a classic interaction between the private and public realm in the urban fabric. The porticos which are private property encroach out in the public realm. However this encroachment is greatly beneficial for both the private owner and the public on the street. Together they enhance the livability of the area.

Fig 3.41 | The Gair baranda projecting on the sidewalk of Bidhan Sarani | Source : Author

1. Gari baranda - Bengali term for portico

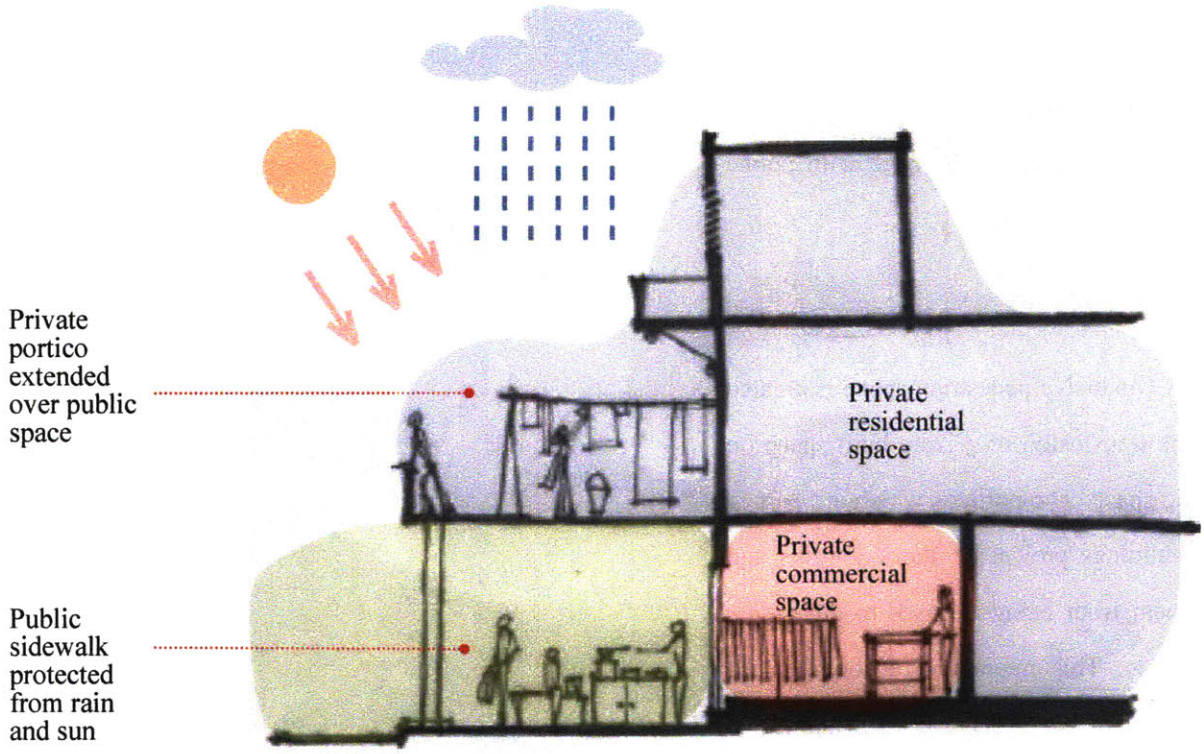


Fig 3.42 | The interaction of private built space and public space | Source : Chandrani

Considering the climate of the city this encroachment proves not only beneficial but essential. It can be attributed as one of the primary reason which encouraged the development of the shopping street. Kolkata has torrential rain for about four months and scorching summer for another four to five months. In these conditions these berandas provide a protection for the pedestrians and also the shoppers all through the day as shown in Fig. 3.42.

In the early mornings and late evening the space under the berandas are used by the local people to sit and relax (Fig. 3.45). Even the lack of proper street furniture does not dissuade them to sit and chat with each other. And as the night comes these areas provide a safe place for the unfortunate people who have to sleep on the open (Fig. 3.44) .

Type of interaction:

Overlapping of private built space with public space.

Benefit:

A conducive pedestrian space is created due to the transfusion of private built space on the public space. The porticos which are part of private buildings project on the sidewalks and protect them from being exposed to the severe sun and rain. This interaction encourages the development of the shopping arcade along this street.

Fig 3.43 | During the day space under the portico used as shops and walkway | Source : Sonia

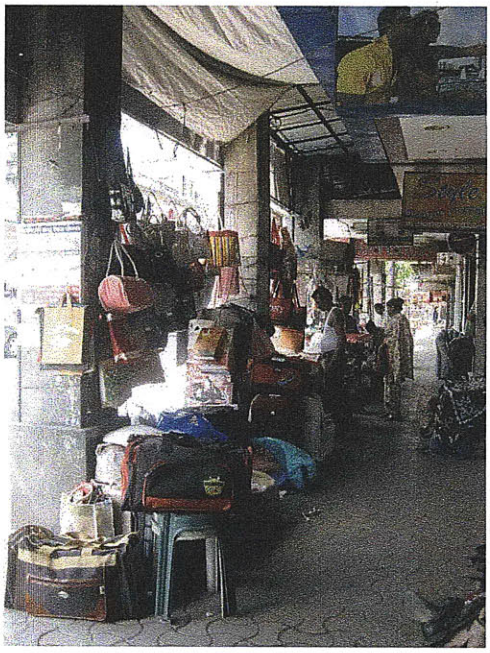


Fig 3.44 | During the night the space under the portico used as safe place for the unfortunate people to sleep | Source : Author

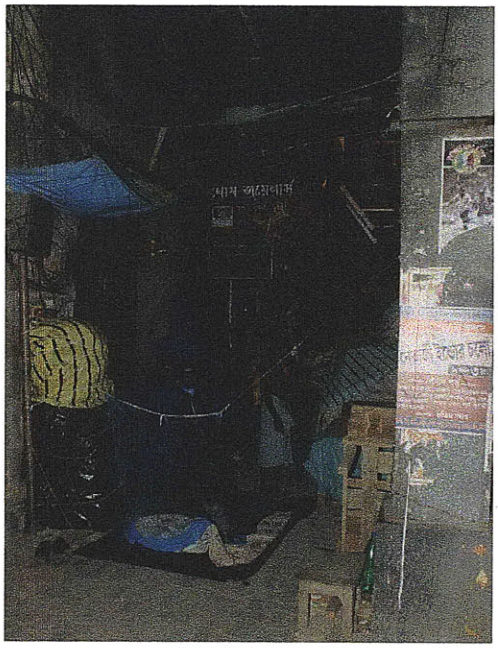
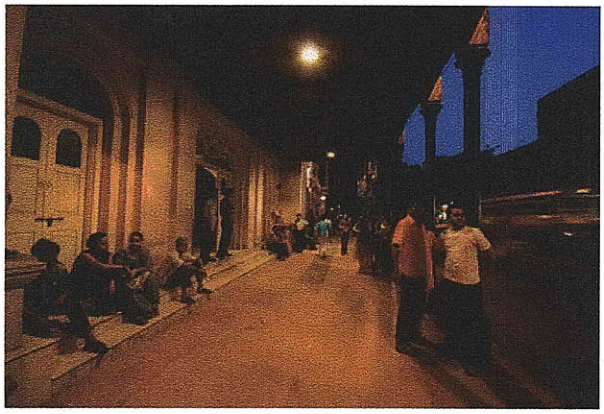


Fig 3.45 | During late evening space under the portico used by residents for sitting and hanging out| Source : Pradipda



VII. Interaction of temporary shades with the public sidewalks

In the shopping arcade along Bidhan sarani where there are no porticos the shop owners have created shades to protect themselves and the pedestrians. (Fig. 3.46)

The shops which are nested within the ground floor of the buildings along Bidhan sarani have projected their hoarding and signage. The stalls on the other hand puts up temporary sheds to cover the remaining portions of the sidewalk These projections are encroachment over public space and effectively provide the same benefits as that of porticos as explained in Fig. 3.47.

Fig 3.46 | The shop owners putting up merchandize under the shades along Bidhan sarami | Source : Author

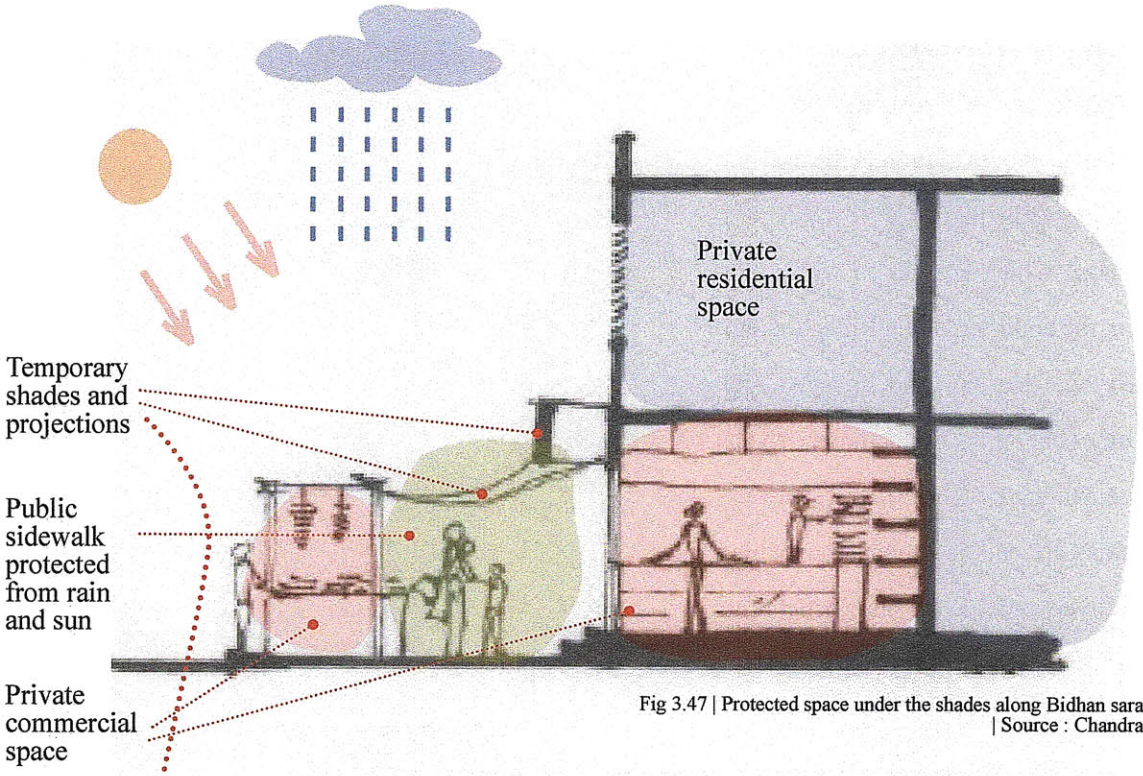


Fig 3.47 | Protected space under the shades along Bidhan sarani
| Source : Chandrani

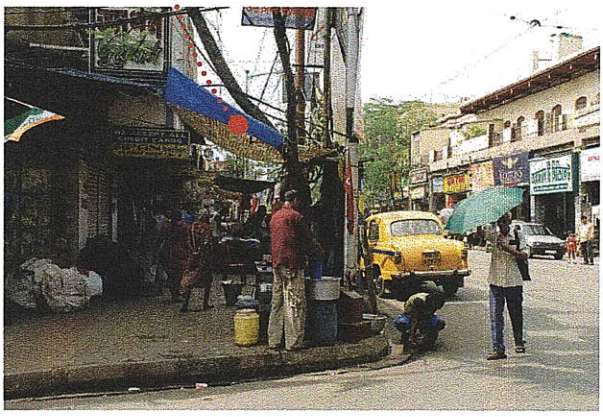
Type of interaction:

Encroachment of private built space over public space.

Benefit:

The shops and stalls encroach the public sidewalk by putting up shades and signs. These encroachments provide protection to the pedestrians, shoppers and the shops. Thus they create a conducive pedestrian space and encourage the development of the shopping arcade along this street.

Fig 3.48 | Temporary shades along Bidhan sarani
| Source : Author

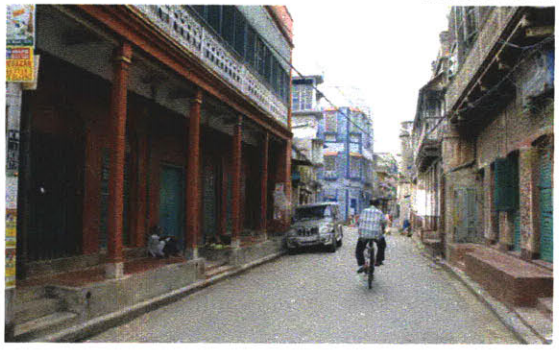


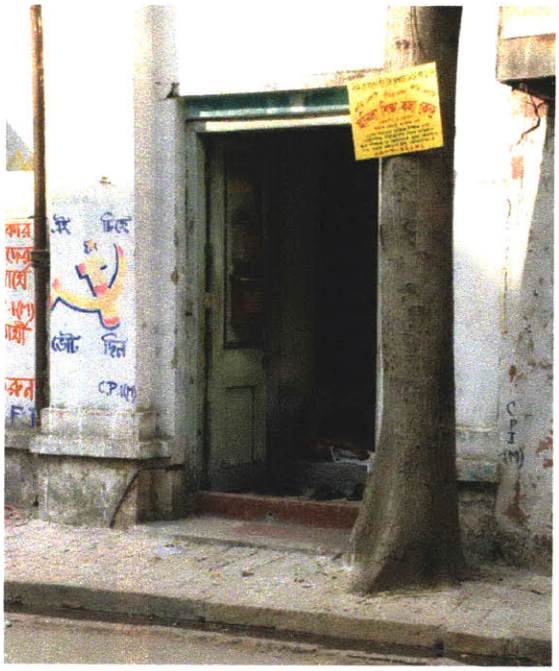
VIII. Interaction of rowks with streetscape

An important characteristic of the built-form of this neighborhood is the interaction of buildings with the streetscape. Most of the buildings were built before the current bylaws were enforced which segregate the buildings from the street. Thus there is much better relationship between indoor and outdoor space. In most cases the front entrance is directly on the street with a flight of steps. Often there are 2-3 feeet high podiums called Rowk in the front. These various types of rowks illustrated in Fig 3.46 are important part of the local culture. It is here that young and old of the neighbor gathers at different times of the day.

This space benefits both the private and the public domains. At times it seems that the indoor space of the house transfuses with that of the exterior and benefits from it. While at other times it is the neighborhood which encroaches on the private space. We see the residents of the house sitting in these zones of interaction and enjoying the street while reading, or chatting with others (Fig 3.43-45). Sometimes the residents or the pedestrians taking a refuge in these welcoming spaces. At night these spaces are often used by the street dwellers for a safe zone to sleep.

Fig 3.49-51 |Residents sitting on the rowks in Shyampukur street
Source : Author





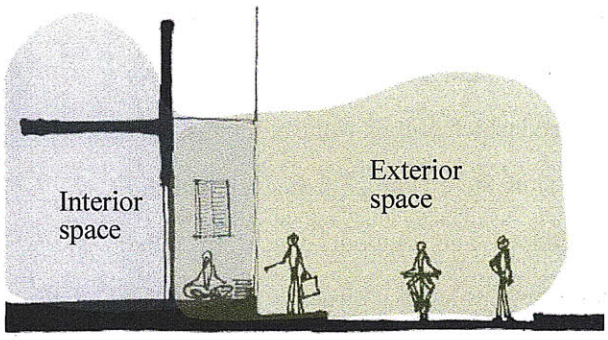
Type of interaction:

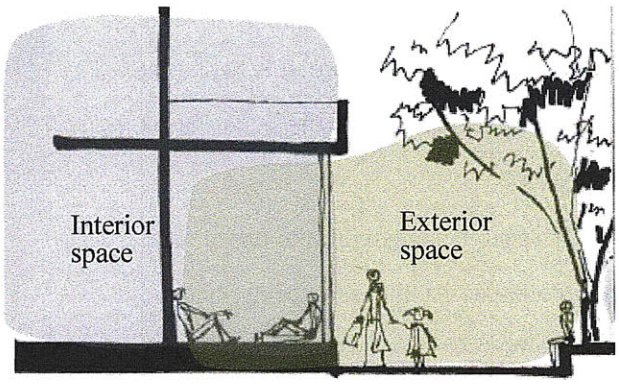
Transfusion of indoor and outdoor space

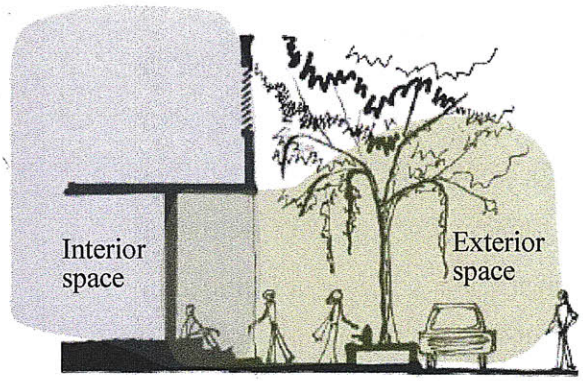
Benefit:

It is this transfusion that creates a livable community where all the residents gets a chance to meet each other and share the joys and troubles of the area. It is the primary reason that creates the feeling of belonging and bondage among the residents.

Fig 3.52 | Various types of rowks in Shyampukur street
Source : Chandrani







IX. Interaction with nature and urban elements

The area has a very poor interaction with nature. The few trees that are present have hardly been properly maintained or provided with proper space. However these few trees provide shelter and shade for the neighborhood residents. They to some degree substitute the lack of basic amenities and street furniture. But the neighborhood needs much more tree cover and the present trees need proper care and maintenance.

Fig 3.53 |People resting under the shade of a tree | Source : Author

Fig 3.54 | Small temple and tea stall under a tree | Source : Author

Type of interaction:

Integration of Nature and Urban form

Benefit:

Whatever little integration is present in this neighborhood greatly benefits the residents life. Various activities have originated taking these trees as the nucleus. They provide shelter to the people and provides some visual relief in the dense urban fabric.

Fig 3.55 | People waitng for bus under a tree | Source : Sonia

E. Conclusion

After the detailed analysis of the various interactions within the neighborhood we find that the richness of the urban fabric is greatly enhanced by these interactions. The different interactions and their benefits are tabulated in table 3.01, from which we observe that the neighborhood is rich in the three category of interactions that are

1. Interaction of different transportation modes
2. Interaction of Built form with open spaces
3. Interaction of Residential and commercial activities

These four categories of interactions make this area a livable and socially sustainable neighborhood. Thus the neighborhood performs with satisfaction despite lack of many basic facilities such as street furniture etc. The benefits they create are following :

Reduces vehicular speed and discourages private vehicles.

1. Improves walkability and encourages pedestrian and other non-mechanical modes
2. Encourages shopping and other commercial activities thereby sustaining local economy
3. Reduces pollution and fuel consumption
4. Encourages human interactions and creates sense of belonging.

However the area is weak in terms of interaction with nature. There are very few trees in the area. Even these trees are poorly maintained though they serve the area considerably. There are very few open spaces and most of the area are covered with asphalt or concrete. There is complete lack of any water body. Among many environmental issues the greatest problem that the neighborhood faces is that of frequent flooding.

But even with these limitations the neighborhood is one of the most vibrant and humane place to live in the city. A modern designer can draw significant knowledge about creating humane neighborhoods from the rich urban fabric of Shyampukur para.

Tab: 3.01 | Table of different types of interactions within the neighborhood

Interaction	Category	Type	Benefits
Pedestrian sidewalk with vehicular carriage way on main road	Modes of transportation	Encroachment	1. Reduces vehicular speed 2. Improves walkability 3. Encourages shopping street 3. Reduces pollution 5. Reduces fuel consumption
Pedestrian sidewalk with vehicular carriage way in inner streets	Modes of transportation	Transfusion	1. Reduces vehicular speed 2. Improves walkability 3. Encourages residential character 3. Reduces pollution 5. Reduces fuel consumption
Motorized and non motorized transportation modes	Modes of transportation	Integration	1. Reduces vehicular speed 2. Improves walkability 3. Increases accessibility in narrow lanes 3. Reduces pollution 5. Reduces fuel consumption
Residential area with commercial activity area	Residential activities with commercial activities	Integration	1. Improves residential character 2. Improves commercial viability 3. Enhances livability
Residences with other activities	Residential activities with commercial activities	Transfusion	1. Makes neighborhood self-sustaining 2. Encourages pedestrian travel 3. Improves local economy 3. Reduces pollution 5. Reduces fuel consumption

Tab: 3.01 (contd) | Table of different types of interactions within the neighborhood

Interaction	Category	Type	Benefits
Private porticos with Public sidewalks	Built form and open spaces	Overlapping	1. Improves walkability 2. Encourages shopping street 3. Reduces pollution 3. Reduces fuel consumption
Temporary shades with the public sidewalks	Built form and open spaces	Encroachment	1. Improves walkability 2. Encourages shopping street 3. Reduces pollution 3. Reduces fuel consumption
Rowks with the streetscape	Built form and open spaces	Transfusion	1. Improves residential character 2. Improves human interactions 3. Increases sense of belonging
Trees and neighborhood activities	Nature and Urban	Integration	1. Provides visual relief 2. Improves micro-climate 3. Catalyzes neighborhood activities

Chapter 4.

Paik Para

Neighborhood Case Study 2

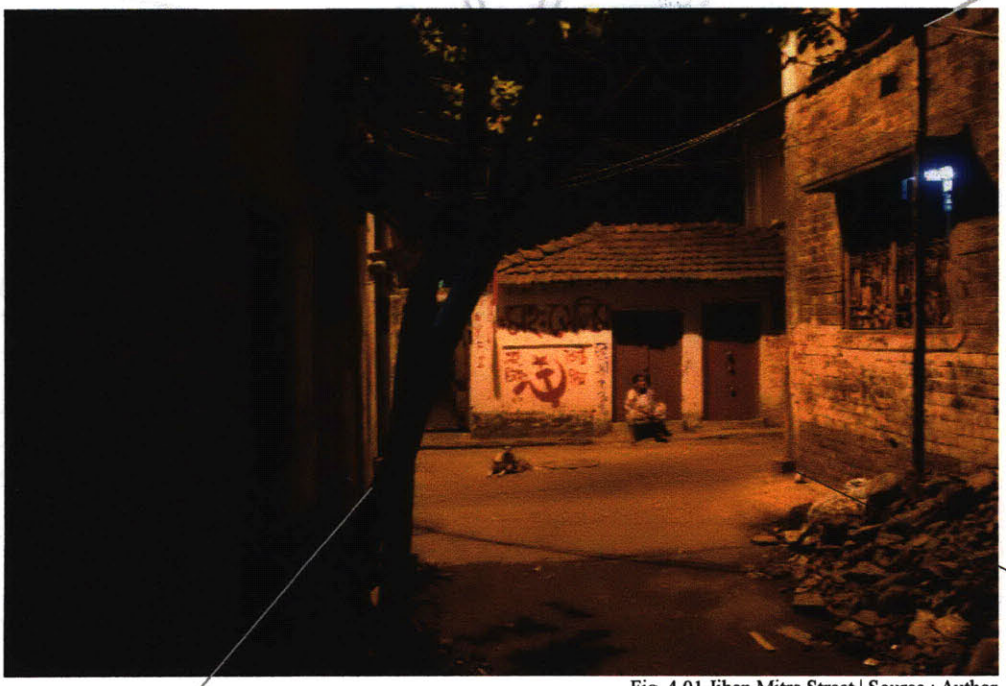


Fig. 4.01 Jiban Mitra Street | Source : Author

4. Case Study 2 - Paikpara Para

Abstract

This chapter presents the case study of Paik *Para*[1] along Jiban Mitra Street. It begins with a brief introduction and relation with rest of the city. Then there is a narrative describing the basic observation as one walks through the neighborhood. Thereafter detailed analyses of the various interactions are presented that are identified as the important factors for the richness of the urban fabric of this neighborhood. At the conclusion these various interactions are tabulated for a comprehensive understanding of their impact on the neighborhood.

1. Para - Bengali term for neighborhood

A. Introduction

The study area is the eastern part of Paik Para which is situated in the north-eastern fringe of the city shown in Fig.4.02. The area which is predominantly residential has been incorporated within the city municipal area in the last quarter of twentieth century. For this reason the area is comparatively less urban and still retains some semiurban character.

The study focuses on the neighborhood around Jiban Mitra Street marked in red in Fig 4.02, which starts from Raja Manidra Road and ends deep inside the neighborhood . The area is a self sufficient neighborhood which has all the residential needs catered within walking distance. There is a large portion of semipermanent houses which means a high density of low and low-middle income group of people. The area has a mix of grid and organic street pattern and is dotted with numerous water bodies. Though the water bodies are well related to the life of the residents they are in general very ill maintained.

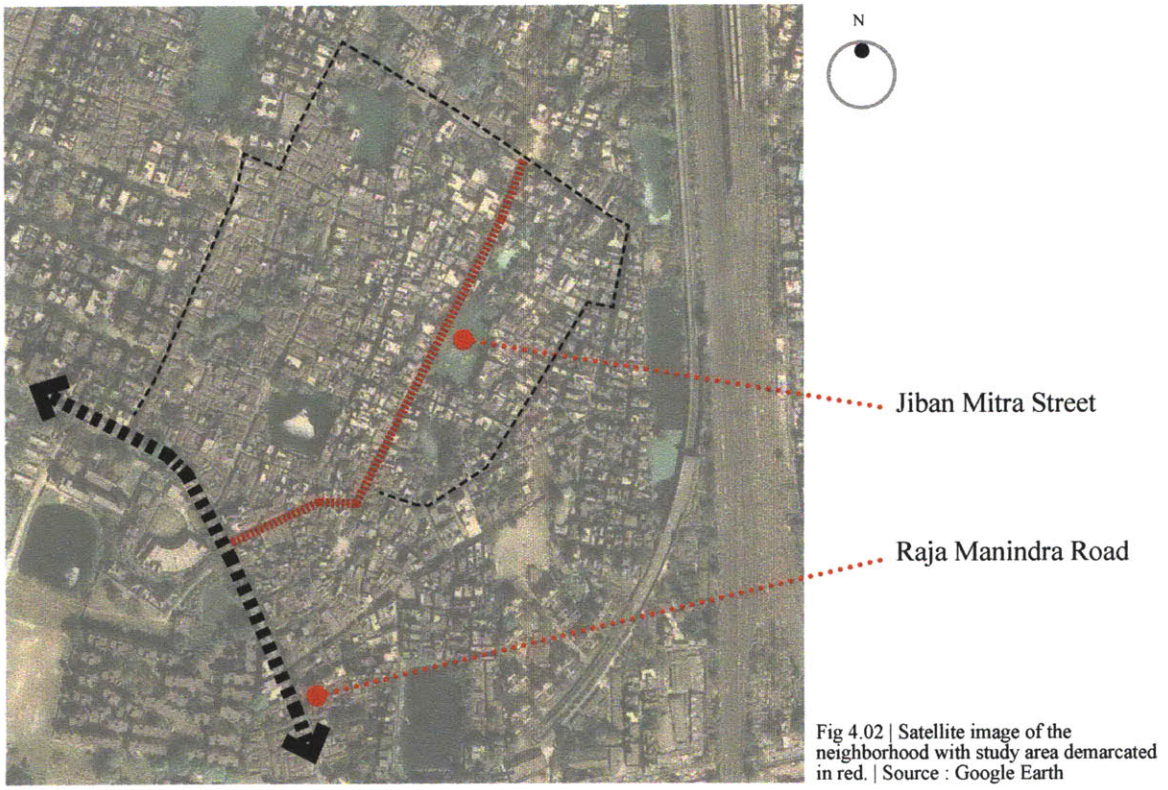
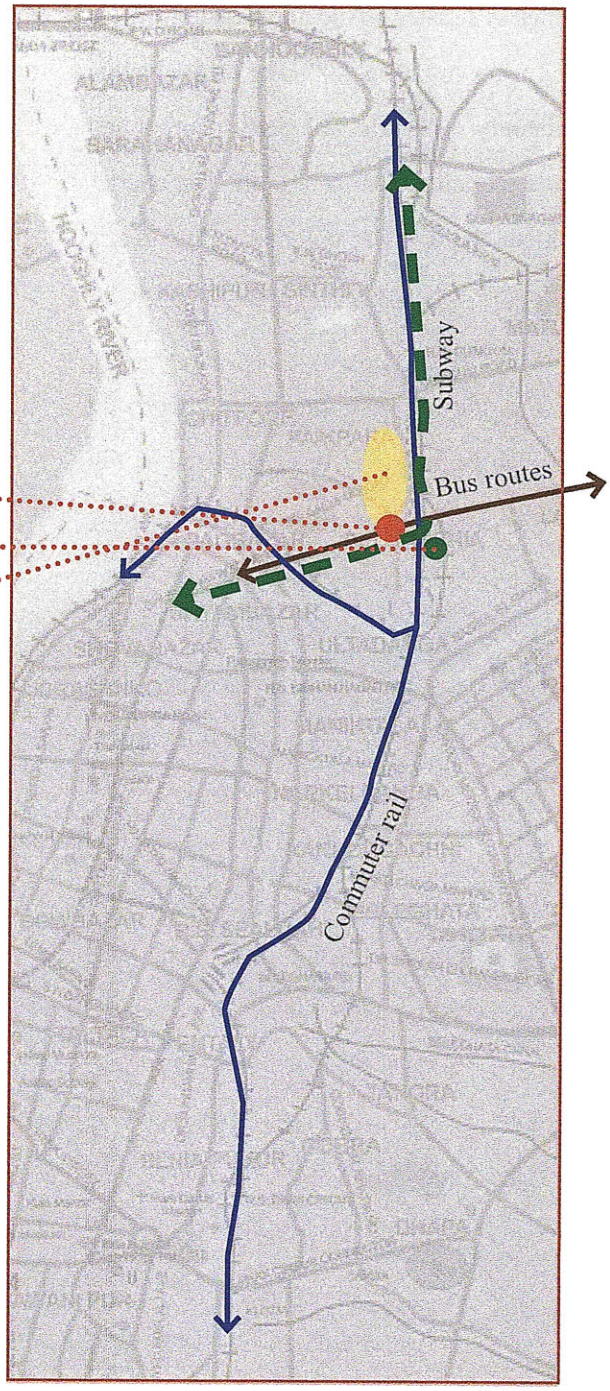


Fig 4.02 | Satellite image of the neighborhood with study area demarcated in red. | Source : Google Earth

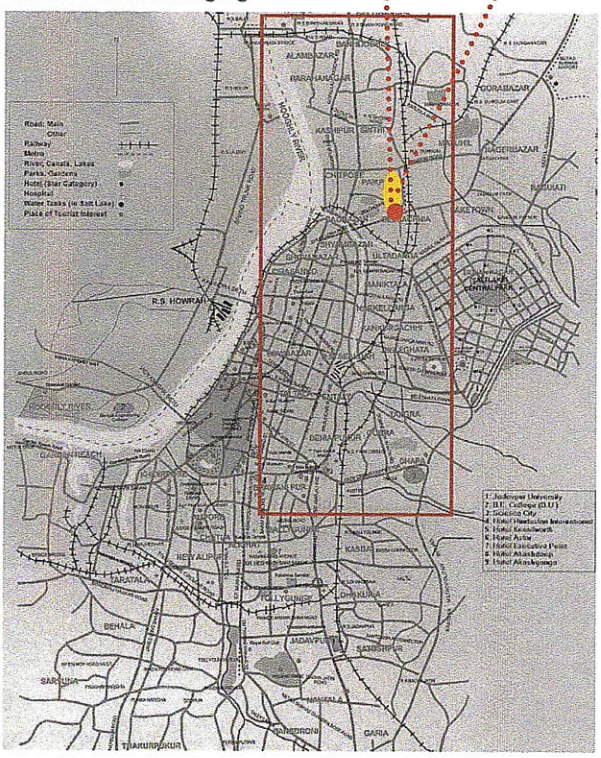
The neighborhood is well connected to the city by public transit network as shown in Fig. 4.04. There are a number of bus routes that ply on Raja Manindra Road and connect it with the city. The residents have access to commuter rail and subway. Since the subway station is about 15-20 minutes walk, there is a network of *autorickshaws*[1] that shuttle in between the neighborhood and the station. And within the neighborhood there is the abundant service of rickshaws.

Fig 4.04 | Study area and surrounding enlarged | Source : www.wikimeFig.org



Raja Manindra Road
Subway station
Study area

Fig 4.03 | Study area on Jatin Mitra Street starting at Raja Manindra Road Source : www.wikimeFig.org



1. Auto-rickshaw - local term for three wheeled small motor vehicle

B. The experience of walking through Jiban Mitra Street

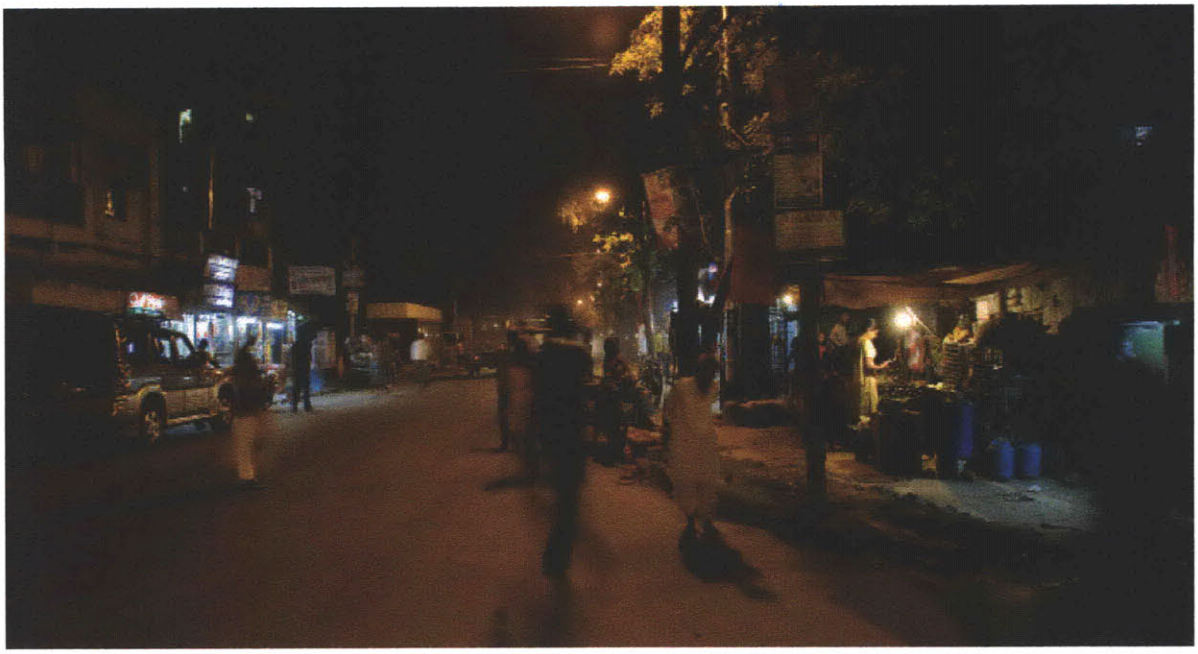


Fig 4.05 | Raja Manindra Road at the beginning of Jatin Mitra Road with shops and stalls. | Source : Author

Jibaan Mitra Street is a residential street that originates from Raja Manindra Road. This road is not very busy as it is more a secondary road that connects two major roads, namely Jessore Road and B.T.Road. However there are a number of bus routes that stop at the bus stop in front of the neighborhood. There is a regular service of auto rickshaws that carry commuters from this bus stop to the local subway station.

Near the bus stop there are a number of stores and shops that cater to the needs of this neighborhood. Figure 4.05 shows some of these shops during the busy hours of the evening. At the entry point of Jatin Mitra road there are a few shops and stalls that sell the basic necessities and daily supplies. The stalls and shops are more vibrant in the evening when the residents return from office and buy the fresh vegetables, fruits, fish and meat. However there is a market within 10 minutes walking distance.

As we go deeper inside the street becomes completely residential. Along the street there are only a few scattered stores selling groceries or stationary items. But tea stalls are more omnipotent and act more as social gathering points.

Fig 4.06 | Jeevan Mitra Street showing encroached sidewalk and shared street | Source : Author

The street is completely dominated by pedestrian, bicycles and rickshaws with only a few private vehicles plying occasionally. It is around 3 meters wide. There is a very small stretch of sidewalk at the very beginning and which is encroached by stalls and parking. Thus people and vehicles share the same street space as seen in Fig 4.06. The use of rickshaws to carry people and goods is very common and works well considering the narrow streets and lanes.

The interesting feature of this area is that the tertiary lanes originating from Jiban Mitra road does not follow any geometrical pattern. Though the primary and secondary roads of the area are in more or less grid pattern, these tertiary lanes are organic in character. These narrow lanes or passages as seen in Fig 4.07 are of varying width and convoluted in nature. They are completely pedestrian and more conducive in creating a residential character.

The narrow streets help to generate a close relationship among the residents. Often people are seen sitting on the street and playing cards or chatting with each other. Lack of street furniture or other amenities are overcome in this humane urban space.

Fig 4.07 | Jeevan Mitra Street showing narrow tertiary lanes
Source : Author

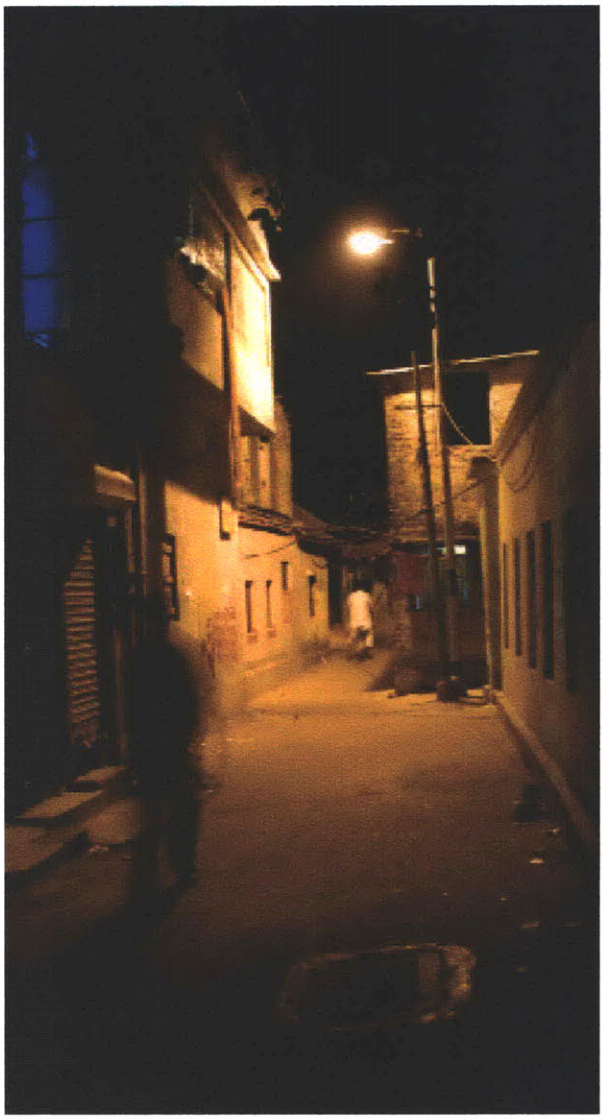


Fig 4.08 | Water bodies in the neighborhood | Source : Author

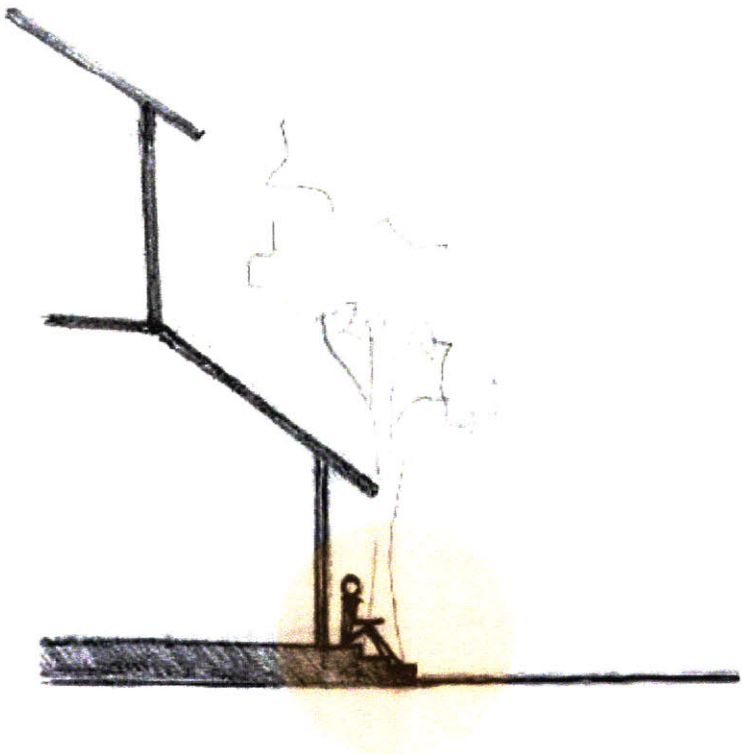
The most notable character of this region is the number of water bodies that are present in this neighborhood. Their size range from 15 sq.m. to 100sq.m. and are well integrated in the urban fabric. The street layout and the positions of buildings are influenced by them.

These water bodies are ecologically and socially very significant to the area. The local people are seen to gather around these water bodies during all times of day and night, but specially during the evening. Women of this area use the water for household chores such as washing clothes and utensils. Children are also well attached to these water bodies and play in and around them.

However the quality of water was observed to be very unhealthy as these water bodies lack proper maintenance. The negligence of the local municipality coupled with the indifference of the local people have led to the undesirable condition.

C. Analysis of interactions

In the next part of the chapter we will try to identify the various interactions that happens within the neighborhood. A detailed analysis of these interactions is done to identify the reasons behind the richness of the urban fabric of this neighborhood.



I. Interaction of subway transit network with informal network of autorickshaws

The neighborhood being predominantly residential in character, majority of the population travel to work to different parts of the city. Most of the people travel in mass transit system such as bus and subway. As the subway station is about 1.5 kilometers away and takes around 20 minutes from the neighborhood there is a regular service of autorickshaws. These small vehicles which carry four to five passengers, shuttle to and fro between the neighborhood bus stand and the subway station.

This system of shuttles, illustrated in Fig 4.10, plays an important role in bringing the benefit of subway system to people of the neighborhood who are relatively far from the station. Thus these vehicles help to reduce the use of private vehicles for commute. The reason for which this system is more advantageous than bus is due to its frequent service and higher relative speed on the congested streets.

A large number of local youths who drive these autorickshaws depend for their livelihood on this informal arrangement. Thus the system helps the local economy by providing large number of employment. .

Fig 4.09 | Autorickshaws carrying commuters to subway station | Source : Author

Type of interaction:

Integration of autorickshaws and subway forms an integrated mode of transit which reach a wide region.

Benefit:

This integration of different mode of transit create a both ecological and economical sustainable condition. It has a number of benefits. First, the subway is made accessible to a larger region without major investment in infrastructure. Second, it discourages the use of private vehicles and reduces ecological cost of transportation. Lastly it provides employment to a large number of youths.

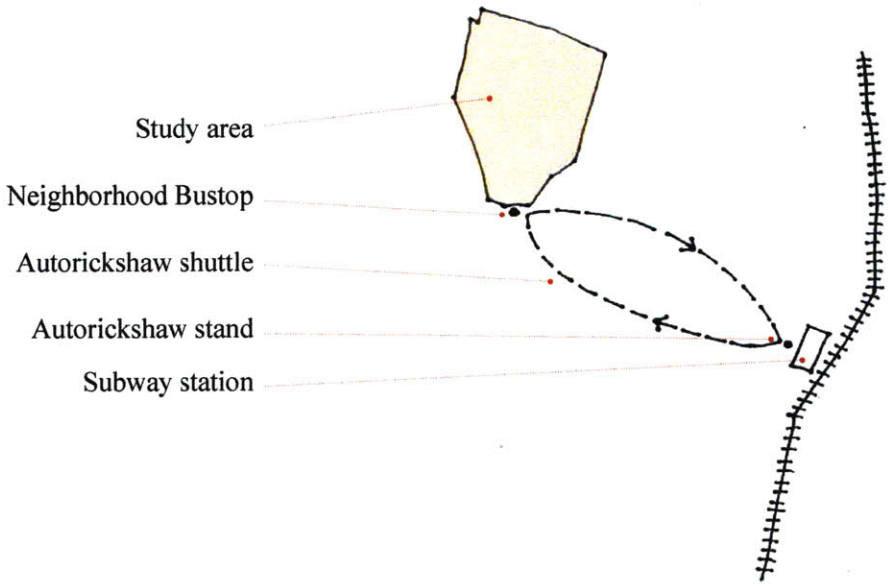


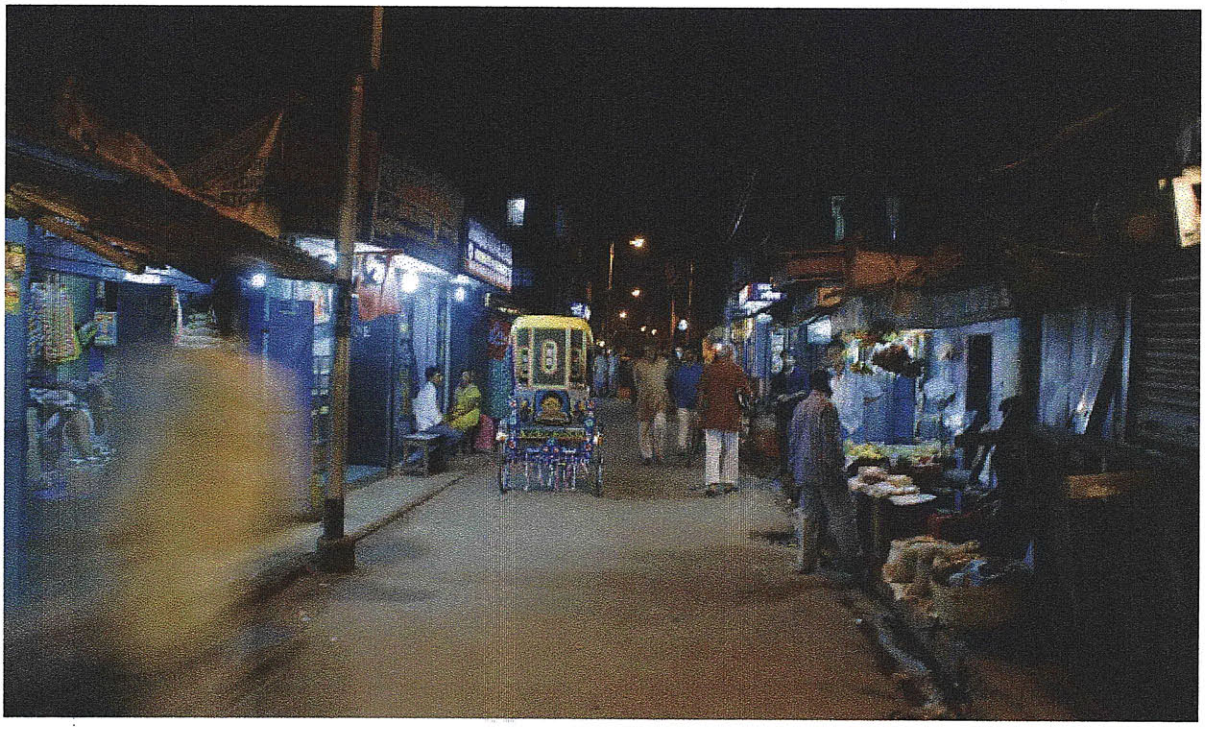
Fig 4.10 | Autorickshaw shuttle system that increases the accessibility of subway system without capital investment | Source : Author

II. Interaction of pedestrian urban space and vehicular carriage way

Jiban Mitra Street is primarily a pedestrian street with very few vehicular traffic. The street width which varies from 3 to 4 meters has sidewalks at very few places. The very few sidewalk that exist are encroached by shops or parking. Thus the pedestrians walk on the street, but they get the right of way as there are few vehicles.

There are also a large number of rickshaws that carry people and materials within the neighborhood. These non-mechanized vehicles are the primary mean of transport after walking. There are even shops that travel on rickshaws.

Fig 4.11 | Jiban Mitra Street vibrant in the evening with shops, rickshaws and pedestrians | Source : Author



Interestingly the streets are not only places for travelling but also urban spaces where the residents interact. The pedestrian dominated streets substitute for the need of urban spaces, which are absent in this neighborhood. The residents of the neighborhood frequently sit on these very streets and spend time together for chatting or playing cards. This space act as a large outdoor living space where the whole community gets together every day as shown in Fig 4.14.

Fig 4.12 | Street encroached by local residents during the day | Source : Author

Fig 4.13 | Street encroached by local residents during the evening | Source : Author

Type of interaction:

Encroachment of vehicular carriage way by pedestrian urban space.

Benefit:

This encroachment is beneficial to the neighborhood in a number of ways. First this encroachments help to create a residential character of the neighborhood which encourage human interactions. Second, it discourages private vehicle and increases walkability of the streets. Third it ensures a degree of safety on the street.

Fig 4.14 | Street encroached by local residents during the evening | Source : Author

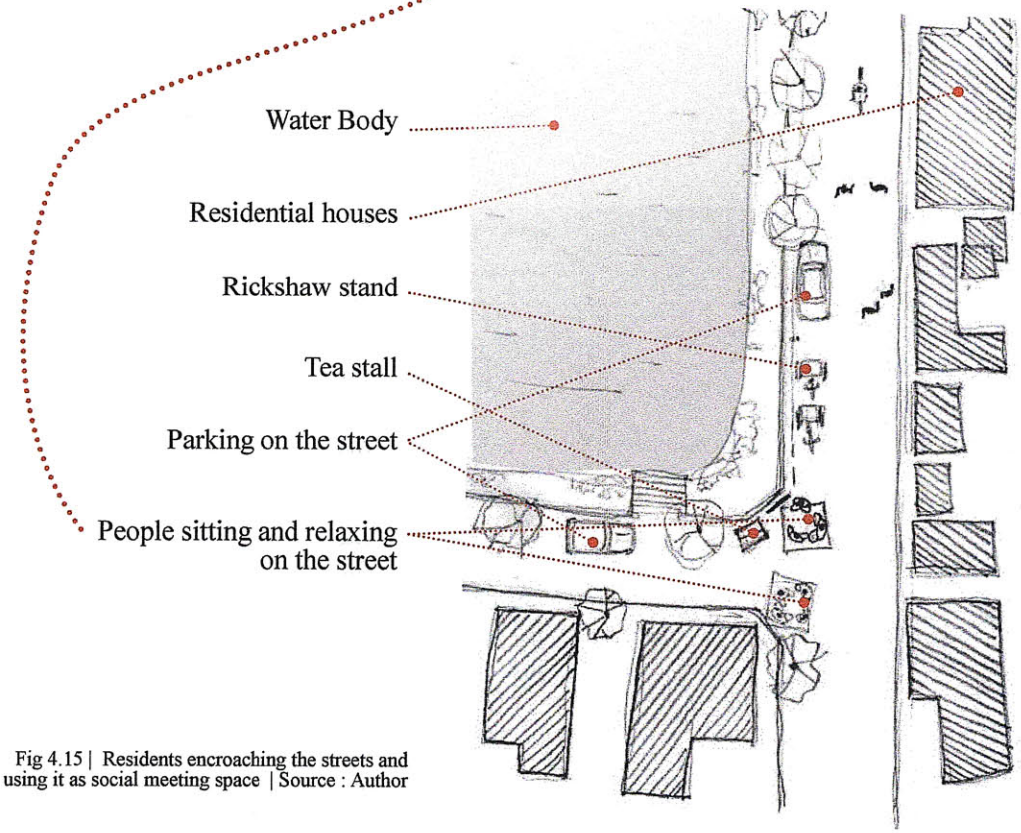


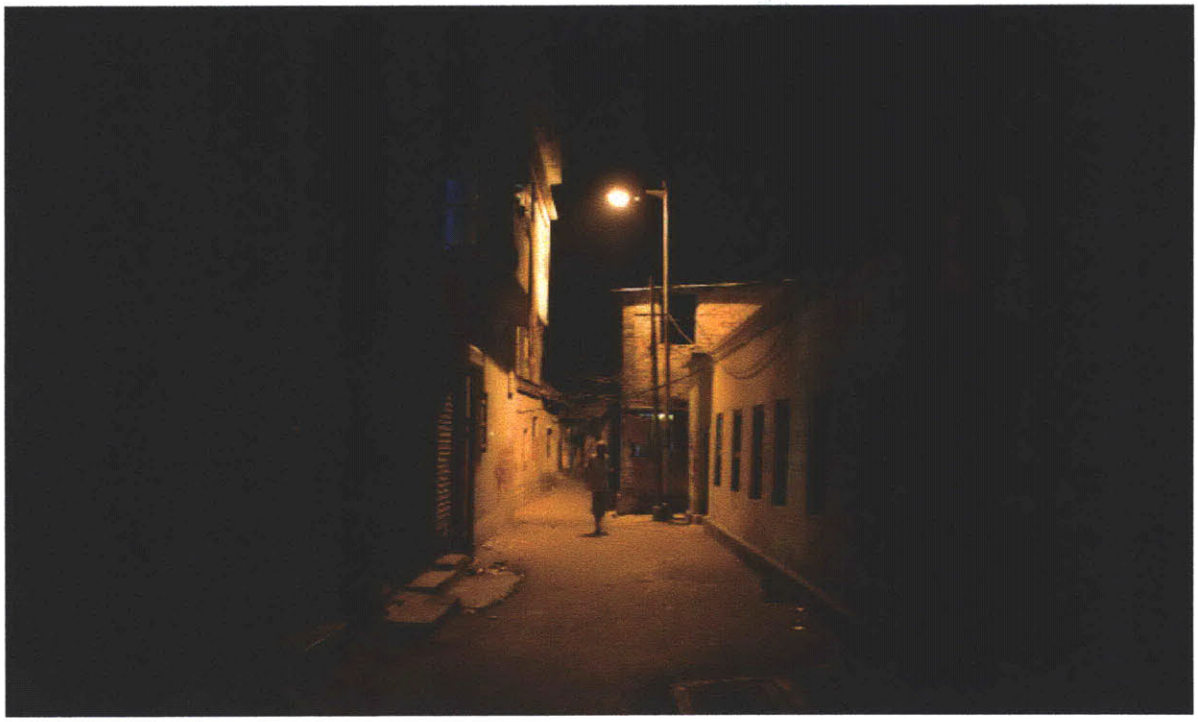
Fig 4.15 | Residents encroaching the streets and using it as social meeting space | Source : Author

III. Street with built space

As mentioned earlier this neighborhood has been inducted within the city municipal area only a couple of decades back. Thus the influences of municipal planning have not erased the semiurban character from this area. One such character is the street layout which differs from the inner parts of the city. The major streets in this neighborhood are in more or less grid pattern, but the inner street layout does not follow any geometric pattern.

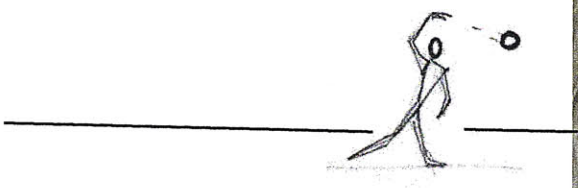
These streets and lanes have evolved gradually over time with any intervention of planner or urban designer. They were created in an incremental fashion as larger properties got subdivided into smaller parts. These streets were free from any fixed pattern but provided access to every plot. As vehicular access was not important these streets rarely can accommodate any vehicle except for rickshaws and bicycles. However motor bikes can also access many of these streets.

Fig 4.16 | Narrow inner lanes with varying cross-section
Source : Author



These narrow streets usually vary from 1-2 meters in width. The cross section of the street varies abruptly and often take sharp turns as shown in Fig 4.17. The houses on these streets are seldom higher than three stories, but they keep the streets shaded all through the day and make them cool and comfortable space to walk through. Being completely free from any motor vehicles, the children play in these streets without any risk.

Fig 4.17 | Street layout in a part of the neighborhood
Source : Author



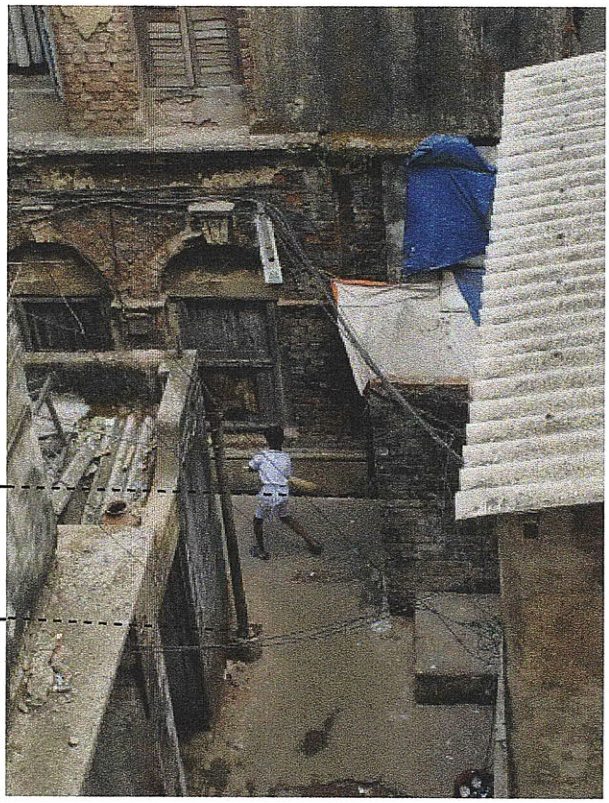


Fig 4.18 | Children playing in the narrow inner streets
Source : Author

The plots on these streets are acquired by different people with varied affordability, thus the sizes of the plots vary and so does the financial status of the neighbors. We find large three storied buildings next to semipermanent huts in this neighborhood which means a large mix of people from different income levels. And the fact they have existed for generations proves they can coexist peacefully. On the other hand they do have a symbiotic relation in most cases. The people living in the huts work as housekeepers, cooks etc. in the houses of the more well off. This relation benefits both class of people. The poor people get employment close to their house and do not have to travel, and the other half get cheap workers. From the ecological point of view this reduces the use of energy-intensive machines such as dish washers, washing machines etc.

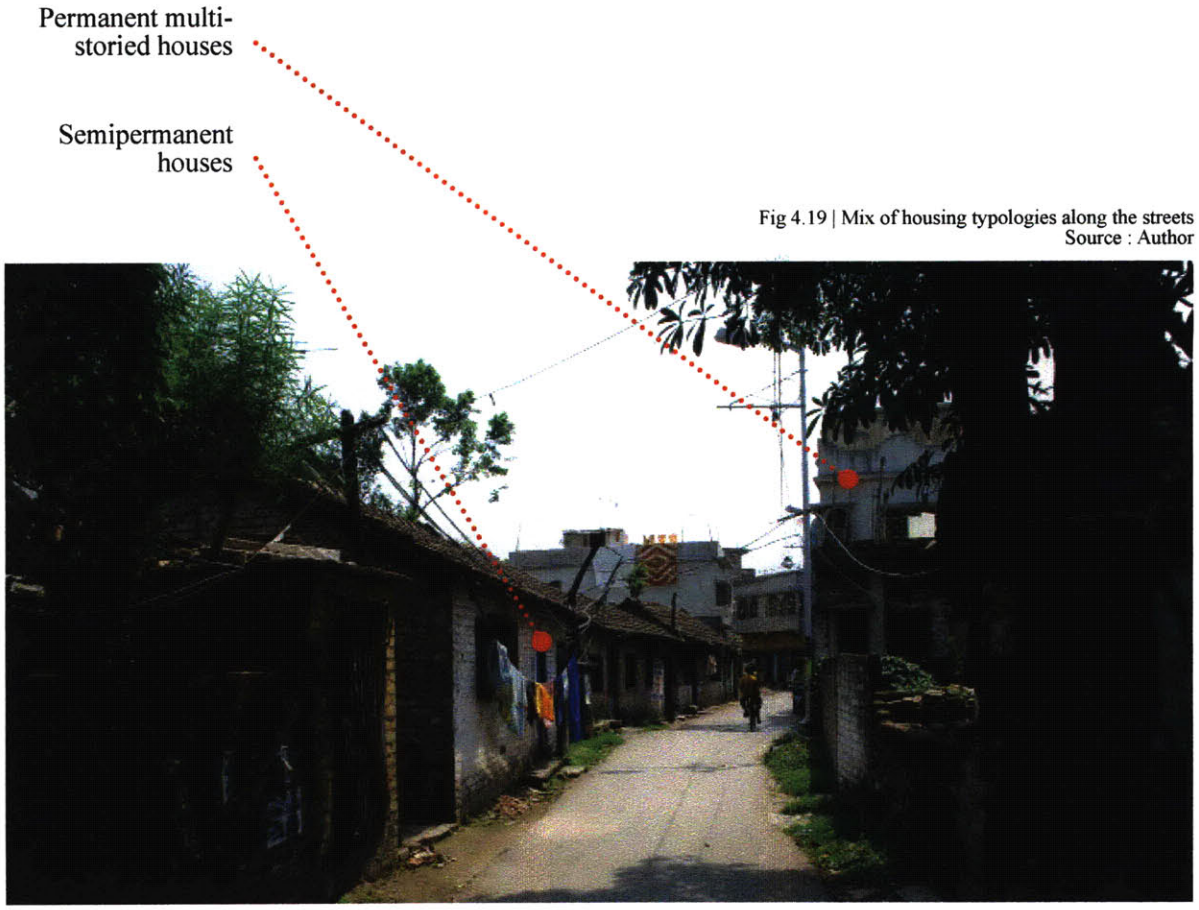


Fig 4.19 | Mix of housing typologies along the streets
Source : Author

Type of interaction:

Overlapping of streets and buildings in the narrow streets of the neighborhood.

Benefit:

First they create motor vehicle free streets which are safe and comfortable for walking and playing. Second create a mix of people from different financial status. Third they generate local employment opportunities. Finally, they save energy by discouraging use of energy intesive machines such as dish washers, washing machines, dryers etc.

Fig 4.20 | Narrow inner streets | Source : Author

IV. Interaction of residential activity with commercial activities

The commercial activities of Jiban Mitra Street is concentrated mostly at the very entry point of the street as seen in Fig 4.22. All residents have to travel through this part of street while travelling in and out of the neighborhood, thus it is logically best place for the commercial activities as it has the highest footfall.

The area has groceries, drugstores, fresh vegetable, fruit, fish and meat stalls. The area becomes vibrant during the evening hours. This is because residents who travel to work outside the neighborhood usually return during the evening and buys the daily supplies of fresh food.

Fig 4.22 | Sattelite image showing the distribution of commercial activities in the neighborhood | Source : Google Earth

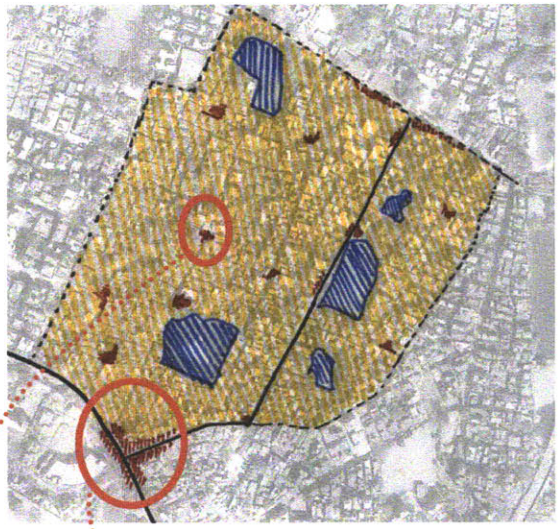


Fig 4.23 | Shops and stalls at entry point of Jiban Mitra Street | Source : Author

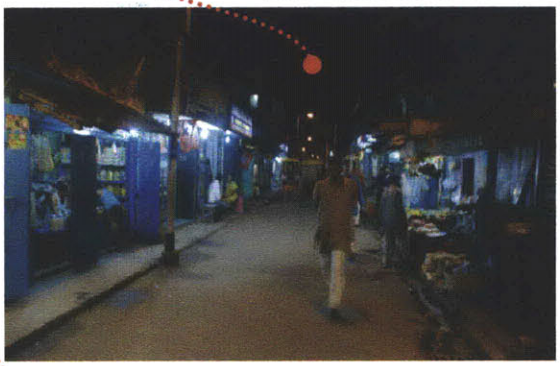
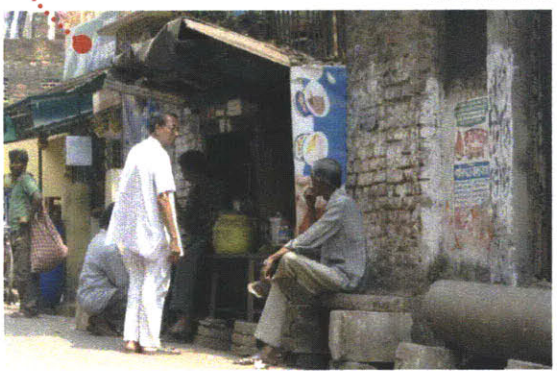


Fig 4.24 | Social interactions at tea stall Source : Sonia



In other parts of the neighborhood there are some shops uniformly distributed. These are usually groceries and stationary shops.

The area has another very interesting feature, that is mobile shops. These are shops on modified rickshaws that travel door to door selling various small items ranging from vegetables to *chappals*[1].

Fig 4.25 | Moving shop on the rickshaw
Source : Author

1. Chappals - local term for slippers

However the most omnipotent shop of the neighborhood are the tea stalls selling *cha*[1] and locally produced biscuits. These stalls are mostly informal usually on encroaching sidewalks or front porches of houses. They function more as social gathering point and residents are found siting and relaxing around it at all times of the day.

Type of interaction:

Integration of commercial and residential activities of the neighborhood.

Benefit:

The residential and commercial activities function as an integrated system sustaining each other. The commercial activities suffices the daily needs of the residents within the neighborhood. While the residents provide the ready market for these shops and sustains the local informal economy. Many of the local shops, specially the tea stalls also serve as social gathering space.

From the environmental perspective the integrated system discourages travelling in private vehicles to shop from distant markets thus saving energy and reducing pollution.

Fig 4.26 | Social interactions around tea stall
Source : Author

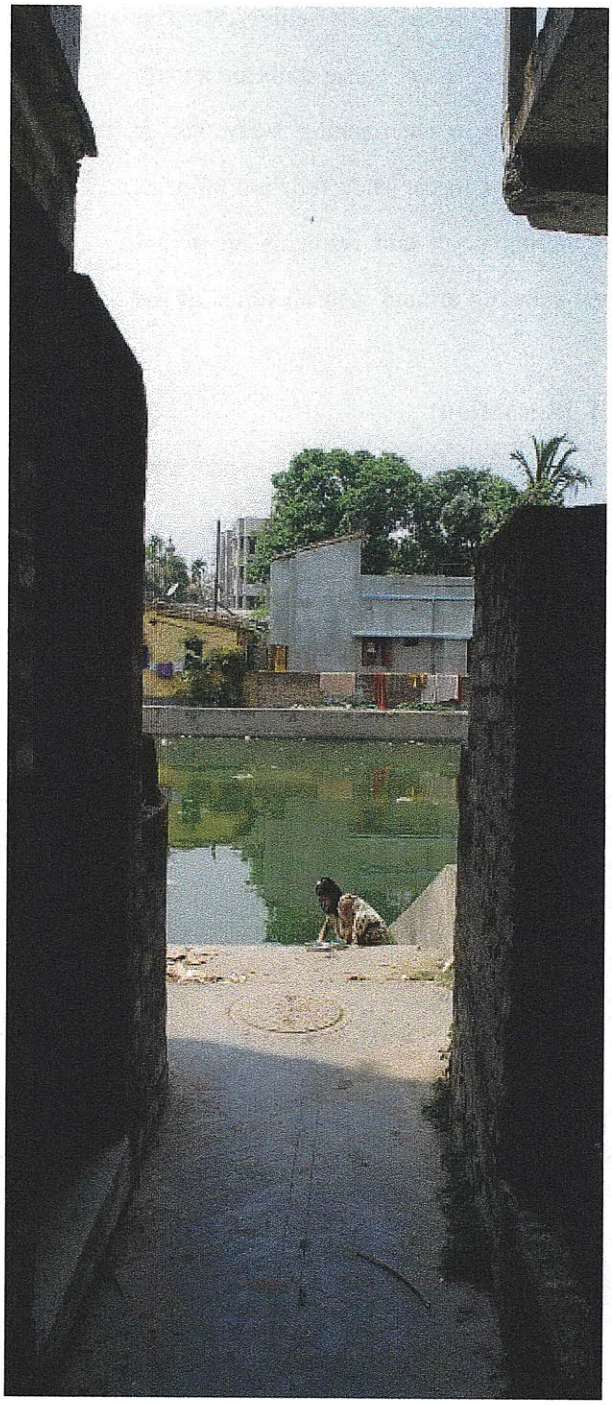
1. Cha -Bengali term for biscuit

V. Interaction of natural water bodies in urban space

The most notable character of the neighborhood is the presence of number of water bodies within it. From studying satellite images of the neighborhood we find that our study area retains an unique geomorphological character.

In a study of satellite images of the whole Bengal region as shown in Fig 4.28 and 4.29, we find an unique geomorphological character. There are innumerable small water bodies throughout the region. These water bodies are ecologically important to the region as they maintain the land-water balance that sustains the fertile character of this lower Gangetic plain. These also have a great role in maintaining the groundwater level of the region. From a social perspective the vernacular lifestyle of the people is deeply rooted to this land-water relation. Traditionally, individual houses or a small group of houses had a designated water body close to it. This used to be the source of water for drinking and daily use. Cultivating fish in these was also an important practice of the local people.

Fig 4.27 | A woman washing utensils in the neighborhood waterbody | Source : Author



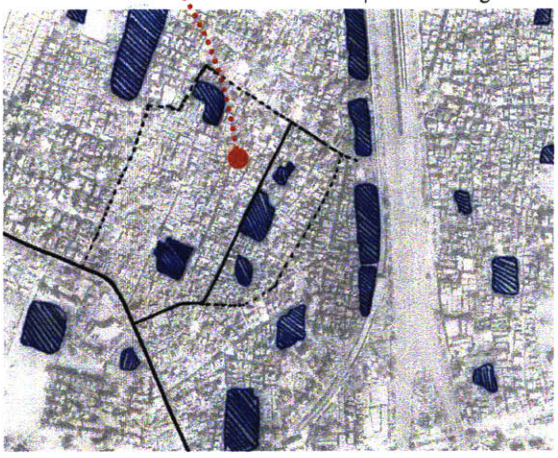
Though we still find this character present in the semiurban and rural areas surrounding the city, it is almost absent in the dense urban fabric of the city. The study area is one of the few neighborhoods in the city that still retains the geo-morphological character of the larger region.

Fig 4.28 | Satellite image showing the distribution of waterbodies in the region | Source : Google Earth

In the main part of the city there are almost no waterbodies

Shyambazar

Fig 4.29 | Satellite image showing the distribution in the study area | Source : Google Earth



However on physical survey most of these water bodies in the neighborhood are poorly maintained. Thus they are filled with garbage. But despite this poor condition they are still used which proves the deep association with the life and culture of the area. During the visit it was observed that local residents come to wash their clothes and utensils everyday. Also many people offer their prayers for religious purpose in and around these water bodies. Local residents also use these as social gathering area as the temperature is usually more comfortable due to effect of the water on the micro-climate.(Fig 4.30-4.33)

Another major important advantage of these water bodies is that they act as catchment for the heavy rains during the monsoon season. Thus, this area is completely free from water logging that plagues almost the whole city. This saves a lot of energy consumption by avoiding elaborate pumping mechanism that is required in the other parts of the city.

Fig 4.30 | Residents washing clothes and utensils | Source : Author

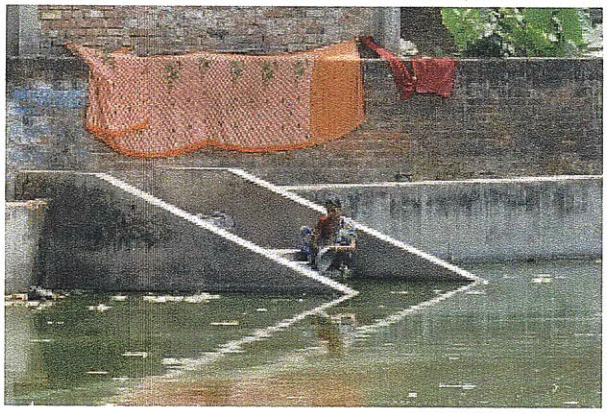


Fig 4.31 | Children playing around the waterbodies | Source : Author

Fig 4.32 | Residents interacting around the waterbodies | Source : Author

Type of interaction:

Integration of natural water bodies with the urban fabric of the city

Benefit:

The presence of the natural water bodies have significant advantage for the neighborhood. First they prevent waterlogging as they store the rainwater during the monsoon. Second, they replenish the groundwater that gets regularly pumped out in the city. Third, they create comfortable micro-climate. Fourth they provide social gathering space. Fifth, they provide water for daily household requirements thus reducing pressure on grid water supply. Finally if properly maintained they can provide employment as fish farming has great potential in this area.

However the water bodies requires maintenance without which they become dirty and a social nuisance. They have the potential to become breeding ground for mosquitoes and other insects. However these can be easily avoided and the present benefits could have been greatly increased if they were not neglected by the city authorities and local residents.

Fig 4.33 | Residents praying in the water bodies despite the garbage in front | Source : Author

VI. Interaction of indoor space and outdoor space

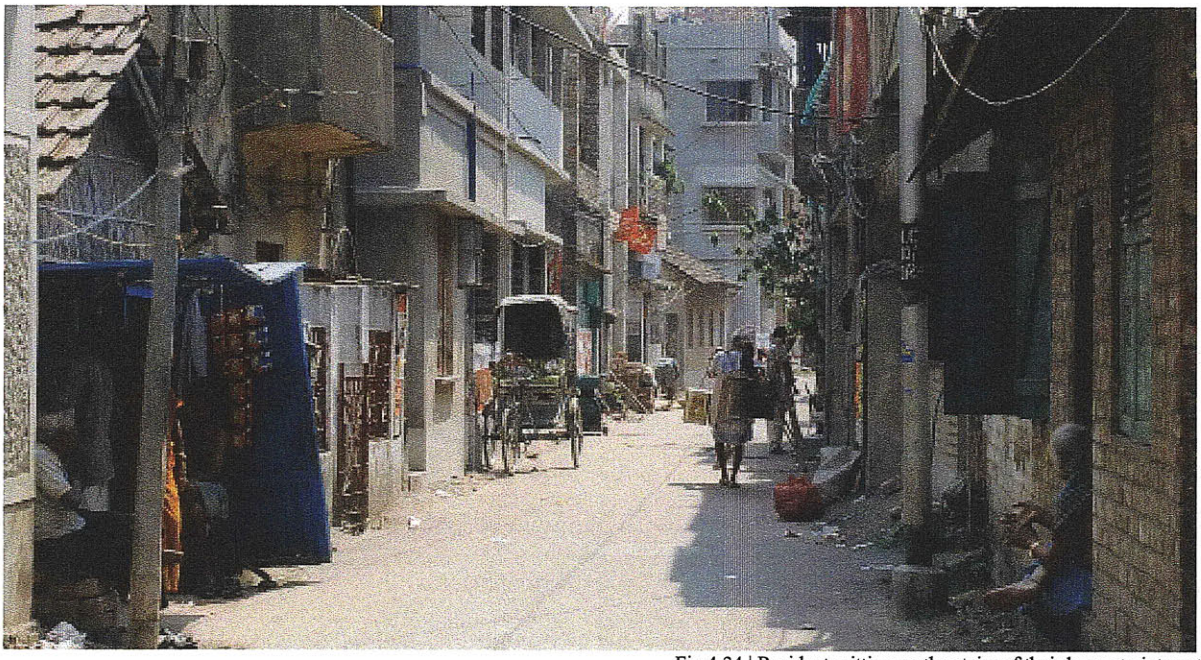


Fig 4.34 | Residents sitting on the stairs of their house to interact with other residents | Source : Author

All along the streets in the neighborhood we find residents sitting outside their houses on porches, stairs etc. These are more common near and around shops and tea stalls as in Fig 4.34.

The fact that the houses that were built before the current byelaws were enacted start from the streets encouraging this interaction. This is specially significant for the people of lower income group whose houses have insufficient space within. The open urban space augments their basic space requirements as in Fig 4.34.

The narrow streets create a proximity that encourage these interactions. This spill over of indoor space on the open outdoor space make the area close knit residential neighborhood.

Unfortunately, it is observed that the interaction is discouraged in the new buildings which have front open space according to the present byelaws and have boundary wall to demarcate the property. This creates complete segregation of the indoor and outdoor space and destroys the humane urban character.

Type of interaction:

Overlapping of indoor and outdoor space

Benefit:

First, the interactions help in augmenting space requirement for the small residences. Second, they improve the residential character of the streets making them more liveable and walkable. Third they encourage human interactions creating a more close knit neighborhood.

Fig 4.35 | Resident sitting in outdoor space of their house
Source : Sonia

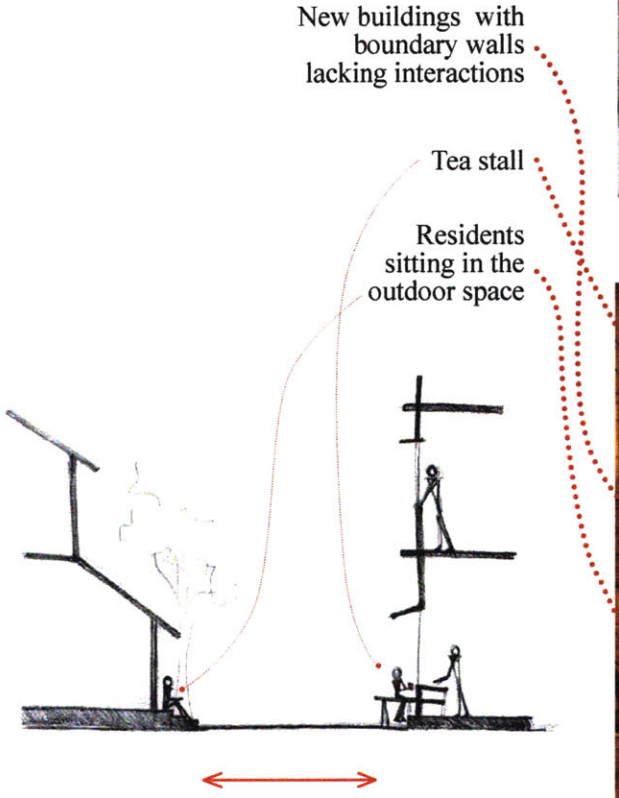
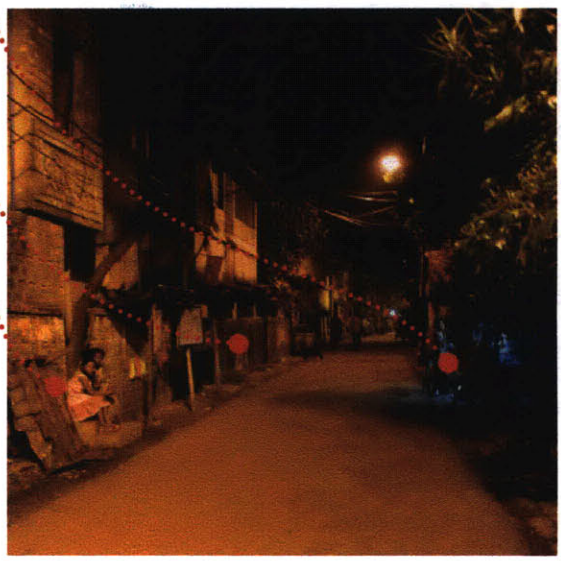


Fig 4.35 | Resident sitting in outdoor space of their house
Source : Author



Conclusion

After the detailed analysis of the various interactions within the neighborhood we find that the richness of the urban fabric is greatly enhanced by these interactions. From the table Tab 4.01 we observe that the neighborhood is rich in three category of interactions that are

1. Interaction of transportation modes
2. Interaction of Residential and commercial activities
3. Nature and urban elements

These three categories of interactions make this area a livable and ecologically sustainable neighborhood. Thus the neighborhood performs with satisfaction despite lack of many basic facilities such as street furniture etc. The benefits they create are following :

1. Reduces vehicular speed and discourages private vehicles.
2. Improves walkability and encourages pedestrian and other non-mechanical modes
3. Creates a self-sufficient neighborhood
4. Reduces pollution and fuel consumption
4. Encourages human interactions and creates sense of belonging.

However the area is weak in the following two category of interactions that are

1. Private built form and public space

We observe that the interactions of these categories are not as rich as we observed in the first case. The reason for this weakness is that most of the permanent buildings are recently built and are segregated from the street with boundary walls. The only interactions that we see are in the semipermanent houses of the low income people.

Also in the relationship between nature and urban elements, only the remnant of a meaningful relationship was observed. The water bodies have been neglected by the local municipality creating a very unhealthy condition. The residents overlooking the benefits have abused them by dumping garbage in them. Irrespective of all these conditions people still use them for worshiping and daily use.

Tab: 4.01 | Table of different types of interactions within the neighborhood

Interaction	Category	Type	Benefits
Subway transit network with informal network of autorick-shaws	Modes of transportation	Integration	1. Reduces private vehicles 2. Encourages public transit 4. Reduces pollution 4. Reduces fuel consumption
Pedestrian urban space with vehicular carriage	Modes of transportation	Encroachment	1. Reduces vehicular speed 2. Improves walkability 3. Encourages residential character 4. Reduces pollution 4. Reduces fuel consumption
Streetscape with built space	Private space and public space	Overlapping	1. Improves walkability 2. Inclusive neighborhood 3. Creates employment 4. Reduces energy consumption
Residential area with commercial activity area	Residential activities with commercial activities	Integration	1. Self-sufficient neighborhood 2. Improves human interactions 3. Enhances livability 4. Reduces travelling 4. Reduces fuel consumption and pollution
Natural waterbodies in urban space	Nature and urban elements	Integration	1. Prevents waterlogging 2. Comfortable micro-climate 3. Social interaction point 4. Replenishes groundwater 4. Provide employment
Indoor space and outdoor space	Indoor space and outdoor space	Overlapping	1. Augments indoor space 2. Increases liveability 3. Encourages social interaction

Chapter 5.

Bhawanipur

Neighborhood Case Study 3

Fig.5.1 | Street artist in Bhawanipur | Source : Bidisha

5. Case Study 3 - Bhowanipur

A. Introduction

B. The experience of walking through Ashutosh Mukherjee Road

C. Analysis of interactions

D. Conclusion

Summary

This chapter presents the case study of Bhawanipur area along Ashutosh Mukherjee Road. It begins with a brief introduction and reference to its connectivity with rest of the city. Then there is a narrative describing the basic observation as one walks through the neighborhood. There after detailed analysis of the various interactions are presented that are identified as the important factors for the richness of the urban fabric of this neighborhood. At the conclusion these various interactions are tabulated for a comprehensive understanding of their impact on the neighborhood.

a) Introduction

Ashutosh Mukherjee Road is a direct continuation of Jawaharlal Nehru Road, which is the main road of the central business district of the city. The study focuses on the neighborhood along this road between Hazra road and Acharya Jagadish Chandra Bose Road as shown in the Fig 5.2.This stretch of the road has large number of offices along with residences. There is sufficient shops and stalls to cater the needs of both the residents and the people who works in the offices. The area which is close to the central business district is a preferred location for the people with both higher and lower income. People with higher income stay in large houses and often in multi storied buildings, while the people with low income stay in semi permanent slums in these areas. Usually the middle income people cannot afford to stay in this area as they neither can afford the high cost nor they can stay in slums. Thus they commute to work here daily.

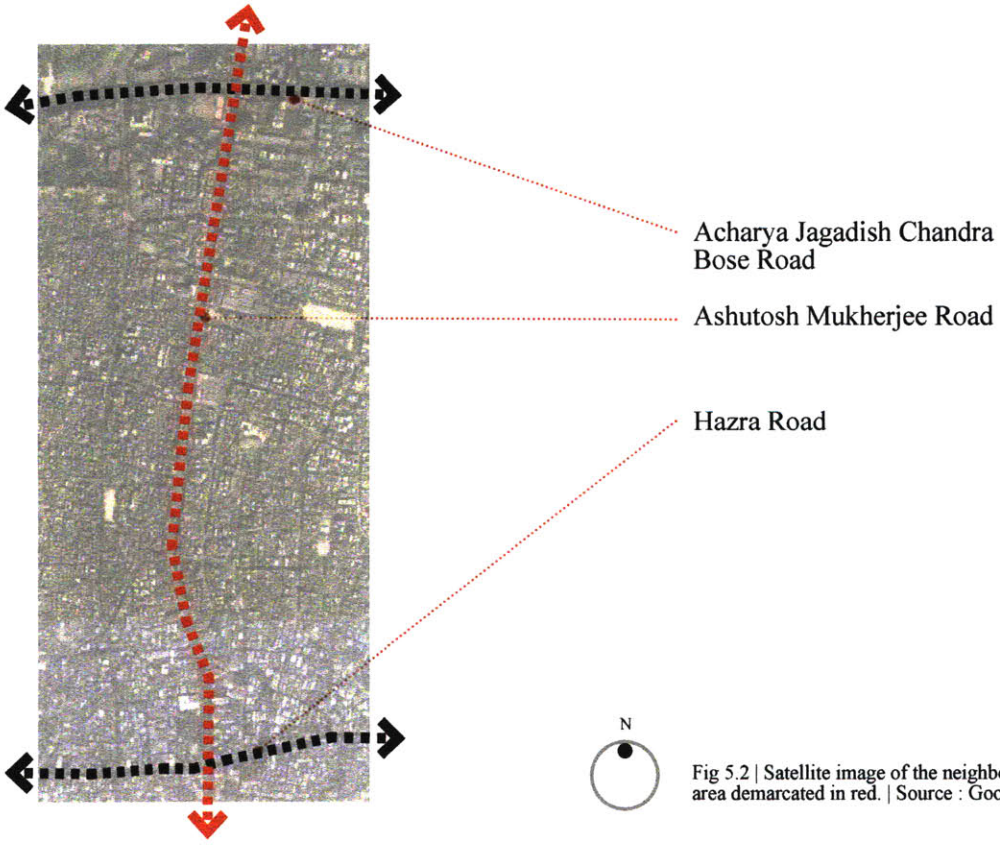
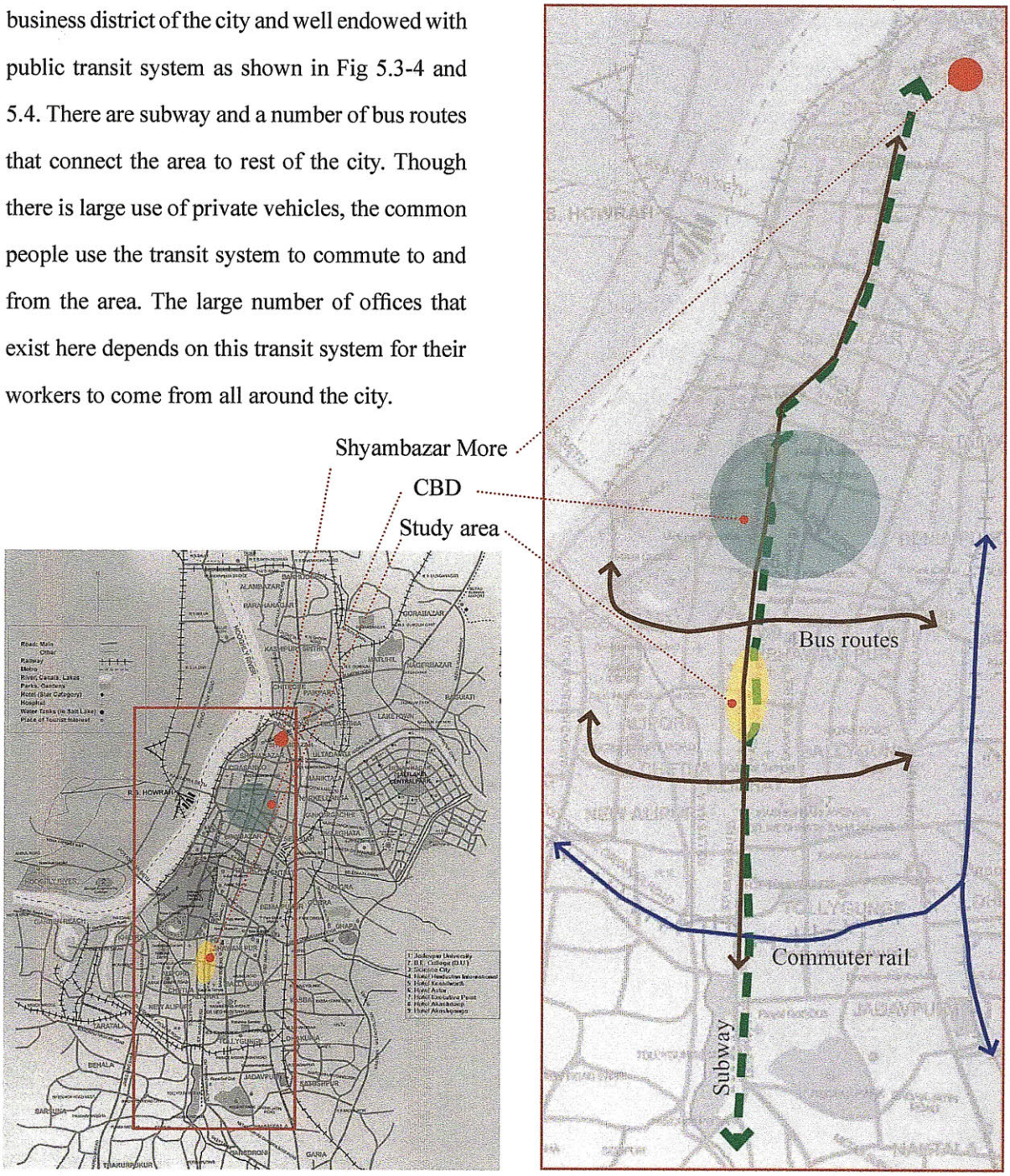


Fig 5.2 | Satellite image of the neighborhood with study area demarcated in red. | Source : Google Earth

1. More - Bengali term for cross road
2. Sarani - Bengali term for road
3. Bajar - Bengali for Market

The area is very close to the central business district of the city and well endowed with public transit system as shown in Fig 5.3-4 and 5.4. There are subway and a number of bus routes that connect the area to rest of the city. Though there is large use of private vehicles, the common people use the transit system to commute to and from the area. The large number of offices that exist here depends on this transit system for their workers to come from all around the city.

Fig 5.3-4 | Map of Kolkata showing the connectivity of the study area. | Source : Author



b) Walking through Ashutosh Mukherjee Road

Fig 5.5 | Ashutosh Mukherjee Road at Hazra Road crossing. | Source : Author

Ashutosh Mukherjee Road is one of the major roads of the city which is about 30 meters wide. It has wide sidewalks of about 4-5 meter running all along it. The subway runs under the road and has a number of stations on it. The study area shown in Fig 5.3-4 is called Bhawanipore, it stretches in between two major crossings and have subway stations at each end. This area is a mixed use neighborhood where residences coexist with many offices, schools, colleges, hospitals and markets.

It is a busy road dominated by the motor vehicles as evident from Fig 5.5. A number of buses ply on it, but there are also a large number of taxis and private vehicles.

Along most of its length the road is divided with steel railings to prevent the pedestrian to cross at any point. The sidewalks are also guarded by steel rails to protect the pedestrians and also to prevent them from spilling over on the street.

The pedestrian tends not to walk on the road and spills out only near the bus stops or subway stations as seen in Fig 5.5.

Fig 5.6 | People waiting in the bus stop | Source : Bidisha

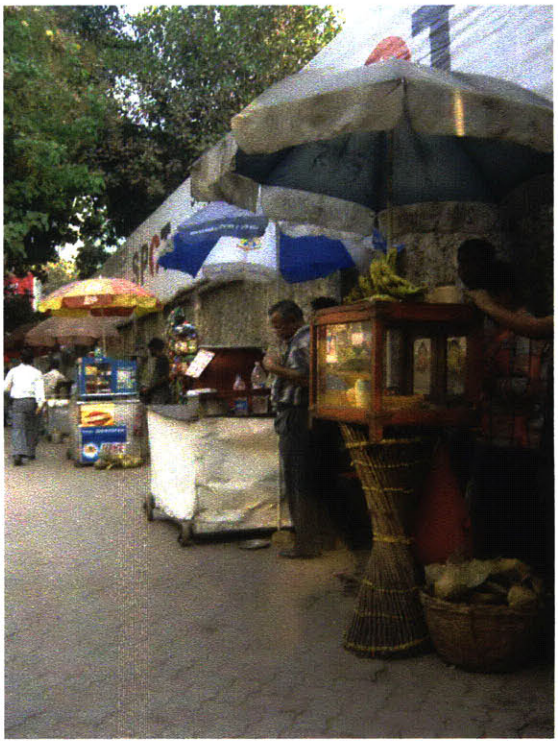
The area being close to the central business district have considerable amount of offices and other commercial activities. There are also a few colleges and hospitals in the area. In recent times a number of shopping malls are developing in the area utilizing its connectivity with rest of the city.

A large majority of the people who work here come from different parts of the city. They use the bus routes and the subway to commute. During the office hours the bus stands and the metro stations are found to be crowded with commuters as seen in Fig 5.5.

Along the sidewalk there are many small stalls and shops that cater to this transient group. As one walks along the sidewalks finds these stalls selling food and other necessities to the people. Most of the sidewalks are partly encroached by these vendors. These vendors and sellers as in Fig 5.7 constitute a large informal economy and also benefits the office people with cheap food and drinks. Other necessary services are also available such as the cobbler and barber.

Also this area is richly endowed with trees and one can observe the close relation of the people with the trees.

Fig 5.7 | Vendors selling food on the sidewalk | Source : Bidisha



c) Interactions

In the next part of the chapter we will try to identify the various interactions that happen within the neighborhood. A detailed analysis of these interactions is done to identify the reasons behind the richness of the urban fabric of this neighborhood.

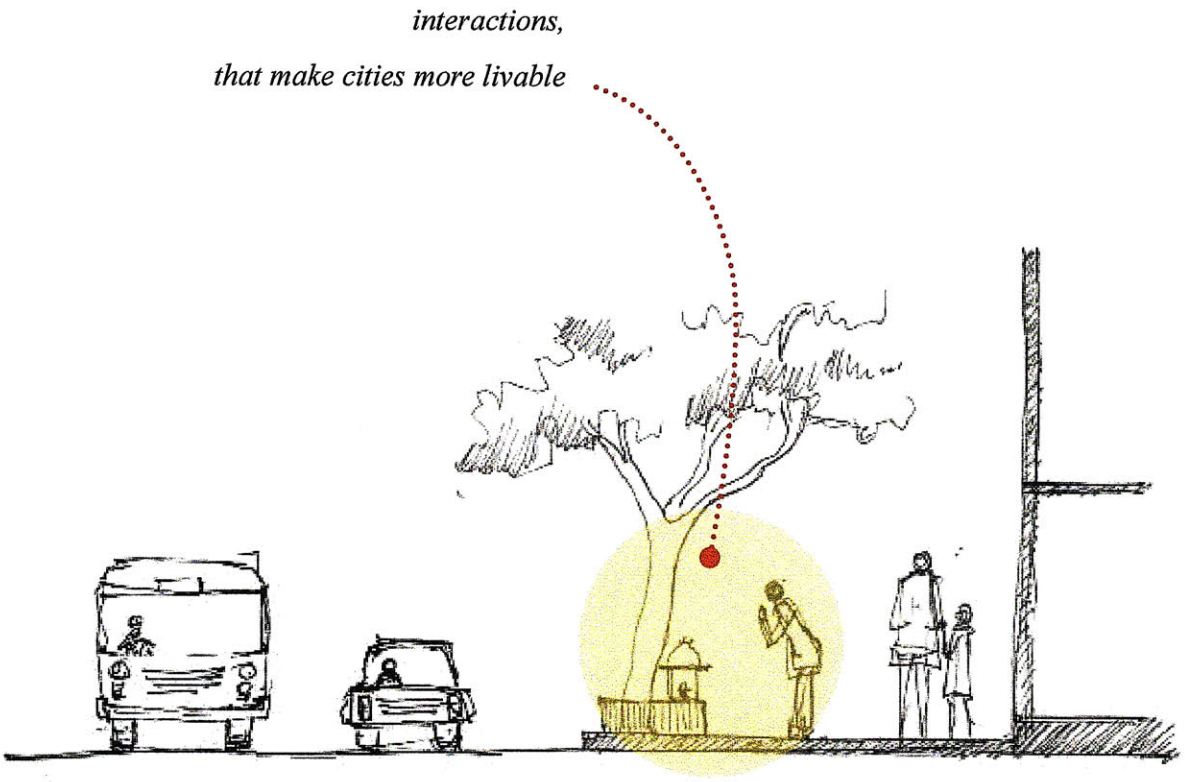


Fig 5.8 | Pedestrian offering a brief prayer to the roadside temple under a tree | Source : Author

I. Mechanized and non mechanized modes of transportation

Ashutosh Mukherjee Road is one of the busiest street of the city and is dominated by the vehicular traffic. There are number of buses that ply on the road along with many taxis as seen in Fig 5.9.

These buses bring the commuters from around the city and also from the subarban railway station of Sealdah and Howrah. Thus a huge number of people can commute here from not only the city but also from the suburbs.

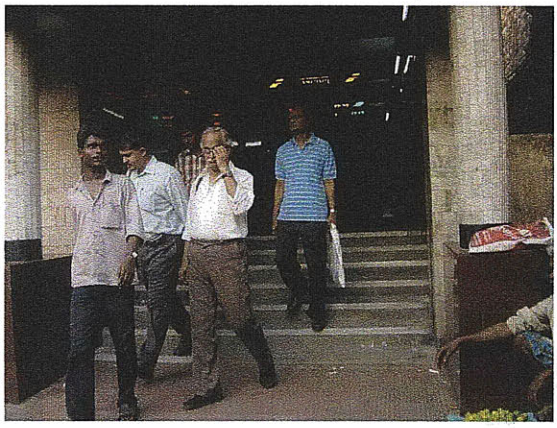
Fig 5.9 | Vehicular dominated Ashutosh Mukherjee Road | Source : Bidisha

However once the people get off the buses or subway the dispersion within the neighborhood is mostly pedestrian. Fig 5.10 shows how the system functions in an integrated way. There are many non-mechanized vehicles such as bicycles and rickshaws which carries the people inside the neighborhood as we see in the Fig 5.13-15.

Fig 5.10 | Figure showing motorized and non-motorized vehicular distribution in the areea | Source : Author

Fig 5.11 |People waiting for the bus at the stand | Source : Bidisha

Fig 5.12 | People coming out of the subway station | Source : Author



Type of interaction:

Integration of mechanized and non-mechanized modes of transportation.

Benefit:

The integration of these two modes provide comprehensive accessibility to the commuters without relying on the private motor vehicles. This in turn create a more livable neighborhood which is pedestrian friendly. This also reduce the fuel consumption and pollution of the vehicles to a considerable extent.

Fig 5.13 | People using bicycles in the inner streets | Source : Author

Fig 5.14 | A rickshaw van carrying school children | Source : Author

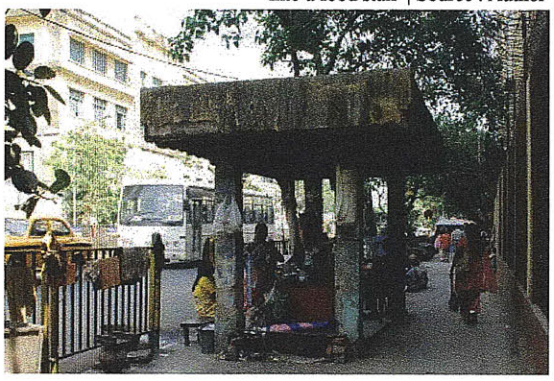
Fig 5.15 | A rickshaw carrying mother and son to school | Source : Bidisha

II. Street furniture and neighborhood activities

The area which has a large transient population lacks terribly in proper street furniture. Even where there are some, they rarely serve their purpose. Thus it is interesting to study how the people are adapting various urban elements to suit their needs.

In Fig 5.16-17 we see a redundant bus stand have been encroached by a street food shop and have been modified into a food stall. They have provided some basic sitting and caters the essential need of affordable food in both rain and sun, to the people who commute here to work.

Fig 5.16-17 | Redundant bus stand converted into a food stall | Source : Author



On the other hand, the complete lack of sitting arrangements in the area have forced the people to find creative ways. The most common ways are to construct podiums around the trees, or use benches provided by the street vendors as seen in Fig 5.18-20. Thus, the illegal street vendors who are actually encroaching the pedestrian sidewalks are fulfilling a important urban function.

Type of interaction:

Encroachment of / for street furniture.

Benefit:

These encroachments are necessary adaptations that the people does to fulfill their basic needs. Sometime these provide space for the pedestrian to sit and rest. And sometime they provide space for affordable food to the people who commutes here from distant places.

Fig 5.18-20 | People sitting on seats and podiums built by encroaching public space | Source : Bidisha

III. Formal and informal commercial activities.

The neighborhood have a large influx of daytime population who come to the offices, colleges, hospitals etc. These constitute a formal commercial sector which is supported by a large informal sector. As the people working in the formal sector travel from distant areas of the city and suburbs they have certain needs, such as affordable food, barbers, cobblers etc.

The sidewalks are encroached by innumerous stalls and vendors who cater to these basic needs of the people. In the following figures 5.21-24 we find how they serve this transient population. These encroachments in effect sustain a large informal economy which is very significant in Indian socioeconomic conditions. On one hand these shops function on a very low maintenance cost thus provide affordable services. On the other hand the large number of people in these informal business earn their livelihood from this condition.

Organized business have high operating cost and will fail to provide the services at affordable price. Electronic vending machines might work in developed countries but in Indian context it will destroy the lively hood of millions. Moreover they are highly energy intensive.

Fig 5.21 | Street side vendor selling fresh sugarcane juice| Source : Bidisha

Fig 5.22 | Street side barber busy giving a shave | Source : Bidisha

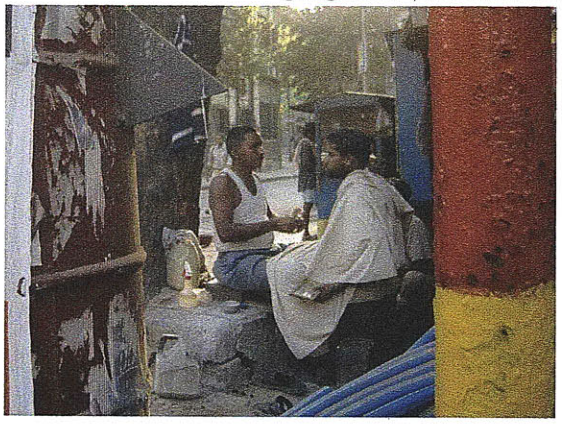
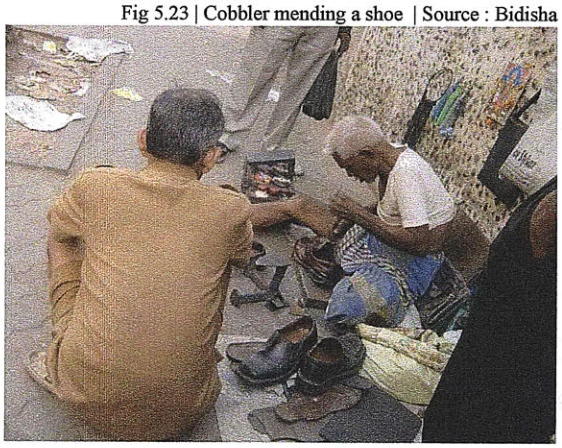


Fig 5.23 | Cobbler mending a shoe | Source : Bidisha



Type of interaction:

Integration of formal and informal commercial activities.

Benefit:

The integration of these two disparate sector of activities benefits both and on the whole makes a positive influence on the city.

The informal sector provides necessary services for the formal sector. While the formal sector sustains the informal economy and provides employment to a large number of people.

Fig 5.24 | Street side vendor selling food
Source : Bidisha

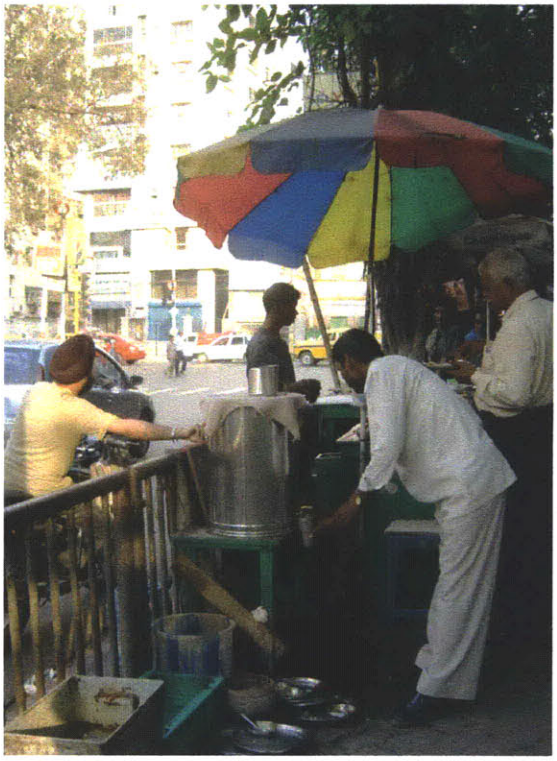
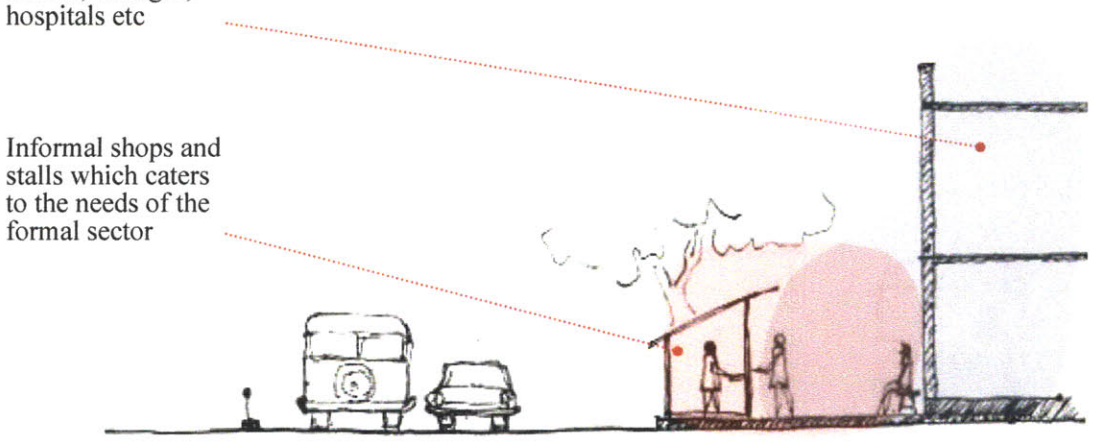


Fig 5.25 | Figure showing interaction of formal and informal commercial sector | Source : Author



IV. Interaction of private buildings with public space

As seen in the earlier case studies the interaction between the private built form and public space make the neighborhood more livable.

One important element is the portico. It is a part of private building that extends over the public space. Many of these were built before the present building laws prohibited them. They offered comfortable walkable space for the pedestrian. It protected the pedestrian from rain and sun of the tropical climate as shown in Fig 5.27. Also, it provided the building owner a large expanse of terrace space for their private use.

Fig 5.26 | Porticos providing comfortable walkway on Ashutosh Mukherjee Road | Source : Bidisha

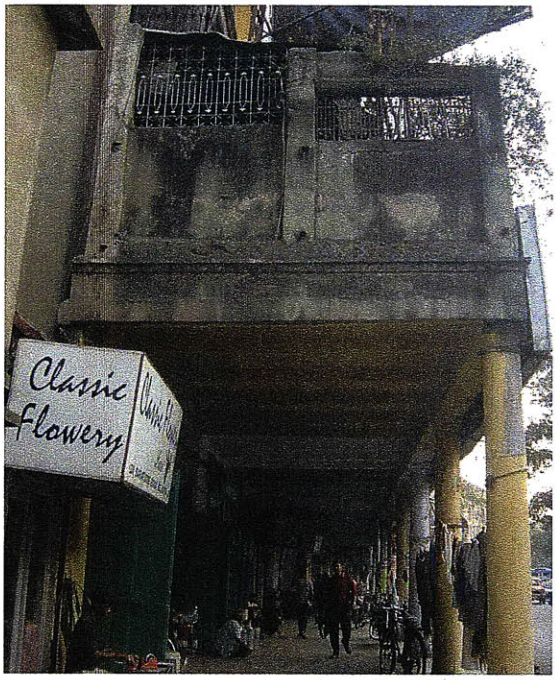
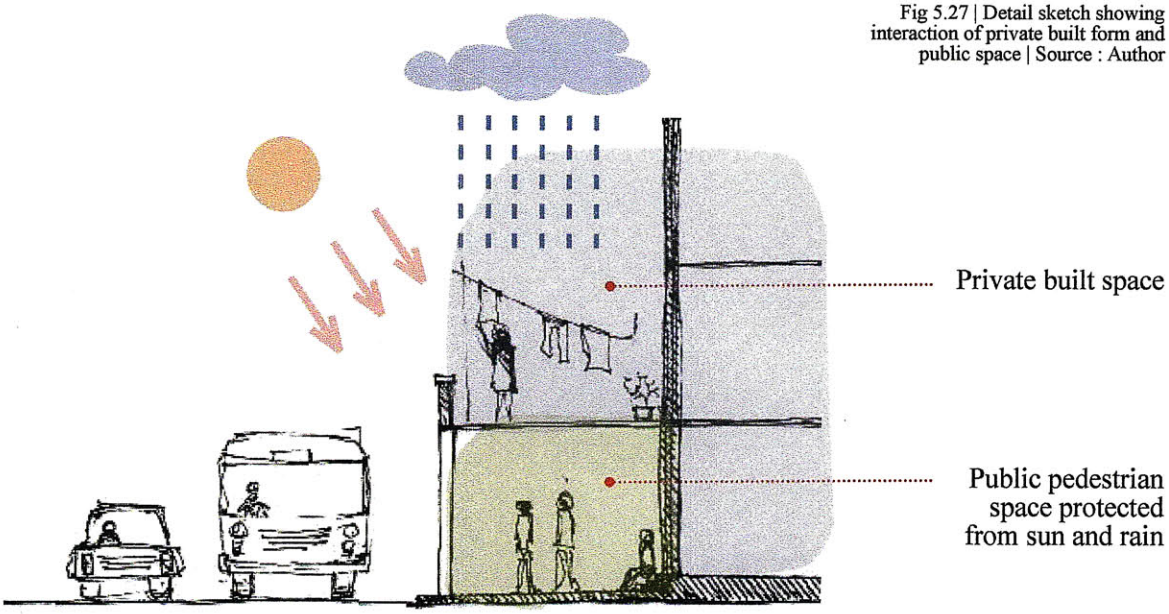


Fig 5.27 | Detail sketch showing interaction of private built form and public space | Source : Author



Similarly, the *rowks*[1] and stairs that came up to the street are interaction of private built form and public spaces. These interactions make the neighborhood more humane as they provide opportunities to the residents and the pedestrian to sit and rest when required. It encourages human interactions and helps forming relationship within the neighborhood.

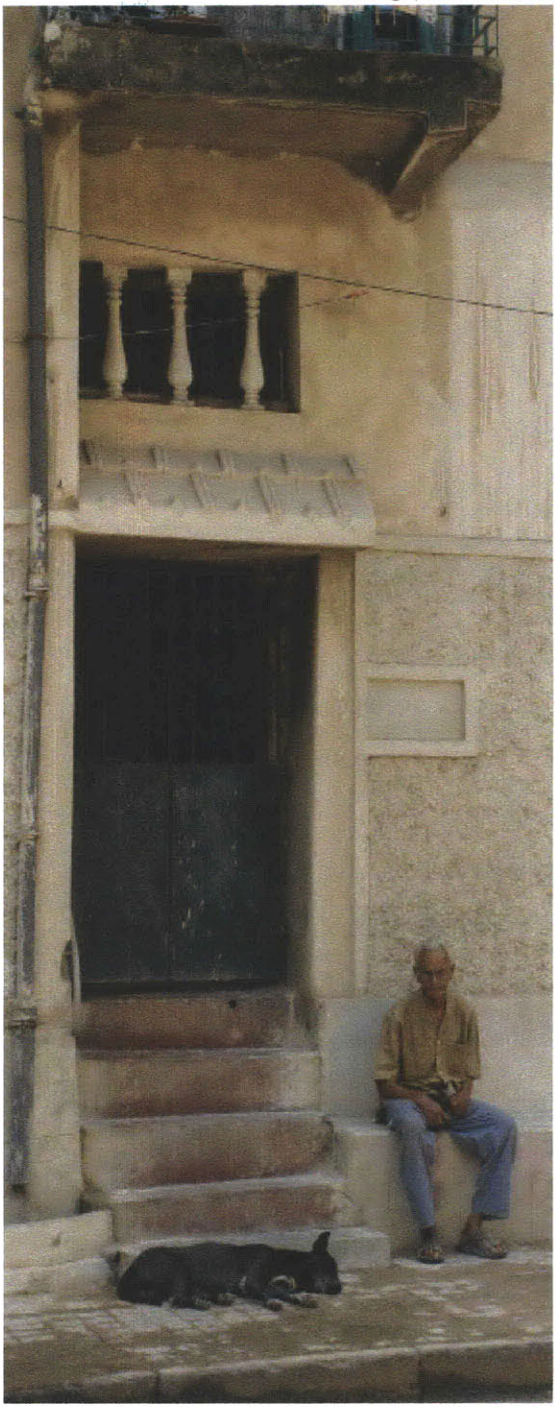
Type of interaction:

Encroachment of public space by private buildings.

Benefit:

These encroachments are one of the most important components of a livable urban fabric. They provides basic human comfort and catalyses the formation of relationships.

Fig 5.28-29 | People sitting on the rowks of the buildings | Source : Author



V. Interaction of trees with urban activities

Fig 5.30 | The Gair baranda projecting on the sidewalk of Bidhan Sarani | Source : Author

This area is comparatively more endowed with trees than the two other study areas. Most of the streets and roads are lined with lush green tropical trees. These trees create visually pleasing environment and also create a conducive micro-climate as seen in Fig 5.30. They create more livable streets and encourages pedestrian movement.

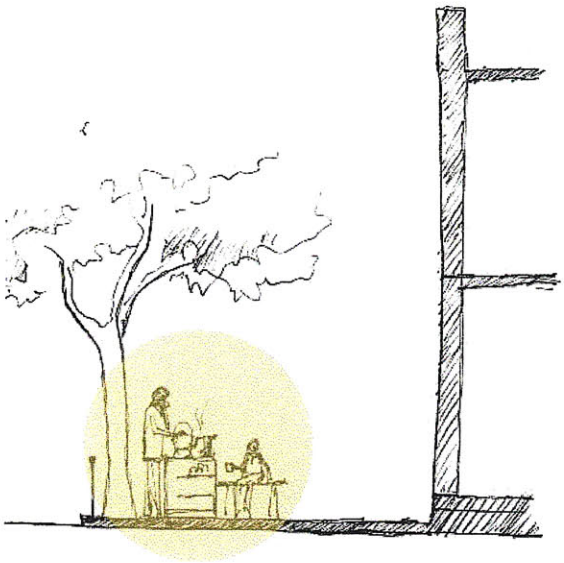


Fig 5.31 | Stall under the shade of the tree
Source : Author

1. Gari baranda - Bengali term for portico

Fig 5.32 | Stall selling fresh fruits under the shade of the tree | Source : Author

These trees also have great functional contribution to urban activities. The shops and stalls tend to locate themselves under the shade of the trees as we see in Fig 5.30-32. The trees provide shaded comfortable space for these activities. It is often found as a comfortable place to rest as we see in Fig 5.33 the rickshaw puller waiting under a tree.

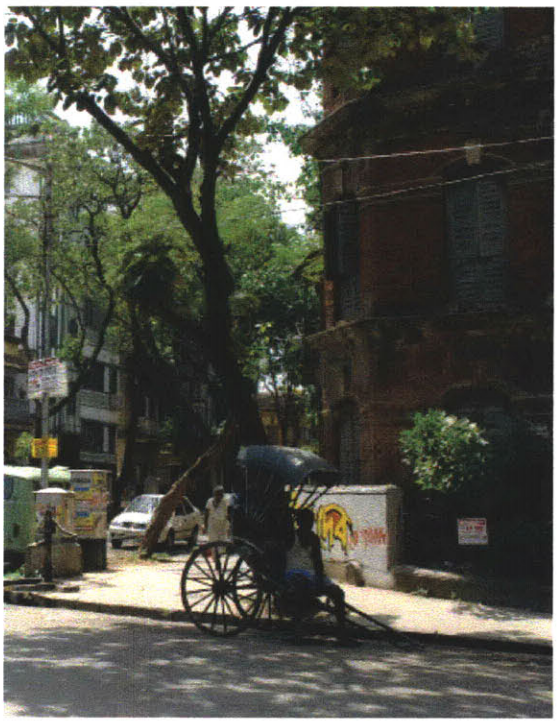


Fig 5.33 | Rickshaw puller resting in the shade of the tree | Source : Author

It is important to note that the trees have much deeper relation with the people, which has its roots in the spiritual domain. For most Indians nature have great religious significance and trees play an important role in this.

It is relevant to mention that the ancient Indian scholars realized the importance of trees in human society more than five thousand years ago. They have used religion as an instrument to encourage the common people to embrace trees. In the neighborhood and also all through the city we find trees being worshiped as holy spirit. Often small temples are built to enhance the spiritual relationship.

Fig 5.34 | Small temple constructed under a tree encroaching public pedestrian space | Source : Author

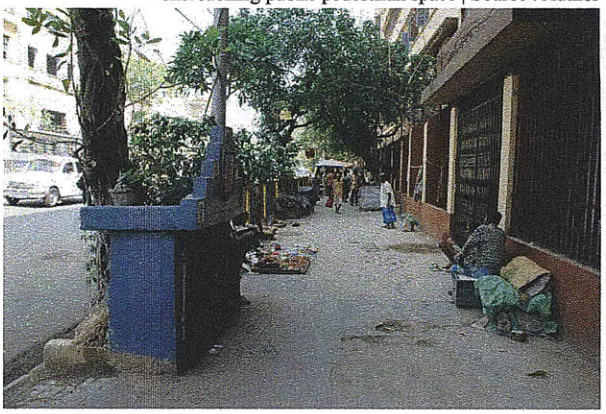
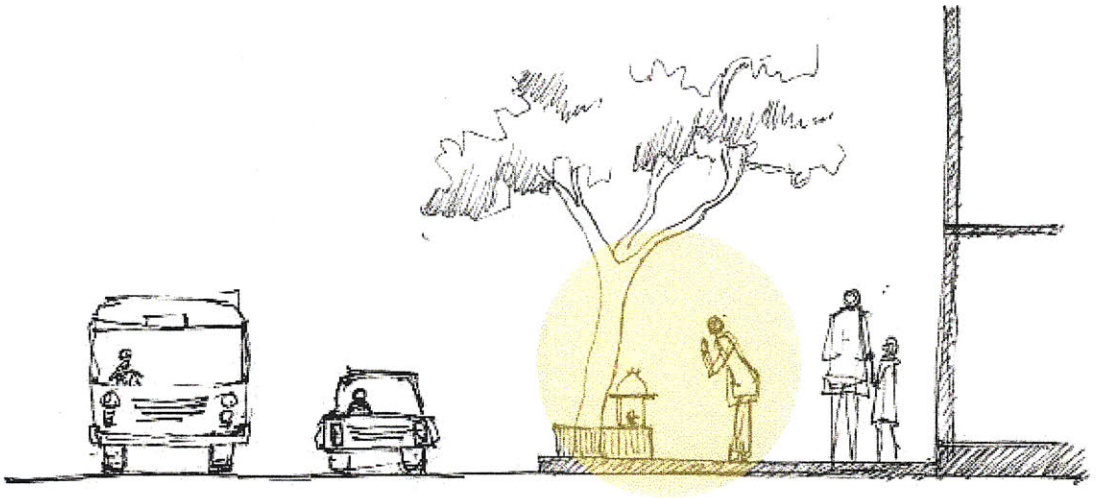


Fig 5.35 | Sketch showing pedestrian offering a brief prayer in the temple constructed under a tree encroaching public pedestrian space | Source : Author



Type of interaction:

Integration of nature and urban elements

Benefit:

The integration of trees in the urban fabric creates a more livable and visually pleasing space. It provides shade and create comfortable microclimate that encourages pedestrian movement. It provides space for resting or other activities. And finally have deep spiritual connection with the people.

Fig 5.36 | A person selling green coconuts under the shade of a tree | Source : Author

Fig 5.37 | Street vendors selling food under the shade of the trees | Source : Bidisha

d) Conclusion

After the detail analysis of the various interactions within the neighborhood we find that the richness of the urban fabric is greatly enhanced by these interactions. From the table Tab 5.01 we observe that the neighborhood is rich in all categories of interactions that are

1. Interaction of different transportation modes
2. Interaction of built form with open spaces
3. Interaction of different activities
4. Interaction of Nature with urban elements

These four categories of interactions make this area a livable and ecologically sustainable neighborhood. Thus the neighborhood performs with satisfaction despite lack of many basic facilities such as street furniture etc. The benefits they create are following :

1. Reduces vehicular speed and discourages private vehicles.
2. Improves walkability and encourages pedestrian and other non-mechanical modes
3. Encourages shopping and other commercial activities thereby sustaining local economy
4. Reduces pollution and fuel consumption
5. Encourages human interactions and creates sense of belonging.

However the total number and type of interactions were much less than our first two study areas. As this area has more new constructed buildings the old urban form encouraging interactions is largely destroyed. Thus along Ashutosh Mukherjee Road vendors were observed selling their stuff in much poor condition than that of Bidhan Sarani. All along the sidewalk the high boundary walls created an un-welcoming and uncomfortable condition. The inner streets and lanes also lacked the articulation of that of Shyampukur Para. The probable reason is that this neighborhood was the European part of the city during the British rule. The area also does not have any water body as they were all filled up during the process of urbanization. As a result the area suffers from water logging problems during the monsoons.

The neighborhood provides us with a combination of different interactions some of which are present while some absent. If carefully recreated in new developments these interactions have the potential to generate a lively and inclusive neighborhood.

Tab: 5.01 | Table of different types of interactions within the neighborhood

Interaction	Category	Type	Benefits
Mechanized with non-mechanized modes of transportation	Modes of transportation	Integration	1. Improves accessibility 2. Improves walkability 3. Reduces pollution 4. Reduces fuel consumption
Street furniture and neighborhood activities	Private and public space	Encroachment	1. Improves livability 2. Provides basic comfort
Formal and informal commercial activities	Different types of activities	Integration	1. Supports larger economy 2. Provides employment 3. Provides basic needs to the people
Private building with private space	Private and public space	Encroachment	1. Improves walkability 2. Improves livability 3. Reduces fuel consumption 4. Reduces pollution
Trees with urban activities	Nature with urban elements	Integration	1. Improves visual environment 2. Encourages pedestrian travel 3. Improves livability 4. Provides spirituality

Chapter 6.

Conclusion

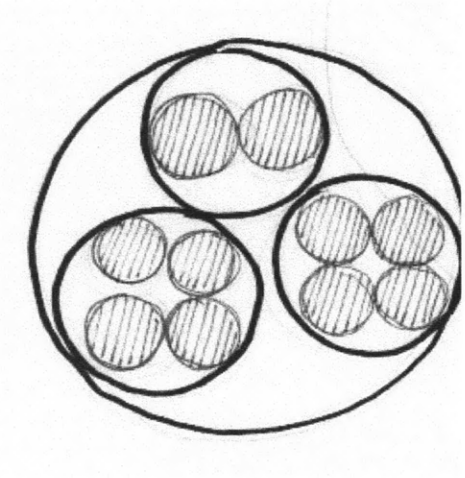


Fig 6.1 | Schematic diagram of Zoning | Source: Author

6. Conclusion

A. Summation of observations

B. Interaction of nature and urban elements

C. Interaction of built form with open spaces

D. Interaction of transportation modes

E. Interaction of residential and commercial activities

F. Conclusion

Summary

This chapter presents the inferences of the different observations and their analyses during the three case studies. It starts with a description of the observations highlighting the paradigm shift required in the discipline of urban planning and design to create humane and ecologically sensitive cities. Finally it presents the detailed findings grouped in four categories and how they may provide a new palette for a new paradigm in urban design.

A. Summation of Observations

The thesis started with the hypothesis that interactions of different elements and activities within neighborhoods in old cities such as Kolkata make them more livable than that of the new cities. The objective of the thesis was to identify a new design paradigm from the vernacular urban fabric, and aspects that can be adopted to create new cities which will be more humane and inclusive.

After the detailed study of three neighborhoods certain interesting aspects of urban fabric of these areas have been observed. In many cases the observed conditions were in contradiction to the general principles of the modern urban design and planning. And in some cases certain aspects were observed that are completely ignored or overlooked by modern designers.

After the study and subsequent analysis we can infer that there is one fundamental difference between old and new cites. The modern approach is to segregate different elements and activities, while in old cities these interacted with each other and created the livable conditions. Thus modern designers should endeavor to achieve more interactions in the urban fabric.

During our education and practice of urban planning and design we learn and practice some well defined rules and principles. Some of these are so inherent and we are so conditioned that we accept them without any doubt. Some examples of accepted rules are - roads must be parallel, cars should be on the roads while the people on sidewalk, there should be lots of open space, private property should not encroach public space, etc. However in the neighborhoods of the case studies these rules are often violated, yet they rarely failed to satisfy the needs of the people. On the contrary they were visibly more successful than the new neighborhoods that have been created by following the modern rules and principles (Fig. 6.2-6.3.)

This intriguing observation challenges the very philosophy of modern planning and design, that is to impose artificial order and rules on human society. It attempted to achieve that by segregating different activities and elements and organizing them to achieve order and efficiency. Eventually this approach failed to create the desired effects and in most cases it ended in inhumane sterile conditions. Thus the endeavor to invent a perpetual form that will function perfectly forever has failed till now.

Fig 6.2 | The lifeless new town of Rajarhaat constructed as an extension of Kolkata by the government on 1990
Source: http://www.wbhidcoltd.com/

Fig 6.3 | The vibrant and lively Shyampukur para, an old neighborhood of Kolkata | Source: Author

On other hand in the neighborhoods that were studied, it was interactions that enlivened the space. It was interaction of different types among different urban elements. Sometimes it was integration, sometimes overlapping and at times encroachment. To a modern urban designer the condition of these neighborhoods may appear completely chaotic. People walking on the streets, cars parked on the sidewalks, private buildings encroaching public domain, commercial and residential activities all mixed up and above all apparently prehistoric vehicles plying on the streets. None of these are appreciated by modern urban designers as it conflicts with their institutionalized knowledge. But the thesis observations demonstrated that these were functioning better than the designed ones.

The situation was well portrayed by Jane Jacobs, when she cited the example of the North End in Boston. The fallacy of modern planning is well expressed from the words of her friend planner, *" ...I often go down there myself just to walk around the streets and feel that wonderful, cheerful street life..... But of course we have to rebuild it eventually. We got to get those people off the streets"* (Jacobs 1961, p10).

The same problem gets intensified in cases of developing countries. The whole cities in these cases appear to be unacceptable to the planners and architects of modern school. Thus they attempt to disregard the local knowledge and transplant the sterile design concepts that failed even where they have originated.

However reestablishing the failure of modern planning and design is not the purpose of the thesis. On the contrary the objective was to identify a new paradigm for future planners and designers that is rooted to the true aspirations and needs of the people. The study and analysis of the various neighborhoods highlight the aspects of the old neighborhoods that have been neglected or overlooked. These aspects have the potential to provide the modern designers with a new palette to create more livable cities.

The study focused on various interactions in the neighborhoods that make them livable. During the initial study these interactions were grouped into four categories:

1. Nature and urban elements
2. Built and unbuilt spaces
3. Transportation modes
4. Residential and commercial activities.

The analysis of the observations showed that these interactions encouraged and facilitated the following positive qualities in the neighborhoods.

1. promote accessibility for all
2. encourage pedestrian movement
3. reduce private motor vehicles
4. reduce fuel consumption
5. reduce pollution
6. increase social interaction
6. create more pleasing environment
8. create employments
9. sustain local economy
10. maintain ecological balance
11. create equity and inclusiveness

In the following portion the insights obtained from the study and analysis have been summarized according to the four categories.

B. Interaction of nature and urban elements

This is the first and probably the most important aspect that a planner or urban designer needs to consider. It is to integrate the city with the natural systems and forces. Indian scholars realized the necessity more than five thousand years ago but unfortunately the modern planners have barely paid attention to this issue. Even in the Garden City movement the focus was merely to put more trees and green belts. The interaction of these elements with the urban fabric was not championed. The emphasis on different aspects of nature such as wind direction, ground water etc was also absent. From the study of the cases it was observed that interaction of natural elements with urban elements created a more livable place where residents had a meaningful relation with nature. It was also observed how the trees play an integral role in the life of the people of the neighborhood.

Paikpara, only one of the three neighborhoods, retains the geo-morphological character of the region. This regional character is presence of many small water bodies that have significant role in maintaining the ecological balance of the region. The neighborhood have developed around these water bodies and they play an integral role in the social life of the residents. These also help in sustaining the ground water level and act as catchments for the monsoon rains. While in the other two neighborhoods and also most of the city this character is missing, though from the old maps and present satellite image it is apparent that the whole region had the same geo-morphological character. During the process of urbanization all these water bodies were filled up, as a result most parts of the city suffer from major water logging during monsoons. While this neighborhood is one of the very few areas which does not have water logging problems. However it should be mentioned that the water bodies in Paikpara are also in poor condition, both the civil authorities and residents should be more proactive in maintaining them.

The insight that are learnt from the case studies is two fold. First it shows the importance of comprehending the natural system of the region and designing the city in harmony with those forces. The second lesson is to understand the culture and tradition of the residents and integrate the natural elements in manner that is meaningful and beneficial to the community.

It is common in new cities to have ample trees and open spaces. But they lack interaction with the people and they are not integrated with their activities. To achieve this interaction it is important to comprehend local traditions, customs, and beliefs. As an example of integration Fig 6.4 -6.5 illustrates that placing a tree with a podium and small space is more beneficial than providing the typical row of trees along the sidewalk with no space for activities. The space shaded by the tree becomes a neighborhood interaction point for host of activities such as a place to worship, or a tea stall or a gathering place etc.

Fig 6.4 | Typical layout of street trees that lacks interaction with neighborhood activities | Source: Author

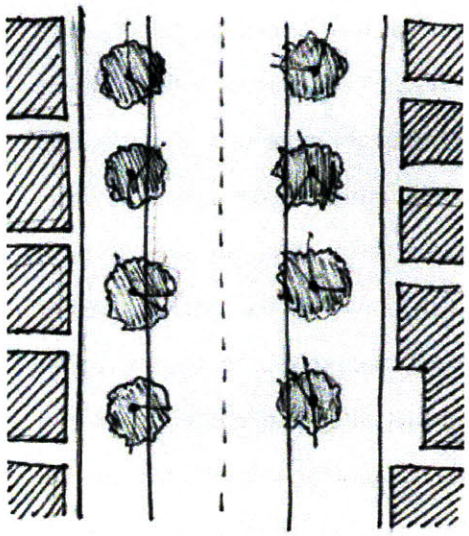
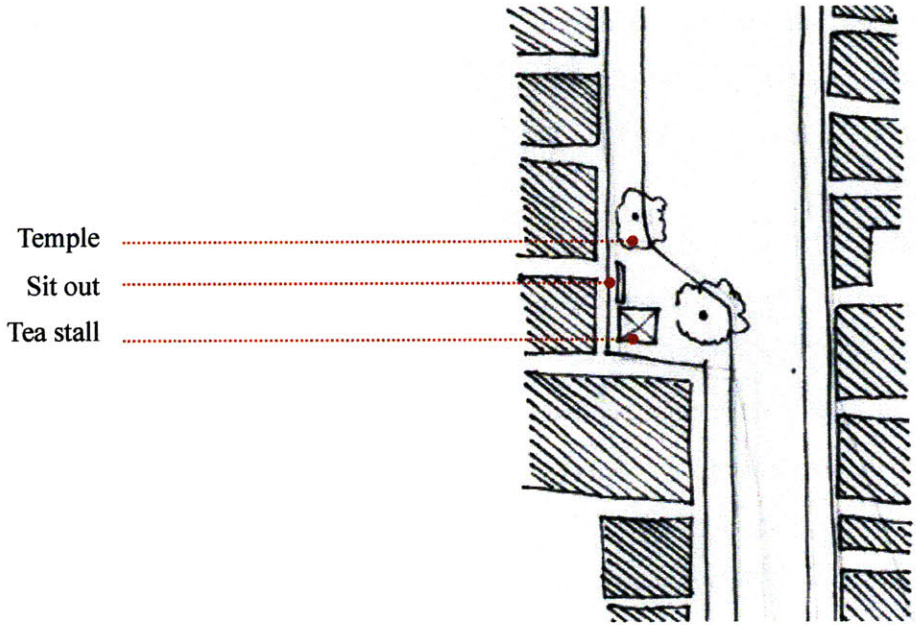


Fig 6.5 | Alternative layout where trees are integrated with neighborhood activities such as sitouts, tea stalls | Source: Author

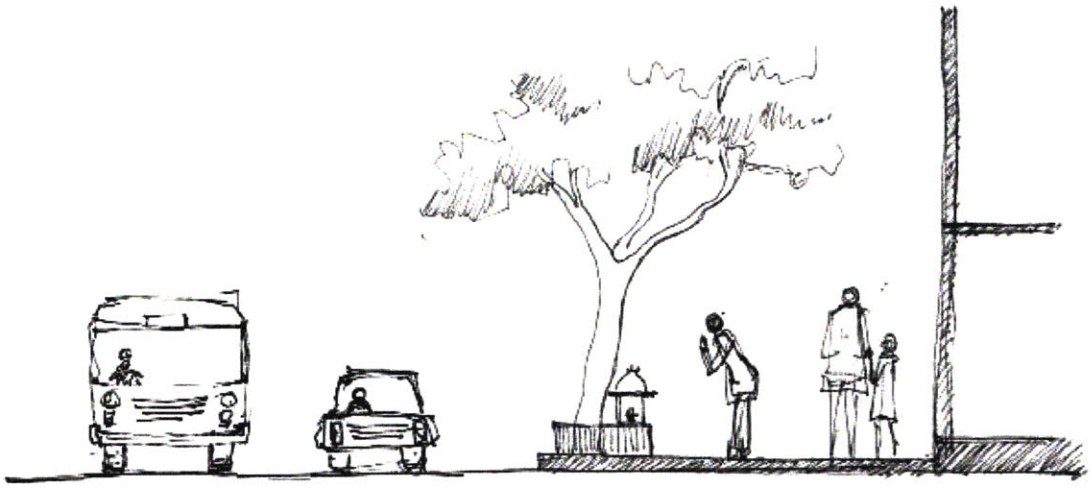


Through the case studies we also realized that elements of nature such as water bodies and trees are deeply rooted to the spirituality of the Indian society. A sensitive designer needs to realize and create urban fabric that provides the opportunity for the residents to cultivate their spirituality.

Thus we can conclude that it is important not only to providing natural elements but it should interact with the urban fabric encouraging integration of the people and activities with nature.

Fig 6.5 | A tea stall and temple under a tree on the sidewalk | Source: Author

Fig 6.6 | A pedestrian offering prayer to a temple under a tree on the sidewalk | Source: Author



Tab: 6.01 | Table of interactions between nature and urban elements

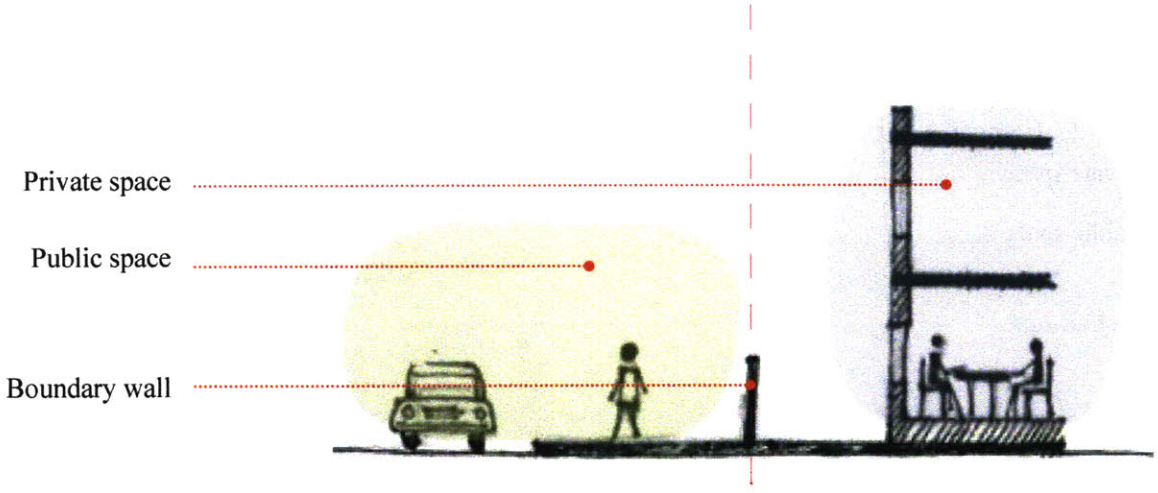
Interaction	Category	Type	Benefits
Natural waterbodies in urban space	Nature and urban elements	Integration	1. Prevents waterlogging 2. Comfortable micro-climate 3. Social interaction point 4. Replenishes groundwater 5. Provide employment 6. Potential for local supply of water
Trees with urban activities	Nature with urban elements	Integration	1. Improves visual environment 2. Encourages pedestrian travel 3. Improves livability 4. Provides spirituality
Trees and neighborhood activities	Nature and Urban	Integration	1. Provides visual relief 2. Improves micro-climate 3. Catalyzes neighborhood activities

C. Interaction of built form with open spaces

The interaction between built and open spaces is a very delicate issue that the planner and designers should tread with great caution. There are number of different issues involved in this kind of interaction. The planners need to revisit these issues and carefully come with creative solutions where the two domains can interact in a positive way.

First, it may be interaction between public and private ownership. The prevalent approach is to clinically segregate both the domain such that they do not infringe upon each other. Fig. 6.00 shows that how according to the present building laws the two domains get completely segregated. As according to the laws, one has to provide some front open space, the owner usually puts up a boundary wall or fencing, isolating himself completely from the public domain. This deprives both domains from the benefits that we observed during the study of the neighborhoods.

Fig 6.7 | The present building rules segregates public and private spaces | Source: Author

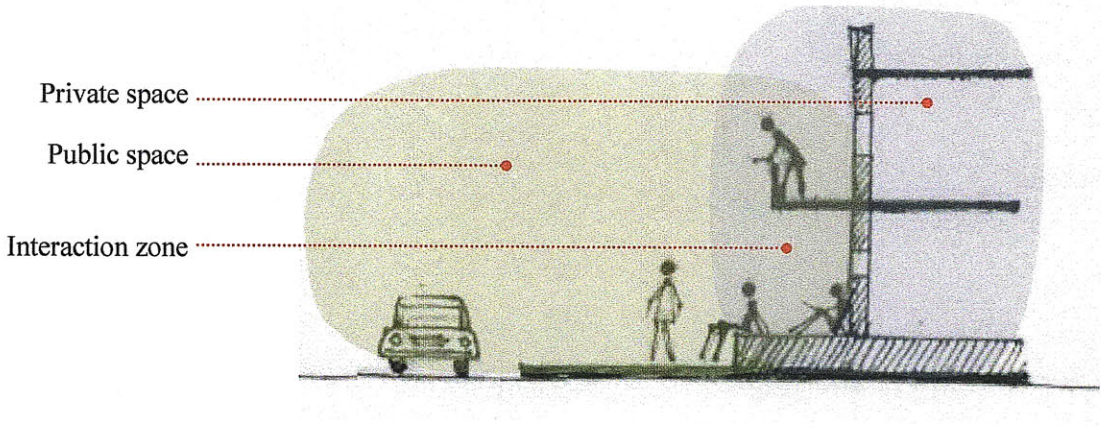


The primary benefit of this kind of interaction is formation of close knit neighborhood where the residents have attachment with the neighbors and the neighborhood. The challenge for the designer is to build an urban form which catalyses human interactions. It is possible to encourage this interaction through the elements such as porches, porticos, podiums (rowk), etc., which make the people more extrovert. These urban elements often perform as more effective street furniture. Thus the planners need to promote laws that encourage these structures and discourage boundary walls.

Apart from the social benefits to the neighborhood, these interactions also benefit the individual residents as they create spillover spaces for the interiors. This is especially important for the socioeconomic condition of India, as many people live in houses that are too small to comfortably house the family. In those cases the external space where indoor activities can spill over provides the residents more comfortable living conditions as seen in Fig 6.8.

During the studies the best interactions were observed in Shyampukur para where the porticos and rowks were widely used by the residents. In Bhowanipur there were some such interactions, but in Paikpara the lack of buildings built before the present building laws resulted in less interactions. However, it was present in a different manner in the semipermanent buildings of the low income people.

Fig 6.8 | The interaction between public and private space that enlivens the neighborhood | Source: Author



Second, the interaction of built form with the streets involves street layout, height, form and position of the buildings. It is almost a universally accepted convention that two sides of all streets should be parallel. Even if the street is curved the width remains constant. Interestingly during our study we found that varying the width of the streets catalyses different activities that enliven the neighborhood. Fig 6.9 illustrates how a sudden increase in the width of a street creates urban space that contains several activities. It should be noted that providing a large open space might not serve the same function. On the other hand Fig 6.10 illustrates how a sudden decrease in width of street creates buffer between different kind of activities. These interactions were more often observed in Shyampukur para, than in Bhowanipur and Paikpara. Perhaps this is because it is one of the oldest neighborhoods where the Indians used to live during the British rule. Bhowanipore was predominantly an European neighborhood, and Paikpara was not urbanized till early 20th century.

Fig 6.9 | Narrow portion of street act as buffer between residential and commercial activities | Source: Author

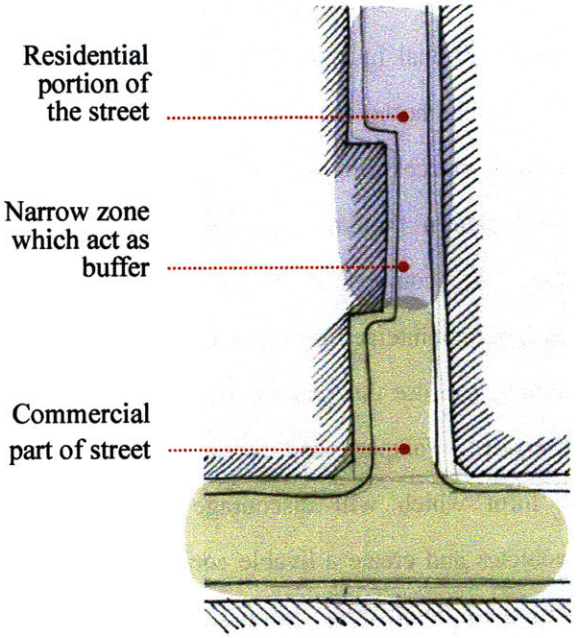
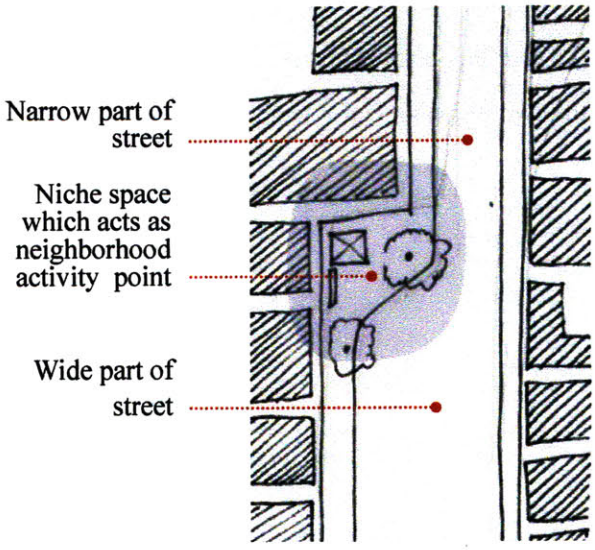


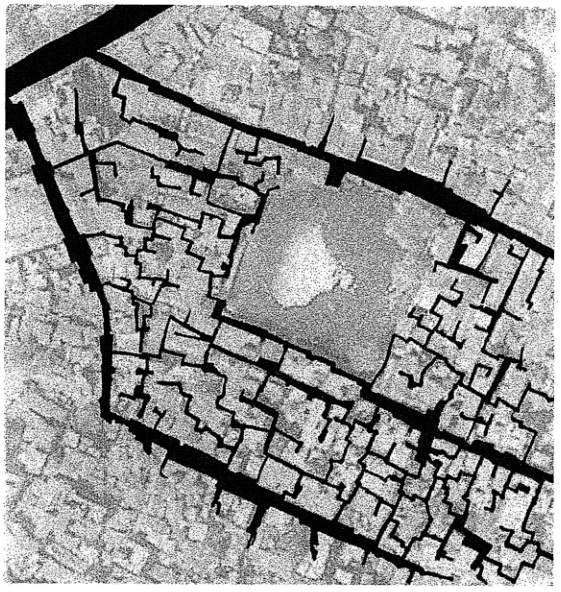
Fig 6.10 | Varying width of street create niches which act as neighborhood activity points | Source: Author



Also the spatial organizatin of the streets and the houses in the studied neighborhoods reveal some unconventional insight. The inner streets in these old neighborhoods were often narrow, tortuous and inaccessible by motor vehicles. This street pattern though not conventionally acceptable, is completely pedestrian and encourages human interactions. Modern planners and designers can use this pattern shown in Fig 6.11 observed in Paikpara, and evolve it into a modern form which will discourage private motor vehicles and create a livable community. This pattern of layout also encourages a mix of residents from different economic strata, which provide local employments and reduce transportation.

Thus the planners need to revisit these issues and carefully come with creative solutions where the two domains can interact in positive ways

Fig 6.11 | Street layout of Paikpara which create a pedestrian friendly neighborhood | Source: Author



Tab: 6.02 | Table of interactions between built form and open space

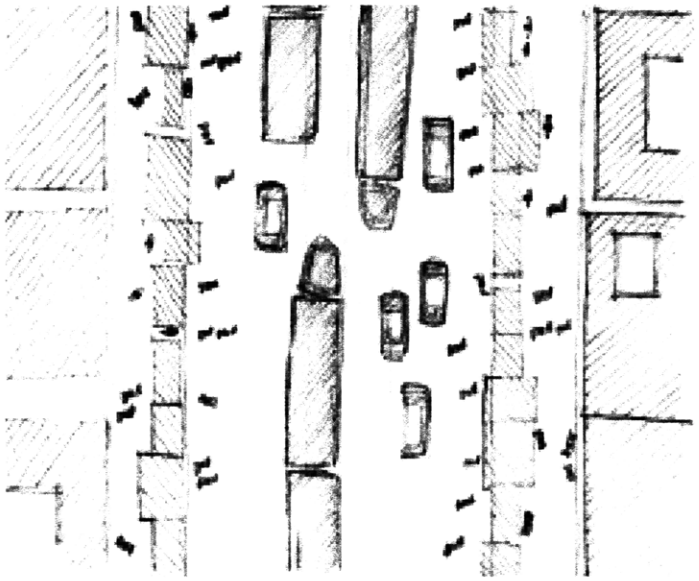
Interaction	Category	Type	Benefits
Private porticos with Public sidewalks	Public space with private space	Overlapping	1. Improves walkability 2. Encourages shopping street 3. Reduces pollution 4. Reduces fuel consumption
Temporary shades with the public sidewalks	Public space with private space	Encroachment	1. Improves walkability 2. Encourages shopping street 3. Reduces pollution 4. Reduces fuel consumption
Rowks with the streetscape	Indoor space with outdoor space	Transfusion	1. Improves residential character 2. Improves human interactions 3. Increases sense of belonging
Indoor space and outdoor space	Indoor space and outdoor space	Overlapping	1. Augments indoor space 2. Increases liveability 3. Encourages social interaction
Street furniture and neighborhood activities	Private and public space	Encroachment	1. Improves livability 2. Provides basic comfort
Streetscape with built space	Private space and public space	Overlapping	1. Improves walkability 2. Inclusive neighborhood 3. Creates employment 4. Reduces energy consumption

D. Interaction between modes of transportation

A well planned transportation system is one of the most important elements of a modern city. The modern transportation planners are working hard to find a solution to this eternal challenge. At present the primary target of the transportation planners is to reduce use of private vehicles and increase use of public transit, non-mechanical modes and pedestrian travel. The neighborhoods that were studied can be claimed to be more successful in this respect than most of the neighborhoods designed by the modern planners. More importantly the solutions that can be inferred from these neighborhoods are more appropriate to the Indian socioeconomic conditions and should be used more in the new cities that are being created. The insights learnt from these studies are three fold.

First, it is the concept of shared streets, which has already been adopted by modern transportation planners. In case of all three old neighborhoods the situation arose because there were either no sidewalks or they were encroached by shops, parking etc. But it was observed that these streets fulfilled their functions well, and people preferred walking in them than driving. The varying width of these streets and abrupt turns further discouraged the motor vehicles. This layout coupled with the interactive built form where people often sit outside on the rowks or stairs creates a warm and vibrant street character. A modern designer can get the inspiration from this layout while designing new cities, and can successfully create lively pedestrian streets where motor vehicles are discouraged.

Fig 6.12 | Schematic drawing of Bidhan Sarani showing the shared street character | Source: Author



Second important lesson is the transit network that covers a wide region. One of the greatest challenges of transportation planners is to provide the option of public transit to all, at all key times and in all places. In most cases this becomes practically impossible due to financial constraints. Light rail which is one of the best public transit system, is prohibitively expensive and very few cities can have a wide network such as Tokyo and New York. In the case of public buses usually the limitation is the frequency at which they can be operated to have minimum losses. Thus, often large sectors of the city do not get served by frequent public transit for certain time of the day. In Kolkata we have only one single subway line running from north to south of the city. But as we observed in Paikpara, all distant neighborhoods are connected by secondary mode of transit, the auto-rickshaws. These auto-rickshaws ply from the subway stops to different areas. The advantages of these vehicles are that they require very little investment in infrastructure and their frequency responses to the necessity of the commuters. Thus they provide public transit practically to all, at all key times and in all places. Moreover this system is more suited to Indian socioeconomic conditions as they provide employment to many people.

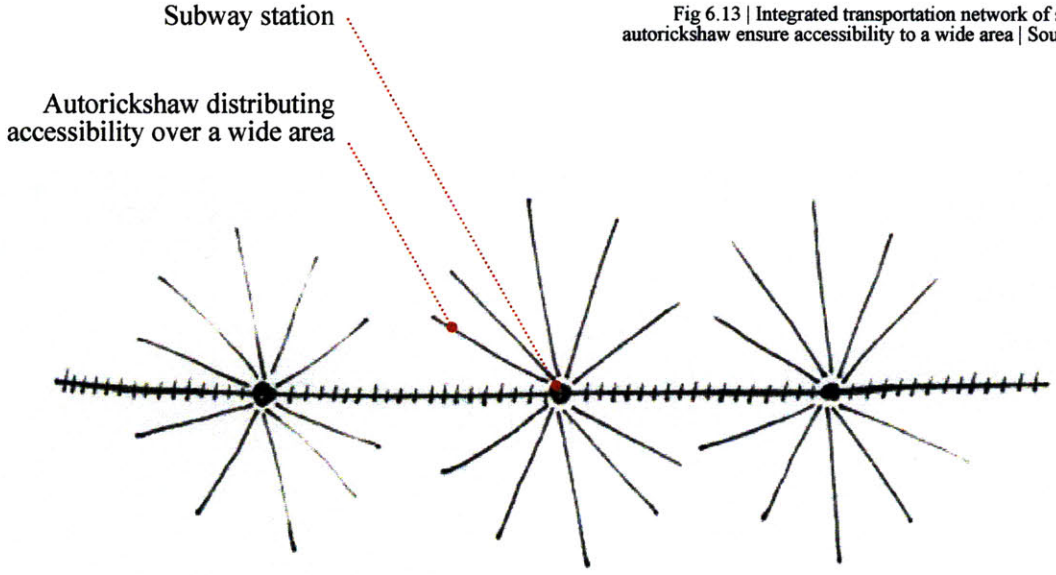


Fig 6.13 | Integrated transportation network of subway and autorickshaw ensure accessibility to a wide area | Source: Author

Third, is the use of non-mechanized mode of transportation such as rickshaws, hand carts and bicycles in the cities. Though bicycle is embraced by modern planners, the other vehicles are usually considered to be outdated, and are never present in any transportation plan. But from our study we observed in all three neighborhoods that these vehicles are very suited to the socioeconomic condition of the country and can be a viable option to reduce the energy footprint of transportation.

Thus we can infer that a transportation system which have both the mechanized and the non mechanized modes integrated performs better in providing widespread accessibility in cities.

Tab: 6.03 | Table of Interactions between modes of transportation

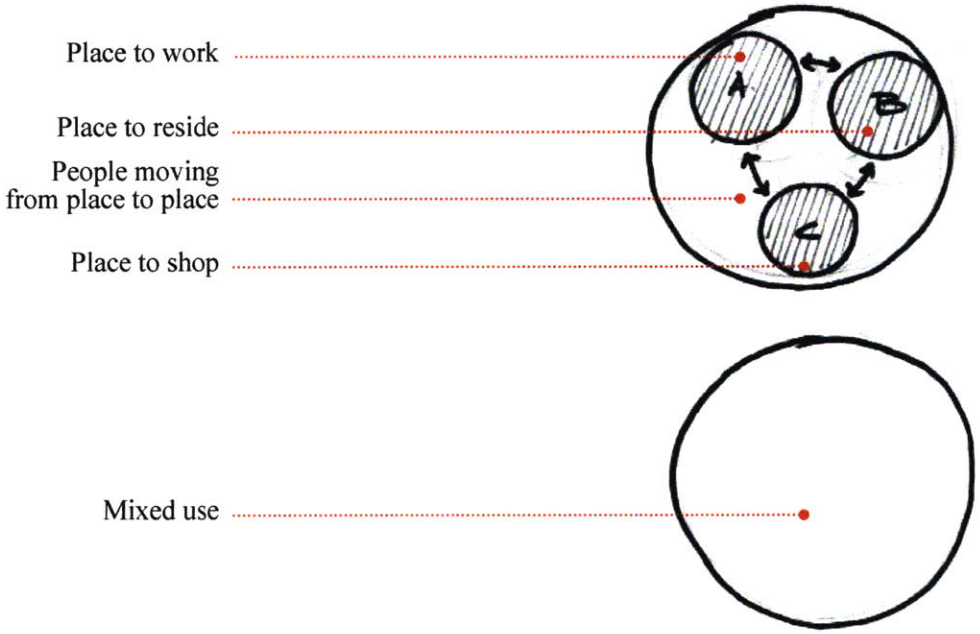
Interaction	Category	Type	Benefits
Pedestrian sidewalk with vehicular carriage way on main road	Modes of transportation	Encroachment	1. Reduces vehicular speed 2. Improves walkability 3. Encourages shopping street 4. Reduces pollution 5. Reduces fuel consumption
Pedestrian sidewalk with vehicular carriage way in inner streets	Modes of transportation	Transfusion	1. Reduces vehicular speed 2. Improves walkability 3. Encourages residential character 4. Reduces pollution 5. Reduces fuel consumption
Motorized and non motorized transportation modes	Modes of transportation	Integration	1. Reduces vehicular speed 2. Improves walkability 3. Increases accessibility in narrow lanes 4. Reduces pollution 5. Reduces fuel consumption
Subway transit network with informal network of autorick-shaws	Modes of transportation	Integration	1. Reduces private vehicles 2. Encourages public transit 4. Reduces pollution 5. Reduces fuel consumption
Pedestrian urban space with vehicular carriage	Modes of transportation	Encroachment	1. Reduces vehicular speed 2. Improves walkability 3. Encourages residential character 4. Reduces pollution 5. Reduces fuel consumption

E. Commercial and residential activities

Through study of the neighborhoods we observed some interesting patterns of human activities which successfully sustain each other. The observations can help future planners to devise principles for more effective organization of activities, especially for new cities in India.

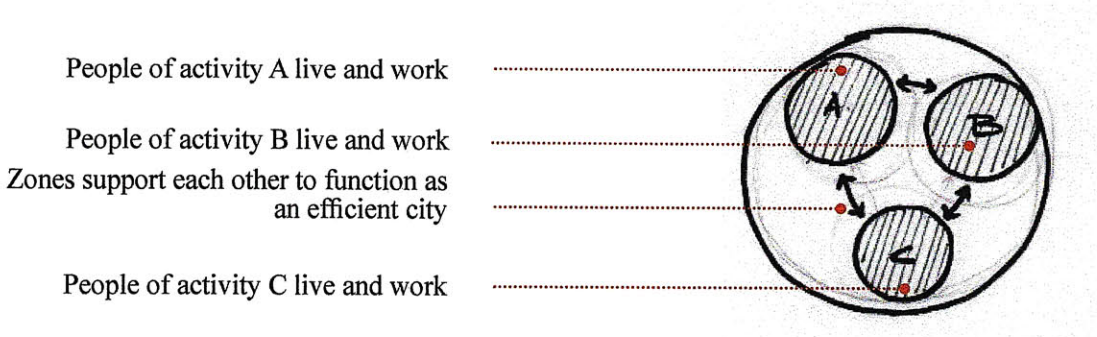
Cities are not only a place where many people live, but also a large agglomeration of different types of human activities. The necessity of organizing different activities to create efficient and livable cities has been realized by planners for a long time. Modern planners from the very onset of Garden City movement have proposed plans of cities with distinct zones based on different human activities such as place to work, place to reside, place to shop etc. This basic principle is illustrated in Fig. 6.14, from which we can apprehend the segregation created which have many undesirable results and has been criticized largely. At present planners are advocating for mixed use developments but does not postulate any concrete principle to organize the complex activities of the city.

Fig 6.14 | Two modern principles of zoning, first it was segregated according to activities and people had to travel from one zone to other. The present planners are advocating for mixed use without any definite philosophy | Source: Author



Before the beginning of the field study it was observed in the literature that the ancient scholars of India have postulated various zoning principles which were fundamentally different from those of modern planners. A critical analysis of those principles going beyond the religious coding will reveal a pattern which is based on sound logic and reason. The core principle allowed people to live and work in the same place, but grouped the people of related occupation in separate zones, and thereafter organize these zones to create an efficient city. Fig. 6.15 illustrates the basic principle schematically. It may be noted that Patrick Geddes also highlighted the relation of Place, Work and Folk and propagated the importance of creating proper relation of the three for a successful city. (Stalley 1972, p77)

Fig 6.15 | Ancient principle of Zoning where people of different activities were grouped together and they lived and worked in the same zone, and each zone supported each other in functioning as the city | Source: Author

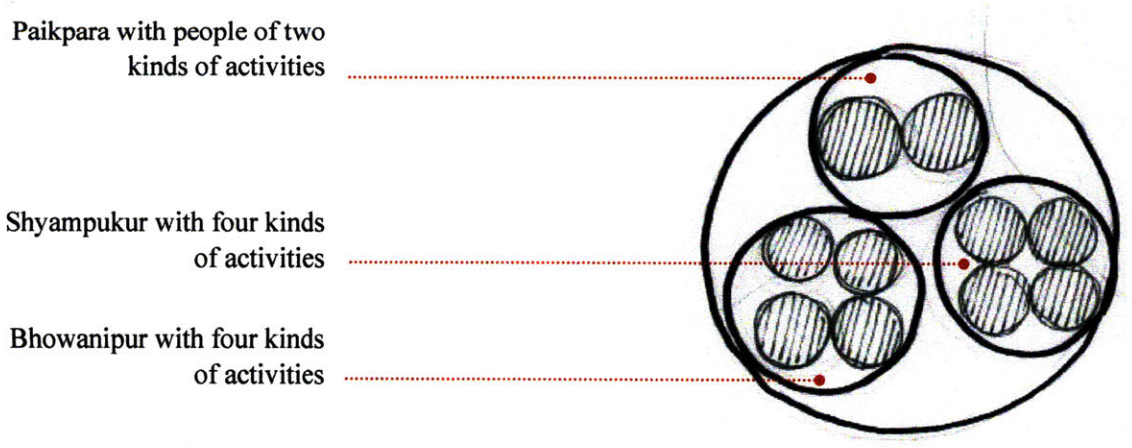


Through our case study a certain pattern of activities were observed which can be related to the basic principle stated above and is illustrated in the Fig 6.16. In Shyampukur para, the first neighborhood, we found people of the following four broad group of activities. First, a group of people resided there and went to work outside the neighborhood. Second, another group of people lived there and worked in the shopping activities. Third was the group of people who came there to do the shopping, and fourth is a group of people who lived and worked there to fulfill the needs of the above three groups, such as the cobbler, washer man etc.

In Paikpara, the second neighborhood, we found mainly two types of activities. First it was the group of people who lived there and worked outside the neighborhood. Second was the group of people who lived and worked there to fulfill the needs of the residents. And in our third neighborhood we find four groups again, first it is the group of people who reside there and work outside the neighborhood. Second, the group of people who reside there and work in offices in the neighborhood. Third, is the group of people who comes from outside to work in the neighborhood. And fourth, is the group of people who reside there and work to fulfill the needs of the above groups.

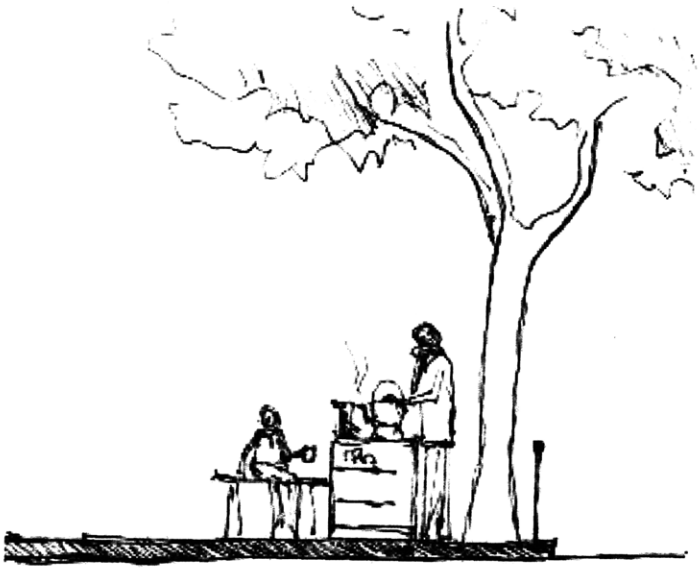
These categorizations are very simplified and generalized from field observations and local knowledge and does not have supporting data. But even from these observations we can identify a pattern in all of the three neighborhoods. It is pattern of intra-neighborhood and inter-neighborhood relationships of different activities. Each neighborhood has a self sufficient nature to certain extent and they support each other to form an efficient city. It must be realized that the complex functional pattern of the present cities such as Kolkata, will not be as simple as it has been illustrated here, but the core principle has the potential to serve as the basis of a more effective functional organization of future cities the cities.

Fig 6.16 | Present pattern of zoning in Kolkata in the selected neighborhoods | Source: Author



Another important observation during the case studies was the presence of a large informal commercial sector in all three neighborhoods. There is a large group of people who live and work in these neighborhoods to fulfill the needs of the other residents. These are mostly street vendors such as the barbers, cobblers, washermen, food and drink sellers etc who provide service to the people at very affordable rates. They form an integral part of the city, but are usually ignored by the modern designers and planners. In the old neighborhoods there were niches and spaces where these people can set up there stalls and sell there products. But the modern plans rarely provide space for this kind of informal commercial activities.

Fig 6.17 | A person selling tea and snacks in the neighborhood | Source : Author



Tab: 6.04 | Table of interactions between different activities within the neighborhood

Interaction	Category	Type	Benefits
Residential area with commercial activity area	Residential activities with commercial activities	Integration	1. Improves residential character 2. Improves commercial viability 3. Enhances livability
Residences with other activities	Residential activities with commercial activities	Transfusion	1. Makes neighborhood self-sustaining 2. Encourages pedestrian travel 3. Improves local economy 4. Reduces pollution 5. Reduces fuel consumption
Formal and informal commercial activities	Different types of activities	Integration	1. Supports larger economy 2. Provides employment 3. Provides basic needs to the people
Residential area with commercial activity area	Residential activities with commercial activities	Integration	1. Self-sufficient neighborhood 2. Improves human interactions 3. Enhances livability 4. Reduces travelling 5. Reduces fuel consumption and pollution

F. Conclusion

This thesis through extensive study and analyses endeavored to demonstrate how various interactions in the urban fabric of old neighborhoods of Kolkata made them more humane, inclusive and ecologically less harmful. It highlighted how these interactions of urban elements and activities of old neighborhoods have the potential to benefit new urban developments. And it calls for modern designers to study and realize the great potential of this new design paradigm which is based on increasing interactions in the urban fabric.

It should be mentioned that the neighborhoods selected have many urban problems that the study have not discussed. On a closer inspection even the positive aspects portrayed in the study have many limitations. For example, hand pulled rickshaws in Kolkata are criticized for being degrading to the puller, the autorickshaws have old engines which produce toxic pollutants, and water bodies in Paikpara are presently unhealthy breeding grounds for mosquitoes, etc. The list seems endless, but the objective of the thesis was not to ignore the problems. These problems have been well known for a long time, but usually the solution adopted is to completely replace this closely integrated urban fabric with a modern urban pattern that is dominated by segregation, which in the long run proves more detrimental.

This thesis strived to highlight the benefits of the old urban fabric, which is mostly ignored by the modern designers and planners. Through the analyses it showed that these interactive urban forms have much greater potential to create humane neighborhoods than the present form practised by the modern designers. Thus it calls for a more sensitive and well informed approach from the urban designers and planners to find creative design solutions that will recreate the positive aspects of these old neighborhoods in the new urban areas without the negative aspects.

Another important issue that the thesis attempted to highlight is the difference in the context of the developed and the developing world. The significance of the observations in this thesis is much more applicable in the context of developing countries such as India. Moreover, it must be noted that many of the observations presented here are specific to Kolkata and may not even be appropriate for other parts of India. The objective is to highlight the importance of

local vernacular urban character, which is related to the culture and tradition of the local people.

In the conclusion it can be stated that the thesis performs only the first step of developing a new urban design paradigm. It only highlights the potentials of the interactive urban fabric of the old neighborhoods. The actual process of applying creative design solutions that embody the positive aspects in developing new cities requires further extensive study and subsequent design development.

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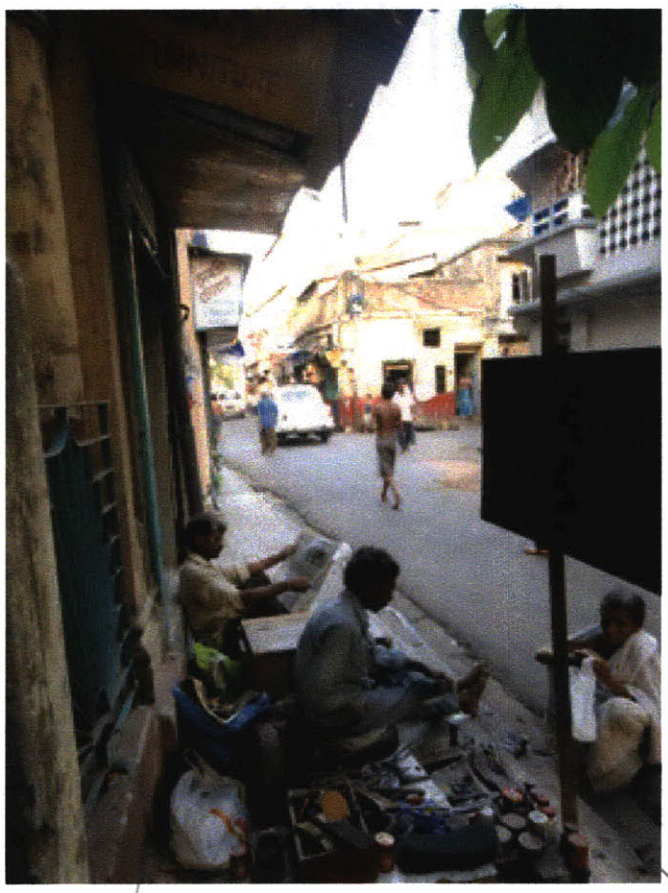

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Thank you