Imageability Continuum and Discreteness: Older Residential Neighborhood Areas of Kolkata.

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Abstract

Residential neighbourhood areas, which form a major bulk of a city's housing stock largely represent a city. Every neighbourhood is unique and is part of personal and collective memories of its residents. Visual and physical realities situate a neighbourhood in the territory of its urban myth through buildings and road networks, housing stock, incremental growth patterns, migration and (de)gentrification along with speculative development scenarios.
The present paper looks at the residential neighbourhood continuum and discreteness in the city of Kolkata from tangible and intangible standpoints. It tries to relate city structure and built forms through physical evidences and artistic constructs. The research culminates in development of a Rapid Appraisal Template for assessing the health of neighbourhoods which in turn affect their imageability and visual identity.

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1.   Introduction

Kolkata, a metropolitan city in Eastern India, has its organic and the planned parts juxtaposed with each other in an indistinguishable continuum. Like all old cities, the 'essence' of the city of Kolkata is largely found in its older residential areas. The city has a distinct spatial structure with a layered incremental development of neighbourhoods since the time of the city's existence, reflecting the historic evolution of the areas. However, in the process of transport corridors being developed, linking the entire city, with its old and new areas interwoven, the old areas sometimes come within transition zones facing the pressures of redevelopment and may be termed as the city's '***grey zones***'. This creates a constant interplay of a multitude of conflicting uses vying for the same space in the city evolving a collage of the old and the new. However, the nature of new development at times creates disharmony transforming the older fabric. But, in the collective memory of the residents of the city, the perception of many of these areas remains etched 'the way they were', rather than the transformed new look. Films and fiction set in the city further help in retaining these images. Diverse and complex urban issues emerge from the actual and the perceptual images.

This paper attempts to capture the multiple dimensions of these older neighbourhoods overlapping their physical entities with cognitive, artistic and imagined constructs. It further tries to document the process of **image generation, consolidation, disruption** and possibilities of **image retrofitting** of these older residential neighbourhoods, relating them with social, political and economic cycles.

2.   The Research Structure

Kolkata as a city has been documented and analysed from various social and spatial aspects. Yet another interesting area of research is in understanding the continuum and discreteness of older neighbourhood areas. The research relooks at the older neighbourhood definitions through **a four step process**:
  (i)   *Image Generation*: The historic development of the city is traced - its core and periphery dynamics creating strong images and identities of its discrete parts.
  (ii)   *Image Consolidation*: Based on the portrayal of the older neighbourhoods in (a) the cultural map of the area, (Films, Literature and Art works) (b) the mind maps of the

residents and (c) traditional neighbourhood activities (kitescapes), the perceived images are established.

(iii) **Image Disruption**: Tracing the nature of present development practices and regulatory framework which influence, and more often than not, disrupt the image of these neighbourhoods.

(iv) **Image Retrofitting**: Examining possible intervention mechanisms and tools to help retain the imageibility of these areas.

3.   Image Generation- Events Timeline

The city of Kolkata (erstwhile Calcutta, the capital of British India till 1911) is essentially a linear city, developed in the North-South direction with a river (River Hoogly) along its western edge. The city developed in fragments housing either the 'native' or 'white' population. The 'native parts' were geographically located at two disjointed ends of the town in the north and south, and the 'White Town' along with the British Fort occupied the geographical centre.

From the mid 19th to the early 20th century, many infrastructure development projects were undertaken in the city stitching the disjointed parts into a single linear whole. Major road, suburban rail and tram networks, sewerage & drainage systems developed as a result of setting up of the Calcutta Improvement Trust (C.I.T.) in 1911[1]. As a consequence, new roads suited to motorized vehicles tore open the organic network within the old town and infrastructure developed fairly in conformity with growth of population & activities.

The mid 20th century saw a change in the course of the urban development with the spilling out of the city to the periphery. Breakdown of available infrastructure by mid 20th century was a prime concern. The Calcutta Metropolitan Development Authority (CMDA) was set up in 1970 for preparation of a comprehensive development plan leading to an extension of the city area much beyond the City Corporation Limits. The construction of the Underground Metro Railway along a North South axis was another major impetus to the city's infrastructure development. The urban planning thrust shifted to new developed areas. These developments had an impact on the older city areas which witnessed out migration of original population from old city areas resulting in de-gentrification of the core. The pockets in and around the original 'native town' by virtue of their location, found themselves trapped between new transit corridors and newer development zones. The following time series maps trace the spatial development of the city through its different phases of growth.
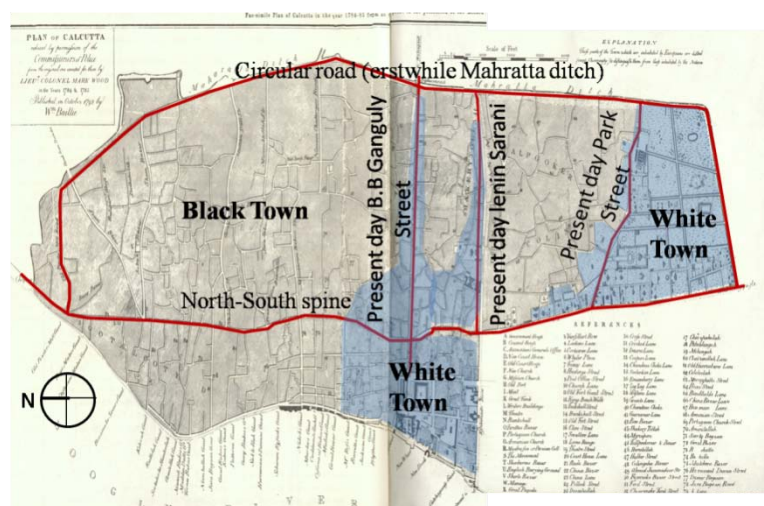

Fig.1 Mark Wood's 'Plan of Calcutta', 1784 showing the city boundary and North-South and East-West roads. These form the basis of future road network. (Source: NATMO Atlas [2])
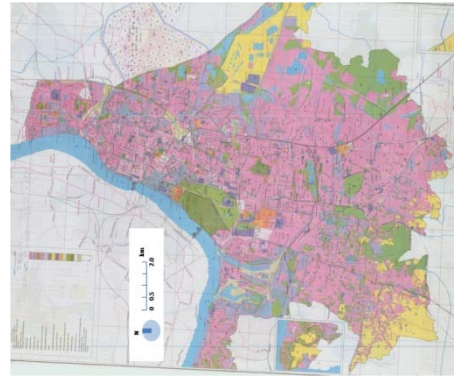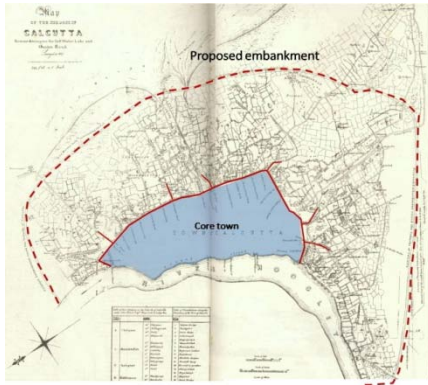
Fig. 2 & Fig. 3
Fig.2 Map of Calcutta suburbs, 1817 showing proposed embankment and roads radiating out of the core town. (Source: NATMO Atlas)
Fig.3 Present Kolkata Corporation area bearing resemblance with the 1817 'embankment' map of the city suburbs (Fig.2). (Source: NATMO, District planning Map Series, Kolkata)
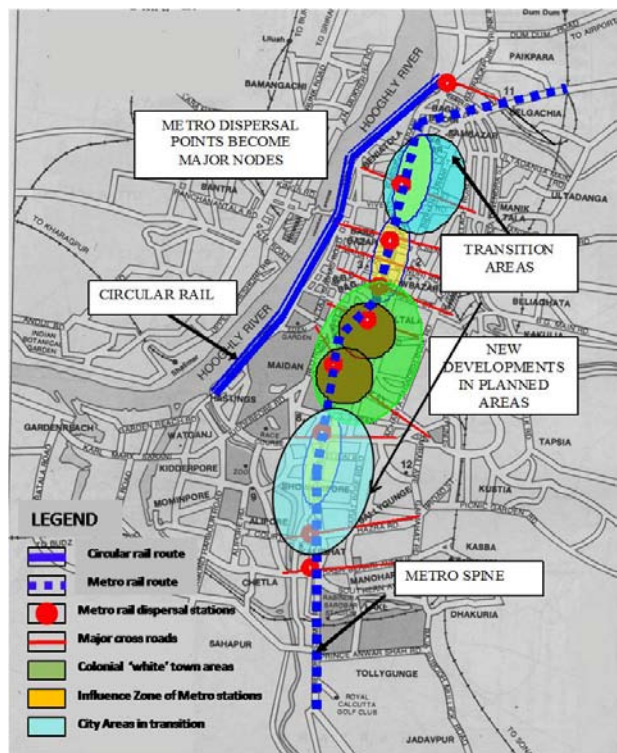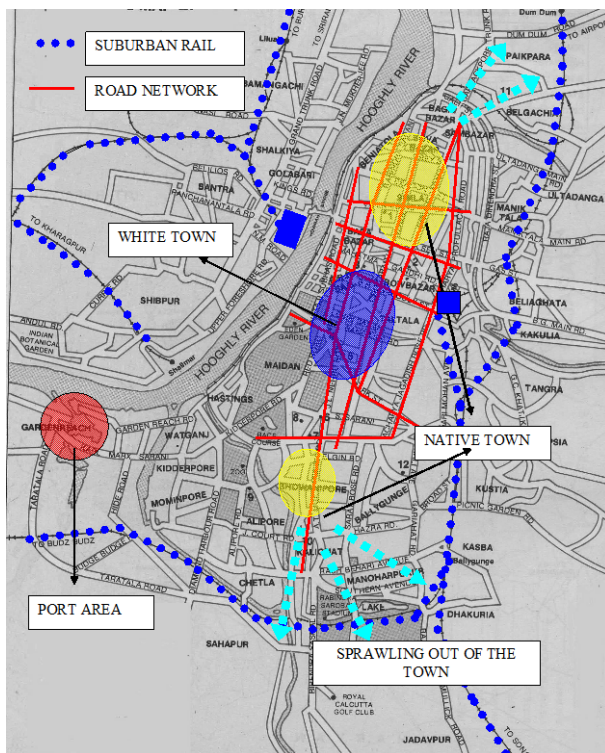

Fig. 4 Evolution of Transportation network and impact on city morphology

The continuum of the older residential areas in the city's fabric has been termed as 'grey zones' which are characterized by the following features:

- Old city districts, which have undergone/are undergoing considerable transformation already, and neither possess a large number of individual buildings of historic relevance to qualify as a historic district.
- Areas where the overall built form however retain a flavour of the past and can in no way be confused with the anonymous new development of the remaining city.
- Areas located near major arterial corridors/ commercial districts of the city, having strong forces of land use change and redevelopment acting upon them.
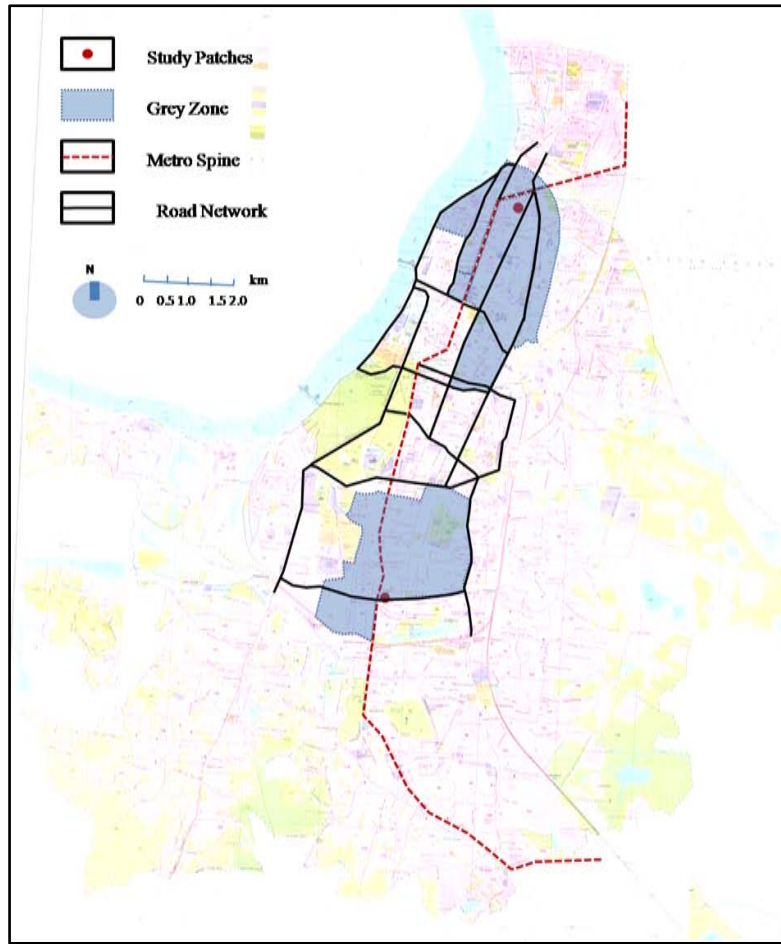
Fig. 5 'Grey Zone' delineation, study patches, the Metro spine and the major road network

Residential neighbourhood areas in the grey zones, have distinct identities, visually appealing and socially still retaining their cohesiveness, which new planned areas of the town do not possess. This section of the study establishes these neighbourhoods as a distinct typology, by taking up studies in two selected patches within the grey zones, but in the northern and southern parts of the city. Subsequent sections of the research analyse the factors which give these neighbourhoods their identity and imageability.

3.1   Street Network Pattern

In line with the emerging neighbourhood and sanctuary area delineation by Michael Mehaffy et al [3], the 400m grid concept is applied to representative neighbourhood areas chosen in North and South Kolkata. In the older Northern part of the city, where the city level transportation network was 'implanted' on the already existing urban fabric, the neighbourhood block appears densely packed and demonstrates the validity of the 400m grid hypothesis quite closely.

On the other hand, in another patch selected in South Kolkata, which was developed as part of the planned interventions of the Calcutta Improvement Trust development scheme, a homogeneous neighbourhood spread is formed with larger block sizes and wider roads. Permeability within the neighbourhood areas are shown through secondary roads which form the walkable web within the areas.

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A point of interest worth noting is that the walkability in the North and South Kolkata neighbourhoods has 'attained' a similar nature over time in spite of the differences in time of development which resulted in the initial variation in block size and road widths in the two parts of the city.

Fig. 6 Street Network in North and South Kolkata showing density of urban blocks within

Fig. 7 Map showing internal road network and permeability in North and South Kolkata neighbourhood spreads

As observed from the maps, though the size of the neighbourhood spreads vary in the Northern and Southern parts of the city, the walkability and permeability in these neighbourhoods are quite similar.

3.2   Densification and reorganization of older and newer city areas

In the preceding section we see that in spite of the fact that the two parts of the city have different time phases of development, the walkability and density pattern are similar. For a study patch in South Kolkata, two sides of a city level arterial road, developed at an interval of 50 years, show the gradual densification process which results in homogenity in the urban fabric. The earlier developed western side had reached a 'critical' density earlier and from 1920's and 1930's onwards the later developed eastern part started getting built till it reached its 'critical' density. A point came when the western and the eastern parts of the spine started reorganizing themselves. It is processes like these, resulting from city level transport connections becoming more wide webbed and land prices becoming more competitive, which lead to overall homogeneity in urban fabric over time. Fig. 8 demonstrates the change in densification pattern over a century for the same area.

Fig. 8 Disparity and Homogeinity in Density Patterns – 1903 and 2011.

4.   Image Consolidation – Place and Public Memory

In the present paper, we argue, that notwithstanding the physical interventions in terms of transportation and consequent real estate pressures which erase underlying existing patterns and make the overall city physically homogeneous, there has been an underlying visual thread which gives the city an overall identity. Artistic constructs in literature and the visual arts bring out the imageries identified with some of the quintessential parts of the city. These imageries form a city map across time. The built forms depicted in literature and films set at different time periods in the city, serve as evidences of the gradual societal and physical transformations in the city and paintings bring out the strong visual images associated with some of these areas.

4.1   The City in Films

Myriad images of the city have been portrayed by the rich oeuvre of the films which have been made with the city as a backdrop. Glimpses of select works by two masters, Satyajit Ray and Ritwik Ghatak, on the subject of the city's many facets, spread across different time periods, validate the premise of image consolidation.

Charulata, a period film by Satyajit Ray based on a Tagore novelette, set in 19th century Kolkata, portrays magnificently, apart from the social fabric of the city, the predominant central courtyard building typology of the urban gentry. The introverted courtyard puts across very effectively the prevailing social system of mid-19th century Kolkata, where the 'progressive Bengali man' allows freedom to the women of his family without separate '*jennanah* quarters' (closed quarters for women only-a legacy handed down from years of Muslim culture in India) but at the same time keeps her freedom confined to the limits of his house and gardens with little access to the outer world.

In the film, '*Mahanagar*' (The Great City), set in the early 60's, at a time when Kolkata was reeling under the tragedy of partition of the country, population explosion and unemployment, Satyajit Ray explores the repercussions when the woman comes out of her kitchen and her introverted courtyard to the streets of the big city, coming to terms with the liberal urban spaces, to work and supplement the family income. Building type and urban space become woven in this film to portray the city where the old and the new are shown in a harmonious whole to depict the sociological transformation of a community.

In '*Pratidwandi*' (The Adversary), another Satyajit Ray film, a story of an unemployed youth in the 1960's Kolkata, the repeated use of the building terrace consolidates the imagery of elevation from personal and collective failures. In a city core filled with high rise and high density residential quarters, with open spaces a rarity, the terrace portrays an image of freedom and aspirations.

While Ray's films give an insight to building types and social fabric at different times in the city, establishing strong images of the city in its houses and *structure(s) of the ordinary* [4], the maverick film maker Ritwik Ghatak takes a panoramic view of the entire city in all its restlessness and angst in the film '*Bari theke paliye*' (Runaway). The city is depicted through the eyes of a wandering village boy, who explores the city streets and house interiors. As the story is narrated from the perspective of an outsider to the city, the shots portray strong visual images of what embodies the city's spirit.

Tracing the settings of the films, the transformation of building types with societal changes over time can be well documented. The central courtyard typology slowly lost out to transformation in the urban structure.The demand for increased housing in the city core led to the development of the ubiquitous multi tenanted apartment blocks. However, the identity and romance of the older neighbourhoods remain linked to the central courtyard building type, with the chance presence of a few of these which some of the wealthier families continue to retain as their ancestral homes. Films serve as a strong visual medium keeping images of the city embedded in the collective memory and imagination of people, which oftener than not, have transformed from their earlier form to be replaced by newer built forms with little or negligible character. In context, Zac O'yeah's 'Majestic: the place of constant return' [5] is a wonderful sketch of this sense of place and remembrance when he calls 'Majestic' (a city bus terminal area named after a nearby Cinema Theatre) in Bangalore a "particular piece of urban nostalgia". The same applies to all 'Grey zone' neighborhoods.

4.2 Tradition, Activity and Identity- Kitescape Neighbourhood

In the neighborhoods of Kolkata under discussion, kite flying is a dominant activity defining territories. The entire neighborhood is projected, as it were on its sky during a hectic community kite flying day and extends beyond its physical limits. Interactions happen across rooftops, streets and open spaces and penetrate into the adjacent neighborhood patches. Kitescapes thus present an alternative definition of these neighbourhood patches, often not coinciding with the ground definition marked by street edges. A discussion of neighborhood is a discussion on the identity of the place; tangible and intangible. Spatial and territorial identity "refers to a persistent sameness and unity which allows………to be differentiated from others" (Edward Relph, 1976)[6].

Fig 9 The physical neighbourhood with its territorial definitions and public realms (L); 'kitescape' neighbourhood marked in green line extending beyond the physical domain.(R)

4.3 People's Perception - Cognitive mapping

Another way of understanding neighbourhoods are through the perceptions of people who 'use' the area in different ways. As part of the research, cognitive maps prepared by neighbourhood users of the selected study patches were analysed. It is observed from the perception maps constructed by different users that certain factors in lifecycle stages, sex and professions play dominant roles in the constructs. Perceptions of neighbourhood extent, walkability and social networks have direct correlation to the profile of the user and cognitive maps of different profiles of users can be used effectively in defining domain limits.

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5.   Image Disruption

The research undertook case studies in two distinct parts of town, both qualifying as old residential neighbourhoods in grey zones. Neighbourhood and premise level surveys were conducted to assess the impact of various factors on the transformation dynamics of neighbourhoods. On analysing the two case study areas, it was noted that in a neighbourhood, the transformation which takes place in individual premises, collectively transforms the imageability of a neighbourhood patch. Individual premises were seen to show one of the three following transformation scenarios:

- **Unchanged Image:** The existing building is in good condition and the socio-economic conditions have not changed significantly over time, and the building has retained its architectural expressions.
- **Decay:** The structure has gradually decayed, because of various factors, some of which include, lesser use of the building due to outmigration, downgrading of socio-economic conditions, inability of aged family members to maintain the house etc.
- **Transformation:**
a) This may include modifications in the built structure to accommodate changes in family structure. This can either change the original character totally or can continue to retain the old characteristics.
b) Other transformations may include demolition of old structures and construction of new buildings. The apartment typology has become the preferred model and has come up on many plots. However, there are no urban design guidelines for the visual expression of these new buildings.

The key findings of the studies, generated the following list of attributes, which in certain critical combinations, play a significant role in image disruption in older neighbourhoods:

Attribute	Impact
Neighbourhood Network	Road widths are linked to maximum permissible building heights in the present city development regulations, affecting the typology of new development.
Holding Size	The development possibility on small plots is limited within the present development regulatory framework, due to requirements of mandatory open spaces on all sides, effectively not permitting new development and hence giving rise to stagnation and decay.
Ground Coverage	Most existing premises have higher ground coverage than permissible, because of the courtyard typology, and this dense built form, creates the neighbourhood's morphology. However, present building regulations do not permit building of peripheral blocks with internal courtyards.
Building heights	A majority of older buildings are 1 or 2-storeyed even though under the present bye-laws, road widths in most parts permit 3 storeyed development. The character of the older built structures is thus low rise, high density. New development however would become high rise and low density, reversing the pattern.
Building typology	The courtyard typology is one of the most common types of house form, which if decayed, is replaced by a different typology, usually the apartment type. Large plots are also the landmarks of the area which become potential 'key-stone' premises as large scale re-development is possible on the vacant land, which can impact the future imageability of the neighbourhood.
Age group of residents	These areas have a predominance of population in the older age group, showing signs of out-migration by the younger generation. This hinders the ability of residents to participate actively in building and community activities.
Family Size & Type, Occupation, Owner-tenant mix	The combination of these family level attributes impacts the decision making process in case of requirements of dwelling unit level transformation.

In addition to these factors, the present building regulations [7] play an important role in determining the character of the neighbourhood.

A neighbourhood consists of different widths of streets. In historic developments, the road widths did not have significant impact on the building heights, and a homogeneity was maintained in the overall character of the neighbourhood, with building heights being of 2-4 storeys and streets having edges of architecturally embellished walls either of courtyard type of houses or common wall typologies built upto the street edge. Sense of enclosure was strong and the street was a living, interactive space with a visual wealth of architectural details along the building lines.

However, in the present day scenario, as road width is the primary factor which controls building height and FAR, the new development is largely guided by it. Neighbourhods having wider streets, would tend to have adjoining plots utilising the maximum permissible FAR and choose to redevelop, permitting buildings of higher height, thus changing the internal streetscape, scale and degree of enclosure greatly. Additionally, vacant plots succumb to market forces and start having new developments utilising maximum FAR, giving rise to clusters of tall blocks. This would propel the transformation of the visual perception and character radically.

6.   Image Retrofitting- Exploring Alternatives

Image disruption or image enhancement occurs due to the development which occurs on each plot and is a result of the combinations of the values that each of them take in each class of attribute. A mapping of the individual values of each attribute for each plot and the links between them can give the pattern of transformation it will take. The cumulative patterns of transformation of all plots in the neighbourhood, gives the overall transformation possibility for the neighbourhood patch. The interventions required can be suggested based on the pattern of transformation emerging.

Rapid assessment of all the premises of the neighbourhood in terms of their physical and socio-economic attributes listed above, by better empowered Local Area (ward) Committees followed by the preparation of a comprehensive development blueprint based on the community's needs, would help in addressing the issues of imageability of the neighbourhood as a whole and prevent piecemeal developments on individual plots.

The development model proposed would also have to build in the funding mechanism possible with revenue generating means built in wherever 'maximum FAR' model is not applied. These may range from simple tax benefits as incentives for minor repair and maintenance to roping in of developers for new developments on innovative building types. Adaptive reuse of existing buildings as community spaces and revenue generating uses would need to be assessed. The combination of all these factors would boost the socio-economic conditions of the entire neighbourhood and draw further investments into the area. These holistic models would prevent the overall decay setting in as well as the piecemeal visually disturbing new development in the area and effectively rejuvenate large parts of the older city areas to robust living environments, leveraging on their strengths as vibrant social units, and strengthening their weakening visual perception.

7.   Research Outcome

The research culminated in devising a **Rapid Appraisal Tool Kit** – a template of mapping the attributes identified along with their values, which can be used as a rapid appraisal tool to assess the health of the neighbourhood and its propensity towards transformation. Based on patterns which emerge, a directory of possible thrust of interventions can be referred to, to identify the degree of intervention possible and the methods of appropriate funding required. A sample demonstration template is included for reference.

RAPID APPRAISAL OF NEIGHBOURHOOD:
TEMPLATE FOR PREMISE TRANSFORMATION

WARD NO. 84	STREET NAME Kalighat Park South	PREMISE NO. 2, 3	OWNER'S NAME	DATA ENTERED BY, on date:

ROAD NETWORK	PREMISE SIZE	GROUND COVERAGE	NO. OF FLOORS	BUILDING TYPE	BUILDING CONDITION	TYPE OF RESIDENTS	NO. OF RESIDENTS	NO. OF STAKE HOLDERS	OWNER-TENANT MIX
Road width < 2.4 m	Small (< 100 sq.m.)	Nominal (< 20%)	1 or 2 storey	Heritage bldg on large plot	Good √√	large family	1 or 2 members	Many	Full owner
2.4 - 5 m	Medium (100-200 sq.m.)	<50%	3 or 4 storey	Courtyard type	Medium √	Scattered large family	3-4 members	Few	mainly owner
5-9 m	Large (200-500 sq.m.)	50-60%	5/6 storeys	Common wall type	Poor X	Small nuclear family	5 members		Owner-tenant equal mix
9-15 m	Key stone (>500 sq.m.)	High (>60%)	G+4 or more with stilted parking	New bldg with mandatory open spaces		Old couple	6-8 members		mainly tenanted
Width > 15m			High rise with basement parking			Young Couple	10 or more members		fully tenanted

Fig. 10 Rapid Appraisal Template demonstration

The main use of the Rapid Appraisal Template would be to prepare 'quick reckoners' for all the premises in an identified neighbourhood and use them to get a holistic impression of the entire neighbourhood area as well as provide cues preparing a development blue print.

This methodology can find wider applications in diverse cultural settings and can be applied for assessing neighbourhood robustness of city areas in transition.

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