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Learning from Informal Settlements through a Multidimensional Analysis of Delhi Slums

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Abstract

The UN Sustainable Development Goals call for cities to be "inclusive, safe, resilient, and sustainable." According to the Census of India (2011), one in every six urban Indians, or 65 million people, live in informal settlements. These settlements are distinguished by haphazard residential development, lack of basic services such as drinking water, electricity, drainage, and garbage disposal, and extremely high population densities. Under the Pradhan Mantri Awas Yojana (PMAY) – Housing for All, the Indian government has launched interventions aimed at moving people from informal settlements into planned residences with basic services. However, concerns are being raised as to how these new spatial configurations may rupture the social and economic connections that have sustained these communities.

This study seeks to elicit key takeaways from case studies of two informal settlements located in the capital city of Delhi, namely *Kathputli Colony* and *Majnu ka Tila*. These settlements are examined individually on three broad levels: social, physical, and economic, with each level containing sub- aspects such as the origin of the existing community, demography, infrastructure, built-up typology, livelihood, and so on. The major goal is to create a framework that allows for a parallel comparison of these settlements based on the parameters considered. Additionally, attempts have been made to identify key takeaways that will aid architects, planners, and policymakers in better comprehending how informal settlements operate and in developing a people-centred and inclusive strategy for informal settlement rehabilitation.

Introduction

Globalization and Urbanisation are the latest driving forces for the current civilizational structure. Globalisation leads to the homogenization of culture and thus denigrates the vernacular attributes, whereas Urbanisation has degraded the quality of indigenous practices due to its pace. Stating the above, the inhabitants of informal settlements face the issues of invisibility (Samper, 2020). These communities, with their self-built shelter, are perceived as a disease by the city. They are humanity's most significant challenges, yet they provide innovative solutions that can save the entire planet under constrained conditions. The utilisation of resources, whether it is land, labour, or capital, is so judicious that despite a scarcity of them, they are also able to sustain. Their resilience and optimism in the face of adversity make them a source of inspiration.

The conception of Informal Settlements

The conception of informal settlement is conceived in stages. The first stage is the transition in the interests of scholars, policymakers, and academia from *the informal economy to the informal habitat*. The second stage highlights an empathetic perception of scholars, where the notion of informal habitat transitioned into a self-built habitat.

During the 1970s, the term informal economy originated from the ILO report on the labourers of Kenya and the work of Keith Hart in Ghana. The observation of some economic activities not registered by the State was strengthening the country's economy. This observation led to the formulation of the concept of *frugal entrepreneurism* in the context of developing nations compared to Western economies (Hart, 1973).

During the same period, the discourse on the linkage of two circuits (upper and lower) of urban spaces resulted in the knowledge of the global economy (upper circuit) deriving its strength from the local economy (lower circuit). The informal part of the local economy participates in the global capital flows and was subsequently discerned as an urban character rather than rural. It shifted the focus of policymakers and scholars on the *urban poor* (Santos, 1975). In the late 1970s, the Vancouver Declaration expanded the debate on the informal economy and its implications for the urban poor to informal habitat. The idea was to focus on the shelter of the people engaged in informal economic activities (HABITAT-I, 1976).

The discourse in the second stage of transformation got an impetus from the work of scholars such as Peter Marris, Janice E. Perlman, Nezar Al-Sayyad, Ananya Roy, and many more. In his book, *The Meaning of Slums and the Pattern of Change*, Peter Marris quoted, "A slum is a slum in the eyes of someone who sees it as an anomaly." The notion of slums was advocated as human creations with intrinsic values attached to them. Slum upgradation through the top-down approach is incompatible by virtue of its complexity, which is not solely built on structures (Marris, 1979).

Furthermore, Janice E Perlman's phenomenal work on Brazil's favelas emanated the idea of marginalisation resulting from economic disparity among the societies. The idea propagated that the slums are not the cause of poverty but rather the symptom (Perlman, 1976). She quoted, " *Slum dwellers are not poor because they live in poor conditions, but they are poor, which is why they live in poor conditions.* From the work of both *Marris and Perlman*, the outcome was that slum demolition is not the solution for the upliftment of slum dwellers. Marris focused on preserving social and cultural values, and Perlman advocated for economic upgradation of the habitats along with physical upgradation.

Urban Informality is the phenomenon of wide spread from of city-making which governs the logic of self-organisation and gradual transformation based on adaptation. In the context of South Asian countries, Roy and Al-Sayyad represented informality as intangible. The ideology of space perceived by the State is the *Aestheticisation of Poverty* by its top-down approach for physical upgradation (Roy, 2011). The State should change this idea by understanding and learning from the informal settlements. The evolution from informal economy to self-built habitat can be understood as a two-stage conceptual transition (Fig. 1).

Informal Vs Formal

The system of human settlements has been categorised into two types based on the dynamics. The first is the Normative system, and the other is the Behavioural. Normative is defined as a system of

settlement based on norms stated by the State, whereas behavioural is organic and does not follow the norms fixed by the State. Based on these systems, two types of settlement originate: formal and informal. The formal settlements are ordered settlements with the notion of planned, organised streets in their visual appearance. They are preconceived and preordained. In contrast, informal settlements are unplanned settlements and visually chaotic in appearance. Nevertheless, they are self-organised and flexible as per the needs of the individuals. They are dynamic processes in the making.

Based on proper organisation and hierarchy, the order in the formal settlement is called *systematic order*. Mandelbrot stated that every component in nature has an order; it can only be discerned through scale. The order is also present in informal settlements and is only discernible through the lens of scale. This order is defined as a *characteristic order.* The characteristic order can be discerned at a smaller scale in informal settlements, but is discontinued at a larger scale. In contrast, the order is contiguous and discernible at any level of hierarchy in the formal settlement. The formal settlement is developed on major strategies and long-term planning (Master Plan). The informal settlement evolves and emerges through minor adaptations and ad hoc planning, which is not intended for the long term. The formal settlement is based on expert knowledge, systematic, rational, and reductionist minds, so following norms is considered legal. The informal settlement is based on local knowledge and common-sense planning; defying the State's norms is considered illegal (Arefı, 2011).

Formality and informality are always perceived in binaries to each other, where formality represents acceptability by the authorities. The whole discourse of informal settlements starts on the basis of legality, which also changes the approach of the State for its upgradation. Being informal serves the people belonging to low-income groups aptly and is constructed according to their needs. Informal settlements can be explored with respect to three aspects, which include physical, social and economic. These aspects of informal settlement help in understanding the complexity of informal settlement and help us learn from them about their peculiar practices through which they are able to sustain themselves (Dovey, 2012). The effort is not to romanticise the notion of informal settlements; it has its defects, but it also has basic elements and characteristics that are true and adequate for sustainable development (Arefı, 2018). The distinction between formal and informal systems can be conceptualised through overlapping dualities of order, legality, and spatial organisation (Fig. 2).

Metaphoric Brawn and Brain of Informal Settlements

Informal settlements are now becoming visible by the efforts of scholars and the application of technological advancements such as GIS and Remote Sensing. With these efforts, the problem of their invisibility is tackled. But still, their apt enhancement is yet to be achieved. The essence of the paper

takes two aspects into account. The first aspect is the metaphorical Brawn, which talks about the peculiar strength of the informal settlements. This peculiarity comes from the sense of community belongingness and togetherness. The trust and reciprocity of community people in informal settlements are so sturdy that it takes the form of capital, which is called Social Capital (Franke, 2005). Social capital,

as defined by the sociologist *Pierre Bourdieu*, is the collection of resources that is measured in terms of relationship networks and mutual understanding. Generally, In India, the strength of social capital is very high in informal settlements and it can be observed in various day-to-day activities like sharing transport modes, sharing kitchens (which is considered an important aspect to separate a household from another household), formation and working of community-based organizations (*Sahkaari Sangathan*) (for the fulfilment of needs of any individual or the community), common open spaces for community interaction. Social capital can be operationalised at both the individual level and collective level and is one of the important aspects of the lives of people of informal settlements to sustain (Olives, 2014). The phrase "*Sharing is Caring*" is apt in the context of resource utilisation in informal settlements.

The second aspect is frugal innovation, which in current global conditions is being preached a lot for sustainable development. The notion of utilising resource till lasting of their life cycle and the techniques are noteworthy. This intrinsic capacity of frugal innovation (*jugaad*) economy is considered the metaphoric brain of the informal settlements. These frugal innovation techniques can be considered as the selective representation of the circular economy, which promotes the principle of Reduce, Reuse and Recycle. Although these terms are now prevalent in academia, the works of scholars, and policymakers, but it was practiced since the beginning of human civilisation, or to be accurate, after our ancestors became more of settlers (Ezeudu, 2022). There is a famous quote by Mahatma Gandhi in which he states that: "*There is enough on planet Earth for everyone's needs, but not for everyone's greed.*" The scarcity of resources in the community automatically trains the human mind to save and sustain, and informal settlements are live examples of our future cities with scarce resources. It is better to have a precaution than a cure, so rather than clutching the slum and its eradication, it is important to understand and learn by virtue of its natural ways of sustaining. The dual conceptual framework of social capital ("brawn") and frugal innovation ("brain") is illustrated schematically (Fig. 3).

Study Area

Delhi, the capital city of India, has been home to many migrants from all over the country. These migrants migrate towards Delhi majorly in search of employment and education, and find shelter in such settlements where the savings can be more and expenses can be lessened. The Centre for Policy Research (A Delhi-based research organisation) has categorised informal settlements into seven types. These settlements house around 78% of the total population of Delhi (CPR, 2015). Out of the various settlements, two settlements have been identified for the study and analysis of the research. These two settlements are the Kathputli colony and Majnu ka Tila. These settlements are identified based on their age, the community characteristics (heterogeneous and homogeneous, origin place), their economic base, and the context of the settlement. These settlements were studied earlier with an eye for finding problems. The spatial concentration of informal settlements in Delhi and the selected case study locations are mapped in Fig. 4.

Kathputli Colony

Kathputli Colony started to take its form in the 1950s with the arrival of puppeteers from the indigenous regions of Rajasthan to settle in the old bus depot of Shadipur Village. Initially, the settlement occupied an area of approximately 5.2 hectares. Then, many attempts have been made by the government for its resettlement and rehabilitation. The earliest attempt was in 2007 by DDA. This settlement has the highest population of performers and artists. It was home to about 3200 families. The residents belonged to different religions. There is also a *Bhule Bhisre Kalakaar Trust*, which acts as a community-based organisation. The economic base of the community depends upon the puppetry, artistry and performers. The settlement has now shifted from its original place to the Anandpur Parbat transit camps. The buildings are generally low-rise, and the density of the settlement is high. The construction materials used are mostly recycled tin, plastic and metal sheets in a very decorative form. The spatial layout and activity distribution of Kathputli Colony are illustrated in Fig. 5.

Majnu ka Tila

The colony of Majnu ka Tilla was established in 1950. The settlement is officially called New Aruna Nagar/ Chungtown/ and Samyelling. The settlement lies in the Zone O/Yamuna Redevelopment Zone of Delhi. The 6.2-hectare area was proposed for Recreation land use as per the Yamuna Redevelopment Plan. The spatial structure and key activity nodes of Majnu ka Tila are shown in Fig. 6.

Majnu ka Tila houses around 1200 families of the Tibetan Community. The settlement, located along the bank of the River Yamuna, originated in Majnu ka Tilla and is famous all over Delhi for its Tibetan cuisines and restaurants. Delhi tourism website proudly advertises the place. The place has one of the major footfalls in terms of visitors as compared to tourist sites all over Delhi. The population is mainly occupied in hotels and restaurants, followed by woollen selling and monks. There is an annual sale of Tibetan woollen clothes in Delhi that attracts tourists all over.

Methodology

The methodology adopted for the study is primarily based on the case study of two known slums of Delhi. Informal settlements are reduced to slums under the definition of NSSO (National Sample Survey Organisation, India) and the UN. In order to proceed further with the study, some of the concepts have already been discussed earlier in the context of informal settlements. The investigation for this research topic is based on the data collected through semi-structured interviews, reconnaissance surveys, and secondary data collected through the *Delhi Development Authority* and the *Centre for Policy Research.* The data collected is further qualitatively analysed into three classified aspects: physical, social, and economic. The three aspects are further broken into parameters. The physical aspect will look into three parameters, namely: *streets, plots and buildings* (Oliveira, 2022). The social aspect will look into the parameters of *Social Capital* and *Community Heterogeneity* (Olives, 2014). The economic aspect will look into the parameters of the strength of the economic base and the degree of frugal innovation (Marino,

2021). These parameters are analysed in the light of a positivistic approach. The data collection framework and analytical parameters used in the study are summarised in Fig. 7.

Results and Discussions

The physical aspect looks into three parameters and their interrelationship. With the parameters of street and building, their relationship defines the degree of enclosure and, thus, openness. The interrelationship of buildings and plots resulted in the finding of the dominant alignment of the street. The inter-relationship of plots and streets helped us understand the block and, thus, the degree of redundancy.

Both settlements have a major primary street that serves as the spine of the settlement, with a width of 3m – 4m, and the secondary street, narrower (1.5m – 2m), weaves through the settlement. The street characteristics in the Kathputli colony and Majnu ka Tila differed regarding people and activities. The streets are typically a part of the private space (building) transitioning into public space. Niches were created due to the irregularity of the alignment of the buildings that the street vendors were using. More than 90% of the buildings were mixed in both settlements. The concept is "*Neeche Dukan, Upar Makaan,*" meaning there is a commercial activity on the road level, and on the upper floors, there are residences. This arrangement is now being promoted as mixed-use for sustainable development. The commercial activity on the ground floor enhances the quality of the streets and makes them more vibrant and interactive, especially for tourists and buyers. This vibrancy also provides a sense of security. The block in both settlements is not ordered. They evolved naturally from a place of need and thus provided street options for traffic and pedestrian movement through the settlement with higher redundancy. The buildings are low in height, with a maximum height of 9m.

The construction technique is based on local knowledge and has evidence of temporal changes. The buildings are constructed from recycled materials and extended beyond the plot line on the upper floors. This case is seen in secondary streets, not in primary streets. These extensions also serve as shade for tourists. In the case of Majnu ka Tila, the buildings and their organisation are linear. This linear settlement bolsters the influence of the River Yamuna on the eastern side and is a central interactive walkway for tourists. All the significant commercial activity is along this central street. In the case of the Kathputli colony, the settlement is roughly rectangular. This rectangular shape provides the residents with a sense of privacy. This privacy means a sense of isolation for different communities in the Kathputli Colony. Kathputli Colony is a heterogeneous community with more than five other communities, whereas in Majnu ka Tila, there is only one Tibetan Community. The impact of this phenomenon is further analysed from a social aspect.

The social aspect of the community focuses on Social Capital and Community Heterogeneity. Social capital is very high in both settlements. It can be verified that the presence of one person's commerce activities is handled by the other. Two or more households have shared motor vehicles. In the Kathputli colony, the Bhule Bhisre Kalakaar Sangathan is a community-based organisation that serves the needs. This organisation has a reach of more than 90% of the dwellers in the community. The number of

members shows the strength of the structural aspect of social capital. The interconnectedness of the members in the organisation is based on trust and reciprocity.

The community is heterogeneous in Kathputli colony and homogenous in Majnu ka Tila. This heterogeneity provides more in terms of bridging social capital and homogeneity in bonding social capital. There is a community-based school called the *Tibetan Children's Village (TCV)*, which imparts knowledge on Tibetan culture to children in their nascent age. This is an important step to preserve the culture of the Tibetan community. Both settlements have their autonomy in their organisations. The most important thing observed here is that there is no income inequality in the society, besides the heterogeneity of the community in the case of Kathputli Colony. There is one major difference in the ambit of social capital in terms of interorganisational networks.

The observation is that the community residing in Majnu ka Tila are supported by the transnational organisations, whereas the Kathputli colony has less interorganisational support. The case of Kathputli colony in terms of inter-organisational support is weaker in comparison to Majnu ka Tila. Another important observation is that the settlement has a Tibetan Monastery, which serves as a central core to the whole settlement, and the settlement has also evolved, integrating the square of the Tibetan Monastery. Whereas in the case of the Kathputli Colony, there is no core around which the settlement evolves, there are just the people and their profession. Occupation is what joins the people in Kathputli Colony, and ethnicity is what joins the people of Majnu ka Tila.

The economic base of Kathputli Colony is puppetry art, handicraft items, and performances that are entirely indigenous and serve as an industry for the residents. The economic base of Majnu ka Tila is tourism and the attraction of the Tibetan Monastery. This tourism is further supported by the cuisine, art items, and handicrafts that are traditionally inculcated in the whole experience. The concept of circular economy can be seen in the context of Kathputli Colony, as they use discarded materials to make their puppets and their performances, which are environmentally impactful and sustainable. This also makes them frugal, and this artistic capability provides the opportunity for the community people to use the resources efficiently. In the case of Majnu ka Tila, most women are responsible for commercial activities as they are responsible for cooking traditional cuisines, which also attracts tourists and eventually supports the economy.

The concept of frugality can also be observed in Majnu ka Tila as women do not use permanent construction for their shops; rather, they just use the table and chairs outside their dwelling units under the extended shady roof and trade. This shows that women are also included in trade activities and serve equally in the growth of the household. The type of economic base plays an important role in the sustenance of these communities. The type of economic base also finds its links to the type of community. The Kathputli colony, being heterogeneous and mixed, resulted in distinct forms of similar economic activities, and in the case of Majnu ka Tila, being homogeneous resulted in different economic activities from the same community. Majnu ka Tila integrates more women into economic activities as compared to Kathputli Colony because of its homogeneity.

The economic activity and the community influence each other a lot. The economic base also thrives due to the availability of choices and options in the community. This leads to healthy competition and thus economic development of the society. The community people in both settlements were found to be helping other persons in their community if required. The economic base, frugal economy and social capital can be seen as a single part of a single entity for which the effort is applied to sustain.

Table 1
Multi-dimensional framework of informal settlement analysis: parameters and key learnings from Kathputli Colony and Majnu ka Tila, Source: Author

S.No.	Aspects	Parameters	Learnings
		Streets	**• Connectivity, which is developed gradually due to needs, and thus sustainable**
		Plots	• The plots are fully utilised in terms of ground coverage, and the setback is also used for steps, which is a nice semi-public space for social interaction. This also enhances the economic activities.
			• Mixed-use buildings for efficiency of commerce and residence, reducing the cost of renting shops and transportation
		Buildings	
1	**Physical**		• Spatial layout is very progressive and need based on indigenous knowledge, which saves the culture and Tradition.
		Alignment of Streets	• The irregularity on the edge of the street, leaving a proper carriage way width, creates niches for community people to set their stalls.
		Blocks	• The irregularity and the redundancy of streets due to irregular blocks in the settlement provide options for more pedestrian movement
		Ratio of Building Heights and Street Width	• The building heights are low, which provides proper lighting along the primary street, and along the secondary street, the building height remains the same, and street width decreases, which creates a microclimate and thus makes the space comfortable.
2	**Social**	Social Capital	• The networks, trust and norms are high in both settlements. • The presence of Bhule-Bhisre Kalakaar Sangathan preserves and promotes artistic capability. • The presence of TVC in Majnu ka Tila imparts cultural knowledge to children and ultimately preserves it. • The presence of common motor vehicles and common organisations creates more opportunities for the development of the community. • *"Sabka Saath, Sabka Vikaas" meaning* everyone supports and everyone grows.

S.No.	Aspects	Parameters	Learnings
		Streets	**• Connectivity, which is developed gradually due to needs, and thus sustainable**
		Community Type	• Community heterogeneity can be observed in the case of Kathputli colony, due to which the intra-social capital is high, as compared to Majnu ka Tila where intra-social capital is high. • The inter-organisational network for Majnu ka Tila is high. • The community in Majnu ka Tila (MKT) is united by the same religion, whereas the community in Kathputli Colony (KC) are bonded by the same profession.
3	**Economic**	Economic Base	• Culture breeds a type of economy, and it is very typological in both settlements. • Sturdy economic base because of social ties and indigenous practices. • Traditionality and uniqueness make it more attractive. • Inclusive of Gender
		Circular Economy	• Frugal innovation • Use of discarded materials in the case of Kathputli colony to make their puppets and performances

Conclusion

Change, upgradation, and rehabilitation are acceptable if they are gradual. The sudden change takes the essence of the settlement. The gradual change is acceptable because it also enfolds the intangibles, such as social and cultural ties, the social milieu, the socio-economic position, etc. The term enablement was used by Arefi in his book *Learning from Informal Settlements of Iran*, where it was stated that enablement captures three aspects, which are Formalisation (physical upgradation, title deeds), Regularisation (service delivery) and Integration (capacity building, community people). The enablement captures the essence that upgradation means not only the place; it's about people. People are what make the place, so the notion of physical upgradation is just a midway solution that, in some way, actually destroys the community. The State, Policymakers, and scholars should understand the delicacy of these settlements to enable them holistically. The social capital, the practice of frugal economy, is a hint for our future cities to be developed sustainably. The informal settlements with these qualities are not a pathogen to a city; they provide solutions to save the planet.

Declarations

Ethics Approval and Consent to Participate: The requirement of ethical approval for this study was waived by the **Institutional Review Board of RUSBM Studio Research Ethics Committee** in accordance with the **Declaration of Helsinki**. Informed consent was obtained from all individual participants included in the study. For minor participants involved in community field observations, informed consent was obtained from their parents or legally authorised representatives, along with minor assent.

Ethics Approval and Consent to Participate: This study involved semi-structured interviews, field observations, and reconnaissance surveys conducted among adult participants. As the study involved minimal risk and did not collect sensitive personal or biomedical information, formal institutional ethics committee approval was not required under the institutional policy applicable at the time of the research. The research was conducted in accordance with internationally accepted ethical principles for research involving human participants. Informed consent was obtained from all participants prior to their participation, and all data were anonymised before analysis.

Data availability statement: The datasets generated and/or analysed during the current study are not publicly available due to the inclusion of sensitive field-based information and to protect the privacy and confidentiality of participants in informal settlements. The data consist of field observations, spatial documentation, and semi-structured interview records.

Anonymised and non-identifiable data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to ethical considerations and applicable permissions.

Third party material: No, all of the material is owned by the authors and/or no permissions are required

Third Party Rights: Not applicable.

Consent to Publish: Not applicable. The manuscript does not contain any individual person's identifiable details, photographs, or personal profiles. All empirical findings are presented as aggregated statistical summaries and anonymised urban analyses.

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Figures

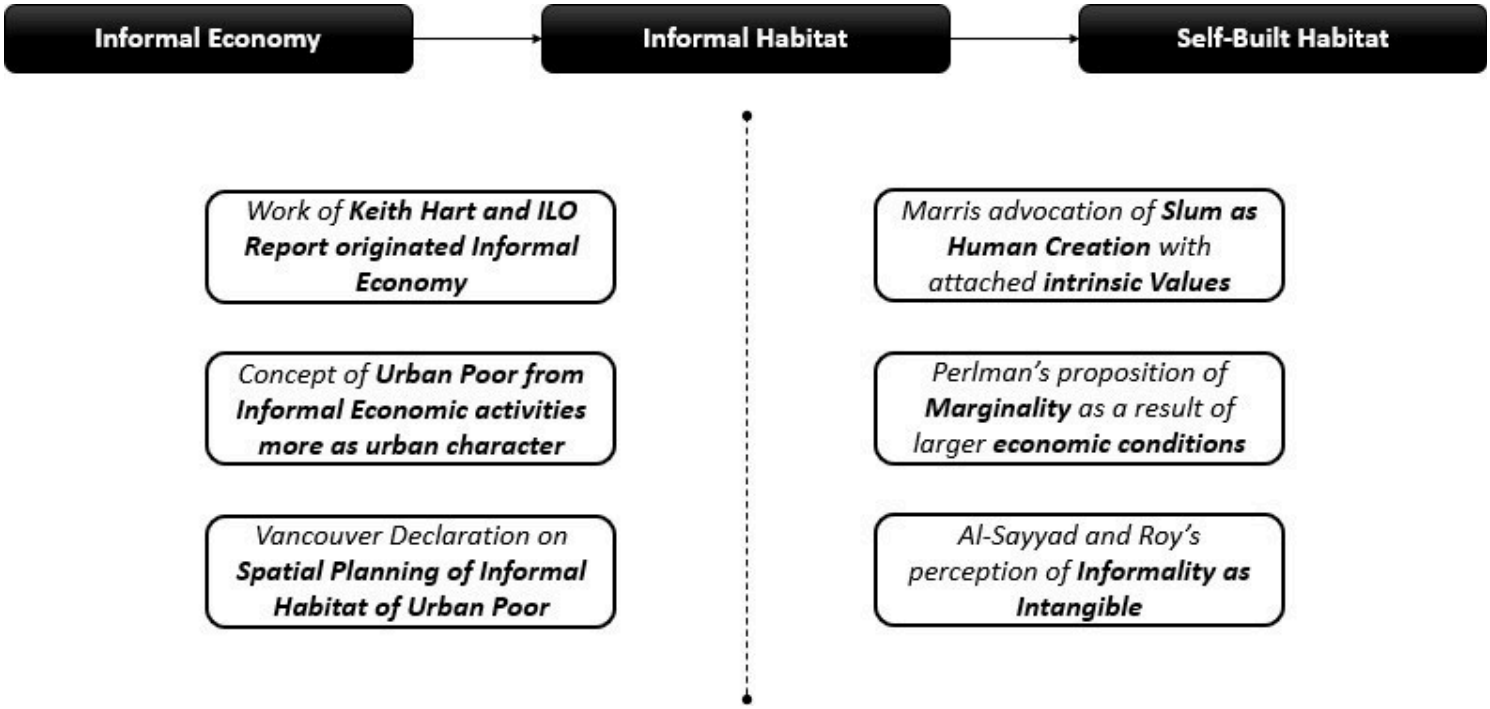

Figure 1

Two Stages of Conception of Informal Economy to Informal Habitat and further Informal Habitat to Self-Built Habitat, Source: Author

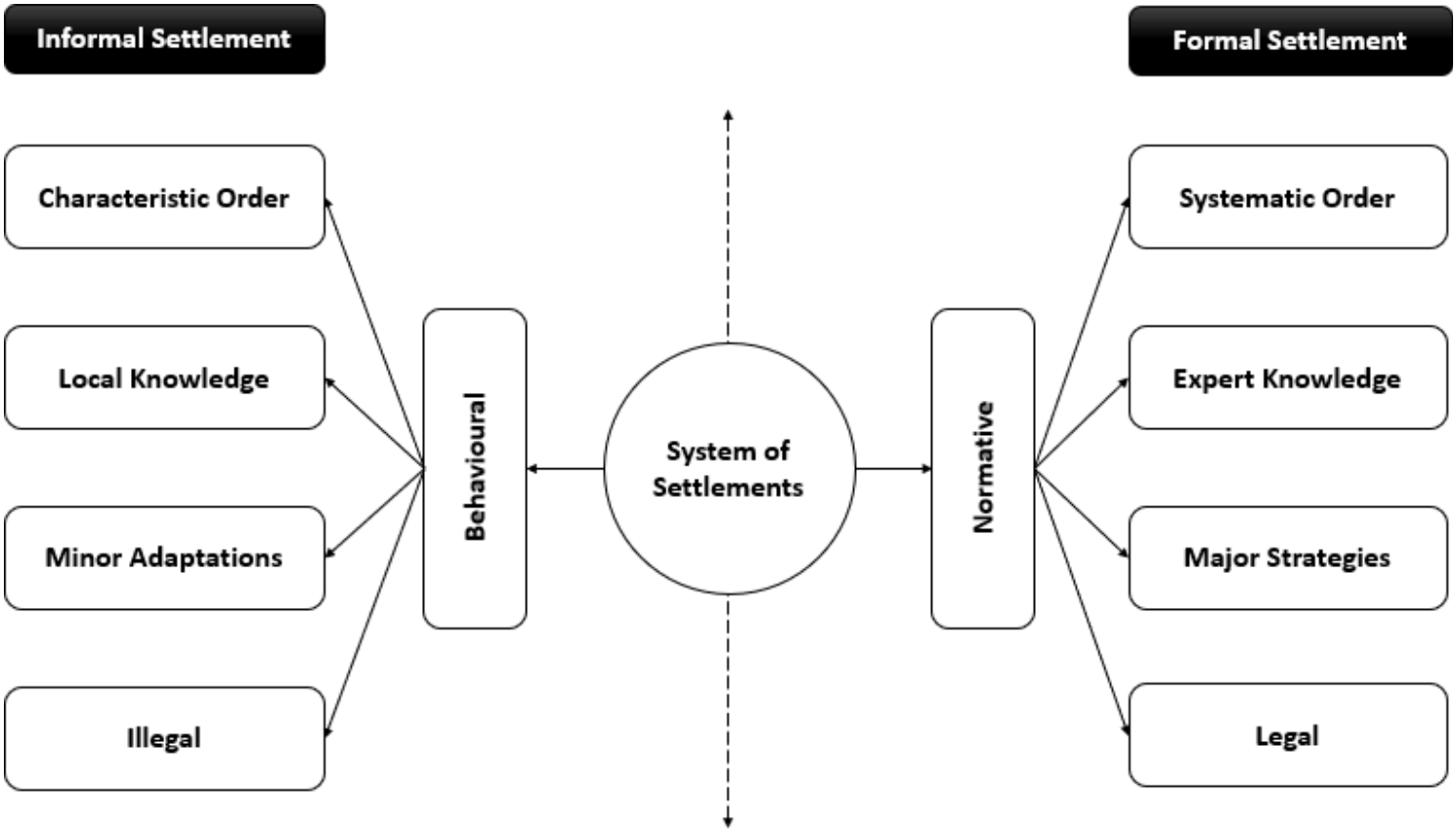

Figure 2

Dualities: The Informal vs Formal, Source: Author

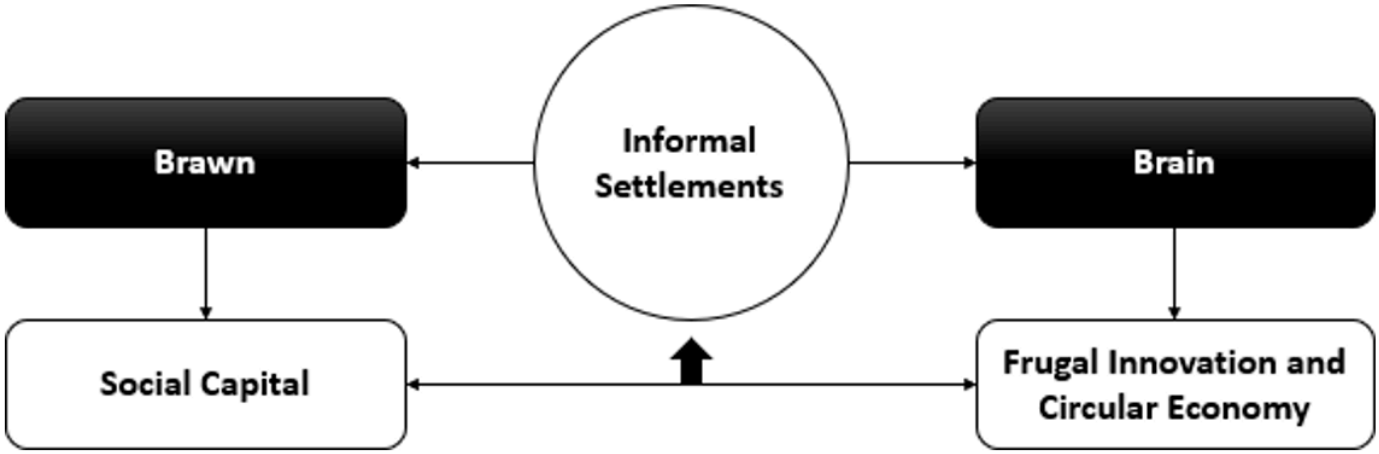

Figure 3

Metaphoric Brawn and Brain, Source: Author

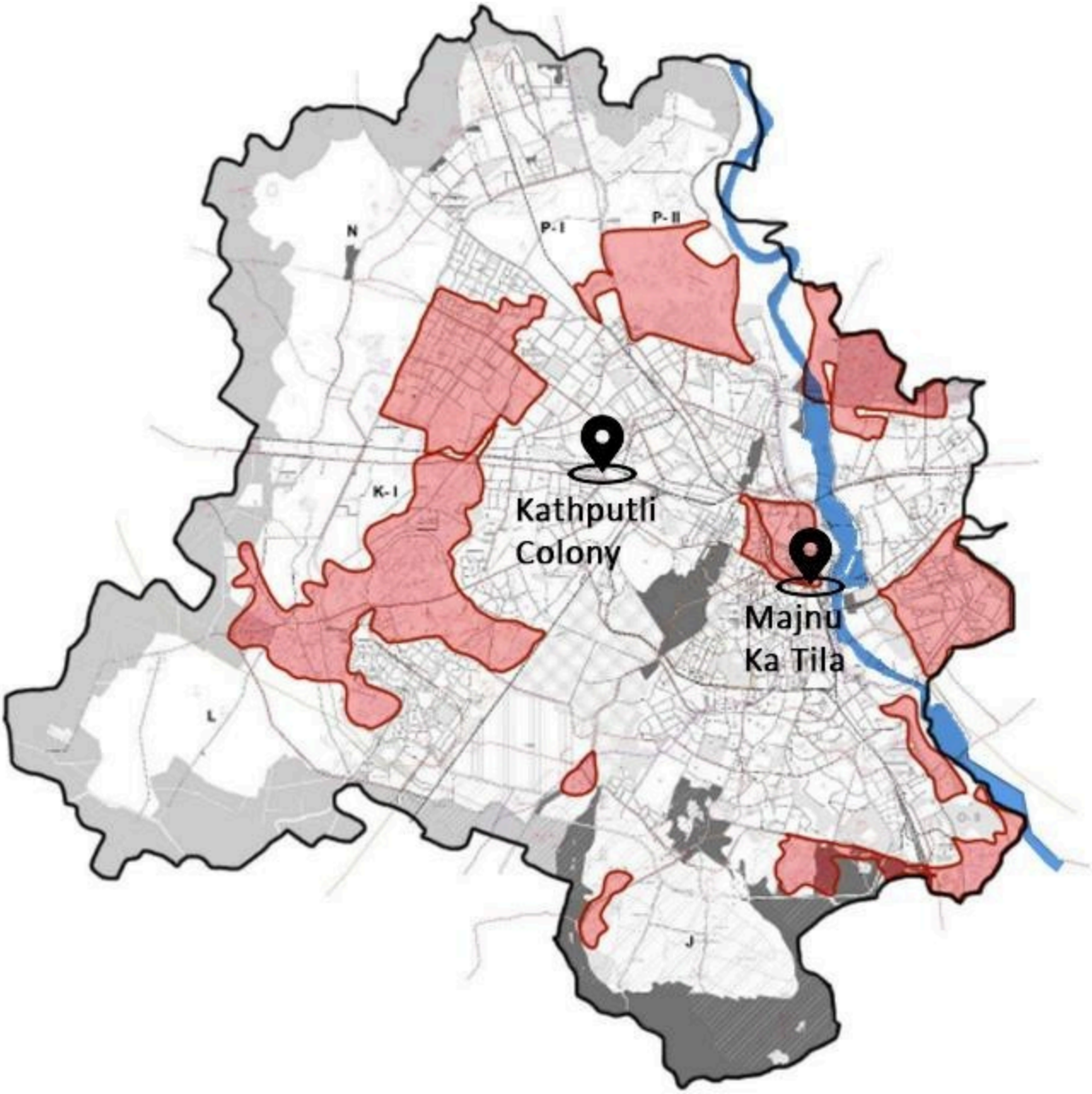

Figure 4

Red patch denoting concentration of Informal settlements in Delhi, two identified Slums: Kathputli Colony and Majnu ka Tila, Source: Author

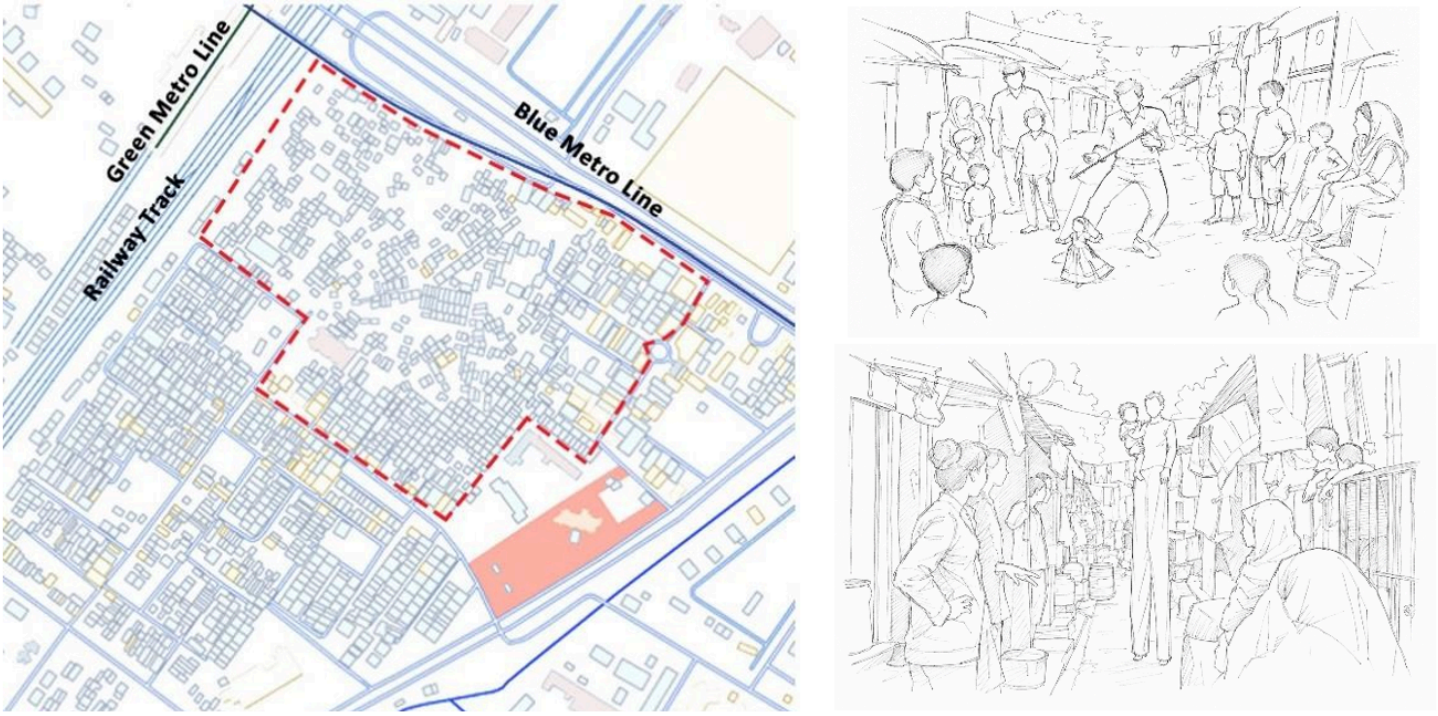

Figure 5

Map showing Kathputli Colony and Activities in Kathputli Colony, Source: Baid, 2020

Figure 6

Map showing Majnu ka Tila and Tibet Monastery Square with Vendors, Source: *Author*

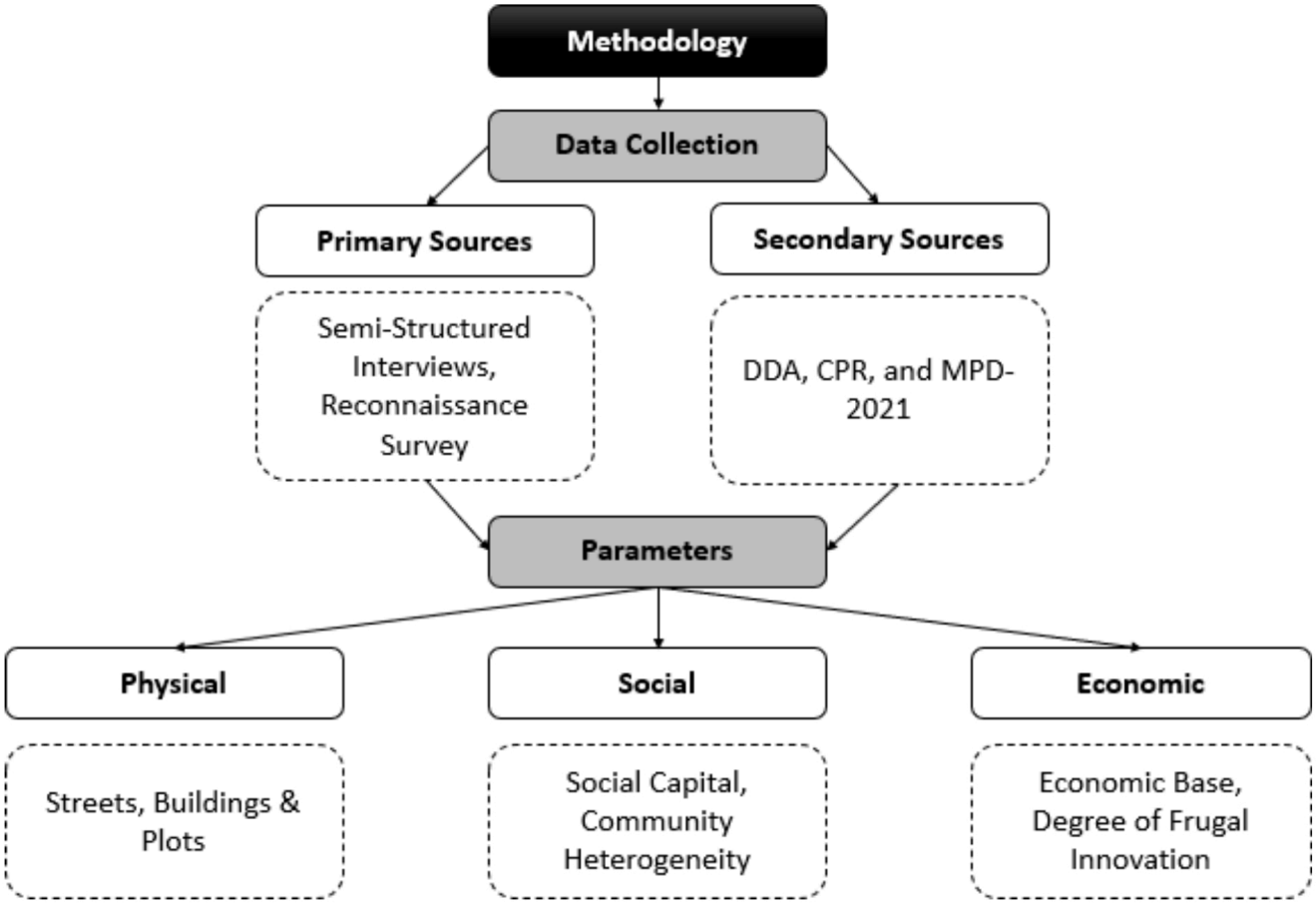

Figure 7

Data Collection and Parameters, Source: Author