AN INFORMAL FRAME

INCORPORATING SOCIAL & ECONOMIC PRODUCTION OF SPACE IN REDEVELOPMENT OF INFORMAL SETTLEMENTS

CASE STUDY: DHARAVI, MUMBAI, INDIA

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Case study: Dharavi, Mumbai, India

Graduate Thesis Report

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Cover: Dharavi, India - https://thumb9.shutterstock.com/display_pic_with_logo/622210/622210/622210.jpg
Ramjibhai Pithabhai Patel, a 65 year old Kumbhar (potter) lives in Dharavi Mumbai. From early morning, he is at work, pausing rarely for a break. A pail of smoke hangs over the corridor as a worker stamps on a mound of clay, preparing it for Ramjibhai and other potters.

“When I was growing up, this was an open space. We could see Mahim station from here”

He lives in Kumbharwada, a settlement where kumbhars (potters) who fled from the drought and famine in Saurashtra, Gujarat (a neighbouring state), many decades ago live and work today.

- Excerpt from Rediscovering Dharavi

by Kalpana Sharma
ACKNOWLEDGEMENT

This research is the result of a year-long graduation project conducted at the Faculty of Architecture and the Built Environment at Delft University of Technology.

The Faculty of Architecture and the Built Environment at Delft University of Technology provided the ideal backdrop for pursuing exploitative research. A large share of this research is attributed to the critique and guidance offered by my mentors, Roberto Rocco & Arie Romein. Further guidance by the studio group was presented through relevant workshops and discussions, which provided the necessary tools for conduction the research comprehensively. Along with the graduation studio, further inspiration was provided by the honours programme and committee.

Fieldwork, essential to the progression and the validation of research, would not be possible without the assistance received from the UrbZ team (based in Mumbai). The fieldwork would also not be successful without the cooperation of the residents and workers in 13-compound of Dharavi. Further insight into the planning and policy approach towards informal settlements in India was provided by lecturers and experts in this field based from Kamla Raheja Vidyanidhi Institute for Architecture and Environmental Studies (KRVIA) at Mumbai.

Personal thanks goes out to my fellow graduates, friends and family, especially Rahul, who provided critique and support when required.
The aim of this research is to investigate to what extent the existing production of space in informal settlements is related to its social ties and economic needs (social and economic values), and how it can be incorporated into a strategic framework for future redevelopment schemes. This stems from the meteoric rise of informal settlements in the global south, despite several redevelopment projects and policy attempts. The selected case study is Dharavi, located in Mumbai, India.

The research defines the problem field of urbanisation in the global south and its manifestation as informal settlements and slums in most developing countries. This research confines itself to a test site in India, where the paradox of a low rate of urbanisation is coupled with a persistent nature of informality exists. The aim is to investigate the spatial quality produced in this particular case of Dharavi, its link to social and economic values, in order to develop a strategic spatial framework, which can be incorporated into future redevelopment schemes.

This research, through a comprehensive analytical framework in Dharavi reveal strong correlation between the economic livelihoods and networks and the existing social structure. This correlation results in a distinct mode of production of space, to which Dharavi’s resilience and economic success can be attributed to it. What is also revealed is the lack of policy in the current redevelopment that addresses the pre-existing economic networks and thereby its social structure. In order to approach redevelopment of informal settlements such as Dharavi, in a more inclusive and sustainable manner, this project aims to use the hypothesis of ‘economic clustering’ in order to ‘reframe’ and develop a strategic framework for Dharavi. The strategic framework is then tested through a design framework echoing the same elements at a selected site (13-compound) inside Dharavi.

The frame of ‘economic clustering’ offers a reframe on the traditional model of redevelopment in informal settlements in India and perhaps extending to the global south. Most informal settlements in the geographical realm of the global south, have distinct economic patterns and social networks which play a vital part in their existence and contributing to their perseverance. The proposed model of redevelopment aims to address and examine the existing economic networks incorporating them into a framework that provides a balanced combination of spatial guidelines and policy recommendations.
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Setting the premise of the graduation project, informal urbanisation and its issues are explored in the larger context. The main challenges resulting from informal urbanisation in India is explored delving into the urbanisation models in the country, before focussing on the particular case of Dharavi in Mumbai, exploring its relevance and position in Mumbai.
1.1 MOTIVATION

My interest in this rather broad topic of informal settlements stems from both academic and personal. The informal settlement, or the slum as it is often called in India has grabbed national headlines for the last few decades. This topic is often gives rise to polarising opinions of redevelopment and is also part of a larger academic discourse. Even with promises of a modern India in the 21st century, there is a constant growth of informal urban settlements with deplorable living conditions in most Indian cities. Although there are several organisations and policies working for these settlements, there a surprising lack of knowledge and discourse about the spatial quality of these settlements in relation to their cultural, social and economic standing. My academic interest stems from this missing discourse, especially in the case of my selected case study of Dharavi.

Personally, I am myself a 3rd generation of migrants arriving to the city of Kolkata (then Calcutta), India at the end of the 19th century, settling in the numerous informal settlements sprouting in and around the city. Along with my family were thousands of people leaving their drought ridden farmlands looking for better opportunities in cities like Mumbai (then Bombay) and Kolkata. This journey has defined how Indian cities have spatially organised themselves, often giving birth to the “informal settlement”. This research, for me is therefore a method to understand the evolution of informal settlement, and therefore my own history.

Selection of research studio:

The approach, argued by this research needs a planning approach and spatial strategy composed with a combination of spatial design and policy recommendations which have a direct spatial impact. This approach is offered by the Complex Cities Research group, which also offers an additional aspect of governance and its possible collaborative elements.

Within this broad research group, my research focusses on the social-economic elements present in informal settlements and its translation into inclusive redevelopment projects. I find support for this in the ‘Inclusive Cities’ research studio (a part of the larger Complex Cities Studio).
“It is our dream that by the time we celebrate the 75th year of independent India, all the slums are replaced by cemented houses.”

– Narendra Modi (Current Prime Minister of India)

“A slum is not a chaotic collection of structures; it is a dynamic collection of individuals who have figured out how to survive in the most adverse of circumstances.”

– Kalpana Sharma (in her book - Rediscovering Dharavi)
1.2 THE CONTEXT

1.2.a Informal Urbanisation and its main challenges

Global urbanization is at an unprecedented rate. 66% of the world’s population is expected to live in urban areas by 2050 (Nations, U., 2014). This has been highlighted by several authors and organisations such as LSE and the United Nations and even by popular media, in an increasing number statements over the last few years. The consensus of this data and information, is that urbanisation is mainly seen as both as a solution and problem in the countries of the global south, especially in the countries of Latin America, Africa and Central and South Asia. This urgency is highlighted in the map (figure 1.1), which illustrates, where in which countries this proposed growth can be seen in the next 35 years. The countries of the global south, such as India and Brazil have been foreseen to have unprecedented growth. The rate of urbanisation is also much higher for the developed regions than that of the developing regions, as illustrated by figure 1.3.

In this era, many parts of the global south have seen an increase in informal settlements, often understood as a direct manifestation of this urbanization. Informal urbanisation in developing countries, first introduced as a mainstream topic by Turner in the 1960s (Turner, J.C., 1968) has since evolved and morphed by several other urban designers and planners. The discourse on urban informalisation has crosses boundaries, often delving into ideological overtones (Van Ballegooijen, J. and Rocco, R., 2013) along with ontological and topological understanding (Roy, A., 2011).

The major share of these informal settlements (nearly 60%) are currently present in Asia, which is predicted to see the maximum increase and pressure from urbanisation (figure 1.2). These informal settlements, apart from academia, has therefore become the object of interest by several concerned governments and organisations. The most prolific documents prepared as a result of this interest is the UN-Habitat report on slums, published 2004. It outlines 4 basic types of urban population expansion which has contributed significantly towards the growth of informal settlements (Un-Habitat, 2004).

- Rural-urban Migration
- Natural Growth
- Combination of natural and migratory growth
- Population displacement due to armed conflicts, internal strife or violence

These types of informal settlement is of particular importance to any city in a developing economy, as it houses a large amount of urban poor, who do not have direct access to a formal housing market. UN Habitat (2003). This type of informal settlement is seen predominantly in India, as a result of natural and migratory growth. Several reasons have been stated by UN habitat along with other scholars (Tunas, D., 2008), mainly:

Figure 1.1: Countries and territories with urban population exceeding 100,000 by 2050; (Circles are scaled in proportion to urban population size); Source: UNICEF Urban Population 2012

Figure 1.2: Proportion of slum in the world - World Urbanization Prospects, UN Habitat, 2014

Figure 1.3 Projected rate of urban population growth in different regions of the world; Source: http://ese.un.org/unpd/wsp/CD-ROM/Urban-Rural-Population.htm
Countries and territories with urban population exceeding 100,000 by 2050

Proportion of slums in the world

ASIA
61%

Latin America & the Caribbean
13%

Sub-Saharan Africa
25%

Rate of urban population growth between less & more developed regions.
This research also attempts to clarify the various terms used in this regard to classify such settlements. The UN habitat uses the term “slum” to refer to inner city areas which were planned as per zoning and construction standards laid down several decades ago, but now over time have become dilapidated, overcrowded and are now only exclusive to the urban poor.

On the other hand “informal settlement” refers to illegal urbanization or unsanctioned development at the (then) periphery where land invasion took place by squatters, erecting housing units without permission of the land owner and with materials and building standards which are not according to the building codes. Although these terms are quite broad, several countries have identified derivatives of the definition of the informal settlement as slums. They are often also labelled as shanty or squatter settlements amongst other terms.

The "formal city", on the other hand, is state-recognised. If the informal settlement arises out of the lack of recognition from the state, the formal city embodies the existence of the governing body and its resulting regulations. However, they are irrevocably linked to the informal settlement through “informality”.

“Informality” is not restricted to the urban poor. Several authors have argues that informality is as much as the purview of the urban rich as it is of the poor (Nijman, J., 2010). Informality is often summed up as a state of deregulation, one where the usage and purpose of land cannot be mapped (Roy, A., 2009a). Therefore it can be argues that

1.2.b Definitions

• A long period of laisser-faire attitude, from the urban authorities towards land occupation and misuse of building regulations
• A lack of capability of the housing and land market to cater to the rapidly increasing urban poor population.
• Political inertia, which has allowed the expansion of informal settlements to a high magnitude that existing infrastructure and formal services could not address the requirements.
• Tunas (2008) has also argued that in many instances, city officials tend to close their eyes to informal settlements because of a lack of financial support and the know-how. Constructing a low-income public housing scheme is often a difficult process in developing nations, needing large investment, motivation and involvement of different stakeholders having their own agendas.
## Built environment in informal settlements across the world

<table>
<thead>
<tr>
<th>City</th>
<th>Population in the city (millions)</th>
<th>Projected Growth 2016-2025 (People per hour)</th>
<th>Population in the metropolitan region (in millions)</th>
<th>Current area density (people per sq.km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUMBAI</td>
<td>11.7</td>
<td>44</td>
<td>19.3</td>
<td>45.021</td>
</tr>
<tr>
<td>MEXICO CITY</td>
<td>8.6</td>
<td>1</td>
<td>19.2</td>
<td>12.880</td>
</tr>
<tr>
<td>SAO PAULO</td>
<td>10.4</td>
<td>11</td>
<td>19.2</td>
<td>10.378</td>
</tr>
<tr>
<td>SHANGHAI</td>
<td>15.5</td>
<td>26</td>
<td>15.5</td>
<td>23.227</td>
</tr>
<tr>
<td>JOHANNESBURG</td>
<td>3.3</td>
<td>3</td>
<td>3.9</td>
<td>2.203</td>
</tr>
</tbody>
</table>

Projected rate of growth of different cities of the global south (2025)
informality is a mode of production of space which connects the separated geographies of the slum and the suburb (Roy, A., 2011). Therefore the formal city also plays a pivotal part in the nature and existence of informal settlements, linked with each other through a nature of “informality”.

This research mainly deals with specifically informal settlements, present in inner city areas. This phenomena is usually seen in many cities in the Global south, ranging from Dharavi in Mumbai, Kampongs in Indonesia, villa (31) in Buenos Aires to Rocinha favela in Sao Paulo.

**Note:** Many of these countries classify such settlements as slums. However, this research uses the broad definition set out by Un-Habitat (2004) and term them as informal settlements.

### 1.2.c Why India

To test and delve into detail of this phenomena of informal settlements, this research explored the socio-economic dynamics of informal settlements or slums in India. The case of India, is of particular interest in Asia, as it presents a unique case in the persistence of large informal settlements coupled with a low rate of urbanisation compared to other developing countries (figure 1.6).

As mentioned earlier, rapid urbanization is often understood as a main cause of the formation of informal settlements. However, this situation is more complex in India, where the rate or urbanization is not that high as compared to the rest of the world. By 2030, if the Indian government has its way, 40% of the India’s population will be urban. A 40% level of urbanization in 2030 would still rank India as one of the least urbanized countries in the world, and even that would require acceleration of the current growth rate (Nijman, J., 2015). This low rate of urbanisation is coupled with high living densities in Indian metropolitan cities, as one of the highest in the world. Mumbai, for example has living densities such as 32.300 people per square kilometre (figure 1.7).

Informal settlements have increased and persisted in the setting of low urbanisation and high living density. Metropolitan cities in India, especially Mumbai display a large proportion of its urban composition as informal settlements (figure 1.8). To understand urbanization process in India and its form in informal settlements, we must look to explore urbanization through both microscopic

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**Figure 1.6:** Urban population and the rate of urbanisation in India; Source - Indian Census (2011)

**Figure 1.7:** Mumbai’s population density compared to other Cities of the global south; Source - Derived from LSE urban Age Project, 2011

**Figure 1.8:** Percentage population of informal settlements in Indian Metropolitan cities; Source - Indian Census (2011)
Mumbai’s population density compared to other cities of the global south, highlights the high pressure in urban land.

Percentage population of informal settlements in Indian Metropolitan cities

- **New Delhi**: 14.6%
- **Mumbai**: 41.3%
- **Kolkata**: 29.6%
- **Chennai**: 28.5%
and macroscopic scales (Nijman, J., 2015). It has been argued by Nijman that India’s slow manufacturing sector reduces its urbanization rate, while simultaneously feeding small-scale industries within urban areas.

This case of urbanization in India, has led to the formation of informal settlements as well as slums in inner-city as well as the periphery of urban areas. As per the Government of India (Census, 2011) there are nearly 37,000 of these informal settlements (referred by them as slums) present in India with a minimum size of at least 60 households. This figure is set to increase dramatically in the last few years, rising from 52 million people in 2001 to 65 million people in 2011 (Census, 2011). To put this in perspective, people living in informal settlements in India has risen by 25% over the last decade.

They also have been particularly resilient towards government and private rehabilitation schemes. This can be attributes to several more additional factors apart from the ones listed by the United Nations (Nations, U., 2014). These factors are:

- The basic economic argument presented by several authors is these informal settlements serve as a base for cheap labour, especially for developing economics where mode of production are still very flexible and subject to change (Davis, M., 2007).
- They are also destinations of unemployed workers from the hinterland (Breman, J., 2006). However, this is a seasonal feature in most informal settlements in India, with many workers heading home to their villages for harvesting season.
- A more intricate aspect of the state’s inability to deliver basic housing and services (Un-Habitat, 2004) has been discussed by Ananya Roy (Roy, A., 2009b). She argue that informality present in the Indian planning system and institutions undermines its intention to fix the problem of informal settlements in India (Roy, A., 2009b). This reason is further supported, as these sites are now no longer a base for cheap labour, but also a site for economic production (Nijman, J., 2015). Although it is not possible to equate all informal settlements as the same, as they share different social economic factors as well as spatial features. It is thus impossible to find a prototype that embodies the informal settlement typology in India. However, this research will explore the phenomena of the informal settlement through one of its most prolific examples: Dharavi.
LOCATION OF INFORMAL SETTLEMENTS

- Informal Settlements and slums
- Commercial and industry
- Built fabric of Mumbai
- Natural areas

Map derived from: www.mumbaidata.in
“All they know is that you’re trying to get to the city of gold, and that’s enough.

Come on board, they say. We’ll adjust.”

-Suketu Mehta (Author of Maximum City)
“More dreams are realised and extinguished in Bombay than any other place in India”

-Gregory David Roberts (Author of Shantaram)

MUMBAI - 2011

POPULATION: 18.3 MILLION

METROPOLITAN AREA: 4355 SQKM

ANNUAL ECONOMY GENERATED: $ 238 BILLION

Dharavi, highlighted in the urban fabric of Mumbai, India
1.2. Why Dharavi

As one of the most visible informal settlements in India, Dharavi, has been the subject of discussion and debate by academicians, the government, the private sector and the civic institutions. It has had the notoriety of being labelled as “Asia’s largest slum” (Sharma, K., 2000). Although, this has been hotly debated by scholars that this notoriety has been gained without reflecting upon the derogatory implications of using such a term (Arabindoo, P., 2011).

What makes Dharavi a point of interest, is that its current location in the heart of Mumbai – the financial capital of India. Dharavi cannot represent all slum across the country, as such an example cannot exist. However, it does embody a resilience and persistence towards external land development pressures, occurring from being situated in the topographical centre of one of the most expensive cities in the country (Bharuchal, N., 2014). Dharavi is now at the centre of Greater Mumbai, located in close proximity to the city’s integral rail connection. This prime location has garnered great interest, both from the government as well as private investors and developers.

In addition to this, Dharavi has hit popular limelight like no other informal settlement. With international movies (Boyle, D., 2009) - figure 1.14 - and several documentaries (figure 1.16) have highlighted the conditions and prevailing situation Dharavi.

This is put sharply into focus the efforts that the Indian government has put into slum rehabilitation measures. Dharavi and other informal settlements in India has seen several governmental measures by the Slum Redevelopment Authority of India over the last few decades. Most of the slum redevelopment projects in the country aim to reduce the high living density to humane levels, building high tower blocks with basic amenities such as toilets. However, it has to be noted that most of these interventions have failed in the larger sense. The most common argument presented is that these rehabilitation schemes disrupt the social ties and economic needs of the community, which has self-evolved over the last decades.
The new attention: A variety of Movies, books and Documentaries based on Dharavi

Paradox of the media attention on the redevelopment of Dharavi
Spatial characteristics of Dharavi
Spatial characteristics of Dharavi
This section addresses the different aspects of informal urbanization and the redevelopment attempts to address it in India (especially in Dharavi Mumbai), leading to the formulation of the problem statement and research question of the project.

This chapter also outlines the project objectives and the methodology by which it aims to address the research question.
2.1 PROBLEM ANALYSIS

2.1.a Urbanisation processes in India

Post the liberalisation of the Indian economy in 1991, there has been a decisive shift in its housing policies and its approach towards urbanisation. From a mixed-socialist and a highly regulated economy in till the 1980s, national policies moved towards a free market system. This changed India’s perspective towards urbanisation, which is now viewed as an opportunity by the Indian government (Express, I., 2016), with the policy makers viewing it as a method to alleviate poverty. In the current era of post-globalisation and the advent off neo-liberalism, India’s approach towards informal settlements have also become increasingly reliant on the “market” and the local “self-help” agencies (Nijman, J., 2008).

Mumbai, as the financial capital of India, signifies the epitome of this new model of urbanisation, and also visibly illustrates the revised approach towards its growing informal settlements. It has always been a city where land prices at one point the late 1990’s were high enough for it to be labelled as the most expensive city in the world. It also based on the idea that cities such as Mumbai offer opportunities for people to develop a better life for themselves and their future generations. This nature has been romanticised by several authors such as Suketu Mehta, who writes in his prolific book (Maximum City), “All they know is that you’re trying to get to the city of gold, and that’s enough. Come on board, they say. We’ll adjust.” This nature of urbanisation in Mumbai, which projects and propels both high end development and informal settlements (figure 2.1) also runs parallel to the urbanisation processes at the national level.

The combination of the shift in national economic policy and the attitude towards urbanisation in India has highlighted a divisive distribution of space – the persistence and rise of informal settlements (with services, infrastructure quality of shelter), further encouraged by the new format of rehabilitation and redevelopment policies (Nijman, J., 2008). Policies, specifically targeting informal settlements are now state and municipality led, instead of being at the national level, therefore more susceptible to market forces. A more direct impact on informal settlements, which is very visible in Mumbai is the reformation of local politics and cultures focussing on local groups and NGOs.

This new approach towards informal settlements in India presents a paradox, with on one hand a dependence on smaller organisations and NGOs, with on the other hand a political culture that is strongly pro-growth with limited tolerance towards informal settlements, particularly salient in urban areas with intense competition for land (Nijman, J., 2008), bringing us back to Mumbai and the chosen example of Dharavi.

Figure 2.1: Development in Mumbai; Source: http://www.theworldisnotflat.com/files/includes/images/55_371d-2d04ee.jpg-v-0.jpg
Figure 2.1 Contrasting development model in Mumbai
Dharavi, as an example, illustrates the perseverance of the informal settlement in the formal city. Occupying around 432 acres and housing close to a million people, space inside Dharavi is highly contested and valued (Fernando, B., 2014). This is further enhanced by its high geographical value by its position in the formal city of Mumbai.

The production of space and spatial fabric of the informal settlement is often thus directly linked to the formal city. Informality is often seen as much as the purview of the urban elite and it is of the urban poor (Roy, A., 2005). The spatial quality of the informal settlements of the urban poor can therefore be directly linked to the production of space in its neighbouring formal fabric. This holds, especially for the case of Dharavi, where the settlement existed before the formal city of Mumbai engulfed it over the last decades of the 20th century.

The formal city of Mumbai, therefore, shares a much more direct link to the informality of Dharavi, engaging and evolving its morphology, economy and social ties. It is much more than just a passive manifestation of surplus humanity (Davis, M., 2007), but it can saturate to a larger area (Dovey, K., 2016). In Dharavi, one can see a certain dependence on public space as an extension of the private life (figure 2.2), ensuring a high usage of the smallest of available outside space. A particular example can be of the 90ft road, which runs through Dharavi and its neighbouring area, transforming itself for various social functions and economic enterprises. Informal economy, also widespread in informal settlements like Dharavi, plays an important role in the mode of production of space within and around it. Dharavi constitutes of a large cottage industry base, consisting mainly of recycling, pottery and leather tanning. This has shaped a large part of the spatial quality of Dharavi and its network with the formal city of Mumbai. Intrinsic to the livelihood of the citizens, informal industries, especially recycling forms a crucial part of the formal city. These industries have evolved over the last decades adapting the space to the required functions, fine-tuning itself to its present day form. This mode of production and system of space is often disrupted by the rehabilitation schemes proposed by the state and national government, with planned enclaves, which on one hand try to elevate the living conditions but do not take into account the social ties and economic needs of the pre-existing space.
A wide range of street and community life in Dharavi
2.1.c The paradox of redevelopment schemes in India

The paradox of redevelopment schemes targeting informal settlements has been argued by Nijman (Nijman, J., 2015) and Roy (Roy, A., 2009b) in detail - although India’s informal urban areas present themselves as a nuisance to most traditional urban planning strategies, they form a crucial part of India’s urban structure. However, this should not imply that we leave its citizens in the appalling and inhospitable conditions. On the one hand redevelopment and large scale action from the government and private sector is necessary (figure 2.3); but it should not come at the cost of its social and community structure and its economic capacity. The research positions itself at the crossroads of this dual and presently contrasting needs.

As discussed previously, India’s informal settlement redevelopment schemes have evolved from being state-led programs (pre-1980s) a more market driven and local agency reliant schemes. This is not limited to only India, as the growing problem of informal settlements now coincides with neoliberal policies in most developing countries. However, Dharavi, presents a unique situation in its redevelopment history. It has been subject to several redevelopment schemes, ranging from the Slum Clearance Act in 1971 to the current Dharavi Redevelopment Project. There has been a substantial amount of debate of with respect to this plan, with arguments from grassroots organisations and local citizens, raising issues over the lack of participation and the erosion of the social and economic values.

For a true inclusive redevelopment project to work in an informal settlement, it is essential to incorporate its existing social-economic values involved in the production of space into the upgradation scheme. This is so far missing from the rehabilitation schemes in informal settlements, especially in India. This is based on the understanding that the social and economic values play a crucial role in the production of space within the informal settlement and contributes to the resilience and the persistence of the settlement within the formal city. Argued by Nijman, J. (2015), who states that “the slum-dweller’s identity is a communal identity and its place-based”, it thus becomes necessary to delineate what place-based factors contribute to the resident’s identity and how they can be incorporated into redevelopment schemes.

The above few pages are a testament to a fact that there is a considerable lack of knowledge about the social and economic structure of informal settlements in India, and their relation to the production of space within the built environment. What is also missing is the linkage of this mode of production of space with the surrounding fabric of the formal city.
Figure 2.3

Executed redevelopment models in Mumbai for informal settlements
India’s number of informal settlements have seen a meteoric rise of 25% in the last decade (Census, 2011), and the pressing need to rehabilitate its citizens is now a more important issue than ever before.

Dharavi, in particular has prevailed and resisted most of the redevelopment and upgradation schemes. Only sporadic attempts by the Indian government have been made at its periphery, with none of them working well enough to be replicated in more numbers. This is accredited mainly to an indifferent attitude of the policy makers, planners and developers towards the existing social and economic mode of space, leading to insensitive and inefficient redevelopment and upgradation projects. This issue needs a deeper understanding of what contributes to the resilience of the space within the informal settlement of Dharavi which roots it deeply within the formal city, in order for redevelopment and upgradation schemes to work in a larger scale in a more inclusive and sustainable manner.
Figure 2.4
2.3 Research Question

How can a strategic framework incorporating the existing social-economic production of space in informal settlements linking it to the formal city, lead to long term inclusive and sustainable redevelopment projects?

(Case study: Dharavi, Mumbai, India)
**SUB RESEARCH QUESTIONS**

1. *What are the social ties and economic networks which contribute to the production of the space in the informal settlement of Dharavi?*

2. *What is the spatial manifestation of these socio-economic values and elements in Dharavi?*

3. *What are the current approaches for inclusive and sustainable redevelopment and upgrading projects in informal settlements?*
4. What is the current position of Dharavi in the formal city of Mumbai, with respect to its social and economic aspects?

5. What role can this mode of production of space play in future redevelopment proposals for Dharavi?

6. How can this strategic framework be translated for other informal settlements in India and the global south?
2.4 RELEVANCE

2.4.a Societal Relevance

India will surpass China in terms of total population by 2030, thus linking the urban future of the world directly with itself (Nijman, J., 2015). Out of this, a large share will be living in informal settlements, with limited access to basic services such as housing, services and infrastructure – and hence addressing this problem is an urgent and pressing issue which requires a comprehensive solution. Already close to 65 million people in India are in this category (Census, 2011), a number which increases with each passing year. Dharavi’s notoriety, and the troubles faced by the recent Dharavi Redevelopment Plan (DRP) have highlighted the problems faced by most slum rehabilitation processes in India. Even previous upgradation plans have faced resistance from Dharavi’s citizens citing that their economic capacity becomes threatened with the new schemes, forcing another way of spatial configuration on a century old system. This does not mean that upgradation schemes are not required; in fact the rising pressure of people in areas such as Dharavi requires urgent attention from policy-makers, planners as well as developers.

2.4.b. Scientific Relevance

Although there has been dialogue and discourse in academia and governmental organisations about informal settlements and their role in the process of urbanisation in the cities of the global south, very little of it has been translated to the redevelopment and upgradation schemes. Here is, therefore, a disconnection between the scholars who explore and study the mechanisms of the space of the informal settlement and the policy-makers and planners, who develop and execute the upgradation strategies. Till date, there has been little attempt policy makers and planners make to incorporate how livelihood and culture can be valued and used for the conception of new forms of production of space that are not only attached to global (capitalistic and western) forms, but also work at the local level. This gap has been further highlighted by Schrader in his unpublished work, agreeing that the social and economic structure of informal settlements is still deficient in nature. Calling informal settlements to be perceived as more than just geographic space and concentrations of urban poverty, he writes about them as areas “in which a large size of people is living in inappropriate conditions, and which city planners have to cleanse or shift; it is also a highly complex space of living and working, with socioeconomic connections to formal and informal economy, the world market, and the place of origin of the migrants. Aspects of ethnicity, religion and social structure cut across this space” (Schrader, H.). This research aims to broaden the understanding of social-economic space in informal settlements (taking Dharavi, Mumbai as a case study), in order to bridge the gap between theoretical understanding and a planning framework implementation.
Dharavi in the popular news media

Money, power and politics collide in the battle for Mumbai’s slums

A controversial project to bulldoze Dharavi, the giant slum town that formed the backdrop to Slumdog Millionaire, is revising the fortunes of essential parties.

Figure 2.6

Dharavi redevelopment project: Tender terms turn off developers, no bids

Last date to submit bids extended to May 5, officials say no terms, conditions to be changed.

Written by MANIKA PUNIA | Mumbai | Updated: April 30, 2010 1:07 am

Figure 2.7

Dharavi slum’s decades-old informal economy turnover of $1 bn plus now threatened by development

MUMBAI: Malik Abdulah’s plastic recycling business in Dharavi, the sprawling slum in Mumbai that is among the largest in Asia, has survived his building collapses, and the criminal underworld for decades. Now, it is threatened by development.

For 35 years, Abdulah has carried on the business built by his father, pulverising used plastic cans and bottles into pellets.

Figure 2.8
2.5 AIM OF THE RESEARCH

This research will aim to develop a strategic framework to contribute to maintaining the social and economic dynamics and value of the space in an urban informal settlement, linking it to its surrounding formal settlement. This framework would comprise of a combination of spatial guidelines that continue the existing mode of production of space in Dharavi, along developing policy recommendations that influence redevelopment projects in informal settlements in India (figure 2.9).

The research supposes that the redevelopment and upgrading projects of informal settlements in India need a framework which ensures its adherence to existing economic network and social ties. This is important to the continuance of social structure, ensuring a more successful and ingrained redevelopment project.

Objectives of strategic framework:

The main objectives of the strategic framework need to contribute to an inclusive and sustainable redevelopment project in informal settlements such as Dharavi. Therefore, it must ensure social equity for its inhabitants, offer continuance and an increase in economic opportunities and be environmentally sensitive and resilient in nature. Some of the main features required for it to fulfil the objectives of the framework in Dharavi are:

- Identification of areas within the informal settlement of Dharavi, where the economic networks and its structure needs to be retained, thereby encouraging the continuance of the social structure.
- Guiding the typology the redevelopment projects in order to ensure future social cohesion and a post-occupation success of the redevelopment project, ensuring social equity of the rehabilitation projects.
- Continuance of the economic structure aspects of the entrepreneurial nature of the inhabitants of Dharavi, so as not to disrupt livelihoods and an industrial sector upon which there is also a heavy reliance by the formal city of Mumbai.
- Developing a recommendation to the current model of financing and policy execution.

In order to formulate and implement the strategic framework, a design hypothesis – or a spatial tool, needs to be identified, which would be used as a lens to propose the new redevelopment model. This hypothesis needs to be context specific, and therefore needs to be derived from a detailed analysis of Dharavi. Some of the possible spatial tools, which have relevance in informal settlements in India (such as Dharavi) are:

- Identification of the economic clusters: Informal settlements, such as Dharavi have their spatial characteristics based on their economic clusters. Industries such as leather...
tanning, recycling, sewing form an intrinsic part of the structure of Dharavi, establishing networks within and around the settlement.

- Mobility as a structuring tool: Movement within Dharavi and most informal settlements is intrinsically linked to the social structure within the informal settlement. Restructuring the redevelopment as per the existing mobility patterns can offer us a way to retain the social structure.

- Public space structure: Public and common space in Dharavi is often derived off its economic clustering. Its social structure is thus directly linked to economic space. The framework needs to recognize this existing structure and ensure its existence in the new redevelopment plan.

- Structure of Infrastructure: Infrastructure irrevocably links Mumbai with Dharavi. The need for formalised infrastructure is of prime importance in informal settlements and can be used as a guiding factor in the spatial reconfiguration of the redevelopment process.

The appropriate spatial tool is identified based on the detailed spatial analysis of Dharavi, which would form the basis of developing the spatial and strategic framework. The selected spatial tool would also formulate the design hypothesis of the project.
<table>
<thead>
<tr>
<th>RESEARCH PHASE</th>
<th>DELIVERABLE ELEMENTS</th>
</tr>
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| Exploratory    | • Research proposal outlining the problem analysis, research question and preliminary outline of thesis plan with intended methodology  
• Theoretical overview and initial framework |
| Descriptive    | • Finalised Thesis plan and research proposal.  
• Methodological structure with design objective  
• Theoretical and analytical framework of Dharavi, based on the above methodology with preliminary conclusions for further research  
• Outline of the spatial and strategical framework, with the main components required for inclusive and sustainable redevelopment in Dharavi  
• Identification of the spatial tools required to execute the spatial and strategical framework in a selected area in Dharavi |
| Empirical      | • Empirical analysis – based on fieldwork – expert interviews, questionnaires, secondary survey data and observational analysis  
• Development of the strategic framework for Dharavi  
• Initial analysis and testing of strategic framework on the selected cite within Dharavi |
| Reflective     | • Detailed testing of the strategic framework in a test site.  
• Illustration how a combination of spatial guidelines and policy recommendations can be envisioned at the larger scale of Dharavi, along with implementation at a smaller scale within.  
• Reflection on the design hypothesis formulated and its implication on the larger body of academia.  
• Reflection on the graduation process and its composite elements. |

*Figure 2.10: Detailed Methodology for the graduation research - by Author*
2.6 METHODOLOGY

The methodology of in order to conduct this research has been divided into three broad frameworks: The theoretical, analytical and empirical framework. In this, the theoretical and the analytical framework run parallel to each other, complementing their knowledge base.

2.6.a. Theoretical framework:

The theoretical framework forms the rationale for directing and conducting my research. Finding the right discourse about informal settlements helps in identifying the limits of generalisation in the research’s scope of interest. An initial literature overview defines the discourse on informal settlements in which this research aims to contribute. This is classified into 3 categories of “Urbanisation Processes”, “Economic Challenges” and “Policy Framework”, which are explored in more detail. Each category is further subdivided into smaller sets (as described in figure 2.14). Each sub-set contributes as a background support to the layer, testing the spatial manifestations of the theoretical explorations in Dharavi.

2.6.b. Spatial Framework:

This forms the basis of evaluating spatial analysis of Dharavi. The layers of this spatial analysis are based on the network city model (Dupuy, G., 1991). The Dupuy method, defines several perspectives to the socio-spatial system in order for a better incorporation of its inherent complexity. The Dupuy method of layers (illustrated in figure 2.12) is not taken to represent a superimposed set of territories. Instead, it view “relations” within the socio-spatial system as the main issue. The layers or perspectives in the Dupuy method have been broadly clubbed into 3 sections: 1st level operator (infrastructure, road networks and transportation); 2nd level operator (production-consumption networks) and the 3rd level operator (urban household networks and territories).

The aspect of governance and the geographical context was introduces to be able to evaluate spatial planning principles and policy making (Rocco, R., 2008). These aspects enrich and provide much needed context to the Dupuy Network city model.

2.6.c. Analytical Framework:

In this research, these two aspects are incorporated and in order to reframe the layers (or perspectives) of the Network city model so as to better suit the context of an informal settlement and its resulting complexities.

These “reframed” layers also incorporate the backing of the theoretical framework, described earlier, in order to provide more nuances understanding of the socio-economic processes and its spatial manifestation in Dharavi.
PROJECT METHODOLOGY

PROBLEM STATEMENT

- MOTIVATION
- INADEQUACY of basic services such as water, sanitation, etc.
- FAILURE of long-term inclusive redevelopment projects
- LACK OF INCORPORATION OF EXISTING ECONOMIC NETWORKS
- UNSUSTAINABLE AND NON-INCLUSIVE NATURE OF REDEVELOPMENT PROJECTS
- PERSISTANCE of informal settlements along with increased urbanisation

METHODOLOGY

THEORETICAL FRAMEWORK
- SOUTHERN TURN
- URBANISATION PROCESSES
- ECONOMIC CHALLENGES
- GOVERNANCE SYSTEM

SPATIAL FRAMEWORK
- DUPUY METHOD
- 1ST LEVEL OPERATOR
- 2ND LEVEL OPERATOR
- 3RD LEVEL OPERATOR

ANALYTICAL FRAMEWORK
- 1 - HISTORICAL EVOLUTION
- 2 - GOVERNANCE SYSTEM
- 3 - LANDFORM & INFRASTRUCTURE
- 4 - ECONOMIC NETWORKS
- 5 - SOCIAL STRUCTURE

RESEARCH QUESTION

SR Q-1
SR Q-2
SR Q-3
Figure 2.10

DESIGN HYPOTHESIS
ECONOMIC CLUSTERING CAN ACT AS A SHORTHAND FOR THE CULTURAL AND MATERIAL SPATIAL ASPECTS

FIELDWORK
EXPERT INTERVIEWS
QUESTIONNAIRES
OBSERVATIONS

STRATEGIC FRAMEWORK
A COMBINATION OF SPATIAL GUIDELINES AND POLICY RECOMMENDATIONS FOR DHARAVI

DESIGN FRAMEWORK
A DETAILED EXPLORATION AT 13TH COMPOUND

REFLECTION

SR Q-4
SR Q-5

SR Q-6
The layers used in this research are:

- **Layer 1** – The historical evolution of Dharavi’s spatial and form with respect to its shared history with Mumbai is explored in order to understand base social and economic layers.
- **Layer 2** – The governance system runs parallel to Dharavi’s historical evolution. It has a shared aspect of how national policy approaches towards informal settlement have influenced and affected Dharavi’s growth.
- **Layer 3** – Location and Infrastructure of Dharavi is formulated on the layers of history and governance approaches, playing an important factor in its present role in Mumbai.
- **Layer 4** – The informal economy is perhaps the driving factor of Dharavi, resulting in a complex sociospatial network which extends to Mumbai and sometimes even beyond.
- **Layer 5** – Intrinsically linked to the informal economic production of space, is the social structure and its resulting social security, which plays a defining role in the spatial construct of Dharavi.

The above layers (figure 2.15), help guide the spatial understanding of Dharavi, identifying the areas within the area, where the spatial design and framework can be implemented and tested.

### 2.6.d. Fieldwork:

In order to make the supplement the operationalisation of the strategic framework and design, fieldwork directed by expert interviews, observational analysis and local inhabitant interviews is an important part of the methodology. The following people have been identified for the set of expert interviews, based on the experience and working history within Dharavi:

- **Ainsley Lewis** – Senior lecturer at KRIVA and practicing architect in Mumbai, who have been involved with several research projects in Dharavi
- **Gerrya George Jacob** – Asst. Professor at KRIVA, led the development of the ‘REDharavi’ project.
- **Hussain Z. Indorewala** – Asst. Professor at KRIVA, regarding policy towards informal settlements.
- **Matias Echanove & Rahul Srivastava** – Founder at Urbz, Mumbai - an experimental urban research and action collective, who have executed several workshops and hands-on research projects in Dharavi.
- **Jai Badgaonkar** – Architect and urban designer at Urbz, Mumbai
- **Shyam Kanle** – Field operator with URBZ. He has run many businesses in Dharavi where he was born and raised. He has also been involved in conflict resolution and local politics for many years.
- **Bhau Korde** – activist and resident of Dharavi

Selected industrial workers and owners along with shop owners are interviewed to develop a better understanding of the social and economic aspirations of the inhabitants.
Governance

Policy implications

Context

Historical evolution

Layer 1

Historical evolution

Layer 2

Policy & Governance

Layer 3

Landform & Infrastructure

Layer 4

Economical networks

Layer 5

Social structure

1st level operator

Road network, infrastructure etc

2nd level operator

Production-consumption network

3rd level operator

Urban household network

Dupuy Network City Model

Source: Derived from (Dupuy, G., 2008)

Additional layers added

Figure 2.11

Figure 2.12

Analytical Framework for Dharavi

Source: Author

Additional layers added

Source: Derived from (Dupuy, G., 2008)

Figure 2.13
Understanding an informal settlement is a complex and layered process. There is no single discipline which solely address this problem, especially in the global south. In order to develop a more comprehensive understanding of the discourse, the literature categorised into various sub-themes (figure 2.14) exploring the phenomena of urban informal settlements.

Informal settlements have been explored by several scholars and organisations such as the United Nations, in different aspects. One of the most prolific documents on the informal settlements was “The challenge of slums: global report on human settlements (2003)”. It defined much of the discourse which followed on informal settlements. Within this literature, one can see an interest in the “South” in order to reimagine the urban and to analytically grasp the terrain of the “global” phenomena (Rao, V., 2006). Davies later presented a paper, mainly an extension of this UN report, focussing on the idea of “surplus humanity” – people cut out of the formal economy and driven into slums. He termed this phenomena as a result of the decoupling of urbanisation from industrialisation and development. The specifically focusses on the cities of the global south, calling them as the “dumping ground of this surplus humanity”, instead of being engines of growth” (Davis, M., 2004). In his further writings, he continues to add to his argument that slums are the only “fully franchised solution to the problem of warehousing the 21st century’s surplus humanity” (Davis, M., 2007). Global cities of the south are therefore often equated with “gigantic concentrations of poverty” and the slum is the physical manifestation of this clam (Davis, M., 2007). This theorization takes a more apocalyptic turn towards informal settlements and slums, although it states that this form has emerged over decades of structural changes and is therefore not passive in nature.

Another dialogue which arises is the Southern turn in urban studies and planning theory. The advent of this discussion (often termed as Subaltern Urbanism) has been written about by several authors; with informality being a particular interest to Ananya Roy. She argues that “subaltern urbanism” helps to provide accounts of the slum as a terrain of livelihood, habitation and politics, working against the apocalyptic and dystopian narratives of the slum (pg. 224) (Roy, A., 2011). Subaltern urbanism is also often seen a new geography of theory that can help in the unbounding of the “global slum (Roy, A., 2011). She has argued how informality is a mode of production of space which connects the disconnected geographies of slum to the suburb; and that this separation happens in a fractal fashion within the informalized production of space (pg. 223) (Roy, A., 2011). Informality and the slum has been called to be used as a theory by Chatterjee (Chatterjee, P., 2004) and Rao (Rao, V., 2006). Rao argues that the slum straddles the conceptual and material forms of city-making that are challenging the imaginary of the modern city, and therefore can be used as an empirical and analytical point of departure for understanding the cities of the global south (Rao, V., 2006). On the other hand, Pushpa
Theoretical Framework

Figure 2.14
Arabindoo (Arabindoo, P., 2011) questions whether a more direct investigation of its application in the new frontiers of urban development in the global south needs to be explored. She argues that the “slums are epistemologically inadequate in terms of conceptualising urban poverty”, leading to distorted policy making decisions. She, however concedes that the term slum still has scholarly appeal, but it should be restrained from becoming a “rhetoric linchpin” which can depoliticises the urban poor, i.e., it should not become a short-cut icon to a desk base research on urban poverty (Arabindoo, P., 2011).

Another type of theorization explores the connection of social and political life of the cities of the Global South. Two authors stand out in this discussion: Arjun Appadurai and Partha Chatterjee. The informal settlements of the global south feature in their research as an important site. Both of them try to track the emergence of governance from which marginalised sectors seek to state their claim from (Appadurai, A., 2001) (Chatterjee, P., 2004). Appadurai describes the alliance of three civic institutions in Mumbai (NGO SPARC, the National Slum Dwellers Federation and Mahila Milan, a cooperative representing women’s savings groups); and how they “individually and collectively, seek to demonstrate to governments (local, regional, national) and international agencies that urban poor groups provide these agencies with strong community-based partners” (Pg. 01(Appadurai, A., 2001)). Appadurai coins this phenomena of negotiation in Mumbai as an illustration of deep democracy, which is rooted in local context and is still able to mediate globalizing forces in order to benefit the poor (Appadurai, A., 2001). This exploration of a changed method of governance becomes relevant if we explore the production of space to a mode of governance which works for all the actors and stakeholders involved.

Exploring the phenomena of urban informal settlements through migration and movement patterns, Doug Saunders argues the role which Dharavi (and other areas) play in the urban transformation of the city, leading to a very direct spatial impact. This phenomena of “arrival city” is tested on the basis of how much social mobility the city offers to its inhabitants, linking migration to urban development (Saunders, D., 2011). Dharavi, like most informal settlements in India offers a certain degree of social mobility, which links to its social space.

The value informal economy has been debated by Hernando De Soto in his writings. He explores and argues for the importance of informal economy for the developing countries; stating that “the dynamics of operating in the informal economy should be allowed to clear the way for free market, creating market oriented reform” (De Soto, H., 1990). This is explored through the case of Lima, Peru. However, it is not extended to the study of space, which is directly produced because of informal economy. In the particular case of Dharavi, Nijman argues that the economic activities are inseparable from the ethnic identities and the highly localised cultural milieu of the slum (pg. 10)(Nijman, J., 2010). As informal economy, plays an important role both for Dharavi and Mumbai, its spatial organisation needs to be explored from the above angle.
The analytical framework composed of the spatial analysis and theoretical framework is tested and applied at Dharavi. It forms an integral part of the research leading to the formulation of the strategic framework. The following sections illustrates the five analytical layers and its spatial manifestation in Dharavi.

Analytical Framework for Dharavi

Figure 2.15
Dharavi - analysis

Layer 1 - History of Dharavi
Layer 2 - Policy review
Layer 3 - Landform and Infrastructure
Layer 4 - Economic Networks
Layer 5 - Social Structure

The analytical framework composed of the spatial analysis and theoretical framework is tested and applied at Dharavi. It forms an integral part of the research leading to the formulation of the strategic framework. The following section illustrates the five analytical layers and its spatial manifestation in Dharavi and its resulting connections in Mumbai.
In order to explore the complex relationship of Dharavi, with respect to Mumbai, it is important to delve into its shared urban history (figure 3.4).

3.1.a. The late 19th century & the early 20th century– Dharavi’s beginnings:

Dharavi’s beginnings go back longer than Mumbai’s (previously Bombay) roots. Prior to its colonial history, a small fishing village of the “Kolis” stood where Dharavi today is. Till the mid to end of the 19th century, Mumbai was classified into 2 main parts: the colonial part (towards the southern edge of the island) and the native part (located north of the colonial town). Dharavi (in the form of the fishing village – “Koliwada”) at this stage occupied the northermost part of the Native town, having a population of only 992 (Dossal, M., 1991, Pg. 197). The Native part of Mumbai was characterized by a high population density living in areas which were unplanned and not considering the quality of life of its inhabitants.

The first instance of Dharavi’s resemblance to its current form started to take shape in the late 19th century, when the polluting industries were expelled from the colonial and the native town to the then outskirts of Dharavi (Nijman, J., 2010). This decision was taken mainly because of unsanitary conditions and a plague which ran through the city, resulting in the expulsion of industries such as tanneries. The first tannery arrived in 1887 and by 1890, other Muslim tanners from Tamil Nadu arrived and made Dharavi their base. Another group were potters from the state of Gujarat, who arrived in 1895, receiving a 99 year lease from the then colonial government (Dossal, M., 1991) (Nijman, J., 2010). This was the birth of Dharavi in its current form.

3.1.b. Pre-Independence (1947):

The evolution of Dharavi, both in its population numbers and spatial area increased over time. The numbers of the migrating families grew steadily over the next few decades, along with Mumbai’s prominence in the colonial empire. The communities, especially the potters from Gujarat (Western India) and the tanners from Tamil Nadu (Southern India) established themselves in Dharavi, setting up community places and services such as temples (the first temple was built in in 1913) and schools - the first school (Tamil) in 1931 (Nijman, J., 2010). This helped Dharavi establish itself as a base for more newcomers arriving in the city.

Figure 3.1: Timeline of Mumbai Urban Growth; Source: derived from http://www.mapsofindia.com/history/ by Author

Figure 3.2: Mumbai historical growth documented; Source: http://www.mapsofindia.com/history/

Figure 3.3: Mumbai’s Urban Growth with its increasing informal settlements; Source: derived from http://www.mapsofindia.com/history/ by Author
Mumbai historical growth documented
looking for work in Mumbai’s growing industries. Their numbers grew steadily in subsequent years as the original settlers were joined by overflow migrants from the central city as well as new rural in-migrants. Still, however, Dharavi formed a minor share (less than 0.2 million) of population of Mumbai in 1950, which stood around 2.9 million (Census of India, 1951).

3.1.c. Post-Independence till 1991:

Post-independence, i.e., post 1947, saw a great surge in the population of Mumbai and its surrounding regions. Greater Mumbai, or the Metropolitan area of Mumbai, grew immensely in the years following the independence, with its population increasing by large numbers along with its living density. As the independence era hit, rural-urban migration peaked, and Dharavi continued to be a place for the new arrivals to Mumbai. The numbers of informal settlements also increased in number, now forming large pockets of dense urbanisation in the Greater Mumbai region.

The 1970s and 1980s saw Dharavi take a central position in Mumbai’s geography, and some of the leather tanneries were driven further out and were replaced by redevelopment projects as they were not seen to be suitable for a central location. Only the smaller tanneries remained in Dharavi. Some
Timeline of Mumbai Urban Growth with its increasing informal settlements
of this vacant land became sites for redevelopment projects (discussed in detail the upcoming sections) (Nijman, J., 2010). This was also a time when Dharavi became more visible with 1976 being the first census to be conducted for the inhabitants of informal settlements in Mumbai (Chatterji, R., 2005). The establishment of the transit camp in Dharavi also occurred in the 1970s, to rehouse inhabitants affected because of the construction of the Dharavi-Sion Road (north edge of Dharavi).

3.1.d. Dharavi – post 1991:

Post 1991, saw a major change in the spatial form of urban megacities such as Mumbai. The freeing up of economy and the onset of liberalization saw a larger proportion of informal settlements to the population of Mumbai (Census of India, 1991). This was also a time when the land prices of Mumbai saw a steep increase. Mumbai had a steep gradient in land values from the South to the North; this coupled with an influx of foreign corporation creating a sudden escalation of land prices (Nijman, J., 2000). The Greater Mumbai region also saw growth towards the North and North-East, mainly because of geographical constraints. The population in Mumbai city stood at close to 9.9 million but also had a considerable share of its population (around 41.3 % - illustrated in Chapter 1 - figure 1.8) living in sub-standard housing such as informal settlements (General, R., 1992). Dharavi rose in importance, mainly because of its now central and visible position in very a valuable piece of real estate.

Several documentaries and popular movies made this particular informal settlement even more visible, often being used to embody and illustrate the poor living conditions within such areas. It has to be noted although several redevelopment projects were attempted in this phase (discussed in detail in the following section of Policies), none of them could be implemented at a required large scale of Dharavi. Because of the city’s expansion to the north-east and its geographical constraints, the land prices have increased significantly within the inner core of Mumbai, making it one of the most expensive cities in the world. Dharavi, now occupies a prime slice of this very expensive land, in close proximity to two railway lines, the airport and the several centralities of Mumbai.

**Figure 3.4:** Timeline of Dharavi’s growth with respect to Mumbai; Source: derived by Author from http://www.mapsofindia.com/history/ & UrbZ, Mumbai

**Figure 3.5:** Urban fabric of Dharavi; Source: Google Earth maps
Timeline of Dharavi's growth with respect to Mumbai

Figure 3.4
Dharavi - 2011

Population: 1 Million (Approx)

Metropolitan Area: 2.39 SQKM

Economy Generated: $1 Billion

Dharavi, in present day highlighted in the urban fabric of Mumbai, India

Source: Derived from Google Maps
Dharavi has always shared a complex relationship with Mumbai, with Mumbai needing it more for its labour and cheap industry, than the other way around. Often seen as a slum or squat settlement, against the global image Mumbai wants to portray, the state and national government has drafted several plans to redevelop this area. The start of these policies have emerged soon after independence of India in 1947, and have since shaped the existence of informal settlements such as Dharavi, including their persistence.

They can be categorised into three broad themes (Figure 3.7) as per their main ideologies and approaches. They have been discussed below:

i) Clearance and Eviction:

This phase was characterised by the first major policy against informal settlements and slums. The Slum Area and Improvement and Clearance Act (1956) made provisions for the clearance and development of areas identified as a “slum” by the Indian government. However, it did not clarify any resettlement plan for the evicted population, leading to the evicted population to settle in other informal settlements or create new informal settlements (Bardhan, R. et al., 2015). Realising this basic gap, the next policy of “The Slum Areas - Improvement, Clearance and Redevelopment - Act (1971) took a more humanitarian approach, aiming to resettle the evicted dwellers in peripheral areas of the city. This was, unfortunately, only restricted to “slums” and “informal settlements” present in government-owned land. It also increased the growth of informal settlements in the periphery, as the resettlement would still take place in an informal manner.

ii) Upgradation and Redevelopment:

The second phase was characterized by policies pertaining to upgradation and the improvement of the living condition of the inhabitants of informal settlements, through financial assistance (in collaboration with the World Bank). The impact of this scheme was quite restricted as it did not apply to informal settlements on private and the central government land, and was limited to land owned by the state government. Dharavi, in particular, received a large grant via The Prime Minister’s Grant Project (1985), in order to relocate close to 20,000 families outside Dharavi (Bardhan, R. et al., 2015). It suffered from bureaucratic and construction delays coupled with the creation of a high-priced housing stock, which limited its application scale.

iii) Privatization and Redevelopment:

The liberalization and the advent of globalization to India in 1991, brought in large scale foreign
Evolution national policy towards informal settlements in India
investment into the housing sector, with a scheme of Slum Redevelopment Scheme (1991). The incentive of an increased FSI (Floor Space Index) was provided to private developers, in order to rehouse the “eligible: inhabitants in-situ and free up space for profit-based development. However, the houses for the inhabitants came at a cost and the criteria for its eligibility also cut off a large population (as they had to prove that they were residents of the area before 1985). A modified version of the above policy came in the form of the Slum Rehabilitation Scheme (1995), which tried to rearticulate the terms of rehabilitation related to informal settlements exclusively. Although, it increased the area allotted to the inhabitants, it still catered mainly to the private developers, providing them with an even higher FSI.

This bent of redevelopment and rehabilitation relies heavily on market forces, decreasing the focus on the actual inhabitants of these informal settlements. Dharavi, in recent history has been heavily influenced by the Slum Rehabilitation Scheme (1995), which protected the eviction of people who could prove that they were residents of Mumbai before January 1995. This formed the basis of other redevelopment schemes for Dharavi, including the current Dharavi Redevelopment Project.

3.2.b The current project: The Dharavi Redevelopment Project

In order to better understand the composition of the Dharavi Redevelopment Project (DRP) - Figure 3.9, it is explored through 5 aspects, derived from European Cohesion Policy:

i) Structure:

The Dharavi redevelopment project was the brainchild of an Indian architect based in the USA, Mukesh Mehta. He saw an opportunity to develop a new more comprehensive plan for the whole of Dharavi instead of piecemeal projects. The DRP proposes the intensive utilisation of land in Dharavi for rehabilitation of slum dwellers and commercial development. The argument is that this will lead to more integrated development and benefits for residents of Dharavi and enable them to integrate to mainstream development.

The Dharavi Redevelopment Plan (DRP) envisages the division of Dharavi into five sectors. Bids were invited from a consortium of international and national developers to provide free housing and infrastructure for the residents of Dharavi. The Developers had to pay a premium to the Government and in return get as incentive ‘Floor Space Index’ (FSI) on which they could build more commercial and other structures and sell in the open market. The FSI offered till now is 4. In this way, it was to be a win- win situation for all the parties concerned. The Government would earn substantial revenues, the Developer would make windfall profits and the residents of Dharavi would

Figure 3.8: Governance division in Mumbai, with Dharavi placed in the G (North) ward in Zone 2; Source - Author, derived from www.mumbaidata.in
GOVERNANCE DIVISION
IN MUMBAI

TOTAL 24 WARDS; SPREAD OVER SIX ZONES
Zone 1 - Ward A, B, C, D and E
Zone 2 - Ward F North, F South, G North and G South
Zone 3 - Ward H East, H West, K East and K West
Zone 4 - Ward P North, P South, R Central, R North and R South
Zone 5 - Ward L, M East and M West
Zone 6 - Ward N, S and T

Map derived from: www.mumbaidata.in
have more living space and better amenities than before (Rao, S.G.B., 2012). It should be noted that the redevelopment projects by the developer, have been stated to be conceived based on participation with the local residents of Dharavi.

b) Simplification:

The DRP has a very top-down mechanism for redevelopment, with the sector divisions formed by the Slum Redevelopment Authority of India, in consultation with Mukesh Mehta. Although citizen participation from Dharavi is encouraged, it plays a limited role in the initial stages. Once the sectors have been allotted its private developers, it is up to them, how to redevelop it in order to generate profit for rehabilitation schemes. Therefore, although the decision making process of the DRP is simple, it largely ignores discourses from other actors, especially the inhabitants. What is also missing is a sense of transparency in the decision making process, which is illustrated in the grey area of eligibility conditions for the low income housing generated.

c) Differentiation:

A large portion of Dharavi’s inhabitants along with several academicians have raised several arguments against the DRP. The most visible missing element is the consideration of current livelihoods and socio-economic networks and whether these livelihoods can be sustained in a post-redevelopment scenario. Along with that, a lack of consideration of existing social structure and economic system in the DRP has been highlighted by several parties.

d) Performance

There has been no attempt or plan in the DRP to evaluate the project post its construction and occupation. It also does not incorporate lessons from other redevelopment schemes in order to learn, how the post-occupancy works in similar attempts. This is a major gap, where the DRP and the state government need to revise its approach.

e) Financial Instruments used:

There has been no attempt or plan in the DRP to evaluate the project post its construction and occupation. It also does not incorporate lessons from other redevelopment schemes in order to learn, how the post-occupancy works in similar attempts. This is a major gap, where the DRP and the state government need to revise its approach, as only a post-occupancy evaluation can ensure a inclusive and socially sustainable redevelopment project.

Note: The future of the DRP in its limbo, with no bids being received from the private developers for any of the 5 sectors of Dharavi (Bardhan, R. et al., 2015). The main factors contributing to it were tough eligibility conditions for the developers, concerns over protests from the inhabitants and height restrictions by the state. This led to the allotment of one sector to the state to develop (which is contradictory to the original plan), in order to jump-start the project and attract other fresh investors.

Figure 3.9: The current system of the Dharavi Redevelopment Project, illustrating the relationship between the different stakeholders and the project; Source: Interpretation by author
The system behind Dharavi Redevelopment Plan
3.3.a Location:

Informal settlements are often regarded as products of failed policies, bad governance, corruption, inappropriate regulations, dysfunctional land markets, unresponsive financial systems and a fundamental lack of political will (Un-Habitat, 2004). The UN Habitat report also states that there is some correlation between the location and age of the informal settlements. Although, this may not always be applicable, the UN habitat report states with an example that in a fast growing but young city, the location of the older “informal settlements” would be outside the centre of the city. The location of the slums have been classified into three main categories (Figure 3.10) as per the UN Habitat’s report:

- **Central:**
  “Central city slums tend to have been formed by the classic process where central, prosperous residential areas of cities undergo deterioration as their original owners move out to newer, more salubrious and more fashionable residential areas. Residents of slums that are located close to such zones are able to benefit from the high concentrations of employment opportunities, especially those related to unskilled and casual jobs. They are also likely to be better off in terms of transportation. This makes centrally located slums much more suitable for unskilled workers” (Un-Habitat, 2010).
CATEGORIZATION OF INFORMAL SETTLEMENTS

- Central informal areas
- Scatterd Slum Islands
- Peripheral informal areas
- Built fabric of Mumbai

• **Scattered Slum Islands:**

“These islands may have been intended as open or green spaces, as the land was thought to be unsuitable for future housing, or locations that are physically or environmentally unsafe. Slum islands are typically small, as few as eight to ten dwellings. They cannot support their own social infrastructure (school, clinic, etc); but use the facilities of the neighbourhoods in which they are located – unless they are denied access through social discrimination, which is quite common. Slum islands that are closer to the centre share many of the advantages and attributes of the central slums described above. However, they are often physically isolated from the surrounding areas by barriers such as canals, storm drains, railway tracks or motorways, and, though close to urban facilities and opportunities, may not actually be able to benefit from them. Some islands may have started as rural communities that became engulfed by urban expansion; but this is rare, except towards the periphery” (Un-habitat, 2010).

• **Peripheral:**

“Slums on the city fringes are either squatter settlements in which households have invaded (usually public) land, or they occupy land that has been subdivided and for which they have paid or entered a rent purchase arrangement with the developer or landowner. The urban periphery has distinct advantages over more central and urbanized areas as there is less competition for the use or control of land, especially if it is located outside of the municipal boundaries.” (Un-habitat, 2010).

3.3.b. Landform:

Dharavi, shares certain characteristics with the “Central” and “Scattered slum island” category, but is diverts from UN habitat’s definition resembling characteristics of “Scattered slum islands”. Although Dharavi now occupies a central location in Mumbai, historically it was once the outskirts of the city (as illustrated in figure 3.11). It was also not formed the manner the UN habitat expects the “Central” settlements to be formed. It shares its formation in the manner of a “Scattered Slum Island”, along with being placed in an environmentally sensitive area (Figure 3.14) of the Mahim Creek (which has contaminated soil and flooding). Dharavi’s location in an area susceptible to natural hazards, such as frequent flooding. Along with the a high density, services such as the main potable water supply line to Mumbai cross the northern edge of Dharavi (Figure 3.17 & 3.18). Tidal fluctuations along the Mithi River, especially during the monsoon period adversely affect this northern of Dharavi, making it a major problem not only for its citizens but also for the rest of the city. This edge is protected by a stretch of mangroves with tidal swamps, which are unfortunately under pressure from Dharavi’s growth and a lack of maintenance from the city authority. This environmentally vulnerable nature is reflected in most informal settlements, especially in the ‘scattered slum island’ typology, who inhabit areas, where formalised settlements are hesitant to occupy. Although it is in an environmentally susceptible area, it enjoys the advantages of a central location, one of the main ones being proximity to Mumbai’s railway lines (Figure 3.12). This proximity, enables its residents to access employment in other parts.

Figure 3.12: Dharavi’s viable real estate location is mainly due to its proximity to Mumbai’s railway lines and the airport; Source - Author, Derived from www.mumbaidata.in
of the city. It is also located in close proximity to the business hubs of Andheri and Dadar, along with being a short distance away from both the domestic and the international airports. This connection and proximity to Mumbai’s mobility network, on one hand has attracted more and more people over the last decade and on the other hand as attracted the private developers’ interests.

### 3.3.c. Infrastructure:

About 49 per cent of slums, including Dharavi have access to water supply from shared standpipes, while 38.3 per cent have a supply from more than one source (Risbud, N., 2003). Only 5 per cent of slums have individual taps whereas 17 slums with approximately 0.1 million inhabitants (0.87 per cent of the total) have no water supply and have to depend on adjoining settlements. Sanitation in slums is very poor as 73 per cent of slums depend on community toilets provided by the government, 28 per cent defecate in the open, 0.7 per cent slums have pay to use toilets managed by NGOs and only 1 per cent of slums have individual toilets. Dharavi perhaps shares the worst ratio with only 1 toilet per 1440 people. This is in spite some toilet blocks were constructed after 1995. Thus, Dharavi illustrates the gaping hole left by the absence of water and sanitation infrastructure.
The challenges of the lack of water infrastructure in Dharavi
The entrepreneurial nature of the “informal” has been lauded by several planners, economists and journalists. Hernando De Soto lauds the importance of informal economy, basing the case in his Native Peru, which was created as a direct response to the rigid regulations by the state forcing entrepreneurs to find a way around the system (De Soto, H., 1990). He applauded this initiative, deeming it as a basic necessity in developing countries, required for a large amount of the population to survive and thrive. Although he was challenged on his methodology and results by many academicians, one cannot overlook the ingenuity behind his ideas. Till recently popular authors such as Neuwirth have claimed about the importance and the large scale of informal economy. He calls for the recognition of “System D” (a phrase used in former French colonies to describe self-starting merchants), which translates as the ingenuity economy and the economy of improvisation (Neuworth, R., 2011, Pg 17). This builds on Turner’s emphasis in the importance of self-help and autonomy, portraying the urban poor and inhabitants of informal settlements as pioneers. Also, Turner was heavily against government help and intervention, citing a better result by involving outside agencies who are free from legislative restrictions (Turner, J.C., 1968). On the other hand James Holston, vies this phenomena as a form of “insurgent citizenship”. He view this form of informality as a movement,
where the marginalised in city regions contest their exclusion. He states that this insurgence begins with the struggle for the right to have a daily life in the city worthy of a citizen’s dignity (Holston, J., 1998). Although Holston lauds the creativity of this informal economy and its practice, he cites the need to produce critical research, which is not reductive and complacent in nature. The idea that the informal economy is linked directly with the formal is not new. Gruber describes a link derived from Madhu Singh’s (Singh, M., 1996) discourse on connections between the informal sector and the formal sector. These connections can be described as “upward” and “downward” linkages. The “downward” vertical link refers to the flow of goods and services from the formal to the informal, whereas the “upward” link refers to the opposite direction (Gruber, D. et al., 2005). It can be therefore argued that the informal sector cannot exist independently of the formal sector. There are arguments present that show that the informal sector is often exploited by the formal. For example by sub-contracting cheap and flexible labour to the informal sector, leads to a lack of social security of the employees and therefore a price-cut of the goods produced (Gruber, D. et al., 2005). It is within this conflicting discourse of informal economy that this research intends to place Dharavi in. What role does the informal economy play in Dharavi? How does it shape its urban form, and does it transcend and connect to the formal city of Mumbai?
3.4.b Working as a nature in Dharavi

The idea of a “working” or entrepreneurial nature of Dharavi has been ingrained in its history. With a wide mosaic of migrants flocking to it from different parts of the country seeking better opportunities, came a variety of professions and industries such as leather tanning, pottery, textile, which gave Dharavi its unique identity of self-sufficiency and a high employment rate of almost 80% (Nijman, J., 2015).

However, estimates regarding Dharavi’s turnover and the scale of its enterprise is limited due to the informal nature of these enterprises. An older survey in 1986 by the National Slum Dweller’s federation estimated around 1044 manufacturing units which included 722 scrap and recycling units, 152 units making food items, 111 restaurants, and 85 units entirely working for export, 50 printing presses and 25 bakeries, along with 244 small scale units and 43 medium scale enterprises (Ranede, S. and Doongerwala, Q.). A recent publication, “Re-Dharavi”, puts the average estimate of the daily turnover of Rs.500 million a day (nearly 7 million euros per day). The report highlights the vibrancy of Dharavi, noting that almost every third house seems to have some sort of economic activity within it (Patel, S. et al., 2010). It also counts 1700 enterprises of various sizes, excluding home based industries.

These industries and enterprises are implicitly linked to the rest of Mumbai city, establishing a mutual relationship of dependence between the “formal city” and the “informal settlement” (illustrated in figure 3.20 and in figure 3.25). Core industries of Dharavi, such as leather production and finishing and recycling rely heavily on the connections and location of Dharavi in Mumbai. This is highlighted in the map in Figure 3.20, which illustrates spatially the linkage of the industries in Dharavi to Mumbai. A detailed examination of the leather production and finishing, also shows its outreach into a national and international market (illustrated in Figure 3.25). Other industries which are irrevocably links Dharavi to the “formal city” (Mumbai) are the readymade food industry, the bulk of services such as house maids, laundring, ironing, milk supply, vegetable vending to neighbouring localities like Sion, Matunga, Bandra, etc (Ranede, S. and Doongerwala, Q.).

To develop a more comprehensive understanding of how industries and informal economies are organised and located, the most visible of them are described and illustrated below:

(i) Recycling:

The 1986 survey by the National Slum Dwellers Federation Survey estimated that the recycling section in Dharavi is one of the largest in the country. It estimated around 700 units (both large and small), employing around 5000 people existed in 1986. This has increased in the last two decades, however it is difficult to get an exact estimate. The system of recycling is integrated into the system of the larger city of Mumbai. Workers from Dharavi collect garbage from the rest of the city, some by garbage pickers, and others by garbage containers. This is sorted in the 700 odd units of the recycling enterprises (Figure 3.23). They are mainly located in the 13th compound, where the Mahim Sion Link

Figure 3.20: Connections of Dharavi to the rest of Mumbai via industry; Source: Author, derived from “Dharavi Ground up” by Mumbai commission for Development Studies
FROM DHARAVI TO MUMBAI
ECONOMICAL NETWORKS

- Papadwala
  Delivery / collection
- Dhobi /Laundry
  Delivery / collection
- Recycling
  Delivery / collection
- Broomakers
  Delivery / collection

road meets Dharavi’s 60 ft road (Patel, S. et al., 2010). Everything, from plastic drums, oil cans, chemical containers, metal scraps, empty bottles, plastic containers and paper – all get sorted (mainly manually) and are recycled. Most of the products which don’t get recycled are cleaned and reused (Patel, S. et al., 2010).

(ii) Textile:
The textile industry in Dharavi grew to its current stage of prominence during the closure of the cotton mills in Mumbai in the 1960s. This spurred an informal industry of weaving, printing and tailoring based within Dharavi, dispersed throughout its urban fabric. It also deals with a lot of outsourced manufacturing and finishing work from outside manufacturers.

(iii) Earthen Pottery:
Kumbharwada, is perhaps one of the most district areas in Dharavi, with a pottery community which can be traced back to the origins of Dharavi. It occupies around 12.5 acres of land at the intersection of the 90 ft road and the 60 ft road. As per the last estimates made, around 250 potters’ families live and work in this neighbourhood of Dharavi (Patel, S. et al., 2010). Working as a shared community, the furnaces and kilns are shared, shaping the urban fabric of the community (Figure 3.23)

(iv) Leather making:
Leather tanning was the first industries to be set up in Dharavi. They were mainly from the south of India (from the state of Tamil Nadu) and the profession was traditionally for Muslims. This business grew quite rapidly, attracting more workers from other parts of the country. As it is not a very

Figure 3.21: Facts and figures for industry in Dharavi; Source: RE-Dharavi by KRIVA

Figure 3.22: Concentration of Economic Activities and avenues in Dharavi; Source: Author, derived from analysis

Figure 3.23: A wide range of industrial activity dominates Dharavi’s landscape; Source: Urbz, Mumbai
A wide range of industrial activity dominates Dharavi’s landscape
clean industry, i.e., it would cause a lot of pollution, most of the 39 major tanneries were moved to the outskirts in 1996 by the city government (Patel, S. et al., 2010). After that, finishing of leather goods took over the business, locating themselves (the network is illustrated in Figure 3.25). Several additional workshops have popped up, mainly due to the demand. However, they remain in cramped lofts and squalid conditions, desperately needing an upgrade along with recognition.

3.4.c Preliminary conclusions

Although, there is an impression of a “rich slum” in Dharavi (Patel, S. et al., 2010), the nature of informality makes the diverse livelihood if its citizens vulnerable to larger interest groups. The vision of the larger interest groups are quite different from those who are at the lower end at the spectrum (discussed in detailed in the review of the Dharavi Redevelopment Project). Dharavi is defined and characterised by its diverse economies, contributing to the vibrancy if its streets and a resilience which is characterised by the reliance of the formal city (Mumbai) on the informal economy generated by Dharavi.
Economic activities are often inseparable from ethnic identities and from the highly localised cultural milieu of the slum (Nijman, J., 2010). This is also highlighted by other researchers, and is especially true in the case of Dharavi. It is also irrevocably linked to the migration patterns which create different social clusters within informal settlements, especially in the global south. This clustering can be mainly attributed to a need for social security, which is provided “social capital” derived from the temporary nature of the existence with the informal sector (Gruber, D. et al., 2005).

Social Capital, has been theorised by several researchers, such as James Coleman and Francis Fukuyama. Both of them define social capital based on its functionality. Coleman writes “It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspects of social structures, and they facilitate certain actions of actors, whether persons or corporate” (Coleman, J.S., 1988). Both of them also emphasize the role of “trust” in the creation of social capital. Fukuyama describes social capital as “informal values and norms which share all members of the group and which make possible the cooperation between the members of the group. If the members of the group assume that the ‘others’ behave honestly and dependably, then they will trust in each other” (Fukuyama, F., 2000).

This social capital plays a very important role in the spatial organisation of an informal settlement. They are highlighted in a clear spatial divide and a social class which are present in most informal settlements in the Global South. It also plays a very important role in providing a social security in an informal settlement.

Does Dharavi display the above signs demarcating spatially its notion of “social security”? How has is notion manifested in the perception of urban space within Dharavi?

Dharavi is sharply divided on the basis of ethnic lines and is heavily influenced by the dominant caste system in India¹. Its economic activities, ranging from textile to recycling are divided as per the ethnicity of its workers. This relates back to the notion of achieving “social security” through “social capital”. Gruber describes this division based on ethnicity and religion also creates as homogeneous structure and network, contributing to a “self-created security” (Gruber, D. et al., 2005). This is also supported by Nijman’s observations in Dharavi, who writes that the majority of Dharavi’s residents are of the lower caste group of Dalits, cluster together in tight knit communities within Dharavi. This is predominantly because of social stigma faced by them, which has lead to the formation of the above mentioned clusters (further sub-divided

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¹ Source: Nijman, J. (2010), Economic activities are often inseparable from ethnic identities and from the highly localised cultural milieu of the slum.
A complex social structure in Dharavi is reflected in its shared notion of space.
The majority of Dharavi’s inhabitants, about 70%, are Hindus (mainly Dalit). Most of the Muslims (about 20%) originally migrated from Tamil Nadu, and particularly from Tirunelvelli district. About 10% of Dharavians are Christian and many of them come from the southern state of Kerala (figure 3.30). One third of the people in Dharavi are Maharashtrians, and others originate from Gujarat, Karnataka, and Uttar Pradesh (Nijman, J., 2015). Nijman describes this as a “social and cultural residential mosaic”, in which people are identifies on the terms of where they belong, illustrated in figure 3.32. Moving outside this defined social space creates feelings stress, apprehension and the absence of “social security” (Nijman, J., 2015).

The main streets (for example the 60 ft road and the 90 ft road), are accessible easily by people who are not inhabitants of Dharavi. It is just off these main roads, that the nature of social space changes drastically. The width of the streets do not encourage vehicular navigation. Social space changes dramatically within these areas, with social control becoming apparent (Nijman, J., 2010).

### Religious Composition

<table>
<thead>
<tr>
<th>Religious Composition</th>
<th>Inhabitants’ Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindu</td>
<td>Immigrants</td>
</tr>
<tr>
<td>Muslim</td>
<td>Local origin</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
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Figure 3.30

<table>
<thead>
<tr>
<th>Employment ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working hours</td>
</tr>
<tr>
<td>Average</td>
</tr>
<tr>
<td>Working Salary</td>
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<tr>
<td>per month</td>
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<tr>
<td>Business</td>
</tr>
<tr>
<td>Ownership</td>
</tr>
<tr>
<td>Hindu</td>
</tr>
<tr>
<td>Muslim</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Immigrants</td>
</tr>
</tbody>
</table>

Figure 3.31

<table>
<thead>
<tr>
<th>Community festival at a main street in Dharavi</th>
</tr>
</thead>
</table>

Figure 3.32

These major roads also guide the classification of various nagars (figure 3.32) in Dharavi.
Figure 3.32:

RELIGIOUS CONCENTRATIONS IN DHARAVI

- Railway lines
- Major Roads

Map derived from: ReDharavi - publication by KRIVA

Figure 3.32
The analytical framework is explored through its 5 layers at the larger scale of Dharavi. Each layer contributes and strives to reach a comprehensive understanding of the social, economic and political system that has shaped Dharavi to its present status. They form the basis of formulating the strategic and design framework through the lens of a design hypothesis.
Following up on the analytical framework of 5 layers, the relationship between each layer is explored, establishing the missing connections, which are addressed through a design hypothesis. This design hypothesis forms the driver of the project approach, leading to the development of a strategic framework.
Economic Concentration of Dharavi is mainly concentrated around the industrial 13th Compound, which combines the living - working relationships. The predominant of Dharavi, such as leather finishing and recycling are located in areas which have on one hand a high value in terms of mobility, but on the other hand a high susceptibility to environmental hazards.

Dharavi is composed of a fine social grain consisting of migrants from various parts of the country. Its social strata is composed mainly of lower caste migrant communities that co-habit, sharing a common notion of social security and capital, brought on by Dharavi’s prime location. Utilising this notion is paramount to the redevelopment of Dharavi.

Infrastructure services remain largely absent within Dharavi, highlighted especially by the lack of potable water and sanitation services. This strikes out starkly in contrast to the surrounding fabric of Mumbai, creating a challenge for redevelopment.
4.1 CONCLUSIONS AT DHARAVI

The five analytical layers used in this project help develop a clear understanding of the spatial production in Dharavi - in the past and well as in the present. The element that dominates the spatial quality produced in Dharavi is the economic activity it generates, which is explored in the analytical layer 4 in this research. Spatial qualities, such as mobility within the settlement are shaped around the dominant layer of ‘economic networks’. Social ties and community networks are also dependant on the primary layers of economic networks. The main conclusions reached from the desk spatial analysis (figure 4.2) are explored below:

Established and dominant links between analytical layers:

- The influence of historical socio-economic evolution of Dharavi (explored in analytical layer 1), is present and visible in all other analytical layers, so more so than others. Clear relationships between the historical traces are found in the economic networks (layer 4) and the social ties (layer 5). Its influence is also seen directly on the policy and governance model (layer 2), which is almost directly shaped by the changes in socio-economic dynamics in areas such as Dharavi and the larger context of Mumbai.

- Economic networks and professions are mostly determined by the familial networks which are transferred from the ancestral village to Dharavi. Professions such as leather tanning, sewing and garment dyeing have evolved depending on the historical communities that have been associated with it. Employment opportunities are mainly by word of mouth, ensuring that employees share the same social structure and networks.

- Social aspects, explored in layer 5 of the analysis, such as social security and social capital are also connected to the economic structure and networks present in Dharavi. A person’s occupation is often determined by their social standing in Indian society, which is still present in Dharavi’s socio-economic system, thus connecting the analysis layers 4 and 5 intrinsically. For example the earlier profession of leather tanning and now leather finishing was started by a Muslim community from Tamil Nadu in Dharavi, who still form the dominant community in this profession. Similar elements are visible in other professions, such as recycling, laundering broom-making amongst others (Ranede, S. and Doongerwala, Q.).

- Historic influence is also extended to the social structure in Dharavi. Specific communities occupy and maintain hierarchy within Dharavi, with recognizable clusters being formed. These social clusters are also linked to the economic functions (Gruber, D. et al., 2005) and are thus directly linked to the concept of social mobility and social capital.

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Figure 4.2: Established connections in the analytical framework in Dharavi; Source Author, derived from previous analysis

Figure 4.3: Missing links in the analytical framework in Dharavi; Source Author, derived from analysis
Historical influence on the social structure

Historical connections influence the present economic networks

Policy approach towards informal settlements is derived from historical influence

The governance model influences the present infrastructure

Economic networks strongly influence the social structure

Established connections in the analytical framework in Dharavi
4.1 CONCLUSIONS AT DHARAVI

Along with the established links between the analytical layers of Dharavi, certain crucial links are missing and disconnected (figure 4.3).

- The most evident of this is the lack of policy response to the existing economic livelihoods. India’s informal settlement and slum redevelopment program at its policy core addresses only the housing requirement. The current position offers close to 25-30 square metres of housing area to a single family unit (Mukhija, V., 2003), based off the 1995 Slum Redevelopment Scheme (1995). It does not provide any section or provision of retaining or even relocating the existing commercial shops and manufacturing or industrial units, resulting in a standstill between negotiations between policy makers and the inhabitants.
• The existing policy based off the SRS scheme, also does not incorporate the existing social and community structure in informal settlements such as Dharavi. The intricate community networks are crucial to the continuance of the economic networks and form an essential part of the notion of social security in Dharavi. The current housing policy, which focuses solely on providing eligible candidates with low-income apartments does not consider the exiting spatial manifestations of socio-cultural relationships. This results in poor maintenance of the housing blocks post-construction, as is evident from complexes such as Kalaghar in Dharavi.

• What also emerges from the spatial analysis is the lack of basic infrastructure (such as water supply and sewage services) that should penetrate the urban fabric of Dharavi. The current man water infrastructure, as illustrated in analytical layer 3, skirts the boundaries of Dharavi, barely delving into its inner fabric. This illustrates a clear lack of an essential relationship between layer 4 and layer 3 of the analytical layers.

• For an inclusive, sustainable redevelopment project to work at a larger scale, the existing policy needs to incorporate & address the missing links, especially targeting the elements of economic livelihoods. It also needs to be supported by other elements of housing and accessible public space, incorporated with basic infrastructure. This project aims to provide a strategic framework (comprising of a combination of spatial guidelines and policy recommendations) for Dharavi, addressed through a design hypothesis of ‘Economic Clustering’.
4.2 - DESIGN HYPOTHESIS

Economic Clustering and its spatial manifestation & organisation can act as a shorthand for the cultural and material spatial aspects in Dharavi.

In order to ensure a framework for sustainable redevelopment project in Dharavi, that encourages social equity, economic opportunities and is environmentally responsive in nature, a spatial strategy which uses “economic clustering” as a spatial tool is considered. This spatial tool is used to restructure future redevelopment projects in Dharavi (Figure 4.4).

The presence of economic activity in Dharavi to a scale illustrated in the analysis lends to a perception that Dharavi can no longer be viewed exclusively as an informal settlement. It acts as a site where simultaneously both residential activity and economic production occurs. Environments such as Dharavi cater to mainly small scale, labour intensive that provide relatively stable livelihoods. On the other hand, the current model of the Dharavi Redevelopment Project (explored in analytical layer 2), in its current form does not recognise the economic activity and clustering present as a part of the redevelopment measures. This is one of its critical flaw, as Dharavi is illustrates a vibrant economic buzz at every corner, which should be harnessed and utilised instead of being ignored.

Therefore, this project presents a ‘design hypothesis’ that incorporates the dominant characteristics and requirements of Dharavi, forming a baseline for future redevelopment projects.

Economic Clustering and its spatial manifestation & organisation can act as a shorthand for the cultural and material spatial aspects in Dharavi.

The hypothesis is the lens through which the larger strategic framework for Dharavi is formulated. This framework is then is tested on a selected area in Dharavi, via a design framework (Figure 4.4).
Design Approach for Dharavi & 13-compound

Figure 4.4
part 05

Strategic Framework

5.1 Outline of Strategic Framework

5.2 Element: [RE]Divide

5.3 Element: [RE]Structure

5.4 Element: [RE]inforce

5.5. Strategic Framework - Conclusions
   5.5.a) Spatial guidelines
   5.5.b) Governance model and stakeholder relationship:

The strategic framework is presented as a combination of spatial guidelines and policy recommendations, that address the missing links in the analytical layers at the larger scale of Dharavi. The strategic framework is divided into three elements of [RE]divide, [RE]structure & [RE]inforce, each of them being viewed through the design hypothesis of ‘Economic Clustering’.
5.1 STRATEGIC FRAMEWORK FOR DHARAVI

The strategic framework at Dharavi aims to propose a combination of spatial guidelines and policy recommendation in order to provide a structure for future redevelopment projects. This structure is divided into three main elements, each of which addresses the missing links and connections in the 5 analytical layers are addressed, framed through the design hypothesis of ‘economic clustering’. The three elements complement each other in their objectives working in synchronisation. Each

- **Layer 1: Historical Evolution**
- **Layer 2: Policy & Governance**
- **Layer 3: Landform & Infrastructure**
- **Layer 4: Economic Network**
- **Layer 5: Social Structure**

**Diagram:**
- Existing policy does not incorporate community structure and social capital
- The current infrastructure does not support the growth of economic networks
- Economic networks is not incorporated in the existing policy structure
element also attempts to renegotiate and reformulate existing stakeholder relationships in order to ensure implementation at a larger scale. Each element comprises of a balance of spatial guidelines that directs the spatial quality of the redevelopment, along with policy recommendations which enable the execution of the project.

The three elements are – [Re]Divide, [Re]Structure and [Re]inforce.
5.2 STRATEGIC FRAMEWORK

[RE] DIVIDE

Overview

The element of strategic framework aims to address the parcellation of Dharavi at the city policy level. The current redevelopment model of Dharavi Redevelopment Project devised by MM Consultants divides Dharavi into 5 large sectors, illustrated in figure 5.1. Each sector is to be opened for public bidding, staggered over the next few years, would be allotted to private developers as per the allotment processes.

However, this process has been plagued by several challenges. Because of the large size or area of the sectors, the requirements for the private developers have been set at higher standard. The bidding conditions require developers to form a consortium with a maximum of three partners. The financial conditions required by this consortium are that any of the three partners should have completed a 4,460 crores project in the last seven years. It is also expected to provide a bank guarantee of 280 crore. Other conditions such as the consortium’s minimum net worth (1450 crore) and their cumulative turnover over the last three years (1680 crores). These restrictions have pushed the Dharavi Redevelopment Project to a standstill, without any viable private developer showing any interest. This has lead the MHADA to start on a section of Dharavi (Sector 1 of the DRP) without private investment, in order to kick-start the project (also illustrated in figure 5.1)

What the Dharavi Redevelopment Project failed to recognize is the finer social grain and social structure present within Dharavi. Further research and fieldwork recognises that there are easily 85 smaller divisions (Patel, S. et al., 2010), or nagars, present within the urban fabric. Each of these nagars display a distinct social composition, illustrated by religion or caste categorisation. As the social composition of the nagars reflect on the type of employment, these nagars have a direct reflection of the spatial composition of Dharavi.

Proposed model:

An analogy of the nagars could be linked to that of a chequerboard (figure 5.2), with different alternating patterns distinct from one another. The current model (figure 5.2a) only offers a simplistic division of Dharavi. A much finer chequerboard (figure 5.2b) illustrates and better represents its finer social grain.

This finer chequerboard of the social grain in Dharavi needs to be marked on-ground, as this marking would encourage the discussion and debate...
DIVISION OF DHARAVI REDEVELOPMENT PLAN

- **SECTOR - 1**
  - Open to public bids
  - 141.99 Acres
  - 11,400 tenements

- **SECTOR - 3**
  - Open to public bids
  - 116.5 Acres
  - 12,600 tenements

- **SECTOR - 4**
  - Open to public bids
  - 83.66 Acres
  - 11,300 tenements

- **SECTOR - 5**
  - Under development by MHADA
  - 153.32 Acres
  - 9,300 tenements

- **Mahim Jn.**

- **Sion**

- **Guru Tegh Bahadur Nagar**

Figure 5.1
Stakeholder model for [RE]structuring water infrastructure in Dharavi

Proposed stakeholder model for [RE]structuring water infrastructure in Dharavi
Demarcating of the nagars on the streets of Dharavi, along with the formation of Nagar cooperatives
with the neighbouring communities regarding nagar boundaries and edges. This proposed marking line’s width is variable to reflect the level of contestation between the different nagars. The act of mapping the new nagar boundaries is based on the communities’ needs and livelihoods, therefore encouraging and increased involvement of its inhabitants in the redevelopment process.

Stakeholder Relationship

Along with the marking bringing out spatial implications of the area of redevelopment (figure 5.2), it also served the purpose in the reorganisation of the stakeholder model (figure 5.3).

An important change in the existing stakeholder relationship is the formation of an independent research committee along with cooperative at the individual nagar levels. An independent research committee which works and addresses Dharavi’s specificities needs to work alongside with the Slum Redevelopment Authority needs to be formulated, contributing to the main ‘activity’ (figure 5.3) of the strategy. The nagar divisions are currently only derived from the inhabitants of Dharavi. Therefore to make these divisions more tangible, cooperatives comprising of long term inhabitants and local community leaders needs to be formed in order to work with the independent research community. The proposed model aims to mark out the nagar divisions on the physical space of Dharavi (figure 5.5). The residents of Dharavi, in conjunction with cooperatives, academic organisations and members of the alliance, re-draw the boundary lines to align with their physical and social reality on the ground. The act of mapping the new nagar boundaries is based on the communities’ needs and livelihoods, therefore encouraging and increased involvement of its inhabitants in the redevelopment process.

The new nagar divisions and cooperatives form then aim to formulate the redevelopment model customised to recognize the finer social and economic grain of Dharavi, with a more active citizen participation. Cooperatives, formed based on these nagar division, are to act as representatives for the local interest of its citizens, and therefore increasing the participation of the inhabitants, not only in the formulation process, but also in the post-development maintenance process.
5.3 STRATEGIC FRAMEWORK

[RE] STRUCTURE

Overview:

Dharavi’s redevelopment, in any manner is foremost hindered by the lack of basic infrastructure in its inner urban fabric. Supply of basic services such as electricity, drinking water and sanitation is sporadic at best. The most striking absence is that of water and sanitation infrastructure, as it is the one that requires the most investment, time and spatial changes to execute. This strategic element, therefore, addresses how this basic service could be implemented, without disrupting the urban fabric along with the pre-existing economic networks.

Because of Dharavi’s extremely high density (Patel, S. et al., 2010) compared to the surround urban fabric of Mumbai, implementing a structured system addressing water and sanitation services has provided to be challenging for the inhabitants. In the current situation, the main water supply and sewer lines skirt the boundaries of Dharavi without entering its urban fabric. Only limited common toilets and water outlets provide this basic service to the large number of Dharavi’s residents. Water Infrastructure, including the supply of potable water, sanitation services and run-off channels are essential services that are required as a base for furthering redevelopment projects in Dharavi.

Proposed model:

The proposed model calls for the restructuring of water infrastructure and services in Dharavi, laying out the spatial guidelines along with a supporting governance model.

The spatial guidelines include identifying major existing avenues in the urban fabric of Dharavi where potable water supply lines and sanitation lines (figure 5.6) could be implemented. In order to implement water supply lines and sewage sewer lines, the existing avenues in the urban morphology are identified. The model recommends that these avenues act as the main routes for water supply and sewer lines as they would cause the least disturbance to the rest of the built fabric.

As a related requirement, planning measures are needed to support Dharavi growing industries during India’s monsoon season. The spatial guidelines in this regards follow similar principles as the provision water & sanitation infrastructure. The network of open spaces in Dharavi are connected to a proposed water run-off system. This runoff is implemented as a smaller urban morphological grain, ensuring the disposal of heavy rain from the clayey pediment soil below (figure 5.8). The aim of this model is to remove the challenges faced by the existing industries and commercial units during...
the monsoon season, where regular inundation is a seasonal problem,

These spatial guidelines are also supported by a modified stakeholder relationship (figure 5.7). The ‘initiation’ and ‘maintenance’ elements in the new system is led by the local cooperatives formed as per the nagar divisions. This increases the involvement of Dharavi’s inhabitants in the maintenance and upkeep of the service lines. It also ensures that services such as the common toilets and community wells are used and maintained as per their full capacity. This stakeolder model (figure 5.7) also echoes a similar implementation model as the previous strategic framework element of ‘re-divide’. However, the ‘initiators’ and ‘execution’ of the element of ‘Re-structure’ requires a greater

The proposed model also aims to involve the local cooperatives form as per the nagar divisions to be more involved in the maintenance and upkeep of the services. This ensures that services such as the common toilets and community wells are used and maintained as per their full capacity.

Stakeholder model for [RE]structuring water infrastructure in Dharavi
Overview

The core of the redevelopment project aims to recognise and reinforce the existing economic concentration and avenues. Dharavi, as explored previously, is known in the general populace for its ‘working nature’, offering a wide range of cottage industries and manufacturing units. This working nature ranges out to a variety of industries and commercial units such as recycling, garment, leather finishing, processed food packaging, pottery, amongst others. The current redevelopment plan does not recognise or make any provision for incorporating them into the redevelopment process, catering to the provision of only housing as a basic need.

The aim of the strategic element of ‘Re-inforce’, therefore, is not only to incorporate the existing industrial and commercial units, but also provide support via spatial guidelines and a revised governance model for them to develop and join the formal economy.

Proposed Model

In terms of the spatial guidelines, the initial attempt would be to identify the dominant economic clusters (figure 5.9) and avenues (figure 5.10) that are already existing in Dharavi’s urban fabric. These areas are based out of the 2009 survey conducted by MM Consultants (Mehta, M.). These identified areas act as trigger spots for future redevelopment. Because of the high density and a large size of Dharavi, identification of these trigger area are essential to kick-start a feasible development model. These trigger areas are also aimed as the initial connectors in the transition towards formal economy, establishing a more permanent connections with the formal city of Mumbai. Along with the above, these economic avenues also aim to enhance Dharavi’s connections to the surrounding business hubs, such as the Bandra Kurla Complex on its northern side (figure 5.13).

Additional economic spaces and programs are proposed in these ‘trigger areas’, so as to strengthen the ties to the formal economy (figure 5.13). In terms of policy rework, the redevelopment model increases the involvement and engagement in the programmes (figure 5.12). The proposed model also encourages investment and involvement from private enterprises and entrepreneurs as ‘initiators’ (figure 5.12). However, this discussion is lead at the nagar level with representatives from the
Reinforcing economic avenues

Reinforcing economic clusters

Proposed policy and financial model for economic clusters
local industries. These development of these high-economic production areas is also supported by the cooperatives formed at the ‘nagar level’ (see strategic framework of ‘Re-divide’). This model enables a greater flexibility and involvement from the inhabitants of Dharavi addressing their aspirations as a priority. The proposed model also presents an intricate model of stakeholder relationship (figure 5.12), which has an additional number of actors, compared to the previous redevelopment model. The local industrial and commercial shop owners are the stakeholders leading the discussion, and the cooperatives formed by them are responsible for the maintenance and upkeep of the system.

Figure 5.12: Stakeholder model for [RE]inforcing the economic clusters and avenues in Dharavi; Source Author, derived from Klimaten by Wolbert van Dijk

Figure 5.13: Reinforcement of economic activity and avenues in Dharavi; Source Author

Figure 5.14: Overall spatial guidelines in the strategic framework at Dharavi; Source Author

Figure 5.15: Overview of the strategic framework and its elements over scale and time; Source: Author
The elements of [re]divide, [re]structure and [re]inforce work together to provide a strategic framework that aims to structure future redevelopment projects in Dharavi. It outlines a combination of spatial guidelines and policy recommendations that aim to retain the existing socio-economic production of space in the area along with reinforcing it connections with the formal city.

The spatial guidelines target in retaining the morphological patterns that emerge from the dominant economic networks. The provision of water infrastructure acts as a necessary support system to the future growth of the economic networks. The areas that re identified as trigger areas of development aim to reinforce the existing economic networks, bridging them to the formal economic network of Mumbai. These strategic elements are complemented by a social structural system that reflects the morphological and economic patterns in Dharavi’s built environment. The combination of these aspects form the basis of the spatial guidelines set by the elements of [re] divide, [re]structure and [re]inforce (figure 5.14).
5.5.b) Governance model and stakeholder relationship:

A crucial change in the stakeholder relationship model in order to facilitate increased citizen engagement in the redevelopment process, is the formation of “cooperatives” at each relevant scale of Dharavi. The scales identified are: (1) a larger cooperative / governance / representative body for the whole of Dharavi, (2) cooperatives at the level of each nagar identified within Dharavi & (3) smaller sub-nagar cooperatives or community representation (figure 5.15). These cooperatives form the basis of inter-scalar mediation coordinating between the different strategic framework elements (figure 5.15). The cooperative at the nagar and community scale are composed of the local community leaders and representatives, expert consultants, ensuring a direct relationship between the inhabitants and the planning process. It also ensures a cohesion between the different spatial strategies through the scales of action in Dharavi. Figure 5.15 illustrates how the different strategies complement and supplement each other through both scale and time, along with the role of each of those cooperatives.
Overview of the strategic framework and its elements over scale and time
In order to test this strategic framework, a design framework is formulated based on the elements of [re]divide, [re]structure and [re]inforce. These elements are applied on a site: 13-compund, which exhibits a high intensity of industrial and economic production, therefore acting as an emblematic illustration of the larger strategic framework.
Dharavi can be reshaped spatially using the notion of economic clustering, combining both long term and short term strategies and policies. The strategic framework presents the combination of spatial guidelines and policy framework which is executed through a design framework.

The strategic framework proposed in Part V of this report is tested and illustrated through a selected site in Dharavi. The selected site is 13-compound (marked and highlighted in figure 6.1). The site exhibits the highest concentration of the economic and industrial production with industries such as recycling, garment and leather finishing dominating the landscape.

The following section explored how a design framework can be implemented in 13-compound so as to ensure a long-term, inclusive and sustainable model of redevelopment. The analytical framework used for Dharavi is echoed in the 13-compound in order to get a comprehensive analysis of the area.
6.1 ANALYTICAL FRAMEWORK AT 13-COMPOUND

Overview

13th compound in Dharavi occupies an area of 0.042 sq. km, in its North-west corner. Sandwiched between the junction of the Sion-link road and 60 ft road and the Western line railway in Mumbai. This prized position in Dharavi has been the concentration of economic and industrial activity since its formation at the turn of the 19th century. The dominant industries of recycling have found their first foothold in this area, with its first plant setting up their business in the 1960s. Leather industry too, features prominently in the 13 compound neighbourhood, along with other industries of garment finishing, garment dyeing, snack food packaging, etc. To systematically understand the position of 13-compound and the role it plays in Dharavi, this research project explores 13-compound using the same analytical layers derived from the combination of Dupuy’s network city model and the theoretical framework.

Layer 1 – Historical Context:

13 Compound forms one of the oldest industrial areas in Dharavi. During one of the several expeditions into the area, Shyam reveals that the oldest leather tanning unit set in this area at the turn of the century (early 1900s), when the local fisherman allotted a parcel of land to the arriving Muslim immigrants from Tamil Nadu. This land was located in the downstream area of the Mithi River, so as not to interfere with the Hindu fishermen village (Koliwada in Dharavi). Although most leather tanning has moved away to the outskirts of Mumbai today, what remains is an extensive leather finishing industry. Amongst other ruminants is the oldest mosque in Dharavi – the Masjid Umar in Navrang compound within the 13-compound area.

Layer 2 – Policy and Governance

13 compound is not a homogeneous area, as understood by the current Dharavi Redevelopment plan, but is an amalgamation of several heterogeneous districts or Nagars. Four distinct nagars can be identified within its area: Navrang, Sanaullah and Babban Compound (figure 6.6). Each Nagar display a distinct socio-economic history and current composition of its inhabitants. This is not currently recognised in the redevelopment plan, which clubs 13 compound into a larger area of Sector 1. The overall vision of Sector-1 does not recognise the intensive industrial production of 13 compound along with its social-economic heterogeneity, which needs a rework at the state policy level.

Figure 6.3: Water Infrastructure and landform at the 13-compound; Source: Author, derived from Survey maps by MASHAL, Pune
Layer 3 – Landforms, Infrastructure and location

13 compound is located at the critical junction between two of the major avenues connecting Dharavi to the rest of Mumbai. The major western railway line of Mumbai, borders the 13 compound on its western edge. One of its major stations, Mahim Junction, is its nearest stoppage directly across from Dharavi. One of the major roads in the vicinity, the Mahim-Sion Link road borders its Northern Edge, providing the industries present within 13-compound its transport links. Another arterial road within Dharavi, the 60 feet road, runs along its eastern front. 13-compound, therefore,
provides its industries the much crucial support of mobility, connecting it to the rest of Mumbai (figure 6.5).

What is absent in terms of essential infrastructure is – sanitation and supply of potable water. Water supply remains absent through most internal areas of Dharavi. The main Mumbai Municipality Water supply lines cross Dharavi in the 13th compound (figure 6.3), but do not provide for the area itself. Only intermittent taps that are shared between several neighbourhoods are present along the main edges of 13th compound. Sewage pipelines also exclude Dharavi’s inner workings (figure 6.3). 13-compound is no different. Only a few community toilets are located long its eastern edge leaving its inner industry and residents devoid of a basic and necessary right.
Layer 4 – Economic Networks

Perhaps the most defining feature of 13-compound is its intensity of industrial production. Every corner of 13-compound is a mix of Dharavi’s dominant industries, such as recycling, leather finishing, Garment sewing and dyeing, snack food packaging amongst others. High intensity industrial pockets are visible, with often distinct industries dominating certain areas. The economic networks in 13-compound are comprised of mainly industrial and manufacturing sections, with the commercial often taking a backseat. Commercial units are found sparingly in the outskirts, along the peripheral roads of Mahim-Sion Link road and 60 ft road (figure 6.4).
What also emerges is 13-compound’s connection to the formal city. The arrival of raw good, which are either to be processed or packaged in some manner arrive from industries across Mumbai and its outskirts with timed precision. The majors industries in 13-compound, such as leather finishing, recycling and garment finishing – all show evident traces of this link to the formal city of Mumbai (figure 3.27). Dharavi, and especially 13-compound acts as almost an ‘in-between’ space – a ‘middle man’ that contributes to the industrial process.

Another spatial quality – shared mobility between different industrial units - emerges due to the limited space allotted to common services. With limited space at their disposal, different and at times conflicting industries form a shared system in terms of transport of raw goods and finished products. This shared space (figure 6.4) is at time extended to the usage of any common space outside the industrial unit, which often act as temporary storage spaces.

### Layer 5 – Social Structure

13-compound can be divided into four distinct identifiable neighbourhoods (or Nagars) – as explained in layer 2. The socio-ethnic mix in 13-compound can be explored through these nagars (figure 6.6). Navrang compound today is a predominantly Hindu community comprised of migrants from the state of Bihar and Uttar Pradesh. Babban and Sanaullah compound are comprised of mainly Muslim migrants from Uttar Pradesh and Tamil Nadu. This distinction also plays an important role in the economic networks generated in the present day (Layer 5). For example, the older Muslim community from Tamil Nadu were the forerunners of leather finishing, which has continued till this date. This model of social structure is therefore, intrinsically linked to the inhabitant or the community’s historic profession, leading to a clustering of a certain group occurring in particular areas.

Social structure in Dharavi and 13-compound in turn reflects the notion of social capital elaborated by Fukuyama, F. (2000). The clustering of social classes and in turn their distinct economic activities illustrate a form of ‘social capital’ leading to a form of ‘social security’, creating a self-made structure and network. Due to spatial constraints in 13-compound (and Dharavi), although the social classes occupy distinct areas and professions, the notion of shared space is extended to social and public realm. Conflicting social and religious functions co-exist in the limited space available, which results in the blurring of the public space of the social clusters.

### Conclusions:

13-compound illustrates a strong linkage in certain analytical layers. They are:

- A strong co-relation between the economic networks (Layer 4) and the social structure (Layer 5).
- Economic networks (Layer 4) and Social structure (Layer 5) have evolved from the...
historic context under which Dharavi was formed (Layer 1).

The exploration into 13-compound also brings to the forefront the absent or weak relationships between certain analytical layers:

- The current policy and redevelopment plan (layer 2) does not respond to the existing economic networks (Layer 4) and social structure (layer 5), limiting their ability to grow and transition towards the formal economy.
- The infrastructural services required are absent in the internal urban fabric of 13-compound, thereby limiting its growth and development of its economic potential.
6.2 EXPLORATION OF ECONOMIC ACTIVITIES AT 13-COMPOUND

Identifying and understanding the industrial units at 13-compound comprises of mapping the main morphological routes and clusters present (figure 6.7 & 6.8). Industries such as recycling, leather finishing and garment dominate the urban fabric in 13-compound. The shared space between them are analysed in order to retain the in the proposed
design framework. The same process is carried out for the commercial units (figure 6.8) which co-exist with the industrial and manufacturing units (figure 6.7). Each of these dominant industries are then explored in detail in order to understand the specific spatial requirements for each.
ECONOMIC AND INDUSTRIAL UNITS IN 13-COMPOUND

- Industrial units
- Commercial units
- Residential units

Source: Author; derived from fieldwork & survey by MM Consultants in 2009
Main economic typologies in 13-compound

In order to fully explore the feasibility and applicability of the hypothesis of ‘economic clustering’ and the elements of the strategic framework, the dominant industrial units and commercial units present in the selected site are explored in detail.

The industries of leather finishing, recycling and garment finishing are explored in terms of their spatial arrangement, their surrounding built environment, present conditions and future aspirations. This study, mainly conducted by field observations and interviews, contributes to the implementation of the larger strategic framework on the smaller site of 13-compound.
Figure 6.9
6.2.A - RECYCLING

Overview at 13-compound

Dharavi presents many scales of recycling. According to the NSDF\textsuperscript{7} survey, the plastic recycling industry in Dharavi is one of the largest in India, employing about 5000 people in a concentrated area. Its turnover in 1986 was estimated to be about Rs 60,00,000 per year (86,000 euros approx. in current exchange rate). It also estimates that every day about 3000 sacks of plastic leave the area. The multiple scales of the trade include the rag-pickers who collect assorted waste and bring it to the kabadi (colloquial term for ‘rubbish’) shops. At these shops, present in 13-compound, the second stage of segregation begins, where the sorted waste is collected by larger recyclers of specialised waste such as iron, paper, plastic, glass etc. These large recyclers are based mainly in the 13th Compound in Dharavi (Ranede, S. and Doongerwala, Q.). It is this waste which then reaches the factories, present in the outskirts of Mumbai, for the final stage of recycling. Dharavi therefore plays the role of the “middle-man” acting as a meeting point between the lower rung (i.e., rag-pickers) and the upper rung (i.e., factories) of the production ladder.

Kabadi-shops in 13-compound

There are several kabaddi (or rubbish collecting) shops present in 13-compound, dotting the entire industrial landscape in the neighbourhood (an example is illustrated on the opposite page). Additionally the kabadi shops also use particular and continued connections for sourcing the raw waste material. Conversations with a few shop owners reveal that these kabaddi shops originally started in the 1980s, propagated by the need to survive after the economic freeze triggered by the emergency period of the 1970s\textsuperscript{8}. They also have a distinct profile with regards to the social composition, even though they are a diverse group in terms of caste and religion. Among the participants in the study conducted by (Ranede, S. and Doongerwala, Q.), the social composition consists of Brahmans (priest-caste), Baniyas (trader-caste) and Muslims and Nadars. They range from the upper castes to the Other Backward Classes (OBCs) in their respective regions. Most of the Hindu migrants working in recycling are mainly first generation migrants, with the workers staying in Dharavi on rent. The Muslim participants, on the other hand, have been based in 13-compound have been in 13-compound longer, and have been in this business for two generations, and are engaged in it as a joint family (Ranede, S. and Doongerwala, Q.).

Recycling Process

The people working in the kabadi shops play the role of classic middle men. They are the link between the individual waste pickers and the large dealers who deal in specialised waste. Most of them deal in plastic, newspapers, glass and iron. The waste pickers who are affiliated to particular shops roam around and collect assorted waste. This is deposited at the shop and separated into items that are wanted

Figure 6.9: Location of leather, garment and recycling units studied during fieldwork by the author
Figure 6.10: Layout of Recycling unit in 13-compound; Source: Author
Layout of Recycling unit in 13-compound
and those that are of little value. These separated items are then sold to dealers. Most of the shop owners who are doing well; deal with iron. Paper, on the other hand fetches the least profit. The other key to profit in the recycling business, as explained by some shop owners, is volume. Being able to store larger volumes of waste requires greater space, which is one of the main spatial challenges in 13-compound. The average earnings made from the recycling business, broadly amounts to Rs 750- 800 (10-13 euros) per day and at least Rs 10,000 (140 euros) per month (Ranede, S. and Doongerwala, Q.). There is some variation in the actual handling of waste. One section of the shops lend a hand with the actual sorting of the waste, whereas the other section are not involved in this process get it done through the rag-pickers (or waste pickers). This division has been attributed by researchers to the caste identity, linking the stage of employment to the social structure. The scope of recycling has only increased in the last few years. There is an increase in card board, plastic and now e -waste. The number of kabadi shops has thus increased over the years. Some of the shop owners who participated in the study have expanded the scale of operations but none to a scale that they have been able to match the big operators.

**Future Direction**

The recycling business is a growing business. Each of the operators is sensing the same. The shop keepers observe that the number of big dealer shops have increased, in the sense there are more shops buying iron waste, big cardboard etc. While this has meant stable incomes for all the scrap shop owners who all reported monthly incomes of more than Rs10,000 (140 euros approx.), the capacity to tap into the growing opportunities differs considerably. In spite of this growth in business opportunity, studies and research reveal that no one among the study participants perceives this as a desirable occupation for their children, and view the recycling business as a no-alternative form of income (Ranede, S. and Doongerwala, Q.).

The prospect of redevelopment brings about certain elements of apprehension. Several residents and workers, by the virtue of their tenancy face eviction in the case of redevelopment. There is not guarantee of a commercial space in the redevelopment model, let alone an industrial or manufacturing unit. Also there is a possibility that the space provided by the redevelopment is insufficient, or more importantly does not respect the pre-existing economic and morphological networks.

For the recycling industry to find a firm base in Dharavi, it is essential for it to transcend from the middle stage. A possible potential would be to harness the already existing creative nature of work in Dharavi. A select group of entrepreneurs have already seized to opportunity to be involved in the finishing process of the recycling business, directly getting involved at the final stage. External collaborations with commercial units could also benefit the existing industry, which would require changes to the spatial configuration. This enables them to be more resilient and demand a redevelopment model that respects their requirements.

*Figure 6.11: Images from recycling cluster; Source: URBZ Mumbai*
Figure 6.11

Imagery of Recycling unit in 13-compound
6.2.B -  - GARMENT UNITS

Spatial Arrangement

The garment industry has several different types in the 13th compound. Most of them work in the finishing of the product, working as the in-between stage of processing before commercial sale. This research explored a few units in the area, focussing on the sewing units of jeans.

One of the units had around 10 men and 2 women, all of them in their 20s, producing almost 100 jeans per day. A quick conversation with the owner and supervisor of the unit revealed that the workds belong to mixed castes and religions. Some of them also lived outside Dharavi, coming into the unit in the morning every day from other parts of Mumbai. The production process includes every step from the purchase of the raw material from Mumbai markets to the final packed product, which is sold in the Indian market. The main production unit is a large room, which is well lit and ventilated and is almost 40 square metres in size. This particular business amongst many others depends largely on an intermediary or ‘middleman’. The middleman, with whom the business has a form of contract provides orders to produce a certain amount of jeans depending on the local demand. This particular unit did not function associated with a commercial unit directly.

Ranede and Doongerwala describe another garment unit in their report, Dharavi: Ground up -

“The sewing unit of S. A. was founded in 1990. In the main building, he employs ten men at the age of 26 up to 40 years and three youngsters ranging from 11 to 16. The house is with the main working space in the ground floor. All labourers are Muslims originating from West Bengal. They have no fixed contracts but are recruited every day anew. The working time covers ten hours a day. The workers are using sewing machines, but beside this, they do not use any higher technology. There is a radio and neon lights on the ceiling, as well as ventilation under the roof. One of the workers tells us that he has been working for A. for five years. He originally comes from Calcutta and nowadays lives in the neighbourhood. In an adjoining room, A. employs another six boys at the age from 15 to 16 years. Every day they have to work from 9 a.m. until 10 p.m. with a lunch break of two hours. The room looks sparse and less comfortable but at least there is drinking water offered and ventilation available. As in the other units, we do not find permanent staff over here. The labourers merely have the status of daily labourers. There is a high uncertainty concerning the daily orders. There are usually no continuous orders, since they are depending on the demand in the local market.”

Future direction:
The garment industry is more flexible in terms of social structure in Dharavi and employs a larger proportion of new migrant labourers. It is also an industry that employs workers from outside Dharavi. The commercial units inside Dharavi are not of high quality and are not connected to the manufacturing unit present. A more direct connection between the commerce and manufacturing sections of the garment industry offers Dharavi a more marketable industry. It would also enable them to branch out into more varied products, thereby cementing their presence in the redevelopment process.
Layout of Garment unit in 13-compound

Imagery of Garment unit in 13-compound
6.2.C - LEATHER UNITS

Social Linkage in the industry:

Leather industrial and manufacturing units dot the landscape in 13-compound. It is also representative of the social structure and familial networks found in the informal sector. One of the production units documented for the site was co-owned with a commercial unit. What also emerges is the strong homogeneous social structure. Another study observed the same, commenting on one of their examples which was founded around 15 years ago, having almost all its workers from the Chamarkar caste family (Ranede, S. and Doongerwala, Q.).

The Chamarkar caste in this case, are among the top three large castes in terms of population in the state of Maharashtra, and form large sections in other states of Uttar Pradesh, Bihar etc. Due to cultural heritage the passing of knowledge from one family member to another, and a policy of monopolisation of the traditional caste occupation, leatherwork still seems to be attached to the caste. Another reason could simply be that leatherwork guarantees minimum subsistence in the absence of any other source of livelihood (Gruber, D. et al., 2005). The work with leather is, based on the belief of physical and spiritual purity, looked down upon as dirty work. The bags are sold at high prices and the work with leather as such as in production is left to some distinct castes. These do the tanning of the leather as well as a cutting and colouring of the material (Ranede, S. and Doongerwala, Q.).

So the work of the Dhor is explained as a semi-finished leather with low quality and there is a current competition between tanneries in Madras who are said to produce finished leather with higher quality and Dharavi tanneries going on. The leather that they take is goat, sheep, buffalo, elephant and cow as well as pig but the reputation of this caste is not very high so there are rumours that no Dhor could effort other leather than the cheapest of the cheap.

Spatial requirement of the industry:

The working process contains the processing of the raw material bought from the tanneries that were formerly also located in Mumbai and then shifted to Chennai, up to the final products like leather wallets, belts or hand bags. Dharavi illustrates the entire range of leather finishing, ranging from washing sutting of leather pieces to the formation of the finished product for commercial sale.

Ranede and Doongerwala describe a leather finishing unit in their report, Dharavi: Ground up-

“It is a big dark looking dirty hall in which a pungent stench is permanent, many cats running around probably because of the rotten meat on the floor. Five men are working in the hall each of them separately. A big cutting machine is standing next to the entrance. A room which is half closed on the left side with some dirty tables and chairs in front of it, is probably used for storing the chemicals, one can see canisters of chemicals for bleaching and tanning the leather. In the rear front of the hall, one

Figure 6.14: Layout of Leather unit in 13-compound; Source: Author
Figure 6.14

Layout of Leather unit in 13-compound
can see pools of round about 2x2 meters this is used for soaking the leather in a chemical compound, which has substituted the three-day lasting water bath. Three cutting machines are existing in the hall in almost every corner one. During a demonstration, three layers of fine leather are cut out of the 4mm thick buffalo leather piece. One worker tells us that even four layers are possible with elephant leather. In the centre of the hall, which is alighted only by one tube light, one can see a small stall, which is standing very near to a kind of gigantic washing drum. In this machine, the leather gets coloured. After the colour is on it the leather is printed sometimes with natural looking finish in a separate machine. The stall shall help preventing accidents because for the printing, an electrical heater is used and the electricity is dangerous. Therefore, the leather comes as a raw material into the tannery. The leather has still old meat on it and hairs. Therefore, they take it and at a machine with a teethed waltz, the rest meat is being scratched off. Then the leather goes into the chemical compound-bath for round about nine hours after this the leather is taken out and waltzed again then it is dried. After that, the leather is cut either length-wise or breadth-wise and diametric. Sometimes one worker cuts 4-5 layers out of one raw piece. Then it is coloured and after this is done, the layers, which have no natural surface, are printed one on it. Again, a waltz is used to imitate the natural finish. Then this is sold on the market...... It takes about 14-15 min from the raw material to the final product. There are always 40 to 50 pieces in one working step being processed.4-5 people work in a room of 25-30 square meters. The room is alighted by a tube light and one window, which is half closed.”

**Conclusion**

Leather is perhaps one of the few industry in Dharavi which works in tandem with its corresponding commercial unit. However, the commercial units based in the area have a certain negative image associated with it. The shops present in Dharavi are looked upon as keeping ‘low-quality’ products. The prices of the products available here, are although under the influence of inflation are often called as the ‘cheapest in the city’ (Ranede, S. and Doongerwala, Q.). The wages offered to the workers, as a result is also one of the lowest. Although the leather industry in Dharavi is more rooted via all its production stages, it is also vulnerable to changes caused by the redevelopment model. Leather industry in Dharavi is already making inroads to revamp itself, marketing it more directly to consumers and changing the prevalent perception from a low-quality to a higher quality commercial product. However, the spatial consolation does not respinf to this movement from the leather industry, and needs to be upgraded. Opportunities to train industrial units to better their product is required, along with a more direct connection to the formal industry in Mumbai and its outskirts.
Imagery of Leather unit in 13-compound

Figure 6.15
The exploration of the three dominant industries and manufacturing units in 13-compound illustrates the challenges, current position and the potential of each industry or economic cluster. The strongest aspect which makes the industries more rooted in Dharavi is the interconnections between the livelihoods. Each livelihood does not exist in isolation but is bound by the nature of shared space in Dharavi. Perhaps the clearest example of this is the recycling industry, which has mainly prospered in Dharavi due to the presence of other industries. Besides the involvement of thousands of workers at multiple levels in the industry; it is also able to generate several ancillaries such as transport (small tempos, hand cart pullers, trucks) and reprocessing (shoe repair, clothes repair, processing of oil from coconuts etc). Other industries such as garments and leather that are prominent also have several interconnections within Dharavi. Similarly there are plumbers, electricians, building contractors, caterers etc. These interconnections make Dharavi an economically strategic location, a place where professions such as kabadi walas refuse to leave, even when they have a choice. The analysis of the different modes of livelihoods also reveals that they operate at multiple scales. The large scale of operations makes it at once easy to set up business (knowledge available, presence of other supportive firms) as well as more competitive which need to be reinforced by trade associations in order to negotiate and improve terms.

The major factors that have contributed to existence and persistence of the current economic clusters are – a) Shared social structure and resulting social space; b) the proximity to railway nodes; c) the proximity to middle class localities; d) Coexistence of multiple communities; e) Will to survive and improve; f) Proximity to planned services; g) possibility of and co-existence of varied norms.

Factors that have inhibited development include – a) Absence of critical infrastructure; b) Absence of policy framework that recognises the social structure even within a smaller area; c) Lack of recognition of the manufacturing and commercial capability of its inhabitants.

However, in order to truly develop as an economic cluster, and target redevelopment models through it, each type needs to become more integrated into the formal market. This would ensure their continuance in the redevelopment scheme and would also act as a viable attractor for future developers. Dharavi, and especially 13-compound is at the forefront of industrial intensity, but it still needs to harness and direct its manufacturing creativity and capability. Reinforcement of the already existing industries would also contribute to the resilience of redevelopment scheme. Therefore, the strategic framework and its elements of ‘re-divide’, ‘restructure’ and ‘reinforce’ need to be applied through the hypothesis of economic clustering for ensuring a more long term, and inclusive redevelopment scheme in Dharavi. This project uses the 13-compound to illustrate the strategic framework and its elements through a detailed design, incorporating the details from fieldwork (table on pg. 161) and focussing on the dominant industries and economies present.
### Spatial Requirements by Different Industrial Typologies

<table>
<thead>
<tr>
<th>Industry Type</th>
<th>Clustering</th>
<th>Street Access</th>
<th>Surrounding</th>
<th>Commercial Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recycling</td>
<td><img src="image1.png" alt="Clustering" /></td>
<td><img src="image2.png" alt="Street Access" /></td>
<td><img src="image3.png" alt="Surrounding" /></td>
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<td><img src="image3.png" alt="Surrounding" /></td>
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<tr>
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<td><img src="image2.png" alt="Street Access" /></td>
<td><img src="image3.png" alt="Surrounding" /></td>
<td><img src="image4.png" alt="Commercial Unit" /></td>
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<td>Garment</td>
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<td><img src="image2.png" alt="Street Access" /></td>
<td><img src="image3.png" alt="Surrounding" /></td>
<td><img src="image4.png" alt="Commercial Unit" /></td>
</tr>
</tbody>
</table>

- **Leather unit**
- **Garment unit**
- **Recycling unit**
- **Residence unit**
6.3 - DESIGN FRAMEWORK

The individual elements of the strategic framework of [RE]inforce, [RE]structure and [RE]divide are reflected in the smaller scale of the 13-compound and are addressed through the frame of ‘economic clustering’. As 13-compound illustrates the highest intensity of economic production through its spatial analysis (analytical layers of 13-compound), the element of [RE]inforce takes the dominant role in the design framework.

[RE] INFORCE

Overview

The element of [RE]inforce targets the dominant industries within 13-compound, i.e., industries of recycling, leather and garment, providing them with guided spatial development in order to propagate them to the formalised market of Mumbai. This primary aim also needs to be supported by other necessary functions, for example, affordable housing for the workers, space for private entrepreneurs, working / learning space for local industries amongst others. The following pages illustrate the idea, function and stakeholders involved is some of these spaces.

Makerspace

Maker-space in other contexts have often associated with the “DIY” culture of the electronics markets in Shezhen (figure 6.15). Broadly speaking, a ‘makerspace’ is a physical location where people gather to share resources and knowledge, work on projects, network, and build. Expert advisors may be available some of the time, but often novices get help from other users. A key element in the maker movement is the growth in makerspaces. These community-oriented workshops are equipped with freely-accessible tools, traditional and digital, such that people can get involved, meet and share resources and knowledge and to build and make things. There is an ethos of sharing designs, instructions and ideas, and making them available to the ‘commons’ through open source principles. Learning environments rich with possibilities, makerspaces serve as gathering points where communities of new and experienced makers connect to work on real and personally meaningful projects, informed by helpful mentors and expertise, using new technologies and traditional tools.

In 13-compound, variations of the ‘maker-space’ are proposed, catering to the existing industries and its workers, encouraging them to root the existing
industries in the urban fabric along with linking them to the formal economy.

**Incubator Hub**

Incubator hubs are envisioned as working and guidance space for new entrepreneurs, targeted especially towards the industrial workers/owners in 13-compound. Spaces like the incubator hubs are also related in function with makerspaces, with both providing spaces for the local industry to grow. Incubator hubs, especially, work as short-term lease office spaces for entrepreneurs (from both inside and outside Dharavi) provided they work towards the betterment of the community at 13-compound. Along with catering to local entrepreneurs, incubator hub could also be leased out on a short-term basis to NGOs that work with the local communities within Dharavi.

**Co-working space**

Shared or co-working space aims to bridge the relations between formal and informal industries in 13-compound. These are workshop spots for both creative industries from Dharavi and Mumbai. Steps have already been taken in this direction by the Dharavi Biennale\(^9\), which provides platform for creative industries emerging from with Dharavi’s community. Co-working or Shared space provides spatial support towards these creative industries in 13-compound, also acting as a support mechanism for the transition towards formalising creative informal industries.

**Business Hub**

A small share of the proposed functions also cater to private, albeit small-scale, cottage industries. Business hubs provide both office space along with workshops, providing a foothold for the formal industries in 13-compound, enabling them to access its human resource pool.

**Affordable housing**

13-compound cannot be developed purely as an economic and industrial base. The ‘live-work’ relationship, present in almost all corners of Dharavi needs to be continued in the redevelopment model. The upper floors of the redeveloped areas are to be allotted as cooperative housing organised and managed by the nagar associations. These housing units are offered also in the formal of long-term and short term leases, enabling ownership rights to its inhabitants.

*The combination of the above spatial elements addressed though certain trends in the economic activity in the current Indian economy. These elements build on top of these pre-existing features (figure ___), such as e-commerce, aim to bridge Dharavi’s redevelopment to the rest of the city.*
MAKER-SPACE

Gathering points for new and experienced makers connect to work on projects

Local Industry, cooperatives, industry experts

CO-WORKING SPACE

Shared working space between formal and informal creative industries

Private enterprises, local industry

INCUBATOR HUB

Supporting systems & space for entrepreneurs, non-government organisations

Local Entrepreneurs, private industry, NGOs, Cooperatives

BUSINESS HUB

Business space for outside enterprises on lease with cheaper rental offered

Private industry, NGOs, Cooperatives

AFFORDABLE HOUSING

Low-income housing to the inhabitants with long-term lease rights

NGOs, Cooperatives
A Special Economic Zone in 13-compound, offering tax benefits for informal industries, that formalise themselves in the same location.

Rebranding of 13-compound, as an innovation hub, which provides recognition to the informal industries and also helps attract other entrepreneurs.

E-commerce plays an important role in integrating the informal industry. Already a growing trend, 13-compound could encourage it amongst its existing industries as a means to operate.

Occupancy rights could take various forms such as long term leaseholds, rentals, transferable leases on individual, plots etc.
Different spatial and functional components of the design framework element at a single community level
Figure 6.18

DESIGN FRAMEWORK - [RE]INFORCE

EXISTING ECONOMIC AVENUES

ECONOMIC CLUSTERS

PROPOSED ECONOMIC AVENUES

PROPOSED ECONOMIC AVENUES

PROPOSED ECONOMIC AVENUES

PROPOSED ECONOMIC AVENUES

ECONOMIC CLUSTERS

ECONOMIC CLUSTERS

ECONOMIC CLUSTERS

Other buildings  
Proposed economic avenues  
Proposed economic clusters  
Existing economic avenues

Source: Based on field survey, by Author

0 m  25 m  50 m

167
Spatial guidelines at 13-compound

The combinations of the spatial elements are implemented in clusters (figure 6.17 & 6.18), identified within 13 compound. Working with these clusters, enables negotiations between the different stakeholders involved. The different levels of the cluster (figure 6.17) also enable the negotiation between the different categories of spaces described in figure 6.16 to occupy as per the needs of the communities. For example, affordable housing is limited mainly to the upper floors of the cluster and maker spaces and incubator hubs are limited towards the lower levels. This arrangement echoes the existing live-work relationship in 13-compound. This arrangement also encourages a slower and smoother transition towards the formal economy, resulting in a robust redevelopment model.

At the level of 13-compound, these clusters are identified based on the intensity of economic productions and the ability of the stakeholders to enter negotiation. The functions to be provided in these clusters are determined by the negotiation mediated by the cooperatives at nagar and community level. To support the workings and establishment of these clusters, along with strengthening the existing economic avenues, new interconnected avenues are proposed (figure 6.18). These avenues, following the morphological guidelines and patterns of 13-compound, enable and encourage movement within the clusters. The element of [re]inforce thus aims to provide and support the different functions identified of maker space, incubator hubs, business hubs, co-working space and affordable housing. The other elements of the design framework [re]structure and [re]divide complement the element of [re]inforce.

Figure 6.19 and figure 6.20 illustrates the spatial manifestation and implications of the design framework element of [re]inforce. The added functions of maker-space, co-working space, business and incubator hubs along with affordable housing result in the transition of the informal industrial and commercial units towards a formal and stable composition of units.
Development of economic clusters in 13-compound

Figure 6.19
Development of economic clusters in 13-compound
Network of run-off water and groundwater collection sites

Rainwater collection sites with filtration & storage tanks

Figure 6.21
In order to support the economic clusters in the design element of [RE]inforce, adequate and necessary support is required by the provision of the right infrastructure. This is addressed at the larger scale by the strategic element of [RE]structure, which provides spatial guidelines for water infrastructure for Dharavi as a whole. At 13-compound, supply of potable water and access to sanitation services is executed at the neighbourhood scale, with a network of community toilets and drinking water wells.

Design Framework:

In 13-compound, the main water supply of the BMC cuts across in the western quadrant adjacent to the North-South railway track. Despite of the water supply line cutting through 13-compound, there is no direct supply to the inhabitants of the area. On one hand the larger strategic framework aimed to make inroads with water infrastructure within the urban fabric of Dharavi, while on the other, the smaller design framework illustrates how and which bottom-up measures could complement the larger picture. The design framework proposes an intricate network of community wells and common toilets (figure 6.21) which tap into the larger water and sanitation lines of Dharavi. Each of these community wells work with a small filtration unit, collecting part of its supply from rainwater harvesting at the local level (figure 6.21). Increased presence of common toilets is also encouraged in the area. Due to its high density, individual access to sanitation in the immediate future is challenging, however, common sanitation services, that are maintained by the local cooperative of 13-compound is a feasible option. One block per cluster could be identified for conversion as a community toilet for immediate execution, with individual, private access to toilets following as the redevelopment model progresses. The maintenance and upkeep of these facilities could only be possible if it receives the backing of the local community. Therefore, the design framework proposed that the nagar committees and cooperatives take the leading role, especially involving the local women. Along with this, each community well & toilet or a set of them, needs to be supported by a local NGO. The local NGO’s need to support this initiative by offering proper training and maintenance advice.

The [RE]structuring of water infrastructure at 13 compound also offers an opportunity to provide its inhabitants with access to open public space (figure 6.23 & 6.24). Because of the maintenance required for this supply, a large tract of the land was cleared cutting 13-compound transversely (figure 6.22 & 6.23). This stretch of land currently under used and without function. This area in 13-compound is envisioned as the main artery (figure 6.24), providing the bustling economic production space with a much needed open public space. Since the notion of shared space already pre-exists in Dharavi’s social structure, this transverse space is envisioned as a shared cultural-economic space for the inhabitants of 13-compound.
Existing condition of the infrastructure in 13-compound
Figure 6.23: DESIGN FRAMEWORK - [RE]STRUCTURE

- WATER OUTLET
- MAIN WATER ROUTES
- WATER SUPPLY ROUTES
- OPEN SPACE FOR RECREATION
- COMMUNITY WELLS
- NALA (WATER CHANNEL)

Legend:
- Community wells
- Open recreation space
- Proposed water channels
- Existing water supply

Source: Based on field survey by Author

Units: 0 m, 25 m, 50 m
Infrastructural artery through 13-compound

Figure 6.24
The development of the economic clusters and the maintenance / upkeep of the infrastructure requires an organised system of engaged actors at the level of 13-compound. At the larger scale, the strategic framework proposed to demarcate and incorporate the nagar divisions in the larger governance system. At the scale of 13-compound, the aim of the design framework of [re]divide aims to enable the implementation of the previously discussed elements of [re]inforce and [re]structure, deliberating on the relationship between the stakeholders and their role in the execution of the strategy.

Economic clusters that are developed in 13-compound need also to respond to the social structure, pre-existing in the area. What has emerged from the spatial analysis are the different community clusters that exhibit a distinct economy and group of people. Within 13-compound, at least 3 distinct nagars are identified (figure 6.25), each of them exhibiting a dominant economic and industrial typology. The design framework proposed that all three of these nagars need to be demarcated on ground, encouraging debate and discussion amongst the inhabitants and community leaders (figure 6.29). The stage of the formulation of the nagars plays a crucial role, as it leads to the formulation of cooperatives at the ‘nagar’ scale. These nagar cooperatives are composed of the local community
Figure 6.25

DESIGN FRAMEWORK - [RE]DIVIDE

- Major nagar sections
- Major Nagar Divisions
- Built fabric clusters
- Nagar sub-divisions

Source: Based on field survey, by Author

0 m | 25 m | 50 m

Figure 6.25
leaders, industry and commercial owners and would be responsible for leading negotiations between the inhabitants and the external enterprises and government organisations. The nagar cooperatives also identify key community representatives, especially women to take a larger role in the discussion, especially with regards to the provision of sanitation services and other public services. The nagar cooperatives, composed of elected, non-partisan representative and community leaders also guide the formation of the community cooperatives, which operate at a smaller scale.

Further sub-nagars as sub-sections of the nagars at 13-compound are demarcated in order to reduce the scale and enable the feasibility of the elements of the design framework, by dividing the nagars into feasible sizes. At this smaller scale, community cooperatives ensure maintenance and upkeep of the infrastructure, public space and services. The community cooperatives, along with the nagar cooperatives also play a crucial role in the development of architectural and spatial guidelines of the economic clusters. For this purpose, the development model of co-building is considered for 13-compound in Dharavi. This model, was successfully executed in Dom Tomás Balduíno near Sao Paolo (figure 6.26), and is already present in the existing fabric of Dharavi (figure 6.27). In the proposed model, the process co-building also involves local, young architectural offices to act as consultants to the local contractors in the re-building (figure 6.28). This process is overseen by both the community cooperative along with the nagar cooperative, ensuring that development model puts the interests of the local inhabitants at the forefront.
Proposed co-building activity in Dharavi

Figure 6.28
Nagar and sub-nagar demarcation in Dharavi (figure 6.29) is illustrated as a process of constant negotiation between the different nagar cooperatives, consultants and local inhabitants.
Discussion and debate over nager and sub-nager divisions between the different cooperatives involved.
DESIGN FRAMEWORK

Summary of Spatial Guidelines

The aim of the design framework is to enable the development of the existing industrial, commercial and economic networks present within 13-compound, in order to ensure a smooth transition towards a formal and robust economy. This is executed and implemented through identifying trigger areas within the dense urban fabric of 13-compound that act as pioneer clusters for the design framework (figure 6.30 and 6.31).

The additional functions of makerspace, incubator hubs, co-working space amongst others are initially implemented in these areas. Supporting infrastructure, especially water and sanitation, is provided, both at the level of the nagar through arterial connections along with smaller scale interventions at the community scale. Further interconnection between the different trigger communities is encouraged (illustrated in figure 6.31), both in terms if additional economic avenues and linkage between the different sanitation and water services at the community level.
Figure 6.30
DESIGN FRAMEWORK - 13 COMPOUND

WATER OUTLETS
ECONOMIC CLUSTERS
RECREATION SPACE
COMMUNITY WELLS

TRIGGER PROJECTS

WATER OUTLETS
ECONOMIC CLUSTERS
COMMUNITY WELLS

Source: Based on field survey by Author
The illustration in figure 6.31 demonstrates how the three elements of the design framework, i.e., [re]divide, [re]structure and [re]inforce work in cohesion with each other spatially. The three elements of the design framework form a larger network spatially, working with a definitive infrastructural artery as the guiding base with connected economic clusters.

At the scale of the community cluster, a smaller network of public space, which also acts as a structuring element for water and sanitation infrastructure. These smaller spaces are interconnected with each other to form a robust system.

The main infrastructure artery in 13-compound capitalises on the existing transverse sect of land which contains the main water supply and sewer lines running through it. This proposed infrastructure artery also provides ample scope for the development of a public open space network for its inhabitants.

The economic clusters proposed, embody the existing live-work dynamic in Dharavi, along with incorporating additional programs and functions such as maker-space, co-working space, incubator hubs amongst others. These additional functions provide 13-compound and in turn Dharavi, a process to link it to the formal city and economy of Mumbai.
In order to execute the design framework at 13-compound, a hierarchy and order of stakeholders is established, clearly demarcating their designated roles and duties. In 13-compound, a minimum of 3 nagar cooperatives are identified. These nagar cooperatives along with suitable support from local industries and relevant consultants oversee the implementation of the economic clusters in 13-compound. Each cluster would form a community cooperative, which would be responsible for the maintenance and upkeep of the services provided. They also facilitate citizen engagement throughout the entire planning process. The overarching Dharavi cooperative ensures that the individual or a collective of nagars work towards the common unifying goal – of a redevelopment model that is sustainable as well as inclusive in nature for its inhabitants as well as for the city of Mumbai.
Main water & sanitation lines to Dharavi (Municipality)

Trigger areas within 13 compound

Identification of arterial infrastructure in 13-compound

Implementation of arterial infrastructure in nagars

Trigger areas in Sannaullah Compound
Trigger areas in Navrang Compound
Trigger areas in Babban Compound

Construction of cluster at Sannaullah Compound
Construction of cluster at Navrang Compound
Construction of cluster at Babban Compound

Local Industry cooperative

Construction of Community Wells & Toilets

Setting up of makerspaces, coworking space, incubator hubs, etc

Maintenance & Citizen Engagement
part 07

Reflection

7.1 Economic clustering as a spatial tool

7.2 Reflection on the process
ECONOMIC CLUSTERING AND ITS IMPLICATION IN REDEVELOPMENT PROJECTS OF INFORMAL SETTLEMENTS

Overview

The overall aim of the project was to explore how the existing socio-economic production of space could be incorporated into the redevelopment projects in informal settlements. The urgency to deal with the informal settlements rises from their persistence and increase over the last few decades especially in the global south. However, redevelopment projects addressing the informal settlements have been far from successful have not reached a long-term viable solution. In the selected case-site of Dharavi, explored in this research, also illustrates several failed attempts by urban planners and policy makers. The research attributes this failure to the indifferent attitude of the policy makers, planners and developers towards existing social and economic mode of production of space with its associated values, leading to highly insensitive, unsustainable and unequal redevelopment & upgrading projects.

This research, through a comprehensive analytical framework (figure 7.1) in Dharavi reveal strong correlation between the economic livelihoods and networks and the existing social structure. This correlation results in a distinct mode of production of space, to which Dharavi’s resilience and economic success can be attributed to it. What is also revealed is the lack of policy in the current redevelopment that addresses the pre-existing economic networks and thereby its social structure.

In order to approach redevelopment of informal settlements such as Dharavi, in a more inclusive and sustainable manner, this project aims to use the hypothesis of ‘economic clustering’ in order to ‘reframe’ and develop a strategic framework for Dharavi.

The frame of ‘economic clustering’ offers a reframe on the traditional model of redevelopment in informal settlements in India and perhaps extending to the global south. Most informal settlements in the geographical realm of the global south, have distinct economic patterns and social networks which play a vital part in their existence and contributing to their perseverance. The proposed model of redevelopment aims to address and examine the existing economic networks incorporating them into a framework that provides a balanced combination of spatial guidelines and policy recommendations

The feasibility of using economic clustering

The hypothesis of economic clustering and its usage as a spatial tool, bears of particular relevance in Dharavi. Dharavi has been in the limelight over the past decade, especially regarding its high economic intensity that exist in squalid conditions.

Figure 7.1: Conclusions derived from the analytical framework for Dharavi; Source: Author
Existing policy does not incorporate community structure and social capital

The current infrastructure does not support the growth of economic networks

Economic networks is not incorporated in the existing policy structure

Conclusions from Analytical Framework

Figure 7.1
It's current model of redevelopment, i.e., Dharavi Redevelopment Project currently only addresses the housing need of its inhabitants, without responding to its intense economic production. The current model perceives informal settlements and the area it occupies as a potential source of high-end real estate (figure 7.2), ignoring the existing economic potential of the area. Unsurprisingly, this model has faced criticism from its residents, with regards to its ignorance towards their means of livelihood. The model has also faced difficulties in finding suitable investors and private developers, notably because of the eligibility conditions imposed on them along with the perceived difficulty in getting cooperation from the inhabitants. This would also limit the long-term viability of redevelopment attempts in Dharavi.

This project proposes that instead of approaching the redevelopment projects of informal settlements such as Dharavi through the lens of generating low-income housing along with the high-end real estate (figure 7.2), redevelopment could proceed with reinforcing the existing economic production and encouraging them to join the formal economy. This model (figure 7.3) caters directly to the needs and aspirations of the local inhabitants, especially aiming to retain the livelihood and social structure of the area as its primary objective. In order to make this model implementable, the finer social structure and grain of Dharavi is explored in order to incorporate them into the strategic framework. The strategic framework also aims to address policy at the national level of the Slum Redevelopment Authority. The current policy offers a more top-down mechanism making provisions for meeting the housing needs of the slum dwellers. This research proposes an integrated model where interested private enterprises can collaborate with the industrial units of Dharavi, for their mutual interests of generating a higher economy. This change enables inhabitants and workers in Dharavi to enter into a direct dialogue regarding redevelopment, and thus ensuring a more viable and long-term solution.

The proposed model, therefore, offers a re-frame to look at redevelopment processed in informal settlements, such as Dharavi in Mumbai. It offers an opportunity to view informal centres as productive economic spaces (figure 7.4), interconnected and networked with each other.

**Limitations and future direction of the research**

The proposed model is not without its challenges. The selected case site of Dharavi is emblematic at best and cannot represent or be equated with other informal settlements, even in India. The proposed model of redevelopment through economic clustering can incorporate the economic networks and social structure in Dharavi, but would require to be catered and modified to redevelopment models in other locations. The research has presented just one example of how a strategic framework can be formulated, viewed through the lens of economic clustering. What remains to be tested are its implications as a large scale development model for other informal settlements and its inevitable impact on the larger urban system. The long-term viability and success is currently difficult to perceive empirically within the given parameters.
Proposed Policy Model

Existing policy model

Figure 7.2

Proposed Policy Model

Figure 7.3
A further challenge is presented in the application of economic clustering by the generally high density of habitation in informal settlements such as Dharavi. Although, there is an intrinsic socio-economic system present, which manages to operate even within the high densities, any implementation of a redevelopment project of a large scale proposes a logistical challenge. Although, the framework presented in this research presents a more involved system with Dharavi’s inhabitants and workers (i.e., stakeholders), ensuring long-term validity, it also presents further logistical challenges to implement the urgently required redevelopment.

The ‘economic clustering’ model also aims to address the urgency regarding redevelopment in informal settlements. Lack of basic services such as water and sanitation are hurdles to any redevelopment project as they require a significant investment and a long time frame to execute. The use of the analytical framework in the project highlights this missing service, noting that for any redevelopment model to work in an inclusive and sustainable manner, this investment into the provision of basic services is inescapable and crucial.

Despite the challenges presented, the exploration in this research highlights the potentials of reframing redevelopment of informal settlements through the lens of economic clustering. The proposed model aims to thus provide for an inclusive and sustainable redevelopment while retaining the existing production of socio-economic space.
INFORMAL CENTRES AS POSSIBLE INTERCONNECTED ECONOMICAL SITES FOR REDEVELOPMENT

Source: Author
REFLECTION ON GRADUATION PROJECT & PROCESS

The graduation project originated with the aim of understanding the model of socio-economic production of space in informal settlements. The objective was to explore how to incorporate and adapt the current mode of production of space into redevelopment projects, so as to ensure a more long-term, sustainable and inclusive development of its inhabitants. For this reflection, five crucial aspects of the graduation process are explored and reflected in this section - on the thesis’s process, the relationship between research and design, the limitations and the direction for future research.

Aspect 1: The relationship between research and design

Since the topic of socio-economic production of space in informal settlements is quite broad and can be explored through various facets, an emblematic and prolific case study is selected which would provide a backdrop to test and explore the research. Dharavi, in Mumbai, India provided as the ideal site, where its production of space has been of some interest to several academicians and scholars. The selection of the case-site was also heavily influenced by my participation in the honours programme (2016-2017), which used Dharavi as an empirical site for testing dominant western theory on self-made or informal settlements.

The main research splits into two sections – the spatial framework and the theoretical framework (figure 7.5), in order to develop both parts complementary to each other. The theoretical framework provides the overview of the socio-economic dynamic and production of space within the informal settlements, focusing in the global south. Split into three sections thematically – urbanisation processes, the economic challenges and the policy implications - the project explores the dominant theoretical themes pertaining to informal settlement in the global south. This is supported by spatial analysis of Dharavi, using Dupuy’s Network city model providing an exploration of Dharavi through three levels of operators – infrastructure networks, production-consumption networks and urban household networks. Both the theoretical and spatial analysis is combined to create a final analytical model for Dharavi, which comprises of a total of 5 layers (figure 7.5). The layers of historical context, policy and governance, landform and infrastructure, economic networks and social structure is used to explore Dharavi through a multitude of layers in order to develop a strategic framework for the whole of Dharavi illustrating it through a detailed design at the selected site of 13-compound.

This analytical model forms a core component of the thesis, echoed and reflected in both in the analysis as well as the design section, tying the narratives of research and design. The strategic framework and design framework proposed is derived directly from the conclusions of the analytical model, addressing absent or weak links within the layers of the analytical model. The research and design sections

Figure 7.5: Analytical Framework as a combination of spatial framework and theoretical framework; Source: Author
Governance
Policy implications

Context
Historical evolution

Layer 1
Historical evolution
Layer 2
Policy & Governance
Layer 3
Landform & Infrastructure
Layer 4
Economical networks
Layer 5
Social structure

1st level operator
Road network, infrastructure etc

2nd level operator
Production-consumption network

3rd level operator
Urban household network

Dupuy Network City Model
Source: Derived from (Dupuy, G., 2008)

Additional layers added

Spatial Framework

Analytical Framework

Theoretical Framework

Figure 7.5
are therefore, irrevocably linked through the layer model which reflects in both research and design.

**Aspect 2: The relationship between the graduation lab theme and the subject/case study chosen:**

In this thesis, the overall objective is to develop a strategic framework illustrated through a design framework, i.e., deriving a set of spatial guidelines in combination with policy recommendations for Dharavi. In this connection, the graduation lab offered by the Complex Cities research group provides the necessary tools and techniques required to prepare a comprehensive project. Within the larger research group, the challenges of developing inclusive and sustainable redevelopment projects, particularly in informal settlements of the global south is addressed particularly by the ‘Inclusive Cities’ sub-research group, where design is proposed through a ‘research-based’ studio. Design and spatial planning is viewed as a cyclic process, illustrated in figure 7.6, which involves the formulation of strategic framework along with spatial design and policy to achieve that framework. The testing of this strategic framework contributes to the body of academic research challenging and revising the existing knowledge base. The theme offered by the Inclusive City sub-research group also explores issues of urbanisation, environmental sustainability and socio-economic integration under conditions of rapid urban growth, often coupled with inadequate governance and weak institutional capacity. Therefore, the selection of the research group and the sub-research group played a crucial part in developing an in-depth problem analysis.

The problem analysis is divided into 3 themes regarding informal settlements of global south in general and Dharavi in particular– urbanisation processes in India, production of economic space in informal settlements, and the paradox of redevelopment schemes in India. Each aspect is explored in-depth, writing critically on the processes involved in each aspect, contributing to defining the composition of sustainable and inclusive redevelopment projects for informal settlements more in general. The implication of current urbanisation processes on informal settlements such as Dharavi is explored through the shift in India’s national economic and housing policy from its independence era (post 1947) to post economic-liberalisation era (post 19911). The latest shift in the national policy are dominated by market forces, which ignores the existing mode of production of space in informal settlements, that have resulted in non-inclusive, and unsustainable redevelopment projects. Redevelopment attempts and their failure are especially highlighted and evident in Dharavi, where the presence of a large economic industrial base is largely overlooked by policy makers and planners, which is presented by the problem analysis in the graduation report.

The project aims to propose a ‘reframe’ on the current approach towards redevelopment in informal settlements, approaching it through the lens of ‘economic clustering’. The proposed model aims to achieve an implementable system for redevelopment that incorporates the existing socio-economic production of space, ensuring a more inclusive and sustainable result. What emerges from this research is the need to re-think the redevelopment models, especially in the

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1. Footnote: This is a reference to the change in economic policies in India after 1991, when the country moved towards economic liberalization.

Figure 7.6: Project Methodology; Source: Author
Figure 7.6

Project Methodology
urbanising global south. Academic explorations need to recognise the shift in urbanisation centre to the global and therefore needs to develop a deeper understanding of its distinct nature of production of space. This research aims to shed light on one such emblematic case-site of Dharavi, thereby contributing to the current body of work on informal settlement in the global South.

Aspect 3: The relationship between the methodical line of approach of the graduation lab and the method chosen by the student in this framework

The methodology used in the project was guided predominantly by the research group’s (Complex Cities – Inclusive Cities) approach of combining a theoretical model with a detailed spatial analysis, resulting in a final analytical framework for a selected site. This analytical framework also includes a detailed exploration of policy models and its implication on the spatial quality of redevelopment projects. The combination of theoretical, spatial and policy analysis is guided by the research studio’s methodological approach. Other aspects of the research was supported by fieldwork – site observations and interviews, which forms an important part of the methodology, filling the gap imposed by the lack of data in informal settlements (such as Dharavi). Conducting interviews (both structured and non-structured) in Dharavi, proved particularly challenging as the given nature of diversity in terms of economic activity and social structure. The workshops organised by the research group regarding methodological approaches in fieldwork played a critical role in structuring the interviews and providing a framework for the observational analysis. Stakeholder analysis also formulates an essential part of the research which was guided by additional support from the research group. With the structure provided by the Complex cities graduation lab, fieldwork was assisted by URBZ (a research collective, working in Dharavi) who provided the much needed support at site level. Interviews and site visits were conducted with the logistical support from URBZ, who also provided historical insight into the socio-economic dynamics of Dharavi.

Aspect 4: The project and the larger social context

Research regarding redevelopment projects in informal settlements is not new – they have been part of a polarizing discourse in academia and policy makers. Informal settlements have proved their persistence and resilience even with promises of a modern India in the 21st century, however with deplorable living conditions in most Indian cities. Although there are several organisations and policies working for the rights of these settlements, there is a surprising lack of knowledge and discourse about the spatial quality of these settlements in relation to their cultural, social and economic standing. It is this missing discourse that this research places itself in – exploring the gap present in the policy discourse and the pre-existing socio-economic dynamics present in informal settlements such as

Figure 7.7: Project & Design approach; Source: Author
Project Design Approach

Figure 7.7
the selected site of Dharavi. As a comparatively established and older informal settlement, Dharavi has been a prominent part of the academic discourse in India, especially in the last decade. Its socio-economic dynamics with economic and industrial production has also received attention from popular media. However, despite this attention, policy makers and planners in India have been unable to formulate long term redevelopment plans, resulting in deplorable and unsustainable living conditions that lack basic services and infrastructure in most informal settlements including Dharavi. Dharavi’s notoriety, and the troubles faced by the recent attempt at redevelopment by the Dharavi Redevelopment Plan (DRP) have highlighted the problems faced by most slum rehabilitation processes in India, where the existing economic livelihoods and social networks are not considered. This does not mean that upgradation schemes are not required and that the pre-existing economic and social networks need to be preserved, rather, policy makers and planners need a rethink as to how to reformulate projects so as to ensure a long term inclusive and sustainable redevelopment. It is within the dual dialogue is required to be addressed by academia and policy makers, which this research aims to address and highlight.

Aspect 5: Project Limitations

Any research or graduation project is not without limitations. The biggest restriction faced in this project were the constraints of limited empirical fieldwork. Survey data and precise mapping is limited in informal settlements such as Dharavi, restricting the accuracy of the spatial study in this thesis. The current data and survey set used is based off a survey commissioned by MM Consultants in 2008 and conducted by ‘Mashal (Maharashtra Social Housing and Action League), at the commencement of the latest redevelopment scheme proposal for Dharavi. The survey data set is not comprehensive along with certain areas not being commissioned for survey work. Hence it is difficult for this project to truly present a complete picture of Dharavi. However, the project still make attempts to fill in this missing information of the database, particularly in the economic clustering present with Dharavi in general and 13-compund in particular. What would also provide a better contextual reference, would be a comparison with another informal settlement in Mumbai would validate some of the assumptions regarding the socio-economic space produced. It would also help map the impact of the redevelopment model presented in this research on the larger scale of Mumbai.

Notes:

1. The economic liberalisation in India refers to the economic liberalisation, initiated in 1991, of the country’s economic policies, with the goal of making the economy more market and service-oriented and expanding the role of private and foreign investment. Specific changes include a reduction in import tariffs, deregulation of markets, reduction of taxes, and greater foreign investment. Liberalisation has been credited by its proponents for the high economic growth recorded by the country in the 1990s and 2000s. Its opponents have blamed it for increased poverty, inequality and economic degradation.
ABBREVIATIONS

BMC: BrihanMumbai Municipal Corporation

DRP: Dharavi Redevelopment Project

MASHAL: Maharashtra Social Housing and Action League

MHADA: Maharashtra Housing and Development Authority

MMRDA: Mumbai Metropolitan Regional Development Authority

MM: Mahila Milan

MM Consultants: Mukesh Mehta Consultants

NSDF: National Slum Development Federation

PGMP: Prime Minister’s Grant Project

PUKAR: Patterns for Urban Knowledge, Action and Research

SPARC: Society for the Promotion of Area Resource Centres

SRA: Slum Rehabilitation Authority

SRS: Slum Redevelopment Scheme
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NOTES

1. India’s caste system is among the world’s oldest forms of surviving social stratification. The system which divides Hindus into rigid hierarchical groups based on their karma (work) and dharma (duty) is generally accepted to be more than 3,000 years old. The caste system divides Hindus into four main categories - Brahmins, Kshatriyas, Vaishyas and the Shudras. The caste dictated almost every aspect of Hindu religious and social life, with each group occupying a specific place in this complex hierarchy.

2. Based on interview at Sanaullah Compound on 05 February 2017

3. Based on Author’s fieldwork and site interviews with industry owners.

4. Shyam Kanle works as a researcher and field operator with URBZ. He has run many businesses in Dharavi where he was born and raised. He has also been involved in conflict resolution and local politics for many years.

5. See Dharavi Redevelopment Project - Appendix

6. Based on interview of Shyam Kanle, Urbz

7. Based on Survey carried out by the National Slum Development Federation in 1986

8. “The Emergency” refers to a 21-month period from 1975 to 1977 when Prime Minister Indira Gandhi unilaterally had a state of emergency declared across India. The order bestowed upon the Prime Minister the authority to rule by decree, allowing elections to be suspended and civil liberties to be curbed.


10. See http://www.dharavibiennale.com/

part 08

Appendix

8.1 Survey Maps - Dharavi
8.2 Dharavi Redevelopment Project - Plans
8.3 Essay - Theorising informal urbanisation
8.1 SURVEY MAPS - DHARAVI
8.2 Dharavi Redevelopment Project

[Diagram showing a key plan for Dharavi Redevelopment Project]

Slum Rehabilitation Authority
Dharavi Redevelopment Project
5th Floor, Grijnirman Bhavan, Bandra (E)
NOTES

- BUILDABLE AMENITIES PROPOSED IN COMPOSITE WITH REHAB BUILDINGS.

LEGEND:
- SECTOR BOUNDARY
- HABITAT COMMERCIAL
- R.G.
- NALA
- MESHEM CREEK
- WALKWAY
- WATER TRUNK LINES
- AMENITY AREA
- ROAD
- R.T.
- H.T.
- H.T. LINE
- B.S.T. BUS STATION
- B.S.T. BUS DEPOT
- RAILWAY TRACK LINE
- RAILWAY TRACK LINE

PROPOSED AMENITIES PLAN OF DHARAVI
(Submitted to Govt.)

Scale: N.T.S.

PROPOSED ROAD NETWORK PLAN OF DHARAVI
(Submitted to Govt.)

Scale: N.T.S.
Theorizing informal urbanization

Viewing the Global South through the lens of the informal urbanisation: An exploration via narratives

Abstract

In the last few years, several academicians and scholars have attempted to theorise informal urbanisation in order to develop an analytical framework which explores the larger field urbanisation processes in the global south. This stems from a decisive shift from the Euro-American centred theoretical production to theory being produced in the Global South itself, which offers a wider imaginary of epistemological narratives generated. Within the context of global south, where urbanisation is viewed as an inevitable phenomenon, the ‘megacity’ acts as a metonym for the urbanisation processes and the theories it generates. The narratives discussed in this paper focus on informal urbanisation, as it is often the most recognisable form of urbanisation in the global south.

This paper explores the different epistemological narratives and their understanding of informal urbanisation processes, debating on their contrasting approaches. The ideologies of these narratives lead to the recent method of exploring urban theory through subaltern urbanism, which explores the role of local political agencies. A reworking of the subaltern is provided by Roy (2011) wherein she aims to separate the notions of informal urbanisation and urban poverty making inroads into the development of a normative base for understanding urbanisation processes in the global south. Although there are advantages of developing a theoretical construct through the frame of informal urbanisation, this paper highlights its future challenges, especially in the lack of empirical grounding as well as the negative connotations associated with its terminology. The paper concludes with recommendations for the applicability for the future of viewing urbanisation processes in the global south through the frame of the informal.

Key words: informal urbanisation, epistemological narratives, global south, subaltern urbanism
1 Introduction

The last few years have seen a return to the theorisation of ‘informal urbanisation’ from several academicians and even popular authors. Popular writers such as Davies (2004, 2007) along with scholars such as Rao (2006) and Roy (2011) have lauded the need to theorize the ‘informal’ aspect of urbanisation. This need is supported by an argument that this model of theorisation could offer a normative base for developing an analytical framework to better understand urbanisation processes in the cities of the Global South. Two diverse and dominant narratives have emerged from attempts at theorising informal urbanisation, which have been termed and elaborated upon in this paper as the ‘dystopian city’ and the ‘entrepreneurial city’. As a response to these narratives, a third position arose from the inhabitants of this mode of urbanisation within the global south – subaltern urbanism, which incorporates the work of different popular agencies that work with informal urbanisation.

The aim of this paper is to explore the value of these different dominant narratives in deriving a normative base to understand the phenomenon of urbanisation in the global south. In order to investigate this, the ideologies of the two dominant narratives are briefly explored, delving into a more detailed exploration of the subaltern approach. The paper concludes with an assessment and possible recommendations for the future of theorising informal urbanisation in order to apply them to the larger field of urbanisation processes in the global south.

2 The premise of the Global South, its megacity and informal urbanisation

Since the latter half of the 20th century, the global south has been used to test emerging geographies of urban theory. This is a distinctive shift from the ‘global North’ to the ‘global South’, resulting in a realignment of ideas and theoretical notions of urban design and studies. Several authors have seen this shift as long overdue and an inevitable phenomenon (Robinson, J., 2002). This new geography of urbanisation theory dislocates itself from the previous ‘Euro-American centre’ of theoretical production, moving towards the ‘global south’ and studying its megacities as empirical cases (Roy, A., 2009). This shift was also furthered by the ontological limitations of ‘Euro-American centre’ sites of theoretical production, resulting in a restricted imagination of the epistemological narratives generated.

Illustrating this shift, Rao (2006) cites the example of the modern South Asian City, where the recent ‘southern turn’ in a steady stream of literature has changed the perspective of viewing cities of global south by the academicians. This perspective, she argues, has lifted much of the theoretical uncertainty and ambiguity previously associated with this context (Rao, V., 2006). In this context of the global south, the megacity becomes an object of enquiry, with urbanisation viewed as an inevitable phenomenon (Prakash, G., 2002). Therefore, it is the megacity of the global south which acts as a metonym for urbanisation and the theories it generates.

Note:
1. The authors and their arguments presented here focus mainly on South Asia and in some cases Africa. This does not represent the entire dialogue of the southern turn, only focuses a body of work, which I find more relevant to the larger graduation project.
Within the framework of the megacities of the global south, the narratives discussed in this paper focus on the theories related to informal urbanisation. Informal urbanisation, or to use a more colloquial term - slums are often seen as a recognisable form of urbanisation in the global south. It is also often seen as the recognizable frame through which the megacities of the global south are perceived and understood (Nuttall, S. and Mbembe, A., 2005). This lens on the informal urban settlement is also supported by other authors such as Rao (2006) who states that these settlements often ‘acquires ideological overtones as a theoretical construct’, thereby ‘straddling the conceptual and material forms of city-making’ in the global south, which challenges the current method of imagining the modern city.

The dominant narratives emerging in the discourse over informal urbanisation can be categorised into two distinct epistemological positions. Each position is supported by a set of authors who take a ‘southern turn’ in their process of reimagining the ‘urban’ (Rao, V., 2006). The first dominant narrative takes an apocalyptic vision of informal urbanisation contained within the megacities of the global south. They are visualised as overcrowded, disease and poverty ridden and overtaken by strife and violence. The second narrative, in contrast, lauds the entrepreneurial nature of the informal opposing state interventions and interference in its working system. The following two sections investigate the arguments of each narrative along with its supporting authors.

3 The dystopian city

The dystopian narrative is marked by one of the most prolific documents produced regarding informal urbanisation by the UN habitat, titled ‘The Challenge of Slums: Global Report on Human Settlements’ (Un-Habitat, 2004). The report highlights the urgency and the extent of problems faced by the inhabitants as a result of informal urbanisation, highlighting the need for increased state intervention and policy level actions. Informal urbanisation and slums are, as the report argues, a manifestation of rapid urbanisation and the urbanisation of poverty, extending to 32% of the world’s total urban population reaching up to 78.2% of the urban population of the least developed countries (Un-Habitat, 2004).

This report spurred other authors such as Mike Davies (2004, 2007), who continued in the same vein describing the dystopian nature of the slums in his book, ‘Planet of the Slums’, published in 2007. In Planet of the Slums, informal urbanisation is seen as a result of ‘surplus of humanity’ (Davis, M., 2007, p.174), where large parts of the megacities in the global south are bursting at its seams, poverty ridden, overtaken with violence and a present a constant struggle for survival. The ‘surplus of humanity’ is reasoned to be caused by people being cut off from the formal world economy and driven into urban slums. Arguing that the above phenomenon is predominantly due to the decoupling of urbanisation from industrialisation and development in the global south, Davies posits that the ‘planet of the slums’ is the only fully franchised solution to the problem of warehousing.
the 21st century’s surplus humanity (Davis, M., 2007).

Reasoning against the dystopian epistemological position taken for informal urbanisation, scholars such as Alan Gilbert & Pushpa Arabindoo warn us of the negative connotations attached to the urban theory of informal urbanisation. Gilbert writes extensively against the terminology associated with informal urbanisation, especially ‘slums’, as too many observers and scholars apply these terms with ‘broad strokes’, embracing any place that is problematic and including any group of people that live there (Gilbert, A., 2007). Another disagreement is brought forward by Pushpa Arabindoo, who states that these larger debates about theorising informal urbanisation processes leads to the theorisation of urban poverty, which requires an empirical rather than a theoretical approach (Arabindoo, P., 2011). Although there is an urgent need to improve the squalid conditions created in informal settlements and slums, caution must be exerted so as to not treat urban poverty and informal urbanisation through the same theoretical lens.

Documents such as the UN Habitat report attempt to address the phenomenon of informal urbanisation in an empirical manner, highlighting the urgency of its problems. Its restrictions include offering policy makers an easy way out to equate informal urbanisation and urban poverty. The broad strokes used by the authors in this narrative also tend to label informal urbanisation as homogeneous areas of poverty and crime, rather than the heterogeneous landscapes of economies and social structures.

4 The entrepreneurial city

In contrast to the dystopian narrative, theorising informal urbanisation as an ‘entrepreneurial city’ was explored by several western urbanists and journalists. This lauding of informal urbanisation, especially about its entrepreneurial nature was propositioned by De Soto in his book ‘The Other Path: The invisible revolution in the third world’ (De Soto, H., 1990). De Soto’s rejected any state intervention in the workings of informal urbanisation and its processes, basing his argument out of Lima, Peru, arguing the survival instincts of the inhabitants is to be lauded instead of suppressed.

In this aspect, perhaps the most radical claim was made by urbanist Rem Koolhaas, in his work on non-western cities, envisioning them as ‘incubators of the future prospect of the global city’ (Enwezor, O., 2003). In her review of Koolhaas’s work on Lagos, Rao (2006) explores his attempt to turn dysfunctionality resulting from informal urbanisation in developing countries into a virtue, using it as a theoretical tool to incubate the future. He called on Lagos as the ‘ultimate dysfunctional city’ – but in terms of all the initiatives and ingenuity, almost ‘utopian’ in nature (Michael, C., 2016). This lauding of the modernity present in the mega-cities of the global south, is often shared by other authors. Robert Neuwirth has explored the phenomenon of the informal economy produced by slums, terming it as ‘System D’. He elaborated on system-D as a form of ‘ingenuity economy, the economy of improvisation and self-reliance, the
do-it-yourself, or DIY economy’, claiming that this ‘spontaneous system, ruled by the spirit of organized improvisation, will be crucial for the development of cities in the 21st century’ (Neuwirth, R., 2011).

This celebration of the ‘informal’ has left a distinct mark in the urban theories generated about informal urbanisation. Although the narrative of the ‘entrepreneurial city’ has helped shed the negative misconceptions about informal settlements, highlighting the ingenuity applied by its residents in order to survive, it has also contributed to the romanticising of urban poverty. In their discourse, Neuwirth and De Soto have offered simplified, ideological solutions to an issue that requires a nuanced, empirical approach. De Soto in particular has received little academic support, with criticism stemming towards his lack of a methodological approach and empirical evidence (Gilbert, A., 2009). In a similar manner as the ‘dystopian city’ narrative, the ‘entrepreneurial city’ narrative also tends to over-generalise, offering a universal appeal in the arguments against interference from the state, but without a methodological approach to improve the squalid conditions present in informal urbanisation.

5 The rise of the subaltern discourse

The two dominant epistemological narratives on informal urbanisation present two vastly polarised accounts. As a response, to these generalised accounts, several authors have called for a recognition of local agencies and people, moving towards a non-western approach in theorizing informal urbanisation – which is term as the ‘subaltern’ approach.

Subaltern space is therefore, often interpreted as a ‘space of difference’, associating itself with the populace (Spivak, G., 2003), and is also used to call out on the elitism of the existing historiography (Guha, R., 1988). Subaltern urbanism aims to theorise the megacity of the global south in terms of informal urbanisation, highlighting the need to recognise the different popular agencies that work with urban poverty (Roy, A., 2011). In recent years, scholars such as Chatterjee (2003) and Roy (2011) have propagated the idea of using the ‘subaltern’ as an agency for change in order for the local inhabitants lay a claim on livelihood and existence.

The subaltern approach arose from the need of re-theorising the urbanisation processes in the global south, especially with the emergence of the 21st century megacity and its resulting in a shift in focus of urban theory. This shift was predominantly because of the limited epistemology of the urban theory generated previously, requiring a re-imagination of the sites where this theoretical production took place previously. Subaltern urbanisation aims to address the shortcomings existing dominant narratives of the ‘dystopian city’ and the ‘entrepreneurial city’, presenting urbanisation processes in the global south as a heterogeneous theoretical landscape. Presenting the views of the people an agencies within the ‘subaltern space’, it directly writes against the dystopian vision
of informal urbanisation in the Global South. It also differs from the viewpoints of Neuwirth and De Soto of the heroic and optimistic ‘entrepreneurial city’. The subaltern, instead presents a distinct type of politics, where ‘flexibility, pragmatism and negotiation’ characterize the habitus of informal urbanisation (Bayat, A., 2000). Although the subaltern urbanisation runs on common ground with that of the entrepreneurial city narrative, it has had limited reach and appeal towards policy makers in the megacities of global south (Roy, A., 2011).

The subaltern, however, has found an audience in the territory of informal urbanisation. Informal settlements and slums feature as empirical and analytical points of departure in the political exploration of the megacities of the global south (Rao, V., 2006). Navigating the political landscape of the subaltern, authors such as Chatterjee (2004) and Appadurai (2001) explore informal settlements and slums as a legal and territorial construct delving into the governance aspect within it. Focussing their work in South-east Asia, they explore how the marginalised class lay their claims to the state.

The main struggles with the subaltern has been raised by Roy (2011), in her paper, titled, ‘Slumdog cities – rethinking subaltern urbanism’, where she states:

‘...... subaltern urbanism tends to remain bound to the study of spaces of poverty, of essential forms of popular agency, of the habitus of the dispossessed, of the entrepreneurialism of self-organizing economies.’

In order to recognise the heterogeneity of the informal urbanisation processes in the global south, Roy (2011) argues that the subaltern needs to break away from its ontological and topological constrains of urban poverty. In an attempt to do so, Roy divides the subaltern into four sub-categories: ‘peripheries, urban informality, zones of exception and grey spaces’, where each has a distinct genealogy (Roy, A., 2011). Attempting to move away from the realm of urban poverty, these sub-categories offer an alternative to the existing vocabulary of informal urbanisation.

Writing against the synonymous nature between informal urbanisation and urban poverty, Roy argues that informality is a ‘mode of production of space that connects the seemingly separated geographies pf the slum and the suburb’ (Roy, A., 2011). This argument, therefore propositions that the informal urbanisation is also the purview of the urban elite as much as it is the purview of the urban poor. Dislocating from urban poverty, the sub-categorised perspective of the subaltern allows informal urbanisation to move away from both the dystopian as well as the entrepreneurial city narratives. The sub-categories of the subaltern presented by Roy (2011) can offer a departure from the previous approach of generalising urban theory in the case of urbanisation processes in the global south. It also incorporates the role of political identity and its influence, especially in the case of informal settlements.

The drawback in Roy’s approach is the lack of location based testing, which results in the sub-
categories being limited to intangible sites. What appears initially useful in Roy’s take on using the subaltern to view informal urbanisation in the global south through a multitude of lenses, suffers because of the lack of empirical evidence. This results in difficulties in illustrating the subaltern categories via real-world examples, offering challenges to develop an analytical framework for the megacities of the global south.

6 Conclusions: The challenges of theorizing the slum

What has emerged quite distinctively from the earlier narratives of the ‘dystopian city’ and the ‘entrepreneurial city’ and has also continued into the ‘subaltern’ approach is a decisive shift towards how the megacity of the global south and its urbanisation processes are viewed and explored theoretically.

However, is there any value of deriving an analytical framework from informal urbanisation theory in order to view the larger landscape of the megacity in the global south? Urban theory has rarely ventured into informal urbanisation, expect as initial forays into epistemological narratives discussed in this paper. The subaltern has made inroads in this aspect, using the notions of popular agencies and the role of governance in their arguments. Forming the beginnings of a normative base for exploring informal urbanisation, the subaltern offers a possibility of developing an analytical framework for the megacity of the global south. Roy (2011) supports this attempt in theorizing informal urbanisation via the subaltern, recognising this as a necessary challenge to the existing dominant narratives. With the addition of the politics of local and advocacy by popular agencies, urban theory around informal urbanisation can become a departure point for the megacity, as it is the point of intersection of different dialogues emerging from the global south.

7 The future of urban theory in informal urbanisation

It is evident that there are clear advantages of the informal urbanisation being viewed as a theoretical construct. Along with challenging the current imaginary of the megacities of the global south, it also provides much needed visibility to its inhabitants and their needs. Supporting it, Rao (2006) states that analysing the informal urbanisation processes and the theory it generates in a normative sense could be used to gain visibility for certain histories and the landscapes of politics and action that have not had enough exposure (Rao, V., 2006).

However, one must be careful of the terminology used in the context of informal urbanisation. The dominant epistemological narratives and subaltern urbanism have brought back the usage of terms such as ‘slum’. This terminology has received its share of criticism by scholars such as Alan Gilbert,
who posits that the negative connotations associated with slums would limit urban theory within the realm urban poverty (Gilbert, A., 2007). This negative connotation also forms a very strong basis for distorting the formation of a clear analytical and normative base. This, sometimes leads to the aestheticism of poverty - romanticizing of the daily hardships and struggles of the urban poor. Forming a paradox, the theorization of the informal urbanisation can work against the very objectives it wishes to achieve.

What is then perhaps needed is an empirical testing of urban theory in the context of informal urbanisation. This would then incorporate the ground-reality complexities, supplementing the theoretical concepts with an underpinning in locational politics and advocacy. The subaltern approach by Roy (2011) has made inroads to disconnect the landscapes of urban poverty and informal urbanisation. This has provided a starting point to view the megacity of the global south through a different lens, leading to a formation of a normative base. This needs to be continued further into empirical and location based grounding, so as to translate it into an analytical framework that explores urbanisation processes in the global south. A relook into the missing empirical aspect would free the dominant epistemological narratives from the homogeneous landscapes of urban theory it generates. It would also help the translation of the subaltern urbanism as an applicable perspective of viewing the urbanisation processes in the global south.

8 References


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