Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences
Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

### Personal information

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### Studio

<table>
<thead>
<tr>
<th>Name / Theme</th>
<th>Complex Cities Studio</th>
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<tbody>
<tr>
<td>Teachers / tutors</td>
<td>Roberto Rocco (1st Mentor) &amp; Arie Romein (2nd Mentor)</td>
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#### Argumentation of choice of the studio

Hailing from the Global South, my interest and therefore my graduation topic deals with the complexities of one of its most visible problems: informal settlements. 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).

The parallel Honours Track and its associated research project (which deals the representation of social-economic elements in self-made cities, such as Dharavi, in urban studies) also offers additional support and experience in academic writing and research methods.

### Graduation project

<table>
<thead>
<tr>
<th>Title of the graduation project</th>
<th>An (IN)formal Frame - Incorporating social &amp; economic Production of space in redevelopment of informal settlements Case study: Dharavi, Mumbai, India</th>
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<tbody>
<tr>
<td>Location</td>
<td>Dharavi, Mumbai, India</td>
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The posed problem, 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.

<table>
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<tr>
<th>research questions and design assignment in which these result.</th>
<th><strong>Main Research Question:</strong> How can a strategic and spatial 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)</th>
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<td><strong>Sub-Research Questions:</strong> 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?</td>
<td><strong>Project Aim:</strong> This research will aim to develop a spatial and strategical framework 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 also involve a rework of the existing policy and redevelopment strategy in order to incorporate a more comprehensive input from the different stakeholder.</td>
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Execution of Spatial strategy in Dharavi:
In order to execute the above framework, a set of spatial tools need to be identified which can be used to form the basis of redevelopment projects in Dharavi. These tools need to be case and context specific, identified based on an in-depth spatial analysis of the site or area. The spatial analysis identifies “economic clustering” as a spatial tool which forms the basis of the spatial strategy, identifying long term and immediate design interventions in Dharavi. The detail design would illustrate and visualise how the spatial strategy could be executed in a selected area within Dharavi.

Process

Method description

The methodology of in order to conduct this research has been divided into three broad frameworks: The theoretical, analytical and empirical (operation) framework. In this, the theoretical and the analytical framework run parallel to each other, complementing their knowledge base. Figure 1 illustrates the methodology approaches in the relation to

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 Implication”, which are explored in more detail. Each category is further subdivided into smaller sets (as described in figure 2). Each sub-set contributes as a background support to the layer, testing the spatial manifestations of the theoretical explorations in Dharavi.

**Analytical 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 3) 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 introduced 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.
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 nuanced understanding of the socio-economic processes and its spatial manifestation in Dharavi.

The layers 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 Morphology 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 socio-spatial 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, help guide the spatial understanding of Dharavi, identifying the areas
within the area, where the spatial design and framework can be implemented and tested.

**Fieldwork:** In order to make the supplement the operationalisation of the spatial framework and design, fieldwork directed by sample questionnaires, expert interviews and observational analysis 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, Hussain Z Indorewala & Gerry George Jacob – Senior lecturers and practicing architects in Mumbai, who have been involved with several research projects in Dharavi

• Matias Echanove & Rahul Srivastrava – Founder at Urbz, Mumbai - an experimental urban research and action collective, who have executed several workshops and hands-on research projects in Dharavi.

• Bhau Korde – activist and resident of Dharavi

• Selected interviews residents identified based on the analysis and direction of the spatial design

Apart from these, questionnaires directed towards a sample population would supplement a broader and comprehensive understanding of the socio-economic dynamics within the selected area of Dharavi.

**Literature and general practical preference**

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 research uses a theoretical framework as an integral part of the methodology (described in the previous section – figure 2).

In addition the Theory of Urbanism Paper (AR3U022) explores the theorization of the “slum”, providing an integral part of the theoretical framework.

**Important Literature used:**


DE SOTO, HERNANDO 1990. The other path: The invisible revolution in the third world.


Reflection

Relevance

The relevance of the project can be seen from an academic as well as a societal point of view. They are described below:

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.

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
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 (Schrader, H.). 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.

**Time planning**

![Time planning diagram](Image)

**Note:**
Fieldwork was scheduled and arranged in Mumbai from 26th January till 12th February, 2017. This is mainly to give time for suitable preparation and background work for the fieldwork, along with the availability of the expert interviewees.