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	
Name	Kavya Suresh
Student number	
Telephone number	
Private e-mail address	

Studio		
Name / Theme	Design of Urban fabrics	
Main mentor	Claudiu Forgaci	Urban design
Second mentor	Dominic Stead	Spatial planning
Argumentation of choice of the studio	Design of Urban Fabrics – The studio focus on a morphological, design-based approach along with the studio methodology of research by design and scenario testing is the most suitable approach to my project, which focuses on urban transformation through densification. This year's studio theme of "density and intensity" is one of the core research topics my project deals with as well.	

Graduation project	
Title of the graduation project	[RE]shaping urban environments in Chennai – Urban transformation through an integrated densification process to facilitate liveable environments
Goal	
Location:	Chennai, India
The posed problem,	Indian cities have undergone extensive urbanisation ever since the postcolonial economic reform of the nineties. Chennai, an Indian coastal city, has experienced significant transformation in its urban fabric during its 400-year journey from a port outpost in the British colony, to its current role as one of the largest urban agglomerations and globalisation hotspot in India. (Dowall & Monkkonen, 2007) The constant prioritisation of economic development has led to a pattern of sprawl, creating fragmented spaces within the city, each with its unique characteristics and challenges. This development pattern has simultaneously created an environment of congestion and a lack of social spaces in the city. Currently, future visions for

	the city are in a state of flux. New building codes allow for increased building density without a holistic perspective that considers the need for mobility and accessibility, the fragile ecological conditions or the diverse and fragmented living environments within the city (all of which are a result of poorly planned urban growth to start with). This is partly due to the separate government authorities that deal with these individual issues without much communication between them. The density reconfiguration and intensification that the city is undergoing needs a particular focus on the spatial transformation of the urban fabric through a holistic approach, to facilitate environments with liveable spaces for all its people, in the different parts of the city.
research questions and	How to facilitate the spatial transformation of the urban fabric of Chennai to enable liveable environments for all people, in different contexts of the city, through a reorganization of the building density using a holistic approach that takes into account mobility infrastructure and ecological systems? Research sub questions: 01 What are the driving forces that have shaped the fabric in different parts of the city? How are these parts different/similar in terms of their physical and social composition? 02 What does the concept of liveability mean in the socio-cultural context of Chennai city? 03 What is the current density and spatial organisation in the city? How will the change in building rules affect the fabric of the city? Where will the impact of this transformation be the most prominent? 04 What is the relationship between building density, population density social infrastructure and liveability? 05 What are the development plans for the mobility and ecological network in the city? What are the synergies and conflicts between these plans and the densification of the city? 06 How to increase the of use of public transport and pedestrian movement in the city? 07 How to integrate the neglected ecological network with the city structure, in order to regenerate these spaces and improve the quality of public life?

design assignment in which these results.	The aim of the design process is the exploration of different possibilities of urban transformation in Chennai, through the process of densification. This results in a design assignment that is multi-scalar in nature. At the local scale: - A design proposal and toolkit that enable liveable and accessible environments at local scales through transformation of the urban fabric in different contexts of the densifying city. At the city scale: -A strategic integrated model for the city, that redefines building rules and development models, to take a holistic approach to densification in the city, considering mobility networks and ecological systems. Across the two scales, the design process is utilised in the following ways: 1. Research by Design: This project utilises design as part of the research process. The different relationships between systems and the integrated model will be tested through design scenario explorations, which will in turn inform the relationships. Further, the aims of this project, at both the local and city scale, are not seen as only the final goals, but as an evolving process where one receives feedback from the other. Therefore, the relationship between building regulations and rules, and the quality of spaces at the local scale will also be made explicit. 2. Design interventions: The locations chosen for design interventions in this project will consider two different approaches. a. projects that are key strategic points to the city. b. identification and classification of typical locations in the city to determine transferable design strategies. 3. Design informed development policy: Transferable general strategies from different sites will be used to determine larger building regulations and development models for densification. These can then be tested at various local sites to understand the diversity of outcomes.

Process

Method description

Methods used:

[1] Literature review
[2] Documentary analysis: a. Policy review b. Historical documentation
[3] Mapping and analysis: a. Morphological study (social and ecological) b. GIS mapping
[4] Comparative case studies
[5] Filed work: a. On-site interviews b. Spatial analysis c. Photo documentation d. Expert interviews.
[6] Scenario testing

The following sections gives a brief overview of the project methodology and the utilization of the methods outlined above.

The approach: The primary approach of the project, that defines an integrated process of densification, uses the theoretical underpinnings from the literature review as the basis, with documentary analysis, morphological studies and stakeholder interviews (on-site and expert) to contextualise it to Chennai.

Analysis: The analysis is conducted in three sections: Patterns, Intentions and Explorations.

Patterns - A morphological analysis of the city in order to understand socio-spatial and socio-ecological conditions. This enables a larger understanding of the driving forces that have shaped the city and a definition of the different types of living environments in Chennai.

Intentions - Analysis of different developments in the city (pertaining to densification, ecological systems and mobility networks) and the perceptions of people towards these potential developments. This involves mapping based on documentary analysis as well as on-site interviews. Further, this is mapped with the existing urban environments in the city to understand spatial implications of the proposed developments. The first two steps of analysis allow for selection of local sites that encapsulate the very different challenges faced by the different parts of the city.

Explorations - A research by design method that tests various scenarios of design in order to understand their spatial implications. This part of the analysis is a transition into the design process. The scenarios are built based on the variables of 1. Densification 2. Ecological systems. 3. Mobility networks and 4. Indicators of liveability. Comparative case studies and the conclusions from the first two stages of analysis are used to define the scenarios to be tested.

The design process: Continuing from the "Exploration section of the analysis, spatial interventions at the local scale and strategies for development at the city scale are defined. This process uses inputs from the analysis, stakeholder interviews, policy guidelines, comparative case studies and the design indicators from the theoretical underpinning. Further, interventions and locations are identified as "key locations" and "typical locations" in order to understand the level of transferability of the design outcome.

Literature and general practical preference

Integrated approach: The project proposes an integrated approach to densification in Chennai city, using the concepts of "The two-network strategy", Transit oriented development and socio-ecological integration.

Tjallingii, S. (2015). Planning with water and traffic networks, carrying structures of the urban landscapes. Research in Urbanism series, 57-80.

Barthel, S., Colding, J., Ernstson, H., Erixon, H., Grahn, S., Kärsten, C., . . . Torsvall, J. (2013). Principles of Social-Ecological Urbanism - Case Study: Albano Campus, Stockholm. Stockholm: TRITA-ARK Forskningspublikationer.

Forgaci, C. (2018). Integrated urban river corridors. Rotterdam: Delft University of Technology.

Thomas, R., Pojani, D., Lenferink, S., Bertolini, L., Stead, D., & van der Krabben, E. (2018). Is transit-oriented development (TOD) an internationally transferable policy concept? Regional Studies, 52(9), 1201-1213. doi:10.1080/00343404.2018.1428740

Urban task force. (2005). Towards an Urban Renaissance. Spon.

Design aim / Research outcome: The theoretical underpinning for the intended design aim is based on the concept of liveability through public spaces and the relation between building rules / development models and the spatial patterns of cities.

Bosselmann, P. (2008). Urban transformation - Understanding city and design and form. Washington: Island press.

Lehnerer, A. (2013). Grand Urban Rules. Rotterdam: 010 Publishers.

Patel, S. B. (2014). Housing, FSI, crowding and densities. Mumbai: Praja Foundation.

Ministry of Urban development. (2017). Liveability standards in cities. Delhi: Ministry of Urban development.

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

   The Dutch approach to urban planning informs the Urbanism programme, the studios offered as well as the projects we work on through the two years of the masters programme. While there are diverse perspectives that urban design and planning is approached from in the studios, the core methodology is always a process of using scientific research as the basis of design, as well as a strong emphasis on the technical and engineering aspects required to actualise an idea. The diverse range of graduation studios offered, situate themselves at different points of entry and focus in this methodology of research, design and engineering, resulting in the presence of experts in different fields and a rich and varied knowledge base to learn from.

   My project focuses on the urban transformation of Chennai, India, through the process of densification. I find the approach in the Urban Fabrics studio, emphasising a design methodology of scenario testing to facilitate urban transformation and the focus on the human dimension of urban space, to be the most suitable and effective approach to my project.

   Further, this year's studio theme of "density and intensity" with its focus on transformation of existing urban fabrics through build density redistribution and strategic social infrastructure planning is very relevant to the area of study that I have chosen.

   Additionally, my project also requires the guidance and expertise from a spatial planning perspective, in order to understand the larger strategies and policies required to facilitate the transformation of the urban fabric. This derives from the field of expertise of the Planning Complex cities studio.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework?

   Scientific relevance: This research aims to make explicit the mutual relationship between facilitating liveable environments at a local scale through the densification process and the larger mobility and ecology networks in the city. High building density in Indian cities also means a high population density, owing to low space available per person. (Patel, 2014) This can often lead to congestion and put high pressures on social, mobility and ecological infrastructures, leading to poor liveability. Mobility networks and access to public transport play an important role in mitigating this.

While transit-oriented development (TOD) is now a common pattern of growth found in Western cities, it still needs to be explored and adapted in the Indian context, where vehicular mode of transport is still predominant, especially due to the lack of multi-modal accessibility and last mile connectivity of public transport. (Singh, 2005). Further, when adapting concepts like TOD in the context of Chennai, it becomes important to explore the development models in the densification process, as land acquisition and development becomes a challenge due to the high degree of private ownership of land in the city.

Societal relevance: In Indian metropolitan cities like Chennai, focus on economic development above all and the rapid pace of urbanisation has led to a lack of quality in public life for the people. There is a lack of space to facilitate social interactions and a lack of opportunity to sit, walk or just wander in the city. This research aims to create these opportunities through an integrated densification strategy at the city scale as well as through design interventions at a local scale. Further, there is a lack of synergy between the kind of public spaces that people want and those that are being built in the city today. This project also explores the way public spaces are perceived and used by the people in the city and will therefore have a significant societal relevance.