

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	Yiyi Lai
Student number	5327504

Studio		
Name / Theme	Global Housing: Mixing Navi Mumbai	
Main mentor	Nelson Mota	Design
Second mentor	Frank Schnater	BT
Third mentor	Vanessa Grossman	Research
Argumentation of choice of the studio	I have joined the Dwelling Studio in MSc1, and it made me realize that housing is an exciting topic closely related to our daily lives and society. Besides, having grown up in China, I have witnessed rapid urbanization erode the countryside and vernacular architecture, which raised my interest in diving into the Global South issues. I am confident that joining the Global Housing Graduation Studio will help me find possible solutions to tackle the dilemma in the Global South.	

Graduation project	
Title of the graduation project	Negotiating the Peri-urban: Exploring Housing Serve as a Mediator between Local Inhabitants and Migrant Quarry Workers in Navi Mumbai
Goal	
Location:	Navi Mumbai, India
The posed problem, research questions and design assignment in which these result.	
<p>a) <u>Background</u></p> <p>India's rapid urbanization has drawn rural migrants to the metropolis for livelihoods, further resulting in urban expansion. Metropolitan areas, such as Mumbai, Kolkata,</p>	

and Delhi, are not only growing in population but also in the size of cities.¹ This horizontal urban expansion to the periphery increases a more complex interaction with its surrounding rural areas, shaping them into a dynamic rural-urban interface termed the 'peri-urban'.² These emerging hybrid landscapes with both rural and urban features have become a major landing point for rural migrant workers into the city.

On the one hand, urbanization has profoundly impacted villages within the urban boundaries. There has been a massive breakdown of local space through gradual changes in land use, economy, and social linkage. For example, in Navi Mumbai, agricultural degradation forces local inhabitants to sell their farmland. As a result, the previous agricultural communities were expelled from their original land and moved away, leading to the displacement of local vulnerable social groups.

On the other hand, infrastructure works in the city have provided many job opportunities, attracting poor migrants from surrounding rural areas to move to the city. In Navi Mumbai, about 35% of the population are rural migrants. Most of them work in labour-intensive sectors, such as quarrying. Actually, before the new city expanded from Mumbai in the early nineteen-seventies, hills around Navi Mumbai had already been used for quarry work. The emergence of the new city has profoundly impacted the development of quarries. In 2008, there were more than 200 quarries located between Turbhe and Nerul, employing a total of 20,000 workers.³ Most of them were poor-educated and from the lower caste, including Other Backward Class (OBCs) and Scheduled Caste (SCs).⁴

However, new development plans for Navi Mumbai failed to respond to the accommodation of these quarry workers. They have been in crisis in terms of their living conditions. Initially, quarry workers were provided collective accommodation outside the quarry sites by the quarry owners. Due to the poor living conditions there, quarry workers turned to self-built informal shelters. Living in the peri-urban areas, residents have difficulty accessing basic amenities such as safe water and electricity supply. Moreover, these colonies are exposed to high levels of risk, including pollution, dynamite blasting, and heavy industrial road traffic.⁵

¹ Annapurna Shaw, "Peri-Urban Interface of Indian Cities: Growth, Governance and Local Initiatives," *Economic and Political Weekly* 40, no. 2 (2005).

² Liana Ricci, "Peri-Urban Livelihood and Adaptive Capacity: Urban Development in Dar Es Salaam," *Consilience*, no. 21 (2019).

³ Shaw, *The Making of Navi Mumbai*, 234.

⁴ Other Backward Class (OBCs) and Scheduled Castes (SCs) are collective terms used by the Indian Government to classify castes which are economically, socio-culturally and educationally disadvantaged.

⁵ Lux and Watson, "Navi Mumbai Stone Quarry Settlements: 10 Community Spaces." See also Smita, *Distress Seasonal Migration and Its Impact on Children's Education* (Falmer: Consortium for Research on Educational Access, Transitions and Equity, 2008).

b) Problem Statement

From the **city perspective**, unprecedented urbanization in India increased existing inequalities and exacerbated urban exclusion in the context of disability to access social services and formal houses. Competition for limited jobs and social resources has led the urban poor to consider migrant workers as a threat.⁶ Worse still, Indian metropolitan cities are losing their distinctive old identities and moving towards a homogenized global urban identity. The deep sense of loss caused in reality by the material conditions is easily transformed into the classification of identities between "the local" and "the outsiders", which directly led to social discrimination and conflict.⁷

Government interventions have been unable to respond to the exclusion appropriately, especially in the housing sector. For instance, most quarry workers are excluded from applying for formal social housing without legal citizenship and stable incomes in the city. Also, with a highly centralized structure, public-funded social housing does not fit the needs of quarry workers with a rural background, further pushing migrants away from formal social housing. Therefore, it can be argued that public-funded social housing has been adopted as an institution to exclude and marginalize rural migrants.

From **migrants' perspective**, especially the migrant quarry workers, despite the fact that informal practices indeed play an important role in sheltering migrants, it exacerbates the marginalization of the migrant poor to some extent. On the one hand, living in the cities, migrant workers are cut off from all their basic entitlements in villages where they have previously registered. On the other hand, they are not allowed to access those urban facilities, including public education for children, free services in public health centres, and Public Distribution System (PDS) grains.⁸ As a result, living in the informal settlements in the city, quarry workers are forced to give up their rights and entitlements, becoming further disenfranchised.⁹

The dynamic socio-spatial spaces in the peri-urban area are full of multidimensional conflicts between villagers, migrants, and government officials. Fortunately, social integration can be facilitated if urban development is carried out in an inclusive way. In the Global South, housing is significant for urban development and addressing poverty because it is a combination of domestic activities, income generation, and social linkage. Therefore, it can mediate the conflict and complex spaces in peri-urban areas in a well-designed way.

⁶ Niranjana Sahoo, "A Tale of Three Cities: India's Exclusionary Urbanisation," (ORF ISSUE BRIEF, 2016), 4.

⁷ "Identity and Exclusion in India's Cities," *Economic and Political Weekly* 43, no. 7 (2008).

⁸ Lux and Watson, "Navi Mumbai Stone Quarry Settlements: 10 Community Spaces," 13

⁹ Smita, 19.

c) Research Question

The following question and sub-questions will be investigated in my research:

How can housing serve as a mediator between local inhabitants and migrant quarry workers in order to negotiate the peri-urban area in Navi Mumbai and build an inclusive Indian city?

This question can be broken down into several sub-questions:

City Perspective:

- How can architects organize the hybrid landscapes at the peri-urban Navi Mumbai to provide opportunities for quarry workers to integrate into the city?
- How can peri-urban living spaces shared by quarry workers and local inhabitants be negotiated on both economic and social-cultural levels?
- How can affordable housing be provided to quarry workers who are excluded from formal public-funded social housing in Navi Mumbai?

Migrants Perspective:

- How can the living environment of quarry workers be improved?
- How can inclusive housing provide quarry workers with a sense of belonging in the city and clarify their ambiguous citizenship?
- How to build a home for quarry workers in the city, based on their traditional rural-related way of life?

d) Design Assignment

My selected site is located beside the quarry belt in Navi Mumbai, between Parsik hills and Mumbai highway. The quarry workers' settlements are close to their quarries, living under the threat of landslides, blasting and dust pollution. Most of them are extensions of the remained urban villages, gathering in small clusters and each one has a high density. There is an urgency to resettle them into a safer place and upgrade the neighbourhood. What's more, dealing with the issues of both low-income and middle-income groups, the most crucial consideration is to build an inclusive community with income-generated approaches.

Meanwhile, with ongoing resistance from local residents and environmentalists, the authority was under pressure to close the quarries in Navi Mumbai in 2016 temporarily. Despite a decision to reopen the stone quarries in 2021, it is foreseeable that the quarries will eventually close in the future. The planning of this area, therefore, requires a long-term perspective.

My design ambition is to achieve a long-term socio-ecological urban resilience through creating an inclusive society, income-generated community, and ecological restoration. In response to this ambition, the graduation project will involve the consideration of different scales from an urban perspective to architecture units. Of these, the resettlement phase (residential design) is the most crucial one and will be my focus in the graduation design.

Process

Method description

The complex urban process in the Global South requires a multi-disciplinary approach to deal with the stated problems. The first stage involves the collective contextual studies from both social, economic, and environmental aspects. **Primary sources of literature** will be used to provide insights into the hybrid landscapes in peri-urban areas. In this stage, **mapping and modelling** will help to give a direct image of the background study.

After that, in order to interpret different lifestyle patterns of migrant quarry workers and indigenous residents, **ethnographic research** will contribute to the design of housing that can translate the lifestyle into a new spatial organization. Alongside the ethnographic research method to interpret intangible lifestyles, knowledge about the tangible way of life will be gathered through a **typological analysis**. Significantly, the hybrid landscapes in peri-urban areas require typological analysis from both urban and vernacular, formal and informal perspectives.

Finally, **comparative case studies and typological analysis** of inclusive and affordable housing programs in both India and internationally will be carried out, offering a closer understanding of housing practices from different scales and various perspectives. This will be executed to draw inspiration of how housing mediates complex urban space and contributes to inclusive cities and communities in India.

Literature and general practical preference

The theoretical framework can be categorized into three groups, each representing a different aspect of the research question. The first included literature belongs to the realm of **peri-urban studies**, representing the research's background and has been a wide-discussed field in developing countries. Besides, studies about the **development of Navi Mumbai** are also included in this group, providing a framework in understanding the context of Navi Mumbai, Greater Mumbai and India. The following literature has been included:

Baxter, R. "New Bombay—the Twin City." *Geography* 59, no. 1 (1974): 51-54.

Bhattacharya, Rajesh, and Kalyan Sanyal. "Bypassing the Squalor: New Towns, Immaterial Labour and Exclusion in Post-Colonial Urbanization." *Economic and Political Weekly* 46, no. 31 (2011): 41-48.

CIDCO. "Cidco Housing Schemes: Turning Dreams into Reality." 2021, accessed Nov 15th, 2021, https://cidco.maharashtra.gov.in/housing_schemes/#gsc.tab=0.

Correa, Charles. *The New Landscape: Urbanization in the Third World*. London: Mimar Books, 1988.

GlocalResearch. "The Dark Sites of Granite: Modern Slavery, Child Labour and Unsafe Work in Indian Granite Quarries - What Should Companies Do?". Utreche, The Netherlands: India Committee of the Netherlands, 2017.

Lux, Valerie Saavedra, and Paul Watson. "Navi Mumbai Stone Quarry Settlements: 10 Community Spaces." edited by Bo Tang: London Metropolitan University; Association of Rural People for Health and Educational Needs, 2008.

Phadke, Aparna. "Mumbai Metropolitan Region: Impact of Recent Urban Change on the Peri-Urban Areas of Mumbai." *Urban Studies* 51 (07/15 2013): 2466-83. <https://doi.org/10.1177/0042098013493483>.

Shaw, Annapurna. *The Making of Navi Mumbai*. New Delhi: Orient Longman, 2004.

-- "Peri-Urban Interface of Indian Cities: Growth, Governance and Local Initiatives." *Economic and Political Weekly* 40, no. 2 (2005): 129-36.

Simon, David, Duncan McGregor, and Donald Thompson. "Contemporary Perspectives on the Peri-Urban Zones of Cities in Developing Areas." 1-17, 2006.

Singh, Bintir. "Peri-Urban Reality in India." *Businessworld*, 2018, accessed Nov 15th, 2021, <http://bwsmartcities.businessworld.in/article/Peri-Urban-Reality-in-India/03-01-2018-136246/>.

Valencia, Sandra. "Caught between Spaces: Socio-Environmental Vulnerability in Formal and Informal Peri-Urban Bogotá and Soacha, Colombia." 2016.

The second theoretical group is dedicated to **urban exclusion in Indian**, which is the

dilemma faced by the urban poor and migrant workers. The following literature has been included:

"Identity and Exclusion in India's Cities." *Economic and Political Weekly* 43, no. 7 (2008): 5-5.
Kundu, Amitabh, and Lopamudra Ray Saraswati. "Migration and Exclusionary Urbanization in India." *Economic and Political Weekly* 47, no. 26/27 (2012): 219-27.

Kundu, Amitabh, and Lopamudra Ray Saraswati. "Migration and Exclusionary Urbanization in India." *Economic and Political Weekly* 47, no. 26/27 (2012): 219-27.

Mann, Preetir. "Urbanization, Migration, and Exclusion in India." 2012, accessed Nov 15th, 2021, <https://casi.sas.upenn.edu/iit/mann>.

Mishra, Alok. "Is Urban Planning in India Exclusionary? The Case for Inclusionary Zoning and Housing in India." *SHELTER* 18 (10/02 2017): 8-19.

Sahoo, Niranjana. "A Tale of Three Cities: India's Exclusionary Urbanization." ORF ISSUE BRIEF, 2016.

Sidhwani, P. "Spatial Inequalities in Big Indian Cities." *Economic and Political Weekly* 50 (05/30 2015): 55-62.

Besides, some online documentary films and interviews were crucial to providing an understanding of the concerns from both local and migrant inhabitants in India, including:

Lahiri-Dutt, Kuntala. *Precarious Labour In Stone Quarries In India*. Video, 2017. <https://www.youtube.com/watch?v=E63a5bmA8gk>.

Vickylive. *Life In Navi Mumbai*. Video, 2017. https://www.youtube.com/watch?v=ChTpZq_FV5c.

All the above indicates that urban exclusion profoundly influences the living condition of the poor. However, most of the current research focuses on the field of socio-economics, and there are still gaps in the research on architecture, especially the housing sector, which will be one of the future areas of my study.

The third group of references views **the inclusive city and housing** in both India and the Global South, which is the ambition and possible approach to solve the stated problem in this study. There has been some exploration illustrating its potential in developing countries. Especially, Indian architects such as Charles Correa and Raj Rewal have managed to achieve equality and inclusion in their residential projects since the nineteen-eighties. The following practical preference has been included to explore different ways of developing inclusive and affordable architecture projects in India:

Artist Village, Belapur, Navi Mumbai, India -- Charles Correa

Previ Housing, Lima, Peru – Charles Correa

Kanchanjunga, Mumbai, India – Charles Correa

CIDCO Housing, Belapur, Navi Mumbai, India -- Raj Rewal

Swadeshi Market Chawl, Kalbadevi, Mumbai, India

Bhatia Chawl, Bhuleshwar, Mumbai, India

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)?

Firstly, my graduation project is closely related to the Global Housing studio topic. As stated in the course manual, the graduation studio aims to address the negative impacts of the development of New Mumbai as a fertile ground for social, spatial and environmental inequalities and to rethink housing as a more equitable city. In response to this vision, my graduation project focuses on rural-urban migrants and their poor living conditions in the peri-urban area of Navi Mumbai. The goal is to create an inclusive residential resettlement community that help them better integrate into city life.

For the relation between the graduation project, my master track Architecture, and my master programme, the graduation design is going to produce a residential project. However, it is not regarded as an isolated field. I will propose a long-term project that covers a wide range of scales, from urban strategies to architecture units.

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

My graduation work has a **global policy and strategic relevance**. It responds to the United Nations' Sustainable Development Goals (SDG) and is directly linked to SDG 1, 9, 10, and 11, which are about achieving no poverty, providing infrastructure, reducing inequalities, and creating sustainable cities and communities.¹⁰ The aim is to develop an open, inclusive and sustainable living environment for inhabitants from different social backgrounds. In addition, the graduation project is also relevant to India's ambitions and policies. The Eleventh Five-Year Plan Strategy (2007-2012) proposed to cover inclusive and sustainable development in India with the

¹⁰ "Take Action for the Sustainable Development Goals," the United Nations, accessed Nov 7, 2021, <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>.

announcement of "Towards Faster and More Inclusive Growth."¹¹

For **societal relevance**, India's future urbanization will be strongly connected to rural migration. Meanwhile, it should be noted that most rural migration studies in India are related to the issue of exclusionary urbanization, which mainly focuses on the inadequate accessibility of basic amenities and social discrimination, marginalization, and even stigmatization. Although it is an intensive-discussed area for economists and sociologists, little has been elaborated in the architectural practice. India is still far from being an inclusive and equitable country. What's more, an inclusive society is not only a challenge for India or the Global South, but it is also an issue that should be dealt with worldwide, considering the complex issues of social classes, race, gender, and territory.

¹¹ *Eleventh Five Year Plan 2007-12*, (New Delhi: Oxford University Press, 2008).