

# 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](mailto: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	Darcey Luca Bil
Student number	4665791

Studio		
Name / Theme	Planning Complex Cities	
Main mentor	Caroline Newton	Spatial Planning & Strategy
Second mentor	Birgit Hausleitner	Urban Design
Argumentation of choice of the studio	<p>The Planning Complex Cities studio departs from inequality in space. The studio focusses on research of the drivers of these inequalities, which can be institutional. Therefore the studio encompasses a wider notion of what urban design is. This focus fits with my graduation project, which focusses on informal settlements in Cairo, Egypt. These informal settlements were created by political circumstances, but struggle with spatial problems. It embodies socio-spatial inequality and the urban design requires a participatory approach, as to involve actors in the process. The design will eventually be in the urban context, hence my second mentor from urban design, but it needs to be supported by institutional involvement and change.</p>	

Graduation project	
Title of the graduation project	Naturalising the informal: urban design for environmental justice in Manshiet Nasser, Cairo
Goal	
Location:	Manshiet Nasser, Cairo, Egypt
The posed problem,	<p>In 2023 sixty percent of the inhabitants in the Greater Cairo region are living in informal settlements, where they have to face challenges related to the physical, socio-economic and the environmental. Segregation is increasing since money and effort are put into the development of new cities and gated communities for higher classes, while middle and lower classes are forced to stay in a deteriorating Cairo. They are "disproportionately vulnerable to climate impacts like extreme heat" (Al-Mailam et al., 2023, p. 2), due to restricted access to key services and resources. "Even though all Egyptians will feel</p>

the effects of climate change, overlapping societal and economic vulnerabilities will leave those experiencing a combination of gender-based, class-based, and other inequalities at even greater risk.” (Al-Mailam et al., 2023, p. 5). Therefor there is a need to “provide a safe, healthy and clean environment for the human and more-than-human actors” (Murdock, 2020, p. 10) in informal settlements, where the actors should be the drivers of change.

**research questions and**

How can an urban design achieve environmental justice for the human and more-than-human inhabitants of the informal settlement Manshiet Nasser in 2050?

1. How is natural space formed in Manshiet Nasser?
2. How is social space produced in Manshiet Nasser through the scales?
  - a. What are the networks in Manshiet Nasser through the scales?
  - b. How do the people in Manshiet Nasser live their everyday lives through the scales?
  - c. How do the stakeholders interact with each other through the scales?
3. What (design) interventions would benefit Manshiet Nasser?
  - a. Which intervention benefit both the human and more-than-human?
  - b. Which interventions can be supported, financed and maintained?
4. How would the proposed interventions come together in an urban design in the case of al-Zabaleen?
5. To what extent are the interventions and the urban design equitable, appropriate and feasible in Manshiet Nasser?

**design assignment in which these result.**

This research aims to investigate the natural and the social space of Manshiet Nasser (an informal settlement in Cairo) in order to make a participatory urban design that achieves environmental justice.

**Process**

**Method description**

According to Samper (2023, p. 361) “the mapping of IS can be divided into five methodologies: community mapping, single case selection, national indexes, remote sensing, and urban morphologies”. In this thesis methods (1), (2), (3) and (5) will be used to a certain extent. (2) and (4) both involve detailed mapping using aerial photography and remote sensing, which is outside the scope of this thesis. However (2) single case selection will be used for a case study for the urban design.

## **Literature review**

In the first place a literature review is used to form the theoretical framework on the concepts of Environmental Justice, the Production of Space and Informality. The literature review is used to explore the characteristics of the concepts, how to research it and how to map it. Therefore it is input for the analysis on natural and social space, design methods for informality and an assessment framework for environmental justice. In the analysis of natural space the focus is on natural and urban ecology in Egypt and in social space on districts, history and communities. The literature review on design methods focusses on the vernacular architecture tradition in Egypt, nature-based solutions for arid climates in informal settlements and methods for participation in informal settlements. The literature review on the assessment looks at frameworks that measure clean, healthy and safe cities for human as well as for more than human. The framework should have spatial or social elements that are measurable.

## **Mapping & QGIS**

Mapping focusses on analysing the spatial characteristics of natural and social space. This is done through 3 scales that focus on the Manshiet in the context of Cairo (L 1:50,000), Manshiet Nasser as a whole (M 1:15,000) and the neighbourhoods within the district (S 1:2,000).

Mapping natural space uses QGIS data from Open Street Map, aerial imagery and research papers on soil and green structures. Mapping social space is more extensive since it focusses on networks, governance and people and everyday life. Networks involve urban patterns, streets, public transport, public spaces and facilities, for this QGIS data from Open Street Map and aerial imagery can be used. Governance involves spatial manifestation of non-spatial government structures. That means that history, policies and a stakeholder analysis can be used to understand how society is formed and what type of space fits that context. People and everyday life is about mapping informality in the case of Manshiet Nasser. Informality usually lacks reliable (spatial) information, since the settlement is not officially documented and continuously changing. (1) Community mapping shows the living conditions and local needs and will be done in soft maps on the M and S scale.

## **Data & Statistics**

Data & statistics fits with method (3) National indexes of Samper to gather information on demography and economy.

## **Stakeholder Analysis**

The stakeholder analysis shows people involved in Manshiet Nasser and their power, interest and their mutual relations. This is done through the scales: local, national and international. It gives insight into how stakeholders will respond to interventions in the area, why they would be opposed or proposed and how it would be possible to motivate them.

## **Pattern Language**

This is a method that bridges research and design. It shows what spatial inventions are the consequences of working with vernacular architecture tradition, nature-based solutions and methods for participation. On one hand, it provides an overview for the

researcher, on the other hand, it is a communication tool for informing the inhabitants on possible changes. The front side of the card looks like a comic. The backside has more elaborate information on the intervention with an assessment diagram.

### **Research by Design**

This involves testing of intervention that come out of the pattern language and the workshop. It involves sketching, modelling, and visualising.

### **Ethnographic Research**

Data is gathered through observations and interviews in ethnographic research. This will involve photography during fieldwork to compare the analysis and the design to on the ground experience. Interviews will be conducted with NGOs (GIZ Egypt), experts on the environmental challenges in Egypt (Cairo University) and development (GIZ Egypt and local ministry for development).

### **Environmental Quality Survey**

The environmental quality survey can measure environmental quality using various indicators. These can involve the access to clean water, greenery, shades and trash. These assessments are typically made on a sliding scale, such as from 1 to 5, indicating a range from poor to good quality.

### **Workshop**

The goal of the workshop is to involve inhabitants in the design process and to gather feedback on possible interventions. To achieve answers to this question the participants would be involved in creating a design or an intervention in a part of al-Zabaleen. During the workshop a map (preferably a 3D drawing) of the area would be available.

The different types of interventions are translated to patterns on cards that are understandable for people who speak English, Arabic or are illiterate. These cards are accompanied by cut-out design elements, that can be placed on the map or drawing. The goal is to create a collection of patterns with a discussion, that can inform the urban design.

## Literature and general practical references

The literature that I will be consulting is two-fold. In the first place I am using theories to understand, define and take a position regarding the main concepts of my graduation thesis: environmental justice, human and more-than-human and informality. Murdock (2020) defines environmental justice, describing its origin and needed steps in the (design) process to achieve it. Lefebvre (1991) explains the concept of the production of space that I use to define human and more-than-human space and the elements of city that need to be analysed to form an understanding of the context. Several other authors put forward the difficulty of defining and addressing informality, because of the multiplicity of the concept (Samper, 2023; Shehayeb, 2009; Ngau & Blanco, 2019). In the second place I am researching urban design methods that combine both human and more-than-human needs in the desert context and that take the positions of actors into account. These can involve vernacular design, nature-based solutions and participatory design.

In the general practical experience, I am making use of Geodata, statistics and findings from fieldwork.

## 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 graduation project topic addresses an informal settlement in Cairo. This is the result of a complicated web of societal and urban trends, such as population increase and ineffective governance, that lead to a situation in which the inhabitants of these settlements have to face socio-spatial segregation in an urban environment that is not prepared for climate change. This relates strongly to the planning complex cities studio, that addresses the topic of disparities of communities and territories due to the unjust distribution of spatial resources. The graduation project tackles this topic by creating an analysis through-out the scales and taking spatial as well as institutional challenges into account. This fits in the larger scope of the MSc AUBS and Urbanism track. Firstly by designing for sustainable development that takes local and global trends into account, such as climate change, and secondly by taking on several perspectives and drawing from different fields of work related to urbanism, such as physical and social sciences. The graduation topic addresses not only the human, but also the more-than-human needs and therefore recognises the natural and man-made conditions of the site that have to work together to move towards a more efficient, sustainable, liveable and manageable urban environment.

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

The graduation work is relevant socially for recognising communities that are unfairly experiencing the costs of development in the Global South. Since this phenomenon is widespread, recognition and new findings can empower these communities.

Professionally it shows a case study in gathering data on, analysing and designing for informal settlements in the urban context. Scientifically it brings research and design closer together in the specific context of an informal settlement, something which is often still separated between researchers/ decisionmakers and urban designers.

However it must be noted that while the graduation work tries to address all these points, it still takes place within an education program with a limited amount of time.

This means that as a student I am still learning and professionals in the field could make different choices on how to analyse and design. Research as well as design has to be developed in the span of one year, which means that not all interesting findings or conclusion can be explored. In addition the graduation work is not restricted by the organisational and financial playing field that 'real' designs are bound to.