

# 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	Juliette Brouwer
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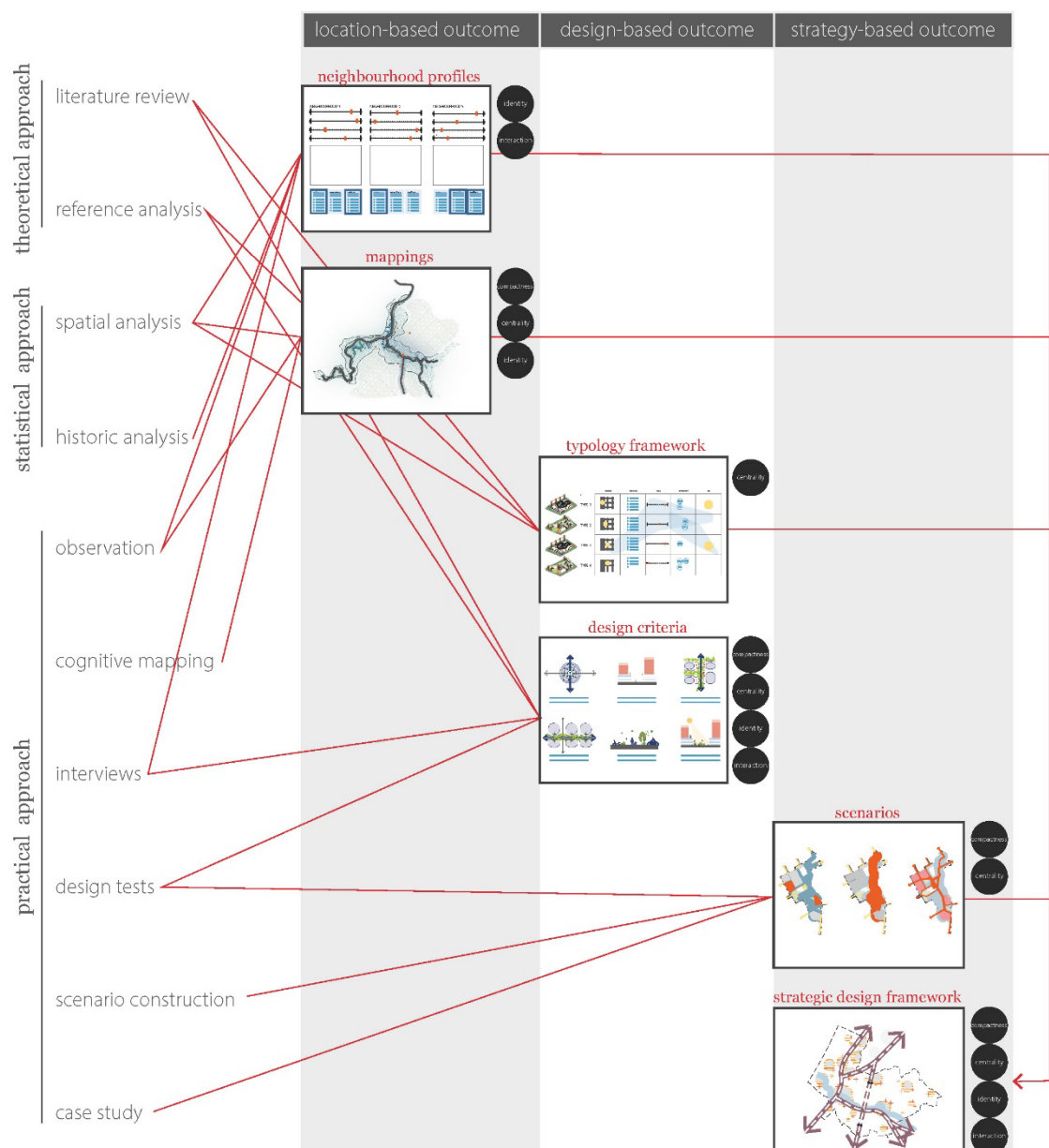
Studio		
Name / Theme	Design of the Urban Fabrics	
Main mentor	Birgit Hausleitner	Urban Design
Second mentor	Alexander Wandl	Environmental Technology and Design
Argumentation of choice of the studio	<p>The approach of the studio is most in line with the way I want to shape my design process. I like to apply different mapping techniques and design tests to gain a holistic understanding of the design assignment. In the Msc1 I developed a lot of enthusiasm for combining analysis, design and presenting in a useful and effective way to design on a local scale.</p> <p>Besides, I'm attracted by the practicality of the studio. In the future, I see myself in the position of an urban designer. That is why I would like to do my studio work in collaboration with a design agency (PosadMaxwan) in the form of a graduation internship, to gain academic and practical experience at the same time.</p>	

Graduation project	
Title of the graduation project	<b>City around the corner</b> Altering the urban rhythm in the periphery of Rotterdam
Goal	
Location:	Rotterdam
The posed problem,	<p>It has become imperative to persevere change in the design of future urban rhythms. Our current mobility habits result in private vehicles taking up a voluminous amount of public space, manifested in the amount of high-speed roads and parking areas. Besides, the use of private motorised traffic makes the human <b>unhappy and unhealthy</b>. It has also a negative effect on the environment due to large emission amounts.</p> <p>To move away from this mobility habit and to deal with urbanisation, new programmes and developments are established by city councils to adapt the city to a new rhythm: travelling less, clean and efficient. Often, <b>Transit Oriented</b></p>

	<p><b>Development</b> appears as a main strategy to synergise public transport use and compact urban form development in the city. Despite this strategy has the potential to fundamentally change mobility habits, achieving enhancement on the scale of the <b>neighbourhood</b> is often overlooked. New physical boundaries are created that reinforce segregation, pressure on land and often low experience of the environmental quality.</p> <p>Currently, some areas, mainly <b>suburban</b>, are underserved in their travel options. The urban form and arrangement of functions result in a lack of flexibility and proximity. This creates the unsustainable habit to travel further than necessary.</p> <p>Suburban neighbourhoods do not only experience low connectivity, but also a <b>low local vitality</b>. This is because of a disempowering combination of low spatial quality, low density and low diversity, some qualities more apparent in one neighbourhood, others in the other.</p> <p>Rotterdam is a city in which those problems reveal themselves clearly. In comparison with the rest of the country, the city has a <b>high car dominance</b>. Some neighbourhoods are prone to traffic poverty. The peripheral area depends on the inner city to be able to live their urban life. This results in suburban residents spending much time on the road commuting, time that is then not spend to live a happy urban life near home.</p>
research questions and	<p>Main research question: What <b>strategic urban design</b> contributes <b>to the 15-minute neighbourhoods</b> in the <b>periphery of Rotterdam</b>?</p> <p>Sub questions:</p> <ol style="list-style-type: none"> <li>1. What is the status quo (centrality &amp; compactness) in Rotterdam?</li> <li>2. What identities and interactions are observed in the periphery of Rotterdam?</li> <li>3. What qualities contribute to the 15-minute centre?</li> <li>4. What urban form interventions contribute to the 15-minute neighbourhood?</li> <li>5. What potential future 15-minute neighbourhoods are possible in the periphery of Rotterdam?</li> <li>6. In what way do the 15-minute neighbourhoods fit in the periphery of Rotterdam?</li> </ol>
design assignment in which these result.	<p><b>Project aim</b></p> <p>The proposed design project is intended to develop a design framework for achieving a higher level of local</p>

	<p>activity and a lower level of motorised private mobility in the neighbourhoods of the Rotterdam periphery. In this way, design solutions are presented to tackle the current challenges apparent in the area. Although the city of Rotterdam is working on a lot of projects to connect the urban edge and to create vital urban centres, a critical understanding of the relation between those peripheral neighbourhoods and the success of interventions is lacking. <b>In this research, the focus lies on implementing a certain concept (the 15-minute neighbourhood) in various environments (the neighbourhoods), resulting in an understanding of the stretch of the concept and the meaning in practice.</b> By this research, it will be clarified how a balance between mobility and locality could be established and maintained. Special attention is given to developing the design with a strong sense of flexibility and proximity. Those design qualities are identified as being essential to deal with the need for densification together with the demands of the transition of mobility.</p> <p><b>Research approach</b></p> <p>In my trajectory, designing will be the core of the research. This means <b>designing is used as a tool to research the course</b>. Following the definitions by Lenzholzer, Duchhart, and van den Brink (2016), design and research could have different relations, two of them being 'research for design' and 'research through design'. Research for design, also known to be evidence-based design, is being done by carrying out fieldwork or generation scientific data. Research through design covers all the research that actively employs designing. This research process yields new knowledge that is applicable in design practice and further research. By combining evidence-based design and research through design, an organic design process is achieved that will result in outcomes that lean on a varied scientific base.</p>
<b>Process</b>	
<b>Method description</b>	
<p>A set of methods are used to structurally reach the intended outcome. Those methods have either a <b>theoretical, statistic or practical approach</b>. Mixing those methods is a form of a concurrent triangulation research design, which means several methods are used in parallel to validate findings generated by several method types. Together, the methods provide a mutual confirmation that makes the results credible and strong. By means of these methods, a list of outcomes is produced. Those all build up to the <b>final outcome: the design strategy</b>. In the following paragraphs te methods are explained more extensive.</p>	

		spatial analysis	historic analysis	cognitive mapping	literature review	observation	interview	reference analysis	design tests	scenario construction	case study	
place	<b>SQ1</b> What is the status quo (centrality & compactness) in Rotterdam?	●										mappings
	<b>SQ2</b> What identities and interactions are observed in the periphery of Rotterdam?	●	●	●		●	●					neighbourhood profiles
theme	<b>SQ3</b> What qualities contribute to the 15-minute centre?	●			●			●	●			typology framework
	<b>SQ4</b> Which urban form interventions contribute to the 15-minute neighbourhood?			●	●			●	●			design criteria
scenario	<b>SQ5</b> What potential future 15-minute neighbourhoods are possible in the periphery of Rotterdam?								●	●		scenarios
strategy	<b>SQ6</b> In what way can the 15-minute neighbourhoods fit in the periphery of Rotterdam?					●		●			●	strategic design framework

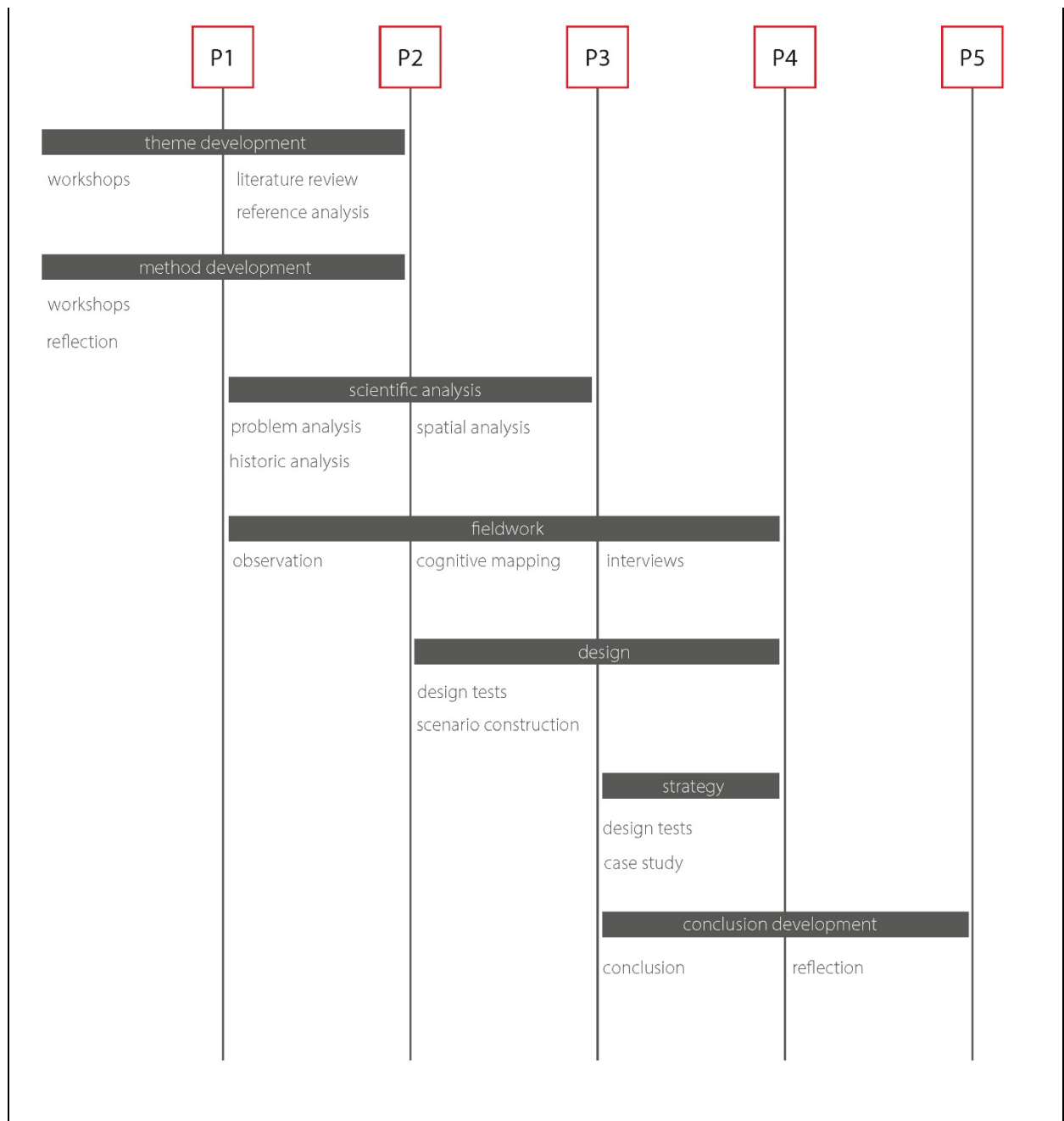


- **Historic analysis:** This analysis is performed by organising spatial and factual information of the past, like fragments of historic maps and chronological narratives. In this way, a key understanding of the historic layer of the neighbourhoods of the Rotterdam periphery is set. Besides, this analysis provides

insight into the planning history of Rotterdam that explains the spatial organisation of the city in the current state.

- **Spatial analysis:** This method comprises a lot of analysis based on geodata. An extensive analysis on multiple scales is performed in order to understand the spatial order and phenomena happening through the scales. In the scope of the research, the scales are identified as the Municipality of Rotterdam at the city scale, the neighbourhoods of Rotterdam periphery at the neighbourhood scale and specific blocks and public space areas on the smallest scale. Types of spatial analysis performed in the research are network analysis and density analysis.
- **Cognitive mapping:** This mapping method is done in the field or on the table and forms a spatial translation and interpretation of certain structures or processes. The method is used to highlight key components in space that inform further steps in the research. This method is also used to support a clear presentation of findings and conclusions.
- **Literature review:** A critical examination of scholarly articles, books and (policy) reports to develop a theoretical understanding of the key concepts of the research. This method helps me to set a base of knowledge and understanding to work further from. This method informs the contextualisation of the theme, the problem statement, the formulation of the knowledge gap and the formation of design principles.
- **Observation:** Observation is an essential method to ensure outcomes are suitable in the specific context of the project. This method comprises the gathering of empirical data on both space and people. The interesting part of observing space is that the unavoidable relation with time is taken into account. The interesting part of observing people is that the behaviour and movement of local inhabitants enrich the understanding of interaction, patterns and atmosphere.
- **Reference analysis:** To understand the practical implications, reference project function as the ideal informant. References are assessed (urban form, density and design principles) to create a better base for the design criteria of the project.
- **Design tests:** Design tests are essential to bring the project to an innovative level. By generating options, whereafter conclusions and criteria are defined, the research is enriched with a design-based argumentation. Design testing includes quantifying the interventions in space and physical performance to make the intervention explicit. In this research, design tests explore the potential alterations in space that contribute to a more pedestrian-friendly environment that stimulates interaction and identity. Design tests could also be used as examples in the design strategy.
- **Scenario construction:** Scenario construction involves the play with ongoing trends and their projection into the future. With speculation, possible and probable futures are explored. Scenarios support insight into the potentials and threats of a certain future path in the location. Having identified several scenarios, statements about the desirable scenario could be made. This informs the design strategy.
- **Case study:** A case study is performed to understand a certain process or principle in practice. This method is a way to assess a certain design statement. In this research, the case study is performed to understand the effectivity of the scenarios that are constructed.
- **Interviews:** interviews are taken to enrich the perspective of the project. I will do two types of interviews: spontaneous and unplanned interviews with the residents of a neighbourhood and structured planned interviews with experts. In this way, a bottom up and top down perspective could be added to the project

## Planning:



## Literature and general practical preference

### Expert knowledge

- Interviews with experts from the municipality
- Interviews with experts from practice (PosadMaxwan)
- Interviews with users

### Research data

- Statistic data (CBS, RIVM)
- Governmental data and reports (Municipality of Rotterdam)

### Literature

- On centrality
- On compactness
- On (suburban) place identity

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## Reflection

### The relation between the topic, the studio and the master track

Research on the 15MC, the local centre and the mobility transition could have been linked to several studios. In Urban Fabrics, attention is given to themes of liveability, density and functionality. The studio is most close to pure urban design by focusing on the smaller scale. These characteristics will benefit the graduation project best. Design is used as a tool to explore, elaborate and communicate. This is something that is strongly needed in the case of the project. Existing concepts will be tested and assessed through design. Besides, this studio work on different scales, varying from the scale of the city (or even region) to the architectural scale. Designing through scales is highly important to understand how the 15MC could work in Rotterdam explicitly. On a bigger scale, themes as network and the system of public spaces play a role. On the smaller scale, density and spatial configuration come into play

### Scientific Relevance

The project will add to the body of literature on the non-residential core in neighbourhoods. In the existing body of literature, some attendance is given to the identification of strategic locations for cores and the effects of the specific placements, but it is not very extensive. My graduation will draw further on the understanding of local cores and their characteristics.

My graduation project provides a practical understanding of the 15 Minute City concept, in other words, designing for slow traffic and local activity in the neighbourhood. With application in urban design to a real case, conclusions could be drawn about the topic in practice, which will strengthen the scientific understanding of the concepts. The 15-minute city is explored through a variety of methods, which will enrich the understanding of connection to density, proximity and diversity, something that is acknowledged by Moreno (2020) to further research. Furthermore, the focus on suburban zones appears heavily valuable for the understanding of the 15-Minute City concept. Currently, this theory mainly comprises and celebrates historical centres (like Paris and Utrecht), a reasonable next step is looking into this theory in the suburban.

Because of this practical application, theory on place identity is also assessed, to create a fundament for the design in place. Also in this field, empirical knowledge is needed to figure out practical solutions.

The topic of transit-oriented development is researched greatly in literature, nevertheless, the meaning of this trend on a local scale is still quite complex and underexposed. The 15-minute city concept sets a base to understand better new habits of local mobility. Possibly, this research could enrich the theory on transit-oriented development to find a more healthy balance between the value of local and regional connectivity.

### **Societal**

The project strives to contribute to the creation of liveable peri-urban neighbourhoods in Rotterdam in the context of the current urbanisation trend and the problem of pollution.

By looking at the organisation of functions, density, centrality and urban form, a spatial organisation could be advised that diminishes car use. In this way, space is opened up for other urban functions or slow traffic. This contributes to a more healthy neighbourhood (in terms of people and environment), something that is identified as an objective by the Municipality of Rotterdam.

Based on the research on local activity and identity, a design strategy specific for the neighbourhoods in question will be proposed. In this way, the research provides insights that are useful for the development of those neighbourhoods in practice.

The Problem Definition has identified some critical challenges that the periphery of Rotterdam will face as a result of the current trends like densification, mobility transition and digitalisation.

The purpose of this chapter is to establish the intent, approach and design of the thesis research and to identify the appropriate methods for analysis and design.

### **Ethical considerations**

Socio-spatial justice:

- Accessibility, geographically: not everybody lives close enough to certain hubs or centres
- Accessibility, financially: not everybody can pay for public transport / shared vehicle services / other services
- Accessibility, spatially: stairs for instance may limit some users from the ability to access
- Accessibility, physically: some vehicles are not suitable for some people (with disorders or abnormalities)
- Accessibility, culturally: some residents might be limited due to daily rhythm, belief, dietary requirements

Planetary justice:

- Local centres mainly serve people, in design, it should be never forgotten to take the demands of nature into account. Some ecological structures might be affected by the design proposal.

Future generations

- The pressure on our climate brings risks for the coming generations. Urban designs could accelerate those risks. Climate adaptation and nature-based solutions must be taken into account.
- Demands always change. Flexibility in design ensures this possibility to change without having to alter the complete urban structure.