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	Eva Jasmijn Groen
Student number	4278615
Telephone number	
Private e-mail address	

Studio		
Name / Theme	Urbanism - Design of Urban Fabric	
Main mentor	Dr. ir. Machiel van Dorst	Urban (environmental) design
Second mentor	Dr. ir. Nico Tillie	Landscape architecture
Argumentation of choice of the studio	The studio provides the opportunity to incorporate research and design into a spatial and specific urban design to the human scale.	

Graduation project	
Title of the graduation project	[title[Transforming Rotterdam Oude Westen into a destination with a comfortable microclimate. [subtitle] Designing a user-based microclimate-sensitive urban transformation for the case of Rotterdam Oude Westen and a set of guidelines: creating great public space for users & natural processes
Goal	
Location:	Rotterdam Oude Westen - Nederland
The posed problem,	The public space of Rotterdam Oude Westen is under pressure. This pressure comes from three directions: 1. The increase in people using the public space due to the proposed increase in density in Rotterdam; 2. Climate change affecting the quality and usability of the existing public space; 3. The existing public space, but mostly the spatial quality of the neighbourhood is not capable to facilitate the conditions to respond to these pressures as it should with the current street profiles. In order to address the multiplicity of issues in the analysis and designing of interventions, the challenge is upon the use of tools touching upon more than the one pressure point. At the moment, the original Place Diagram and complementary Place Game is not

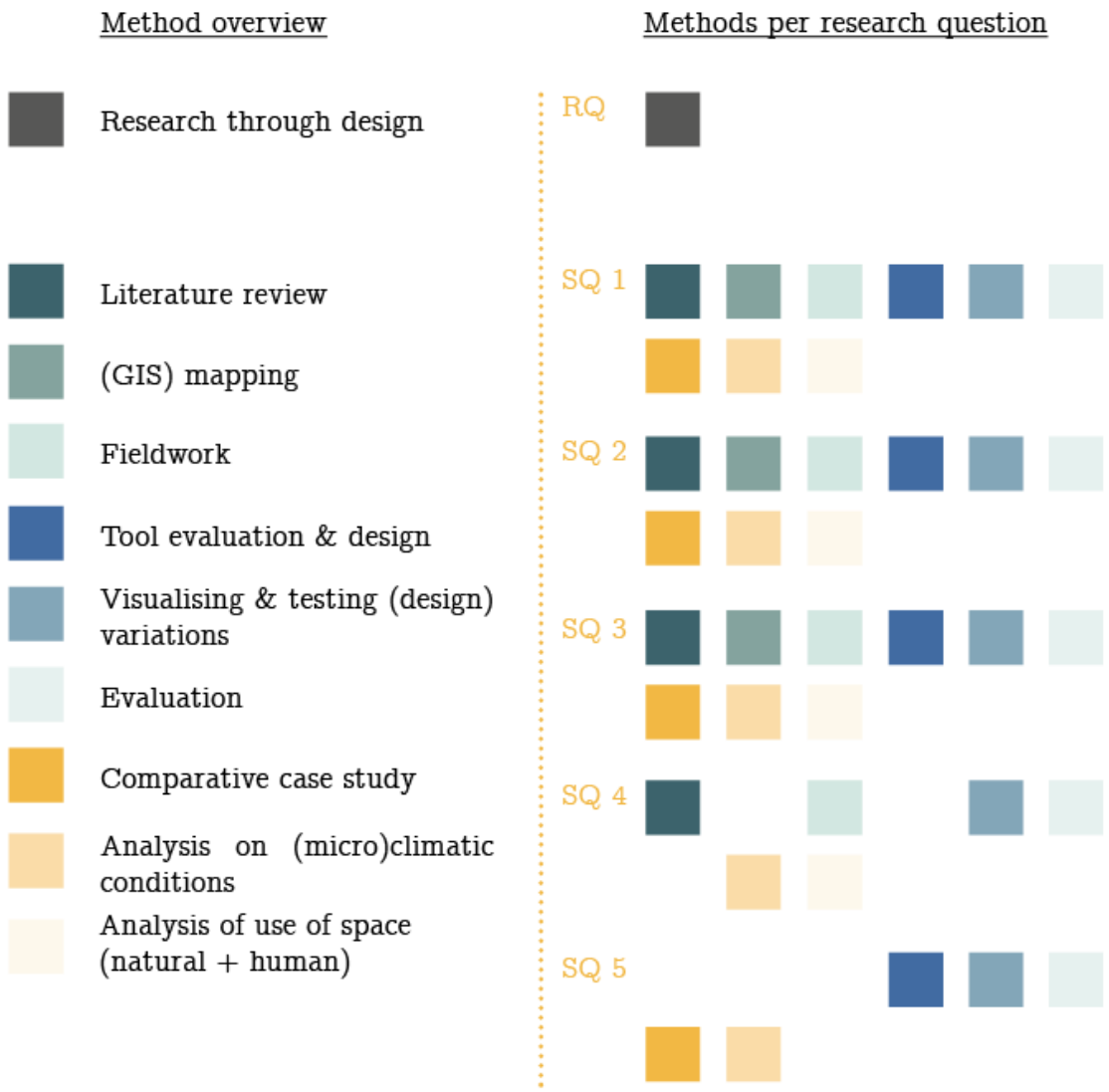
	sufficient since it focus is only on creating destinations. In order to achieve the design goal, adaptation to tools such as the above mentioned are part of the task in order to evaluate and to guide the design process. The pressure point of the increase in people is addressed by both adding dwellings to the neighbourhood to provide housing as well as improving the public space and creating destinations while being sensitive to this diversity in user(groups). Even if there is limited expansion in dwelling possible in the Oude Westen, there are two city-streets in the neighbourhood that will facilitate an influx in users of the neighbourhood. The climate change pressure point will be included in this research methodology by focussing on the climatic conditions and on implementing microclimate sensitive interventions that improve the experience of the public space by the users while working more smart with the natural processes to make the neighbourhood more adaptable and soft. Densification is seen as an opportunity for transformations to the built environment to support this climate focussed neighbourhood design and, in doing so, posing interventions to the existing morphology of the built fabric and the street network.
research questions and	Design goal: What interventions within the street scape can improve the public space by an integrated approach of the urban microclimate and usability in relation to densification for Rotterdam Oude Westen? Research question: In the context of densification, what are the synergies of the urban microclimate and usability for the public space of Rotterdam? SQ1a: What transformation of the built environment opportunities related to density can be identified to improve the climatic conditions on a neighbourhood scale? SQ1b: What are the conditions resulting from this transformation for the street scape intervention sites, and how does this relate to placemaking and climate adaptation? SQ2a: What are the possible placemaking tools to improve the usability and the sense of ownership of places? SQ2b: Which existing evaluation tools and design interventions for placemaking are suitable for this location, what is still missing in those

	tools and interventions, and how does this relate to density and climate adaptation? SQ3a: What is the urban microclimate of the location? SQ3b: What are the possible urban microclimate tools to improve the physical well-being and what is the role of climate adaptation in this? SQ3c: Which existing evaluation tools and design interventions for the urban microclimate and climate adaptation are suitable, what is still missing in those tools and interventions, and how does this relate to placemaking and density? SQ4: How can the microclimate sensitive design interventions and the placemaking tools be translated into a combined design for Rotterdam Oude Westen in the context of the transformed built environment? SQ5: Which of the interventions are applicable in a general context?
design assignment in which these result.	The design-part in this research will consist of two designs on different scales: 1. Design on neighbourhood scale - taking into consideration the built fabric, and the climatic aspects of that scale level; 2. Design on the street scale - taking into consideration the use of public space and the microclimatic aspects of that scale level; The research aim resulting from the problem statement and research questions is stated as follows. The aim for this research is twofold: 1. Integrating placemaking tools and climate adaptation interventions in the context of densification 2. Designing a microclimate-sensitive public space design with a high 'sense of place' for the location of Rotterdam Oude Westen

[This should be formulated in such a way that the graduation project can answer these questions.
The definition of the problem has to be significant to a clearly defined area of research and design.]

Process

Method description



Techniques

1. Literature inquiry
2. Literature review
3. Policy review

1. GIS mapping
2. Site analysis (desktop)

1. Observations soft elements [climate conditions, people, activities]
2. Observations hard elements [built environment]
3. Testing tools on site
4. Structured interviews [with users]
5. Semi structured interviews [with experts]

1. Existing tool analysis & evaluation
2. Tool design & testing

1. Mapping, perspective, sections, as designing
2. Designing on interventions - neighbourhood scale
3. Proposing new urban fabric - neighbourhood scale
4. Designing on interventions - street scale
5. Pattern language

1. Evaluation of design interventions
2. Evaluation of design tools

1. Comparative case study on the use of built fabric to improve the climate
2. Comparative case study on the use of vegetation to improve the microclimate
3. Comparative case study on the use of placemaking to improve the usability of the places

1. Analysis of climate conditions with existing urban fabric
2. Identifying problem elements & locations based on existing conditions
3. Assumption based analysis of climate conditions with proposed urban fabric
4. Analysis of microclimate conditions in existing situation for specific locations
5. Identifying problem elements in existing situation for specific locations
6. Assumption based analysis of microclimate conditions in proposed situation for specific locations

1. Analysing for specific locations: use of space (people) in moderate conditions
2. Analysing for specific locations: use of space (people) in extreme climate conditions
3. Analysing for specific locations: use of space (vegetation)
4. Analysing for specific locations: use of space (vegetation) -> what is the role of vegetation in extreme climate conditions

Literature and general practical preference

The main sources for the following topics are used as literature reference:

1. Urban Microclimate & climate change

   Erell, E., Pearlmutter, D., & Williamson, T. (2010). *Urban Microclimate—Designing the spaces between buildings*. Routledge.

   Lenzholzer, S. (2013). *Het weer in de stad:hoe ontwerp het stadsklimaat bepaalt*. nai010 uitgevers.

   Pijpers-van Esch, M. (2015*). Designing the Urban Microclimate: A framework for a design-decision support tool for the dissemination of knowledge on the urban microclimate to the urban design process* [PhD]. Technische Universiteit Delft.

2. Placemaking – creating places

   Gehl, J. (2011). *Life between buildings: Using public space*. Island Press.

   Hes, D., & Hernandez-Santin, C. (Eds.). (2020). *Placemaking fundamentals for the built environment*. palgrave macmillan.

   Karssenberg, H., Laven, J., Glaser, M., & Van 't Hoff, M. (Eds.). (2016). *The City at Eye Level: Lessons for street plinths*. Eburon.

   Sim, D. (2019). *Soft cities: Building density for everyday life*. Island Press.

3. Urban morphology

   Carmona, M., Tiesdell, S., Heath, T., & Oc, T. (2010). Public Spaces—Urban Spaces: The Dimensions of Urban Design—Second edition. Routledge.

Furthermore, the policy documents and maps from the Municipality of Rotterdam will be used for reference and information. GIS data from open sources such as the Municipality and the CBS are used as well.

Finally, a large source of information is the neighbourhood itself: the physical neighbourhood and its inhabitants and users.

[The literature (theories or research data) and general practical experience/precedent you intend to consult.]

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 topic of this graduation project connects to the studio topic, densification, as follows: the transformation of the built environment to facilitate densification is an opportunity for alterations to the urban fabric. The alterations are necessary to address the pressure on public space as has been elaborated upon in the problem statement. Furthermore this research is intertwined in the master track Urbanism as it touches upon the small scale design challenges and the processes on a more governing level with the inclusion of the user groups and stakeholders to make the public space more accessible and usable for a wide range of local inhabitants and visitors. This graduation project expands the master track Urbanism into the master track of Landscape Architecture by improving knowledge on designing with vegetation and using the natural processes in spatial interventions to add onto the quality of place and enrich the experience and perception for the users.

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

By focussing in this research on both this technical perspective of the urban microclimate as well as the social point of view concerning placemaking and creating destinations, the link is addressed between the two fields of knowledge.

The scientific relevance of this project lies in adding to the body of knowledge and design tools that concerns the relationship between the notions climate adaptive and microclimate sensitive interventions and placemaking. Together, by making a design for the chosen location, it is possible to show the potential value of these interventions applied in the Dutch context.

From a societal point of view, there are added benefits in interventions that address both notions. In the case of a transformation of the street scape of a neighbourhood, there may be changes and actions necessary from both the municipality and the inhabitants/users of that space. Both parties will also be impacted by the consequences of that transformation. With the added layer of placemaking interventions, thus not only making the public space more future-proof but also a more attractive place to be, this can out-weigh the negative consequences and convince the users/inhabitants to be part of this project, and give municipalities more value for money (1+1=3) thus speed up the decision making process. The process of implementation is an important element as well.

The people are of high importance during the process, since this research is so context specific. In the end, the users (or absence of) define if this design works and the places are turned into destinations. Therefore, observations (of people) and interviews are key methods.