This thesis addresses the impact of the urban layout of Amsterdam’s Ringzone on the continuity of tangible and intangible structures between Amsterdam inside the Ring and Amsterdam outside the Ring. The thesis demonstrates the consequences of a discontinuity of these structures, caused by the disintegration between city and infrastructure, on the balance of Amsterdam. The city is already dealing with a dichotomy between centre and periphery, which is now being reinforced by trends such as gentrification. The thesis aims to rebalance Amsterdam by reorienting the city more equally towards both centre and periphery. After a profound analysis of the city of Amsterdam, in which the tangible and intangible structures on all different layers of the urban landscape are being researched, a spatial vision and development strategy are being proposed. The vision focuses on the bigger picture and describes the desired future for Amsterdam as a whole, whereas the strategy shows how the vision can be translated spatially.

Relation graduation topic, studio topic and Master track
Since its establishment in 1948 the Department of Urbanism at TU Delft draws on the general Dutch approach of Urbanism: “an interdisciplinary approach that focuses on the urban landscape as a scale continuum, uses design research and research through design as important teaching and research strategies, and regards mapping and drawing as important tools for thinking” (Hoekstra, Nijhuis & Stolk, 2016, p.96). In other words, the urban landscape is being considered as a system of layers (Read, Bruyns, van den Hoogen & Plomp, 2007) and the creativity of design methods needs to be combined with the rationality of academic research (TU Delft, 2018). The Dutch approach can therefore be summarised as ‘integral urbanism’.

Moreover, the Department of Urbanism aims to create more sustainable, resilient and fair societies (TU Delft, 2018). Therefore, it is necessary to work on different scales, to be able to respond to both local and global trends and to integrate social, cultural, economic and political perspectives with all the conditions of a specific area. The Department emphasises the importance of high qualitative urban environments for societies and the well-being of people.

The chosen research group ‘Design of the Urban Fabric’ is actually grounded in the Dutch tradition of Urbanism and shows strong overlaps with this idea of ‘integral urbanism’. First of all, the research group studies both the tangible and intangible structures of the city (Research Group Design of the Urban Fabric, 2016). In other words, studying the urban fabric refers to the physical urban environment, as well as socio-economic, psychological and managerial structures for example. Secondly, the research group acknowledges the valuable combination of research and design by defining the goal of the research group as “to understand through research how urbanism can contribute to making sustainable, attractive and vital urban design” (Research Group Design of the Urban Fabric, 2016). Urban design is being considered as a technical scientific discipline and therefore two complementary approaches are being promoted: design driven by science and design driven by practice. In the first case, design is used to explore the urban impact of new technologies and developments; in the other case design is used to cope with questions arising from the socio-technical trends in society (TU Delft, 2017; Research Group Design of the Urban Fabric, 2016). Additionally, in order to get insight in the urban fabric itself, a combination of the actual interventions and the spatial impact on human activities and the dynamics of the design processes has to be studied properly.

For the year 2017-2018 three themes have been proposed by the research group: Cities and Technology, Cities and Growth, and Cities and Health (Research Group Design of the Urban Fabric, 2017). The technology theme focuses on the possible transitions in mobility systems; the growth theme focuses on the drivers for growth and the arising questions about the built layout of the city in order to accommodate the expected growth; the health theme focuses on contemporary challenges European and African cities are facing and the required new solutions in order to deal with these (often climate change related) challenges.

The thesis is related to the theme ‘Cities and Growth’ by taking the city of Amsterdam as a case study and the relationship between city and infrastructure as a starting point. Amsterdam is subject to different drives for growth and is looking for places to accommodate the expected population growth. The Ringzone is one of these locations and for this area and for its current strategy the statement of the research group is extremely relevant: “all drivers ask for questioning
the built layout of the city when looking for spaces to accommodate the growth and its distribution/density of people” (Research Group Design of the Urban Fabric, 2017). Moreover, the Ringzone is where city and infrastructure come into conflict with each other.

The relationship between city and infrastructure is strongly related to the field of urbanism, as there is a recent trend of infrastructural design moving back to the field of urbanism. The exploration of the relationship between city and infrastructure asks for an approach in which the different layers of the city, as well as different scales are incorporated. Moreover, the graduation topic asks for an exploration of both the tangible and intangible city. That is in line with the approach of the Department of Urbanism and the approach of the selected research group.

Moreover, both the Department of Urbanism and the research group are looking for high qualitative, vital urban environments. This is a rather general ambition and therefore the ambition of thesis as well.

The thesis especially focuses on the bigger picture, since this is now lacking the strategy of the municipality. Moreover, the thesis focuses on the tangible and intangible city, while proposing a vision and strategy. Therefore, the thesis pays attention to the dynamics of the urban fabric and what the desirable future for Amsterdam looks like. By doing so, the thesis is linked to several research questions of the research group as well:

- How can (re)designing the urban fabric contribute to improving the sustainability and vitality of the urban environment for our and future generations?
- How do the physical environment and the intangible structures interact?
- What are the dynamics of the urban fabric and how does this relate to different design strategies?
- How can patterns and scenarios provide a way to transform desirable future images into concrete design interventions?

Relation research and design

From the beginning the integration between research and design played a key role in this thesis. This clearly enriched the thesis and made the entire analysis and design more convincing, as both are evidence-informed. Moreover, several methods and theories have been used that are linked to the research group as well, such as space syntax. This thesis was therefore actually an opportunity to exercise the use of certain new methods. In the first semester the integration of research and design was mainly visible by the spatial translation of general knowledge or theories into a more specific analysis for Amsterdam. The relation between research and design in this phase can be described as research for design and research through design. Research was thus being used to feed the design process and to study existing designs in order to get a basis for the future design (Nijhuis, 2017). Research in this phase existed mainly of field-
Designing is exploring and deciding within a potentially endless number of possibilities, to come up, in the end, with an internally coherent whole. To be able to create a coherent whole, a designer needs an inspiring direction or order. Using a guiding theme or qualities not only gives the design its character and identity in the complex and open design process, it also helps in making choices (see Fig. 4). The guiding theme is the way in which the designer sees or frames the design situation at hand. Designing is a process of naming and framing, of attending to matters and of making a context to work with them.” (Van Dooren et al., 2013, p.8)

When reflecting on my own approach I can conclude that in the end the thesis is a coherent whole, due to the fact that the layer-approach has been used during the entire process. However, the thesis started with a rather straight-forward focus on the Ringzone and the ring road itself, but evolved in an attempt to unravel the hidden importance of the relationship between city and infrastructure. That means that the mapping process actually started with lots of maps of the infrastructural networks, but was being transformed in a series of maps of all layers that show how infrastructure has an impact on other layers. Along the process I tried to educate myself to be open, which led to a broad research on the tangible and intangible structures of Amsterdam as a whole. This actually led to a ‘train of thoughts’ (Lawson, 2005) that started with one image and was transformed during the entire year. As a consequence, the guiding theme changed several times during the graduation year as well and ended up with a stronger focus on the relationship between city and periphery instead of the a main focus on the Ringzone. It would have made the process more efficient if the guiding theme would have stayed the same and the train of thoughts would have been limited a bit more. In a new process I would be more careful with using the context as a source for the guiding theme, since the context is pretty much unlimited.

This is also the reason why the combination of research and design did not only enrich the process, but brought some challenges well. Research can feed the train of thoughts endlessly and when design and research are not integrated in different ways at all times, it can be harder to switch from research to design or the other way around. During my process I could state that during the first semester there was perhaps a lack of ‘research through design’, whereas it would have been helpful to have more design exercises during the first semester. When evaluating with fellow students, this appeared to be a problem for many. P2 was actually the moment when the switch to design had to be made in most cases and it was more difficult than expected to bring the phase of analysis to an end.

Moreover, the value of fieldwork should not be underestimated. Especially when you are an outsider of the case city, it is important to spend time in the city in order to get a good impression. Being an outsider also has advantages, as there are less prejudices. Fieldwork is not only valuable when it comes to drawing conclusions, but also when it comes to ‘getting the train of thoughts for the end-products rolling’. In the end, however, I can conclude that the thesis is still a strong combination of research and design and that every conclusion drawn in this thesis is based on research. The ‘how’ part of the approach was perhaps not always efficient, but the end result shows that the approach did lead to a coherent whole and to a surprising story. I therefore do not regret the fact that the guiding theme changed and led to a broad research. I would say that the project does entail a combination of a critical analysis (A), an integrated design (D) and a structured presentation (P) (Design of the Urban Fabric, 2017). The research group ‘Design of the Urban Fabric’ prescribed this approach and states that these three elements need to be mixed constantly. I would say that my thesis mixed A and P at all times, but that D was underrepresented in the first semester.

The thesis also represents the response to feedback of both mentors. Whereas one mentor is more into the academic approach of analysing the city; the other is more interested in the design approach. Therefore the feedback from both mentors was quite different. In general, meetings were very valuable and led to a new train of thoughts. During the meetings the thesis got new input that made the entire story more convincing and coherent each time. I learned to give myself some time to process the feedback and to come up with my own interpretation of the feedback. Besides being open along the process, I tried...
myself to be critical and to respond to the feedback each time. It therefore led to interesting conversations with both mentors as well, which was helpful in order to get a good understanding of their ideas on the subject. Especially after each presentation there was more than enough time saved for the evaluation with mentors and with peers. This brought forward new insights and new inspiration.

**Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of project results.**

As mentioned before, this thesis takes into account the different layers of the urban landscape, the tangible and intangible city and uses several methods during the analysis. The topic of the thesis is not unique, as Ringzones, including the Ringzone of Amsterdam, have been studied before. However, the profound analysis with the integration of a wide variety of aspects gives new insights on the problem. In fact, most studies with similar topics start with the relation between city and infrastructure and focus mainly on infrastructure. This thesis has a reversed order: whereas the relationship between city and infrastructure was proposed as a starting point, the analysis of all the layers of the tangible and intangible city was actually used to unravel the hidden importance of infrastructure. In other words, this thesis shows the impact of the layer of infrastructure on all other layers of the city. In most regular design assignments on ring roads there is not enough awareness of the links between all layers and scales. This thesis combines many aspects and makes the layers and link between layers and scales understandable, which is the reason why this thesis could function as an eye opener.

The analysis led to a vision and strategy for Amsterdam with the bigger picture as a second starting point, which could also be inspiring. Whereas most studies on infrastructural barriers or the redesign of a Ringzone focus primarily on the zone itself and on the ring road, this thesis focuses on the continuity of structures and therefore on the city as a whole. Axes pointing in both directions are part of research as well as the design. Additionally, the thesis does not regard the elevated ring road as barrier, but the Ringzone that is functioning as a grey zone. That is the case in many other cities as well, which makes the project results transferable. In short, the thesis is not a standard research on an infrastructural barrier, but a broad research on the impact of this barrier on the entire city. At the moment, the strategy focuses on one city part of Amsterdam, but in the end all city parts need to follow this strategy and so the project results are transferable to other city parts of Amsterdam as well.
My personal goal for this year was to develop myself as an urban designer in the Dutch context. A conversation during the orientation phase led to the decision to focus on redesigning the urban fabric without covering the ring road. The idea behind this was that it would be more challenging to deal with such a barrier than with an ‘ordinary’ urban design assignment of connecting two areas with an empty zone in between. On top of that, I soon came to the conclusion that not the ring road, but the Ringzone was the actual barrier. The combination of these two events led to a stronger focus on the Ringzone and the contrasts between centre and periphery and less attention for the ring road. The next step would be to incorporate the road and to develop scenarios for the road as well. Especially when concerning the health and environmental conditions in Amsterdam, it is necessary to think of solutions or alternatives for the ring road. In general it could be concluded that the broad approach resulted in a relevant research and a relevant outcome, but it is necessary to keep sight on certain aspects that need to be involved.

Another ethical issue is the ring road of Amsterdam. The air pollution caused by the road is similar to smoking ten cigarettes per day (GGD, 2017), which means the road raises ethical health and environmental issues. Covering the ring road would improve the health and environmental conditions, but requires large investments as well. Simultaneously, technology is evolving fast and so it is questionable if we still need a covered ring road in thirty years. This brings forward dilemmas when thinking of the potential applications of results. That is also the risk of focusing on the larger scale (the metropolitan city of Amsterdam) and the longer term (until 2050: there are many uncertainties and new issues might come up. It is thus more difficult to predict and to control.

Ethical issues and dilemmas encountered in 1) doing the research 2) elaborating the design 3) potential applications of results

As mentioned before, the Department of Urbanism emphasises the importance of high qualitative urban environments for societies and the well-being of people (TU Delft, 2018). Moreover, the thesis focuses on the tangible and intangible structures in Amsterdam and especially that combination brought ethical issues and dilemmas. To give an example, the thesis describes the impact of gentrification on the dichotomy in Amsterdam and the spatial footprint of this trend. Exclusion of certain groups of society is already happening in Amsterdam, while the municipality claims that Amsterdam should be a city for everyone. Nevertheless, the municipality does not have clear answers to the arising ethical issues and dilemmas yet and even seems to stimulate this trend. For me it was thus an opportunity to take a stand and to show how Amsterdam could respond to these trends. These issues and dilemmas were therefore part of the research, the design and the results as well. It is, though, hard to predict if the vision and strategy would have the desired impact on these trends. That is why during the process case studies have been looked at in order to find out what means would have the desired outcome. That is also in line with my personal goal of using research as a solid foundation for the design process.