



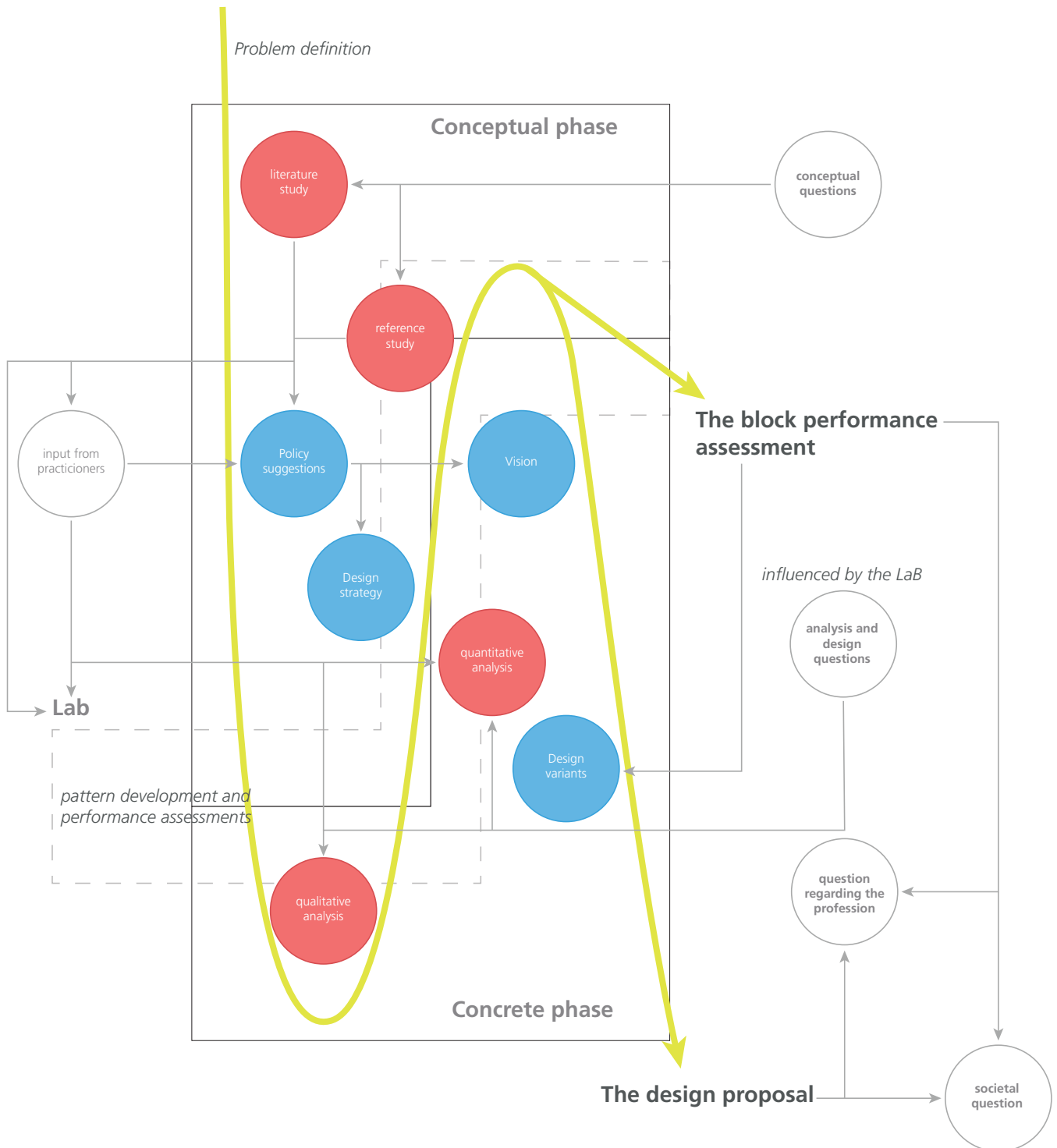
Eco-Inclusive Opportunity

*Operationalizing Environmental assets
towards a resilient densification.*



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The Havenstad ambition



The iterative process throughout the design

Reflection

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Research motivation

One of my main reasons for choosing to study at TU Delft many years ago was the focus on sustainability, and my growing dissatisfaction with how neighbourhoods were being built. The choice to adopt spatial expansion and transformation of the open land instead of intensifying the built area was perceived as unquestionable. Where does sustainability fit into all this? Our growing populations and the accompanying increasing resource consumption have raised the share of land dedicated to production to up to 70% of the world's land surface. (N. Katsis, personal communication, September 26, 2019)

Here, western consumption in particular has been disproportional to the share of the global population. An example of this is the Dutch resource consumption exceeding twice the available footprint on the planet. (Hackauf, Haikola, & Maas, 2014, p. 166) Considering how global urban populations, who now make up more than half of the world population, continue on a path of rapid economic development, we should question whether maintaining our current consumption patterns is even ethical if even possible.

Therefore a change is necessary to the way we use resources, reconsidering taboos such as density to accommodate additional growth in a more resource sensitive way.

Now our species' combined effect on this planet and its ecosystems has become undeniable, to the extent of being considered a force of nature in itself, we are cast into the age of man-made consequences, the Anthropocene. (Hamilton, 2017) With it this new era is characterised by climatic changes, increasing the incidence of disruptive weather patterns and affecting the predictability of our societies developed in.

But what are we even doing against this? In my personal experience I have learned that sustainability tends to be considered a mere buzzword or luxury in practice, thereby disregarding potential benefits. Whether it is in Brazil, the USA or China's burgeoning metropolises, the majority of development seems to have an alternative interpretation of sustainability, focused on short term financial returns.

While we are often taught to pursue Value based design at this institution, based on the people, planet, prosperity paradigm, most of the world operates on a different paradigm altogether. As profit-oriented strategies are leading there, all choices are measured against potential profits and costs, with a general focus on the short term. The lack of valorisation of ecosystem services coupled with the absence of a strategic interdisciplinary approach seems to favour solutions that appear questionable under scrutiny.

Therefore my interest lies within the realm of resilience. How can we prepare our cities to cope with climatic disruption, while at the same time lowering our per capita resource dependence? And how can we increase the value of ecosystem services, beyond just their perception to the level of crucial supportive infrastructures for a liveable city?

Research and graduation studio

I started this research project with a specific goal in mind, that is to increase my understanding of the complexity of cities and the potential to operationalise spatial design to increase climate resilience and lower resource consumption, while allowing for a high liveability. Here my fascination for the workings of highly dense urban environments had me thinking about the potential to work within such a context.

The higher interest for the human side of this issue had me deliberating whether to opt for the interdisciplinary city of the future studio and the urban fabrics studio.

Here I initially opted for the City of the Future studio as the promise of an interdisciplinary approach, coupled with the challenge to develop a new type of diverse urbanity in environments that are currently infrastructure heavy, monofunctional working environments. The Urban fabrics studio on the other hand had a research focus on automated mobility.

The city of the future studio was characterised by a large amount of freedom in the area definition, as well as the problem definition. The ambition of the studio, shown in its name was also reflected in the workshops that were part of it (like the workshop with other European students in Venice), amongst which the cooperation with designers working on the BNA “stad van de toekomst” research project. Unfortunately, here the studio and the the BNA had diverging time paths, with the studio starting at the end of the BNA project. A closer cooperation regarding the timepath could have been very interesting.

On the one hand I do think starting within the city of the future studio was a great idea, as it afforded the freedom to create my own focus, while still working on the subject and the challenges

that densification and resilience bring to the city. However, the fact that I was the only urbanist in this studio, felt quite difficult, especially since the assignments seemed more tailored to the architects, resulting in a heavier workload for those not from that track. This eventually motivated me to switch studios.

Admittedly, my project could have been possible within the Urban Fabrics studio. Here the mandatory focus on automated mobility, made me decide against developing my research within this studio.

Interestingly I did end up working with Urban Fabrics, albeit without the automated mobility focus. Here I was lucky that my second tutor had invited me to many of the workshops for the studio, enabling me to learn about the use of space syntax through GIS and design patterns as a tool for design.

It was for that reason that I conceived the idea of developing a performance-based design method, based on the use of design patterns, while using performance indicators to determine the design's success. Considering how I am an individual student and not a group, I may have underestimated the workload this implied. Maybe this could have been minimised through working in a group on some segments.

Graduation theme and case study

Resulting from my fascination with high density environments, and my previous experience working with resilience, I wanted to discover how to connect the two in a way that could benefit and maybe even streamline the design process.

To further understand this, and because of the availability of data, I chose the city of Amsterdam as the case study and project area for this design and research project.

The city of Amsterdam is far from the worst case when it comes to the challenges presented, but the, for Dutch standards, rather high population growth and deliberate choice to deprioritise individual car mobility to prioritise liveability and other forms of transportation, gave me the impression that the city is prepared to make some tough choices. The city is once again proposing an area as a city of the future. Reclaiming urbanity and breaking the taboo on density.

This is in line with the increasing awareness that certain choices must be made to ensure long term liveability. "Niet alles kan" from the RIVM can then be placed alongside the publications metro mix and panorama Nederland, all of which challenge us designers and planners to envision new ways to integrate sometimes conflicting space uses to create new systems. About this I am highly optimistic, as the urgency is felt in society as a whole.

For the city of Amsterdam, the decision to add an additional 1 million homes of which many will be in the Randstad could be either a godsend or a curse. Planned right, I really do believe they could actually help to increase the liveability. And going on Jacobs' work and Van Eesteren's intentions with the AUP there seems to be truth to this as the denser environments managed to maintain their liveability.

Project transferability

The city of Amsterdam was for a large part chosen due to the accessibility of data, as well as its unique conditions in a completely man made environment leading to the combination of heat stress and pluvial as well as fluvial flooding risk.

The project scales of city scale, district scale and neighbourhood scale are common scales to work on in many different contexts. In addition to this the block is being promoted as a scale through the work of the PBL, so I believe it can become a new intermediate level between the building level and the neighbourhood when it comes to design and understanding the different performances.

Space syntax is a widely used method to assess the network qualities in the city, especially when it comes to accessibility and potential viability of particular functions in a given location. It also allows to understand the potential impact of interventions in the network on the functioning of the city.

Adding to that, the indicators used for the assessment were mostly derived from existing research and are nearly context independent, allowing usage in many different cases.

Research vs Design

In this project I attempted to develop an evidence-based design method, that is to say a method built around designing for particular performances using a pattern language. That to me seemed of crucial importance regarding the challenges we are facing. We need to understand the interplay between different design choices and the potential integrations. However, I've unfortunately not been able to follow through completely with this approach. The extent of learning required to develop the performance indicators and the guidelines did not allow for the creation of a pattern language as well, considering that a design was to be reached as well.

Essentially my goal was to use this project as a way to learn on the one hand whether such a structural evidence-based approach would be feasible, while also trying to better understand density and the

potential for liveability as well as the risks. In this I tried to follow an opportunistic approach, focusing on the potential of a very high-density environment.

Doing this I ran into a series of complications, as every new problem required a specific approach to research and develop a specific integrative solution. Therefore I believe my project was more research than design focused for the most part. An earlier acceptance of the difficulty of focusing on an evidence-based approach would have resulted in a more cohesive and focused project. There were a lot of valuable lessons in this project and in the approach I selected, but an even more opportunistic approach would have been more effective.

Approach

Developing a city for the future, capable of incorporating changes within its fabric, requires a transition from planning based on current socioeconomic patterns. Havenstad must work to become a resilient high-density environment, as a high population density is integral to the city's ambitions.

As mentioned earlier, density and liveability have been recurring themes, integral to the development of the various "cities of the future", with ecosystem services gaining a growing importance as the years progressed. However, the blue/green spaces have in those iterations mostly been intended mostly with recreation of food provision (formerly) purposes in mind. In Havenstad they will have to be able to fulfil multiple purposes in order to maintain a liveable environment.

The goal here is to allow for a high liveability that can be sustained over the long term. This is to be achieved for a great part through operationalising ecosystem services and integrating them spatially,

taking into account the effects climate change may have on the area, while high density forms the context in which this is to take place.

In short this research revolves around the themes of density liveability and ecosystem services and their interrelations and spatial manifestations. The pictures to the right are intended to show schematically how the different themes manifest within the city. Here the Wan Chai district of Hong Kong has been taken as an example.

The first theme, density, is shown by highlighting the spatial component composed of buildings. The second, liveability is here shown correlating to the infrastructure and recreation facilities. Finally the ecosystem services are represented by the green spaces and the present vegetation.

Ethical dilemmas and considerations

These are divided into three categories:

In research

Resilience turned out to be quite problematic if not handled properly, as argued by Diprose (2015). Here the choices for a hierarchy of protection often seem to rely on the perceived importance of the area, leaving many to cope on their own. Luckily the area currently has no inhabitants, and the highest flood risks seem to coincide with the areas with the highest amount of development.

Throughout the design process

There is a strong potential for conflict between inhabitants and businesses. Here the city seems to have chosen a perceived path of least resistance in its decision to transform part of the harbour, a working area lacking inhabitants into a mixed

area with the highest population density of the Netherlands. However, the choice to locate all these additional inhabitants in an area priorly reserved for businesses, together with the legal standing regarding norms of sound, odour etc, could prove disastrous.

Potential applications of the approach

The sheer act of mapping the environmental and functional condition, with the potential for development could be used as a tool to raise the land prices (which are currently deemed low by the city), limiting the inclusivity of any future development.

Measures to increase the resilience themselves could then add to this problem if co-opted by developers.

Considerations on the MSc programme

Having spent a considerable chunk of my adult life at TU Delft I do have some considerations on the programme. First off all, I must say it was a relief after the rather stringent bachelor with tightly regimented projects. The great freedom to explore one's own fascinations through research and design were very helpful. I can say that without it, I probably wouldn't have discovered my fascination for working with density.

However, looking back I must say that the times I learned the most were not during the projects with only fellow Urbanists. While I felt alone in architecture studios, as I turned out to have very different ideas when it comes to what design is. Here I noted how well our MSc trains us to be observing and mostly doing research.

It would have been very good to have an equally strong focus on design. I found that the introduction of design patterns during the MSc3 was very helpful for the pursuit of an evidence based design, but it would have been very helpful to have this prior to de graduation project.

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