The relationship between research and design

Public health and the built environment go hand in hand; how the built environment is organized influences our public health, and public health issues change the built environment. Once, the latter resulted into the construction of sewer systems, now it results into empty streets and limited social contact. However, to understand *how* the built environment can be beneficial for our public health, research relating health aspects and the urban context is needed. Much research has been done already about this topic, and during my research and design process I have focused at collecting, linking and translating the *"how"* into tools and strategies (research) and into form (design). This is of importance, because apart from scientific knowledge, the built environment is dynamic and needs to be altered to meet our lifestyles.
As Frederick Kiesler, known for its inventive stage designs and youngest member of the Stijl[1], once said:

"A foot has been made designed to walk, but only by its function it doesn't dance".

The same goes for the built environment: its structure has a function, but we have to observe, study, design and evaluate the built space to make it 'healthy'.

The research therefore is a collection of literature studies, combined with observations and projected on a reference location, Paddepoel (Groningen), which is also the subject of the subsequent design. Linking the enormous amount of information was a challenge and is only the start of the translation of research into design practice. The focus on the post-war neighborhood structure complemented the research, since these neighborhoods do need attention, and the health of the population in these neighborhoods is, on average, poorer than in other Dutch neighborhoods. The reason for this, is the amount of physical activity which tends to be lower among children living in post-war neighborhoods than children from a different neighborhood.

The relationship between the graduation topic and your master program

My fascination of public health and 'space use', especially on the interaction of inside and outside spaces which we do encounter daily, has been developed since I started the Architecture Master track. The Building Technology course, where we had to transform a part of the façade of the AMC, inspired me to relate Health and Architecture together. Furthermore I am very passionate about the interaction between buildings and public space, which resulted into my ambition to design to stimulate physical activity in the post-war neighborhood.

Also, the knowledge I have gathered during my Architecture and Urbanism Master have given me a new way of looking towards post-war architecture and public space use in general. The post-war architecture is under pressure in Europe. In the Netherlands, most people do not value post-war architecture; it's boring and monotonous, with a lot of demolition as a result. But I believe, that post-war neighborhoods are the future real estate stock, and when transforming the neighborhood, it's important to work with this existing stock (not only to remain the 'Zeitgeist' but also to be sustainable). This view is also put forward by, for example, Wessel de Jonge[2].

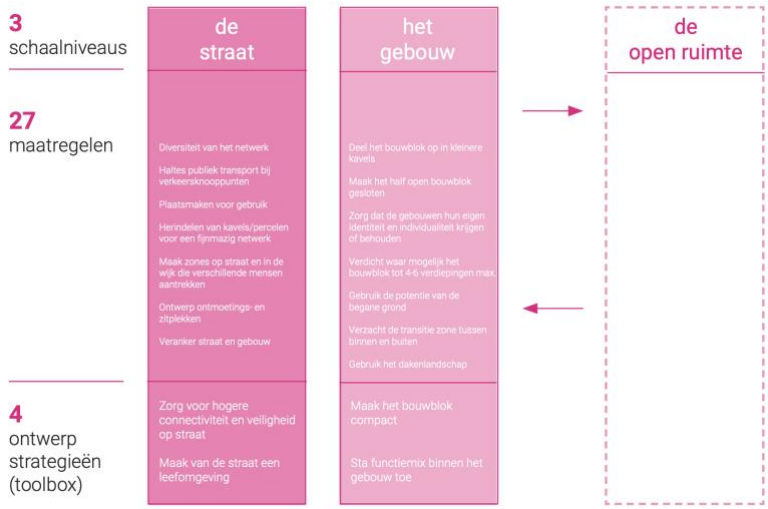
Post-war neighborhoods represent one third of the Dutch housing stock, and for their future viability, they need the attention of designers. As mentioned before, the urban layout does influence the physical activity of children , which means that the post-war layout does enlarge the social-cultural inequality, next to the social and economical issues of these neighborhoods, by having a urban layout which promotes negative health outcomes.

[1] MoMA museum (online). Manhattan, New York. https://www.moma.org/artists/3091. Used on 16th of May.
[2] Interview with Wessel de Jong, newspaper article in 'Trouw". Used on 20th of May. https://www.trouw.nl/cultuur-media/moet-de-wederopbouwarchitectuur-tegen-de-vlakte-niet-doen-zegt-deze-architect~be283cfe/?utm_medium=email

The research method and the approach to the graduation, reflecting on the scientific relevance of the work

In the research I am answering the research question “How can we change the post-war urban form in such a way that its form stimulates the inhabitants to be more physically active?”. In order to find out what we need to change and add to the post-war urban form to stimulate physical activity, we need to understand and analyze the post-war neighborhood.
After addressing the relevance of the topic, the research analyzes the post-war neighborhoods (1960-70) and compares the general analysis with the reference location Paddepoel. The same counts for the other two chapters, where I have compared the findings of scientific literature regarding physical activity and urban form to Paddepoel as well. This way, I show how we can translate scientific research into design strategies and how important it is to gain knowledge about variety of research done in this field in order to formulate good design solutions.

Below, the document structure and chapter structure are shown. The research consists of two main chapters, the street and the building. In each chapter a variety of literature is discussed, compared and analyzed which result into design tools. This structure has helped me to organize the big topic, and to give an overview of possibilities for designers to bridge the gap between research and design in urban and architectural design. However, the urban form and the challenges of the post-war neighborhood are extremely wide and complex topics. Therefore we need 1) more and diverse research methods which collect and translate the data into design principles, and 2) examples of designs where we can evaluate and learn from.



Document structure.

Chapter structure.

Relationship of the graduation project in wider context

Participating in both tracks at the Faculty of Architecture & the Built Environment has contributed to the development of my own design values. It has also shaped a certain social attitude about how we should think about our built environment in the future, and how we could benefit from the sustainability demand by focusing on increasing health and wellbeing within design disciplines.

Density and proximity are the important parameters to design 'Healthy Cities', which do increase physical activity in the built environment. With density, I mean building density, measuring the compactness of the urban layout. Cities with a high compactness level require citizens to travel shorter distances to daily facilities, and are more crowded than less compact neighborhoods, like the historical city centers. Of course, now with the Corona outbreak this idea of compactness is under pressure as well; as cafes and other public facilities experience economic pressure, and crowded streets have to be avoided.
But at the same time this crisis also shines a light on how important it is to have a range of diverse facilities nearby; the green spot around the corner, the (super)market within walking distance, the different streets you can chose from to reach that one shop without taking the main street. The morning walks where you have the freedom to choose different routes…

Daan Zandbelt, the Dutch Governmental advisor of the Built Environment, has written an interesting piece in "*Panorama in de Pratijk*" on May 11, 2020[3]. In February this year, *Studio Bereikbaar*[4], has done research concluding that the travel distance per person in the Netherlands decreases when the number of habitants and jobs within cycle distance do increase. Or in other words; your travel distance is short, changes are higher that you walk or bike and be physical active.
He also advocates to not letting fear influence the way we built our living environment, like for example Ludwig Hilberseimer plans to make a new extreme urban design sprawl for America that would undermine the drop of an Atomic bomb. Also Caroline Gruyter, journalist at the NRC, wonders what the result will be of politics in Europe regarding the fear of the virus. She notices we deal different with this virus than for example the "Hong Kong virus" in 1969-1970. Reasons for this could be the shift from collectivism to individualism or simple the fact we have more to lose due to our wealth and aging population[5]. What if safety and certainty are more important than freedom to walk and go wherever you want to go? How will this effect architecture and urbanism? How will future strategies and policies be formulated?

In addition, the current social-distancing situation is an exceptional period that, like pandemics in the past, will likely fade in a matter of a few years. In contrast, sustainability and health are structural issues, and city planning should consider decades rather than years to come.
The housing shortage is still among us, and space for expansion is limited – especially if we do not want to sacrifice already scarce nature. New developments altering the existing built environment, can be used to densify and decrease the distances towards our daily needs. Therefore, proximity will be of high importance in our (urban) living environment during and after the Corona crisis. According to Zandbelt "Proximity is the new normal". Decreasing long travel distances in our daily life could reduce the spread of the virus on the short term, and in the long term could benefit our public health by stimulating physical activity. Apart from proximity, we should still invest in smart green solutions from which we can profit in the future. From applying smart building materials, which can be recycled and reused, to the energy production of housing blocks.

For me, the transformation of the 'portiekflat', an archetype building of post-war architecture, serves as an example of this vision. The use of easy-to apply, recyclable materials, use of the roofscape for energy generation, and modern isolation materials shows how existing post-war stock can be updated to fit our current needs. Moreover I would like to stress the importance of having a active lifestyle, and how a clear diverse street networks can stimulate the amount of physical activity. It does not only increase our public health, but also makes our living environment vibrant, something we need also after we have dealt with the Corona virus.

[3] https://magazines.collegevanrijksadviseurs.nl/panoramanederland/2020/02/inleiding
[4] https://www.studiobereikbaar.nl/assets/uploads/2020/02/StudioPlaats-uitleg.pdf
[5] NRC weekend, jaargang 50, nr. 193. "Zekerheid en veiligheid boven vrijheid". Caroline de Gruyter, p.27.

Ethical issues and dilemmas encountered during the research and potential applications of the results in practice.

Next to the urban layout, a lot of problems occur in (late) the post-war neighborhoods. The concentration of 'weak' social groups, often with a low income, is still a problem. Because of these problems, social housing is under pressure in the Netherlands and many cities want to replace social housing blocks for newly built family houses. While family houses are needed in the post-war neighborhood, the way how we built them now often leads to invisible "gated communities" within the neighborhood and, according to Klooster (2004), are becoming less dense (meaning the number of demolished houses is far higher than the newly built ones).

During the design process I have encountered this social dilemma; should the portiekflat only be transformed from the outside or from the inside as well? And what does that mean for the social housing stock in the neighborhood and the city of Groningen? Gentrification is popular, but it does not solve social, cultural and economic problems in our country. On the contrary, these problems get only bigger when weaker social groups are concentrated in one neighborhood- as history has taught us from the post-war neighborhoods. The question that raises is; what is exactly the problem in this neighborhood? Are the social groups the problem, as we often hear from politicians or the media, or is the problem the way we organize and neglect the neighborhood? I would like to argue the latter; I am convinced a social mix in the neighborhood is needed to help the neighborhood organize itself differently and to attract investors, facilities, projects and people to make the neighborhood diverse and lively, where people would like to go to and to walk through.

During the design, the main goal was to increase the spatial quality, connectivity and proximity of and within the neighborhood, reflecting the research outcome. This has resulted in a walking route through the neighborhood, connecting the recreational areas in the neighborhood, and the transformation of the 'portiekflat' block. The goal of the transformation was to show how different social groups can live together within one block. The transformation resulted into multiple *maisonnettes* and apartment types to accommodate starters and families with low or medium income level.

Of course, originally the whole block consisted of social housing, so still half of it has been 'lost'. To bring these numbers back, I propose a strategic vision for the neighborhood, to transform multiple blocks in the neighborhood on the long term, which do have the same concept: to stimulate connectivity, proximity and spatial quality in the neighborhood by the transformation of the blocks and the organization of a social mix within the blocks. This way, the neighborhood displays a variation of social groups, which can attract a diverse mix of facilities, shops and outdoor activities on the long term.