

**where
public and
private
meet**

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Hi, I am Florian Bart and I am a spatial designer from Rotterdam, the Netherlands. I have a specific interest in moments within the urban fabric where public and private spaces meet. I love the tension that their relationship creates and I believe this tension also stimulates and accommodates spontaneous social interaction. In this research paper I will be looking into a Dutch phenomenon: "the cauliflower neighbourhood". In the 1970s, desire arose for a more humanistic approach in urbanism and architecture. In doing so, more possibilities for social interaction would be created by rethinking and refocussing the relationship between public and private spaces. At the time, architects and urban planners revalued modernist design principles. Now, 35 to 50 years later, I want to see how the initial design principles of cauliflower neighbourhoods' can be revalued into a contemporary urban context.













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Here are a couple of definitions that I would like you to know and understand before you start reading my research paper.

^{1, 2, 3} Hertzberger, H. (2016). public and private. In lessons for students in architecture (Seventh edition, pp. 12–13). nai010.

⁴ Hertzberger, H. (2016b). the “in-between.” In lesson for students in architecture (Seventh edition, pp. 32–39). nai010.

^{5, 6} Sennett, R. (2019). Five Open Forms. In Building and Dwelling: Ethics for the City (pp. 259–302). Penguin Books Ltd.

public space

An area that is accessible to everyone at all times.

private space

An area whose accessibility is determined by a small group or one person, with responsibility for upkeep.

collective space

An area that is accessible to everyone at all times; responsibility for upkeep is held collectively.

transition zone

The transition zone provides the key to the transition and connection between areas with divergent territorial claims and, as a place in its own right, it constitutes, essentially, the spatial condition for the meeting and dialogue between areas of different orders.

boundary

A boundary is a closed edge where interaction ends. Interaction occurs on both sides of the edge but fails to cross or dissect it, resulting in two separate interaction spaces that do not mix.

border

A border is a porous edge and that encourages a greater variety in interaction, and also simulates for different groups to come together.

introduction



Last summer, I happened to visit a cauliflower neighbourhood for the first time. This type of neighbourhood is a very distinct yet common type of residential area in the Netherlands. I was involved in a project in Oosterflank, a cauliflower neighbourhood located in north-east Rotterdam. During my first visit, I wasn't impressed by the look and feel of the area. However, over time, I discovered new spots in the neighbourhood showing its versatility in architectural styles. Each time I walked into another street, a new and unexpected perspective on the neighbourhood occurred. When walking through the neighbourhood, I continuously experienced a level of surprise and adventure.

What piqued my curiosity was the vast variety in which buildings related to public space. The harsh line between public and private spaces I usually encounter in the city was intentionally faded through the use of erratic facades, varying housing styles and extensions. After reading into cauliflower neighbourhoods, I learned that many of the initial design principles are based on a social motive, staging the possibility for social interaction between neighbours. I wanted to find out how the urban planners and architects staged the possibilities for social interaction and how the diffuse relationship between public and private spaces helps realise this.



1 to 4 Oosterflank

Cauliflower neighbourhoods, built between 1970 and 1985, are often located in the suburbs of cities and towns and approximately make up about 10% of the current housing stock in the Netherlands.⁷ Opposed to modernism, where rectangular and repetitive high-rise buildings were the norm, cauliflower neighbourhoods are characterised by small scale low-rise living environments that focused on a more humanistic approach to architecture and urban planning.⁸

The main ideology behind cauliflower neighbourhoods was to create spacious, green, relatable and village-like suburban neighbourhoods where neighbours could easily meet and talk to each other (image 5).⁹ In these low-rise living environments, houses are connected through erratic and centripetal patterns that feature the “woonerf” as its centre, which usually acted as sociable centres.¹⁰ The woonerf is probably one of the most characteristic aspects of the cauliflower neighbourhood. It can be compared to a small square that functions as an informal link between all connected dwellings and defines the place where neighbours meet each other (image 5 and 6).



The fact that all cauliflower neighbourhoods were built from the same social ideology does not mean the whole neighbourhood looks the same. Each individual part of the neighbourhood is designed with its own housing types, styles in architecture, forms of allotment and relationship between buildings and the public space, creating individual identities throughout each cauliflower neighbourhood. The vast variety of housing types and architectural styles make the cauliflower neighbourhoods something unlike anything build before or after that period.¹¹



Cauliflower neighbourhoods were undeniably popular when they were initially built.¹² However, the way the cauliflower neighbourhoods function today can differ significantly. The cauliflower neighbourhoods can be divided into those that were built before and after the second oil crisis in 1979.¹³ This crisis led to a severe economic recession and major cutbacks, also in housing.¹⁴ Therefore, the districts built after 1980 are a more simplified and austere version than the greener and more spacious districts of the 1970s.

Also, the needs of residents have changed over the last 35 to 50 years. There is a growing contrast between lifestyles, an influx of socially and economically weaker residents, more nuisance and safety issues in the immediate living environment, small-scale mixing of functions and decreasing involvement and social cohesion.¹⁵ The changing contexts within cauliflower neighbourhoods have an impact on the way people relate to the public, collective and private spaces. This means that in many neighbourhoods today, many of the initial design principles do not accomplish their goals anymore.

⁷ Abrahamse, J. E. (2019b). Inleiding. In *Opkomst en ontwikkeling van de bloemkoolwijken* (pp. 4–6). Rijksdienst voor het Cultureel Erfgoed.

^{8, 9} Ubink, M., & van der Steeg, T. (2011f). *Opkomst, idealen en abrupt einde*. In *Bloemkoolwijken: analyse en perspectief* (pp. 17–40). SUN.

¹⁰ Ubink, M., & van der Steeg, T. (2011g). Voorwoord. In *Bloemkoolwijken: analyse en perspectief* (pp. 10–12). SUN.

¹¹ Lay-out 04. (2008b). *De opkomst en ontwikkeling van grootschalige laagbouwmilieus*. In *Bloemkoolwijken* (p. 2). Stimuleringsfonds voor Architectuur.

¹² Ubink, M., & van der Steeg, T. (2011e). *Opgave en toekomstperspectief*. In *Bloemkoolwijken: analyse en perspectief* (pp. 153–162). SUN.

^{13, 14} TU Delft & bouwfonds ontwikkeling. (2013). *Inleiding*. In *Bloemkoolwijken: een uitgekookt concept* (pp. 13–14). TU Delft.

¹⁵ Ubink, M., & van der Steeg, T. (2011a). *De buurt: verkaveling en openbare ruimte*. In *Bloemkoolwijken: analyse en perspectief* (pp. 93–124). SUN.



When I observe my neighbourhood in Rotterdam, I often miss a more playful relationship between public and private spaces. The transition from public to private spaces is often harsh and direct. For instance, when I walk out of my front door, I immediately step into public space (image 8). The space in front of my house is too public and too narrow for me to claim ownership of. The absence of this type of space inhibits me to linger and to possibly meet neighbours. Therefore, I use the public space around my home very singularly: for transportation. The cauliflower neighbourhoods offer a buffer zone between public and private spaces that smoothens the transition from one to the other and blurs the notion of what is public and what is private space.

In the city, I often encounter places where social interaction is virtually absent and where residential buildings are designed in such a way that they have little to no physical relationship with public space. This is not only the case with dwellings that originate from the start of the 20th century, the building I live in, or with post-war dwellings (modernism). I also encounter a lot of newly built building blocks where the relationship between public and private spaces lack possibilities for social interaction. A lot of buildings built in the city renewal period between 1970 and 1980 in Rotterdam are urban translations of the same social ideology. Now, many of these buildings are replaced by newly built buildings where little interaction is stimulated between public and private spaces (images 10 to 12).



I got inspired by the initial social ideology of the cauliflower neighbourhood and as a designer I'm an advocate for more possibilities for social interaction in the streets. I want to see what I can learn from the cauliflower neighbourhoods and how both the positive as the negative aspects can be of value in a contemporary urban context.

In this thesis, I am going to look at which design principles were used in the cauliflower neighbourhoods and how these design principles function today. I will look at design principles that stimulated and affected social interaction between neighbours, especially in relation to places where public and private spaces meet. I'm going to analyse the cauliflower neighbourhoods on three scales: the urban scale, neighbourhood scale and the architectural scale.

In the urban scale, I'll be looking at how cauliflower neighbourhoods relate to their surrounding urban fabric and which elements define the main structures of the neighbourhoods.

Then, I zoom into the neighbourhood scale, in which I will discuss individual neighbourhoods, their allotment structure and the role of public space.

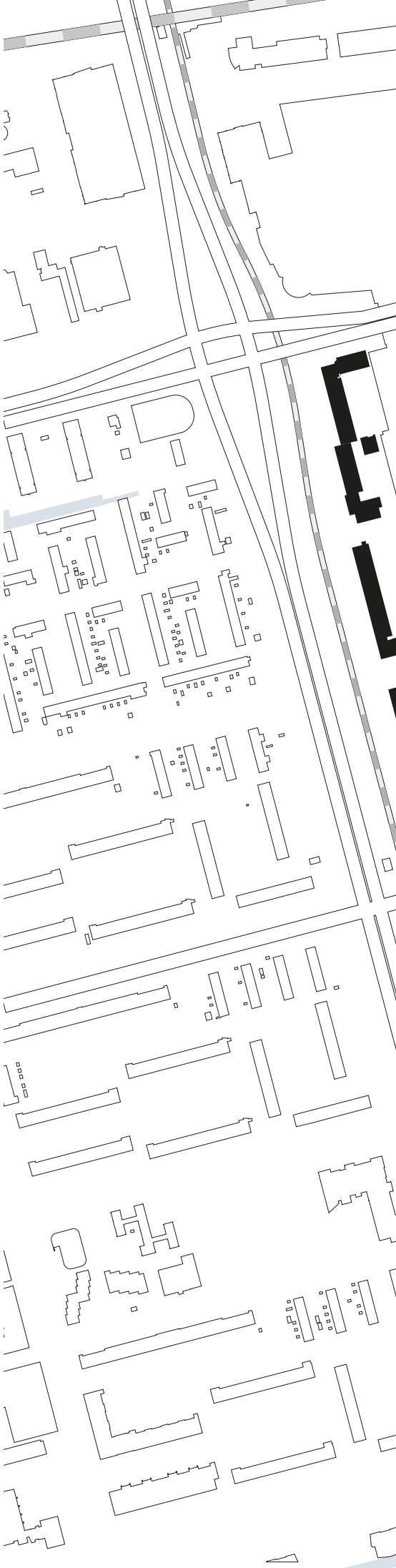
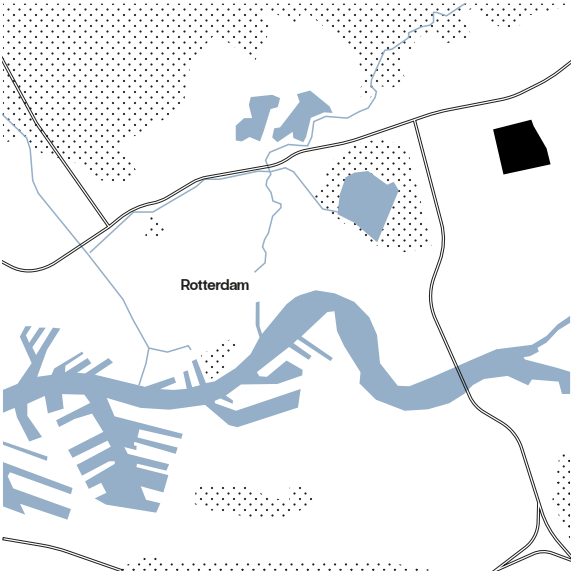
I'll be looking at how dwellings relate to public space and how architects designed the transition between public and private spaces in the architectural scale.

For my research, I visited four different cauliflower neighbourhoods. I visited these neighbourhoods in autumn/winter 2020/2021. During this time the Netherlands was in a lockdown because of the corona pandemic. This made it harder to observe and document people using public spaces because people just weren't out and were hesitant to get in contact. All photo's in this document are made by me during my trips to these neighbourhoods.

Oosterflank, Rotterdam Zuid-Holland

Built in: 1980-1985
Area: 1,63 km²
Dwellings: 5586

Oosterflank is the first cauliflower neighbourhood I visited. This neighbourhood is built in the 1980s and therefore a simplified version of the initial cauliflower neighbourhood. It's located in the north-east of Rotterdam, one of the larger cities in the Netherlands, and situated next to "Alexandrium" which is one of larger shopping malls in Rotterdam. Its more urban locations resulted in more high-rise buildings throughout the neighbourhood and especially towards the shopping centre. There also seemed to be little social control and more people minding their own business.

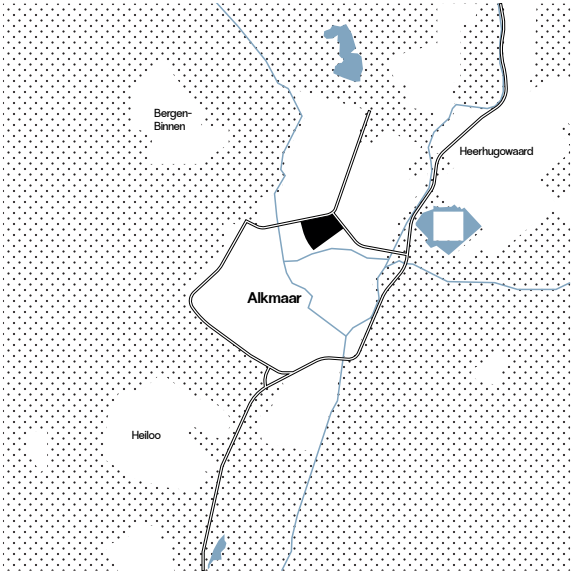




Huiswaard II, Alkmaar Noord-Holland

Built in:	1972-1977
Area:	0,59 km²
Dwellings	1970

After having visited a cauliflower neighbourhood from the 1980s, I wanted to visit a cauliflower neighbourhood built at the start of the 1970s, which can be seen as the prime time of the cauliflower neighbourhoods. Therefore, it's an absolute textbook example. This neighbourhood is located in the north of Alkmaar and enclosed by an industrial area on the south side and a ring road on the north- and east side. The neighbourhood has a very suburban feel to it with a higher level of social control and is infused with a lot of greenery.

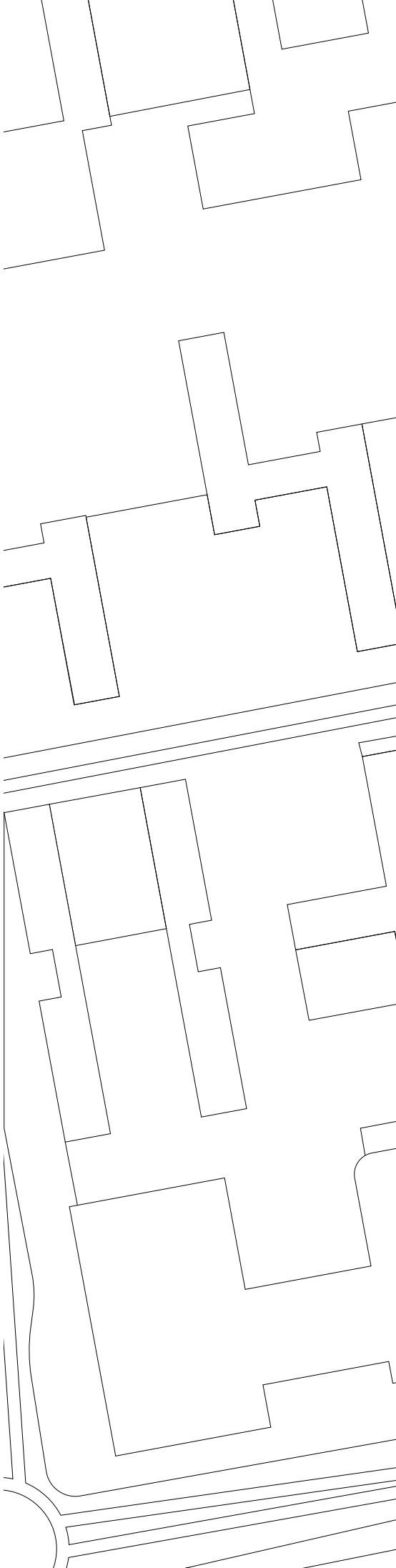
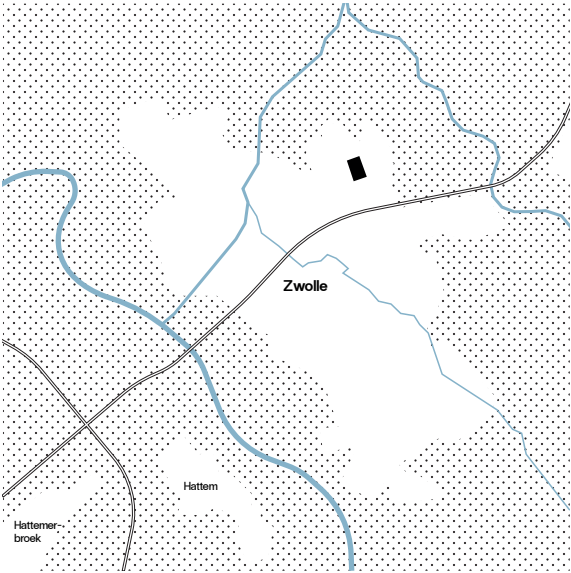




Krekenbuurt, Zwolle Drente

Built in: 1972-1974
Area: 0,15 km²
Dwellings: 155

The third cauliflower neighbourhood I visited is the Krekenbuurt, which is a rather smaller scale neighbourhood. I was looking for neighbourhoods where the relationship between public and private space was the starting point of the design. The neighbourhood is built in the 1970s in a structuralistic way. It is characterised by its constantly alternating facades, clearly defined woonerven and green walking routes along the backyards as a connective element between the different woonerven.

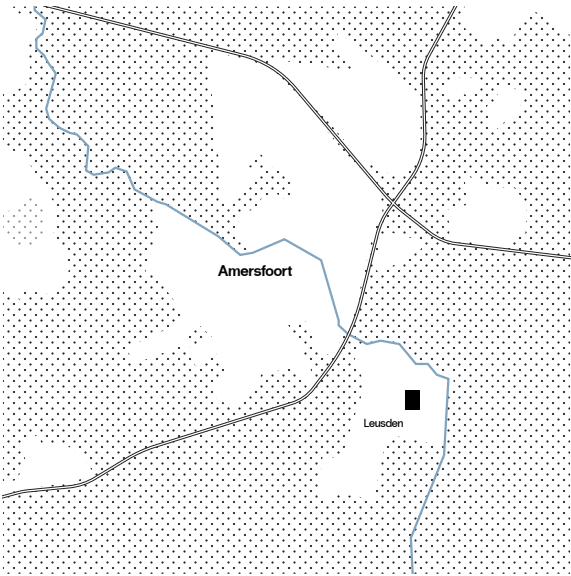


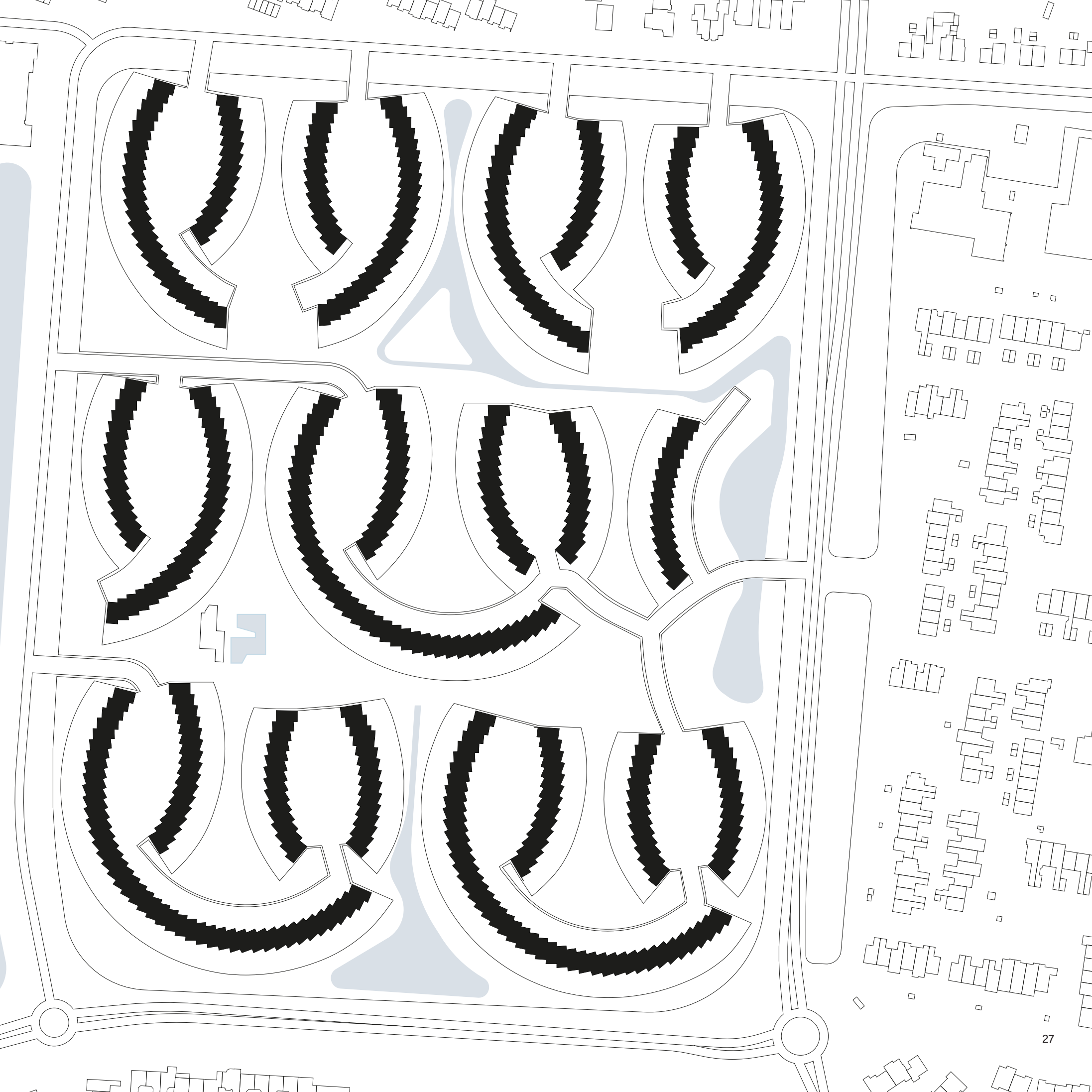


Park Rozendaal, Leusden Utrecht

Built in: 1970-1972
Area: 0,19 km²
Dwellings: 476

Park Rozendaal is the last cauliflower neighbourhood I visited for this research. Like the Krekenbuurt, Park Rozendaal is also built in the 1970s and in a structural-istic way. Compared to the Krekenbuurt, Park Rozendaal contains a much more structured and repeated pattern throughout the neighbourhood. Here too you find constantly alternating facades providing a high level of privacy. Another aspect that made this neighbourhood a joy to visit was finding out about the shared facilities the neighbourhood has for its residents.







Kalundborgert



Horsenserf



**cauliflower
neighbour
hoods**

historical context and ideals

Cauliflower neighbourhoods came as a response to the modernist way of building and urban planning. In the 1960s, criticism arose on this modernist way of building, by architects and residents alike.¹⁶ Modernist buildings were perceived as distant and cold, and residents could no longer relate to their living environment.¹⁷ Monotony and repetitiveness of buildings and the predominant role of traffic in the streets were seen as most problematic.¹⁸

Already at the end of the 1950s we see architects taking an alternative perspective. A group of young architects (Aldo van Eyck, Herman Hertzberger and Jaap Bakema) were asked to run the architecture magazine Forum, wherein they emphasised the importance of an emotional approach and symbolic and social functions in the built environment.¹⁹ The straightforwardness of modernism began to clash with the changing social and political context, the economic prosperity and the increasing diversity in the population.²⁰ Politicians, architects, urban planners and residents all agreed that the human scale needed to be brought back into architecture and urban planning.²¹ There was a shared desire for small scale living environments in which residents could easily meet each other in the streets again. And thus the cauliflower neighbourhoods were born.

Cauliflower neighbourhoods were designed with an instinctive and experimental approach. The focus was on creating low-rise neighbourhoods where social interaction would flourish, and residents could relate to their living environment.²²

Architects were inspired by traditional Dutch villages that naturally have high levels of interaction between residents, and tried to copy-paste that into a suburban context.²³ Terms like variation, pluriform, complexity, experimentation and surprise were keywords in the design process.

When walking through these neighbourhoods, you clearly see how these keywords got translated into the built environment. Shifting building lines, irregular allotments and roof scapes, varying heights within a residential block and individually recognisable dwellings are some of the techniques applied in these neighbourhoods to create a more lively, intimate and secluded living area.²⁴ Even though the cauliflower neighbourhoods were places full of experimentation and creative freedom, there was a structure and a way of working when designing these neighbourhoods. Architects and urban planners used different techniques in each scale to achieve the desired effects, like social interaction between neighbours, within these neighbourhoods.

^{16, 17, 18} Ubink, M., & van der Steeg, T. (2011f). Opkomst, idealen en abrupt einde. In Bloemkoolwijken: analyse en perspectief(pp. 17–40). SUN.

¹⁹ Lay-out 04. (2008b). De actuele situatie in de woonerfwijken. In Bloemkoolwijken (p. 3). Stimuleringsfonds voor Architectuur.

^{20, 21} Ubink, M., & van der Steeg, T. (2011f). Opkomst, idealen en abrupt einde. In Bloemkoolwijken: analyse en perspectief(pp. 17–40). SUN.

²² Ubink, M., & van der Steeg, T. (2011g). Voorwoord. In Bloemkoolwijken: analyse en perspectief (pp. 10–12). SUN.

²³ Ubink, M., & van der Steeg, T. (2011f). Opkomst, idealen en abrupt einde. In Bloemkoolwijken: analyse en perspectief(pp. 17–40). SUN.

²⁴ Ubink, M., & van der Steeg, T. (2011g). Voorwoord. In Bloemkoolwijken: analyse en perspectief (pp. 10–12). SUN.





urban scale

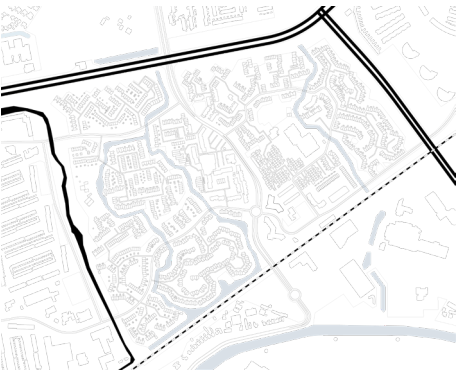




- 1 north side boundary Huiswaard II
- 2 south side boundary Huiswaard II
- 3 west side boundary Huiswaard II

boundaries

When you look at a cauliflower neighbourhood from above, you can see that they often have well-defined boundaries. Take a look at Huiswaard II, a cauliflower neighbourhood in the north of Alkmaar. The neighbourhood has clear boundaries on all sides. A ring road can be found on the north and east side, train tracks on the south side and a stroke of greenery along the west side.



In the 1970s, all space inside the cities' ring roads was full due to the urban expansion plans of the 1950 and 1960s.²⁵ This naturally forced the cauliflower neighbourhoods to places outside of the ring road, which now characterises them. However, the spatial and functional relationships with the surrounding nature are limited despite their location on the edge of the city. At the time, it was the belief that the increasing urbanisation shouldn't be realised at the expense of the surrounding nature.²⁶ Therefore, a sharp boundary was formed between the new neighbourhood and the surrounding nature. In this way, the surrounding nature itself would remain untouched and inaccessible to the neighbourhoods' residents.

The negative effect of the sharp boundaries is that it emphasises the neighbourhoods' spatial isolation in relation to the existing urban and rural area.²⁷ Especially now that the surrounding areas of cauliflower neighbourhoods have been used as more urban space, they have a hard time relating to and connecting to their surroundings. However, this closed-off character does provide a certain degree of intimacy within the neighbourhood that pulls the residents' focus towards the more collective spaces like the woonerven.²⁸

I believe that by forcing an inward focus, residents are more likely to use the public space in their neighbourhood and meet their surrounding neighbours rather than strangers from other neighbourhoods. The boundaries of cauliflower neighbourhoods clearly mark the start and the end of a neighbourhood. As a visitor, the boundaries emphasise the feeling of you entering someone else's territory. Therefore, I can imagine that crossing the boundary as a resident marks the feeling of home.

^{25, 26} Ubink, M., & van der Steeg, T. (2011b). De wijk: ligging en ruimtelijke hoofdstructuur. In Bloemkoolwijken: analyse en perspectief (pp. 65–84). SUN.

²⁷ Lay-out 04. (2008b). De actuele situatie in de woonerfwijken. In Bloemkoolwijken (p. 3). Stimuleringsfonds voor Architectuur.

²⁸ Alexander, C., Ishikawa, S., & Silverstein, M. (1977a). 15 Neighbourhood Boundaries. In A Pattern Language: Towns, Buildings, Construction (pp. 86–90). Oxford University Press.



- 4 north-east side boundary Oosterflank
- 5 north side boundary Oosterflank
- 6 west side boundary Park Rozendaal
- 7 south side boundary Krekenbuurt
- 8 west side bounadry Krekenbuurt
- 9 south side boundary Oosterflank



6



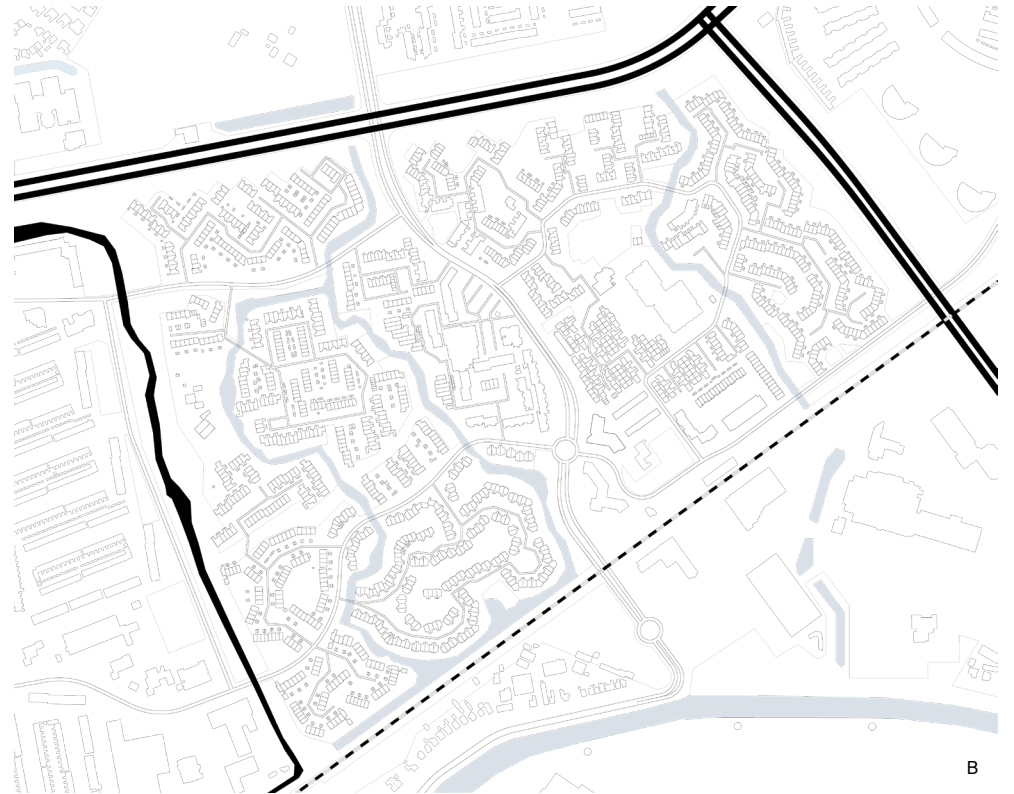
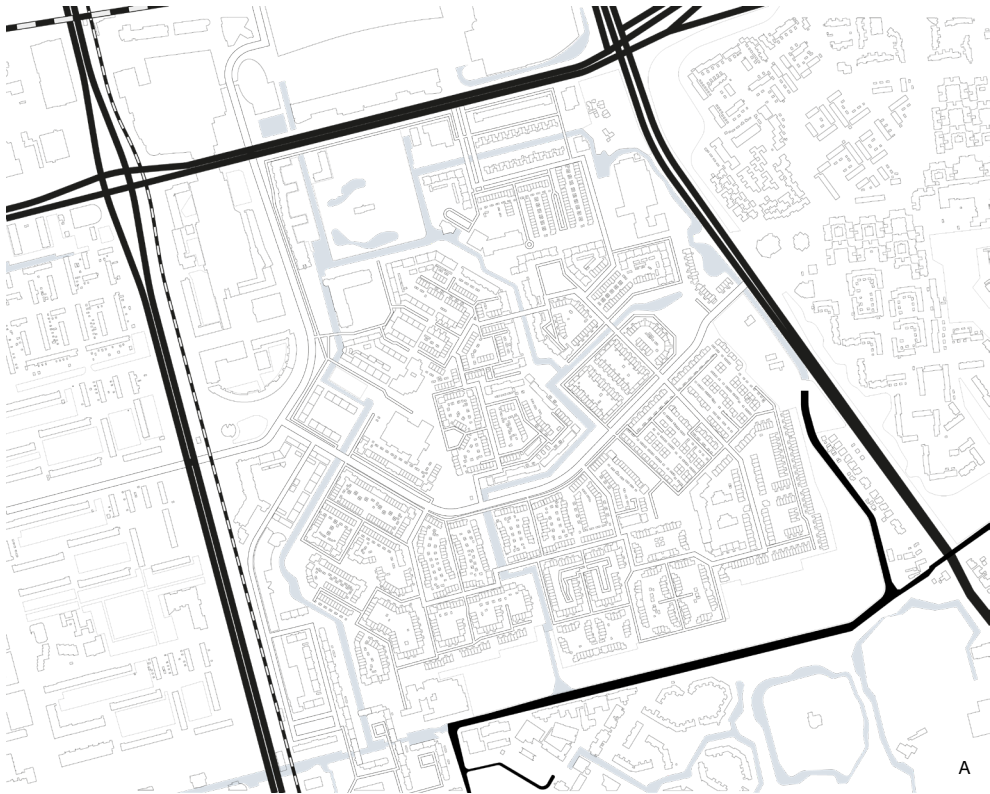
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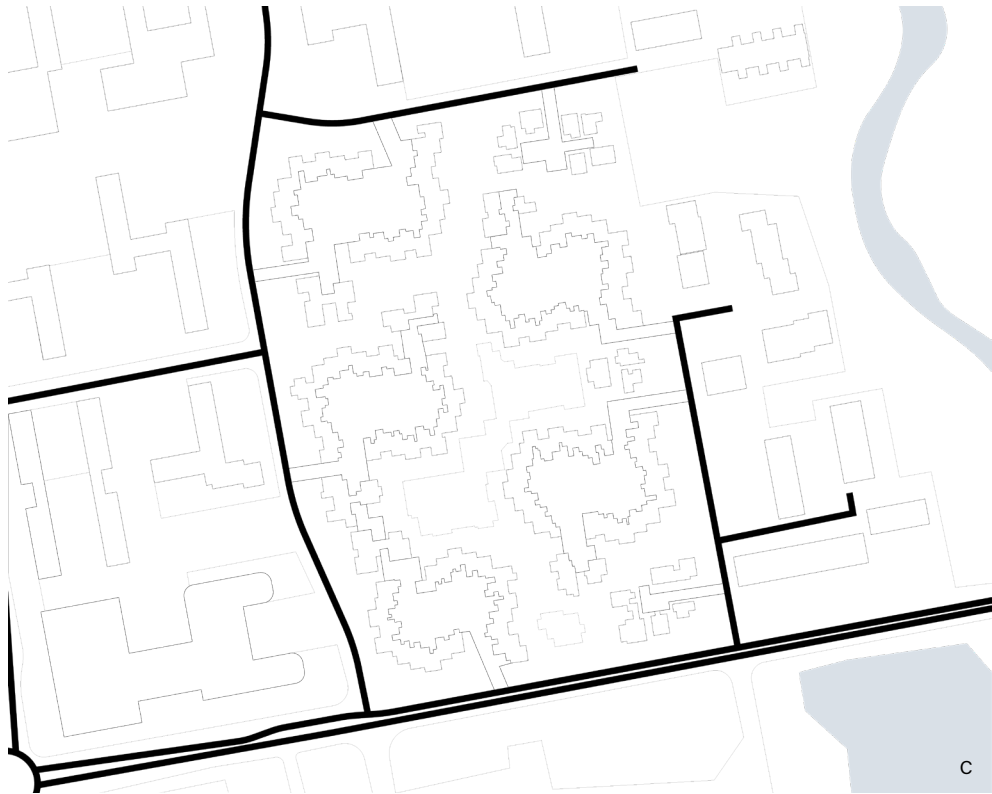


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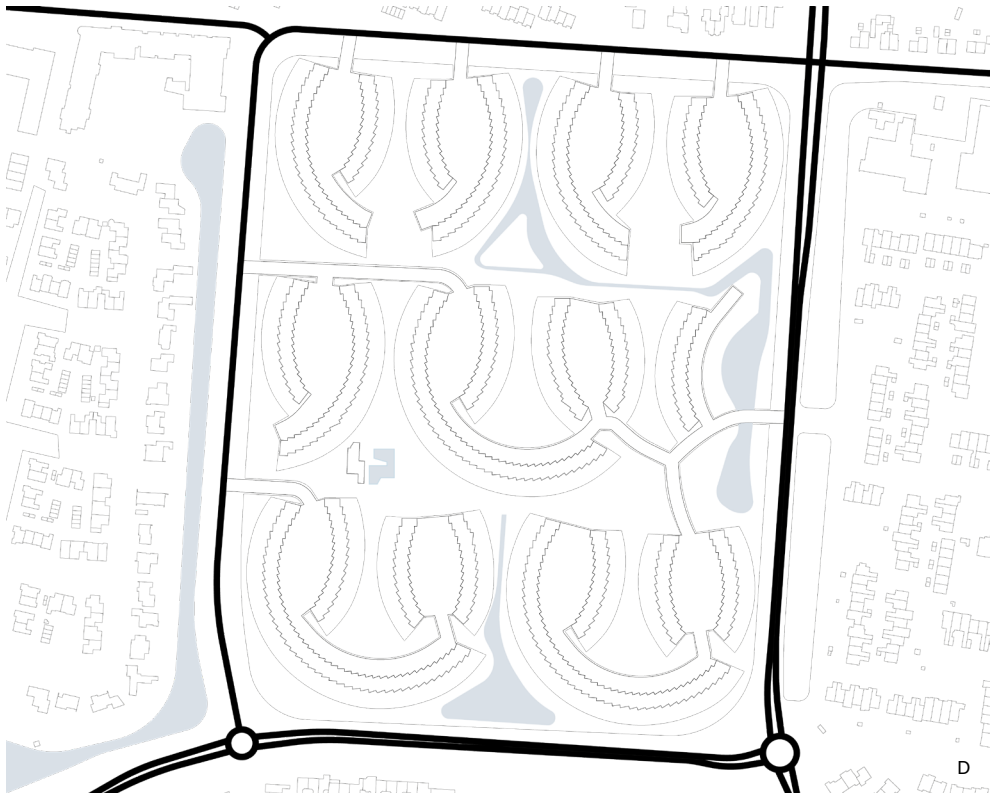


9





**boundaries are often
made up of busy roads,
train or metro tracks
and greenery**



- A The north and east boundaries of Oosterflank are made up of busy roads, the south boundary is made up of greenery and the west side of the metro-line towards Rotterdam.
- B The north and east boundaries of Huiswaard II are defined by the ring road of Alkmaar, the south boundary is made up by the train tracks and the west boundary by a old dyke containing a cycling path connective the north of Alkmaar to the centre.
- C the Kreenbuurts' south boundary is made up of a connective road, all the other boundaries are roads that are used by local traffic.
- D Park Rozendaals' boundaries are all made up of busy roads.



Middenweg





greenery structures

After defining the boundary, the main structure of cauliflower neighbourhoods is determined by two shaping elements: the greenery structure and the traffic structure. In the planning of cauliflower neighbourhoods, urban planners paid an increasing amount of attention to existing green and water structures.²⁹ This meant that many of the existing structures were left intact and added a natural element to the neighbourhood. Besides that, leveraging existing landscape structures also offered a financial benefit.³⁰

^{29, 30, 31} Ubink, M., & van der Steeg, T. (2011b). De wijk: ligging en ruimtelijke hoofdstructuur. In Bloemkoolwijken: analyse en perspectief (pp. 65–84). SUN.

Where in modernism urban planners planned every bush, tree, flower and rectangular grass field, the nature in the '70s and '80s was wild, informal and intimate. The experience in nature should be an adventurous one. However, the residents have experienced the greenery and water structure as increasingly dangerous over the years.³¹ The bewildered and informal greenery result in a lack of overview and an unsafe feeling, especially on the pedestrian and cyclist routes within these greenery structures. As a result, the wilderness is increasingly having to make way for orderly green lawns.



1 and 2 greenery Oosterflank
 3 greenery Krekenbuurt
 4 and 5 greenery Park Rozendaal



12 pond Oosterflank
13 pond Park Rozendaal



6 to 9 waterways Oosterflank
10 and 11 waterways Huiswaard II

**water structures
in cauliflower
neighbourhoods**



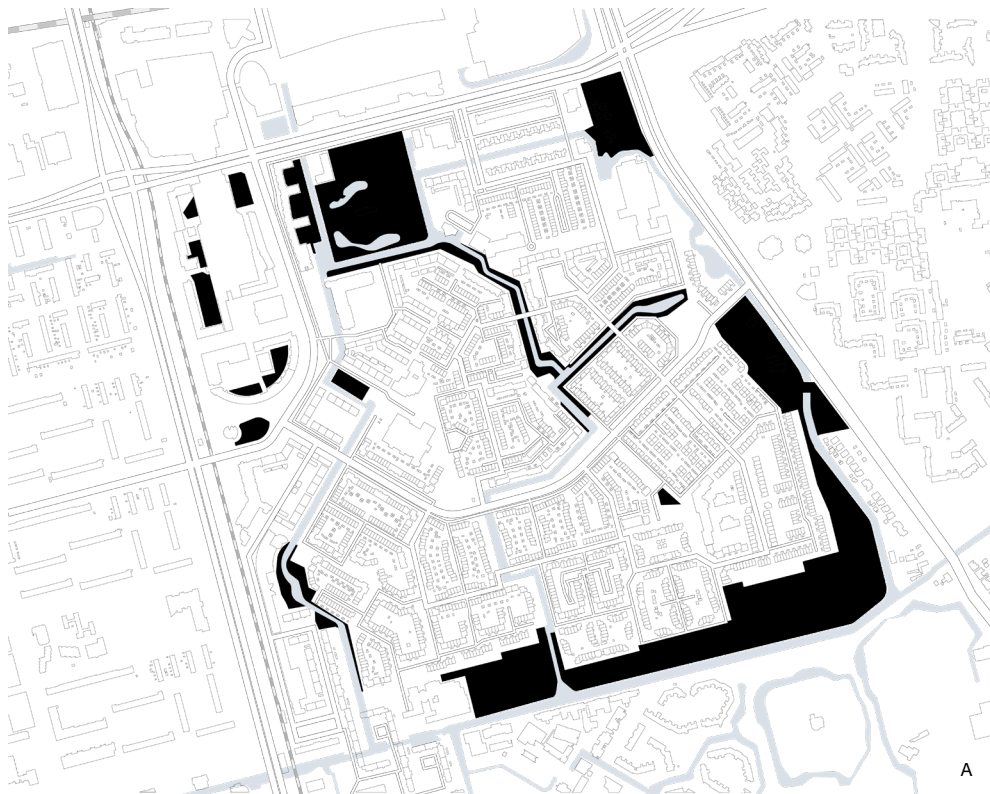
I experienced this unsafe feeling in Huiswaard II, where green spaces on the neighbourhoods' north and east edge function as a buffer zone between a busy ring road and the dwellings on the edge of the neighbourhood (images 6 to 12). These green spaces consist of walking routes that felt rather unsafe and undefined. On my left side, there was the sound of fast racing cars and trucks, and on the right side, an occasional dwelling appeared in-between a set of bushes. It was unclear where the walking route was taking me and I had no overview of my surroundings.

14 to 19 informal green spaces Huiswaard II



20 and 21 open green spaces Oosterflank

Whereas in Oosterflank, the green spaces on the east and south side also function as a buffer but have more overview and are designed to be more open with defined paths. I experienced the green spaces in-between the different neighbourhood parts of Huiswaard II as more safe, open and inviting. These green spaces also contain more regularly used walking and cycling routes and feel connected to the surrounding dwellings.

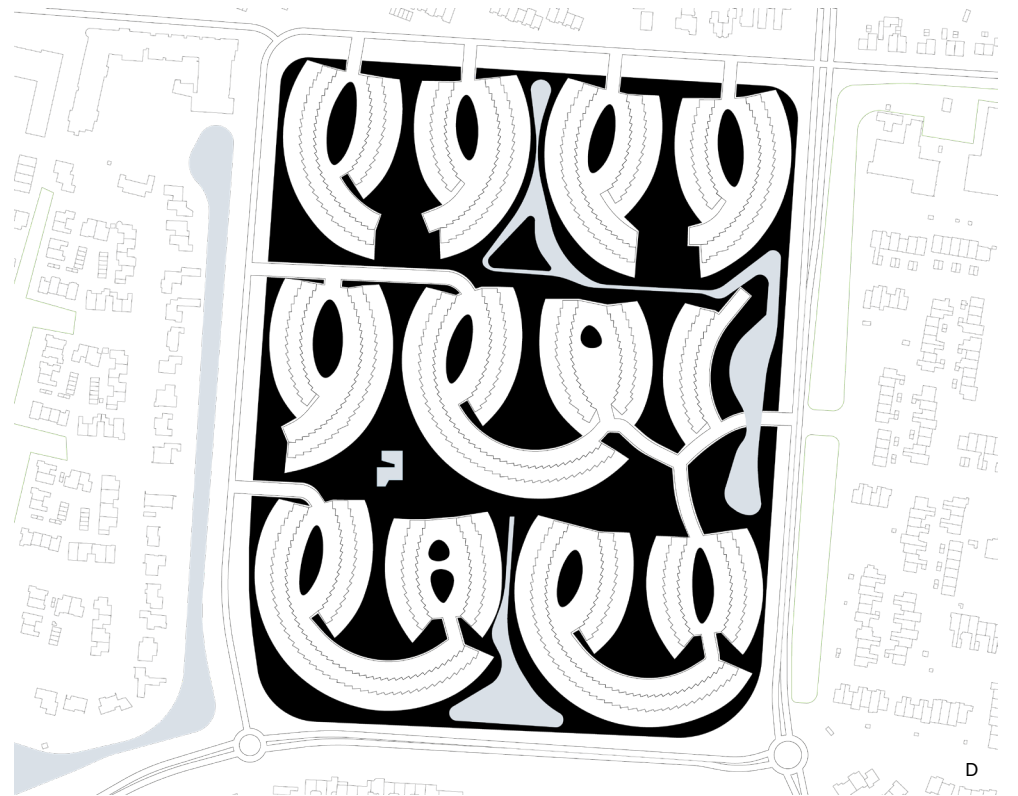
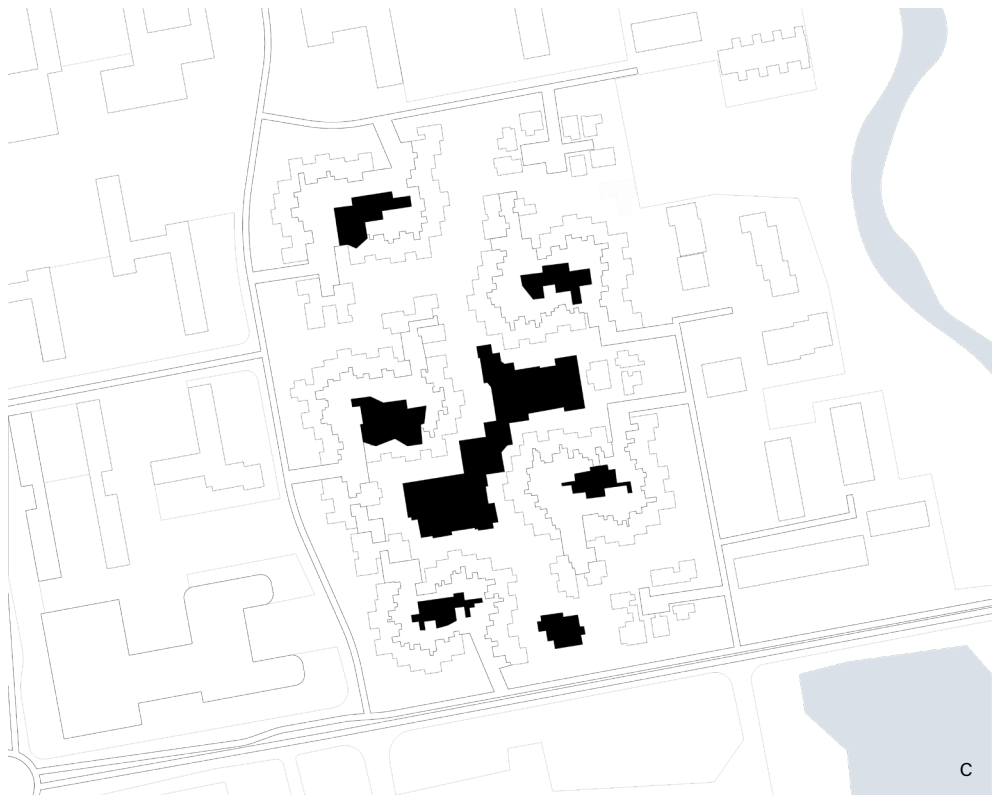


A



B

- A The green spaces in Oosterflank are very planned and because it is built in the 80s the nature is less wild and informal. (see images 6 to 9 and 20 and 21)
- B In Huiswaard II, the green spaces are more incorporated into the neighbourhood. The greenery is very wild and informal. The green spaces on the edges of the neighbourhoods are used as buffer between the ring road and the neighbourhood.
- C In the Krekenbuurt small green spaces can be found on the woonerven and larger green spaces on in the centre of the neighbourhood.
- D In Park Rozendaal there are also small green spaces to be found on the woonerven and all spaces outside of the woonerven can be considered as green spaces.









traffic structures

Parallel to the greenery structures, the traffic structure was decided in the planning of the neighbourhood.³² In the seventies, the focus shifted from stimulating traffic movements and parked cars (during modernism) to limiting traffic movements in order to maintain environmental qualities.³³ Limiting traffic movements was done through two strategies: a hierarchical traffic structure or a diffuse traffic structure. In a hierarchical structure, I make a distinction between roads that have a flow function and roads that have a slow-traffic function. At an urban level, the flow function must ensure rapid handling of traffic and connection to, for example, the ring roads and other neighbourhoods. Roads containing this flow function can then be divided into two traffic structures: a primary traffic structure and a secondary traffic structure.



The primary traffic structure often consists of one or two main roads that either cross or make a circular movement through the neighbourhood. On these types of roads, people generally enter the neighbourhood and they are usually made of asphalt.³⁴ In my experience, the primary traffic structure is the most public space in the neighbourhood. It's used by both local traffic and passers-by. These roads have a more open character where different traffic functions (pedestrians, bikes and cars) are separated.

- 1 primary road Oosterflank
- 2 primary road Huiswaard II
- 3 primary road Krekenbuurt
- 4 primary road Park Rozendaal

^{32, 33, 34} Ubink, M., & van der Steeg, T. (2011b). De wijk: ligging en ruimtelijke hoofdstructuur. In Bloemkoolwijken: analyse en perspectief (pp. 65–84). SUN.



In the individual neighbourhood Koggewaard in Huiswaard II, I met an older woman of 87 years old. She moved to Huiswaard II 10 years ago to live with her new husband. The husband has been living in Huiswaard II for 44 years and loves living here. The women, on the other hand, grew up in the city centre of Alkmaar and misses the buzz of the city where pedestrians and cars would continuously pass by. She finds Huiswaard II aloof, unsociable and a maze. After ten years, she still gets lost once in a while.



The secondary traffic structure forms the link between the primary traffic structure and the woonerven. These roads still feel quite public as they are also used for connective reasons. Depending on the neighbourhood, these secondary roads are made of either asphalt or bricks. I noticed that the secondary roads are often characterised by the fact that the bike path and road have merged and only the sidewalks are separated. Although the secondary roads are still rather public, I started to feel more like a visitor because of their more enclosed and more intimate character.

- 5 secondary road Oosterflank
- 6 secondary road Huiswaard II
- 7 secondary road Krekenbuurt
- 8 secondary road Park Rozendaal



The slow traffic policy is what characterises the woonerven. Here, a clear distinction between different traffic functions is gone. By adding bends, flower beds and benches the architects limited the cars' speed, aiming for a more child-friendly environment. The woonerven are the places where pedestrians, cyclists and drivers meet in a very informal setting. As soon as I stepped onto a woonerf, it felt like entering a private space. I knew I was constantly being watched by neighbours from inside their houses, looking at why this stranger is walking past.

- 9 woonerven Oosterflank
- 10 woonerven Huiswaard II
- 11 woonerven Krekenbuurt
- 12 woonerven Park Rozendaal



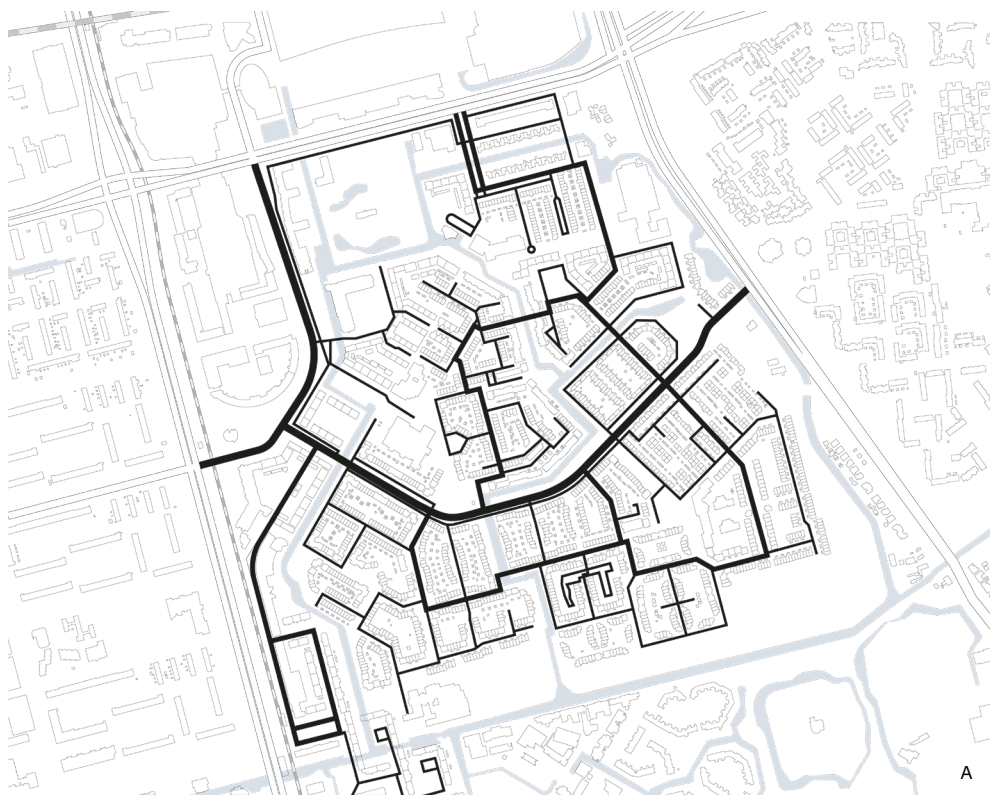
many people got lost very quickly, which resulted in the nicknames "verdwaalwijk" (getting lost neighbourhood) en "doolhofwijk" (maze neighbourhood)



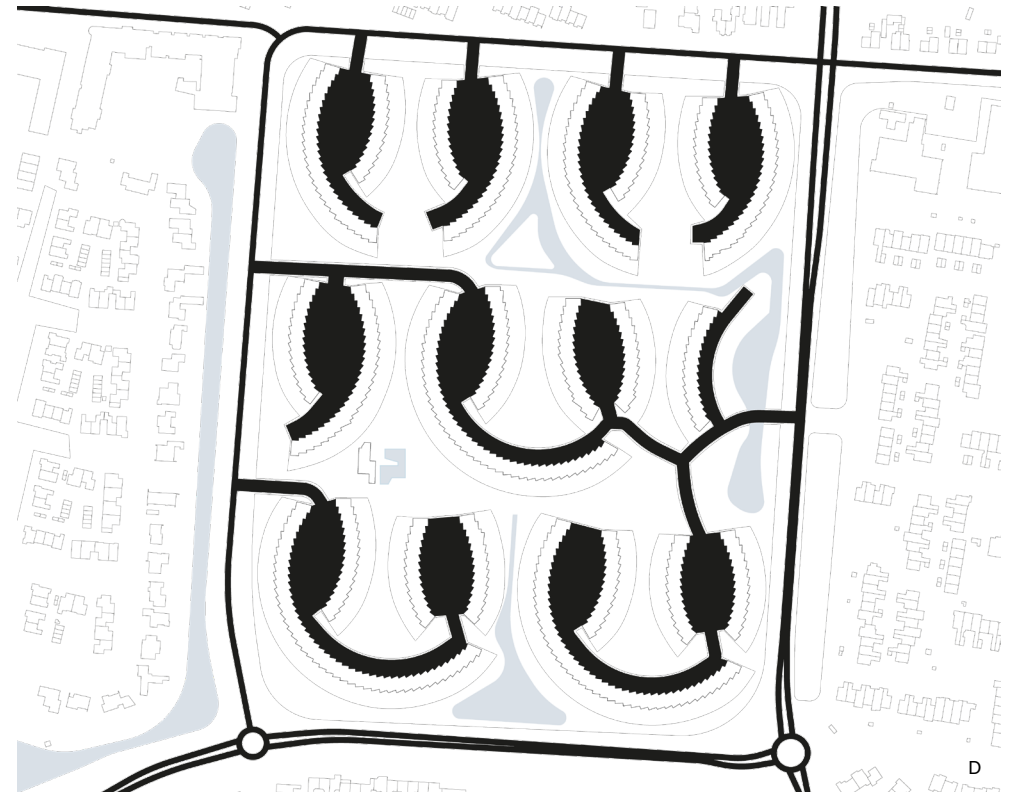
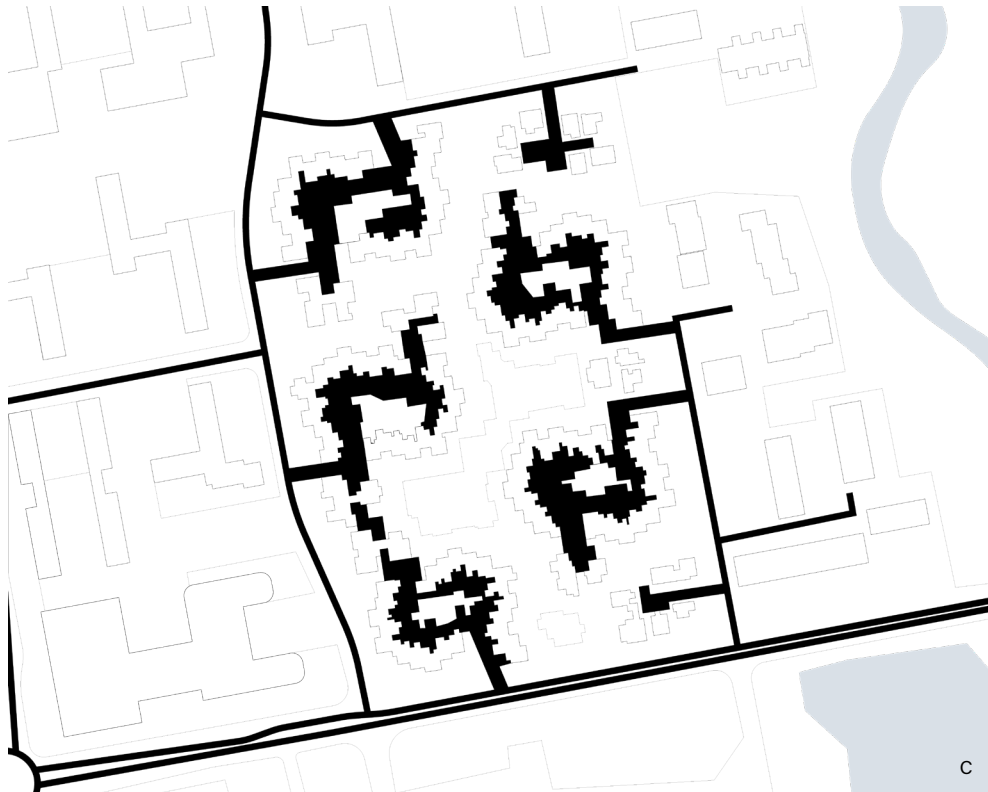
This branching traffic structure is one of the signature design principles of the cauliflower neighbourhood.³⁵ It ensures a gradual transition from public to private spaces inside the neighbourhood, both for visitors and residents. The further in you go, the more enclosed and the more private the environment feels. However, not everyone agreed with this design strategy at the time. Some architects and urban planners were not convinced that the hierarchical traffic structure was the best way to go.³⁶ To them, the hierarchical traffic structure meant that people, especially children, did not come into contact with traffic and therefore would not be able to assess the dangers of traffic well enough. As a solution, urban planners came up with a diffuse traffic system, a small-scale grid with a large number of streets used by mixed traffic.³⁷

In this setup, the speed of cars would be reduced by bends, bollards, trees, and play objects allowing the streets to have a traffic function as well as a social function. This traffic structure required many more access points into the neighbourhood, whereas the hierarchical structure only asks for one or two. In some cases, there was not enough money to realise these access roads, disabling the functioning of the the system and causing confusion for both visitors and residents. Many people got lost very quickly, which resulted in the nicknames "verdwaalwijk" (getting lost neighbourhood) en "doolhofwijk" (maze neighbourhood).³⁸

^{35, 36, 37, 38} Ubink, M., & van der Steeg, T. (2011b). De wijk: ligging en ruimtelijke hoofdstructuur. In Bloemkoolwijken: analyse en perspectief (pp. 65–84). SUN.



**the branching traffic
structure resembles
the structure of a
cauliflower and ensure
a gradual transition from
open public roads to
smaller intimate roads**



- A In Oosterflank, there is a primary traffic structure that crosses the neighbourhood. Compared to Huiswaard II, the roads are quite structured and squared. However, when driving through the neighbourhood you still get lost easily.
- B Also in Huiswaard II the primary road crosses the boundary. The secondary roads connect the neighbourhood to adjacent neighbourhoods. In each individual neighbourhoods a different road technique is applied to slow down traffic.
- C and D In both the Krekenbuurt and Park Rozendaal, the primary and secondary roads surround the neighbourhoods. When you enter the neighbourhood, you immediately enter a more intimate space.







1

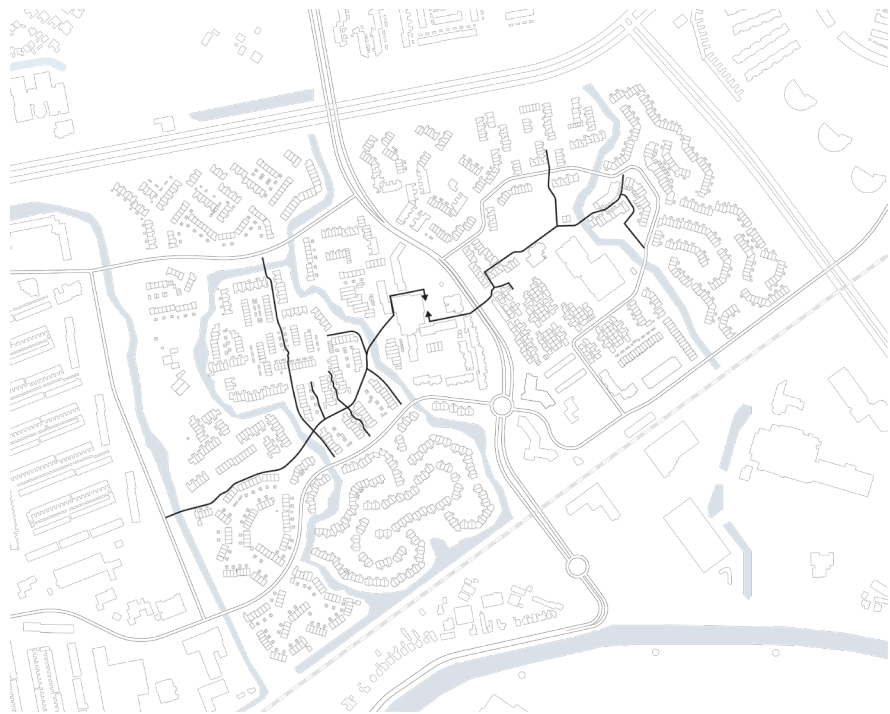


2

1 to 5 pedestrian routes in Huiswaard II

pedestrian + cyclist routes

In addition to the traffic structures accessible by car, urban planners also paid a significant amount of attention to pedestrians and cyclists' routes.³⁹ In many cauliflower neighbourhoods, these routes for cyclists and pedestrians lead directly to the neighbourhoods' facilities to stimulate this type of transport. At the time, architects and urban planners added an intrinsic value to moving by foot or by bicycle so people would be able to be in contact with their surroundings: if you move slowly, you can see, hear, smell, feel, stand still or have a chat.⁴⁰ As soon as you get into a car, much of these experiences are lost. In many cauliflower neighbourhoods, these routes coincide in the greenery structure.



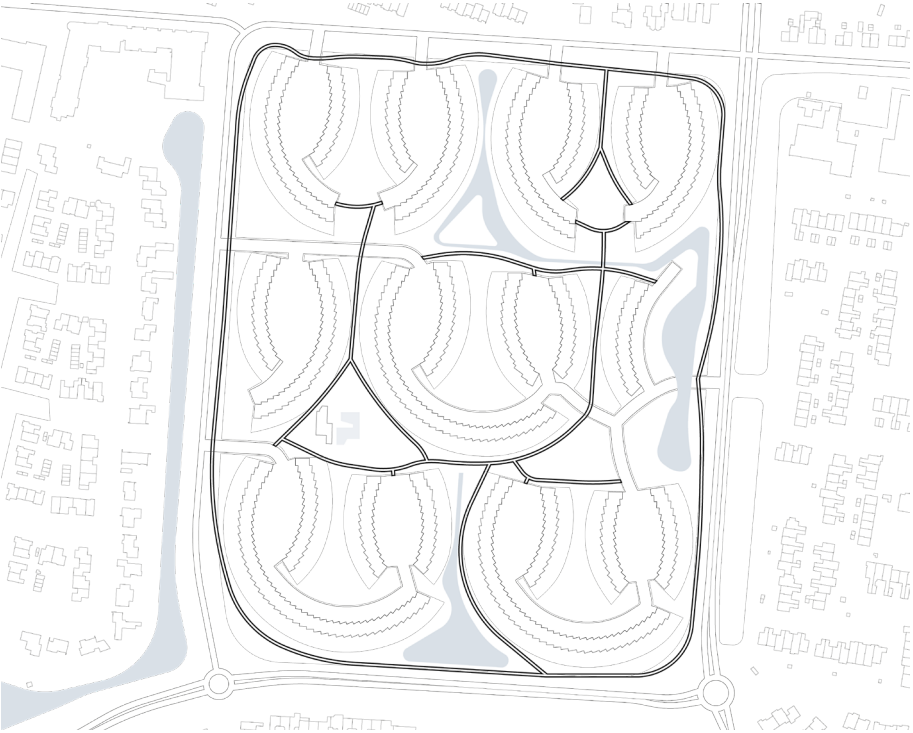
In Huiswaard II, you can see pedestrian routes connecting different parts to the centre of the neighbourhoods where the supermarket is located (images 1 to 5).

^{39, 40} Ubink, M., & van der Steeg, T. (2011b). De wijk: ligging en ruimtelijke hoofdstructuur. In Bloemkoolwijken: analyse en perspectief (pp. 65–84). SUN.

In the Krekenbuurt (images 6 to 9) and Park Rozendaal (images 10 to 13), the pedestrian are the only way to get from one woonerf to the other and they feels like they play a big part in the neighbourhoods' functionality. They connect the different woonerven and collective green spaces or facilities where children and their parents can meet.



6



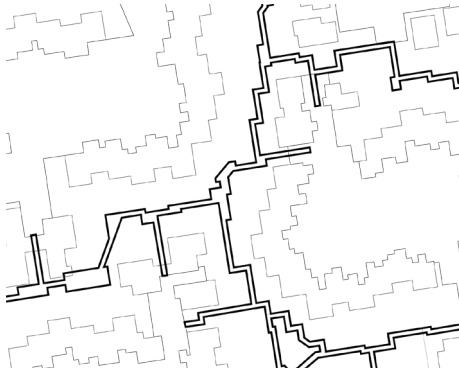
10



11



6 to 9 pedestrian routes in the Kreenbuurt

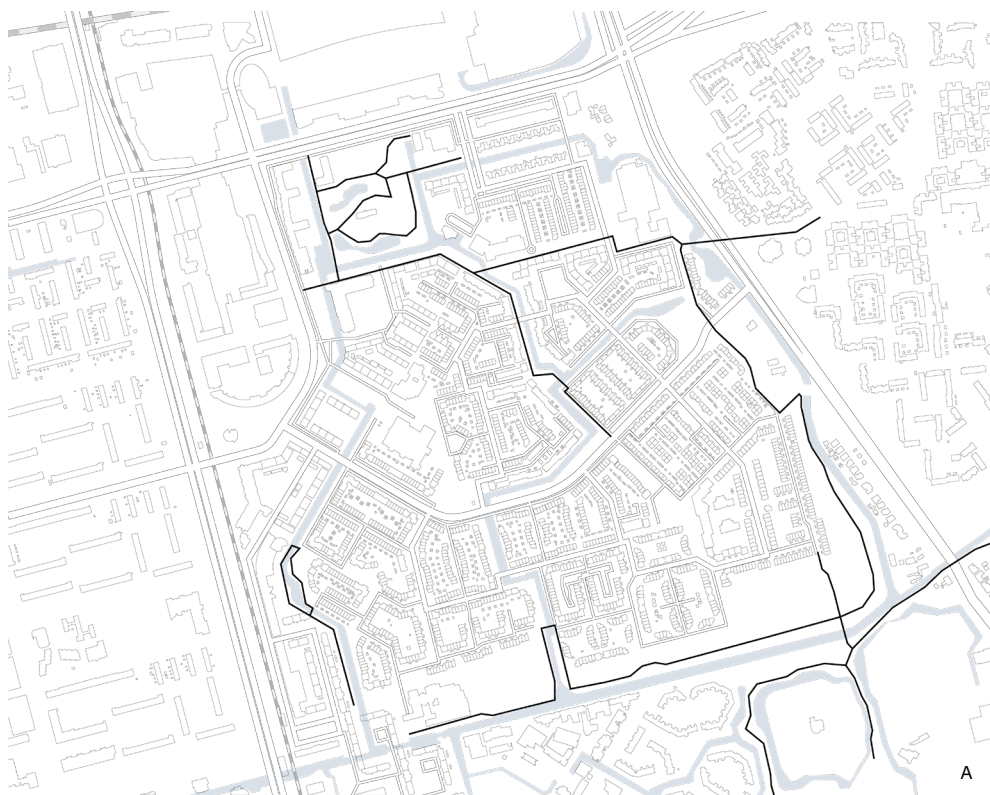


In one of the walking routes in the Kreenbuurt, I met a young mother with three children walking from her woonerf to the collective green space where the children could play. I crossed her path on a small widening of the path created by the architect. It was precisely this small open space in the walking route that allowed us to interact with her and talk about her experiences in the neighbourhood. A few years ago, she moved here after having children and finds it a very pleasant neighbourhood to live in. Everyone in the neighbourhood knows each other without there being too much social control, making it a safe environment for her children to grow up in. What struck me about the Kreenbuurt was that a large number of the backyards were quite open to the pedestrian routes within the neighbourhood and that this meant there could be interaction from the back garden to the walking routes.



10 to 13 pedestrian routes in Park Rozendaal



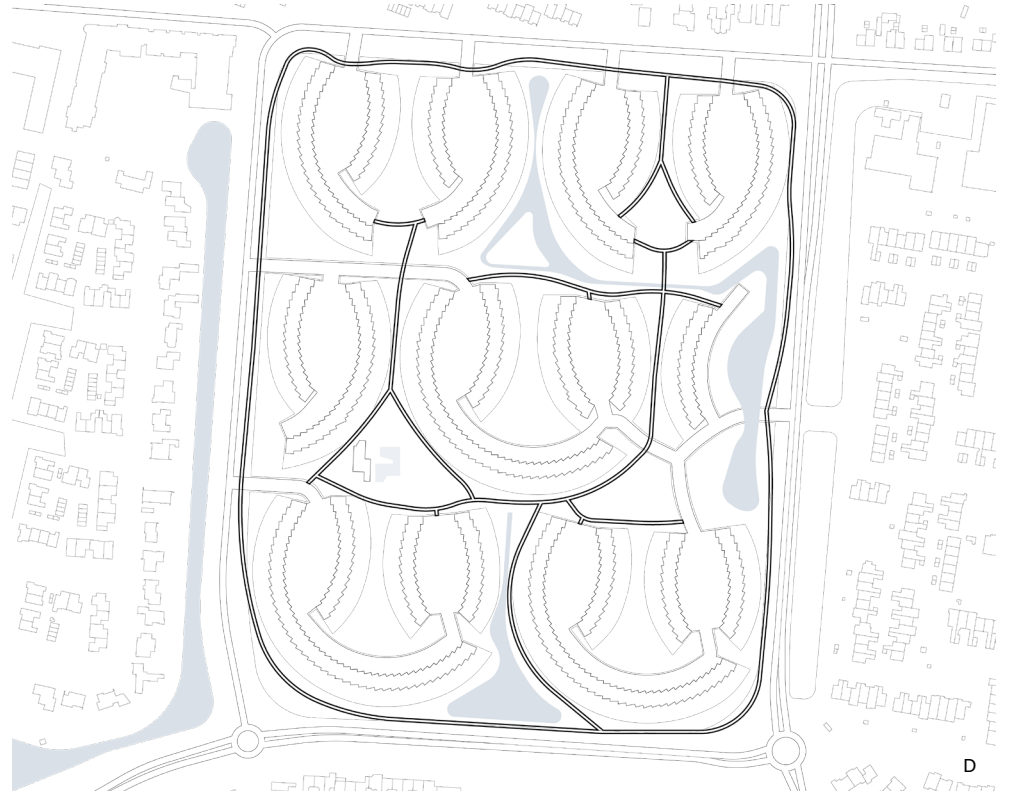


A



B

- A The pedestrian routes in Oosterflank mainly coincide in the greenery structure. Some help connect the neighbourhood to adjacent neighbourhoods.
- B In Huiswaard II, you can clearly see that the pedestrian routes helps connect the entire neighbourhood. This pedestrian path mainly runs through greenery.
- C In the Krekenbuurt the pedestrian routes connect the different woonerven and rung along the back of the dwellings. Open spaces are created to allow people to meet each other.
- D Also in Park Rozendaal the pedestrian routes connect the different woonerven and are the most convenient way of getting from one place to the other.







neighbour hood scale





- 1 Huiswaard II
- 2 Park Rozendaal

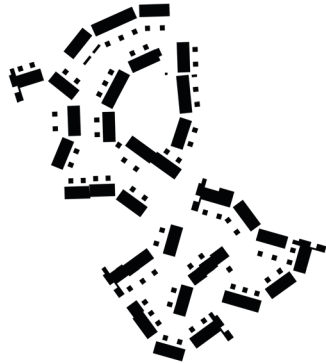
The structural elements determine the main layout of the neighbourhood. The leftover space between the greenery- and traffic structures form the segregated and individual neighbourhoods. In many cases, these individual neighbourhoods were developed by different architects, each introducing their views on the social ideology of cauliflower neighbourhoods.⁴¹ Therefore, each individual neighbourhood is characterised by a high degree of individuality that can be observed through housing types, styles in architecture, forms of allotment and relationship between buildings and the public space.

What becomes evident when looking at the vast variety of individual neighbourhoods is that every architect had a different focus within the individual neighbourhoods' design. One would be more focused on the type of housing, the other one more focused on a constantly changing allotment or facade.

erratic allotments

⁴¹ Ubink, M., & van der Steeg, T. (2011b). De wijk: ligging en ruimtelijke hoofdstructuur. In Bloemkoolwijken: analyse en perspectief (pp. 65-84). SUN.





Especially in the early 1970s, a desire arose to design neighbourhoods without any apparent order or recurring patterns, leading to a wide variety of executions.⁴² For instance, if you look at Huiswaard II, you find different patterns of allotments in each individual neighbourhood (images 3 to 7). One individual neighbourhood has a pattern where houses are placed perpendicular from each other. Another is home to a continuously changing and curving allotments that disable overview and thereby slow down cars on the woonerven. Each neighbourhood had its strategy and technique in creating intimate and sociable public spaces.

- 3 allotment pattern north-east Huiswaard II
- 4 allotment pattern central Huiswaard II
- 5 allotment pattern north-west Huiswaard II
- 6 allotment pattern south-west Huiswaard II
- 7 allotment pattern south-central Huiswaard II

see page 24-25 for overview Huiswaard II

⁴² Ubink, M., & van der Steeg, T. (2011a). De buurt: verkaveling en openbare ruimte. In Bloemkoolwijken: analyse en perspectief (pp. 93-124). SUN.

most architects
were focused on the
erratic placement of
dwellings rather than
the relationship it
would have with its
surrounding in an effort
to create recognisability
and individuality on a
smaller scale



A great deal of experimentation took place at the time, but nowadays, I see that not every experiment survived the test of time. Most architects were focused on the architecture and its erratic placement rather than looking at the relationship between the architecture and its surrounding public space, green structure or individual neighbourhood.⁴³ This was often on purpose, in an effort to create recognisability and individuality on a smaller scale.⁴⁴

The lack of relationship between the individual neighbourhoods is one of the main points of criticism on the cauliflower neighbourhood.⁴⁵ The cauliflower neighbourhoods can be seen as a collection of individual patches that are in no way related to each other or the city it is built in. However, it was also this individuality that fuelled my interest in these neighbourhoods and made them a place of discovery and adventure.



8 to 10 lack of relationship between individual neighbourhoods
Oosterflank

⁴³ Lay-out 04. (2008a). Analyse van knelpunten en definitief van opgave. In Bloemkoolwijken (p. 24). Stimuleringsfonds voor Architectuur.

⁴⁴ Ubink, M., & van der Steeg, T. (2011a). De buurt: verkaveling en openbare ruimte. In Bloemkoolwijken: analyse en perspectief (pp. 93–124). SUN.

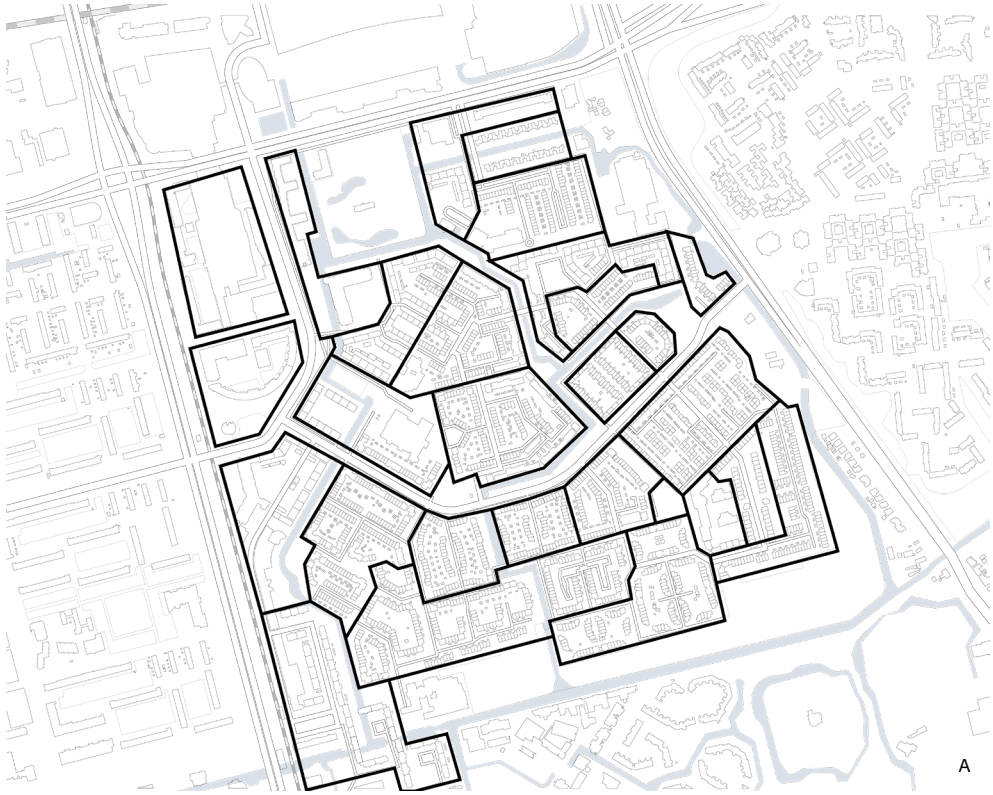
⁴⁵ Lay-out 04. (2008a). Analyse van knelpunten en definitief van opgave. In Bloemkoolwijken (p. 24). Stimuleringsfonds voor Architectuur.



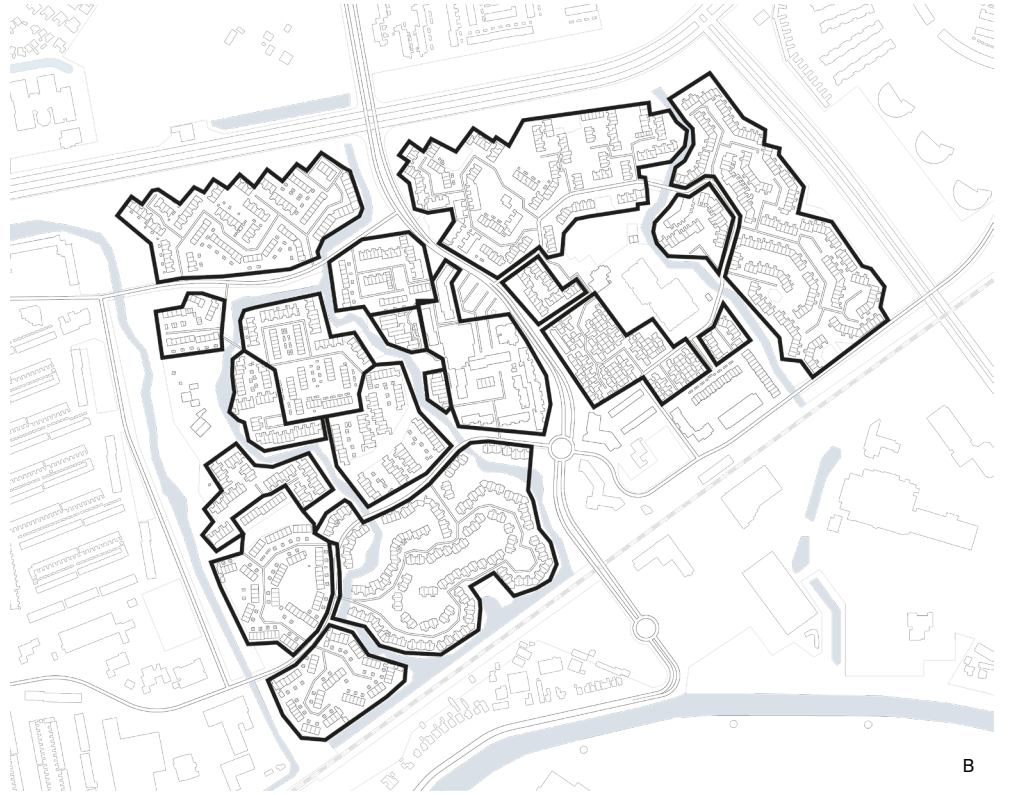
The constantly changing perspectives and identities of the individual neighbourhoods create awkward architectural meeting points within the neighbourhood that seem to lack function and definition but therefore also strike me as spaces of possibilities. Because the placement of the dwellings within an individual neighbourhood were often placed toward the woonerven, you can find unused walls facing nature, main streets or other public places. Because of the unused walls, public and private spaces are disconnected.

11 to 15 unused facades in Oosterflank
16 and 17 unused facades in Huiswaard II

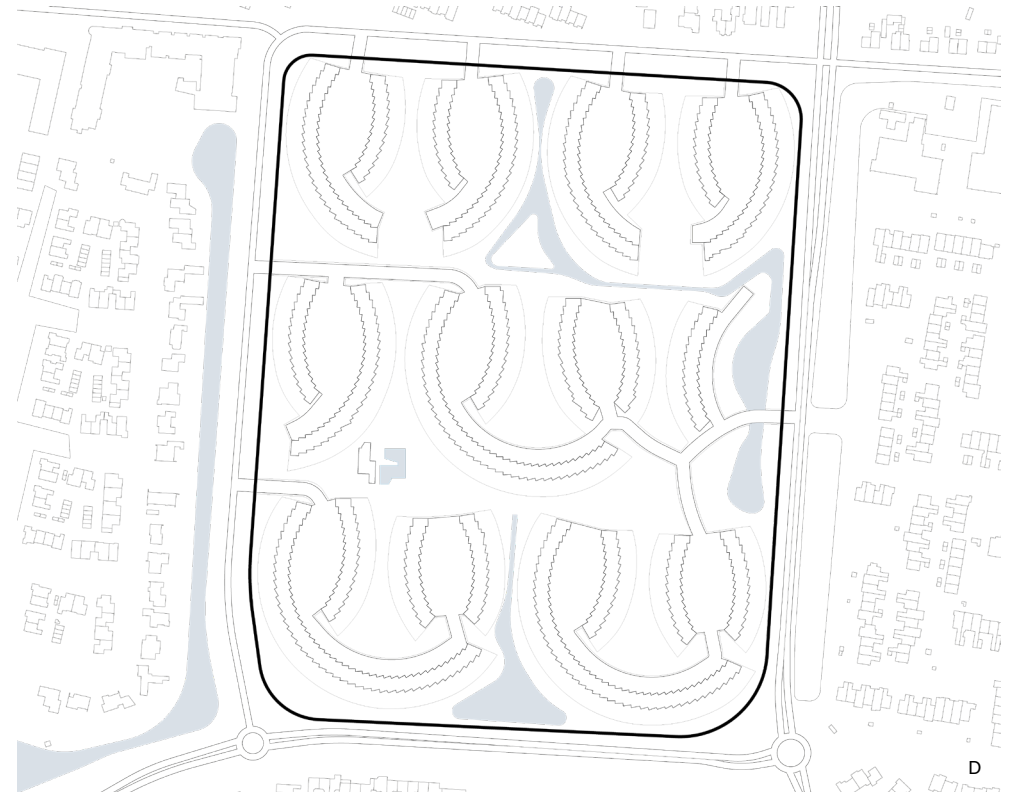




A



B



- A In Oosterflank you can see a lot of different neighbourhood identities were created. There different identities are connected to each other in the sense that there is no boundary but do not truly interact with each other.
- B In Huiswaard II, there are also different individual neighbourhood identities. Here you see that there are boundaries created between them and they barely interact with one another.
- C and D Both the Krekenbuurt and Park Rozendaal are smaller neighbourhood that were designed by each one architect. These architects have been able to design these neighbourhoods in one identity and applied this identity in every inch of the neighbourhood.









1, 2, 5 public space in Huiswaard II
3 and 4 public space in Oosterflank

When it comes to public space, many of the cauliflower neighbourhoods lacked an overall urban concept for the function, form and layout. Especially in the neighbourhoods where diversity and variation were an important starting point, the public space is merely a derivative of the allotment structure rather than a design itself. In many cases, it makes the public space a kind of residual space, surrounded by independent and autonomously placed housing blocks. As a result, these public spaces lack definition and are difficult to read for its users.

woonerven

A middle-aged woman in Huiswaard II told me the public space is intensely used by the children of the neighbourhood and the children's parents. Once the children become teenagers and stop playing, both teenagers and their parents stop using public space more or less. The woman stated that one of the privileges of living in a cauliflower neighbourhood is that you have plenty of space in and around your house. Most houses have both a front- and backyard where they can do whatever they want, and therefore the public space becomes somewhat irrelevant. Also Elisa, a friend of mine that grew up in Huiswaard, loved playing in the adventurous public space of Huiswaard II as a child, with its small passages, wild greenery and child-friendly areas. However, she stopped using the public space as soon as she went to secondary school. Therefore, the public space in the cauliflower neighbourhood is used quite limited: either for playing by children or for transportation.



First, I want to touch upon the woonerven, designed to be public spaces with a private character. The initial woonerf was designed to be a place of easily accessible social interaction between neighbours without the danger of traffic.⁴⁷ The blurred boundaries between public and private spaces would ensure a natural connection between the residents and their living environment and would stimulate the use of the woonerf. Woonerven are often dead ends and primarily used by the residents living there.⁴⁸ Alternating pavement patterns, planting pots and street furniture were supposed to help create a (child-) friendly streetscape. However, the way woonerven function today can differ significantly. Because many woonerven were a derivative of the allotment structure, they lack a clear definition in use.

As a visitor, it truly feels like entering someone else's territory. I noticed that the residents watched me through their kitchen windows and I got spoken to many times about what I'm doing here and why I'm taking pictures of their houses. Especially in some of the individual neighbourhoods in Huiswaard II, I felt a higher social control level making the woonerf feel even more private. Whereas in Oosterflank, a much more urban and simplified version of the cauliflower neighbourhood, I felt free to do what I wanted, and no-one asked me what I was doing and why I was walking around with a camera. I believe the deeper you get into the neighbourhood, the deeper you get into the social structure and the higher the social control will get.

"You have to be able to sit, walk and drive there, play games quietly, have an interest, have a chat and stand and watch, look for a parking space and display merchandise, etc."
Niek de Boer ⁴⁶

⁴⁶ de Boer, N. (1987). -. In D. Lambert (Ed.), Woonwijken: Nederlandse stedenbouw 1945-1985 (p. 73). Uitgeverij 010.

^{47, 48} Ubink, M., & van der Steeg, T. (2011a). De buurt: verkaveling en openbare ruimte. In Bloemkoolwijken: analyse en perspectief (pp. 93-124). SUN.





6 and 7 parking in Huiswaard II
 8 parking in Oosterflank
 9 to 11 parking in Huiswaard II

The ideal woonerf would not be dominated by parked cars. Parking on the woonerf was preferably limited and partly moved to places in the proximity of the woonerf where cars would cause little to no disruption. However, residents saw this large distance as unacceptable, so cars moved closer to the front door.⁴⁹ Furthermore, economic prosperity allowed more and more people to buy their own car, which hasn't diminished since the '70s.⁵⁰ In many cauliflower neighbourhoods, almost half of the families own more than one car, which means that the car has increasingly forced its way onto the woonerven.⁵¹ Therefore, the majority of the woonerven I encountered have become a sort of sociable parking lot.

^{49, 50, 51} Ubink, M., & van der Steeg, T. (2011a). De buurt: verkaveling en openbare ruimte. In Bloemkoolwijken: analyse en perspectief (pp. 93–124). SUN.



the majority of the
woonerven I encountered
have become a sort of
sociable parking lot





collective spaces

Besides the woonerven, there is another even higher degree of private-public space: collective spaces. In some neighbourhoods, architects designed courtyards as collective spaces in-between building blocks. These collective spaces can be small squares or widened footpaths situated along the backyards of houses. The collective spaces were meant to be an extension of the backyards where people could collectively come together, and children could play without any hazard. Parents could watch their children from either their open backyard or their living room (which was often located in the back of the house). However, this meant that residents would be exposed to public space on the front as well as on the back of their houses which causes conflict between the private and the collective space. As a result, many people put up fences and high bushes that ensured a level of enclosure for themselves and drew a harsh line between the private and collective space. A collective space functions because of the input and use of different neighbours, and the moment these fences went up, it stops being collective and turns to a public space again.



**collective spaces
have a very private
character and are often
only accessible by
pedestrians**



1 collective space in Huiswaard II
2 to 4 collective spaces in Oosterflank





5 to 8 collective spaces in Park Rozendaal

While walking through Park Rozendaal, I entered the woonerf Henegouwen. In the green space that is situated in the middle of the woonerf, I noticed a young father playing with his daughter. I entered the green space and encountered the father playing soccer with his little girl. We started a conversation and they told me all about the neighbourhood. He told me the architect designed collective spaces in between the neighbourhood that are only accessible to residents. The neighbourhood contains an outdoor swimming pool, where residents can swim in summertime and children of the neighbourhood have a weekend sleepover once a year. There is a tennis court, a basketball field and an adventure island for children to play on. Furthermore, they have a neighbourhood corporation that oversees the greenery of the neighbourhood and allows the residents to have ownership of their own living environment. Also the green spaces on the woonerven can be considered as collective spaces. Most of the green spaces have been thought of and created by the initial residents that moved in in the 1970s and current residents add and care for their living environment until this day.



27

18-PF-BL



architectural scale





1 and 2 Oosterflank
3 Park Rozendaal

Although the collective aspect played an important role in the design of the individual neighbourhoods, during the 1970s architects became aware of the fact that the collective spaces could only function if dwellings themselves offer the opportunity for seclusion through both auditory and visual isolation.⁵² This led architects to search for the right balance between collectivity and privacy. The houses in the cauliflower neighbourhoods are characterised by having both a front yard and a backyard, which function as a border between the private and public spaces. This border provides a gradual transition between public and private and was initially designed to be ambiguous, diffuse and multi-interpretable. You see that this marginal area is indicated by entrances, carports, parking spaces, gardens and nowadays more often by fences.

⁵² Ubink, M., & van der Steeg, T. (2011a). De buurt: verkaveling en openbare ruimte. In Bloemkoolwijken: analyse en perspectief (pp. 93-124). SUN.

transition spaces



During my walks in the cauliflower neighbourhoods, I have seen many shapes and forms of building extensions in the front of the house, both connected and disconnected from the dwelling. These extensions are often used as storage spaces or scullery and are located next to the kitchen, which was often placed in the front of the house.⁵³ It was the idea that this way, the mother would be able to have her eyes on her children playing on the woonerf while cooking. With entrances placed at a relatively small distance, the scullery or storage room (in the extensions) guarantees the residents' privacy.⁵⁴ The extensions mark the transition space between public and private space. Extensions come in many different variations, but not each one of them guarantees a level of privacy. Some extensions are placed so that adjoining neighbours have a shared transition space. This way, architects seem to have forced a collective space on front sides of the building to stimulate social interaction.

^{53, 54} Ubink, M., & van der Steeg, T. (2011a). De buurt: verkaveling en openbare ruimte. In Bloemkoolwijken: analyse en perspectief (pp. 93–124). SUN.



4 front yard transition Huiswaard II
 5 transition spaces through facades in Krekenbuurt
 6 and 7 extrensions Oosterflank
 8 and 9 extensions Huiswaard II

**the extensions mark
the transition space
between public and
private space**





The back of the house is often focused on the backyard and the greenery connected to the backyard. In many cases, the living room was placed in the back of the house to stimulate the use of the garden and intensify the relationship with the greenery.⁵⁵ This is something that became apparent in all three 1970s neighbourhoods I visited. For instance, in Huiswaard II, many of the backyards are placed towards and along the neighbourhood's waterways (images 1 and 2). In Park Rozendaal, the focus on greenery is realised on both sides of the building. In the front of the dwellings a combination of high trees and low bushes form a green space roughly in the middle of each woonerf and the back, a strip of greenery separates the gardens (images 7 to 12). The architect, Henk Klunder, designed the main living area on the first floor, resulting in a view on treetops from both sides of the house which enriches the relationship with the greenery and provides even a level of privacy on the first and second floor. In neighbourhoods built in the 1980s, you find less greenery within the neighbourhood and therefore backyards are connected to either each other, a narrow ally, parking spaces or a stony woonerf.

Initially, many backyards were left open to establish a direct relationship with the collective spaces behind the backyards.⁵⁶ These collective spaces come in the form of widened paths, courtyard, playground or open green spaces. Also, the main greenery structure was perceived as an extension of the backyard, which is visible in both the Krekenbuurt and Park Rozendaal. In both cases, there are walking routes running along and in-between the backyards as connective elements between the woonerven in the neighbourhood. These walking routes are characterised by greenery and often lead to larger green or collective spaces. In the Krekenbuurt and Park Rozendaal, the relationship between public and private spaces on the backside of the buildings are still quite open. I've seen that many backyards have greenery as a border, allowing the residents to look at and interact with the collective green spaces.

^{55, 56} Ubink, M., & van der Steeg, T. (2011a). De buurt: verkaveling en openbare ruimte. In Bloemkoolwijken: analyse en perspectief (pp. 93-124). SUN.

10 and 11 wateradjacent backyards in Huiswaard II





12



13

12 and 13 wateradjacent backyards in Huiswaard II

14 and 15 shielding greenery woonerf in Park Rozendaal
16 and 17 open backyards towards greenery in Park Rozendaal



15



16



17





- 18 to 22 high fences due to friction in Huiswaard II
- 23 closed blinds due to public exposure in Oosterflank
- 24 high fences due to friction in Huiswaard II

In neighbourhoods like Oosterflank and Huiswaard II, the visual relationship between the backyard and the collective spaces or green structures is removed by placing high fences, which turns the collective space into unused public space. I believe a collective space only functions when there is active participation and input from the residents surrounding it. Also in the front, the boundaries between front yards and public space are increasingly marked by fences, making the vague and diffuse boundaries unambiguous. Residents want to decide for themselves whom they will allow into their private sphere and to what extent. Closed blinds, curtains and shutters are also used from out of the private spaces or on the facade to guarantee flexible privacy.







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1 to 4 erratic facades in Krekenbuurt II
5 erratic facades in Park Rozendaal





Also facades can function as transition spaces. In the Kreekenbuurt for instance, the facades are designed super erratically that it creates small niches that provide shelter from public space and help smoothen the transition from public to private (images 1 to 4). There is no clear differentiation to be found between public and private beside the facades but residents have claimed part of public space to smoothen the transition until the point they feel comfortable. You can see this happening in Park Rozendaal too, where the faced is designed to be evenly erratical throughout the neighbourhood in a more structured way. (image 5) This provides each resident with the same amount of transition space that they can personalise to their needs.

facades

In one of the woonerven in the Kreekenbuurt, an elderly woman came out of the corner to throw away the garbage in the container. The container had been placed in one of the niches created by the erratic facade. She told me that she has lived in this neighbourhood since it was built and has always enjoyed living there. She also said that despite the elaborate and eccentric design of the houses, this has not always made them maintenance friendly, especially now that she gets older. In her house, she has 3 flights of stairs before reaching her bedroom. She proudly says that her house is one of the only ones that is still as good as original. In many other houses, new residents have changed the layout to create a more comfortable living environment for themselves. The buildings require a lot of maintenance, not only on the inside but also on the outside. In a number of houses, the masonry had to be redone and there is also regularly a house that suffers from leakage due to some architectural mistakes. A few years ago, the neighbourhood became a monument of the municipality of Zwolle, but the residents do not receive any help from the municipality. Despite everything, she wouldn't want to leave here for anything.



6 transition space in the Kreekenbuurt



Furthermore, you see that many dwellings in cauliflower neighbourhoods contain balconies that reach out towards public space. Balconies are like front- and back yards also a transition space and allow people the choose wether or not they want to participate in public space or not. Unfortunately, I must say that I've seen many balconies left unused due to the exposure to public space, it being shared balconies that ought to be collective space between neighbours and balconies being unfortunately place on the north side of buildings. However, I do appreciate the gesture that they make towards streets allowing people to participate or not.



7 to 10 balconies in Oosterflank
11 balcony in the krekenuurt







⁵⁷ Abrahamse, J. E. (1029). Hoofdstuk 3 Vorm en functie van de bloemkoolwijk. In Opkomst en ontwikkeling van de bloemkoolwijken (pp. 18–19). Rijksdienst voor het Cultureel Erfgoed.

The architecture of the cauliflower neighbourhoods is characterised by a high degree of variety and complexity. The architecture was designed to be small scale, pluriform and recognisable to mimic historical dutch cities and villages. However, there are no overly obvious references to be found. Something that characterises the architecture in many cauliflower neighbourhoods, is the absence of of monumentality and the architectures' unobtrusiveness.⁵⁷

Although cauliflower neighbourhoods were a reaction on the modernist way of building the influence of modernism was still evident in the architecture. The first neighbourhoods in the 1970s were built in the visual language of functionalism, with straight corners and flat rooftop. Over time, architects began to experiment more and more with housing types, architectural styles, relationship between buildings and relationships between buildings and the public space. The architecture transformed more complex shapes containing varying housing styles. However, the high level of complexity in the architecture resulted in a rather high degree of overall homogeneity. Many houses are build with the same materials which contributes to the inconspicuousness of the architecture. Many dwellings are made of brick in shades of brown and grey combined with wood and tiles. Despite all attempts to build recognisable and individual, the architecture of cauliflower neighbourhoods remained fairly uniform.



1 to 6 shades of brick in Huiswaard II and Oosterflank

materialisation





7 to 11 timber cladding in Huiswaard II and
Oosterflank



12 to 16 variety in roofing in Huiswaard II and Oosterflank







Sally's
SALON

NER

Proeflokaal Faas

Heineken

30
↑
bicycles

30

ISIS



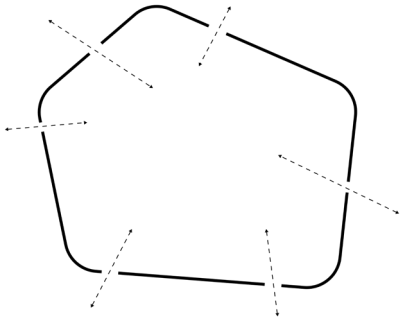
urban perspectives

**What can I learn
from cauliflower
neighbourhoods and
how can I revalue the
initial design principles
for a contemporary
urban context?**

During my visits to the cauliflower neighbourhoods, I have seen that many of the initial design principles have either stopped working or are perceived differently due to the changing needs of the residents living in cauliflower neighbourhoods. However, because I have experienced both positive and negative aspects of the current cauliflower neighbourhoods, I can see which aspect of the initial design principles may be of value in a more contemporary urban context like Rotterdam.

boundaries

Cauliflower neighbourhoods have clearly defined boundaries both along its edges and around its individual neighbourhoods that make interactions with their surroundings or other neighbourhoods rather difficult. The boundaries secure a level of intimacy within the area and pull the focus inward to, for instance, the woonerven or collective spaces. Looking at Rotterdam, I feel like we must accept the natural boundaries, like busy roads and waterways, and use them to create smaller, more manageable individual neighbourhoods.

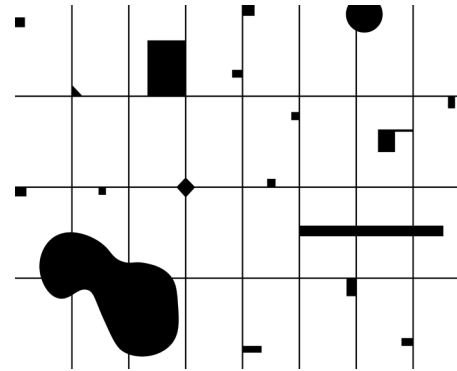


punctured boundaries

Maintain natural boundaries to ensure a level of intimacy within the (individual) neighbourhoods but puncture them with pedestrian and cyclist routes connecting and opening up the closed-off neighbourhoods allowing a more natural pedestrian flow and interaction between them.

greenery structure

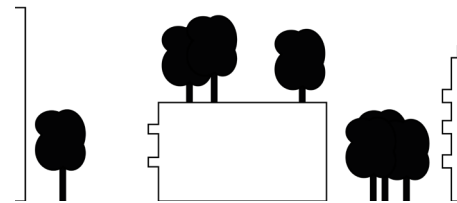
Although the green spaces in cauliflower neighbourhoods are increasingly perceived as unmanageable and unsafe, the sheer volume in which they are incorporated into the neighbourhoods is often one of the positive aspects of why residents chose to live in cauliflower neighbourhoods. Rotterdam has a couple of larger green spaces, like Het Park, the Kralingse Plas and the Vroesepark that are perfect to go to on a nice day, but for many people, they are not within walking distance. In my experience, there are little green spaces around my home that are easily accessible. Many smaller green spaces seem to be designed for children only (not unlike the green spaces in cauliflower neighbourhoods) Furthermore, greenery can be used as natural shields for private spaces that improve the living environment in both public and private spaces.



accessible greenery

Create easily accessible greenery in different sizes and for various functions throughout the neighbourhood.⁵⁸ Green spaces must be able to stimulate peoples imagination. However, if the greenery is too wild and too informal, it will be perceived as unsafe and therefore left unused.

⁵⁸ Alexander, C., Ishikawa, S., & Silverstein, M. (1977c). 60 accessible green. In *A Pattern Language: Towns, Buildings, Construction* (Vol. 2, pp. 304–309). Oxford University Press.



shielding greenery

Implement greenery or green spaces into the urban fabric where public and private spaces meet. The greenery helps smoothen the transition from one to the other and provides a level of visual privacy for residents. Green spaces should occur on streets, in public spaces, on balconies and rooftops.

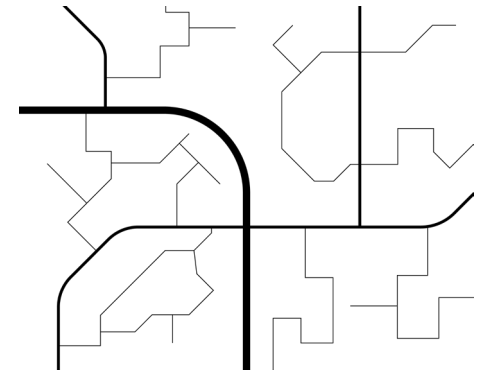
traffic structure

The hierarchal traffic structure in cauliflower neighbourhoods often clearly mark transitions from public to more private areas within the neighbourhoods. These transitions stage a perception of how public or private an area depending on how intimate a road is. The primary and secondary traffic structures have a more open character and are used for connective reasons, whereas the woonerven have a more private character, have a slow traffic policy and often lead to dead ends. From the neighbourhoods I visited, I found out that approximately 30% of the roads have a connective function and 70% a slow traffic function or are a dead end. I feel like this could be very effective in the city because today cars have a very dominant role in the streets and almost every road is accessible by car. If fewer roads would have a connective function, pedestrians and cyclist could claim these streets and use them for a wider variety of purposes.

stage perceivable transitions

Clearly distinguish different areas of (individual) neighbourhoods through differentiation in openness-intimacy, shapes and forms and materialisation. You can use these transitions to immediately give visitors and residents an idea of the identity of a (individual) neighbourhood and stage a gradual change in intimacy and stimulate the possibility for social interaction.⁵⁹

⁵⁹ Cullen, G. (1971). Serial vision. In *The Concise Townscape* (pp. 17-20). Architectural Press.



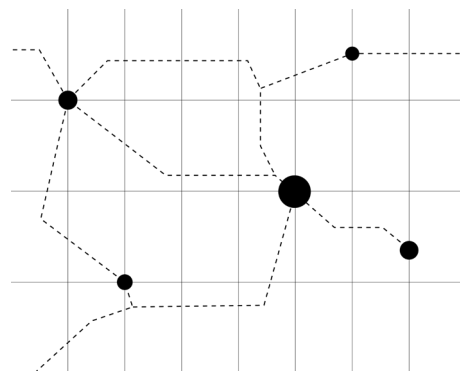
road purposes

Divide the number of roads into ones with a connective function (30%) and ones that can become dead ends (70%). This way roads dominated by cars can make way for streets that are more diversely used.

pedestrian priority

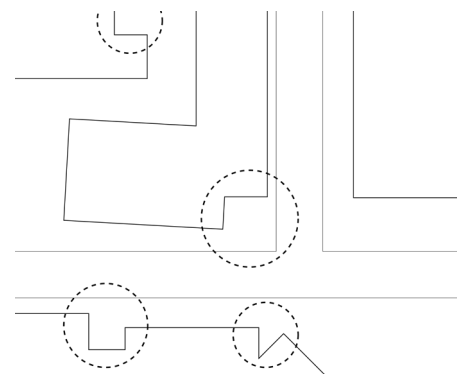
Promote and create pedestrian routes that cross and connect different activity nodes in neighbourhoods to stimulate walking.⁶⁰ Social interaction is more easily achieved when walking, and people can take in their living environment better.

⁶⁰ Alexander, C., Ishikawa, S., & Silverstein, M. (1977b). 30 Activity Nodes. In *A Pattern Language: Towns, Buildings, Construction* (pp. 163-167). Oxford University Press.



erratic allotments

The erratic placement of dwellings within the cauliflower neighbourhoods is often focused towards the woonerven. The fact that all dwellings have this inward focus results in unused empty facades, awkward meetings or clashes between buildings or individual neighbourhoods. Also, in Rotterdam, I regularly find undefined spaces due to awkward meetings between public and private spaces.



opportunistic awkward erraticness

When awkward meetings between public and private spaces leave unused or undefined spaces, use them to your advantage. Design for these unused spaces to provoke the claiming of these spaces. Once claimed, you have better chances residents take care of these spaces and the street they are in.

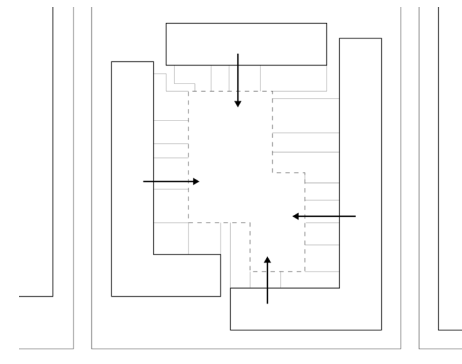
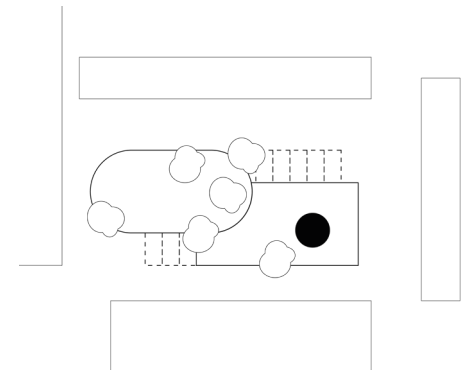
public space

In cauliflower neighbourhoods, public space is often merely a derivative of the allotment structure and therefore lacks a clear definition in function and is hard to read for its users. Due to the lack of definition and the increasing number of cars, many public spaces have turned into a sociable parking lot. Also in Rotterdam, cars have quite a dominant role in the streets. Yet, when it comes to the public space, I find that it is often too defined and leaves little room for interpretation.

balancing definition and interpretation

Create easy readable public spaces and find the balance between too defined and undefined to leave room for interpretation and playfulness. This way, people can use public space according to their needs. If designing a square or woonerf, always add something roughly in the middle as a focus point within the public space. A public space without a middle is likely to stay empty.⁶¹

⁶¹ Alexander, C., Ishikawa, S., & Silverstein, M. (1977e). 126 Something Roughly in the Middle. In *A Pattern Language: Towns, Buildings, Construction* (pp. 606–608). Oxford University Press.

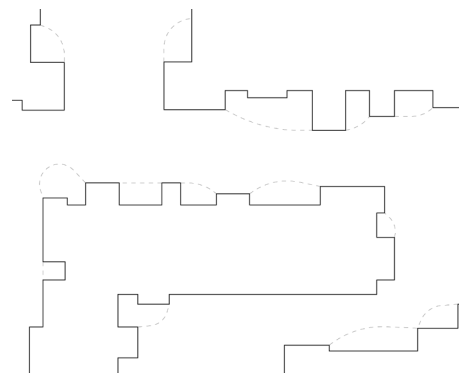


colle(a)ctive participation

Implement collective spaces in a neighbourhood where residents can claim ownership off. Give the public spaces form so that the local community will feel responsible for them so that each member of the community will contribute in his or her way to an environment that he or she can relate to and identify with.⁶² Collective spaces should adjoin private spaces so that the transition from private to public is not alienating. However, do create a (porous) border between them to maintain and secure a level of privacy so that the collective space does not intrude the private spaces.

⁶² Hertzberger, H. (2016b). the "in-between." In *lesson for students in architecture* (Seventh edition, pp. 32–39). nai010.

transition space



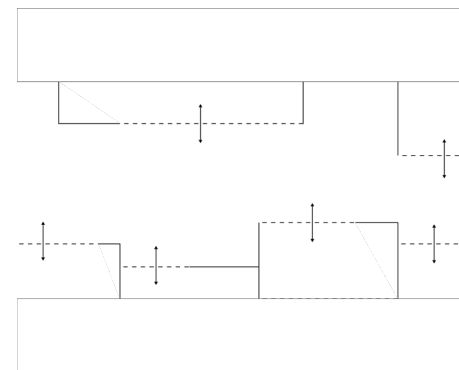
For me, transition spaces are what truly characterise the architecture of the 1970s and 1980s. This is the aspect of cauliflower neighbourhoods that piqued my curiosity in the first place, and I thought that because private spaces seemed so exposed to public space, this would naturally ensure a well-working relationship between the two.

However, I have learned that it is actually the security of private spaces that ensure a healthy relationship. People need to be able to choose if they want to participate in public space or not, and their transition space should ensure that they feel comfortable doing so. I think in Rotterdam, many people are quite exposed to public space and their neighbours. There is often little transition between public and private spaces and even private spaces on higher floors. People are still exposed because there is nothing between us. If I look outside, from my private spaces, I see everyone trying to secure their private spaces by using curtains, roller blinds or diffuse window stickers. Social contact is not possible at all.

optional publicness

Let dwellings reach out toward public or collective spaces but ensure a level of visual privacy. Let building extensions mark a transition from public to private space and design this so that people have a choice if they want to participate in public space or not.⁶³ It will help if residents partly claim public space.

⁶³ Alexander, C., Ishikawa, S., & Silverstein, M. (1977d). 112 Entrance Transitions. In *A Pattern Language: Towns, Buildings, Construction* (pp. 548–552). Oxford University Press.



marking porous territory

Residents should mark their territory but with an open border to create a space where they feel comfortable and also allow social interaction to happen.

cherish identifiable elements

Make sure to cherish and emphasise identifiable elements in neighbourhoods and use them to create a relatable identity for residents.

**I can see the revalued
design principles as
acupuncture needles,
where specific needles
or a combination of
different ones can be
put into the urban fabric
where needed**

I genuinely enjoy cauliflower neighbourhoods because the architects and urban planners tried to stimulate social interaction on all scales. You see that the urban design principles (boundaries and structural elements) affect the neighbourhood scale. The neighbourhood scale (erratic allotments, public- and collective spaces) affects the architectural scale (transition space, facades). This way, all scales contribute to a very staged sociable setting and create a specific perception of a neighbourhood for both visitor and residents. Of course, architects and urban planners were able to design this social setting from the planning table. In Rotterdam, there is an existing urban fabric I have to deal with. I believe the initial design principles would fail in a contemporary urban fabric and therefore have to be revalued into something that could be implemented into the existing structure. I can see the revalued design principles as acupuncture needles, where specific needles or a combination of different ones can be put into the urban fabric where needed. This way, they can restore or create a living environment with more possibilities for social interaction between neighbours.

conclusion

As a designer, I've always been interested in the moments where public and private spaces meet. In my opinion, the level of activity and social interaction depends upon the relationship between public and private and defines if it's a comfortable living environment or not. Going into this research, I had the preconception that because cauliflower neighbourhoods were designed with a social ideology, the relationship between public and private would automatically be designed to be fruitful for social interaction. They seem to be neighbourhoods where every fibre of the neighbourhood supports and contributes to staging an environment in which social interaction between neighbourhood could occur. And in a way, they are designed like this. However, because of the high number of architects designed in one neighbourhood and the wide variety of buildings styles, a holistic design approach regarding relationships and transitions between public and private spaces is often absent. This mainly resulted in a lack of relationship between cauliflower neighbourhoods and their surrounding urban areas, between individual neighbourhoods and between dwellings and public space.

However, there are also examples of cauliflower neighbourhoods where the relationship between public and private spaces form a central element that defined the design of the neighbourhood. In these cases you see that the initial design principles from the 1970s still work to this day. Due to the design of the dwellings, private spaces are better shielded from public exposure and therefore create a living environment where residents have the option to engage in public life but are never forced to. In these neighbourhoods private spaces are clearly defined, but the moment in which public and private meet is left somewhat undefined and allows people to claim, personalise and engage with these public spaces.

Looking at Rotterdam, a much more urban context, I see people live their lives in a very individualistic way. I experience the urban public space to be overly optimised in a way that it leaves little room for personal imagination and interpretation. Having seen a wide variety of relationships between public and private spaces in cauliflower neighbourhoods, I believe that looking at these neighbourhoods and the way initial design principles work today could expose interesting new opportunities for a contemporary urban context. By focusing on the successful and unsuccessful elements of the cauliflower neighbourhood, I have been able to find several design principles that offer a fresh perspective on how to design a relationship between public and private spaces that stimulates social interaction. I believe we need to create more possibilities for spontaneous social encounters between neighbours and that we, as designers, have a responsibility to do so. I see these design principles as tools that can be injected into the urban fabric to improve our shared living environment and impact a better, more sociable tomorrow.

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images and diagrams

All photo’s and diagrams in this research paper are taken and made by me.

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interviews

I encountered several people in all four neighbourhoods. With some I had quick chats and with others longer conversations. Some of the experiences are included in my research paper.

I also did an interview with an old class mate from secondary school. She grew up on the edge between Huiswaard I and Huiswaard II, a district that was built between 1970 and 1980. However, only Huiswaard II is built as a cauliflower neighbourhood. She grew up in and her parents still live in Huiswaard II, her grandparents, whom she spend a lot of time when she was a kid, do live in Huiswaard II. At the moment she is living in Manchester with her girlfriend and only occasionally visits this area. Her experiences are therefore mainly from growing up until 3 years ago when she decided to move to the United Kingdom. The interview was online due to the fact that the pandemic isn't allowing her to visit her parents during the Christmas Break. The plan was to take a tour with her through the neighbourhood so she could show me all of her memories but I changed it to a digital version and we took a tour through Google maps.

First, I'm curious of what your understanding of public space is. How would you define public space?

Uhhh, isn't that just some kind of communal area? An area that you share with others? For example the street that surrounds your house or things like the side walk and stuff. Maybe parking space too?

Oke oke, and what do you consider to be private space?

Uhhh. I think more of spaces like your

garden or your house.

And what would think semi-public or semi-private spaces are? Something that is in-between the public and the private space so to say.

Maybe this in the situations where you for instance. yes. Well how do you call that? You for instance live in a flat, This means you have. Well I'm not completely sure.

A shared hallway for instance.

Yes something like that, that you would have a shared patio or things like that. Sidewalk or a garden.

Yes exactly, so and where do your grandparents live?

They live... well it's hard to find looking at it from above, hmm, let me have a look.

You could even look it up yourself and share your screen with me or something like that.

Ah yes I can probably do that, then I can show you! Let me see how this works. Do you see anything? Ah this is manchester hahaha. I'll show you where I live now. So here I live, on this corner here.

Ah, right below the gay village!

Yes hahaha, I'll show you in aerial view. (Switching to Huiswaard) So I lived here and this is where my grandparents live. On the edge so to say.

Ah really, so you lived almost across one another.

Yes almost. They really live in like a dead-end street you know.

Ah yes a woonerf.

I've been in this here, in Koggewaard. It's right above their place. But I haven't been to the Rijperwaard and Lekkerwaard. More to Koggewaard, Ilpenwaard, and the east part of the neighbourhood. At a certain point I started to get to dark so I had to leave the rest. Have you also been in this part of the neighbourhood a lot? (Referring to the eastern part of the neighbourhood)

Yes we often played in the playground close to my grandparents.

And in which one did you play then?

Let me think, it should be somewhere around here. I'm not sure if it has a name or anything. Yes, it was right here, or am I in the wrong place, lets see, no it should be here.

How did you use the public space in the early days and how did this usage change over the years? Like, you used the public space a certain being a kid, as a teenager and now as a grownup. Which public spaces did you use and how did this change over the years?

Oke, well I used that part of the neighbourhood the most when I was in primary school, after school I would often go to my grandparents.

Would you like to show me where this was? Perhaps that is quite fun, a sort of tour through your eyes.

How do you want it? With this thing here? (the small street-view men in Google Maps) Shall I show it with that? Ah here we are! Yes my primary school is over there. You can see my school behind this house. And here (field of grass next to the school) we had outdoor gymnastics in summer. And if you walk this way, you go

straight ahead and then we had to cross this road. And if you would go this way you would end up at my parents house. But then we would walk across the bridge.

You can drag the person to the other side to the road to get there. You can click on the blue lined and it will automatically take you there.

Ah yes, where are we now. Ah, there is the bridge. So this is a dike that surrounds this neighbourhood actually. And then we walk past here. And as you see the houses all like like this. And a bit further is the playground. There used to be a field here and a playground behind that. And then you walk here and here and my grandparents live right there on the cornered. It is the house you kind of bump into when walking on this sidewalk. They use their backyard more as their front door. Otherwise you would have to go around the whole block.

And are they living along the water or not?

Almost, but there is still this dike between them and the water so not really. But quite close still compared to others.

So this was the route you took as a kid?

Yes this was the route we took to and from school. And often we played at the playground or we had a small back and used to bike around all the little paths and roads especially at the end of this road cars can't go there so only pedestrians were allowed to go there. That area continues behind these houses. I really liked it because it had this kind of maze feeling to it. Small alleys and sidewalks everywhere. I really liked that while being a kid. That you could wonder off everywhere.

And yes, then I went to secondary school and that was the moment I visited my grandparents far less often and if I did visit I wasn't playing outside anymore. I wasn't a primary schooler anymore of course. If we visited it was just visiting inside their house rather than using the space around it.

Did you still take the same route to your grandparents or did that change?

No still the same simply because is the easiest way to walk via the bridge.

So, and how did this change at your own house, So not your grandparents but the house of your parents. Did something change there too when you think of the usage of public space or a specific route?

Yes, I can show you. Uhm, so this is my house on the corner here. Imagine me in primary school, then I used to walk along this street, that way and the next street would look exactly the same so that was very easy. This was my daily walk so to say.

But, when I went to secondary school, I had to take a different route. Then I left off from the back of the house, which you probably can't see. Let me see. So I cycled primarily here, oeps this is way too far. Actually the same type of street. That house on the corners there was my house and then I used to bike from there in this direction. In that direction towards the city.

In which ways do your experiences differ when you compare the neighbourhood you lived in and a cauliflower neighbourhood, the neighbourhood your grandparents live in?

Well, like I said. Those small streets and

stuff. This is of course quite a normal layout, for me at least (showing the street where her parents house stands) A sort of rectangular street that you go through. What I really appreciated as a kid where those dead end streets, the small roads that were only for pedestrians. So that's what I really liked. It felt homier and cosy so to say. While this is, well you can see it yourself, if you would get rid of the trees you would be able to see even house. While in the other street (the cauliflower neighbourhood) the layout is not one rectangular row of houses, there is some variation in that. So that what I think makes it cosier.

Yes exactly, And what do you think of that now? Where would you prefer to live for instance. Would you prefer to live in a cauliflower neighbourhood or the neighbourhood you grew up in.

Personally, if I would buy a house now, if I had the money hahaha. I think I would prefer to live in a cauliflower neighbourhood. Simply because there is this cosy feeling. And you have this certain kind of getting together, how do you call that. Those small squares in-between the houses. An area where no cars are allowed. That's what I like about it.

Or wouldn't you want to live in neither of them. Maybe a place in the city, or somewhere else, I don't know. Perhaps newly build houses.

Well, newly build houses are quite nice of course because you can have all type of modern stuff and tricks in your house. And the houses in the cauliflower neighbourhood are from the '70s. So if I would buy one from in a cauliflower neighbourhood I would want to renovate it before I start living there.

This would of course help you make a

house your own.

Yes exactly.

Oke, and what do think of when hearing the word transition space?

Hmm yes, that's a good one. Well transition is of course some kind of change. But if we are talking about space, hmmm, yes I think you can look at it from two perspectives. One could be something that changes over time. The other could be that you for instance have two functions and in between those two functions you would have some kind of transition space that helps ease the feeling of going from one function to the other. That this transition is less harsh.

Yes right, and what do you consider to be your neighbourhood. At the start of the interview I asked you what you think public and private space is. When I was walking through the neighbourhood I was a visiter of course and the only place that felt truly public was the big road in the middle of the neighbourhood. The one that crosses it. As soon as I turned left or right it already felt like more privately owned space while it was still quite public.

Yes, I have the same thing here (referring to the street of her parents) Like you see here, this is the big road everyone uses. And here there is a bump that functions as a boundary between the neighbourhood and the big street. This would make it some kind of semi-private space. I get what you mean actually, because as soon as I enter this particular street I have the feeling that I entered my neighbourhood.

(Sharing screen with top view neighbourhood) So you lived here ('60s neighbourhood), and your grandparents here (cauliflower neighbourhood). What do you

consider to be your neighbourhood. Not the neighbourhood designed by the municipality but the area you feel comfortable in. Is this only within one neighbourhood or does this entail multiple ones.

I think my neighbourhood is more focused within the stuff I use everyday. So this would entail school, the supermarket, my grandparents, etc.

Is there also a certain feeling of safety involved? That in you feel more safe in the part of the neighbourhood you use on a regular basis?

Well, I wouldn't use the word safety, I'd rather use the term feeling at home. Comfort zone, that kind of stuff. I would say I do have a stronger feeling like that within my own circle.

Does this also relate to the way you experience your public and private space. That the space between your parents and grandparents feels more like a semi-private space because you use it more often? I guess so, yes. Even though there is a big road, we use the sidewalk often to walk the dog. So that certainly feels more like semi-private.

And if you would look at the house of your parent or your grandparents, or even your house in Manchester now. What would you consider to be public space and private space.

Really based on the house itself?

Yes, and then especially the relationship between the house and the street.

Well, this is my house in Manchester, I'm not sure if you can see. It's just a regular flat. There is a small field with grass but that's not accessible to us because it's

locked. And this flat also doesn't really feel like home.

Why doesn't it feel like home?

Well, for starters because it's a rental. So it feels very temporary. Perhaps I'll move in the coming year or so. And also because it's a flat, I'm not very used to living in a flat. I grew up in a normal house, not in a flat. And also the fact that it's literally right beside a road. We only have a very small sidewalk and it just doesn't feel very homy to me.

Do you then also have something like a shared entrance or so?

Yes, everyone in the building uses the same entrance.

Could you maybe take me on the journey from the street, metrostop, busstop to your house. Imagine coming home from the city centre and get out of the metro, bus and walk into your home. How is this transition between public and private?

The private circle is very small here. I go by bus, not by metro hahaha. And the busstop is like a 5 minute walk. But still it feels like a very public space if I walk into building. Then it's still not the moment of ah, yes I'm home or anything. That only is there if I close my flat door behind me.

How long does this transition take? Are you living on the 3rd floor or on the ground floor?

Do you mean from outdoor to my front door?

Yes for instance. From the front door of the building until you sit on your couch.

Well quite long I'd say, something like 20 to 30 steps.

So you feel like public space still continues inside the building.

The way I see it yes.

So that means there is actually a very harsh boundary here.

Yes that's right. It's quite harsh. While if I compare this to the neighbourhood in the Netherlands, this transition is somewhat more fluid.

How would you describe this transition in the neighbourhood in the Netherlands? Perhaps a description of you parents house. Imagine having done groceries until you sit on the couch again.

I'd say that it's way bigger here. Like I showed you, I have this small area behind my backyard that is only for pedestrians or cyclists and I consider that to be part of my inner circle.

Do you then consider it as an extension of your backyard or more something like a common space between you and your neighbours?

Yes, especially on this corner I know a lot of people so therefore I believe that space becomes less public.

So you know most of the people that are adjacent to this small square. Do you think this space allowed you to get in contact with one another? Or do you also know a lot of people that live on the opposite side of the road?

Well, we are also in contact with the people across the road because I used to play there as a kid. But it is definitely a stronger connection in the back because we are all sort of cramped together along

this small square.

And at your grandparents for instance?

Well at their place not so much. I spend most of my time there as a kid so I think the circle was a bit bigger there. I rather played a bit further away from the house in these small streets or inside their house, not really in between or anything.

Yes right, so because you knew the neighbours it created a more collective space.

Yes and in the past couple of years new neighbours arrives and I don't really know them. I don't even know their names. And because I share this small square with strangers it started to feel more like public space again.

Yes exactly, is there a big shift in neighbours?

I don't really think so, there are quite a lot of elderly people, a lot of them who bought their house when they were build. However, the elderly are more and more moving to elderly homes or just passing away. So this does result in new and hunger families living in the area actually. People I don't really know. Also because I haven't lived there for a couple of years now. So this makes that it doesn't like like my own space anymore.

I spoke to a woman while I was there, and she actually stated that a lot of starters move to the neighbourhood again after they studied or had their student life. Close to their family and that you see a lot of the same families living in the same neighbourhood. Is this something you have experienced as well?

I think this illustrates my mother actually.

She grew up the house of my grandparents and she went to buy a house within half a kilometer so she has been living here all her life actually.

And if you would return to the Netherlands, would you like to live in this neighbourhood, or would you prefer to live in Amsterdam of the city centre of Alkmaar or something like that?

Well that's a good one. If I would live in the same city it would already be quite nice. Of course now I live in another country so that's a far way from home. I don't have live in the same city per se but somewhere not too far would be good. Either in the same city or a couple of towns away.

Well, I think this was it. Thank you very much. I really enjoyed getting to hear your experiences within this neighbourhood. I of course experienced it as a visitor and have a certain distance to the neighbourhood, the houses and the street. I didn't always feel that welcome because of the social control and stuff. And therefore it was really good to hear the perspective from someone who lived in the neighbourhood.

this is a research paper
on how the design
principles of cauliflower
neighbourhoods can
offer perspectives
on creating new
possibilities for
social interaction in a
contemporary urban
context