graduation plan
at home in the city

‘infill vs sprawl’

Tutors
Birgit Jürgenhake
Olv Klijn

Charlotte Churchill   4206835
Bagijnhof 107, 2611AN Delft
06 41 63 56 42
charlottechurchill@gmail.com
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Cities are expanding to accommodate human desires for large living and outdoor spaces having detrimental environmental, social and economic impacts resulting in urban sprawl. Today, an increasingly large portion of the European population lives not in consolidated towns, but more often in dispersed regions. The poorest people are being pushed further out from the cities as urban sprawl has become the norm, rather than the exception. The United Nations has predicted that within 40 years the world’s largest cities will merge into ‘mega regions’ making future urbanisation almost unstoppable.1

‘Urban sprawl’, occurs when the rate of land-use conversion exceeds the rate of population growth. This is no longer a localised problem, but one affecting the majority of European cities as more than a quarter of the EU’s territory is directly affected by urban land use, pertaining more to lifestyle choices than population growth. The areas with the most visible impacts of urban sprawl are in countries or regions with high population density and economic activity including the whole of Belgium, Denmark, the Rhine Valley, Germany, Northeastern Italy, Andalusia and most of the Netherlands.2

In Europe, cities have traditionally been much more compact, developing dense historical cores which were shaped before the emergence of modern transport systems.3 The huge growth that was experienced following the second world war, and the intense housing shortage sparked huge development and expansion which increased the size of cities three fold. Today urban sprawl is a common phenomenon throughout Europe of which there appears to be no slowing in this trend. Even where there is little or no population pressure, a variety of factors are still driving sprawl, one which is rooted in the desire to realise new lifestyles in suburban environments outside the inner city.4 Deeply embedded in peoples imaginations is the dream of living in a house with one’s own garden. This is competing also with the demands of having urban services at close proximity.

The average urban dweller has approximately 1/3 of the carbon footprint of the typical suburban dweller. This is due to increased need for driving and detached dwellings which are much less energy efficient.5 Cities with this level of consumption require more energy supply systems, more road networks and a lot of land. The result is more damage to the natural environment and increased greenhouse gas emissions threatening both the natural and rural environments leading to climate change, elevated air and noise pollution levels.

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1  http://www.guardian.co.uk/world/2010/mar/22/un-cities-mega-regions
3 Ibid.
4 Ibid
which often exceed safety limits.

Moreover, space consumption has increased dramatically during the last century. Population density fell from 570 in inhabitants per hectare in 1880 to 65 in the year 2000. Amsterdam city underwent an expansion increasing from 560 to 11500 hectares, while the population grew from 317 000 to 727, 000 inhabitants. The growth of Amsterdam can therefore be determined as largely an increase in spatial demands per person, and only slightly due to population growth. As the number of people per dwelling decreases the dwellings become larger and as a result the city becomes less dense.

In combination with increasing urban development, the current situation has shown a changing demographic with a trend towards smaller families. The number of one-person households will grow and is anticipated to reach 3.8 million in 2060. This means that 44 percent of households in the Netherlands will be one-person households versus 37 percent today. In 2025, 22% of the population will be aged 65 or over, compared with 16% in 2011. Europeans are living longer and increasing alone which is putting greater demands on living space. The decline in people per household, (the growing number of singles and couples) combined with the increased floor space taken up by each person is putting further pressure on housing.

This change in household structure, which is no longer conceived of the family as a nuclear unit (composed of a husband, wife and two children) is meaning that more and more people are miss-housed or unhoused due to a lack of suitable alternatives. Family, community and a sense of belonging which were once considered ordinary are now being actively sought out by many. There is a need for further compactness and adaption to the habitation demands of the way that people live today. This situation is demanding new forms of housing and solutions of typologies that effectively respond to a changing need and the issue of densification.

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6 Berghauser Pont, M., & Haupt, P. 2010, p32
7 CBS, 2013.
research questions

What level of densification is necessary to counteract urban sprawl?

Can a new typology of shared living, provide a solution to a changing demographic and the issue of densification?
The graduation project will aim to work out the most efficient form of density which responds to the problem of urban sprawl whilst considering the individual need. The project will focus on how to achieve a comfortable living environment that captures the essence of suburbia in a highly dense urban situation. This will be realised at varying scales starting at the smaller scale of the dwelling and extending to the building block and the urban network. A sustainable density here is the goal which simply should rationally be about a density that limits the adverse effects on others now and into the future. From an urban perspective for a sustainable density to be achieved the focus must not only be on the compactness, but also the connection to the greater network. When considering suburbia and its impact it would seem that by simply sustaining families within the city a degree of sustainability is already achieved.

Counteracting urban sprawl involves clearly defining the cities edge with preserved agricultural land and open space beyond its borders. A walkable community which is well connected allowing residents to work, live, play shop and learn within a convenient walking or transit distance is also the aim. A diverse mix of housing reflecting a range of incomes, family sizes, ages and multifamily residences should also exist. Green infrastructure such as potable water, reuse or disposal of wastewater, and harvested heat should be present. A sustainable density needs a network of nearby functions. As the site is lacking in available functions and the space is only alive at certain times during the day it needs something to keep it active.

Further explorations of new typologies of housing will be investigated in response to changing lifestyles and family structure as a possible solution to further densification. This will include the idea of collectivity and shared living.

At the urban scale the Kop Van Weespertrekvaart will be integrated into the urban fabric through space activation and a sense of place. Introducing new entities to the site will be used as a method of space activation.

The project will aim to create an example for the future development of Amsterdam and other cities to effectively deal with achieving compactness, urban amenity and ecology. This will be used to develop a methodology that can be applied to further infill areas in Amsterdam.
The method of research will be based on an initial SWOT analysis of the site, identifying strengths, weaknesses, opportunities and threats. This will uncover potential problems and opportunities as well as things that are lacking. This will focus on the urban scale to further an understanding of the site and context of Kop Van Weespertrekvaart.

Alongside the site research a theme research will also be conducted to assess the meaning of sustainable density for families. This involves looking at various projects in the Amsterdam city context to assess the underlying themes of maintaining families within the city. While many potential criteria were identified, the focus was to be on the issue of privacy. This was not only identified as a crucial need for families living in dense environments, but also relates in particular to the issue of sharing. To what level this is socially viable and to what extent people need privacy. The investigation will hopefully discover how privacy can be realised at high density and what design methods can be used to enhance this. By looking at varying methods to incorporate public, private and collective spaces, the sequence of these spaces and their transition within the city environment will be studied.

Alongside this will be an investigation into compact city models. Quantitative analysis of levels of density at different sites in Amsterdam will provide a basic idea of scale and typology. A qualitative analysis will be used in contrast to look at perceived density and to work out the most efficient form which allows the best living condition. This will be undertaken at the scale of the dwelling, the building block and the urban scale. The sustainable urban environment will look at the connections to the greater network.

The seminar research, to be in conjunction with the studio will focus on the issue of collectivity. Models of collectivity throughout history were to be researched focusing on housing, primarily in Eastern Europe, Central and Scandinavia. This was to look at the underlying ambitions of collective architecture, and what are the implications on emerging models today. Flexibility is a key component here. Further research will look at investigating new typologies of sharing and models of flexible constructions. This will use the densification studies as a base model of a quality density to further challenge whether density can be improved by shared living.
In reflection the project should be highly valuable to a larger social and scientific framework. It can inform density in terms of scale and arrangement providing a basis for future development.

With the experience of growing up in a suburban neighbourhood in a country vastly affected by urban sprawl, currently threatening important ecosystems it is the aim that the knowledge gained here will not only be applicable to the city of Amsterdam, but can be used as a model globally. As The Netherlands is as a country that already effectively practices highly dense housing models if this can be challenged further it will be a strong example and of significant value to other countries where urban sprawl is prevalent.
### Time Planning

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<tr>
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<tr>
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| 02/09 | Semester Begins  
Evaluation of design and research; definition of additional studies, necessary for the final design stage |
| 09/09 - 11/10 | Development of design, in relation to:  
Volumetric studies, housing typology and other programmes  
Plus materialisation, structure and climate design  
Parallel additional research specific to the design;  
Extra consults: structure, climate design etc. with experts, if applicable |
| 14/10 - 25/10 | P3 Presentation |
| 28/10-29/11 | Focus on elaboration of design, esp. housing typology, interior and facade design with regard to materialisation, structure and climate design |
| 2/12-13/12 | P 4 Presentation |
| 16/12 - 17/01 | P5 Preparations |
| 13/01 - 24/01 | P5 Presentation |

