

Reconfiguring welfare landscapes: A spatial typology

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Abstract. *The post-war Danish public housing estates were a cornerstone in the construction of the Danish welfare society. Green open spaces played a central role in creating a framework for “the good life” in the many new public housing estates, which is why we propose to call them welfare landscapes. Today, these welfare landscapes are facing new challenges such as social segregation, extreme rainfall caused by climate change and changing uses. Therefore, they are increasingly being transformed, yet often with little or no interest for their existing spatial qualities. The welfare landscapes are insufficiently researched and knowledge about their spatial characteristics needs to be developed and communicated to preserve their inherited spatial qualities and to use these qualities as a resource for developing contemporary welfare landscapes. This paper aims to contribute to understanding the spatial characteristics and qualities of Danish welfare landscapes in order to create a better basis for their reconfiguration. Based on typo-morphological case studies of three public housing areas in the metropolitan area of Copenhagen this paper proposes a preliminary spatial typology of welfare landscapes from the small scale of the individual green space to the territorial scale. This typology will provide a basis to explore possible future development scenarios for Danish welfare landscapes through research-by-design.*

Keywords: Public housing estates, green open spaces, welfare landscapes, transformation, spatial typology.

Introduction – Welfare Landscapes

The post-war Danish public housing estates were a cornerstone in the construction of the Danish welfare society after the Second World War. Today, roughly a million Danes live in public housing estates, countrywide 17% of the population and in the metropolitan area of Copenhagen the number is as high as 22% (Socialministeriet 2016). The Danish public housing estates, before 1996 in Danish called; *Almennyttige boliger* (which could be translated with “housing for public benefit”), and after 1996; *Almene boliger* (public housing), are originally build as publicly supported housing, constructed by governmentally approved housing foundations (Vestergaard 2017).

Danish public housing estates supplies a large proportion of the Danish population with affordable housing and are inhabited by both privileged as less-privileged people, but with the majority of the inhabitants in the lower half of the income distribution (Socialministeriet 2016, p.2). The public housing estates build in the decades after the Second World War stands for a significant proportion of the overall Danish public housing stock, with more than 80,000 housing units constructed in each of the decades of respectively the 1950’s as well as the 1960’s, and more than 100,000 units in the 1970’s (Socialministeriet 2016, p.4).

Central to the post-war public housing estates were the open spaces and landscapes which played a crucial role in creating a

framework for “the good life”, which is why we propose to call them ‘welfare landscapes’. A great number of the Danish post-war public housing estates possess unique architectural and spatial qualities, and have been important architectural references internationally (Boye 1948; Hiort 1952; Woudstra 1995; Treib 2002).

However, the welfare landscapes are currently undergoing substantial changes due to a range of different challenges. This includes among other things ghettoisation issues being linked to the planning and architecture of the public housing estates calling for action (Bjørn 2008) and climate change leading to new climate adaptation projects advised to take place in the open spaces of the estates (Landsbyggefonden 2014). Therefore, the welfare landscapes are increasingly being transformed, yet often with little or no interest for their existing spatial qualities. Despite the architecture and planning of the post-war public housing estates being well described (see for instance, Bæk-Pedersen 2005; Tietjen 2010), substantial knowledge about the welfare landscapes is surprisingly lacking. Knowledge about the spatial characteristics of welfare landscapes needs to be developed and communicated to preserve their inherited spatial qualities and to use these qualities as a resource for the future. This paper aims to contribute to understanding the spatial characteristics and qualities of Danish welfare landscapes in order to create a better basis for their reconfiguration. Based on typo-morphological case studies this paper proposes a preliminary spatial typology of welfare landscapes, which will provide a basis to explore possible future development scenarios for Danish welfare landscapes through research-by-design.

The project draws on a Henri Lefèbvre (1991) inspired relational understanding of space, where space is understood as both process and product, and the output of the relationship between respectively materiality, discourses and practices. The project seeks to understand how the material characteristics of welfare landscapes were constituted, including the ideas behind the materialisation of different welfare landscapes. Further to understand how welfare landscapes have been and are being transformed in relation to changing ideas about welfare, communality, urbanity, cultural heritage, traditional dichotomies as well as changing spatial practices. Central to the research is the presumption of the existence of some approximations of ideal types of welfare landscapes in possession of unique spatial characteristics. The concept of the ideal type is here to be understood as: “an abstraction of features from empirical reality and their embodiment into a unified conceptual scheme of hypothetical validity” (Merriam-Webster 2017). This paper presents some of the preliminary studies of the material characteristics - the matter, shape and structure of three iconic Danish welfare landscapes thought to possess some ideal spatial principles recognisable in a large amount of the Danish welfare landscapes.

Three Preliminary Ideal Types of Welfare Landscapes

Three preliminary ideal types of welfare landscapes have been defined based on existing



Figure 1. Three ideal types of welfare landscapes

literature on the architecture and layout of post-war public housing estates (see for instance: Tietjen, 2010; Bæk-Pedersen, 2005; Nygaard, 1984). On this basis, three iconic cases in the greater metropolitan area of Copenhagen have been chosen to exemplify the three preliminary ideal types (Figure 1), representing different materialisations of welfare landscapes respectively: pastoral scenery in relation to Bellahøj (1951-1957), structural patterns in relation to Albertslund Syd (1963-1968) and topographic megastructure in relation to Farum Midtpunkt (1970-1974). The three cases are in a Danish context well-described and central in the literature on post-war Danish public housing (see for instance: Nygaard, 1984; Tietjen, 2010; Bendsen et al., 2015;)

Bellahøj was the first high-rise development in Denmark constructed between 1951 and 1957, situated in the area of Brønshøj towards the centre of Copenhagen. The development consists of a park landscape with 28 free-standing buildings of between 9 and 13 stories having a total of approximately 1300 units (DAC 2017). Albertslund Syd built between 1963-1968 was among the first and largest accounts of prefabricated building developments in Denmark, situated in the western part of the metropolitan area of Copenhagen. The development is built as low-rise and divided into areas with courtyard buildings and row houses towards the periphery and apartment buildings along a canal in the middle of the site. Albertslund Syd has a total of 2200 units (Lind & Lund 2005). The third case of Farum Midtpunkt was built between 1970-74 and situated in the northern part of the Copenhagen metropolitan Region. The buildings of Farum Midtpunkt consists of stacked apartments with own garden terraces. The buildings are placed parallel to each other and lifted above the terrain with large parking spaces on the groundfloor, separated by strips of thicket, and has a total of 1650 units (Lind & Lund 2005).

The first two cases, Bellahøj and Albertslund Syd, represent two different typical materialisations of welfare landscapes, whereas Farum Midtpunkt represents an exception. The case of Bellahøj represents the park settlement

with free-standing high- or low-rise buildings situated in a park landscapes which forms a continuous 'pastoral scenery'. This type was primarily constructed in the 1950's but already developed in the interwar period (Tietjen 2010, p.88). The case of Albertslund Syd represents another typical type of public housing estates; an additive structural pattern of open spaces enclosed by buildings. Albertslund Syd can be perceived as an early variation of a low-rise high-density building layout. The low-rise high-density type becomes popular from the late 1970s onwards (Tietjen 2010, p. 104). Within architectural, urban design and landscape architectural theory the two cases of Bellahøj and Albertslund further stands for well-described spatial situations. The two cases have the classical types of respectively the courtyard building and the detached villa as central components in their respective building designs. Further Bellahøj and Albertslund Syd also represent approximations of two opposing spatial situations within urban design theory as described by Rowe & Koetter (1978, p. 62): "(...) one an accumulation of solids in largely unmanipulated void, the other an accumulation of voids in largely unmanipulated solid; and, in both cases, the fundamental ground promotes an entirely different category of figure-in the one *object*, in the other *space*.". However, from a landscape perspective there is more to the open space than what can be described by *void*. Where Bellahøj from an architectural perspective might be described as solids in a void, it can from a landscape architectural perspective be perceived as a continuous pastoral landscape. Further for the case of Albertslund Syd the voids in the solid can be described as a pattern of enclosed gardens (See for instance Aben & Wit 2001). Further Bellahøj and Albertslund Syd can be seen as representatives for two different approaches to how housing estates should be conceived as either open high-rise or dense low-rise, a central theme in the Danish post-war architecture and planning debate (Nygaard 1984). In a Danish context the latter became the most popular and wide-spread type of post-war housing. The third case, Farum Midtpunkt, falls outside of the typical categories and represent an exception

within welfare landscapes. Farum Midtpunkt is in opposition to Bellahøj and Albertslund difficult to depict using traditional means of representation as respectively building and landscape in many ways are difficult to separate and describe independently.

Methodology – Describing the spatiality of Welfare Landscapes

The methodology applied has included a multi-method approach drawing on Typomorphology as described by Moudon (1994). This includes using a method derived from Contzen's *town-plan analysis* (1960), looking not only at the structure of roads, plots and buildings but extending it further to also include more natural features in the landscape as for instance the contour lines. This is done through analysis of historical maps, original architectural drawings as well as by the use of GIS. Steenbergen's (2008) approach of using drawing as a tool of enquiry in design research has played a central role in the initial studies. As described by Steenbergen (2008) the act of drawing can serve as an answer to a formulated question leading to new questions arising: "Each drawing is an answer to a question, which in turn poses the following question" (Steenbergen 2008, p.23). So far the studies have approached the cases from a plan view mainly but the intention is to do further studies looking at the cases from other angles and with a more sectional perspective, elaborating on and questioning some of the first findings.

Past / Present Terrain

Comparing the past and present terrains for the three cases reveals how different degrees of terrain manipulation has been taking place as part of the construction of the public housing estates involving and approaching the existing landscapes in different ways (Figure 2). The initial question proposed for this study was concerned with, the relationship between the past terrain, before the construction of the individual estates, and the terrain of the

present day. Past terrain maps, from before the construction of the public housing estates, was as part of this study created, based on vectorising and tracing Danish historical topographic maps 'Lave Målebordsblade' created between 1901 and 1971. Several different features were traced as part of this process, including buildings, plots, paths, roads, railways and more natural elements as forests, wetlands, waterbodies and terrain curves. However, for this study only the terrain curves and waterbodies/wetlands were in focus and brought forward in the final drawings. The present terrain maps, also showing terrain curves and waterbodies/wetlands, were based on the Danish topographic Kort10 dataset, which is deemed to a large extent to be identical to the situation of the finalised construction of the three public housing estates.

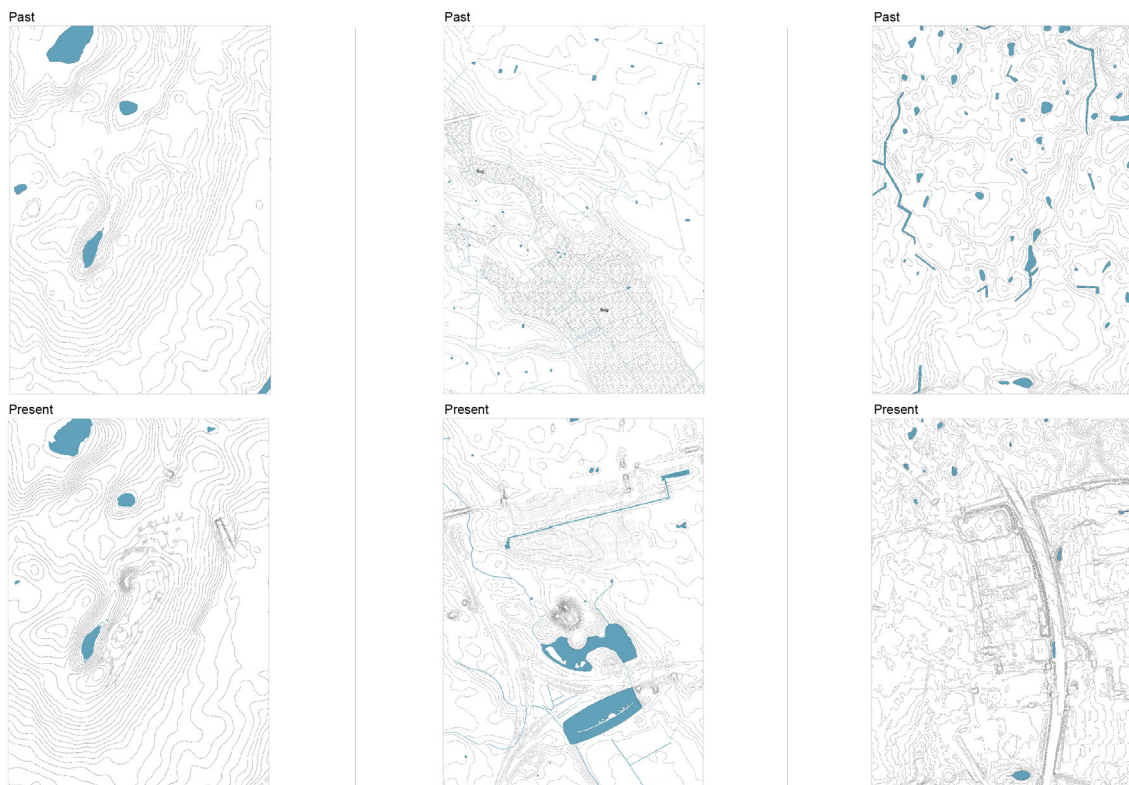
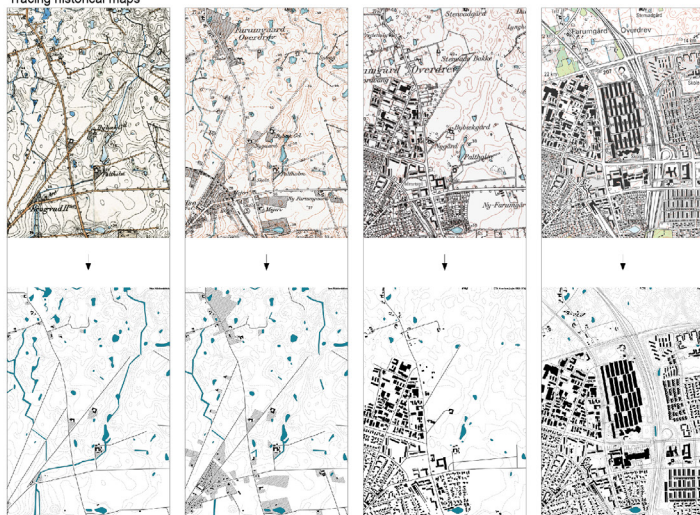
Bellahøj has of the three cases the least degree of terrain reconfiguration as the majority of the terrain remains the same. Smaller adaptations have been necessary in order to incorporate the buildings into the landscape and some new features have also been added, like a small amphitheatre. The case of Albertslund Syd stands out as an example with a more proactive approach to adapting the terrain. In the northern part of the case site, where the housing estate is situated, the surface has been reworked which includes making room for a major canal stretching across the entire site. South of the housing estate, but still part of the case area, is a large parkland with a mound and a lake. Comparing the present map to the historical map it becomes evident that the mound is an enhanced feature of the past terrain. The visible water features in the landscape also has its roots in a past feature of the terrain as the historical map reveals how a bog was situated at the site. The third case, Farum Midtpunkt, has had the most radical approach to the existing terrain as very little from the past terrain can be recognized. Farum Midtpunkt becomes the example of a total terrain adaptation where large volumes of soil are rearranged leaving no traces of what was before. The reconfiguration of the terrain consists of large areas becoming largely flattened as well as accumulation and formation of new large land forms to screen the

estate from the highway situated to the east of the estate. A range of new questions arise as part of this study, which could be investigated further. This includes asking, in relation to the original decision on where to position the housing estates, if and how the geology of the respective case sites determine the design and composition of the public housing estates and

their welfare landscapes? The overall findings challenge the general conception of post-war public housing estates as purely reshaping the context and landscape in which they are placed as some of

the studies show that the existing terrain in fact has been incorporated into the final design.

Tracing historical maps



Bellahøj

Albertslund Syd

Farum Midtpunkt

Figure 2. Tracing historical maps and comparing past and present terrain configurations for the three cases

Built and Open Space relationship

The three cases differ in their figure-ground relationships, as well as in the amount of respectively built and unbuilt space, in the following denoted as built and open space (Figure 3). This study has its starting point rooted in the question; how is the relationship between respectively open and built space for the three individual cases? Open space is in this study understood as space which is open to the sky. In opposition, built space is to be understood as the building mass. The first two cases, Bellahøj and Albertslund Syd, are different in the relation between built and open space. Bellahøj consist of a very large amount of open space in comparison to built

space, and the buildings are placed as objects within a larger open space. Albertslund Syd consists of an equal amount of open and built space. However, the built space here constitutes the open space which is defined by the appearance and form of the built space. The third case, Farum Midtpunkt – described as the Topographic Megastructure, represents a third situation where the built and the open space are entities difficult to separate. The ground floor of the built structure is horizontally open and a large proportion of the built structure is covered by garden terraces being open to the sky. The building becomes a landscape and vice versa with no clearly marked boundaries between the built and the open space.

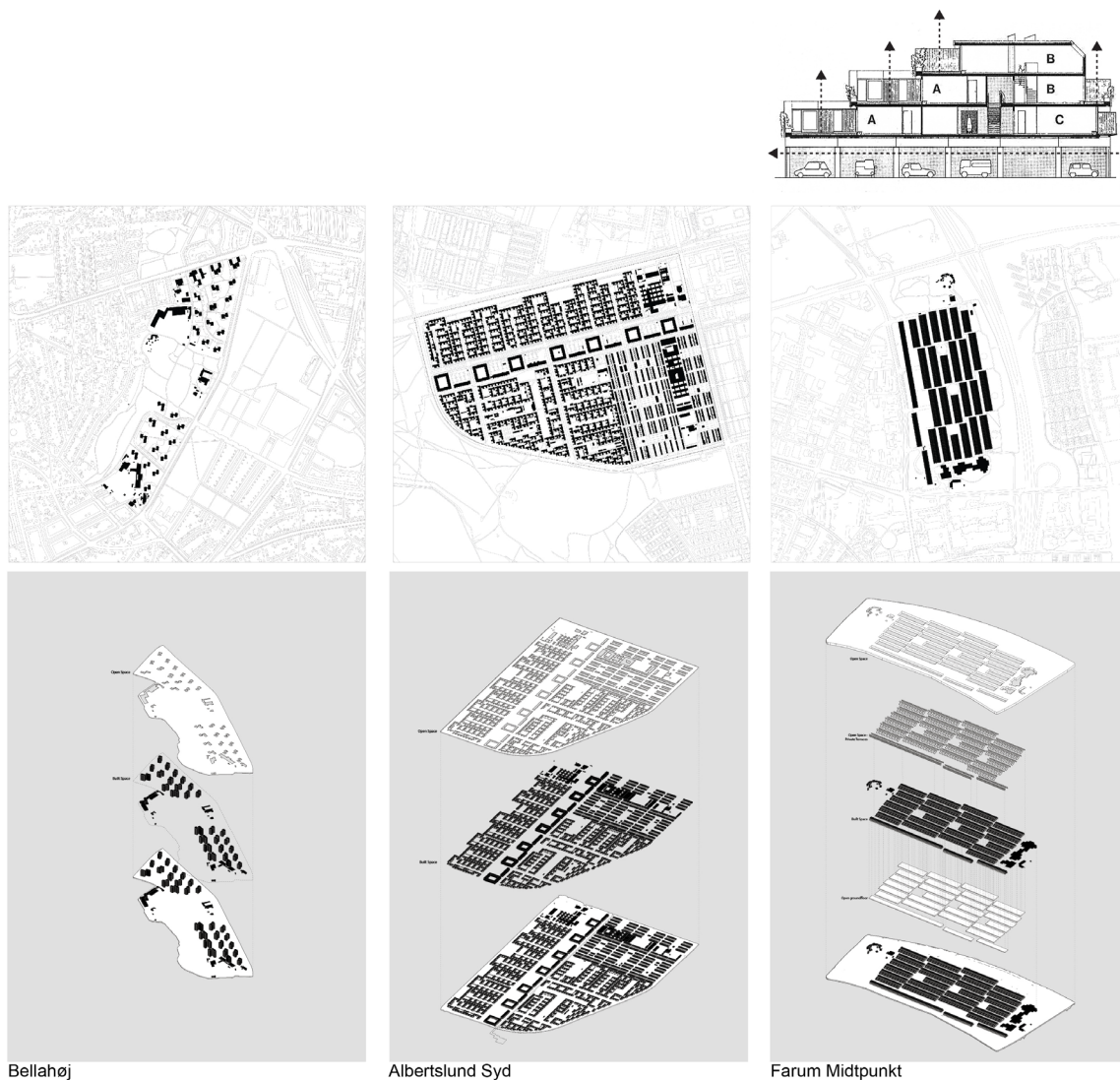


Figure 3. Figure-Ground and relationship between built and open space for the three cases

Welfare Landscapes – green or grey?

Understanding the quantities of the open space surfaces has led to challenging the initial idea of the welfare landscapes as being merely green. The following study was sparked by asking into what constitutes the open spaces in terms of respectively hard and soft surfaces (Figure 4). In this study the open space surfaces were based on GIS data acquired from the Danish Geodata Agency and divided into respectively green/blue and grey surfaces. The green surfaces consist of permeable areas at large, including highly maintained surfaces as simple lawns, flower beds and ditches as well as areas less maintained including thickets and forest areas. The grey surfaces included impermeable and hard surfaces at large, including asphalt and paved surfaces of any kind; roadways, parking space, squares etc.

Bellahøj is in the study characterised by having a large amount of green and blue surfaces in comparison to grey. The surface is overall green but consist of a larger concentration of green towards the centre whereas the grey areas are concentrated towards the built-up

areas facilitating entrance to the buildings at the site. On the contrary, Albertslund Syd has a significantly larger share of grey surfaces than green. The grey surfaces form a consistent carpet covering the entire site whereas the green surfaces appear fragmented and minor in size. Farum Midtpunkt is to the north and east bordered by large primarily green areas whereas the path system dominates towards the centre of the site leaving more areas grey. New questions arose as part of this study, including asking, what are the more specific elements of respectively green and grey surfaces and how is the distribution of these elements across the sites? Further the origin and reason to the surprisingly large amount of grey surface for two of the three cases could be investigated. One explanation could, according to Nygaard (1984), be inspiration at the time of conception taken from the Mediterranean regions and the Arabian Kasbah buildings. This source of inspiration stands for a fundamentally different idea of what makes the urban fabric than the Le Corbusian vision of towers in the park, in which Bellahøj on the contrary fits.



Figure 4. Distribution of respectively hard and soft surfaces for the three cases

Mobility

Further understanding what constitutes the open space led to a study focusing on the mobility and movement systems of the different sites (Figure 5). All three cases have different kinds of traffic separation dividing movement across the sites into respectively space assigned for pedestrians, cars and parking. In Albertslund Syd central roads are connected to centrally located parking spaces across the entire site. In the original layout emphasis is put on crossings making it possible for pedestrians to pass underneath the roadways without any risk of harm. The pedestrian path system serves as access routes to the individual housing units but also connects smaller squares and playgrounds. Access to the surrounding region is thought to take place either by car or by local so called s-train which through the local Albertslund Station links the site to the metropolitan public

transportation network. The most radical separation of pedestrians and cars is found in Farum Midtpunkt where the entire ground floor is assigned for cars and parking whereas the upper level is for pedestrians and bikes. The access to the site is primarily thought from a car perspective but also with smaller pathways connecting the site to its surroundings. Besides a few bus routes passing in the periphery of the site no direct major link to the metropolitan public transportation network, as the s-train station in Albertslund, exists. A unique feature in the original conception of Farum Midtpunkt was how movement across the site initially was supposed to take place through the buildings. This act of letting the built structure become part of the overall path system and thereby publicly accessible again leads to the boundary between what is open space and what is building becoming blurred in the case of Farum Midtpunkt.

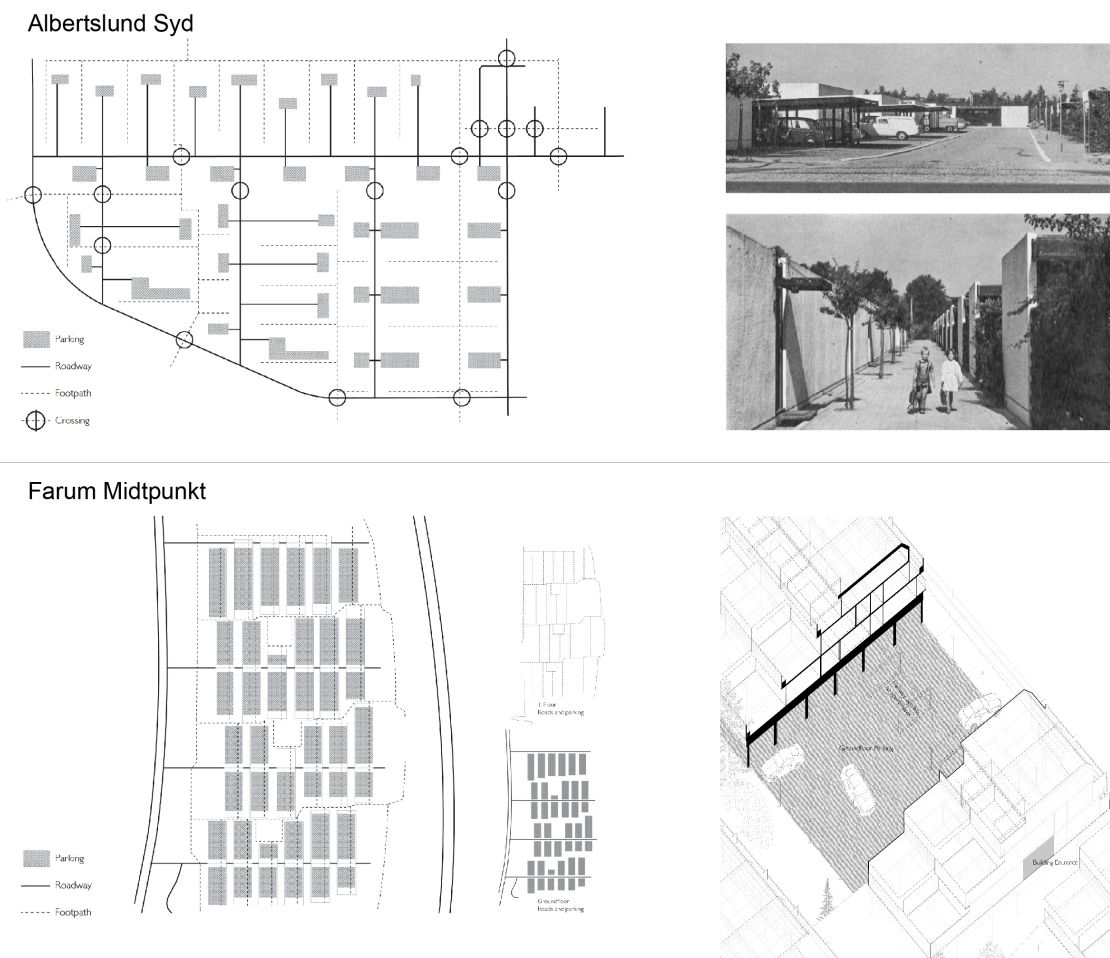


Figure 5. Mobility – Traffic separation for Albertslund Syd and Farum Midtpunkt

Between home and common

The final study to be described in this paper is concerned with the relationship between home, the space assigned for the individual, and the common, the space assigned for the collective (Figure 6). The question put forward as part of this study asked, how is the division and hierarchy between the private and the common. The study consisted of tracing aerial photographs and highlighting parts which were deemed to belong to different spheres, moving from the most introverted to the more extroverted. Bellahøj was the most homogeneous of the three as it primarily consists of large publicly accessible and extroverted surfaces. On contrary, Albertslund Syd has a much more heterogeneous division

of spaces, gradually moving from introverted and enclosed garden terraces, only accessible for the individual inhabitants, to more open and collectively accessible small courtyards, squares and pedestrian walkways. Farum Midtpunkt has a similar structure as Albertslund Syd moving from what it privately accessible to something more collectively accessible. The study revealed a need to explore the cases with different means as the current study did not manage to grasp the full complexity of each of the cases. It is expected that moving through the spaces on the ground level has the potential to reveal aspects not visible through an analysis from above. In combination, the two different methods of approaching the space will possibly be fruitful.



Figure 6. Between home and common

Conclusion

The initial studies of the three cases have overall supported the choice of the them as being representatives for three preliminary ideal types, representing different materialisations of welfare landscapes. Bellahøj, the pastoral scenery, is characterised by the least degree of terrain manipulation and has a very large proportion of open space in comparison to built space. The surface in the Bellahøj case is significantly more green than grey and characterised by the green areas being large and cohesive. The initial study of the relationship between home and common revealed Bellahøj as having a more direct relationship between the private sphere in the building and the outdoor common than the other cases. Albertslund Syd, the structural patterns, has been constructed with a larger degree of terrain adaptation than Bellahøj but also with existing terrain features being enhanced as part of the final design. In Albertslund Syd there is a more equal distribution of respectively open and built space but with the built space in general constituting the open space. The surfaces are in Albertslund Syd to a large extent grey and the green space appear more fragmented and non-cohesive than what is the case in Bellahøj. The study of the relationship between the home and the common revealed how there is a distinct system and a graduation from what is private to what is common. Farum Midtpunkt, the Topographic Megastructure, represents the third and most radical kind of welfare landscapes. Farum Midtpunkt has the most comprehensive terrain adaptation of the three with a complete remake of the past surface. The built space and open space are tightly interwoven and creates a distinctly different situation than the two other cases. Further the pedestrian path system used to be integrated with the buildings blurring the boundary between building and landscape. The initial studies foci from a primarily plan view have been useful but has also revealed the necessity for additional studies from other angles taking place. This both to elaborate on some of the new questions arising as part the studies as well as to describe the cases from a more in-depth view.

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