The relation between buildings and public spaces in the context of sustainable compact cities

Understanding the impacts on human behavior - cases of Ørestad and Hammarby Sjöstad

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This master thesis discusses the relation between the buildings and public space in the context of the compact cities, and how it interferes on human behavior related to walking experience and pleasurability. In order to illustrate how the human scale is portrayed in different scenarios, two case studies - Ørestad District, Copenhagen and Hammarby Sjöstad, Stockholm - have been selected to be studied in different scales, shifting from the block structure to the use of the building groundfloor. This enables me to identify the similarities in the process of composition of each compact city and, in case of contrasting comparisons, have a more critical discussion and understand the negative impacts on the user experience.
The concept of compact city has emerged as a response to large scale urban conflicts such as environment pollution and high demand for housing caused by rapid urbanization. These new built environments have been exported worldwide as promises of achieving green label communities based on a sustainability mainstream discourse, which tends to exclusively prioritize the technical and economic efficiency of private developments, rather than also looking at the functionality of public spaces and how people perceive them.

Despite the given idea of being compact, the high expectation and ambition to design mass large scale projects at a low cost, are very much present in the process of conceptualization of a compact city. Nonetheless, this scenario might lead to a repetition of preset urban design concepts and it challenges urban planners and architects in order to have a more personal and detailed understanding of micro-scale urban design. In addition, the constant lack of human scale in public spaces directly interferes on the attractiveness of the built environment as a whole, affecting walking experience and also dictating the success or failure of public space daily use.

By looking at the spontaneity and social interaction that happens out of the private life, it is fundamental to analyse the relation between public spaces and the built environment, for instance, their connectivity within the urban fabric, impacts of building shape and height on the street, importance of the groundfloor on the activation of hybrid zones, and many other analyses which are to be compared between two case studies in the context of Scandinavia.

The main focus of this master thesis is to extract from each case the most pleasant eye level proportion between the public and built environment, by evidencing their similarities regarding the building development process, and also discussing their divergencies related to how people perceive and interact in these new environments. In addition, the results of this study aim to contribute for a more human scale oriented conceptualization of further compact cities, in which public life needs to be the main priority.
In order to analyze how the relation of buildings and public spaces on the compact cities, and how it interferes on human behavior, two case studies were selected for comparative analysis within the context of Scandinavia, Ørestad District in Copenhagen and Hammarby Sjöstad in Stockholm. The similarities and divergencies among them were deeply analyzed during study visits, which consisted of photographing and mapping the area. Also, it is important to highlight that I am the author of all the photos, maps and graphics included in this research.

For all the categories studied, the method of photograph analysis is present. Initially, at the district scale, the method of mapping blocks and street patterns (Southworth and Ben-Joseph 1997) aims to understand the impacts of number of intersections, access points and cul-de-sacs on walking experience and how suburban concepts may differ from modernism. For a more detailed study, one block of 1000x700m has been selected in each area, taking into consideration the presence of the main artery and the main public park. At the transport network and amenities comparison, the method of mapping the street was used in order to analyze how the local commerce can be influenced by the street hierarchy.

Looking at the footpath network, mapping the routes was fundamental to analyze the walking range of each district and how nature features play a major roll in the interconnectedness of compact cities. In this research, nature features area defined, at a macro scale, as natural reserves, parks, pocket parks and lake, whereas at a micro scale, it is understood as waterbody and greeneries. The graphics tend to study the visual connection between the main park and water, and, in the case of Ørestad, due to the poor connection, an abstract two dimensional graphic is proposed as a desired scenario for the future (figure 29). In addition, through the method of photograph analysis, it is clear to see the difference of scale on nature features and how it reflects on the maintenance of each landscape (figures 46 and 47).

Shifting to the building scale, a mapping of typologies was developed according to factors such as material façade, building character, shape, angle, number of storeys and presence of courtyard, in order to find possible common typologies between the case studies. Also, analyzing the attractiveness of facades and the activation of the hybrid zone through the method of picture analysis (Karssenberg, Laven, Glasser & van’t Hoff 2012), leads to a better understanding of the relation between the building and the public life at the street level.

At the street scale, two dimensional graphics were developed to study the impacts of building height and street width on the level of sun incidence and visual range (figures 65, 66, 67 and 67), which gets less intense as the color fades away. In addition, a detailed two dimensional section of the main artery was done for the case studies, in which is possible to compare the difference of scale and the positioning of bicycle lanes and sidewalks in relation to the built environment (figures 73 and 76).

The research also analyzes the relation of green spaces and urbanity (Maas, J., Verheij, R., Groenewegen, P., Vries, S. and Spreuwenberg, P. (n. d.), and how people behavior respond to these new contexts of the compact cities (Maria Johansson, Catharina Stenudd & Mattias Kärholm (2016)).

Aiming to make the comparative analysis more legible and self descriptive, the layout of the sheets has been predefined according to the following pattern: the visual analysis from Ørestad is on the left top side, whereas Hammarby Sjöstad on the right top. On the bottom of each sheet, there is the descriptive analysis, as we can see in the following sample:
In this research, the case studies of Ørestad District, Copenhagen and Hammarby Sjöstad, Stockholm have been selected to be investigated due to their both positive and negative repercussions that go beyond the European boundaries and, also due to many of the concepts adopted in their development which have been reproduced worldwide.

Even though the projects may still present a very similar approach to sustainable practices and high density expectation, their insertion on the local urban context and the relation each built environment develops with the users are very contrasting in each case. Aiming to identify the contrasts and similarities between them, it is crucial to understand their roots and historical background, as will be done so in this chapter.
"Ørestad earned the nickname Copenhagen's Dubai due to the breakneck pace of construction in a short period of time" (Grabar H., CityLab)
Located in southeast Copenhagen, in the island of Amager, the district of Ørestad started to be built in the 1990s, and at that moment, it was nothing more than a grass field with highways crossing it. Even though the area is just 7km away from Copenhagen International Airport, it only started to gain importance after 2000 when the Öresund bridge was completed, connecting Copenhagen to Malmö and reinforcing the strategic location of the site.

As a result of the formation of an international metropolitan area uniting Denmark and Sweden, a renowned American architecture firm, Studio Libeskind, was hired in 2006 by the Municipality of Copenhagen in order to design a master plan for Ørestad and reshape the area for upcoming developments.

Within only one decade, Ørestad district gained a metro line, the biggest conference center in Scandinavia, and Denmark’s largest hotel, largest mall, and largest apartment complex, the area also became an experimental site which gave green light for renowned Danish architecture firms such as BIG and 3XN to design mega residential projects with sustainable approach such as the use of green roof for rainwater reuse and solar panels to reduce mass energy consumption.

Looking at the urban form, Ørestad has an area of 310ha compacted in a narrow strip of land which is limited by a residential area on the east side and a natural reserve on the west, Amager reserve. These natural and physical barriers have made the area to develop linearly along the main artery, Ørestad Boulevard, a 6 km extension avenue which works as the main private access to the district and the only public transport connection from and to the inner city.

However, the discontinuity and fragmentation in the urban fabric, featured by massive gaps along the boulevard, is not only a response to the existing barriers, but indeed a result of the 2006 master plan, which strategies led to a strict functional zoning, by centralizing A - the majority of amenities such as restaurants, coffee shops and other services in one single block, for instance Field’s, a private shopping mall, whereas B - mega residential projects, the majority with underground garages, were spreaded through the edges of the boulevard.

Even though Ørestad is still under redevelopment, the district is currently portrayed as a place with massive empty sites, a huge lack of scattered amenities and a long distance from A to B, which has encouraged even more the prioritization of private transport, making walking experience not pleasurable and functional in this context. Definetely, Ørestad’s poor attractiveness has led to a scenario with a lack of pedestrians and public space daily users.

“Several perceived urban design qualities have been proposed as prerequisites for walking, including perceived accessibility, safety, comfort, interest and pleasurability of the environment” (e.g. Alfonso 2009; Ewing and Handy 2009 as cited by Johansson, Sternudd & Kärrholm 2016, page 3)
“Hammarby was originally meant to be a eco-friendly sports arena and athlete’s village for the 2012 Olympics. When London got the bid, plans changed”

(Mendelson Z., Next City)
Hammarby Sjöstad or also known as Lake City is located in the southeast periphery of Stockholm, originally a former industrial and harbor brownfield area which was known for being polluted and unsafe. The district has a land area of 150ha which is spreaded into 3 different islands and they are linked by the Hammarby lake (Hammarby sjö), totaling an area of 200ha with water included.

During the 1990’s the scenario of Hammarby Sjöstad started to change when the first conceptual design was proposed by the Urban Planning and Environmental Coordination Comitee and Stockholm Water Company in order to create an international model of green compact city, consisting of a redevelopment project with high sustainability ambition.

The realization process started in 2004, driven by the possibility of Stockholm hosting the Summer Olympic games, however, after not being selected, the project got extended and it is supposed to be completed in 2020, aiming to achieve a population of 25.000.

When compared to nearby areas, the district presents higher density, fewer cars, higher levels of income and lower environmental footprint. Also, due to the clean-tech infrastructure applied to the construction of green label buildings, the real estate prices got extremely high, which makes housing in Hammarby only affordable to a specific social group, the upper middle class.

Looking deeper into the redevelopment project, it is important to highlight the crucial role of water in the context of Hammarby, not only talking about sustainable practices such as water-saving appliances, reuse and wastewater treatment. However, the importance of water in the urban planning of the district, which street pattern and blocks are aligned according to the shape of the lake, this way allowing easy accessibility to the waterfront and a view field that is spontaneously directed to the lake from any perspective within the district.

In addition, a remarkable feature of Hammarby is the rich connection between nature features such as parks and water, and for instance, in the case of Sickla Park, the connection is made through pedestrian routes which cut through courtyards of residential areas and break down the wall between the private and public. This way, guaranteeing the locals and visitors the right of accessibility to all public spaces, at some extent fading the impacts of socioeconomic segregation caused by real state speculation.

As a result, experiencing the district by walking becomes a more flexible and pleasant activity due to the wide range of walking pathways and well maintained natural scenery. On the other hand, at a large scale, the lake does become a physical barrier for connection of pedestrians between the islands, especially between south Hammarby and Södermalm, the walking distance between the two bridges is very long and the ferry for commuting runs at a limited time.

"Today the Lake City offers a more sustainable framework for everyday life compared to the average Swedish city but hardly challenges its inhabitants to lead a more resilient life" (Maria Ignatieva 2014. The nature of cities).
In order to clearly illustrate the findings of the different methodologies applied, the results have been divided into 7 categories, following a linear scale, which starts by analyzing:
1. the district scale, that involves the study of blocks, street patterns, public transport network, amenities, footpaths, nature features, urban furniture and maintenance; 2. the building scale, involving building typologies and study of facades and, at last; 3. the main artery scale, which discusses the relation between building height and street width.
Ørestad follows a modernist concept which is featured by wide boulevards and a rectilinear grid that develops parallel and perpendicular to the backbone of the road structure, Ørestad Boulevard, and as a reflect of the 90 degrees grid, the number of loops is almost inexistent.

Most of the blocks present an orthogonal shape that vary only in size and the linear continuity of the grid is considered cheaper to be built, maintained and easily accessed by bicyclists. However, as a result of modernist functional zoning, the long distances between residential areas, retail and service centers impact on the preference for using private and public transport over walking and cycling. As seen on the chart, Ørestad presents a higher lineal feet of street, a feature of modernism in which cars are still the most prioritized mode of transportation.

The spatial segregation in Ørestad can be seen on the different size and land use of blocks, for instance, on the right side of the map there are small residential blocks, while on the left there are massive mixed use complexes. The lack of interconnectedness is evident, and the boulevard ends up being a physical barrier in this context.

Another factor to be taken into consideration about Ørestad Boulevard is the wind passage, which is a consequence of the wide and rectilinear corridor combined with the high rise buildings on the edges, creating an undesired environment for pedestrians and cyclists.

Moving on to the similarities between the case studies, both show the exact number of blocks and access points, however, the higher number of intersections in Hammarby Sjöstad and also a more equal distribution of the blocks, make the interconnectedness in the area much richer, distances shorter and provide the pedestrian more choices of routes.

In addition, the street pattern of Hammarby Sjöstad presents a more suburban concept, with a higher number of loops, cul de sacs and a more organic grid that follows the geography of the area, especially the borders of Hammarby Lake. In a contrast to the cul de sacs of Ørestad, which means the end of the route for both cars and pedestrians, in Hammarby they end up with a roundabout, meaning that private transport is obliged to return, on the other hand, it is the start point for alleys and footpaths that connect the green areas to the waterfront.
Looking at the areas of analysis specifically, in both cases the infrastructure is concentrated along the main artery and it consists of two modes of transportation that run through the same route, what definitely limits the access to the sites in case of road maintenance and bad weather conditions. However, in Ørestad Boulevard, apart from the bus line, the network is more independent from the road traffic comparing to Hammarby Sjöstad, since the metro is suspended from the ground. On the other hand, the flyover which the train is attached to becomes a physical barrier that cuts through all over the boulevard. The left public spaces underneath it tend to become undesired areas which are aesthetically unattractive and mostly associated to insecurity. In addition, the elevated station platforms do not have any facilities or amenities that could make the groundfloor more activated, especially during night time.

Nonetheless, the lack of visual contact between the station and the public life at the ground surface rise even more the feeling of insecurity among the commuters, making the stations unwanted spaces.

In the case of Lugnets Allé in Hammarby Sjöstad, both bus and tram lines operate on the ground level, which provides more visual contact with the exterior and it does not interfere on the field of vision between pedestrians and commuters. Also, the crossing between the lanes is not affected since the speed of the tram is slower than metro, the trips are less frequent and there is no level difference between the sidewalks and platforms.

“\textit{The traffic planning has created a good soundscape with a low level of noise, allowing attractive sounds to enrich the residents’ living environments}” (Maria Ignatieva 2014. The nature of cities - Hammarby Sjöstad).

As well as the public transport network, in both cases the amenities and facilities are predominantly attached to the main artery. In the case of Ørestad, the number of amenities is sharply lower than Lugnets Allé in Hammarby, and this can be understood as a consequence of functional zoning applied to the 2006 masterplan, which concentrated most of the commerce and service in specific areas.

As a result of zoning, big developments have emerged along the boulevard with very defined characters: commercial, financial, cultural or residential. Looking at the cultural zone, Bella center is Scandinavia’s largest exhibition and conference center, and looking at the commercial zone, the Shopping mall Field’s is the largest in Denmark and the main commercial pole in Ørestad.

Both projects are private business that polarize not only the district scale, but a regional scale, however, Ørestad is by far the most affected. An organic dispersal of the commerce is limited by the economic power of the mall, which discourages shop owners to open new establishments in the area.

Hammarby, on the other hand, presents a more scattered commercial structure which is placed on the groundfloor of the residential buildings all over Lugnets Allé and partially at the lake promenade. It is important to mention that not all the groundfloor has been activated yet and the district is slowly attracting more visitors every year, although, since it is a recent development, the area is still struggling to build up its own identity.

“The Lake City so far also lacks proper public squares for open space markets and an intense city life. It also still lacks a core centre and smaller local cultural centres with cinema, theater and music stages as well as public indoor meeting places” (Maria Ignatieva 2014. The nature of cities - Hammarby Sjöstad).
The presence of green infrastructure has become a symbol of sustainability in the compact cities, however, the meaning of nature in dense urban areas goes beyond technical aspects. Our perceived general health is likely to be improved in the presence of green areas due to the immediate relation we make to sentimental factors, such as stress reduction and contemplation.

Also, we tend to relate nature to collective factors, for instance, social gatherings, meetings and acts of public demonstration. At last, the association to practical factors, involving all kind of physical activity, which might be enhanced by supporting infrastructure.

“A review of links between urban design and human health found that “at the parcel scale, greenery and access to it visually and physically are the principal keys to health” (Maas, J., Verheji, R., Groenewegen, P., Vries, S. and Spreeuwenberg, P. (n. d.).

Looking at supporting infrastructure, in both cases the footpath network is more concentrated in the parks. In Byparken, Ørestad, the design is completely linear and it connects the extremis of the park, allowing the pedestrian a faster route and a wider view field since the topography is flat and the vegetation low and scattered. These factors rise the sense of security, where everybody watches each other, giving Byparken a collective character, also featured by big empty spaces for sports, leisure and gathering.

On the other hand, at Sickla Park, Hammaby, the design is much more organic and the network diffuses into ramifications within the park, allowing the pedestrian a wider choice of routes, however, a more limited view field since the topography is irregular and the trees higher and more dense. Even though the feeling of unsafety might be higher than Byparken, Sickla presents a more reserved and cozy character, with many refuge spots, narrow footpaths and more silence.

Looking at Ørestad, the footpath network still does not fill the gaps left from the street hierarchy, also it does not supply the weak connection between the residential district at east and west of Ørestad Boulevard. The grid’s vertical flow is still predominant. In a sharp contrast to that, the network in Hammarby extends along the whole border of the lake and it enhances the connection between Sickla Park and the water.

In addition, Hammarby presents a stronger and clearer connection between nature features and accessibility, providing short and linear footpaths that lead to the water, and the grid is equally reproduced on both sides of the canal, reinforcing the visual contact between the islands even without the presence of bridges.

On the other hand, the strong sense of unit in Hammarby is completely absent in Ørestad. Currently, The three segments Byparken, Ørestad Boulevard and the residential district do not present any element or direct route that makes the connection clear. Even though the flyover is a permanent physical barrier and cannot be removed, the site still offers a lot of potential on the ground level. Some positive aspects can be highlighted such as: 1. The flat topography of Ørestad can facilitate future urban interventions; 2. The rectangular shape and the main footpath of Byparken are placed horizontally and towards the residential district, which suggests a linkage; and 3. the pocket park already works as a main connector, but it lacks direct visual contact with the park and the residential district.
FOOTPATHS AND NATURE FEATURES

The scale and function of some nature features may differ a lot from one case to another. Looking at the water aspect for instance, the compact cities have made the most of water reuse and proximity to water reserves in order to allow as many buildings as possible to profit from the water-rich views. In order to make this possible, water-bodies and canals have been implemented in both areas according to the orientation of the street pattern and so were implemented the buildings in the surroundings.

The canals have become a mainstream characteristic of both Ørestad and Hammarby Sjöstad projects, although, the notion of human scale and the presence of supporting infrastructure are completely divergent in both scenarios. In Ørestad Boulevard, for instance, the 20m wide waterbody was partially implemented underneath the flyover structure, in a predominantly concreted environment which is not totally exposed to the sun, not well maintained, and adding to that, the poor water drainage lead to algae bloom on the surface, making the quality of the water drop.

Curiously, it seems that the waterbody in Ørestad originated as a consequence of the out-of-scale width of the Boulevard, being seemingly implemented as a strategy to fill up the empty spaces left after the flyover structure being built. The artificiality of the environment is strengthened by the proximity of high rise buildings to the water, which are permanent structures that limit a further extension of the existing narrow sidewalk.

In this context, the lack of space and the predominance of concrete are barriers for the implementation of supporting green infrastructure such as large treetops or even low vegetation, which in fact could make a slight and gradient transition to the water. Besides, the difference of level between the sidewalk and the canal surface makes the physical water contact unreachable. The water is no longer an element of playfulness in Ørestad.

In a sharp contrast to Ørestad, Hammarby makes the transition between nature features very linear and touchable, making the canal attractive to the human eye and offering the pedestrian different experiences along the walk. The mix of low vegetation and high trees enhance the atmosphere of a small-scaled park, besides, the canal is also accessed by the concreted footpath, which can become a public furniture due to the slight level difference. Hammarby shows that natural and artificial materials can coexist in the same spot and not affect the nature feeling within an urban context.

In relation to pedestrian accessibility, the design, materiality and signage of the footpaths play a fundamental role in defining the character of walking experience. For instance, in Ørestad, the unpaved pathways might be mostly used by locals who have a basic knowledge of the area since there is no floor pattern to be followed and the tracks are likely to vanish if the greenery is not maintained.

On the other hand, in Hammarby, the wooden alleys and trails have a more precise visual direction. They are responsible for connecting the park to the lake, cutting through green courtyards of residential buildings. This offers the pedestrian the possibility to explore alternative routes and to access public spaces within semi-private environments due to the absence of fences and continuity of the floor pattern.

"Alleys provide a different kind of space, perhaps a more interesting place for teenagers and children to ‘hang out’. Alleys also provide more visual access to backyards, the suburban hideaways. Although alleys probably reduce privacy, they may promote more casual neighboring and spontaneity" (Southworth and Ben-Joseph, 1997).
Urban furniture is very much present in both compact cities and it helps to define the character of each micro-level urban space and it may enhance the pleasurability of walking experience at a macro-level scale. Looking at the main parks, Byparken and Sickla Park, the presence of playful urban furniture utterly changes the urban park character into a more collective and childlike character, this way also influencing on the target audience, which is mostly family with children.

On the other hand, along the canals and the lake, unprotected wooden structures have been designed to skirt the lake, in the case of Hammarby and, to connect sidewalks in the case of Ørestad. Both structures work as a continuity of the floor pattern and become seatings and viewpoints, resulting in a micro-level urban space with an individual character, which is featured by the experience of landscape appreciation and it is mostly used by adults and elderly people.

It is interesting to highlight that some perceived urban design qualities such as safety, comfort, interest and pleasurability do affect the walking experience of each individual and consequently the daily use of public spaces. Features such as greenery, paving and lighting are examples of urban design qualities that are used as mainstream guidelines for architects and urban planners who participate in the process of composition of compact cities worldwide. However, in the case of Ørestad, for instance, due to the big scale of the boulevard, the presence of a few scattered urban furnitures are not enough tools to integrate the area and fulfill the gaps left in the urban fabric.

Adding to that, the maintenance of Ørestad Boulevard can be very poor in some extents, and this might be a result of a functionless space and/or a lack of public claim of the area. Even though the aesthetic and infrastructure might be good, there is no guarantee that the area will be liveable and the public space use successful if there is no process of community engagement which is responsible for claiming and activating the public space. Hammarby, for instance, it is in the beginning of this process of recognizing their own public space and identity.

In addition, the micro-scale urban design of public spaces in a dense urban environment such as Hammarby, makes the urban installations more exposed to the human eye and physical contact, therefore, more exposed to surveillance and more requested for a better maintenance.

“Places with micro-level urban design features triggering negative valence seem to strengthen the intention to avoid walking the route. This supports an urban design strategy of attending to weak spots in relation to the route as a sequential whole, for example, to the narrow or dark parts of the route or to a part with particularly bad upkeep, rather than redesigning the whole route according to some universal design programme” (Johansson, Sternudd & Kärrholm 2016)
According to the graphics, there is not a common typology between the areas nor even a similar criteria that completely matches. Looking at Ørestad, the layout of the buildings do not follow a specific pattern and the extension of the buildings is very contrasting. Even though 4 typologies have been defined for Ørestad, apart from the character and number of storeys, typologies 1-2 and 3-4 could be joined. The predominance of the same material and the common design of each joint is very clear, for instance, typologies 1-2 are featured by glass-metal facades, irregular shapes and there is a hint of futurism in their concept, while typologies 3-4 present a pre-fabricated structure, rigid orthogonal lines and uniform facades.

In a contrast to Ørestad, Hammarby Sjöstad presents an uniformity in the scale and shape of the buildings. The units are smaller, more scattered within the block, and it is easy to read the landscape since the buildings are oriented toward the sea and the canals, allowing as many houses as possible to profit from the water-rich views.

This Stockholm’s district has been planned to be a semi-open block-based city with a dense settlement structure. Unlike Ørestad, the buildings in Hammarby have a more traditional form, smaller extension and due to the limits of Lake Hammarby and Sickla Park, some buildings were adjusted to their irregular form, resulting in a concave-convex shape, as we can see in the typology 5.

The height of the buildings is lower than Ørestad, an average of 5-7 storeys, and within the same block there is a variation of typologies, and consequently a wide variation of color patterns, facade elements and different building functions. However, this scenario is far from happening in Ørestad, where the block is still very much the determining factor which, physically limitates what kind of building character, architectural style and scale will be implemented into the area.

Evidently, some of the modernist concepts applied to the development of Ørestad District, for instance, the functional zoning, do still have a big impact not only on the process of diversification of buildings within a block, but especially on the diversification of public-private interaction beyond the scale of the block.

“The moderate height of the houses and the sufficiently spacious neighbourhoods allow for both wind-shielded and sunny inner courtyards with ample possibilities and incentives to develop both inviting entrance green and common courtyard green, and facilitating small-scale cultivation in micro-garden plots or small greenhouses” (Maria Ignatieva 2014. The nature of cities - Hammarby Sjöstad).
What works against good public spaces in these big developments such as the compact cities is the fact that human scale comes too late in the process of composition. Instead, the first design is commonly made from a bird’s eye view, ignoring all the micro-scale public spaces and their relation with the proposed buildings. Besides, the high number of population expected to reside in Ørestad and Hammarby has not been reached yet, so both are still struggling to achieve a high density, meaning more users to activate and boost the local commerce.

In the case of Ørestad, for instance, what also hinders the implementation of human scale is the ownership of single large-scaled blocks, usually owned by the same developer, who tends to use standardized prefabricated structures in order to lower the price and faster the timing of construction. As a result, the blocks do not present a diversity in material, style and scale.

As we can see in the typologies 3 and 4, the brown brick has been reproduced at a large scale in the facades and the monotonous layout do not present any visual attractiveness from the exterior, not even at the groundfloor level, since the most of it belongs to private housing. Consequently, hybrid zone is completely inexistant in the area of study analized in Ørestad.

Hammarby, on the other hand, presents a bigger diversity of facade patterns and the contrast between neutral and warm colors (figures 59 and 60) creates a visually appealing environment. Besides, the district offers a more flexible infrastructure at the groundfloor, which might be turned into small installations in the future.

In addition, in both districts, big private developments which occupy a whole block, have a tendency to restrict the access to the building and also to restrict the street view into the block by implementing high blank facades. This way, these projects completely deny the street life happening outside their boundaries, as shown on figures 61,62,64.

“A building may be ugly, but with a vibrant plinth, the experience can be positive. The other way around is possible as well: a building can be very beautiful, but if the ground floor is a blind wall, the experience on the street level is hardly positive” (Hans Karssenberg, Jeroen Laven, Meredith Glasser & Mattijs van ‘t Hoff 2012)
Still having *The city at eye level* as a reference, another method to be highlighted for achieving a more active groundfloor and a more attractive public environment is a defined relation between buildings and street. According to the authors, the building height should at least be half the street width, in numbers, a proportion of maximum 0.50. This way, providing the pedestrian better conditions of physical comfort and a clear visual range.

In the context of Scandinavian countries such as Denmark and Sweden, having the maximum possible access to the sunlight on the building facades and public spaces is a plus factor, especially during winter season when the social interaction tends to happen more indoors. On the other hand, during spring and summer, the weather is no longer an enemy for outdoors social interaction, however, the shade created by the height of buildings might affect the activation of hybrid zones, which can also work as a crossing zone between sun and shadow.

Looking at the graphics above, Ørestad Boulevard has a width of 61m and the height of the buildings is approximately 36m, resulting in a proportion between height/width of 0.59, whereas in Lugnets Allé, the width of 37m and the height of 18m result in a proportion of 0.48. This scenario shows that the proportion in Ørestad Boulevard is slightly above the average recommended by *The city at eye level*, mainly reflecting, in the case of Ørestad, in factors such as the constant wind passage and long extensions of shade, which hinders the growth of greenery and it demands a more frequent maintenance, as shown on figure 69.

In addition, the presence of the flyover also reflects in other physical comfort aspects, for instance, it raises the noise pollution due to the constant passage of the metro and, it interferes in the reading of the groundfloor as a *continuity of the same landscape* due to the interruption caused by the structural pillars, which also hinders the view access to the facade of the buildings, as we can see in the figure 65. The closer you get to the flyover, the least you see in the opposite upper facade, whereas the further you get, the least you see in the lower facade.

Hammarby, on the other hand, presents a more equal proportion between the height of the building and the width of the street, which allows a bigger sun incidence and a wider visual range. Regarding physical comfort, even though the passage of the tram is also a factor that causes noise pollution at the surrounding buildings, unlike Ørestad Boulevard, the transport structure does not become a physical element that interrupts the continuity of the space and that creates shade spaces with no function and a very poor maintenance.

In both cases, the percentage of hybrid zones is still very minimum. As mentioned before, Hammarby presents a more prepared building infrastructure which can turn the groundfloor into small types of amenities, as we can see in the figure 72. Ørestad, on the other side, seems to be reproducing the same typologies of buildings, which have a very poor integration with the street life, also, the flyover ends up segregating the public life in the extremes of the boulevard. The physical and visual disconnection results in a fragmented social interaction.

“Urbanites experience their cities in what we call the ‘public realm’. It has a broader meaning than just ‘public space’; it includes facades of buildings and everything that can be seen at eye level. Plinths are therefore a very important part of buildings: the ground floor, the city at eye level” *(Hans Karssenberg, Jeroen Laven, Meredith Glässer & Mattijs van ’t Hoff 2012)*.
The sidewalks in Ørestad Boulevard are very wide and spacious. However, as we can see in the figure 74, the 11m width does not present any kind of green infrastructure or urban furniture that could change the concrete character of the environment and, also make the pathway more playful by using the contrast between sun and shadow. In addition, the presence of private housing on the groundfloor of the buildings makes a scenario with further hybrid zone almost unlikely to happen.

In a contrast to that, on the opposite sidewalk, shown by figure 75, the groundfloor is active with services, the footpath width narrower, nature features such as greenery and the waterbody are more evident, however, there is no temporary or permanent infrastructure which supports the local shops, such as tables, seatings, diversity of materials or even art installations. The hybrid zone becomes very poor functionally and the space ends up losing its attractiveness.

In Lugnets Allé, Hammarby, the standard sidewalk width is 4m, much narrower than Ørestad, but it offers much more green infrastructure and a wider diversity of facade materials. The shops are starting to pop up more often as the district population rises, some of them have already occupied the groundfloor of an entire block as we can see on figure 78, although, just like Ørestad, the hybrid zone could be more functional and have more temporary infrastructure which can vary during different seasons.

Regarding the bicycle infrastructure, Ørestad Boulevard presents a more efficient and safer system, with protected bicycle tracks due to curbs that separate them from the car lane and also due to the level difference that separate them from the sidewalk. On the other hand, in Hammarby, the bicycle lanes are on the same level of the car lane, separated only by a painted stripe. Also, what makes this system even more unsafe is the fact that the bicycle lanes are inserted in between car lanes and parking spots in some extents (see figure 77).
The results of each category analyzed lead to the fact that Ørestad District and Hammarby Sjöstad present more divergencies than similarities regarding the relation of buildings and public spaces. Evidently, the functional zoning which Ørestad went through, led to a fragmentation of the urban fabric, which is featured by long distances and a very poor diversity of amenities, whereas Hammarby presents a more organic dispersal of commerce, also, its street hierarchy is supported by a rich footpath network that makes Hammarby much more accessible and pedestrian friendly, offering its users a wider variety of routes.

As expected, in the compact cities, the presence of sustainability is also highlighted by the strong relation between urban parks and water, which tends to be the branding of these developments, however, the character of nature and the visual permeability to the water is very contrasting in both cases. Ørestad main park, Byparken, has a collective character, with scattered low trees and more empty spaces for gathering and leisure, on the other hand, the park has no visual contact and clear connection to the water-bodies, whereas in Hammarby, even though Sickla Park is more dense and looks more reserved, it is physically and visually better connected to the water, which enhances the pleasurability of the natural landscape.

Among the categories, the building typology is the most contrasting between the cases. No common typology has been found, however, Hammarby shows a richer diversity of façade materials and scales, also, a more prepared groundfloor structure that can be further turned into services and facilities. On the other side, Ørestad presents less building typologies, what reflects on the building attractiveness from the street level. In addition, the height of the buildings and the presence of the flyover in the main artery, Ørestad Boulevard, affects much more the sun incidence and view range than in Lugnets Allé, Hammarby.

In conclusion, in order to make public spaces more visually attractive and physically active, there has to be enough supporting infrastructure and a strong community engagement, in order to, not only keep the maintenance and surveillance of the space, but also to claim a sense of ownership over the sharing spaces. For me, it seems that both case studies are still struggling to form their own identity as an unit, and that happens due to the fact that both projects are recent urban experiments and ongoing developments, which still present a low populational density and very high expectations.

There is no formula or step-by-step guideline which teaches us how to precisely design a city from scratch, however, there are living proofs such as Ørestad and Hammarby, which are able to show us what should be avoided in the process of conceptualization of further compact cities. The urban planning according to the bird’s eye view needs to start being replaced by micro-scale urban design, this way, designing the cities at the same scale that we, humans, experience and perceive them.
Maria Johansson, Catharina Sternudd & Mattias Kärholm (2016): Perceived urban design qualities and affective experiences of walking, Journal of Urban Design


Michael Southworth and Eran Ben-Joseph (1997). Streets and the shaping of towns and cities

Hans Karssenberg, Jeroen Laven, Meredith Glasser & Mattijs van ‘t Hoff (2012). The city at eye level - lessons for street plinths


