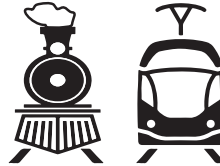


THE PROMISE OF MODERNISM

HISTORICAL GEOGRAPHY WITH SPACE SYNTAX

Urban design thesis by Gunnar Tjus



Pre-Industrial

Modern Industrialisation

Post-modern Historicism & Retrenchment

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I am equally appreciative of Lars Marcus, the enthusiastic examiner. His expertise in spatial form, urban systems, and resilience has been pivotal in refining my research. Lars's commitment to fostering holistic urban planning has left a lasting impression.

Personal background

As an architect who has studied in Scotland and Sweden, from a bachelor's degree in architecture at the University of Dundee towards a master's degree in architecture and urban design at Chalmers University of technology, the time spent studying the commonalities between these two countries is what drove me to write this thesis.

ABSTRACT

Aiming to transcend the confines of idealised visions and confront the realities of urban design. This thesis critically examines the concept of 'The Mixed-use City', a well-intentioned idea that, despite its popularity, has yet to be translated into effective methodology in the periphery of cities.

At the heart of the research are two case studies, identified as outliers in a report by the Spatial Morphology Group. These cases serve as a microcosm, providing a focused lens through which to scrutinise the challenges, opportunities, and disparities that characterise contemporary urban environments.

Providing context and offering valuable insights which can inform future interventions. The methodology employed in the thesis is a blend of space syntax with historical and geographical research. In this process, the thesis delves into the historical evolution of urban spaces, tracing the trajectory of their development over time. It analyses the impact of various factors on the transformation of space. Including culture, economic changes, technological advancements, and policy shifts. Amalgamating empirical knowledge, spatial analysis, and historical context to unravel the complex ways in which people mould the form of Göteborg.

The ultimate goal of this thesis is to shed light on the role architects can play in fostering sustainable, inclusive, and fair urban environments. Interventions should cater to a diverse array of needs and preferences, reflecting the multifaceted nature of urban populations.

The underpinnings of the case studies will be applied in a design action strategy. This strategy will focus on what historical research terms a 'fringe belt', which is more commonly known as a suburb in everyday practise. The design system will bridge the gap between theoretical aspirations and practical implementation, striking a balance between the pressing need for economic and CO2 efficiency and the commitment to egalitarian principles.

Through this comprehensive investigation, the thesis aspires to enrich our understanding of the intricate interplay between urbanism, infrastructure, and architecture. The research seeks to contribute to the discourse on sustainable urban development, offering insight that could inform future urban design and architectural practices.

INTRODUCTION

History does not repeat itself, but it often rhymes.

“The Mixed-use City as a ‘mantra’ in the urban planning debate should be moved to a concrete urban policy action strategy. For this to happen, research and methodology on the ‘Mixed City’ issues is required with direct link to sustainable urban development and physical/social planning.” (Bellander, 2005)

Current ‘City’ concepts is focusing on innovative solutions to concrete issues, but no ‘City’ concept since ‘The Radiant City’ has ever been more than a mantra, and sometimes the concepts are slogans for business as usual. ‘The Mixed-use City’ that was debated almost twenty years ago has the same problems today, and other cities concepts are trying to address the same issues: Unstructured system of public spaces, dysfunctional zoning, buildings retracted from the footpaths and car-oriented layouts (Venerandi et al., 2023; Bellander, 2005). When stakeholders work together to solve these issues architects can achieve great outcomes where representatives do great work, but political power can also be used to increase inequality since a consensus building process can easily be manipulated (Fainstein, 2011). How to build any city for the common good of all people remains a blind spot for people working in practise with urban development issues (Fusco et al., 2023). Economic efficiency forms the cornerstone of any planning, which is sometimes in tension with egalitarian principles. When efficiency becomes the only goal, it can produce unequal consequences, and urban design insensitive to the context (Moroni, 2023; Langemeyer & Connolly, 2020).

There are many ingredients to create a Mixed-use City, this includes promoting mixed-use development, developing public places, creating integrated and equitable infrastructure systems, and constructing mixed-income housing (Legeby, 2010; Kager & Harms, 2017; Graham & Marvin, 2001); However, the Swedish experience shows a lack of effective tools and resources to implement these strategies consistently. New projects often exacerbate existing disparities, in the long-term, increasing spatial inequalities within cities, the Swedish nation and the European Union. Well-connected enclaves with high-quality infrastructure have been built on top of older landscapes, while other areas remain underserved (Ryan et al., 2023). Sustainable and affordable solutions remain unevenly distributed. Certain areas have excellent options, while others lack opportunities, agency, and autonomy, particularly in the periphery of cities and within rural areas (Ryan, 2019; Nilsson & Stjernborg, 2022). Reconfiguring land use and plots could promote sustainable development and prevent future injustices, but in Sweden, this can only offer marginal improvements (Ryan & Martens, 2023). The maintenance and construction of infrastructure networks (like transport, telecommunications, water, and energy) can lead to disconnection and splintering, which creates a fragmented city, with well-connected and privileged zones alongside alienated, neglected and underserved zones. By utilising new tools alongside traditional urban planning methods, urban designers could move beyond slogans to create Mixed Cities that truly does promote sustainability, connectedness and inclusivity.



Figure 1. Högertrafikomläggningen på Kungsgatan. (1967).

How can historical geography and space syntax inform concrete strategies for sustainable, mixed-use development, fostering a resilient periphery?

Methodology

This thesis has developed an interdisciplinary framework for the analysis of urban spaces by considering both the physical layout of cities and the socio-political context. This semi-systematic research could be further developed and into a methodology that can be scrutinised within the field of urban morphology. It is a pilot study, which could be more systematised within a comprehensive research project.

Current Geography - Synchronic

Understanding the socio-spatial organisation by analysing built form (space syntax) and infrastructure.

Historical Geography - Diachronic

The forces that shaped the built environment, how it develops over time and the processes involved. Includes the various socio-political dimensions of space, examining the artefacts, statistics and texts that can be read and interpreted. This analysis has not been fully developed, if the work was more systematised, it would require strong collaboration with a historian that can deep dive into the work.

Case Studies

Were chosen to test this framework and analyse two opposite contexts in the current city. These regions are outliers in research conducted by the Spatial Morphology Group (SMoG). Their research spans both buildings and cities, positioning their work within the field of urban morphology. The outliers they identified can serve as a microcosm for larger challenges and potentials in the metropolitan area.

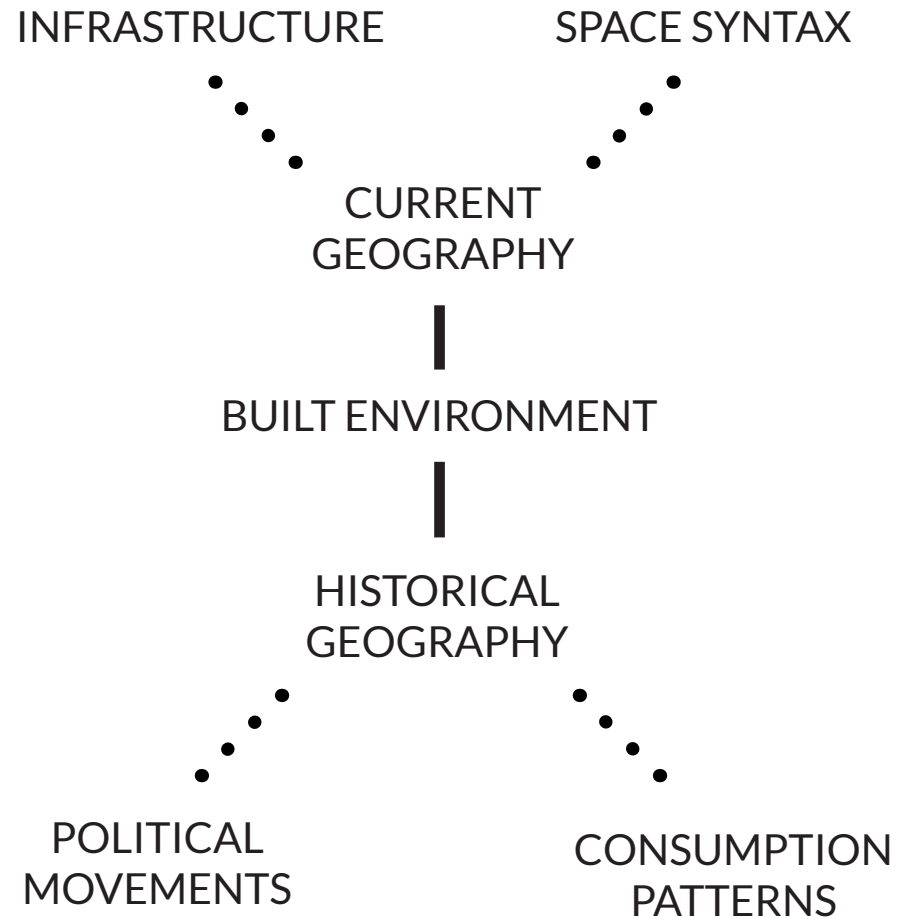


Figure 2. Process diagram. (2024). Own work.

Limitations & Sustainable Development Goals

Socio-Political Analysis (Lefebvre et al.)

May prioritise meaning of urban elements at the expense of understanding their practical functions and the lived experiences of dwellers. Potentially missing the dynamic and evolving nature of cities, which can oversimplify the multifaceted nature of urban spaces.

Space Syntax Theory (Hillier et al.)

When reading the data it is not always clear how and why certain phenomena or situation has occurred and data can also be of poor quality, which means that the theories can be intentionally or accidentally misused. For example, geospatial analysis does not consider the effect pollution, crime or traffic accidents has on individuals (Eldjick et al., 2022).

Morphological Tradition (Conzen et al.)

While providing valuable insights into the various forces shaping urban settlements and form, the research often focuses on specific geographic regions and might overlook contemporary or future dynamics that influence them. Analysis from many perspectives and contexts are important, as the findings and concepts developed within this tradition may not be universally applicable and may not account for regional variations. "Urban morphology has been criticised for its traditional focus on the historical urban centres, which limited its theoretical frame and models of analysis to the historical buildings and their immediate surroundings. New urban forms are generally not been considered, because of the insufficiency of the morphological theory and its tools of analysis. Urban morphologists strive to expand their field by considering the whole city." (Stojanovski et al., 2023)

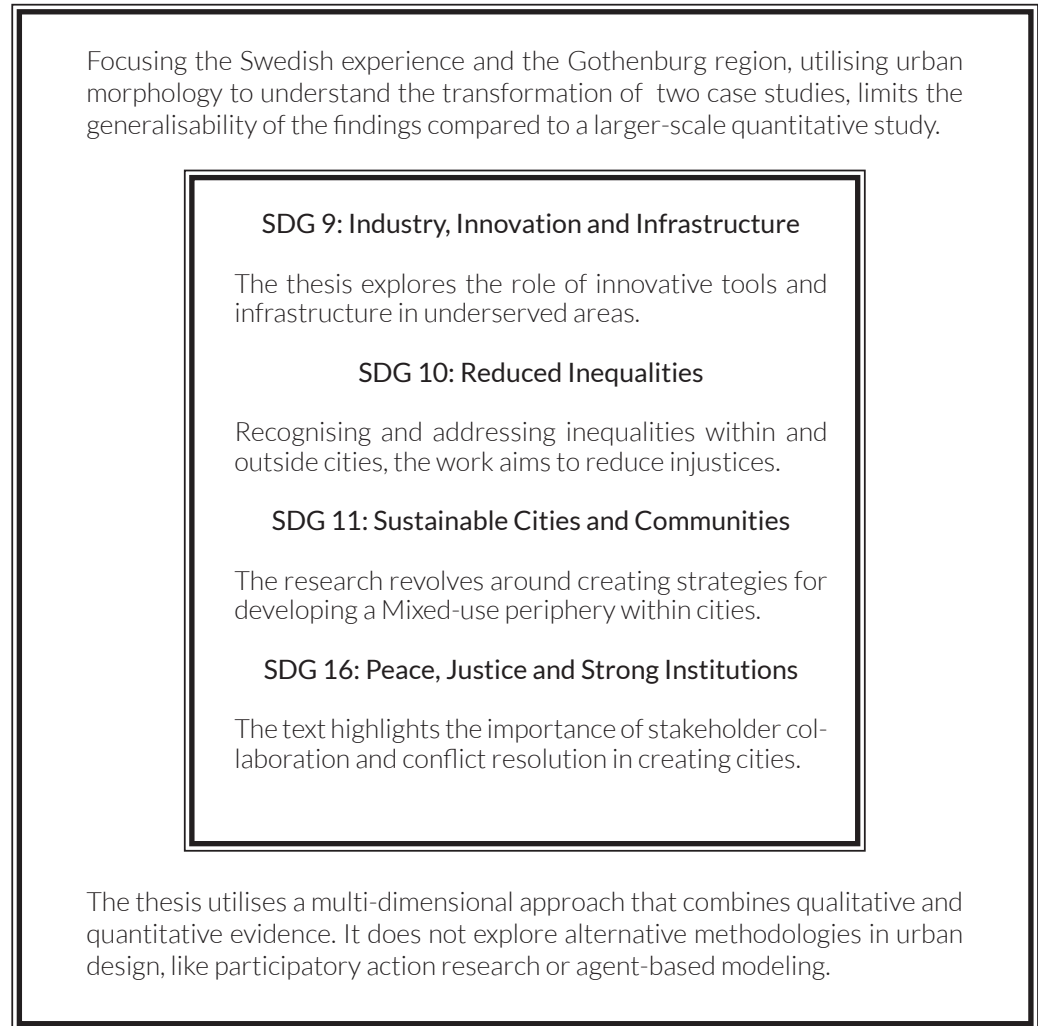


Figure 3. Content diagram. (2024). Own work.

SPACE SYNTAX: Configurational Approach to Urban Morphology

Architectural studies often examine cities from a static perspective. This can oversimplify the complexity of cities and disconnect space from the activities that shape it culturally, historically and socially.

Spatial Analysis

“By focusing on the perceptually significant dimensions of the physical city, space syntax places humans squarely in the forefront of the analysis of space” (Rashid, 2019). This theory can be used to evaluate how buildings (i.e., entrances and windows) relate to public places (streets, parks, etc.) and this can influence how secure, attractive, or interesting these spaces are perceived (Legeby, 2010). Combined with quantitative and qualitative research, space syntax will enable a more accurate comparison of the case studies.

Historical Analysis

Balancing historical narratives with spatial analysis is crucial to study the relationship between physical space and social phenomena. Spatial analysis cannot fully capture the relationship of space to the long process of deliberation and negotiation among multiple actors (Rashid, 2019). Utilising geospatial analysis and historical artifacts can untangle different relationships and dependencies.

Innovative Tools

The Place Syntax and Urban calculator tools rely on space syntax and geographic information systems (GIS) to provide user friendly spatial analysis of connectivity; However, the vitality of urban life is not just about quantity of activity, it is also about the quality of social interactions and the overall experience of being in a place (Hillier, 1996).

Betweenness and integration centrality has been proven to correlate to pedestrian flows. Different radius of analysis of movement patterns can help to evaluate important connections on the local, neighbourhood and global scale.

Angular betweenness centrality

Indicates how often a street segment is part of the shortest path between all other street segments in the network within the set radius. A street segment with high value is an important mediator and more likely to be passed through.



Figure 4. Angular betweenness. (2024). Own work.

Angular integration centrality

Calculates how close a street segment is to all other streets in the network and thus, more likely to be passed to go to something, within the set radius.



Figure 5. Angular integration. (2024). Own work.

Additional Glossary

Morphological frame is the spatial, social and legal framework that determines the shape of urban form. The frame consists of elements such as streets, plots, blocks, and the boundaries that outline it.

Morphological region describes heterogeneity, shaped by an interplay between town plan, building form and land use.

The Radiant City an unrealised urban design project conceived by 'Le Corbusier' in 1930.

The Mixed-use City integrates various functions and seeks to reduce the amounts of zones and barriers, fostering connections while providing pedestrian accessibility.

The 15-minute City envisions neighbourhoods where inhabitants can access daily necessities like groceries, green spaces, social life and work within 15 minutes.

Transit-oriented development a symbiotic relationship between compact form and efficient public transport use.

Synchronic this term refers to the study at a particular point in time, without considering the historical context

Diachronic pertains to the study of the evolution and change within the built environment over a period of time.

Urban agglomeration is when firms and people locate near one another in cities and industrial clusters.

Urban resilience is defined as the capacity of a city's systems and inhabitants to survive, adapt, and thrive amidst various chronic stresses and acute shocks.

Socially sustainable urban regeneration are redevelopment projects that balance economic growth with ecology and social well-being. Including strategies like inclusive community engagement, affordable housing, preservation of local ecology and social fabric, and educational quality.

Modes of transport is a method or way of traveling, or of transporting people or cargo.

Street segment is the section of street or path lying between two intersections.

Segregation refers to a state where spaces are more remote or cut off from all other spaces within an area.

Rhizome is a system of roots and shoots from nodes. Non-hierarchical, heterogeneous, multiplicitous, and acentered.

Fringe belt is an area that encircles the older city centre, created by the cycles of growth and decline. They contain a variety of land-uses, buildings, and construction periods.

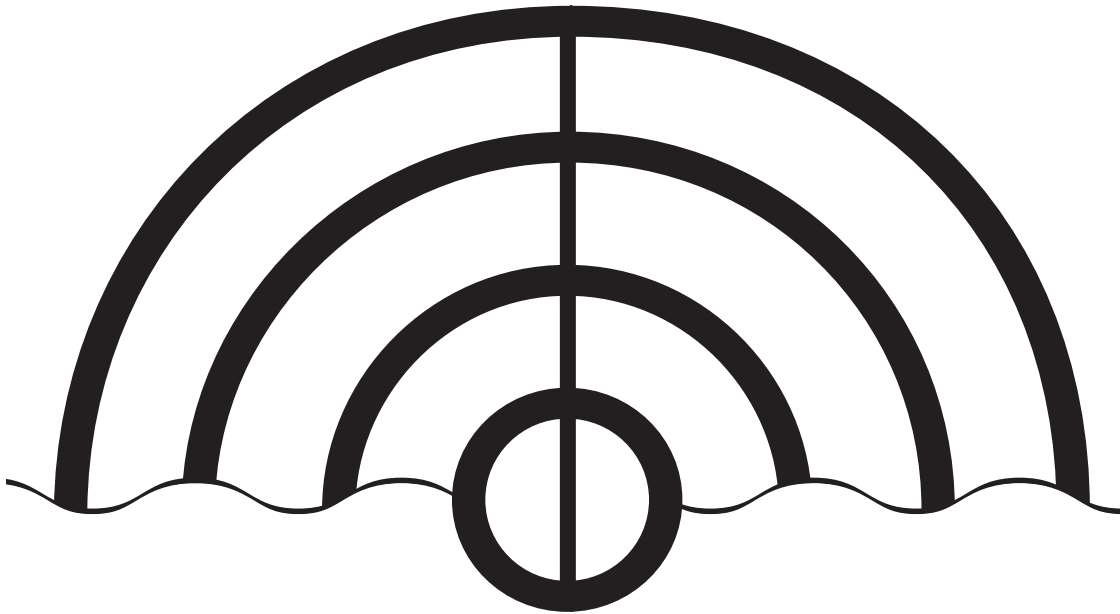
Consolidation marks intensified land use, increased infrastructure, and clustering of functions of a fringe belt, leading to a more interconnected urban fabric.

Reduction involves diminishing significance, size, or functionality due to landscape, economics or policy changes.

Migration refers to population or activity movement in and out of fringe belt areas.

Alienation the instances when an areas lose original characteristics in a short time-frame, and the identity is erased.

SYNCHRONIC ANALYSIS



Global Positions
Logistics & Activity

Local Network
Regions & Transport

Crossing Analysis
Barrier Effects

Figure 16. Splintering diagram. (2024). Own work.

The built environment shapes time and space. Railways, motorways, buildings and green corridors impacts urban growth and sustainability.

There is a division between the north and south sides of Göteborg. The disparities between the two are evident in the availability of amenities, services, and establishments (as seen in Figure 7). On the south side, the city is characterised by higher population density, which is why it enjoys greater access to resources (as seen in Figure 8). At the same time, the northern neighbourhoods, particularly the north-eastern quadrant, grapples with distinct challenges related to unemployment, social exclusion, and urban decay.

While the challenges faced by these neighbourhoods will not vanish overnight, sustained efforts can make a difference. Policies, bridges and projects implemented in the core of the city have had positive long-term consequences; However, the motorways and train terminals pose significant hurdles to extending the reach of concerted efforts by various stakeholders to bridge the divide and promote fair development.

Often, it is precisely in the periphery where interventions could have the greatest positive impact. To reduce the risk of 15-minute city policies exacerbating the tensions between the city centre and periphery, 'The Evolutive Meshed Compact City' project has proposed adapting the concept to the conditions of the periphery (Fusco et al., 2023). In order to rectify the imbalance between the north and the south, knowledge generated for high-value properties in the city centre must be effectively translated into practical applications for properties and frameworks outside the city centre. If Göteborg aims for the north-east to thrive, it must extend knowledge across time and space.

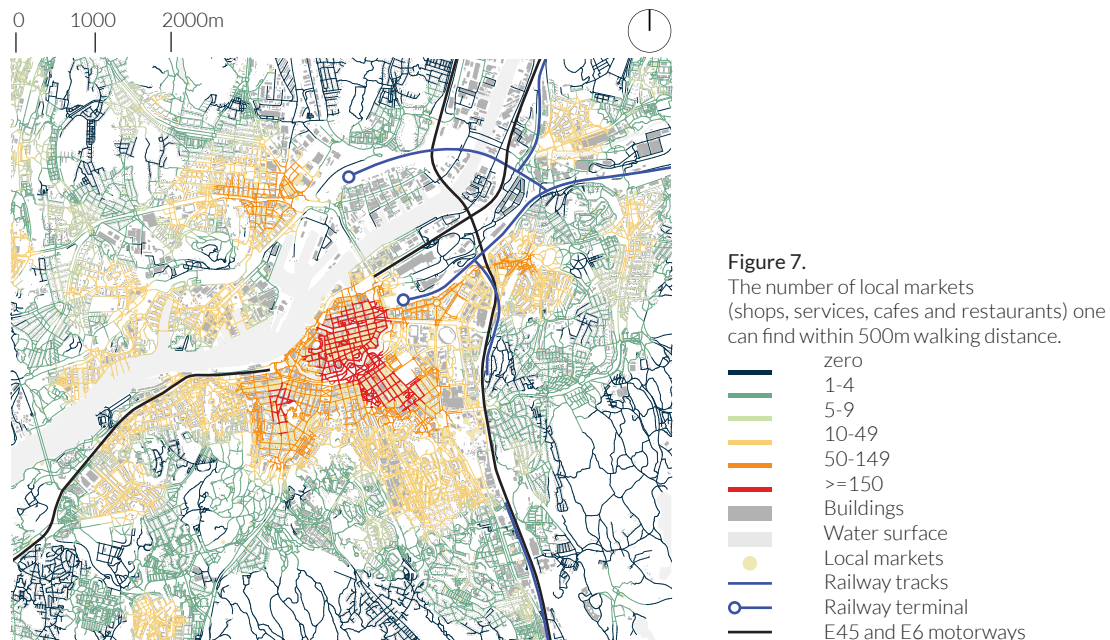


Figure 7. Göteborg's local markets. (2024). Own work.

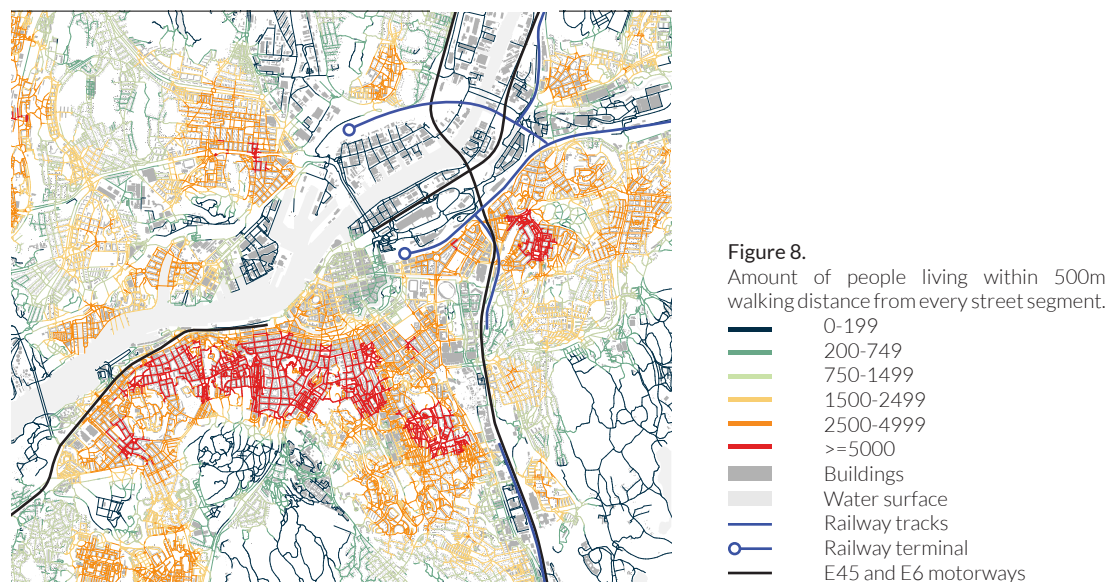


Figure 8. Göteborg's population density. (2024). Own work.

GLOBAL POSITIONS

Previous research has been conducted using a node-quality model of train stations in the metropolitan region of Göteborg by Pont et al. (2022). This analysis reveals which train stations surrounding the city have greater access to services and open land that is readily available for development. From this analysis, two outliers emerge:

Bohus

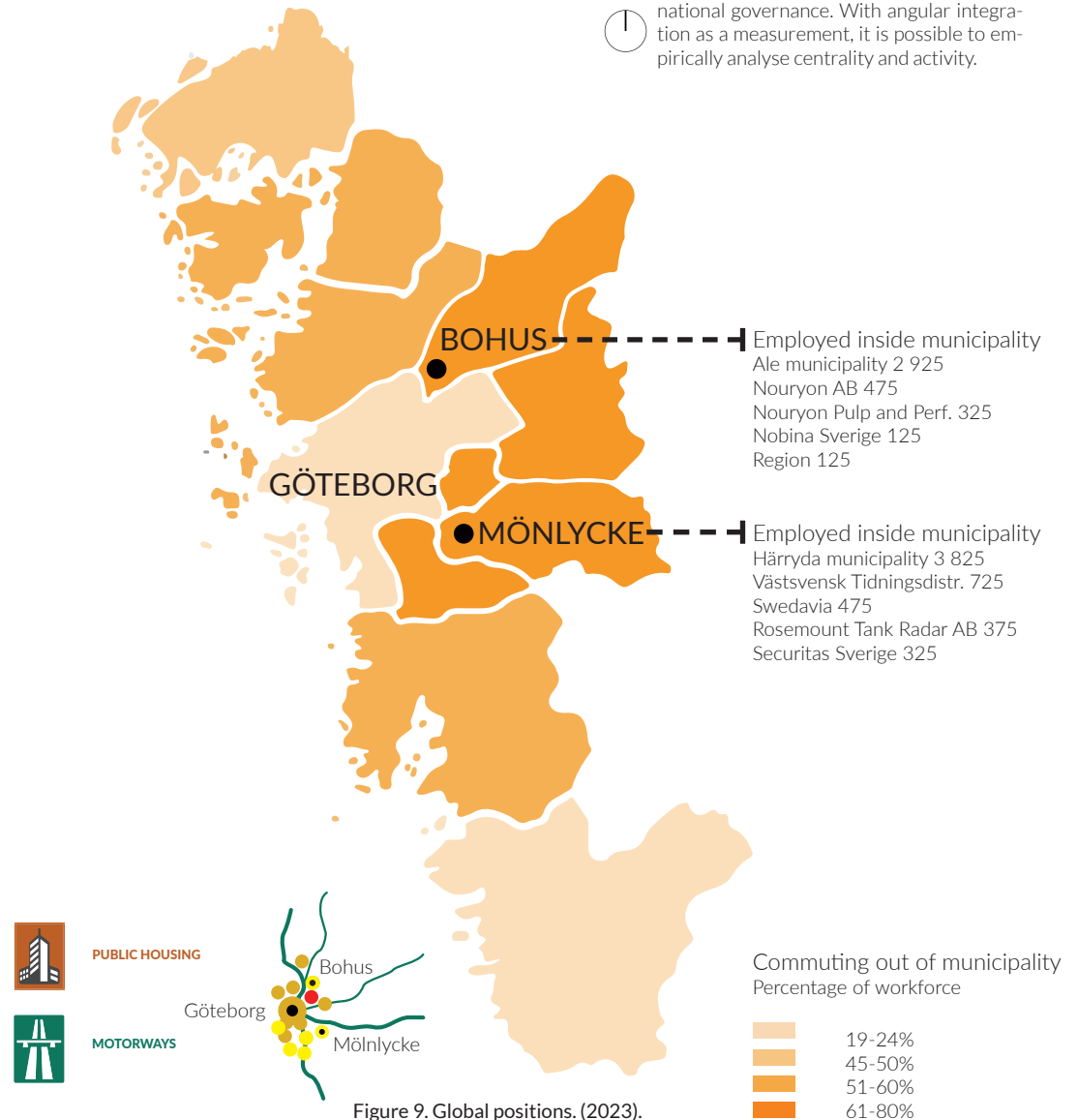
Few services close to the station, but there is a relatively high number of people using the main public transport station. The transportation capacity is high, allowing for further development. However, regulations are preventing development in the area, primarily due to the fear of unsustainably raising rent prices.

Mölnlycke

There are many services close to the main station, but a relatively low number of people travel from it. Infrastructural developments have integrated different transport modes, including cycling, walking, commuter trains, and buses. The municipality is home to a large airport. Yet, the current train connection to Borås and other cities to the east could be argued is insufficient from a global network perspective.

A snapshot of the current landscape does not reveal how and why these suburbs have their current characteristics, but it does indicate that inequalities have partly been shaped by the segregation and separation of municipalities and communities. Higher education has been correlated to higher public transport use, but research has also found that affluent individuals with greater access to public transport services tend to avoid them, even when they technically have more measured access (Ryan et al., 2023).

The figures shows how municipal boundaries and segregation. This reveals that regional spatial inequality is dependent on local and national governance. With angular integration as a measurement, it is possible to empirically analyse centrality and activity.



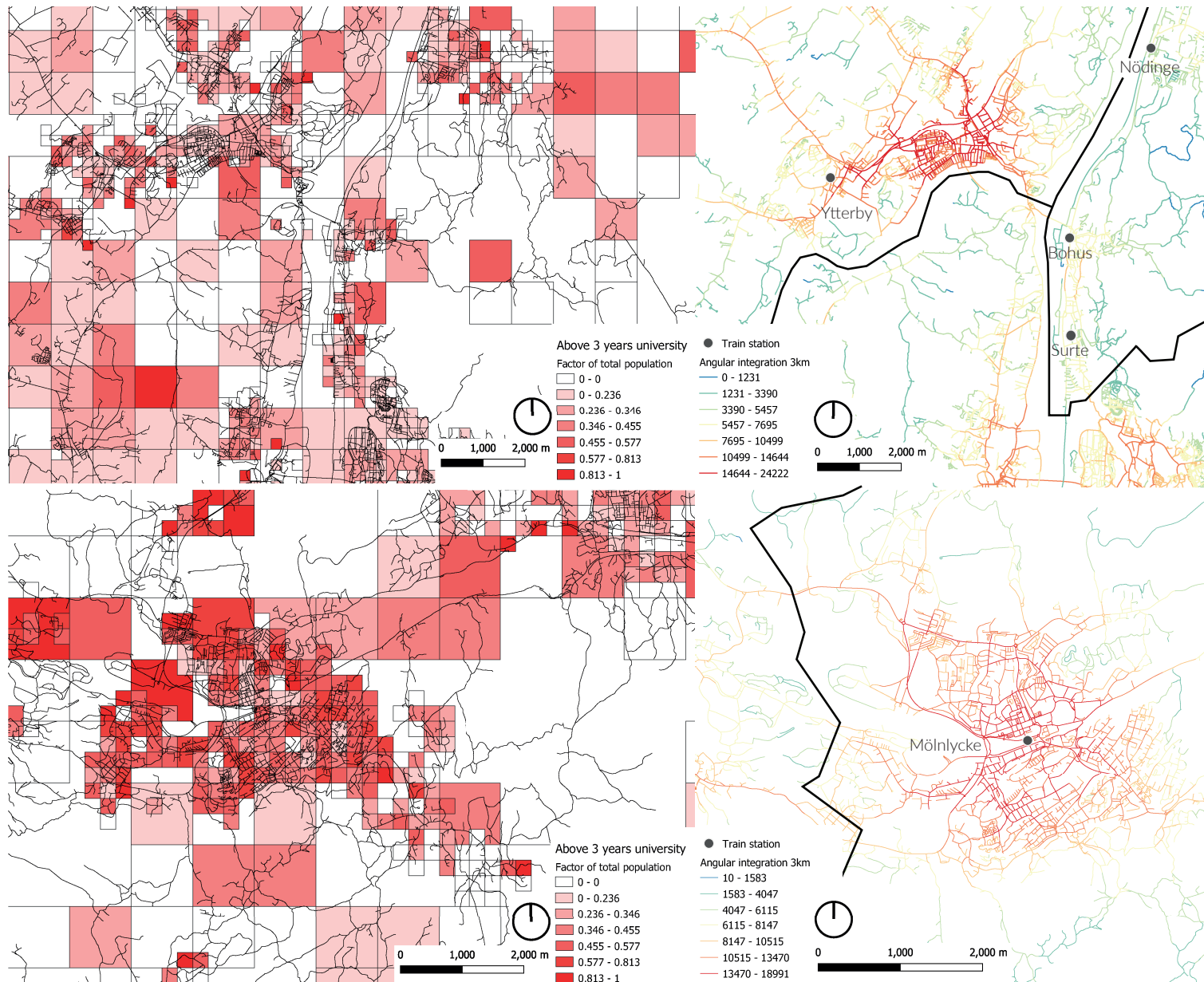


Figure 10. Correlation between global position, higher education and neighbourhood integration. (2023). Own work.

LOCAL NETWORK

Mölnlycke and Härryda municipality are well-connected, with infrastructure that supports urban development. In the region, thoughtful alignment and rhizomatic connections among various elements creates a cohesive fabric that responds to the landscape. The region is characterised by street patterns, plot shapes, and the arrangement of public and private spaces, that seamlessly integrates with building forms, taking into account typology, age, and their interrelationships. Simultaneously, mixed land use fosters a dynamic and adaptive environment.

Contrastingly, Ale municipality and the north-east fringe belts, including Bohus and Surte, exhibit more segmented and diffuse town plans. Simultaneously, the building form and land use exhibit several problematic qualities:

Inactive Street Frontages

Blank walks, entrances facing away from streets and car-centric layouts discourages interaction (Kickert et al., 2023)

Unstructured Public Spaces

The lack of well-defined connected public spaces discourages community building and hinders the success of bottom-up approaches to town planning (Venerandi et al., 2023).

Dysfunctional Zoning

Has reinforced physical barriers between markets, workplaces, residents and ecosystems.



Figure 11. Bohus-Surte public transport stops. (2024). Own work.

There is a growing interest in the role of the physical built environment on people's active behaviours. The fundamental assumption is that the surrounding physical environment can support active behaviours among a large number of people with long-term effects.

Figures 11, 12.

The number of public transport stops one can find within 500m walking distance from every street segment

- zero
- 1
- 2-5
- 6-19
- =>20
- Public transport stops
- Buildings



Figure 12. Mölnlycke public transport stops. (2024). Own work.

CROSSING ANALYSIS

According to Eldjik et al. (2022), even though geospatial analysis does not explicitly consider vertical elements like bridges and tunnels, space syntax can still assess the impact of barriers on integration and accessibility.

“Transport infrastructure such as motorways, railways and arterial roads can improve accessibility for motorised transport on a regional and inter-urban scale but can at the same time create barriers that reduce accessibility for pedestrians and cyclists on a local scale.” (Eldjik et al., 2022).

Bohus is Facing High Severance Barrier.

With centrality analysis, space syntax can reveal the severity of barriers (seen on page 13). The theory can also be used to analyse movement between different parts of the neighbourhood (seen on page 17). Evaluating street design quality and regulations is also important. Barriers can produce various effects, such as noise and air pollution or fear of traffic accidents. In this comparison, the motorway in Bohus generates a substantial amount of pollution, which could be proven with data from ‘trafikverket’. This information can be used to design better streets and public places.

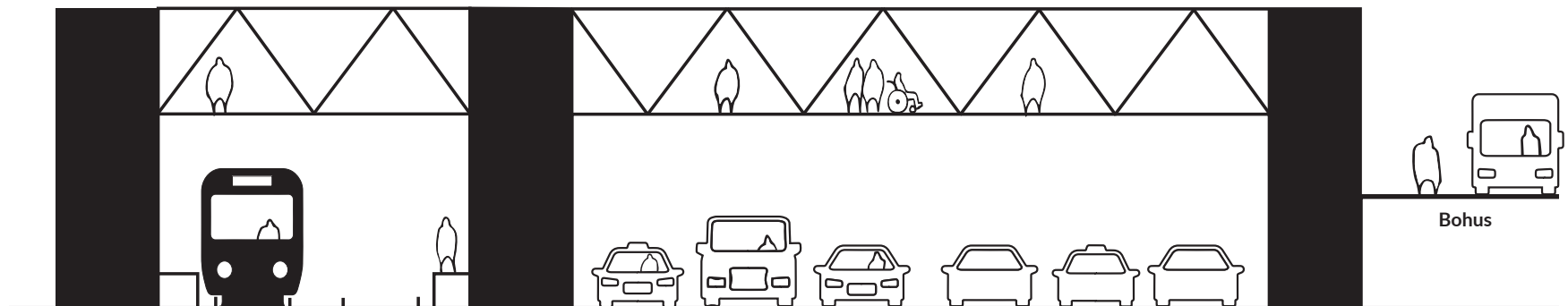
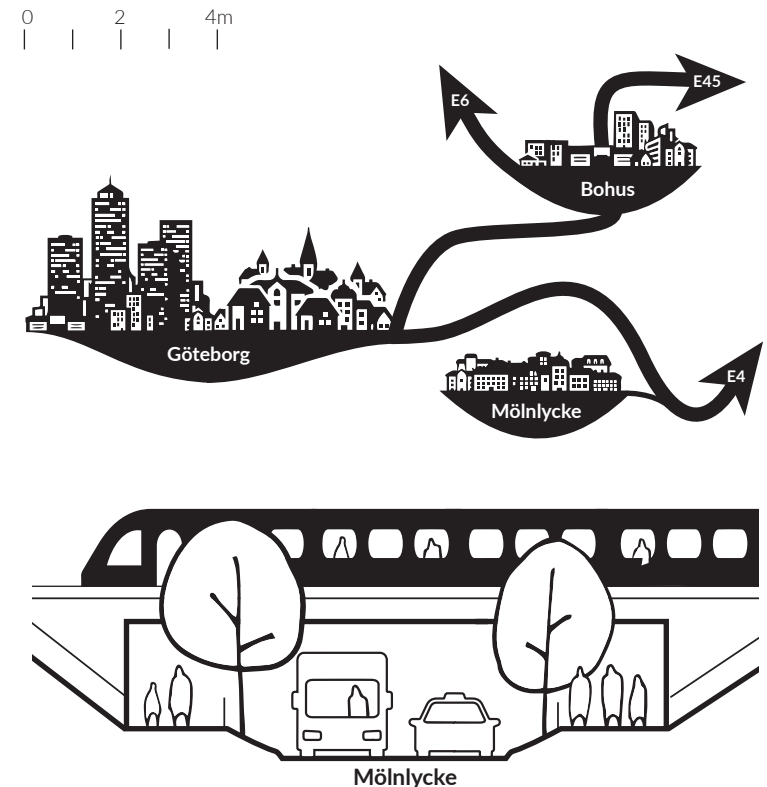


Figure 13. Analysis of crossings. (2023). Own work.

Lower income groups tend to live in neighbourhoods that are close to motorways. (Lorbach et al., 2021)

Many regions within fringe belts in Sweden have strong spatial connections to the city core and workplaces but weak cross-connections (Legeby, 2010; Ryan & Martens, 2023; Nilsson & Stjernborg, 2022). Despite their geographical proximity to the city centre, some areas are segregated due to of barriers, such as motorways, railways, and rivers. Spatial analysis reveals that both neglected and affluent areas can be found in segregated positions. Spatially segregated workplaces, markets, and community centres are largely dependent on local resources, a situation that benefits individuals in affluent areas, but is also detrimental to residents in areas with scarce resources (Legeby, 2010). “This leads to both marginalisation and lack of access to mobility, as well as strong attachment to private cars as symbol of independence, identity or welfare.” (Lorbach et al., 2021)

Segregation is a concern for the whole city, particularly from an urban design perspective. (Legeby, 2010)

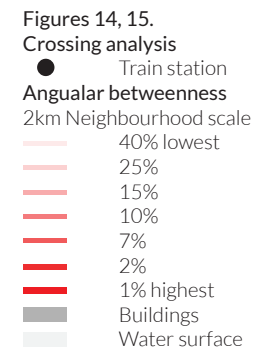
A common critique of many modern suburbs in Sweden is that their local centres do not function well as social meeting places nor for commercial activities. These neighbourhoods typically lie peripherally to the city centre and were planned and built after 1960 (Legeby, 2010). Over many decades, the discourse has focused on a ‘one-size-fits-all’ solution to reverse negative trends in these areas. However, this approach does not work in all cases. The areas with dysfunctional local centres have different spatial properties and potential, primarily related to their global position, but they also exhibit distinct spatial shortcomings and qualities at a local level that need recognition. For example, Bohus and Surte are not affluent neighbourhoods, nor are they multi-household neighbourhoods built after 1960, they were planned during the earlier industrialisation and modernisation of Sweden around 1930. The diachronic analysis will uncover the evolution of these areas.



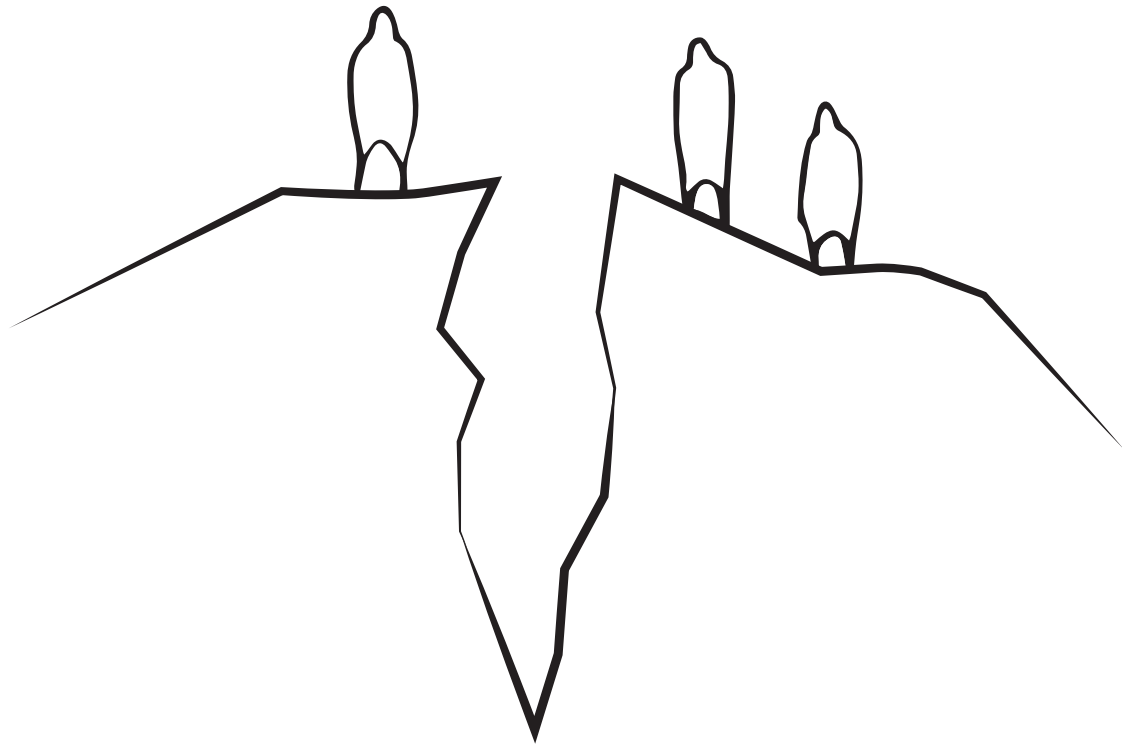
Figure 14. Mölnlycke - estimated through movement. (2024). Own work.



Figure 15. Bohus - estimated through movement. (2024). Own work.



DIACHRONIC ANALYSIS



Welfare Society 1932-1976

Folkhem

Record Years 1953-1973

Rekordår

Green Wave 1968-1982

Grön Våg

Europeanisation 1991-2000

Europeisering

“Urban design history is characterised by the continuous emergence of new design models aimed at the physical concretisation of ideological positions and societal aspirations.”
(Venerandi et al., 2023)

Figure 6. Splitting diagram. (2024). Own work.



Figure 17. Göta älv. (2024). Own work.



Figure 18. Mölndalsån. (2024). Own work.

The fringe belt, situated at the periphery of urban areas, represents a dynamic transition between the urban core and rural hinterlands. Its formation is closely tied to population growth, suburbanisation, industrialisation, nature sanctuaries, and land-use changes. Historically, fringe belts have been areas of intersection between urban and rural lifestyles, reflecting evolving economic, social, and cultural dynamics. The persistence of fringe belt areas is more noticeable in the middle and outer fringe belts. This is attributed to several factors, including their emergence during the later stages of urban growth, the existence of established fixation lines, the prevalence of larger plot parcels, and the challenges associated with relocating to areas that offer comparable spatial features (Çalışkan, 2023). The historical analysis will describe the fringe belt of Mölnlycke and Bohus-Surte and connect this geographical description with an historical analysis of the social movements that occurred during those years.

The ongoing transformation of Bohus-Surte and Mölnlycke can be broadly categorised into several key processes, including consolidation, reduction, migration, alienation, and sustained continuity of the fringe belt. These changes are not random occurrences but are, in fact, influenced by a range of deliberate and controlled processes. These processes encompass economic investments made by the city, strategic urbanisation initiatives, and intentional planning decisions. Simultaneously, unplanned factors also exert an impact on the ebb and flow of fringe belt dynamics. Uncontrolled factors include population movements, migration, and the consequences of wars and disasters (Çalışkan, 2023).

In this sense, the study of fringe belts in urban settings becomes a dynamic exploration of the interplay between planned urban development and unforeseen events that shape the urban landscape. Urban space serves as both a factor in and a result of production, taking shape through prevailing property dynamics. The benefits of real estate and the key players influencing usage patterns are essential in understanding these dynamics.



Figure 19. Kungälv SO. (1936). Note: Station offered ferries over the river.

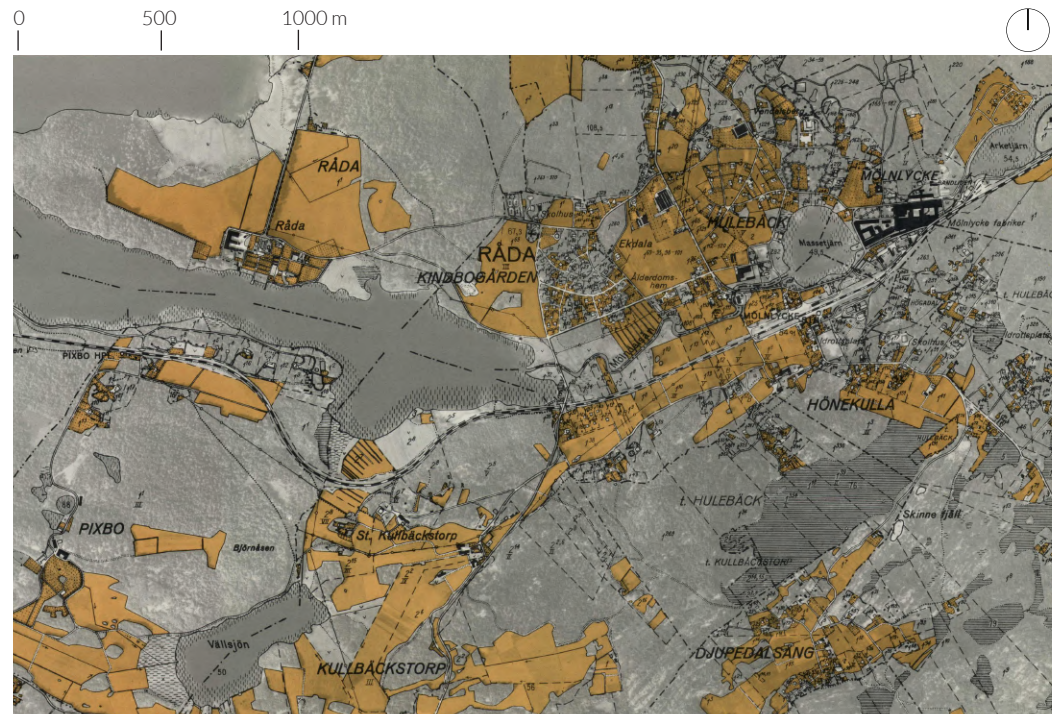


Figure 20. Råda NV. (1937). Note: Mönlycke was originally called Råda, named after the manor estate to the west.

Bohus: Was originally an industrial offshoot of Kungälv, named after the historic fortress nearby. There was a lot of farmlands west of the river, with some industrial development to the east. Bohus served as Göteborgs' travel node, as the ferry and train station facilitated services to industries, Kungälv and the historic fortress to the west of the railway tracks.

Mönlycke: History traces back to its early development from a manor estate known as Råda. The presence of the train station and burgeoning industry led to growth, this transformed the estate into single-household suburb. The plot structure was already established in 1937, laying a solid foundation for future expansion and growth. This early planning and development set the stage for Mönlycke to evolve into the thriving town it is today.

Figures 19, 20.

Bohus & Mönlycke

- ⋯ Plots
- Double-track railway
- ▬ Non-residential building
- ▭ Residential building
- Arable land (with impediment)
- Water surface

WELFARE SOCIETY

Zenith 1932-1976



The Folkhem 'People's home' Movement

Public and cooperative companies were formed with a social mission to contribute to urban development and social integration (Götz, 2002). "Let us instead deprive our present-day capitalists one by one of their functions of property, so that in a few decades they will still be formally kings, but in reality as more or less powerless symbols of a bygone era" (Adler-Karlsson, 1967).

Consumption Culture

The urbansation increased from 20% of total population in 1880 to 50% in 1930 (Svanström, 2015). Advertising and propaganda was widespread. Social reforms and growth increased the rights and living standards of workers.

Public-Private Partnership

The social-democrats created a compromise in the conflict between labour and industry owners. Businesses were controlled with regulations instead of government ownership. The policies relied on mild medications to their achieve goals, and the justifications for this varied throughout history, initially from a social housing policy perspective and cultural objectives, but from around 1970 mostly for environmental purposes (Vedung, 2021).

Social Resistance

The municipalities expressed doubts to several aspects of government policy, which led to tensions that decentralised power; However, the public control of urban land has occurred through a broad four-party front across party lines, consisting of all parties except 'The Moderates'. A trend that reversed after the elections of 1991 (Vedung, 2021).

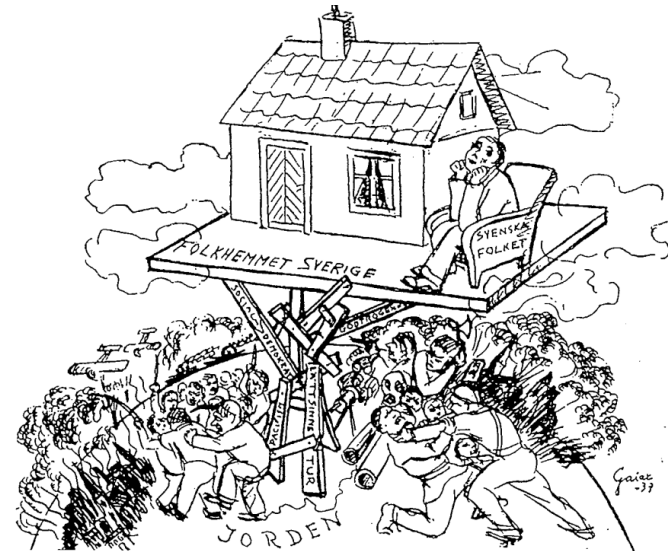


Figure 21. Drawing featured by a Swedish conservative organisation in 1934 'How Sweden experiences itself'. (2002).



Figure 22. "Neither the Soviet star nor the swastika. Against dictatorship, against violence and barbarity: Vote for the Social Democratic Workers' Party". (1934).



Figure 23. Bohus. (circa 1960). Note: Consolidation doubled the size.



Figure 24. Mölnlycke. (circa 1960). Note: Mix of single-households and multi-households close to the station.

Bohus: Undergoing significant changes, the once serene suburbs near the station was now a hub of activity. The expanding industrial sector fueled the construction of multi-households and single-households close to the railway, providing convenient living spaces for workers. The rhythmic clatter of trains echoed through the streets as factories churned out goods, and families settled into their new homes.

Mölnlycke: This villa suburb, once scattered across the landscape, now consolidating. The growth was mostly driven by residential land-use, lacking any new industry or commercial activities, a commuter town was born. The infill developments introduced more density through multi-households, filling in the gaps in the network connected to the station.

Figures 23, 24.
Bohus & Mölnlycke
 Developments 1937-1965

RECORD YEARS Zenith 1953-1973



The Modernisation Movement

With the end of protectionism and importing new technologies, neutrality during WW2 put Sweden at the forefront (Schön, 2014). Modern technology, architecture and motorways was developed. Among the leaders, one representative wrote a poem: "I often feel like caressing the machines, putting my hand against a flywheel, and feel how the shiny steel slips under the fingertips" (Kylhammar, 1990).

Consumption Culture

The landscape changed dramatically. Housing areas, shopping malls, and public facilities were built. The state subsidised migration to industrial clusters, increasing agglomeration and urbanisation by 20% 1930-1960 (Svanström, 2015). At the height of industry, 'Miljonprogrammet' aim was to provide for all income levels by an even divide in high-rise, low-rise, and single-households (Boverket, 2023).

Globalisation

Free trade, sponsored by the state and industry owners, made Sweden catch up to other countries (Schön, 2014). Göteborg became a leading exporters of cars and ships.

Social Resistance

Initially, left-wing intellectuals like Strindberg, perceived industrialisation to be inhumane, harsh and cold. Right-wing contrarians went further and critiqued modernism for destroying traditional values, spirituality and natural landscapes (Kylhammar, 1990). After 1968 there was widespread resistance against modernism, that was critiqued for assimilating marginalised groups (Mattsson, 2023).

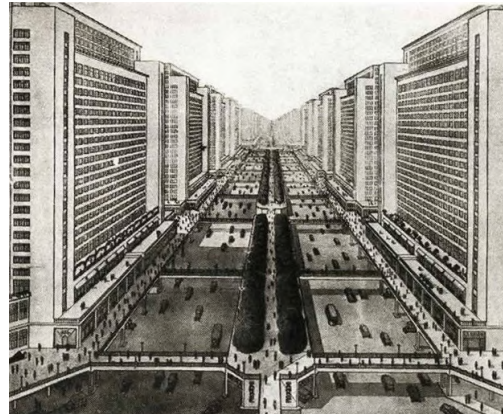


Figure 25. The Radiant City. (1930).

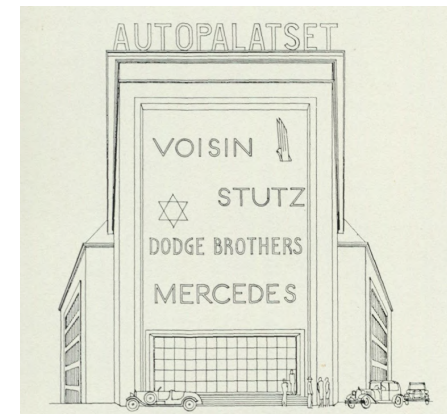
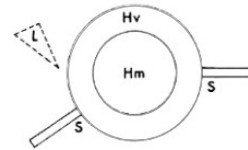
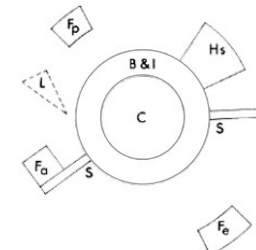


Figure 26. Ture Ryberg's proposal for Philipsons Automobil Aktiebolag 'Per Haps' 1936. (1968).



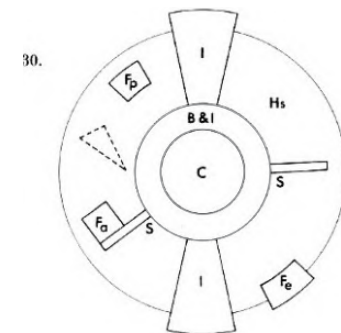
Model of the pre-industrial city



Model of the Swedish city during industrialisation up until 1930

Pre-industrial morphological frame
Hm = Tradesmen zone
Hv = Artisan zone
S = Laborer zone
L = Manor estate

Industrial morphological frame
C = City
B&I = Settlements and industry
Fa = Worker suburb
Fp = Patrician suburb
Fe = Single-household suburb
Hs = Multi-household zone
I = Industry zone



Model of the Swedish city during industrialisation 1930-1960

Figure 27. Translation of Améen morphological frame model. (1964).



Figure 28. Bohus. (1975). Note: The E6 to the west and the E45 to the east.



Figure 29. Mölnlycke. (cirka 1975). Note: Single-households and multi-households was funded by 'Miljonprogrammet'.

Bohus: The identity of the region was alienated as the construction of the E45 motorway acted as a new dividing line, separating industry, river and historic centre from the life of the dwellers, preventing urban development. On west side, factories and Kungälv hummed with activity, while on the east, some parking spaces and mixed-income residential construction was built.

Mölnlycke: Continued consolidating. To the north, multi-households had emerged, providing modern living spaces. Meanwhile, to the south, individuality bloomed in the form of quaint single-household plots and a few multi-household dwellings. Between the two, the station was redeveloped. Mölnlycke's pulse beat in harmony with both progress and tradition, shaping its character against the backdrop of change.

Figures 28, 29.
Bohus & Mölnlycke
 Developments 1965-1975

GREEN WAVE

Zenith 1968-1982



The Postmodern Movement

In the previously agrarian society, '68 counter-culture found allies with the farmers party. "There must be something crazy about a civilization that sacrifices a hundred time more toil, ingenuity, and willpower to the production of more or less necessary manufactured goods than on the solution of the vital problems of physical sustenance and spiritual health of mankind." - Selander (Kylhammar, 1990).

Consumption culture

This counter-culture was a reaction against the hierarchy that had accompanied economic boom, and ended with creating new urban-rural schism. Culturally, it has reduced reliance on industry owners and the state by embracing communal lifestyles or individual self-sufficiency. Economically, the ruralisation trend has caused gentrification and social segregation of various villa and townhouse suburbs (Kolkowski et al., 2023; Mattsson, 2023).

Anti-Growth

Challenged the prevailing economic paradigm, which placed a high value on economic growth and efficiency.

Social Resistance

Conservatives and free-market advocates viewed the movement as a threat to the liberal world order. Environmentalists criticised the movement's perceived lack of focus on environmental issues. Some social justice activists argued that the green wave's emphasis on individual responsibility overlooked the systemic causes of environmental degradation and social inequality (Mattsson, 2023).

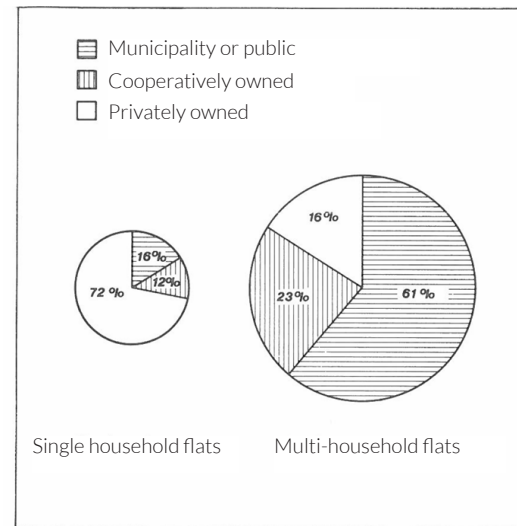


Figure 30. Ownership of production 1970 Sweden. (1972).

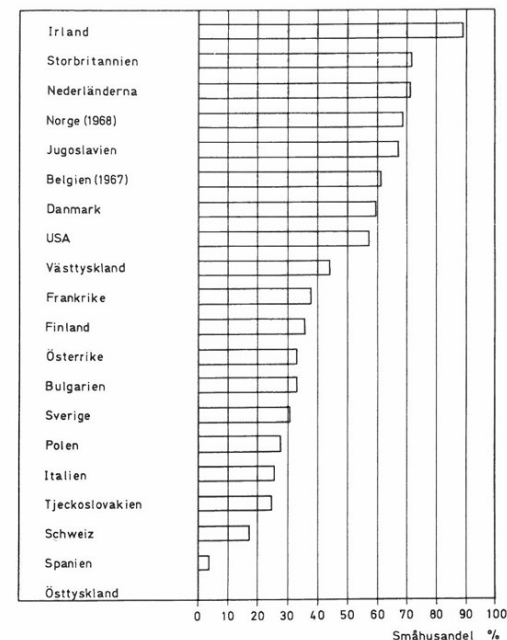


Figure 31. Share of single-household producing year 1969. (1972).



Figure 32. Bohus. (circa 2024). Note: Minor infrastructure adjustments.

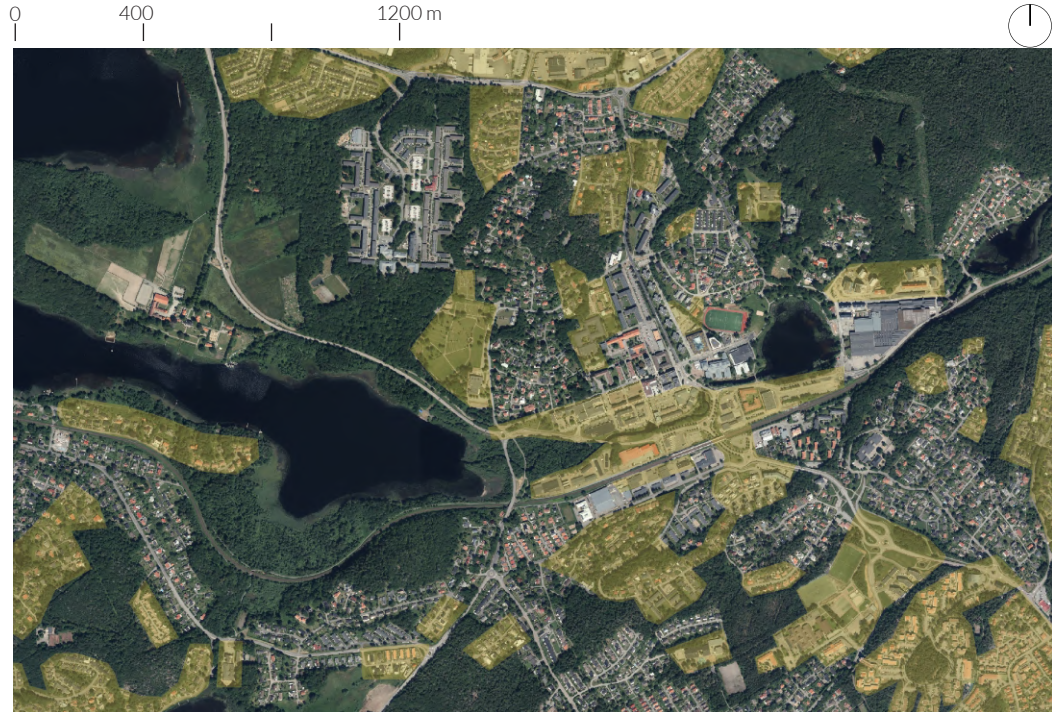


Figure 33. Mölnlycke. (circa 2024). Note: Increase in single- and multi-households, and a wide variety of services.

Bohus: The fringe belt and Ale municipality's land reduced in significance and value because of the severe barrier effects of the E45. Kungälv and Göteborg are unable to support them effectively, since they are not part of the same district. With some adjustments to the infrastructure and minor residential land-use growth, the mall shut down commercial and public services, the public has had to prop up the markets. The reduction is also related to the fringe belt lacking economic growth, as many workplaces in the north went bankrupt. Bohus industries survived, but are difficult to access for locals.

Mölnlycke: Even greater consolidation. The growth was driven by single-households sprawling out from the station. Multi-households and town house dwellings were also built in certain locations. The train station was adapted to include buses, cyclists and cars. Major industries were built next to the E4 motorway north of the suburb. Many people are migrating to the space to get closer to workplaces and housing in proximity to ecosystem, social and commercial services.

Figures 32, 33.
Bohus & Mölnlycke
 Developments 1975-2024

EUROPEANISATION Zenith 1991-2000



The Europeanisation Movement

The Swedish people elected representatives that made the country join European Economic Area in 1992, and held a narrow referendum to join the European Union (EU) in 1995. Compared to Sweden, the EU agenda was more right-wing and laissez-faire, the accession meant adapting to as well as influencing the union. Foreign policy and civil society were among the areas that were most affected.

Consumption Culture

EU opportunities were mainly accessible to resource strong, politically embedded organisations, buttressing the view of EU integration as an elite project reproducing existing hierarchies. At the same time, there are also cases where support from EU institutions can strengthen civil society that are challenging domestic power structures and established relations (Meeuwisse & Scaramuzzino, 2019).

Retrenchment and Austerity

From the top-down, since 1982, the government deregulated the economy (Mattsson, 2023). Since the election of 1991 landlords has regained some rights (Vedung, 2021).

Social Resistance

The reforms during the 1980s-1990s has been characterised as a 'Neo-liberal turn' (Mattsson, 2023). The social liberal agenda of legitimising nonstate service providers and social entrepreneurship in welfare has not matched well with Sweden. With the majority having an understanding that civil society is a complement rather than an alternative to public welfare (Meeuwisse & Scaramuzzino, 2019).

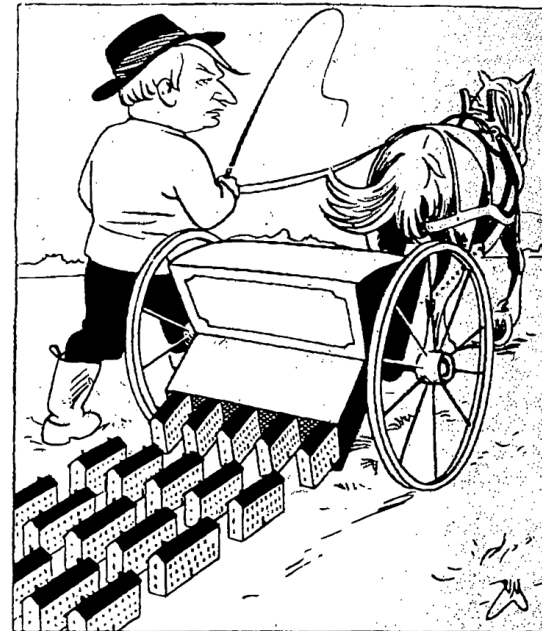


Figure 34. Drawing in the book 'The infamous Sten Selander a right-wing intellectual'. (1990).



Figure 35. Haga Nygata, pedestrian street of city district Haga, Gothenburg, Sweden. (2010).

SYNTHESIS

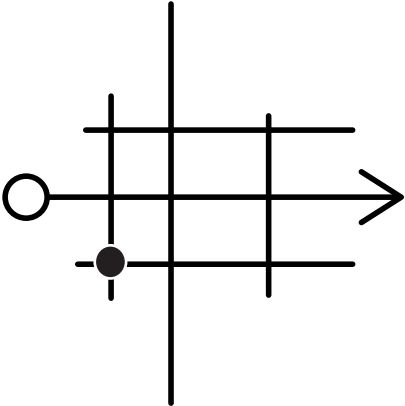


Figure 36. Bohus - Extractive movement economy. (2024). Own work.

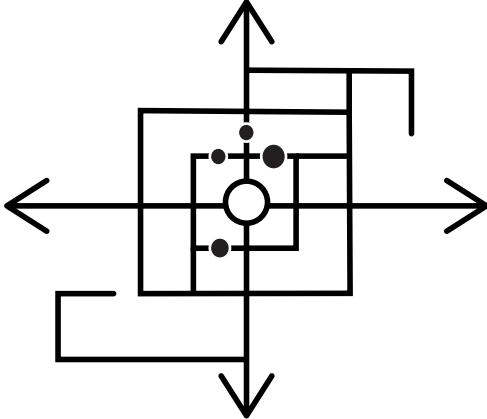


Figure 37. Mölnlycke - Interactive movement economy. (2024). Own work.

Figures 36, 37.
 Movement economy
 ○ Global movement attraction
 ← Neighbourhood movement
 — Local movement
 ● Local market

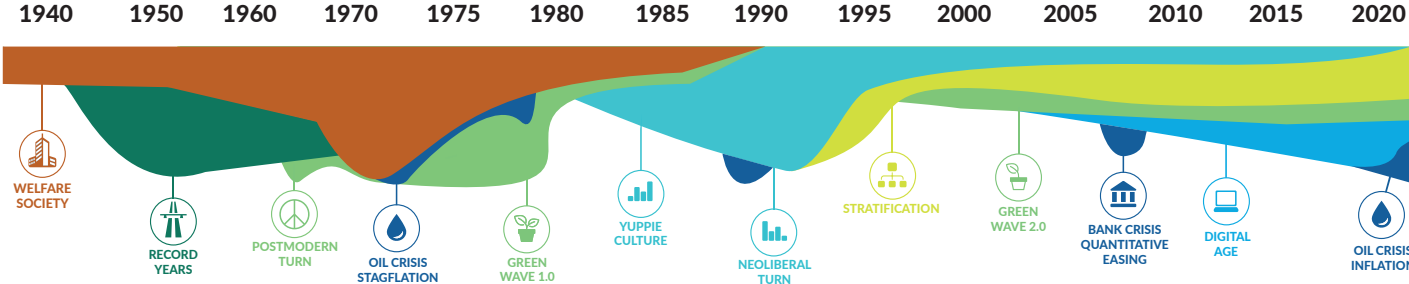


Figure 38. Timeline. (2024). Own work.

How can historical geography and space syntax inform concrete strategies for sustainable, mixed-use development, fostering a resilient periphery?

Physical Barriers

The natural and the built environment can create physical barriers that limit accessibility and connectivity within the region. This can lead to segregated communities and hinder the flow of people, goods, and services.

Socio-Political Boundaries

The delineation of administrative and political boundaries can impact the social fabric. These boundaries may not only divide administrative jurisdictions but can also lead to a sense of isolation.

Economic Segmentation

The industrial and spatial economy can transition over time, leading to economic segmentation and disparities. This can affect the distribution of resources and opportunities, contributing to social inequality.

Trying to bridge the barriers in Bohus, this thesis will provide the groundwork for a just sustainable transition. This strategy will try to address the complexities of multi-actor interventions, fostering the diverse needs and aspirations of the community. It will also seek to reconcile the often conflicting objectives of various policy agendas and the co-creation of shared value by focusing on:

Vision & Responsibilities that helps to ensure that everyone is working towards the same objectives. Including specific outcomes and outputs related to the intervention, such as the role of the local authorities, the modes of transport required and centrality analysis metrics.

Evidence-based Methodology for underserved suburbs. Utilising socially sustainable tools, methods, software and community engagement strategies that have been proven to have a positive impact in many cases or studies.

This could be further expanded by considering conflict resolution mechanisms, capacity building, and ensuring that the strategy aligns with relevant policies and regulations. The outcome of this strategy depends on various factors, but professional expertise and data availability plays pivotal roles (Vrbek & Jukić, 2023).

CENTRALITY AS A PROCESS



Ecosystem
Design Process

Consolidation
Modes of Transport

Street Hierarchy
Multiple Objectives

Master Planning
Notes & Sources

Figure 39. Bohus fortress and Bohus suburb highlighted in a picture. (2024).



Figure 40. People are desperate as Bohus' centre shuts down services. (2023). Alekuriren.

ECOSYSTEM

The vision of the project is to address the severe barriers and infrastructure that reinforce inequality along the E45. From the analysis, it was possible to glimpse that five formidable barriers currently divide the landscape of Bohus and Surte, including the two motorways, the inaccessible industry, the river, and the railway. Therefore, the socially sustainable urban renewal area is located to the north-east of the river valley, as these barriers restrict movement. While the barriers persist today, the strategy remains open to evolve, as further innovation and investment could surmount their effects.

The strategy also warrants deeper consideration to the east, where important natural sanctuaries and habitats harbour threatened species. These areas serve as vital breeding grounds and refuges for species facing endangerment. Within this context, the action program for threatened species comes into play (SLU, 2023). The purpose of this program is to establish robust relationships with landlords, users, authorities, and other stakeholders. These collaborations facilitate dialogue, knowledge exchange, and coordinated efforts. Ecologists or other experts could help build bridges by designing and implementing roadside habitats, railway embankments, and power line corridors, serving as refuges within the strategic area.

Transit-oriented development provides an opportunity to live a less stressful lifestyle, reducing reliance on cars for mobility and survival. However, it also poses potential risks, including gentrification and displacement. Unlike many other municipalities in Sweden, Göteborg still has strong rent control policies. These could be strengthened or adjusted to better protect residents in areas with scarce resources. Some incumbents have also proposed tax incentives to stimulate growth in neglected areas.

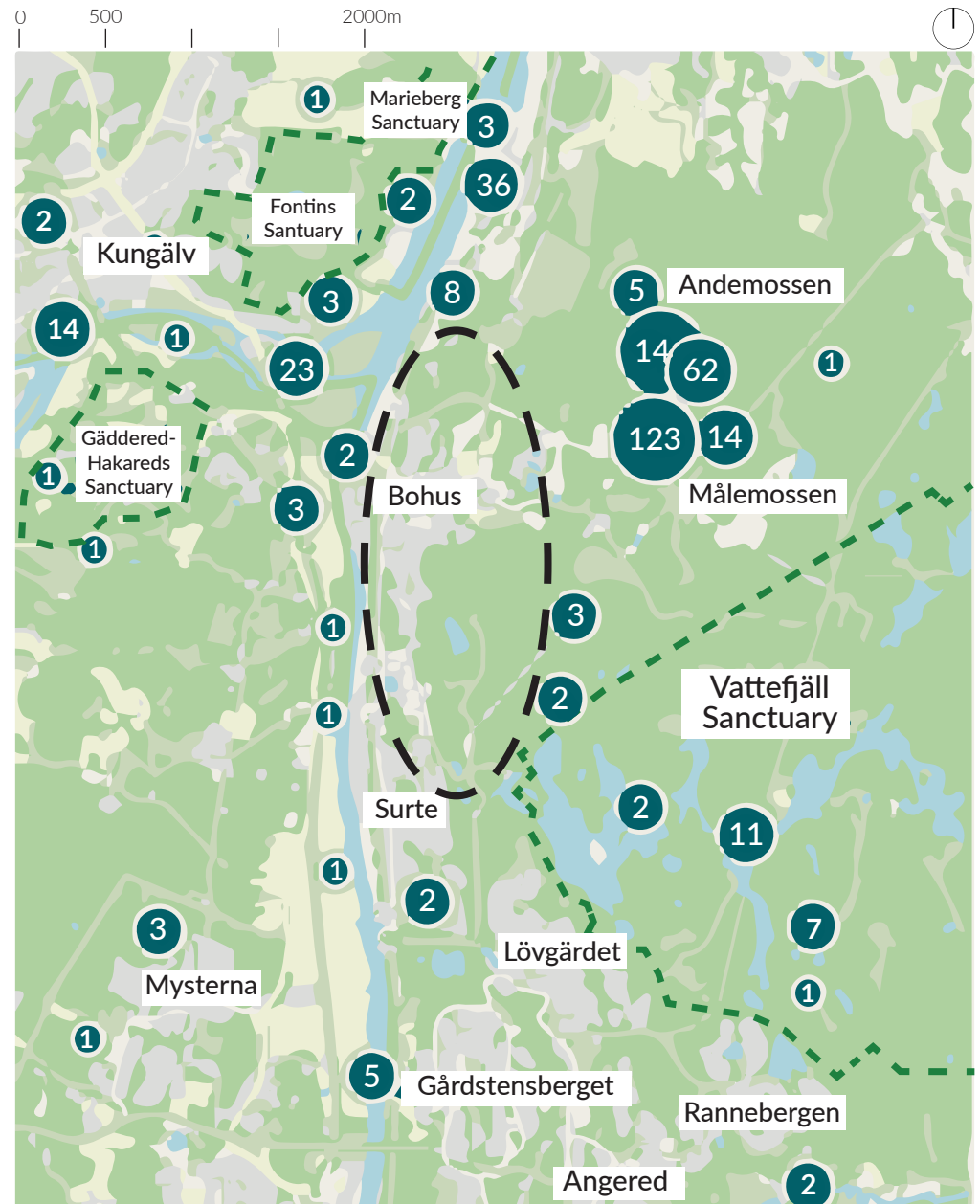


Figure 41. Distribution map of threatened species 2021-2023 - Crowd sourced. (2024). Own work.

User crafting

Partially Lifted Veil of Ignorance

Acknowledging that not everyone's needs and preferences can be met, it can be difficult to design a space that can serve a community. The veil of ignorance concept denotes decision-making without biases, focusing on universalism behind a thick veil is ensuring impartiality in law, applying universal values of justice and fairness. Similarly, using user-centric knowledge is striving to design without preconceived biases about users, but when building in a specific location the veil is thinner, since the developer or institution will know certain facts and engage with the environment from their perspective. Blind spots become inevitable. Framing the universal goal of fairness behind a thinner veil encourages considering specific, known empirical facts while still advocating for impartiality in design decisions, akin to the partial lifting of the veil in post-constitutional decision-making (Moroni, 2023). It is up to the designer to emphasize a systematic consideration of various perspectives.

Figure 41.
Distribution map

- ④ Recorded threatened species
- Mid-term strategic area
- - - Nature sanctuary
- Mixed forest
- Urban fabric
- Water surfaces
- Open fields



500-meter radius.

Commonly recognised as an approximate distance for the willingness to walk. This radius is also crucial for residents with impaired mobility or anyone that is reliant on convenient access to daily necessities like grocery stores or public transport. Activities within this range fosters connectedness and community cohesion, as neighbours meet at local cafes, parks and community centres. Within urban space, people benefit from low-capacity transport systems, like buses and trams.

1000-meter radius.

Within this radius, urban planners can design transit-oriented development, having activity near this range to major stations can provide space for integrating mixed-use sustainable development. When analysing this radius, it also shows the potential local networks of activity. In other words, the streets which locals traverse or the places with easy access for outsiders, depending on the location.

2000-meter radius and above.

The analysis shows the neighbourhood structure that fosters a sense of place and the movement economy that facilitate active main streets, providing life to buildings. High centrality yields insight in low- and high-capacity transport systems and streets. Transport systems play a role in connecting community centres and people, supporting social and economic life, and reducing congestion on roads.

Figure 42. Users vertical. (2024). Own work.

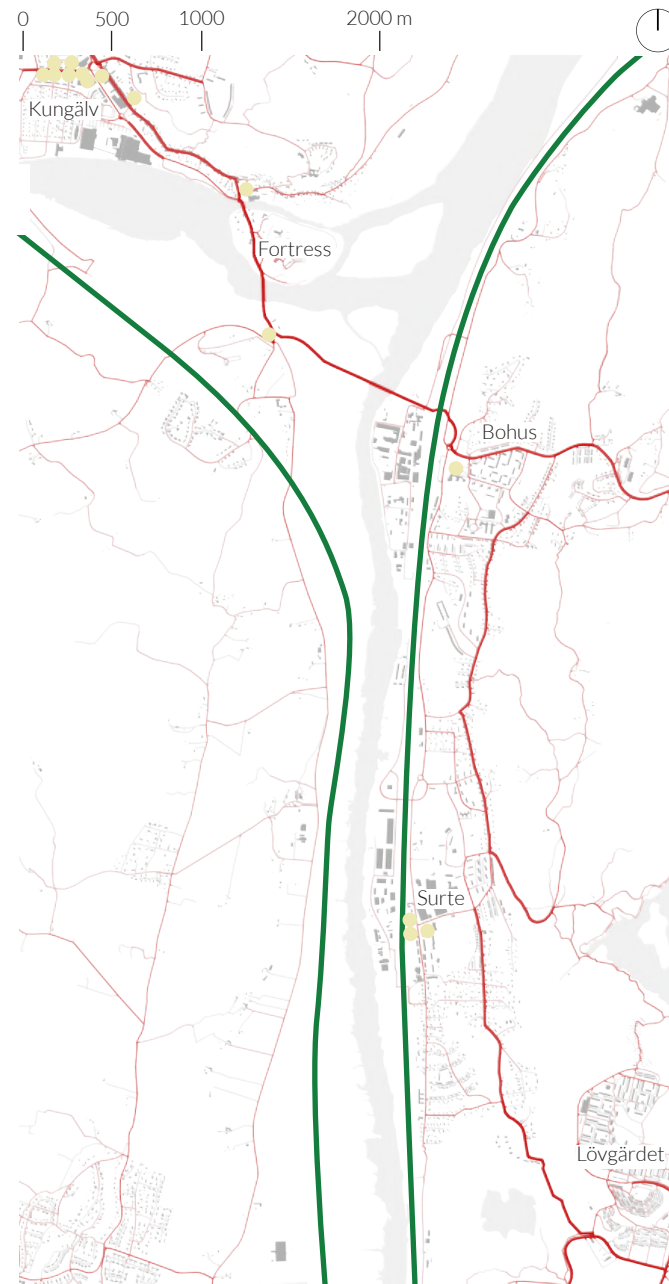
Design process

Regional scale

The division between Kungälv and Bohus have prevented connections. It would take significant investments and time to bridge this gap. Göteborg is also characterised by more diffuse network structure and larger plots than many other European cities (Pont et al., 2019). This low-density region could instead focus on the intensifying and integrating Bohus and Surte. The objective is to make the Ale municipality more globally attractive by strengthening connections and reduce the barrier effects of the motorways.

Experimentation & Iteration

Research has revealed that interactive frontages and a well-structured system of public spaces encourage walking and interaction by making distances seem shorter and destinations more attainable, this can also promote natural surveillance, which deters criminal activity (Romice et al., 2020; Kickert et al., 2023; Venerandi et al., 2023). Additionally, these streets can cater to different activities and scales of social interaction (Smarta gator, 2022). It is possible to estimate movement patterns and design streets that prioritise safety, interaction, and accessibility. As demonstrated by space syntax theory, urban activities tend to adapt to take maximum advantage of movement patterns (Hillier, 1996). By leveraging geospatial analysis, it is possible to modify the network and infrastructure (see figures 45 & 46), by minimising cost constraints and reducing the time required to develop the neighbourhood.



Due to the severe barrier effects, there is little activity in the area and the centrality analysis shows low values at all scales.

Figures 43, 44.
Angular betweenness
5km global scale

- 40% lowest
- 25%
- 15%
- 10%
- 7%
- 2%
- 1% highest
- Motorway
- Buildings
- Water surfaces
- Local markets
- Long-term cluster development

Figure 43. 5km through movement in current network. (2024). Own work.

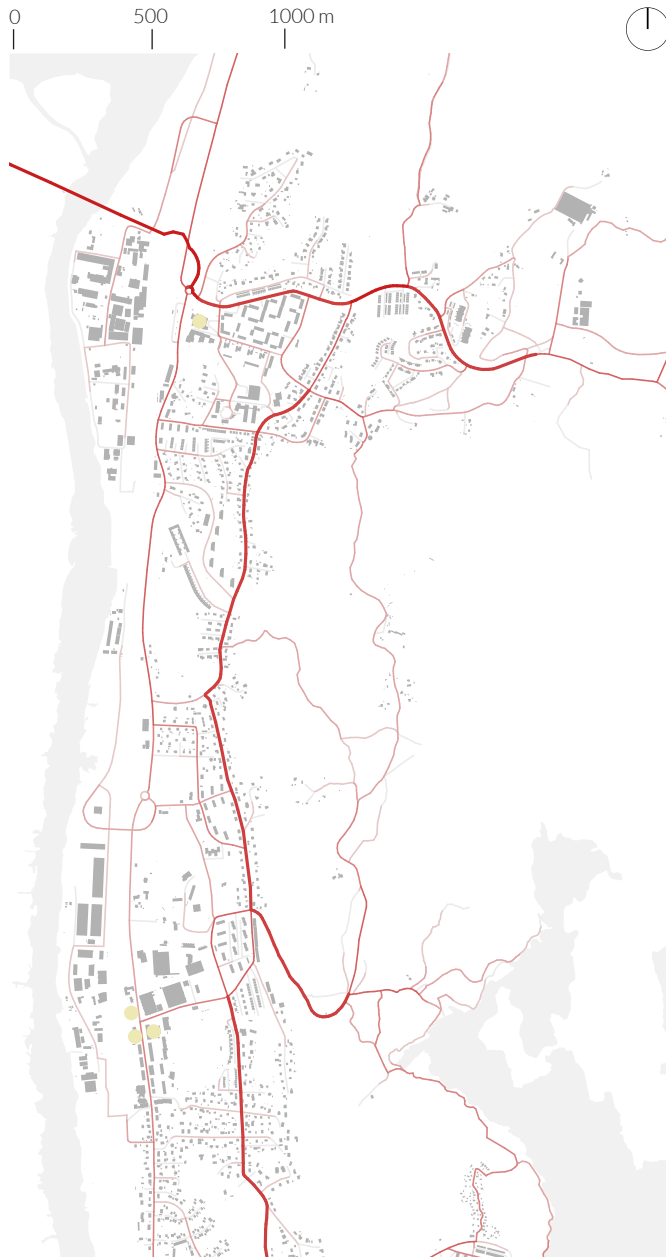


Figure 44. 5km through movement in current network. (2024). Own work.



Figure 45. Current situation in Bohus centre. (2024). Own work.

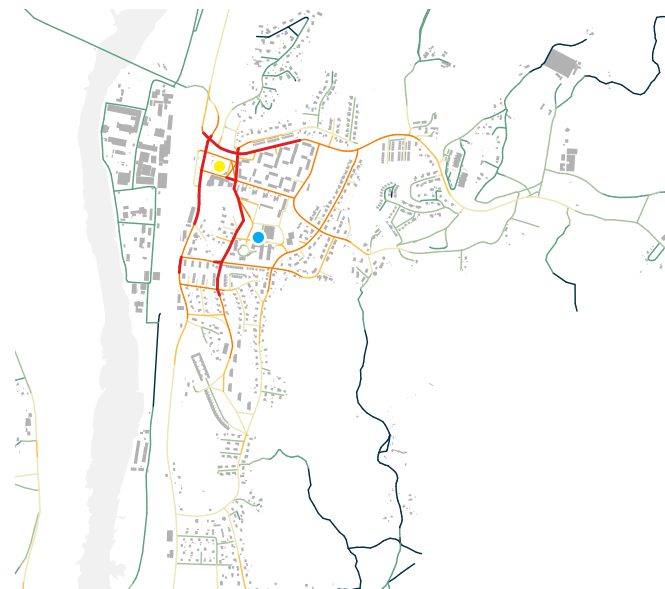


Figure 46. Early test. (2024). Own work.

The network can be reconfigured in a number of ways to further increase centrality. Many different configurations were tested to understand benefits and challenges, figures 45 and 46 shows an early test of reworking the roundabouts, but also connecting the school and sports centre to the mall.

Figures 45, 46.

Public spaces

- Inactive shopping mall
- School and sports centre

Angular integration

- 1km Local scale
- 25% lowest
 - 25%
 - 25%
 - 10%
 - 5%
 - 5%
 - 5% highest
 - Buildings
 - Water surfaces

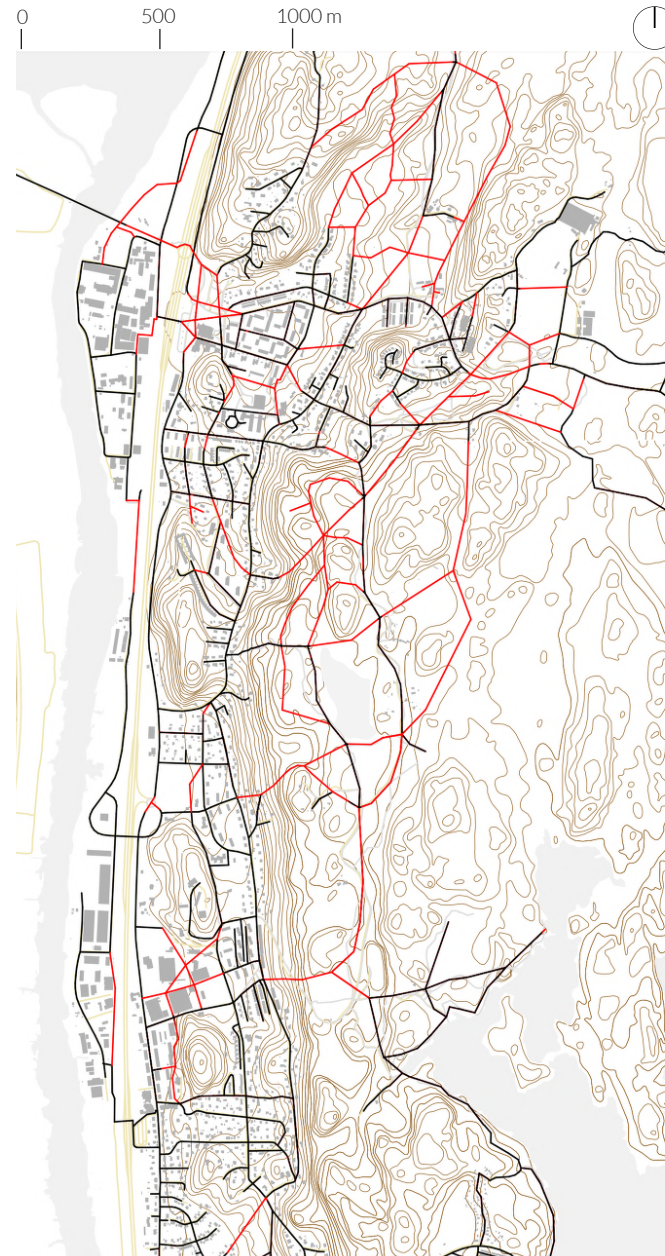
CONSOLIDATION

Neighbourhood Scale

Address the lack of centrality within Bohus (see figure 48). Transforming Bohus and Surte into a lively and active corridor that connects Kungälv to Lövgärdet and Gårdstensberget could foster regional integration, which supports collaboration between municipalities and future development.

Growth Dynamics

The process of urban consolidation and agglomeration can promote city's shift from fierce competition between different areas towards a mix of cooperation and competition. If the policy is poorly planned, or the intention is to produce unequal outcomes, it can also increase competition and inequalities. Spatial heterogeneity of city growth is important, this includes movements within and between cities, and understanding their affects. The current centrality of the network is not as strong as in many other places in the outskirts of the city, the movement economy might not be sufficient for certain activities, especially if the other morphological regions within the fringe belt continue to grow in a similar trajectory.



Inner fringe belts tend to take shape along designated fixation lines, often mirroring the contours of natural features such as rivers, mountains, or coastlines. These areas exhibit a remarkable degree of dynamism and susceptibility to change, primarily due to smaller plots and proximity to the city centre (Çalışkan, 2023).

Figure 47.
Environment
— Motorised network
— Topography
— Water surface
— Buildings
Proposed nonmotorised network
— New streets
— Existing streets
— Removed streets

Figure 47. Relationship to environmental barriers. (2024). Own work.

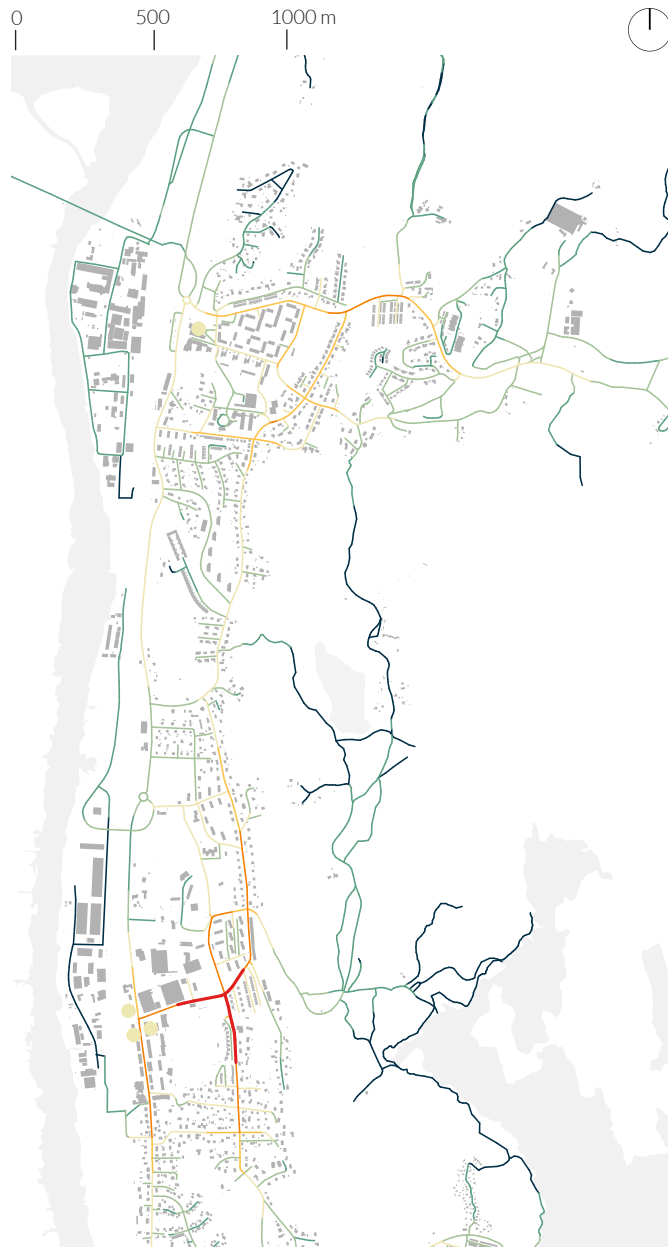


Figure 48. Before - 1km local scale to movement. (2024). Own work.

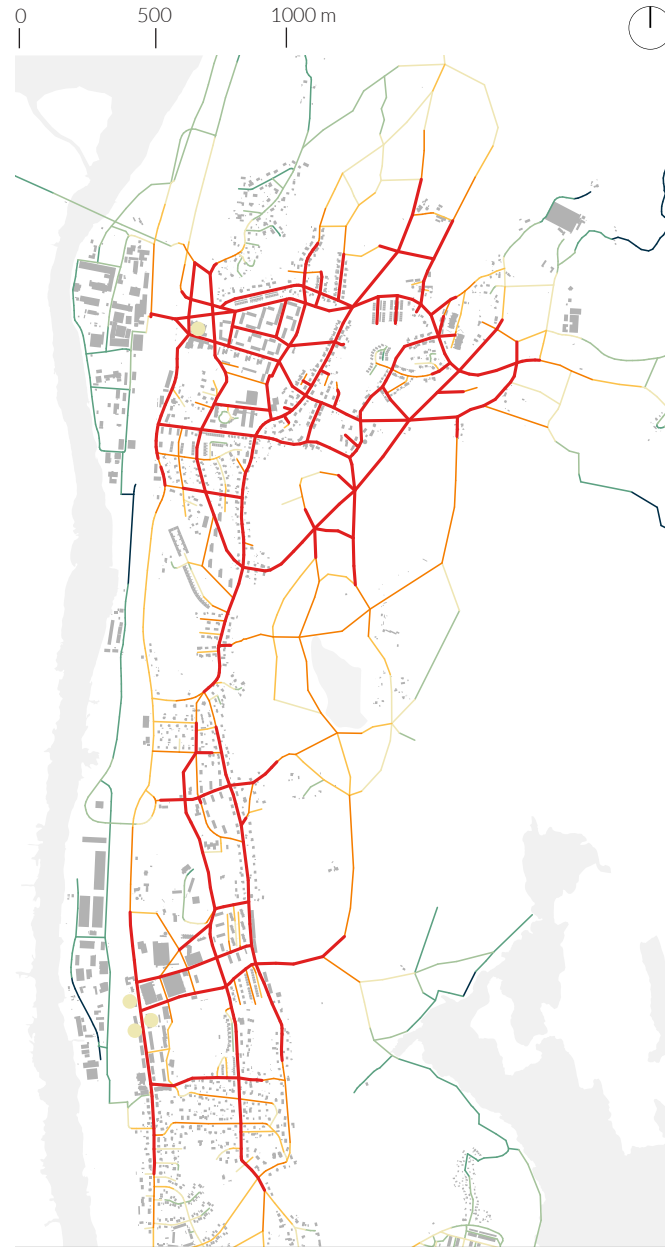


Figure 49. After - 1km local scale to movement. (2024). Own work.

In the analysis of the global and local scales of the non-motorised movement, varying street segments was highlighted as central. In the proposal, the different types of analysis of varying scales converge to highlight the centre of Bohus and the streets connecting the local markets. The spaces where the different scales and types of centrality analysis highlights the same segments are more public, visible and central streets.

- Figures 48, 49.
 Before and After integration local scale.
 1km local scale
- 25% lowest
 - 25%
 - 25%
 - 10%
 - 5%
 - 5%
 - 5% highest
 - Water surfaces
 - Buildings
 - Local markets

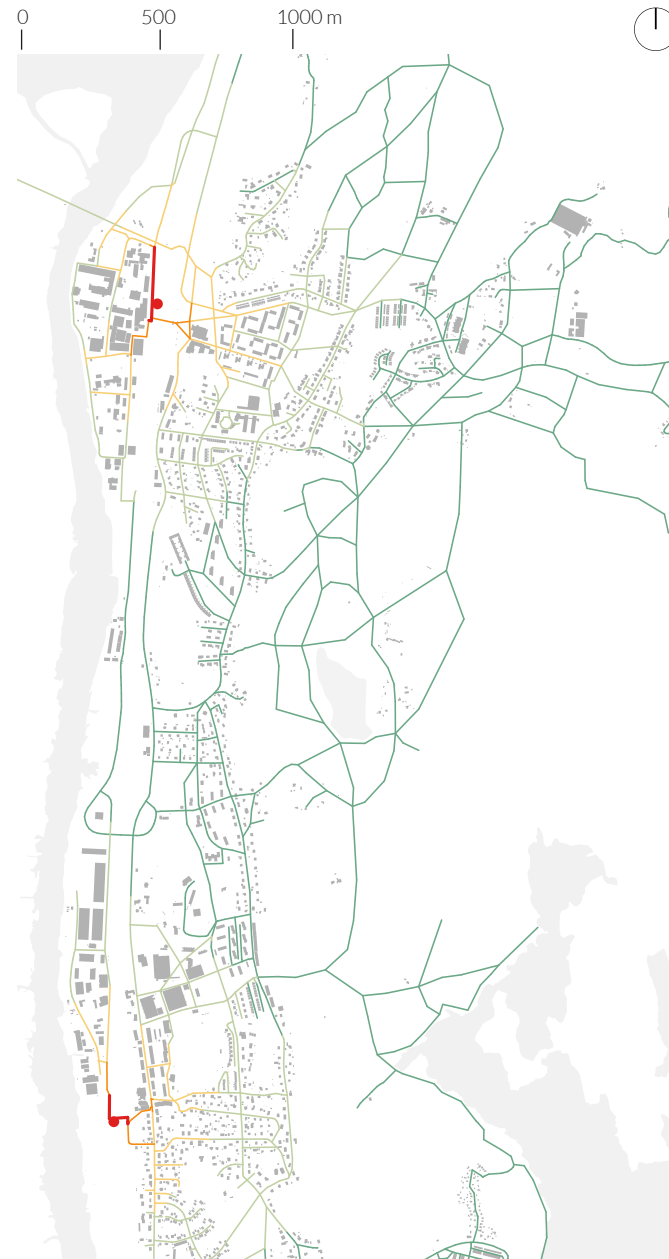
Modes of Transport

Just Transition to Sustainable Development

Systemic and proactive policies are required to achieve changes in regulation, infrastructure, and the managed phase-out of oil-powered individual mobility. Public services, such as public transport stations, is not currently easily accessible to all people. Maximum and minimum distances need to be taken into account when discussing the location of new services. There is ongoing debate on how regulate distances to public transport services, for now, there is no 'one-size-fits-all' regulatory framework (Ryan & Martens, 2023). Car-sharing, along with other significant innovations, plays a vital role in a sustainable transition by phasing out oil-powered vehicles.(Lorbach et al., 2021)

Adaptability and Responsiveness

Urban designers can analyse and evaluate how to make land use and network compatible, adaptable and responsive to the landscape. When it comes to Bohus, intensification next to the train station and sustainable growth along new bus lines within the existing network could make the streets more interactive and contribute to sustainable growth. A fringe belt emerges from the intricate interplay of spatial factors, initially shaping its formation and location within a network. In this process, movement serves as the predominant mode through which people interact with space (Hillier, 1996). Cities organise land use seeking high movement, such as transport stations and markets, in relatively integrated locations. Conversely, land uses with lower movement requirements, such as small single-household dwellings, tend to be situated in relatively segregated areas.



Reconfiguring the car-centric planning, the design can balance different modes of transport equally, reducing the reliance on cars. Leading to less congestion, better air quality, less traffic accidents, safer streets, economic growth, reduce pollution and enhance accessibility.

Figure 50. The shortest walking distance to the nearest train station from every street segment

- 1000-3000m
- 500-1000m
- 250-500m
- 100-250m
- 0-100m
- Water surfaces
- Buildings
- Train stations

Figure 50. The proposals relationship to train stations. (2024). Own work.

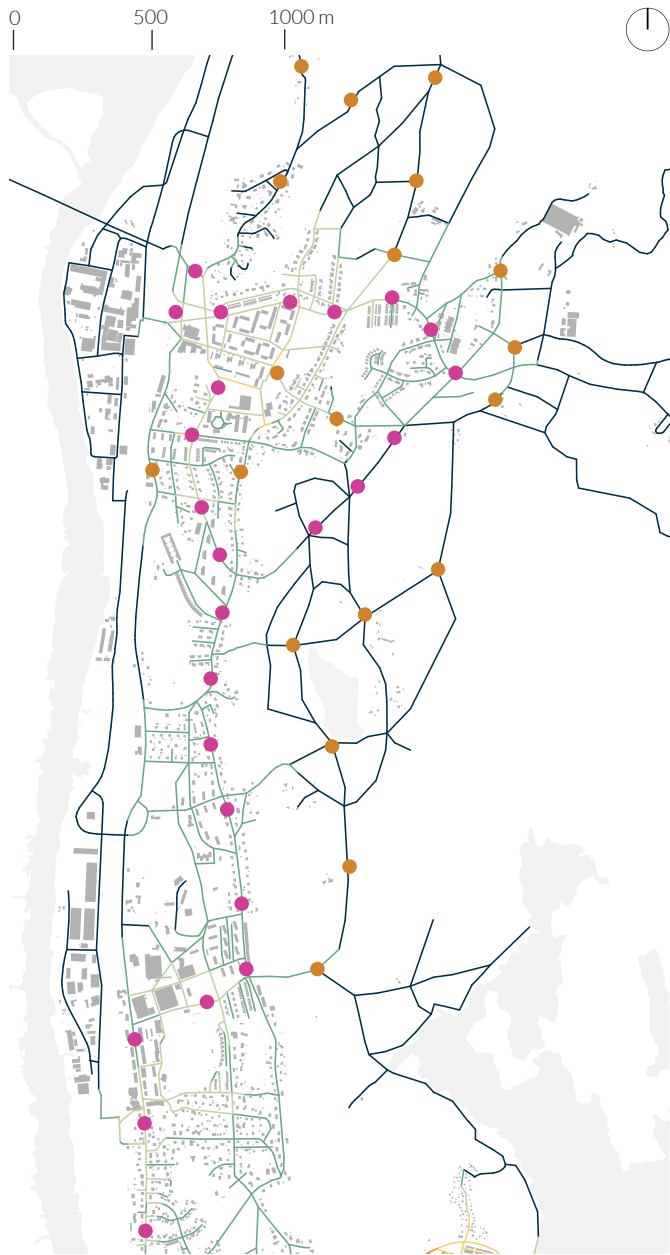


Figure 51. Station distribution of over population density. (2024). Own work.



Figure 52. Motorised betweenness analysis of centre. (2024). Own work.

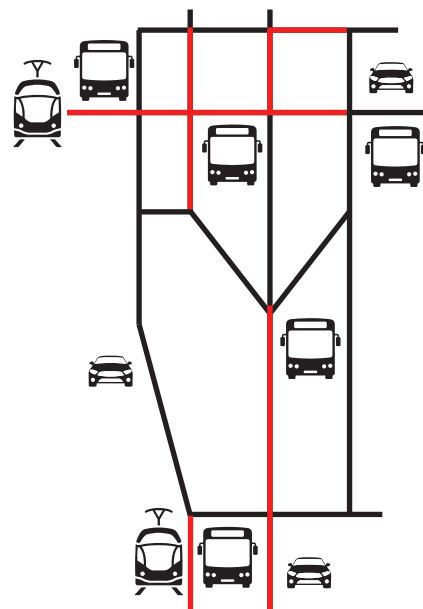


Figure 53. Proposals traffic management. (2024). Own work.

With the help of traffic engineers, the streets can be assessed to allow for functioning arrangement, efficient service delivery and emergency response. Certain streets can accommodate buses, trams or cars, while other streets can prioritise non-motorised modes of transport.

Figure 51. Distribution of stations over the amount of people living within 500m walking distance from every street segment.

- 0-199
- 200-749
- 750-1499
- 1500-2499
- Buildings
- Water
- Primary new stations
- Secondary new stations

Figure 52. Potential Motorised betweenness 5 local scale

- 40% lowest
- 25%
- 15%
- 10%
- 7%
- 2%
- 1% highest
- Buildings
- Water surfaces

Figure 53. Transportation

- High betweenness in all scales
- High betweenness global scale

STREET HIERARCHY

Conventional engineering aims to optimise individual systems and products, when designing streets, the designer should instead consider a network of diverse interacting legacy and new systems, brought together to achieve multiple goals. Within this complex process, 2-dimensional space syntax analysis can yield significant insight.

High Betweenness + High Integration

Forms the backbone of the urban network, high importance and excellent connectivity. They benefit from any type of land-use type that wants to attract people, and are often the most sought after streets for commercial and public service. The community or local authorities could get engaged in the planning and creation of these streets.

Low Betweenness + High Integration

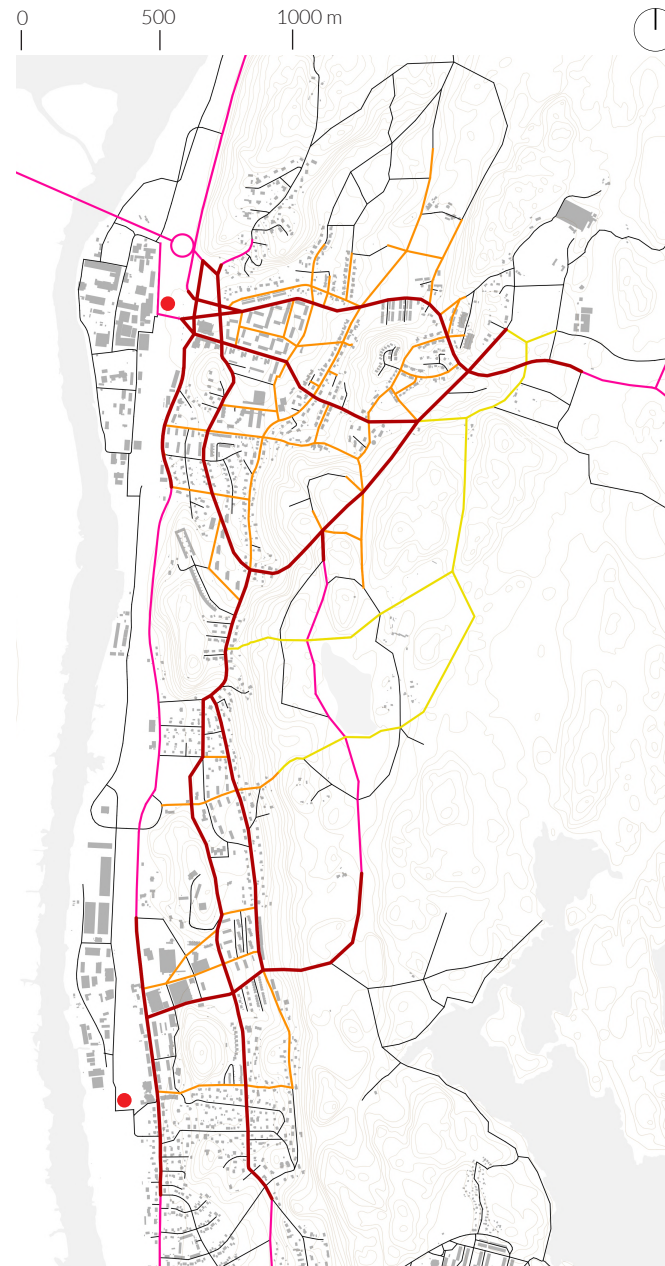
Well-connected but less frequently moved through. These streets are diverse in functionality, most types of activities is possible that can be designed as semi-public/private space.

High Betweenness + Low Integration

These streets are mainly thoroughfares. In some contexts, they also have commercial, green/blue or public spaces.

Low Betweenness + Low Integration

These streets have minimal movement on them. They are likely to become a one-way, dead-end or local street with limited connectivity; However, if there is open land that is readily available for development, there can be 'emerging streets' designed with wider lanes and setbacks to increase capacity to enable future growth in movement.



The map shows how a 2-dimensional design process, combining 5km angular betweenness and 1km angular integration centrality analysis, could aid in the creation of a hierarchical street system.

Figure 54.
Street hierarchy
The 2-dimensional movement economy. System that creates attraction inequalities.

- Low B. Low I.
- High B. Low I.
- Low B. High I.
- High B. High I.
- Emerging street
- Water surfaces
- Buildings
- Train station

Figure 54. Street hierarchy. (2024). Own work.

Community Engagement

Transforming Streets

Alkaliävågen, Byvågen and Ekekullsvågen are central streets, and for now, they are also inactive due to the configuration of the network. The excessive amount of parking spaces and inactive street frontages has to be addressed. Over time, smaller designs can be implemented on-site for varying durations to visualise alternate uses of street space, this can change embedded practices in design. Inexpensive yet aesthetically pleasing installations can define medians, islands, curb extensions, and more. This allows residents to see progress in a short time frame with quick demonstrations. When the community experiences an alternative, permanent changes can be implemented.



Figure 55. The streets of Bohus. (2024).

Dialogue with the Citizens

If the community wants to get engaged in process of creating vibrant public spaces, the most central streets can become platforms to kick-start a community project. As a starting point for co-creation, the community can reclaim public spaces that been neglected or decayed due to austerity and retrenchment. Through iterative feedback loops, residents, technical experts, local businesses or authorities could refine and rework the configuration of built form and infrastructure. Through this process, a new collective vision could emerge, and this vision will create new responsibilities, methods and goals. This process can increase resilience to deal with uncertainty, volatility, complexity and ambiguity.



Figure 56. Own work. Zoom in of Street hierarchy.

Figure 55.
The streets of Bohus.
Yellow Alkaliävågen
Red Byvågen
Green Ekekullsvågen

Multiple Objectives

To design morphological frames that work effectively and fosters urban life in the long-term, it requires working quantitatively with public space, individual plots, traffic management, local context and ecosystems.

Set Objectives

In the context of urban design, many objectives cannot be simply categorised as 'the-more-the-merrier' or 'one-size-fits-all'. One way to find an acceptable compromise among competing goals is to create a structure of individual systems that collaborate to achieve objectives. In this thesis, ideals and minimum targets was designed (see figure 58), refined utilising the street index 'Smarta gator' (2022).

Evaluate the System











To assess how the different objectives and elements interact within the project (see figure 57).

Co-create Public Places

Community initiatives can prioritise the most central places, such as east of the train platform (1000m radius).

Figure 57.

Street figure-ground plan

-  Main bus station
-  Slower speeds
-  Main bus line
-  Width $\geq 8m$
-  Width $\geq 16m$
-  Width $\geq 21m$
-  Train platform
-  Topography
-  Demolished structures
-  Existing buildings

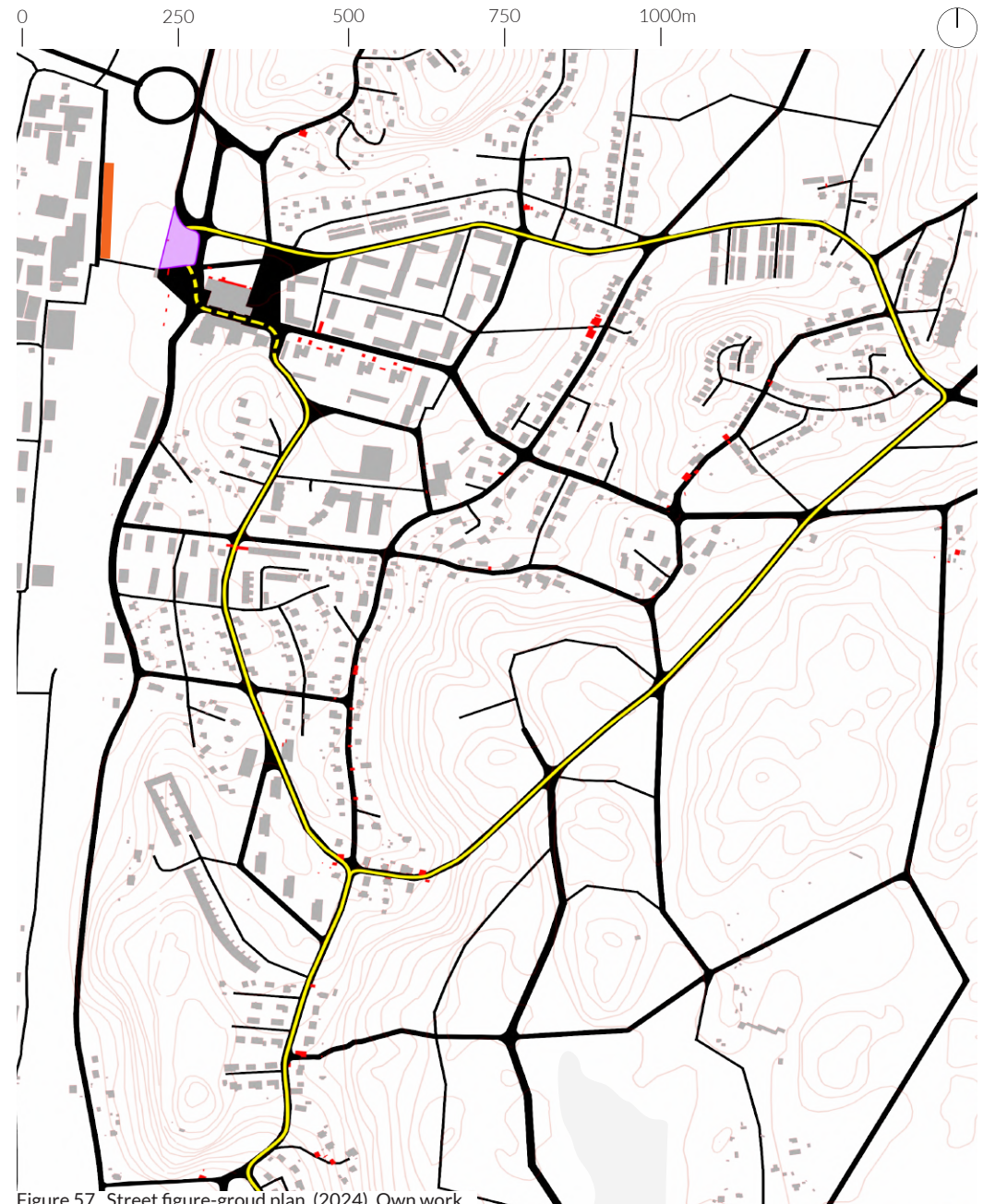
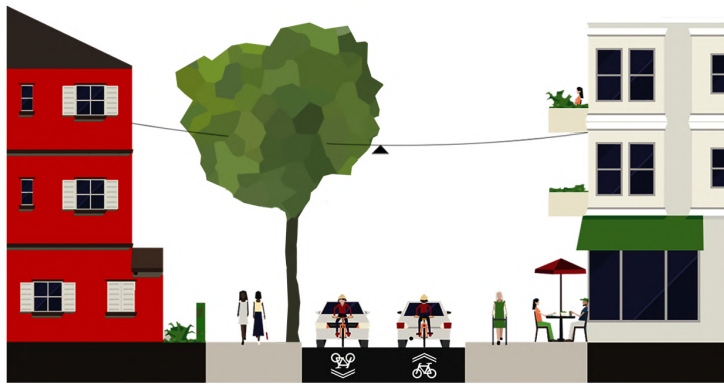


Figure 57. Street figure-ground plan. (2024). Own work.



Central street street roughly 21m
 20km/h 40km/h 20km/h 20km/h 40km/h 20km/h



Thoroughfare street roughly 16m
 20km/h



20km/h



5km/h



5km/h

Walking speed street minimum 8m

Figure 58. Edit of Streetmix. (2024). Own work.

MASTER PLANNING

When creating parcels, reconfiguring streets and modifying the existing plot structure, there are several aspects of data collection and processing where architects do not have sufficient tools for consistent application in practise. Master plans are one of the tools that could help designers work together with professionals, residents and decision makers in planning departments.

Mixed-Use

Small width of plot parcels, combined with mixed-use regulations and high centrality creates the perfect conditions to produce streets where residential, commercial, and recreational land use coexist. To achieve mixed functions within the configuration, financial analysis and collaboration with the municipality is crucial. Considering the potential revenue from plots, businesses, and other sources, and assess the cost of building and maintaining infrastructure.

Inclusivity

Planning for parks, recreational areas, schools, and public spaces, it is important to seek to level the playing field for marginalised groups. This can be achieved by building bridges and create dialogue with citizens, but this process could also include master planning safety measures, emergency services, crime prevention strategies and account for the needs of aging populations. To design for residents with different capabilities, tools, and resources, a “partially lifted veil of ignorance” (Moroni, 2023) can encourage decision-makers to consider blind spots.



Figure 59. Current context. (2024).

Who does not have a voice in the design process?
Does spatial qualities create conflict or neglect someone?



Figure 60. Users horizontal. (2024). Own work.

Figure 61. Master planning

- Bus station
- Parking facility
- Playground
- School
- Skatepark
- Basketball court
- Existing buildings
- Street curb
- Existing parcels
- New parcels



Figure 61. Master planning (2024). Own work.



Figure 62. Feasibility study. (2024). Own work.



Figure 63. Privacy of built form. (2024). Own work.



Figure 64. Visibility graph analysis. (2024). Own work.

Figure 62.

Feasibility study











-  Existing building floors
-  New building floors
-  Urban fabric
-  Entrance
-  Pedestrian
-  Street curb
-  Plot parcels
-  Green feature

Figure 63.





Privacy of built form

-  Private
-  Adaptable
-  Public

Configurational approach allows planners to understand how plans can affect urban life. Combined with the street hierarchy (figure 54) a visibility graph (figure 64) can be used to analyse the privacy and visibility of public spaces or buildings (figure 63). Unobstructed visibility is particularly suitable for public spaces, landmarks, or areas designed to foster social interaction. On the other hand, areas with obscured visibility may be more appropriate for more private land use. Providing data-driven insights to optimise the street network for improved accessibility, safety, and social interaction, space syntax analysis can help determine the most impactful way to create a well-connected community.

Figure 64.

Visibility graph analysis

-  Obscured
-  Impeded
-  Open
-  Unobstructed
-  Plot parcels

Generalisation of Findings

Comprehensive Analysis

By investigating the periphery and the historical forces that shaped it, urban designers and planners can assess and evaluate barriers that divide regions and focus on fostering more connected communities. Development strategies can put the dwellers at the centre of the design process by utilising human-centred morphological assessment. Public transport and car-sharing could be key to reduce dependence on individual oil-powered mobility.

Town Plan

Well-designed plans prioritise walkability and feature well-defined, connected public spaces. When designing the morphological frames and regions, it is essential to evaluate both active street frontages and traffic management.

Land Use

When it comes to the fringe belt, space next to major transit stations and schools could be transformed into public spaces. In the long term, streets can evolve and adjust mixed-use functions responding to intensity, movement and capacity.

Building Form

The type, age, and relationship between buildings all play a role in shaping a city's character. A vibrant urban environment promotes a mix of building types and ages that fosters social interaction and caters to diverse needs.

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