

under the forest canopy

a new Copenhagen

forest thinking as an approach to redeveloping the socio-spatial structure of
Copenhagen

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Man is a part of nature, and his war against nature is inevitably a war against himself.



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Abstract

The current state of cities and the challenges have prompted us to reconsider the way we perceive nature and its relationship with urban environments. Anthropogenic impacts, particularly climate change, have highlighted the urgent need to transform how we design and understand living environments in urban areas.

As humans have acted as custodians of the world, we must also take responsibility for addressing the consequences of our actions. Through rapid urbanisation, we have created built environments that increasingly affect human well-being and contribute to various social and environmental challenges.

In case of Copenhagen, Denmark, planning strategies and patterns of urban development have had a significant influence on the current socio-spatial conditions of the Greater Copenhagen region. This thesis focuses on Copenhagen's urban development, examining the Finger Plan and its relationship with the welfare system, technocratic governance, and climate change. Through this investigation, the research seeks to understand how these interconnected factors have shaped the region's urban landscape and contemporary challenges.

The research identifies several key challenges within the green wedges of the Finger Plan in the Greater Copenhagen region, which serve as the primary test site for this project. These challenges include the dichotomy between forest/nature and urban/culture, the issues regarding socio-spatial inequity, and the landscape quality.

By addressing these challenges, the project aims to revive the relationship between human and nature through a speculative design approach. Urban forestry is employed as a tool to explore new ways of

creating, using, and managing the green wedge's landscape of the region. The research is conducted through a Research-by-Design methodology.

The project is informed by three theoretical frameworks. These theories provide the conceptual foundation for exploring and addressing the identified challenges.

The design investigation is carried out across three spatial scales. At the territorial scale, encompassing the Copenhagen region, the project addresses broader regional challenges and opportunities. At the regional scale, focusing on the Vallensbæk Green Wedge in Greater Copenhagen, the project examines the relationships between urban development and forest expansion. Finally, at the local scale, in Avedøre, the project explores speculative design interventions that test new methods of growing, using, and managing forested green wedges.

At the local scale, the project further investigates how spatial quality can be enhanced and how new forms of shared responsibility can be developed to manage forests at a large scale. Through these explorations, the project seeks to propose alternative approaches for fostering stronger connections between people, nature, and the urban landscape.

Chapters

In addressing an object as complex as a city or urban territory, the report is divided into chapters which each organize different lenses through which the city and human relations are imaged, and through which a variety of differences and consistencies have emerged. Each chapter will explore under certain conceptual theory or design experiments and their relations to social and spatial aspect within the urban areas of Copenhagen.

- 1 In response to cosmopolitan thinking unfolds historical relations of human and nature over the years and later in text of urban development and surrounding. It takes data and historical under layers of development analysis driven approach to understand problem and to target intended area of project.
- 2 Plant thinking explores theoretical knowledge and ideas to understand new approach for such complex problems. These theories are explored in relation with humans and social factors that shape our spatial experiences and how such challenges are addressed in design.
- 3 Into the realm of forestry examines through design experimentation of ideas from theoretical background to develop new insights for knowledge gap by using urban forestry principles and structural approach to accommodate our social needs which are less tangible.
- 4 Between Forest, Society and Copenhagen discusses emerged findings make make co-relation with site specific answers to posing challenges which will improve and add to main research question. This chapter deals with findings from design experiments and literature knowledge to build a new insight.

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Anthropocene

Proposed name for a new geological epoch in which humans have become the “dominant force shaping Earth’s bio-geophysical composition and processes” (Chua, 2022). The term was coined by Paul Crutzen in the year 2000.

Cosmopolitan human

Since the Industrial Revolution, humanity has increasingly migrated toward urban centres. These urban environments have confined human life to limited physical spaces, and over time such spatial constraints have shaped our modes of thought. As a result, human consciousness has grown progressively detached from the rhythms and logics of nature, losing coherence with the wider world of non-human beings.

Solastalgia

Solastalgia is the feeling of homesickness while being at home, the anguish associated with watching an unwanted transformation of a beloved place. Landscapes have never been static, nor have local places ever been exempt from geological forces of change; however, with the advent of industrial technology deployed on a mass scale, mountains can be flattened, valleys flooded, and rivers drained in a matter of weeks and months (Glenn Albrecht, 2003).

Urbanization

Urbanization refers to the physical and built environment of the city, as well as the (historical) development thereof (Hermans, 2022).

Forest Urbanism

There is no clear-cut definition of forest urbanism (Wambecq, 2019). It is an emerging field within landscape architecture and urbanism, that understands the forest and the city as fundamentally interdependent and intertwined entities both in respect to their historical development, as well as design projections regarding their future.

Urban Forestry

Art, science, and technology of managing trees and forests resources in and around urban community ecosystems for the physiological, sociological, economic, and aesthetic benefits trees provide society. (Society of America Foresters (Helms, 1998)

Spatial Planning

Spatial planning is very shortly put the planful regulation of land and space use (de Klerk & van der Wouden, 2021). It focusses on more abstract functional allocations as well as setting up policy documents that focus on spatiality, but also economic and social concerns (van der Wal, 2020). For this it draws on a variety of fields from politics and sociology to architecture and engineering. It can be differentiated from urban design which focusses more on designing form and liveability.

Symbiocene

A way of overcoming such negative psychotropic (earth-related) mental health and emotions, instead with positive earth emotions, would provide a earthly ‘home’ symbiotically unified with all living things life processes of this planet. (Glenn Albrecht, 2019)

Earth-related

Emotions that are directly related to nature, which changes with the change in state of earth and state of our psyche and when human well-being state is at odds. These emotions are triggered through rapid changes in our built environment due urbanization, climate change, major destruction and extensive human impact on surroundings (Glenn Albrecht, 2003, 2004, 2008).

Aesthetics

Within the field of empirical aesthetics, the concept of aesthetics refers to the evaluation or appraisal (e.g. beauty, liking, pleasure, emotions, etc.) of sensory objects or events. Although aesthetics is traditionally linked to art, other objects can also be aesthetically relevant (see Leder et al. 2004, 2022, Peloski et al. 2017, Skov and Nadal 2020), and the notion of aesthetics can be applied to objects in everyday urban environments, i.e. not commonly categorise as art (Knoll et al. 2024, Specker et al. 2024).

Rurban

A state of blend of (‘rural’ and ‘urban’) refers to settlements or regions that blend the characteristics of the both lifestyle. It typically describes area between city and countryside, where the urban lifestyle, culture, businesses and urban infrastructures are integrated into a rural settings. (Charles J. Galpin, 1910)

Urbanity

Anton Zijderveld describes urbanity as an urban mentality or culture which is made up of a certain economic and civic culture that subsists on diversity of inhabitants, backgrounds, ideas, and interests (Hermans, 2022).

Forests have a strong cultural image and narrative. The forest is an archetypical landscape, strongly connected to the human conception of “nature”.

“To resist the extinction of biodiversity of this Earth, we also need to resist earth-affirming cultures and emotions. In the emergent Symbiocene humans will once again be anchored to place and region, however it will be not the same as past. The new identity will have to be an act of creation.”



Fascination and Position People and care

This graduation project was initiated from a perspective grounded in emotional engagement and social responsibility. Many of my emotions are directly or indirectly influenced by my surroundings—how a place makes me feel, whether it brings joy, or dose it facilitates social interaction. I have always been drawn to environments that are aesthetically and experientially rich, whether found in nature or within human-made built environments. I have observed that when a place lacks such qualities, feels uncomfortable or tend to avoid it. This reflects a broader realization that built environment and its relation on how we feel. I grew up in a country where numerous cultural and social practices were conducted within natural settings or particularly with some trees, a cultural common to many societies. Natural elements affect as do man made environments, in contrast, natural or green spaces has positive impact.

Beyond their social significance, trees are deeply compelling because they embody patience and endurance—growing slowly over time and withstanding the storms they encounter. They serve as a reminder of the importance of remaining grounded while retaining the flexibility to adapt to changing circumstances.

1

In response to

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Prologue

Of human and nature

For millions of years, plants have played a fundamental role in supporting human life, serving as sources of shelter, medicine, fuel, food, and tools. The plant kingdom encompasses various forms of life, something that is not of humans. Fundamental to all life on Earth – from producing the atmosphere we breathe, to harvesting the sun's energy and converting it into food and fuel for every form of living organism – they have been variously commodified, cultivated and colonized, but we rarely dwell on their unique and extraordinary behaviors.

. A lot of studies investigate the ongoing significance of the plant kingdom to human life, consciousness and spiritually (e.g., Peen et al. 2010, Lederbogen et al. 2011, Bai et al. 2012, Gruebner et al. 2017, Krefis et al. 2018, Dimitrov-Discher et al. 2023, Gu et al. 2025, Gina Buenfeld, Martin Clark, 2020). In doing so, it highlights the subjectivity and being of plants, their influence on knowledge-forms and wisdom-traditions, and how we engage with and activates them in culture, counter-culture, art and many more things we do.

Idea of scared tree have always been center of many cultures, the concept of an Axis Mundi or Cosmic Tree, a universal archetype that appears in the symbolism and mythology of numerous religions. From giant Ash, Yggdrasil, that connected the Nine Worlds of Norse mythology, to the tree of Knowledge in the Garden of

Eden, and the Islamic Tree of Immortality, again and again the human condition is connected to the physical and transcendental universe through the image of plant. The psychoanalyst, writer and artist Carl Jung (Carl Jung, 2020) pictured this great 'Tree of Life' as both supporting and connecting every aspect of the cosmos. Old cultures and emotional connections to specific places and regions on Earth are rapidly changing with cosmopolitan identity, a homogeneous trend making it a global culture.

Before so called scientific revolution, the medieval European world view was built around esoteric, sympathetic, and intuitive relationship – a natural science based on intimate, lived knowledge and equivalence in nature. With the advent of the Age of enlightenment and the advance of scientific materialism, many of these ideas were driven underground-hidden for centuries in the arcana of the occult-subject to the same colonial values of 'reasons' and 'progress' destroyed indigenous cultures abroad (Gina Buenfeld, Martin Clark, 2020). Our forests were being converted into woodchips and increased Industrial character rate, and development was taking nature further and further away from the city; you could still get there, but it would take half a day, and then a day. And so, it was clear, that the world around us was transforming extremely rapidly.

These development in our way of living changed the relation that we had with nature, which also reflects, as humans started to move from nature based to more cosmopolitan environments, resulting difference in living conditions, how we perceive and understand it around us. Today, with growing challenges we have realized the concerns regarding the way we plan our urban environments as a result of our understanding and consideration of humans different than nature, and not part of it, explored in following text on wreckage and results of cosmopolitan thinking.

1.1 Frame the wreckage today

The rapture of our civilization from climate change to mental breakdown – might have more to do with how we design our cities that disconnects us from the nature. We are in a mid of epochal transformation, and the symptoms are many, the climate change, biodiversity loss which in many cases is irreversible, and mental health crisis. These are not separate problems; instead they are creation of one important aspect of the way we design our cities. The abstract idea of the city is for humans, has disconnected us from the nature. We see nature as a problem and which needs to be kept outside of our cities, as a decorative element. This is where, I think the society needs to change to way we look and perceive nature, making it as a fundamental based to our lives.

The fundamental needs in regard posed problem within this thesis are focusing on the ability to sense, understanding, resonating with nature, based on our surrounding through materiality, light, sound, humidity and scent. In short, it is a sensuous and embodied form of connection that is not just beauty but a meaningful way of connecting to the living world around us. Yes, being nature over selves. Aesthetic feelings for nature are decorative, but a fundamental. Without it we cannot know why our cities aren't working or it is not truly for humans. When people suffer in our cities, it is not only because of noise or pollution, but also the cities lack certain humane aspects in its de-

velopment.

Cosmopolitan human

The Anthropocene, or period of human dominance over nature, is now characterised by corporate gigantism and accelerating economic development all in the context of a projected population of 10 billion people by 2050 (Chua, Liana, and Hannah Fair. (2019) 2023. "Anthropocene").

People who are worried or impacted by the climate changes made by humans, such as climate change, the extinction of species, destruction of ecosystems, and extreme weather events, experiences negative effects on their mental health and sense of identity (e.g., solastalgia, ecoanxiety, ecoparalysis, global dread). Given the rapid change in development, that there is also a huge increase in the negative psychoterratic (psyche-Earth).

However, certain groups of people revel cosmopolitan identity, and not affected by any loss of any type of heritage. A proposed meme of 'Symbiocene' by (Gleen Albrecht, 2003), tries to halt further the retrogression of physical and mental landscapes in Anthropocene. Here, the positive side of the psychoterratic urges to reconnect life in symbiotically unified nature. Positive Earth emotions (e.g., biophilia, soliphilia, eutierria, endemophilia) once again reconnecting with nature. Such thinking processes also shapes our way of planning our cities, such a case is explored from the lens of rational planning in Denmark in the following to understand the

challenges in Copenhagen region.

One sided focus: urban development in Nordic cities

When looking at the Nordic cities in a historical context, one central theme presents itself as easily the most important for the development of the current state of society: the welfare state. Even though the welfare state is a broad concept (the meaning of which depends on geography and period), it is relevant to reflect on how welfare ideas through time have left their mark on people and shaped these cities.

The welfare state's history, nuances, and intertwinement with other prevalent currents in 20th-century thought is too long and complex to relay here. In what follows, I will take the liberty to look at one thread running through history of the welfare state: rationality. I do not claim to have accounted for everything contained within the idea and life of the welfare state. Rather, I wish to focus on rationality to make its workings visible to the reader.

Rationality: The Welfare State in Denmark

The Danish welfare state as we know it today is often considered a result of the last 100 years of history. Whether one consider K. K. Steinck's social reform in 1933 or the massive expansion of the state in the 1960s as the beginning of the Danish welfare state, the construction of the Danish welfare model was founded on the solid conviction that the perfect society

– from the structural level of the smallest details - could be achieved by means of planning, science, and rationality (Kjell Nilsson, Ryan Weber, Lisa Rohrer (eds.), 2021). The goal was introduced to order the national economy, housing construction, family, and social security. Through rational planning, society was to be (re) built (Stig L. Andersson, 2021). In some respects, the welfare state is rationality taken to its logical conclusion. By consistently relying on rational decision-making in the development of society, the welfare state has achieved great results: an unprecedented improvement of welfare with social security, education, health services, and housing for an entire nation, an entire people-an incredible achievement. But, paradoxically, exactly because of this one-sided focus, the welfare state carries within itself the seed of its own collapse-with systems follows rules and consistency (Stig L. Andersson, 2021), ensuring effective and uniform procedures but leaving very little room for everything that does not fit within such an environment.

What was left of out of welfare state in the eagerness for modernization was everything not rational: the aesthetic (Stig L. Andersson, 2021). In this context, the aesthetic should be understood in its widest philosophical and sensory sense as the emotional, the sensuous, the bodily the intuitive, the intersubjective-in short, the human. It is a different mode of thinking of and approaching the world. The aesthetic was

forgotten, downgraded when decision makers and the civil service decided to plan using the welfare state's ideals of the rational and well-ordered society as a role model for Denmark (Kjell Nilsson, Ryan Weber, Lisa Rohrer (eds.), 2021).

However, this reliance and focus on the rational is not invented by the welfare state on its own. Since Plato, the rational has taken precedence over the aesthetic. In a way, it is an intoxicating idea to suggest that our welfare state is rooted in almost 2,500 years of intellectual history (Stig L. Andersson, 2021). But the 2.5 millennia also reveal the extent of our fallacy and show how hard it is to correct the western world's most fundamental way of thinking. Rationality has made considerable positive impact on the development of society; nothing is wrong as long as rationality does not stand alone. The problem is that it becomes clear that we are missing something. We are missing the other half of what will give us a whole life-the other, less tangible half that had to do with the quality of our everyday life and with the fundamental human and biological need for sensory experiences, creativity, and the urge to create and do so in collaboration with others (Stig L. Andersson, 2021). This have resulted in the way cities planned and their characters, which affects the spatial surroundings and the relations of connection with built environments.

Spatiality

In early 20th century, modernism introduced the necessity of air, light, and greenery in the spatial disciplines of architecture, landscape architecture and urban planning (CIAM, 1933/1946). Rejecting historic urban models of density and gridiron urban form, vast new areas of modernistic urban fabric were added to outskirts of Nordic cities. These new places were characterized by extensive greenspaces, separation of pedestrian, car traffic, and disconnected, large housing slabs and towers. Modernism still remains topic of discussion in many disciplines and organisational contexts. Modernist approach for urban design is still much criticized for being too monofunctional, too monotonous, and too rational (Krier, 1897).

In Nordic countries, welfare state coincided to a large extent, with the emergence of modernism. Shared values in terms of task to provide decent living and working conditions. Reliance on 'planning, science, and rationality,' and the overlooked importance of the other needs which do not fit in the box, created shortcomings of the finger plans success (Stig L. Andersson, 2021).

The vastness of most parks had, for economic reasons, propelled both a monotonous plant design and a rational management (Bucht, 1979). In tandem, these driving forces resulted in poor experiences and affordances. Ecosystem services and the principles of aesthetics (which are often enmeshed) invite practices to measure, monitor, and compare

performance. Such actions are typically based on numeric data and quantitative aspects that easily lend themselves to the rational perspective. The tension between qualitative and quantitative aspects in urban planning and design is not a new topic, but is this quantitative paradigm perhaps a larger threat towards the aesthetic than rationality previously posed. There has been never a more urgent occasion to raise the aesthetic question in current practices in order to safeguard qualitative aspects of human life (Stig L. Andersson, 2021).

1.2 Intent

Forest approach as a way forward

The forest covers approximately forty percent of Europe’s land mass, and are the most essential ecosystems on earth. They are crucial for the balance of ecosystems, biodiversity, climate stability and overall health of our planet. The forests are also places of symbols, meaning, memory and identity-cultural landscape that are shaped by humans as much as by natural processes. Relying on only technological solution won’t be just, new woodlands are required, as the existing fragmented forests were absorbed by the sprawling cities over the course of time (Mateja Kurir and Urška Jurman, p.09, 2025).

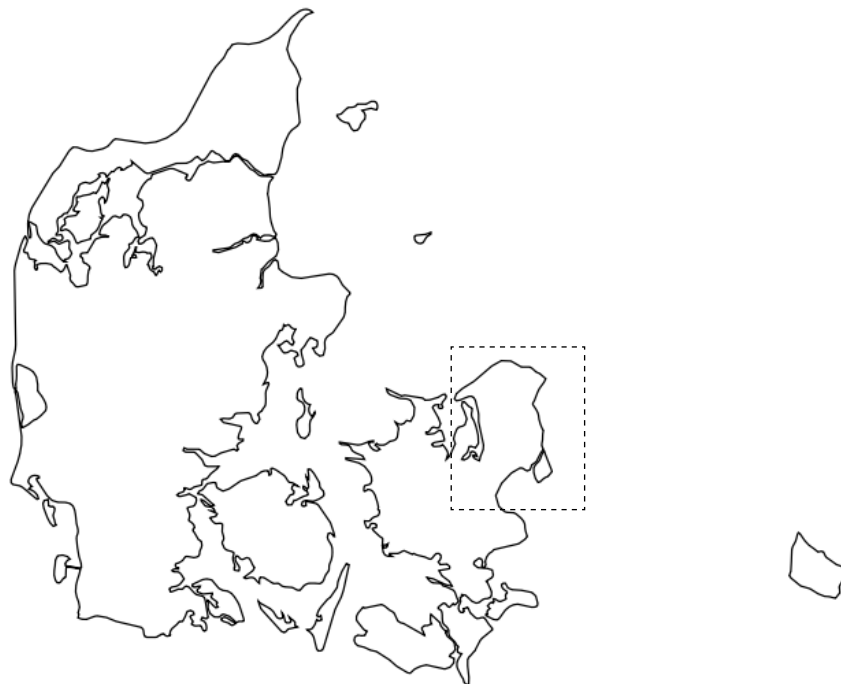
Claims have multiplied in the field of academia, planning, and policy that urban forests as a core component to nature-based solutions, urban infrastructure, eco system services, urban biodiversity, climate adaptation, and urban livability are all aspects of sustainable urban development in context of climate change. Over the course of time, urban forestry has gained influenced public discourses and today trees and forests have gained unprecedented popularity and awareness in society at large (Anders Busse Nielsen, Roland Gustavsson, Henrik Sjoman, 2023).

		Scales of the Urban Forest		
		Element	Configuration	System
Dimension of the Urban Forest for non-humans and humans	Spatial	place, legibility, experience, identity		
	Social	health & wellbeing, recreation, social interaction, community		
	Environmental	time, microclimate, CO ₂ , water regulation, air quality		
	Economic	employment, wood production, food, leisure		
	Ecological	biodiversity: species, habitats, ecosystems		

Why Copenhagen's green wedge

Throughout the globe in urban areas, people are planting more trees, or implementing strategies for increase in tree growth to achieve various goals. And in academia, planning, and policy makers are recognizing the importance of trees and their need in growing urban environments. Simply putting, a new perspective on designing cities to offer liveable spaces under tree canopies. Urban woodlands with its integral quality of spatiality are being proposed here as a new category of public space for the not just sustainable urban futures, but a future that can provides the other half, the fundamental needs of humans.

The planet is urbanizing, and more than fifty per cent of humanity lives in cities. Those cities are not as densely built as downtown Copenhagen, historic Paris, and Amsterdam. Most of them consist of loosely built-up metropolitan areas, with residential, commercial Centre, industries, motorways, pockets of fields, farm houses, golf courses, and villages. The 'green wedges of Copenhagen's finger plan sit right in such a setting. A sub-urban/rurban area covered largely with intensive agricultural land use and satellite urban centres, fragmented nature, historically important places, outside Copenhagen. So where can be the new forests of futures?



Denmark

Denmark's plan for forest landscape, targeting to meet 25% land cover of total land, as part of EU Forest strategy for 2030. As of now this goal is achieved by 14.9% of total, While the untouched, wild forest covers less than 2%.

Copenhagen

Over the past century, numerous green spaces have been developed within and around urban areas. Their design and character have largely been shaped to accommodate limited and pre-defined uses, primarily driven by objectives of economic growth and social welfare. To a significant extent, these spaces exhibit a predominantly non-human orientation, evident in their functioning, spatial organization, and sensory qualities. And with growing population, there is more pressure on matters relating health, physical well-being and experiential quality of nature.

In cities such as Copenhagen, the system of green wedges includes several parks that demonstrate limited spatial quality and a restricted diversity of uses. While many existing public green spaces continue to be frequented, findings suggest that this continued use is often attributable to a lack of alternative options rather than to the inherent quality or adaptability of these spaces (Stig L. Andersson, 2021).

Copenhagen Green space Policy

The Copenhagen Municipal Plan 2019 underlines that Copenhageners health is generally closely linked to their background, including level of education, housing conditions and income. Furthermore, it proposes that to 'increase social equality in physical and mental health, health-promoting urban planning should start where it is most needed (in vulnerable areas) ... (through) physical activities or green areas that promotes mental health' (City of Copenhagen, 2019, p. 22, see more in appendix). As discussed earlier, current posing challenges, the forest with its multi-dimensional and multi-scalar entity which can address a variety of concerns, from environmental and ecological, to social-cultural, spatial, and economic ones (Research Fellowship Urban Forestry TU Delft, 2019). The element of forest and forestry can help to find new insights to the challenges, this argues for the relevance of the forest as a landscape typology and element for transforming the public green spaces in Copenhagen.

Structural Approach

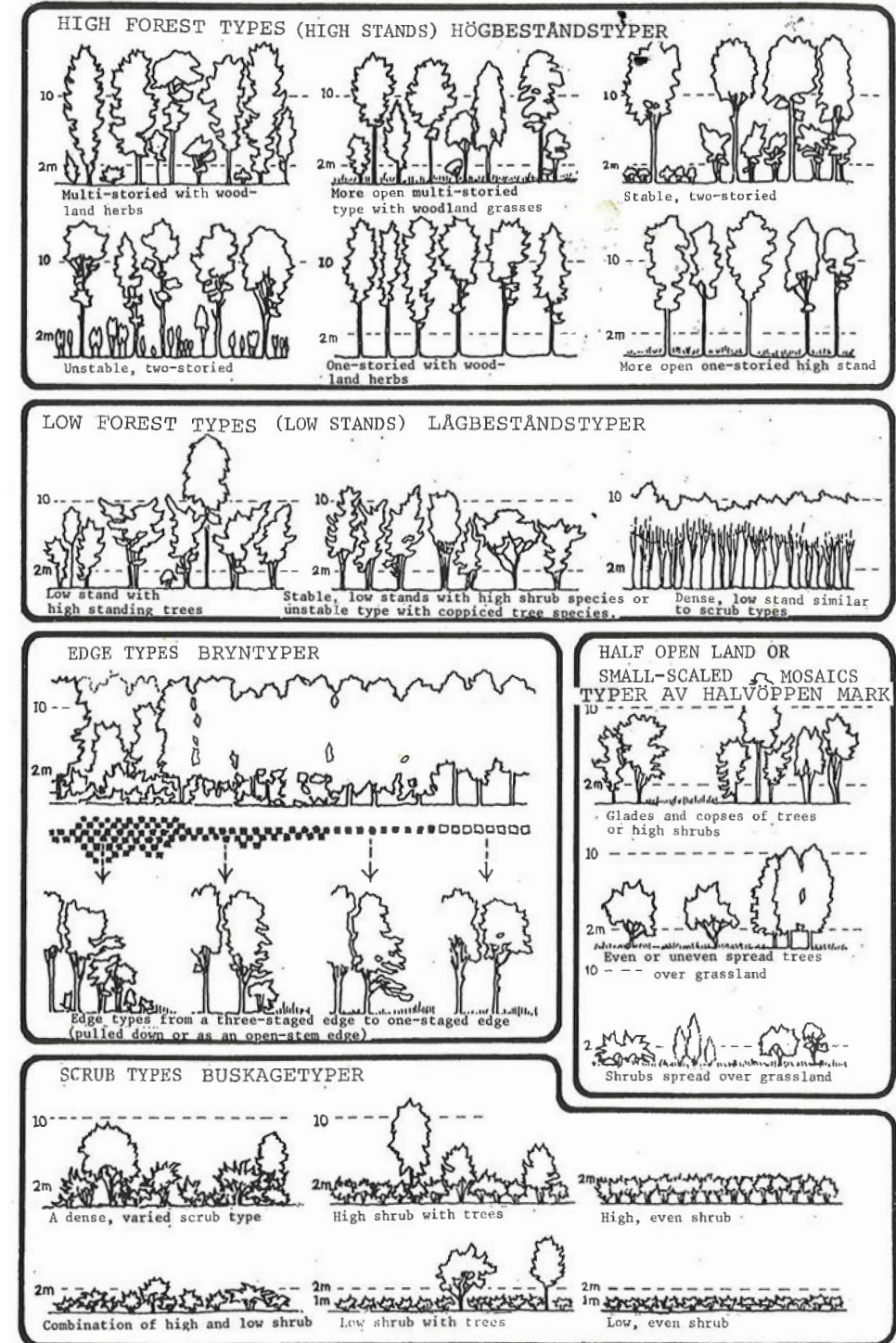
In response to spatial challenge, this thesis works with spatial lens to achieve urban forest cover goals with urban forestry principles of Structural approach to improve spatial quality of Copenhagen's green wedges.

Forests consists various qualities which benefit us humans, where one quality of spatial experiences is exceptional and relevant in this case to explore. For example, enclosed woodland experiences under the canopy are markedly different to other landscape experiences, more such spatial elements can be used. As the project is situated in urban environment with a challenge to accommodate various ongoing and new functions, it become central task to identifying and testing of various sets of interior rooms and woodland types. Further the forest with its multi-layer tree structure flexibility, and woodland types such as shrub rich high woodlands, low woodlands, woodland edges, and half/open types make them suitable to accommodate various spatial needs.

A wood can be extremely regular and strict, but also highly organic with a sense of complete wilderness.

By nature, woods are complex mosaics of these two extremes with dense stands, open areas, and transitions to bushy and herbaceous vegetation. A woodland is more alive, dynamic, and changeable than a building. But like buildings, woods also have spatial compositions, an overall form and size, a rhythm of exposure and en

closure, points, places, walks and passages, and individual trees and shrubs, making them a relevant base to building new living environments or the cities.

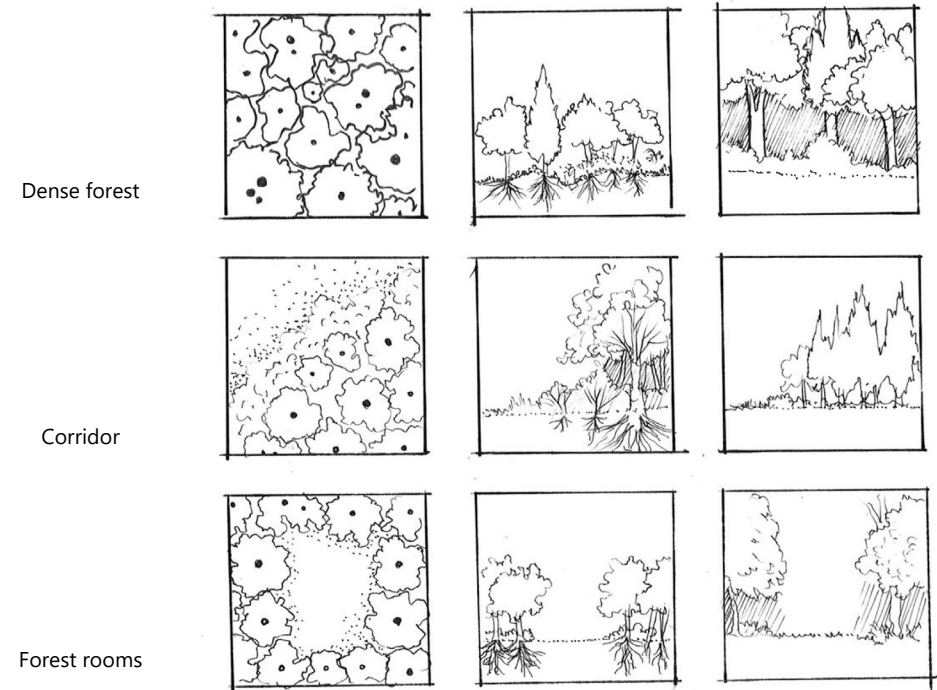
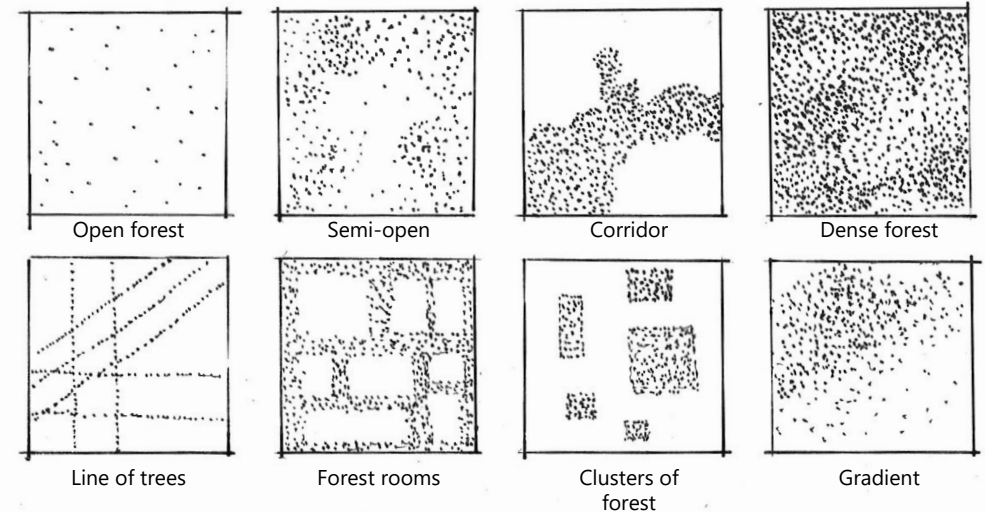
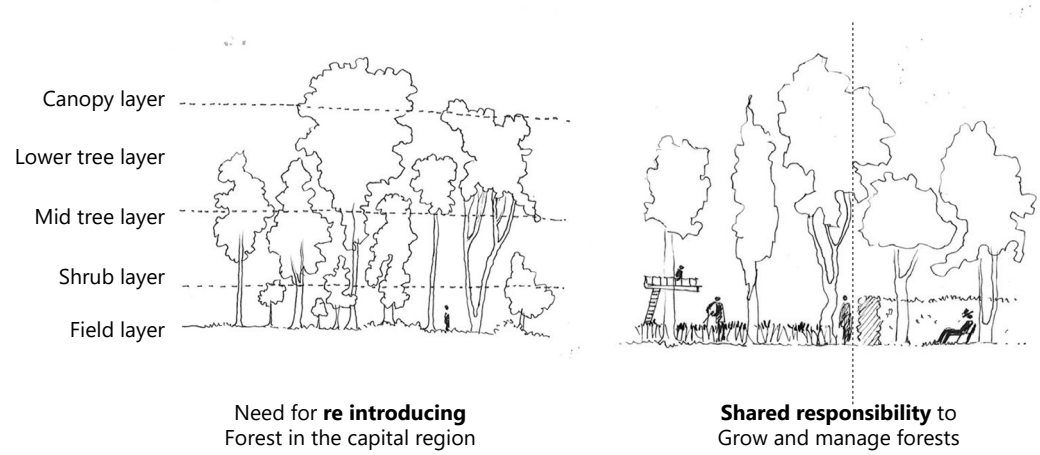


Woodland and woodland edge types structural approach, Woods go urban

Tree layers and forest spatiality

Structural approach uses woodland and forest types to achieve various spatial goals. The design principles mentioned below in the drawings shows the use of vertical tree layers. And the secondly the idea of Co-management are explored through participatory approach.

Inherent spatial quality of forest is employed here to answers the challenges regarding spatiality, heterogenous uses, landscape quality in the region.



1.3 Define

Problem statement and Research

The modernistic currents within the Nordic welfare state have solved many functional challenges for cities historically but have forgotten the humane, the aesthetic, and the grown environment. In some cases, rational thinking has taken logical conclusions. By consistently relying on rational decision making in the development of our society, the welfare state has achieved great results: an unprecedented improvement, from welfare city to liveability with social security, education, health, and housing for an entire nation, an entire people. But, paradoxically, exactly because of this one-sided focus of welfare state resulted in limiting non-rational developments (Stig L. Andersson, p. 38, 2021), limiting growth of the other half of what will give the whole life-the other, less tangible half that has to do with the quality of our everyday life in urban environment. This rapid growth of urban populations has led to a fundamental shift in many human activities and social structures, as well as in our everyday environment.

In continuation of a non-dualistic view on nature and culture, the differences of city and nature is obsolete. Landscape, on one hand, is a cultural and artificial concept and place (Prominski, 2014), that often serves the city (Newman et al., 2017), while cities hands are not wholly artificial, but made up of landscape elements and processes (Spirn, 1985). This interwovenness also increasingly manifests itself spatially through the growth of so-called dispersed territories (Sieverts, 1997; Wandl, 2020). The wedges of finger plan, these places are neither landscape nor city, but rather both. They are characterized by decentrality, heterarchy and the in-between (Sieverts, 1997; Wandl, 2020). Integration and design of these spaces becomes crucial. To acknowledge our dominance and responsibility on the other hand, urges us to limit anthropogenic pressures as much possible (Sijmons, 2022). In recent years, there has been a movement in awareness on pressing matters city faces due to climate change, increasing population densification, and biodiversity loss.

Landscape architecture cannot stimulate this dichotomy entirely, it can however help develop and transform conflicting territories by providing alternatives to growth-centric urban development (Waldheim, 2022).

At the same time humans need to take an active lead in repairing the ecosystem they have damaged (D. Sijmons, 2022), particularly in case of forest cover of the region which was cut down over the centuries. By reversing anthropogenic modifications in the landscape and working with natural dynamics, certain anthropogenic pressures on biosphere and atmosphere can be lessened and mitigated: reforestation can lessen floods and promote carbon sequestration for example (Pearlmutter et al., 2018, p. 3-5). Landscape architecture can take a central role in caring for these challenges through the design of forests management and repair strategies. Lastly, the growing environmental challenges and the disparities in economic gap to cultural diversity of citizens, attention is required in Copenhagen's social fabric for improving environmental justice and equal access to quality nature in everyday life. This raises questions on how a new nature-based development solutions can be used, translated and applied to ongoing challenges regarding the relative society and urban development. Thus, the understanding of this theory and posing challenges bring my fascination to following research questions.

Research Questions

What is Copenhagen's new spatial forest approach to help revive relations between human and nature by creating equitable attractive green wedges?

Sub-questions

_How can urban forest infrastructure aid in strengthening green wedge work in socially just way?

_How can the new urban forest infrastructure aid in dissolving the dichotomy of urban/nature and strengthen spatial integrity?

_What alternative governance and management strategies can aid this new urban forest infrastructure?

_How can urban forestry help provide base for heterogeneous uses and managing?

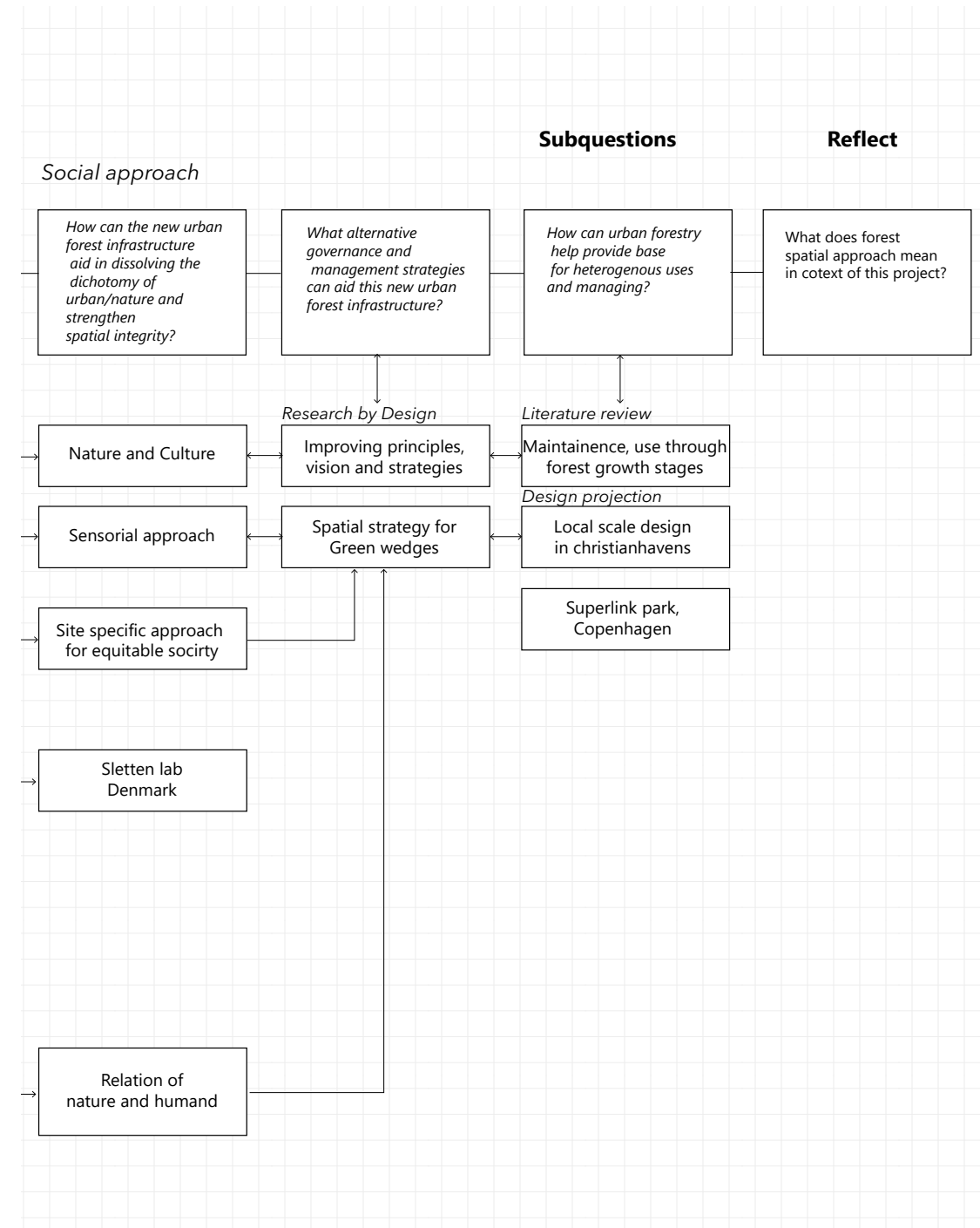
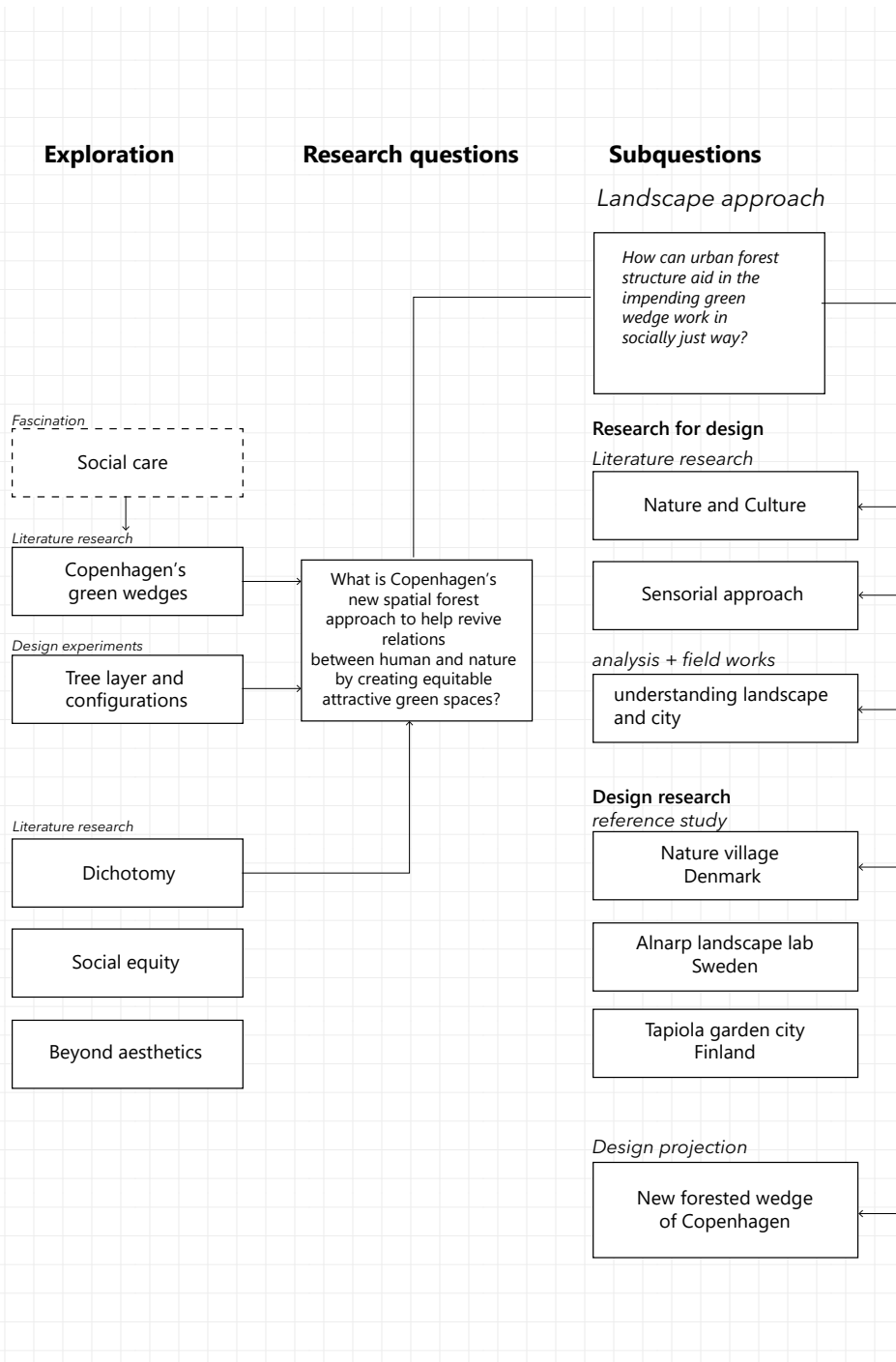
Methodology

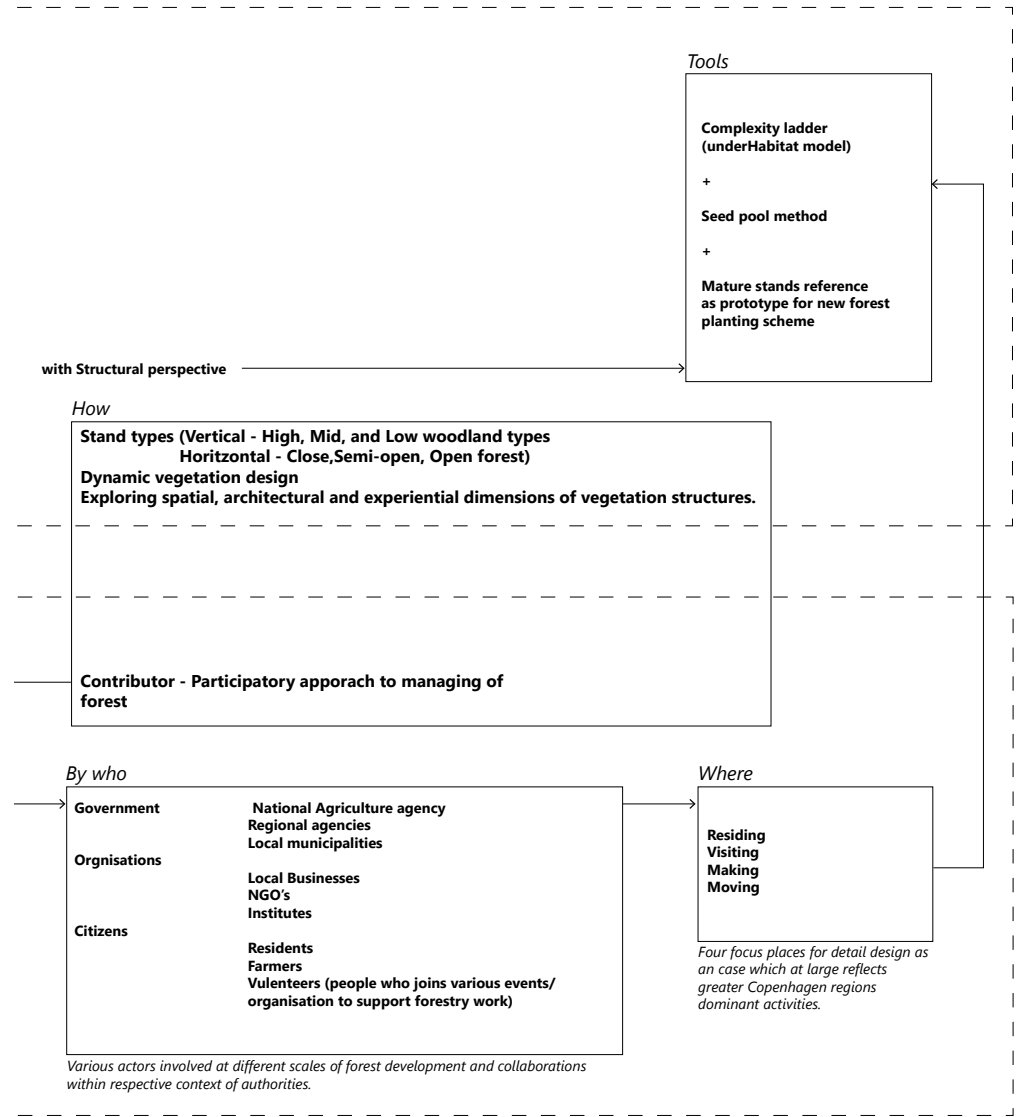
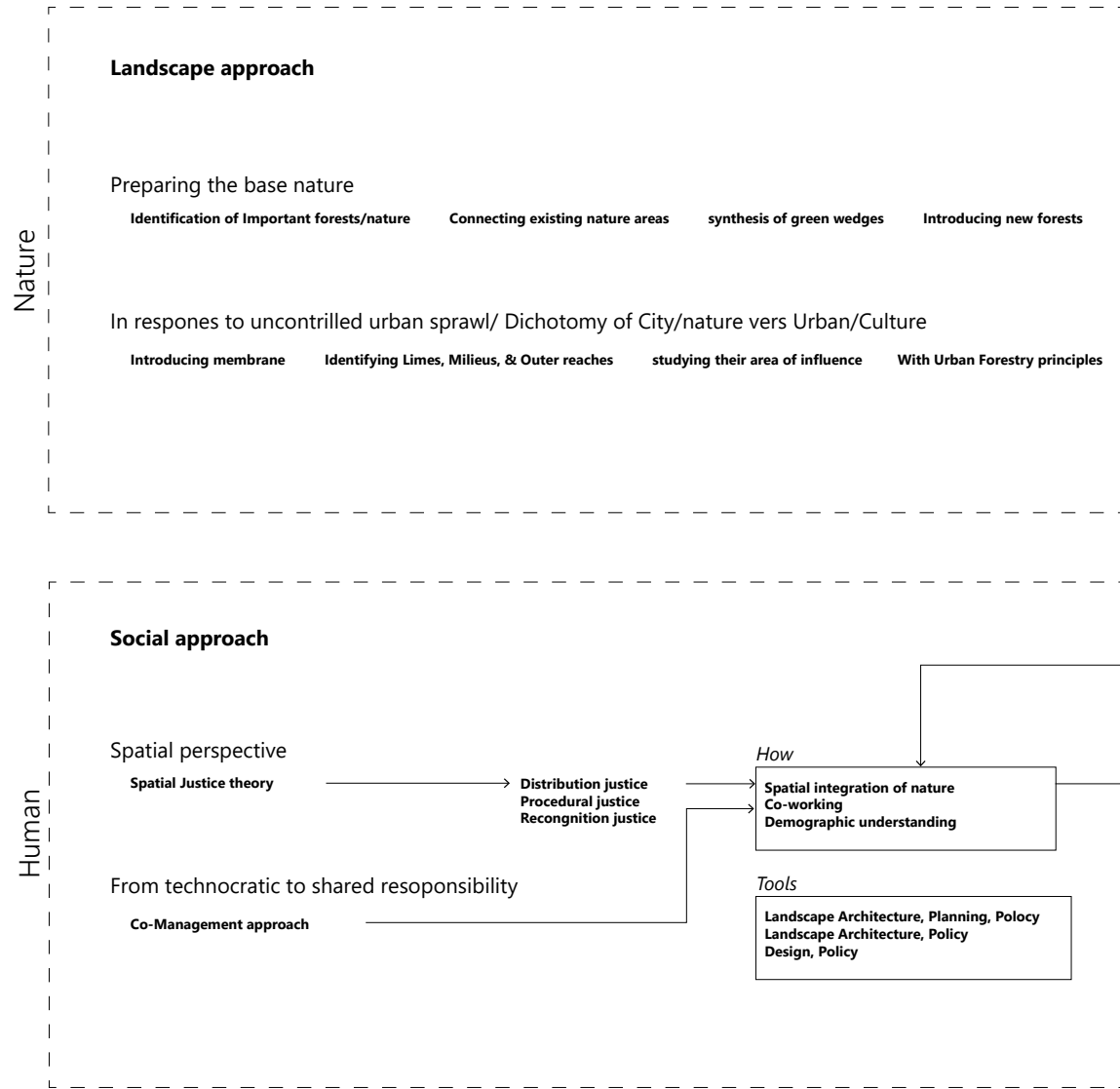
Scope

Initial time and work on my graduation will focus on exploring my fascination and site. This analysis will be carried out using creating layered mapping, literature readings, photographic study, and design experimentation to understand the challenges. Preliminary analysis is combined with reflective literature about current situation of rational thinking on planning and social justice, where these challenges are seen with a lens of spatial perspective.

Within the graduation project reforestation is examined as a means to engage with challenges of the Anthropocene through design and unfolding the relationship of nature and human. For this the project draws on the notion of forest urbanism – the forest as the guiding entity in the development of the urban – as well as on the multi-dimensionality of the forest and its inherent capability to address environmental, ecological, social-cultural, spatial, and economic concerns (Research Fellowship Urban Forestry TU Delft, 2019). Moreover, the forest is explored not solely as a utility or commodity, but rather a living thing with inherent agency (Konijnendijk van den Bosch, 2016), that on one hand provides for, but also needs to be cared for by humans and other than humans alike.

The urban fringe landscape around Copenhagen (Denmark), also known as 'green wedges' part of the finger plan of Copenhagen, where today the wedges tussles with fragmentation, loss in spatial identity, biodiversity loses amid urban expansion associated with economic rise, technocratic governance and providing fundamental needs people in subsequent erasure of 20th century rational approach. It was less instructive about the open landscape outside and between the fingers.





'The forest is a living demonstration that strength arises from diversity and resilience from interconnectedness. Thus, this report invites to explore ideas of forest as a space and in collaboration with which we can learn and create otherwise.'

'As said, Trees are most tangible form of nature and one of the main elements in urban forestry. There many research and results showing the benefits from the trees we can benefit'.

2

Plant thinking

Site introduction
 Demolished fortification 1856
 Urbanisation 1920
 Firest Measure 1936
 Finger plan 1947
 Population growth 1960
 Safeguarding the leftovers 1970
 Fragmented nature 1980
 Approved region plan 2005
 Revised finger plan 2019

Co-existence

Nordic cities
 Denmark

Plant thinking

Beyond beauty: Power of Aesthetics

Conclusion

the way forward

Site Introduction

Copenhagen the capital of Denmark, sits on the coastal islands of Zeeland and Amagar. Copenhagen has various borders, from municipal, Greater Copenhagen, Capital region, Oresund region (Regional Copenhagen). The various Copenhagens are spanning to Malmo region, southern Sweden, linked via a sea bridge over Oresund. Historically, place was settled as a small Viking fishing village in 10th century in the vicinity of what is now Gammel strand. By 15th century the city became the political capital of Denmark, governed the modern-day the region of Nordic countries. Following centuries, city developed in various aspects, and by 21st c has become a strong image of culture and urban development, facilitated by investing in its institutions and infrastructure.

Copenhagen in a very short time span, a strong economy has transformed the traditional welfare city into prosperous city. The welfare state was the very image of the inclusive ideas of equality and fairness with equitable access to shared resources and the possibilities that the city affords, to powerful institution, workplaces, and cultural venues. It was and is one of the most tangible manifestations of the spatial levelling of hierarchies and economic differences as laid out in the welfare society's social contract with its citizens. Accessibility, transparency and openness were the planning ideals that defined the management of public spaces, and designer and planners identified the social programmes underlying the welfare state. One of the major spatial development shaped the city as it is today, resulting of Finger Plan.

The finger plan was adopted in 1947 to coordinate the many considerations for creating a sensible development of the metropolitan area of Copenhagen. The plan is widely praised at home and abroad because it is an easily understood framework for the development of the capital that allows all inhabitants to live in proximity to public transportation and greenspaces. The central principles were that all over the metropolitan area should be a minimal distance between housing, workplaces, and green areas based on public transportation. Urban growth should happen along these lines and the in between land should be left open for recreational areas and farming – the so-called green wedges.

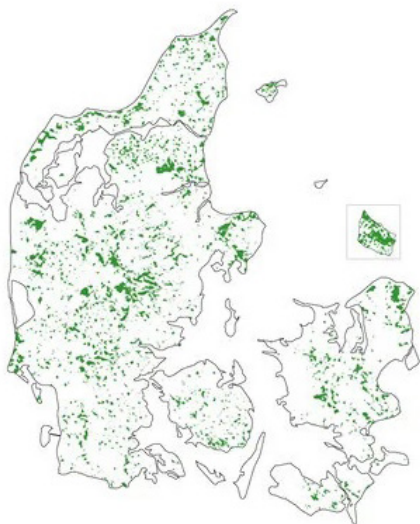
1000 BC
100% forest



1800
2-3% forest



2020
14% forest

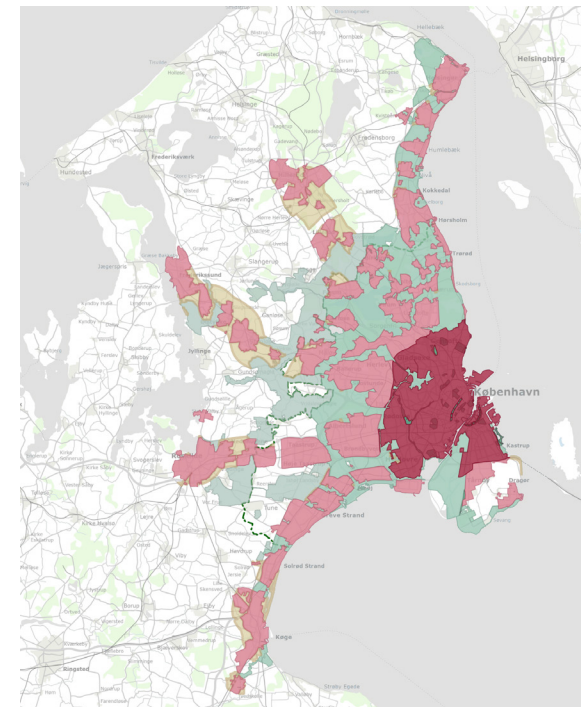


2100
20-25% forest



The finger plan was recently revised, and has provided valuable opportunities to create a more livable and greener city, but also that is necessary to break away from the plan's one-sided, quantitative, and rational approach and now it needs to be supplemented with a more human and aesthetic approach. The recent revision in 2019 (Erhvervsministeriet, 2019) for the finger plan has been a missed opportunity for formulating and implementing new and contemporary visions for the sustainable, nature-based city (Stig L. Anderson, 2021). The following text,

explores historical urban development and considerations of nature areas in capital region.



^ Finger plan zones 2019, Landdistriktsstyrelsen, Denmark
 << Forests cover over time in Denmark
 EFFEKT, 2020



Shipbuilding in Faaburg, Pete Hansen (1866-1928) <

Urban & surrounding landscape development history: 1850 to Present day

After the ice age, around 80 per cent of the Denmark's land was covered under forests. Over the years, due to Anthropocene development such as ship building, timber export and home building, by 1800s, which reduced the forest cover to just 2-3 per cent of the country's land mass. In 1805, first Forest Protection Act was proposed. The areas outside were subjected to rapid growth from 1856. The only landscape elements like forests, lake and wetlands restricted urban sprawl after the demolition of the fortification. Later by 1920s, planning for open spaces was not done and existing social segregation within the walled city was replicated in growth pattern, leading expansion of upper class to north, middle class to north-west and evolving working class to districts to the west and south. In result, the north fringe of the city was urbanization and increased recreational activities. Forest, lakes, and coastlines constituted the 'deep structure' (spirn, 1998) upon which urbanization developed. In contrast, open countryside to west and south of city were subjected to almost unlimited urbanization.

Rapid urbanisation and population growth lead in considering and implementing comprehensive plan for green structure around the north west side of the city. The Green structure plan was introduced in 1936. It was first only planned for north side of the city

as there was already extensive expansion in scattered pattern along both traffic corridor and attractive landscapes. Due to existing forests, distinction of wedge pattern was difficult. In following years, the Copenhagen's Finger plan was implemented in 1947. This plan was a urban plan, not an comprehensive regional plan, with a focus was oriented towards urban development, infrastructure and recreational needs. Though, it dealt with countryside in small extent. Agricultural landscape was never part of the planning measures. In following years in 1960s, the population in greater Copenhagen doubled, dramatically increasing urban expansion (Caspersen et al., 2006) Various development respected the finger plan, but the finger became successively thicker then stipulated. Some wedges were reduced to very narrow corridors. Several initiatives from various levels safeguarded the remains of green wedges with new law in place from municipal plans in 1970s. The Vestekoven (the western fringe) didn't had landscape qualities of the north, and to justify several afforestation initiatives were carried out from 1967 onwards. As the currents of time changed, by 1980s, ecological considerations have been central agenda for physical planning. Some connections were implanted at regional planning by many municipalities. But it had little noticeable relations with the finger plan concept (Brandt 1995). Similarly, another current lead in introducing Landscape stabilization, but was only seen from central point



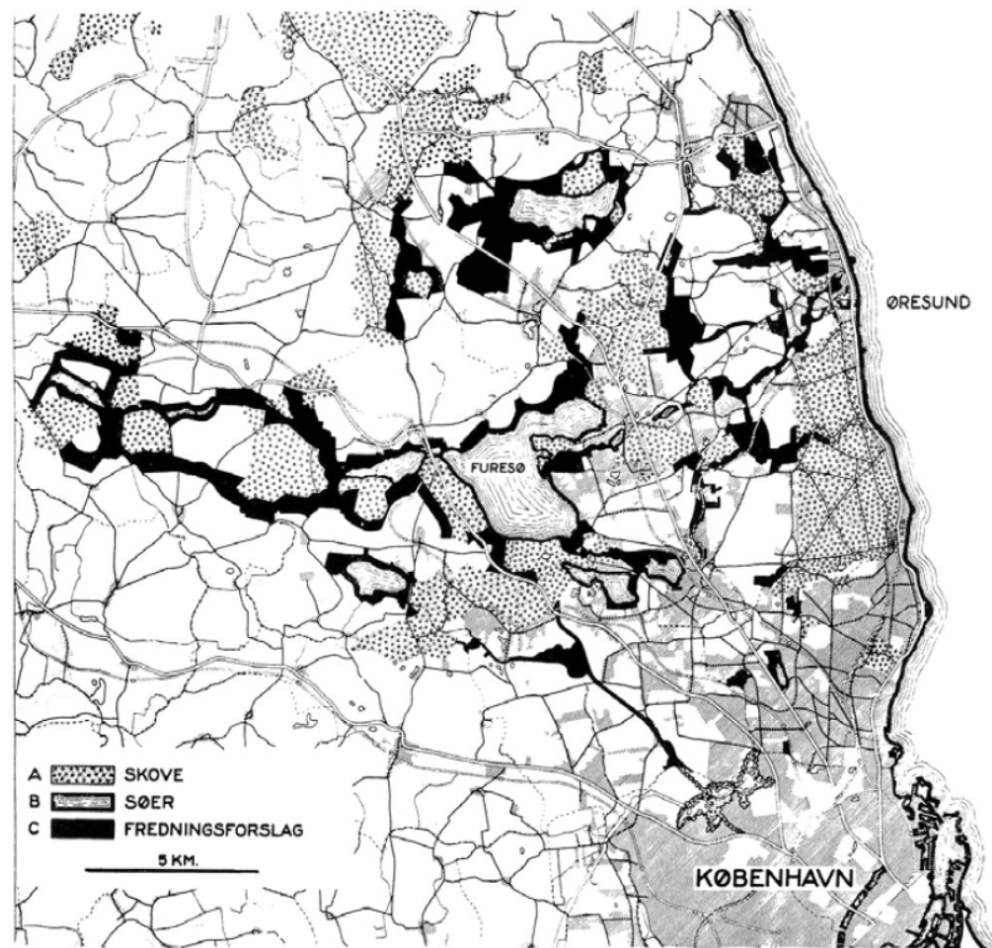
a farm with stocks nest on roof by L.A. Ring 1903, skaerbaek, Davidmus.dk 

of view of city, but less pronounced in structure (Mander et al., 1988), based on three traditions: a) a greenway tradition (Lewis 1964, Mcharg 1969), b) a nature conservation tradition island theory and Metapopulation theories (Forman & Godron 1989) c) a stabilization tradition roots in geo-ecologically oriented landscape from eastern Europe (Mander et al., 1988, Miklos 1986). A unifying plan for all wedges was not formulated, such as Vallensbaek wedge was created just around 1996. A number of important developments outside the wedge had major impact to Copenhagen's green spaces. i) reclamation of shallow sea between the island of Mager and southern Copenhagen (Vesteamager), ii) creation of a beach park along the southern coast. Later both locations were subject to central governance and finger plan planning. The Finger Plan established the spatial framework necessary for the development of recreational functions, habitat enhancement, and the ecosystem services that the green spaces provide today. Although the plan provides less details on function and program of green structure. Green wedges of Copenhagen are dominated by agricultural land use, apart from some areas of the northern wedges. Agricultural lands were not major consideration for finger plan or in regional planning. The plan mainly controlled urban sprawl, 1980s onwards, nature conservation and some ecosystem services. Agricultural landscape was not affect

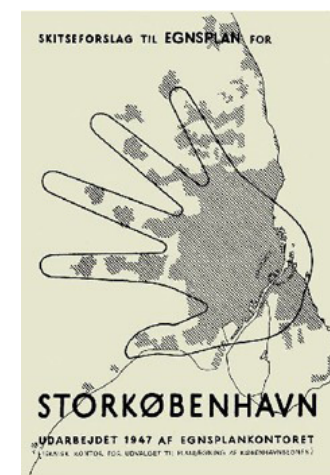
ed by planning system, largely remained the same. Major issues in current system are rural areas, with less attention the growth wedges and particularly on urban edges have grown unplanned and scattered form.

In 2005, a regional plan (Anon. 2005) had been approved for Copenhagen region. Over time some new landscapes were designed, for example, in 2007, the plan for Vestekoven (the western park) was accomplished. Despite concern over landscape design, clashes with motorways and forest management, Vestekoven remains the most successfully managed compared to other wedges. Within the wedges some rules controlled urban growth, reuse of abandoned sites and few sites still available for new development. Some efforts were done to connect all wedges, but has a large drawback due to construction of sports field and traffic corridors, making it enclosed landscape in fragments and more with eroding agricultural structures, tucked in between highways and fingers forming pockets, pressuring to be taken over by other function.

Today landscape remains mostly the same, largely characterise with open landscape dominated by agricultural fields or grass fields. The extensive farming processes and large infrastructure projects have left the landscape into a fragmented and open nature with low ecological value, biodiversity lose and low spatial quality character in the region.



Looking back in historical layers of landscape, can help shape the future of the region and based on certain challenges, I propose three theories in search of possible answers to mitigate posing issues. First part of theory explores dualism of city and nature under Co-existence (Contrast theory), Plant thinking (decentralization) and beyond aesthetics (Spatial approach).



Co-Existence

Cities across world have expanded with rapid rate of urbanisation. Growing outward with migration of population from countryside to cities, sprawling towards sub-urb and further into the countryside. A vast land mix of urban and nature intertwined with human activities. It is more than just built-up area. These urban carpets blend in with agricultural areas, 'contain' and enclose natural areas, industrial zones, agro-production clusters, airports, water extraction areas, mining areas, and recreational areas connected and bisected by a range of infrastructural routes

ranging from pipelines and radio links to roads and railways. If we look at the earth from space, it immediately becomes obvious that many global environmental and human problems are associated with urbanization, or at least have a root (D. Sijmons, 2020).

This can be said, that the answers to these problems have to be found in the city. This could be partly true for the relations of city and nature, or more precisely phrased the complex and layered relationship between natural processes and the processes of urbanization (D. Sijmons, 2020). I want to use this dichotomy formulation because city and nature are too easily positioned as antagonists. City and Nature may be distinguished but cannot be separated. The potential is its presentation of prevailing trope of Dichotomy of forest/nature verse urban/culture; a dualism that plays out in the way cities are seen and imagined-subsequently projected, shaped and managed. Today, despite vast knowledge on importance of nature, city and nature are seen and designed in traditional way and in worst case in relative isolation.

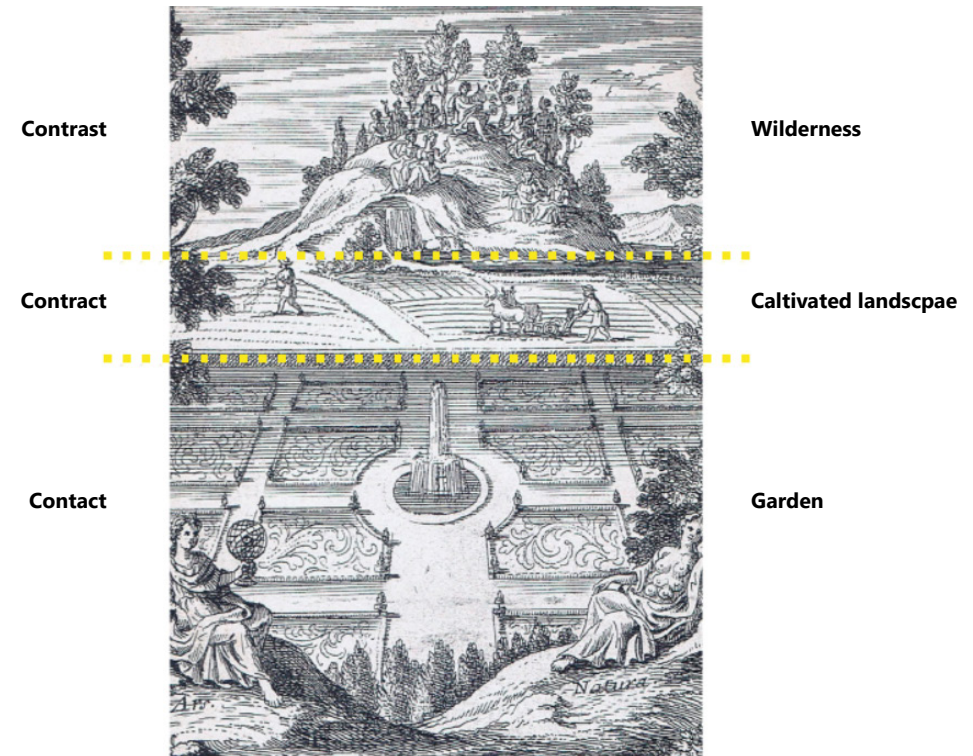
Past decades, Copenhagen has seen a rapid growth into the sub-urban areas, merging with nearby cities, spreading into landscape outside city and further into countryside. Not just becoming dense and dynamic, but shapes of enormous endless urban landscape literally covering parts of capital region. Since the demolition of defense wall of historical Copenhagen, the city growth went rapid then imagined. Particularly

expanding towards north, where the landscape values were highly appreciated. Mainly the landscape visual and variety of landscape elements draw people to reside and the expand the growth along the lakes and some major transit corridors.

During 19th and 20th century first measures were taken to protect the nature in the sub-urban side of the city.

Over the centuries, in Denmark, growing human population, their need for agriculture, settlements, and ship building, forests were cut down and were replaced by farming and cities. By the year 1800, country's only 2-3% of land area

was left under forest cover. Since anthropocentric development, humans have shifted to urban areas, distancing from nature, creating distinct places for humans to live (the city) and nature on outside (in countryside) throwing away the nature further out in country side. This lead in creating environments functioning in isolation, limiting human interaction with nature. The rational approach or 'cosmopolitan thinking,' that is also reflected in planning of Copenhagen's finger plan and quality of nature, social unjust.



4 Plant thinking

Far from being passive, unintelligent life, plants display remarkable capacities for communication, memory, learning, and problem solving. Plants have ability to learn from experience and their environment. They interact not just with other plants but other animals, and insects in complex and highly manipulative ways, and their rhizomatic root structure and decentred, collective intelligence provides a hyper efficient model for gathering and communicating information – a far more modern and radical way of thinking about social and environmental relations.

The redefinition of the soil as thickness and as living material

forced us to redefine our relationship to it, our mooring. One of the best examples of a living being that is anchored in the ground is a tree. Imagine an optical instrument capable of unfolding all its qualities; note growth (in depth, heights, size—volume and branching), respiration (carbon balance), flows (of sap), growth (photosynthesis), cohabitation (organisms, insects, and other animal inhabitants), and attachment (to the earth). If we draw a tree with these guidelines, then it won't be a leg-end, miniature, nor an object, but a point of view. A way of unfolding things are they are, in space, with the world around one.

The decentralisation is key. It is discovered that plants breathe, see, feel, and evaluate with their whole body. Spreading each function over the entire organism as much as possible is the only way to survive predation, and plants do it so well that they can withstand removal of much of their body without losing functionality (Gina B., Martin C).

In case of urban densification and compact city development has huge impact on health and on nature has been studied in several research (Pauleit, Ennos and Golding, 2005) while other studies show densification in urban areas and impact on nature areas, does not necessarily lead to a deterioration in accessibility or people's perception (Stahle, 2010). Whilst some research findings show a development in residential environments across Denmark characterised by simultaneous densification and greening since

the mid-1990s (Samuelsson et al., 2020), the pattern of densification in the city of Copenhagen in the last two decades, which is projected to continue in the next decade, which calls for planning and informing new urban policies, where new approaches suggested above the decentralization can be implemented.

Background

Today, demographics of Copenhagen region is a large mix of various social backgrounds, from economic, nationality and to racial, making conditions of difference in cultures and people's lifestyle. Which directly relates to the spatial character of the city.

Spatial Justice theory

In order to offer a just alternative, adaptation options must adhere to the three components of climate justice, (a) distributional justice, referring to spatial and temporal distribution of burdens and benefits amongst individuals, communities and nations, (b) procedural justice, implying the need for a democratization of climate-related decision-making and policy planning processes, and (c) recognition, emphasizing basic respect and fair engagement and consideration of a multitude of cultures and viewpoints (IPCC, 2022).



Recognition Spatial justice
validation, protection and compensation of marginalised and vulnerable identities and groups

Distributive Spatial justice
equal distribution of benefits and burdens as evaluated from previous analysis

Procedural Spatial justice
participation in decision-making as evaluated from the interviews with city hall representatives

In this case, I engage in potential nature development in context of vulnerable neighbourhood, but also the thesis focuses on social justice importance and consideration in green space policy for greater Copenhagen region. The raised questions are on how a new nature-based development solutions can be used, translated and applied to ongoing challenges regarding the relative society and urban development.

5 Beyond beauty: Aesthetics with paradigm shifts

Almost one third country's population lives in Greater Copenhagen region, and is yet to increase in 2050 by 1,319,460 resident. Many such changes with rapid growth of urban populations has led to a fundamental shift in many human activities and social structures, as well as in everyday environment. The day-to-day setting for many humans now predominantly consists of (hu) man-made and built space. This 'urban environment'—from built spaces, infrastructure, public open and green spaces defines our daily experiences.

The welfare state's goal was to fulfil human rational needs. All these are important but fallacy is when we see this as a comprehensive list of needs. I would say them as just rational needs. The goals of the welfare state overlooked the fact that human beings have social and aesthetic needs as well. Social needs here refer to our very fundamental ability to thrive in collaboration, survival, mental health, social security, learning. Since stone age, we humans have learned and survived in groups, exchanging, and learning new ways for almost everything we did. Whereas aesthetic needs refer to our creative power, our ability to collaboratively create better living conditions for each other, our need to sense, wonder, reflect, think, and understand, and our need to experience mutual connection and gain new insights into ourselves and each other through

that which is not rational (Stig L. Andersson, 2021). When we agree with this fallacy, we not only overlook the value of aesthetic aspects when planning our lives, society, and future but we also overlook the fantastic possibilities of the new insights we garner when experiencing the world with our sense. When we use this approach on how we organize our society, we, roughly speaking, developed cities on half measures. This thesis, however focus from empirical aesthetics lens where aesthetics is used as a starting point to understand experiences with natural elements, everyday interaction with places, and urban environment. I consider aesthetic a key aspect, as the "look and feel" of urban environments that shapes how people feel in the space, how

they move through it, and how they relate to each other within it (Pizzolante et al. 2025). This is not a new angle studied for the first time, many studies have worked on the space in which we live in shapes the behaviour of humans or other impacts on wellbeing (see Dalton, et al. 2012, Kuliga et al. 2013). By focusing on aesthetics, I aim to connect forest landscape knowledge and human lived experiences of cities are preferred and perceived. This approach does not treat aesthetics as only a visual component of urban landscape design, but as a crucial part of how urban environments can have sensorial positive impact, communicates values that shape everyday life.





3

Into the

Design brief
A territorial project

Under laying layer
Three scales
Design principles
Forest character
New forested wedges
Stand type
New management

Greater Copenhagen region

Local scale
A multi-scaler lens
A new participatory take
A new shared responsibility

Projection
Moving through limes
Living in Milieus
Wonder in Outer reaches

Residing
Moving
Visiting
Making

forest territories

Design brief

The aim of project is to design a site-specific reforestation strategy that envision forest as a new way, a medium to revive the connection of nature and human by tackling key challenges of dichotomy of city/nature versa urban/culture with spatial perspective and social justice in greater Copenhagen region. The project is elaborated in three scales, the territorial (Copenhagen's green wedges), municipal (Vallensbaek wedge) and local scale (Avedore, Vallensbaek wedge-Copenhagen).

At territorial level, the project explores ways of reforestation, particular to this thesis, it explores the 'areas of interactions' as a mean to dissolve dichotomy with urban forestry spatial approach to envision new forested Copenhagen, creating a spatial landscape base to achieve revived relations with nature and of humans.

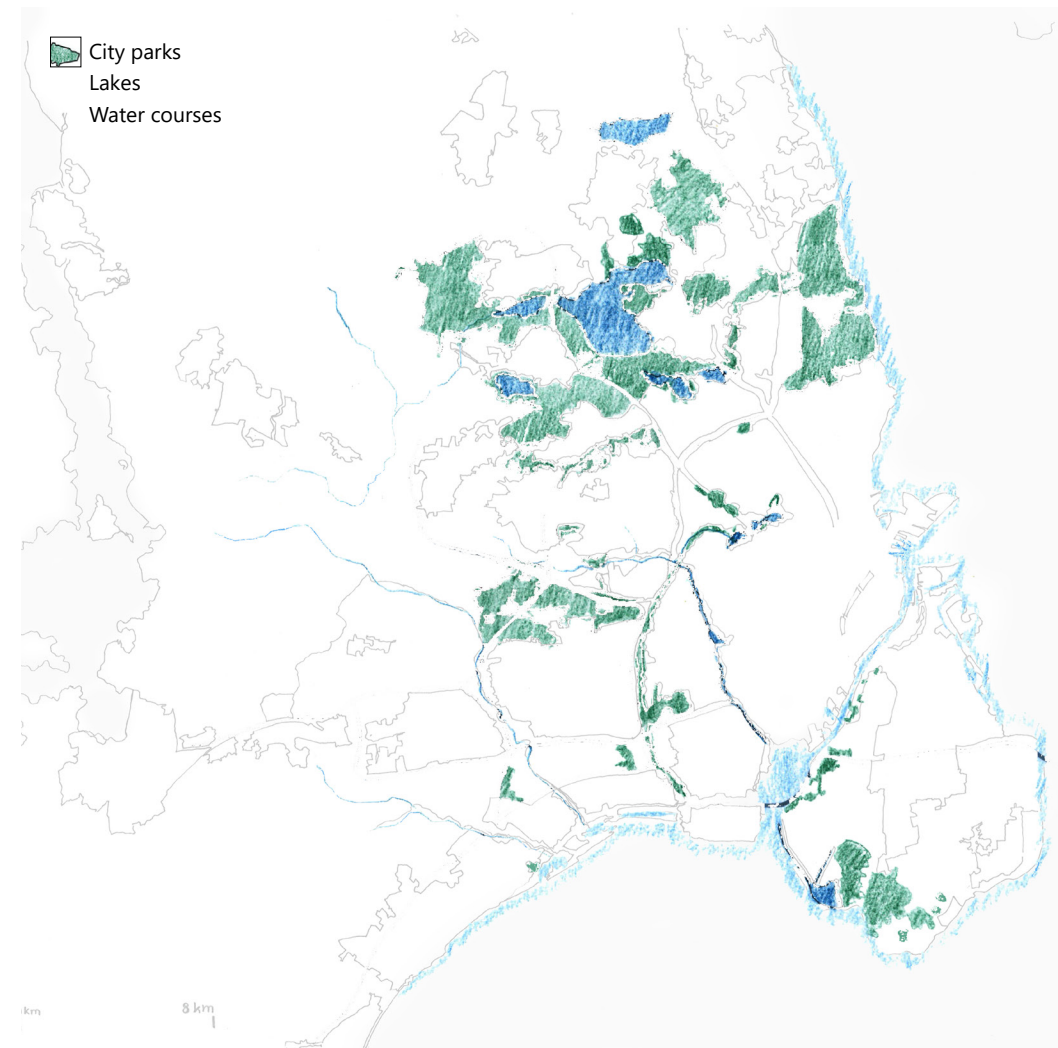
The project is further elaborated on parts of vision area, to municipal level (regional design). Here the details are worked out for Vallensbaek wedge south-west of the city, in a try to answer to future development on addressing current challenges of the landscape and city. This is amid at improving functional uses of green space, fragmented nature and spatial quality to strengthen coherence of the area, further enabling growth of forest and prioritising nature.

And lastly, at local scale, the project aims at one of the most crucial and pressing challenges of growing and managing new forests and adding humane scale into the urban context. Here the idea of management of forest itself becomes the means of bringing humans close to nature, by deciding, using and sharing responsibility. For detail

A territorial project

The green wedges of Copenhagen's finger plan is divided into two planning zones. The core wedge (Inner wedge) and Outer wedge. Landscape in these wedges differs a lot, resulted on geographical conditions and subsequent urban development. To redesign the wedges and their landscape quality, an extensive understanding of underlying layers is important.

To begin with, historical layers of nature areas and water courses are examined here (map on right page, 69) forming a based layer to protect and work with those areas to strengthen spatial quality of landscape. This study enables to understand the potential and limitations of the nature areas and water courses. The water courses here are taken as a base to grow continuous new forest bands to increase various qualities.

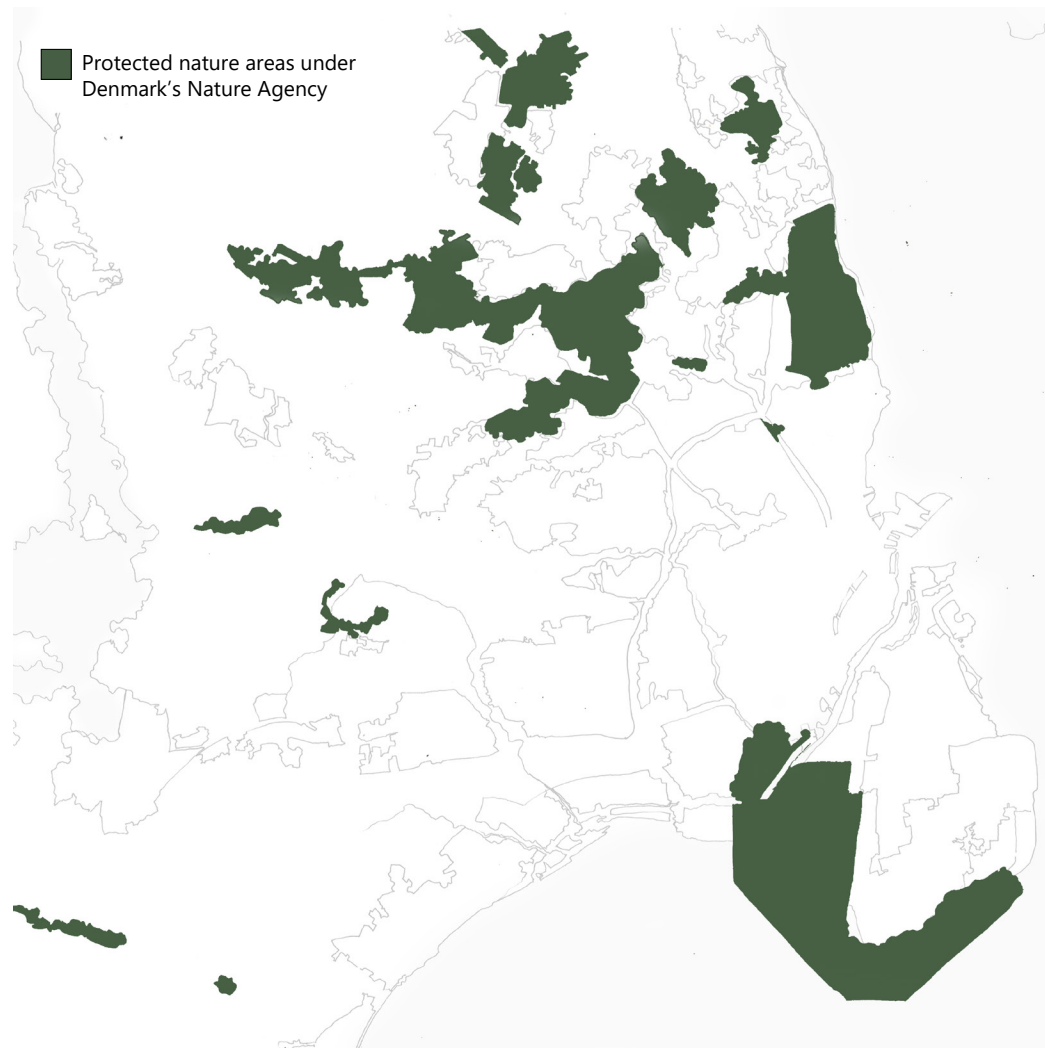


Protected nature

The green wedges consist nature that are protected, some stretch connecting nature in the captial region (regional Copenhagen) are part of Denmark's protected nature areas.

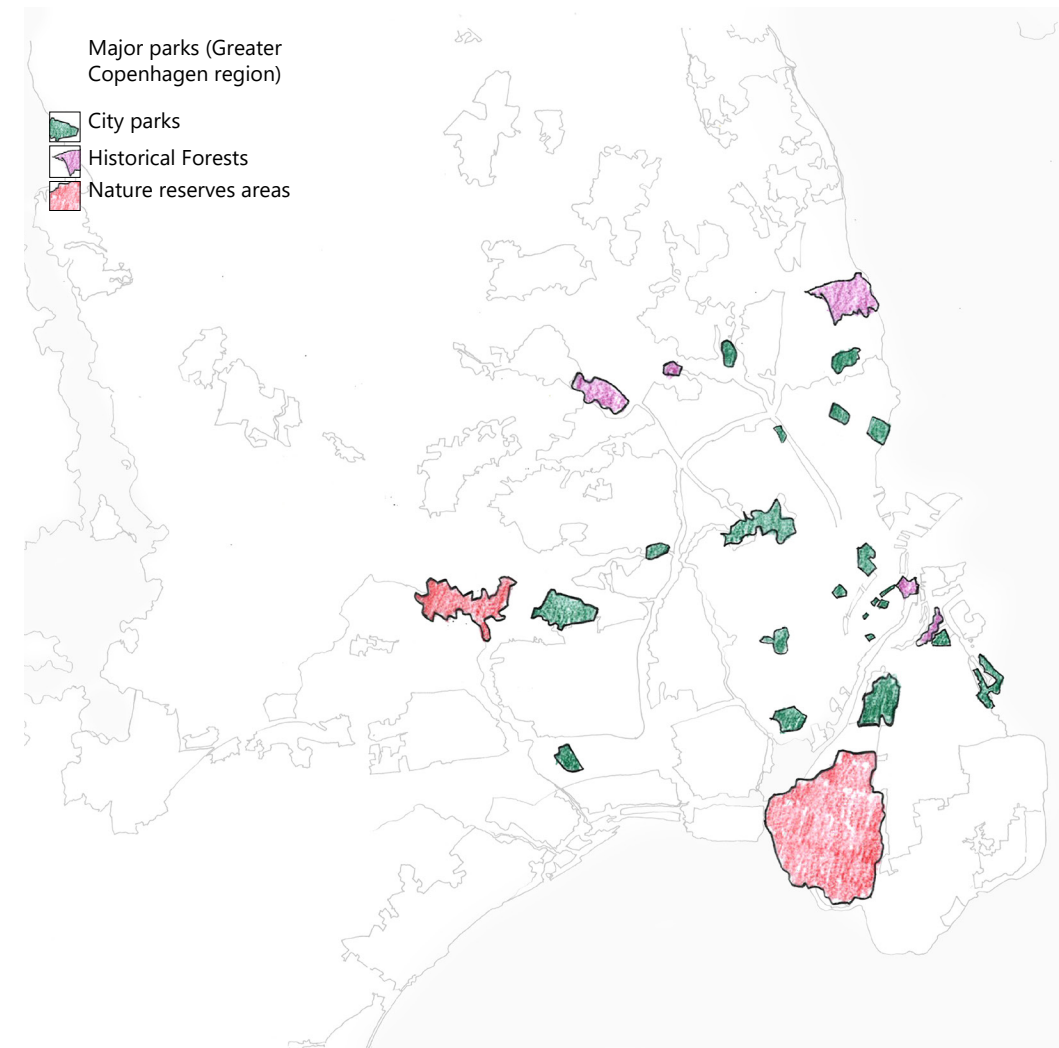
These nature areas are of restricted use permit, but still certain nature activites are allowed. Which can hlep in benefiting humans and other than humans too.

ing and cities. By the year 1800, country's only 2-3% of land area was left under forest cover. By the year 1800, country's only 2-3% of land area was left under forest cover. Since anthropocentric development, humans have shifted to urban areas, distancing from nature, creating distinct places for humans to live (the city) and nature on outside (in countryside) throwing away the nature further out in country side.



City parks and green spaces

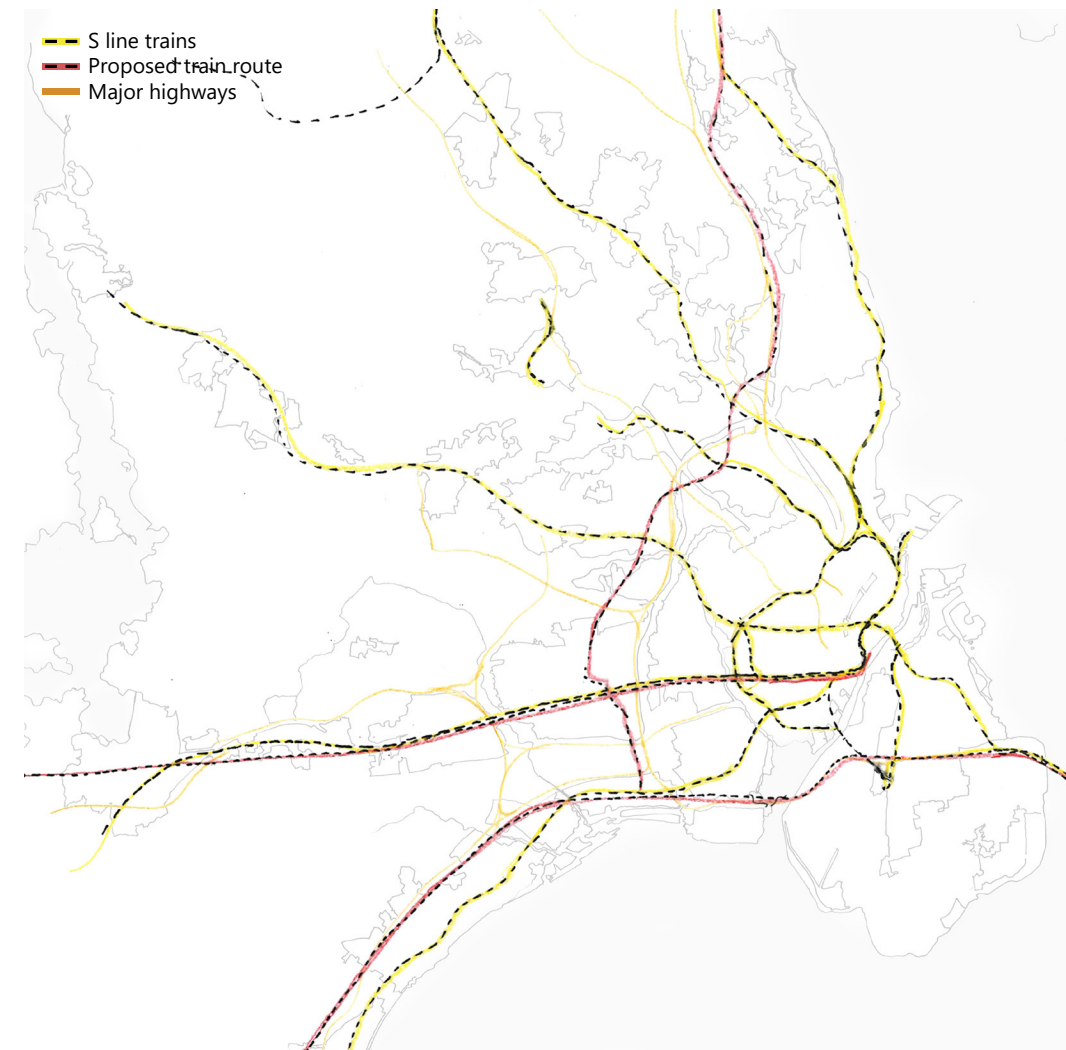
Copenhagen, the city growth went rapid then imagined. Particularly expanding towards north, where the landscape values were highly appreciated. Mainly the landscape visual and variety of landscape elements draw people to reside and the expand the growth along the lakes and some major transit corridors.



Existing green structure

Copenhagen, the city growth went rapid then imagined. Particularly expanding towards north, where the landscape values were highly appreciated. Mainly the landscape visual and variety of landscape elements draw people to reside and the expand the growth along the lakes and some major transit corridors.

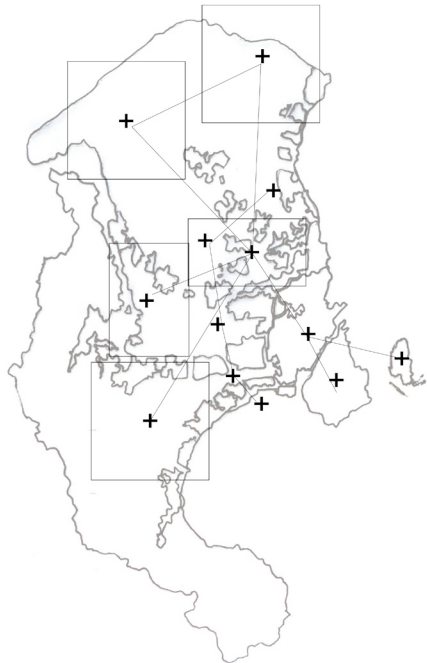
During 19th and 20th century first measures were taken to pro



Potential connection

The open landscape of the capital region is looked over. The rapid urbanisation is spreading across, and transforming the regional with not only more built up area, but also fragmenting the landscape. This subsequently has resulted loss of valuable nature areas in close proximity, biodiversity loss, habitat loss, and further enabling larger issues like climate stress and impact of mental health. The new nature can help with new identity, recreational needs, national 25% forest cover growth, and aid in developing aesthetic values of wilderness in the region.

Design principles



Potential connections of fragmented nature areas

Dichotomy

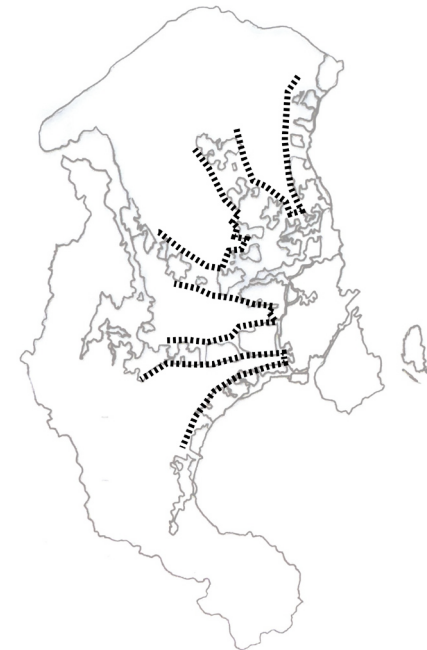
As for centuries, cities and nature has been conceived different entities. Today growing concerns on various problems increasing with urbanisation, these problems are reactions of how urban development have planned over the years. This thesis with focus on social care, highlights issues regarding mental well being, ideas explore how nature can help tackle such issues. As nature has huge impact on well being, nature of the green wedges should be extended into the city, adding more greens cover and outdoor places in walking distance, rather than a destination, making it as a easy choices for daily life.



Blurring the dichotomy of City/Nature, Urban/Culture

Urban sprawl

Since 1945, migration of citizens from rural areas to municipal and in the greater Copenhagen region has recorded increase in the population. Resulting urbanisation has grown out, leaving very less spaces for nature areas in urban context. And with densifications of new development, protecting existing valuable green wedges have become crucial than ever. Here, the forest spital approach is proposed to control and manage the edges and urban sprawl of the city's fringes (finger Plan's finger). This forested edge is not just a means to control sprawl but also aid in growing new forests.



Need for measures to Control urban sprawl

Landscape quality

The pressure on Copenhagen center has questioned the need for urban quality in the city area. Copenhagen suburbs can be a potential solution. But the fringes of the city lacks spatial quality. The landscape quality of each wedges vary highly, particularly the wedges on west-south region of the city faces larger challenges. Further, the existing nature of the green wedges can aid in bring new nature into the city to accommodate demands of increasing population and the new development with focus on densification of urban areas. The urban forests here will become the new base for urban development.

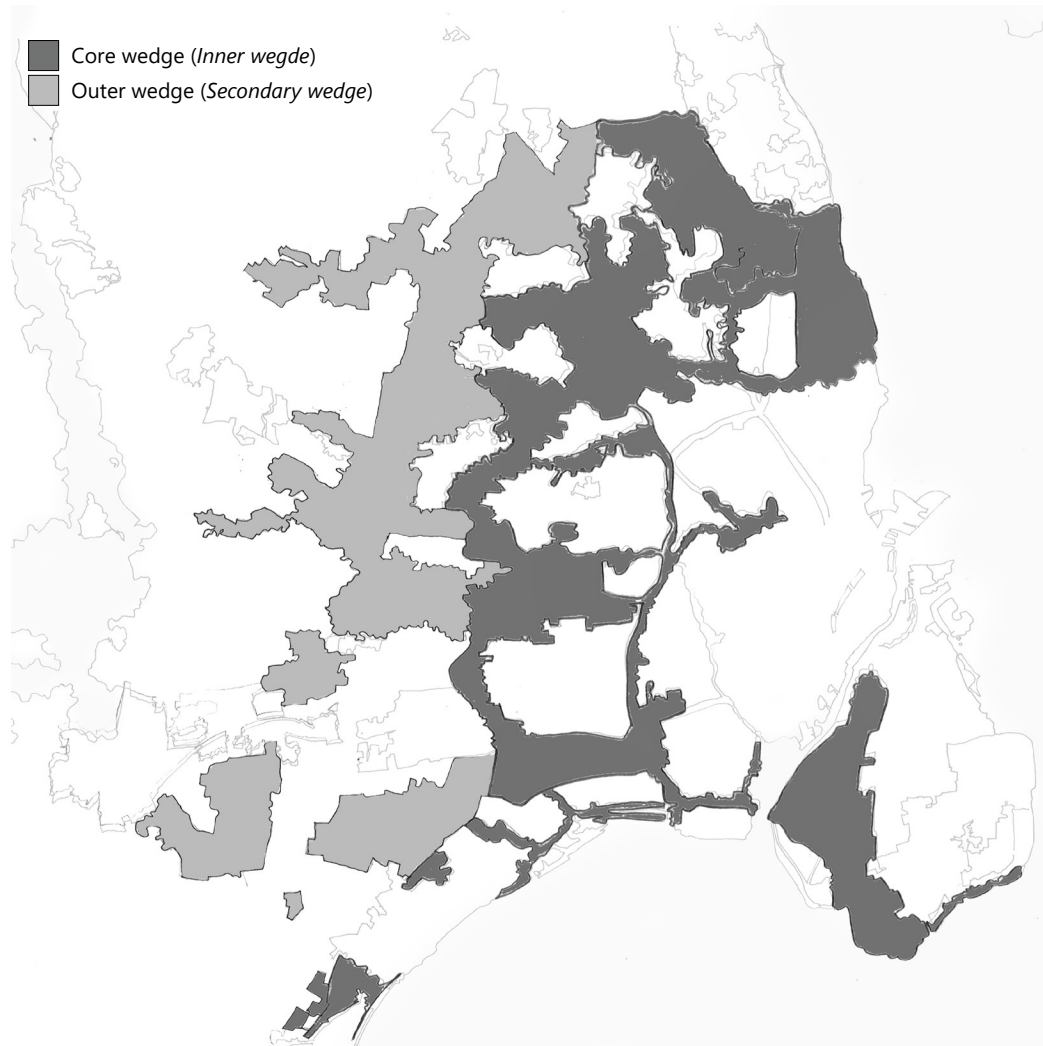


Need for landscape quality to vulnerable areas

Green wedges: Finger plan

This project starts with the understanding the Finger Plan's green wedges. Green Wedges are areas reserved for nature development, other nature based activities and recreational purposes. Since the introduction of the Finger Plan, the green wedges introduced had only inner wedge with different landscape character. Today, still it is almost the same. As zoning, the green wedges are

divided in two parts. i) the inner wedge and ii) the outer wedge. The second wedge was introduced later with expansion of city and its urban areas. The analysis for the wedges was carried out to understand the underlying layers of the landscape, to inform a new approach for the forest development.



New areas of Interaction

Based on border and dichotomy theories, three types of borders were identified as key areas for new forest development: (i) Limes (Lines), (ii) Milieus (Places), and (iii) Outer Reaches (Larger Territories).

These categories represent different types of borders, understood through their spatial characteristics and modes of interaction. The

analysis helps to reveal the varying degrees of influence these borders exert on one another, providing a framework for understanding their relationships and dynamics. This understanding can guide the development of interventions that either seek to balance these influences or strategically strengthen the influence of one border condition over another.



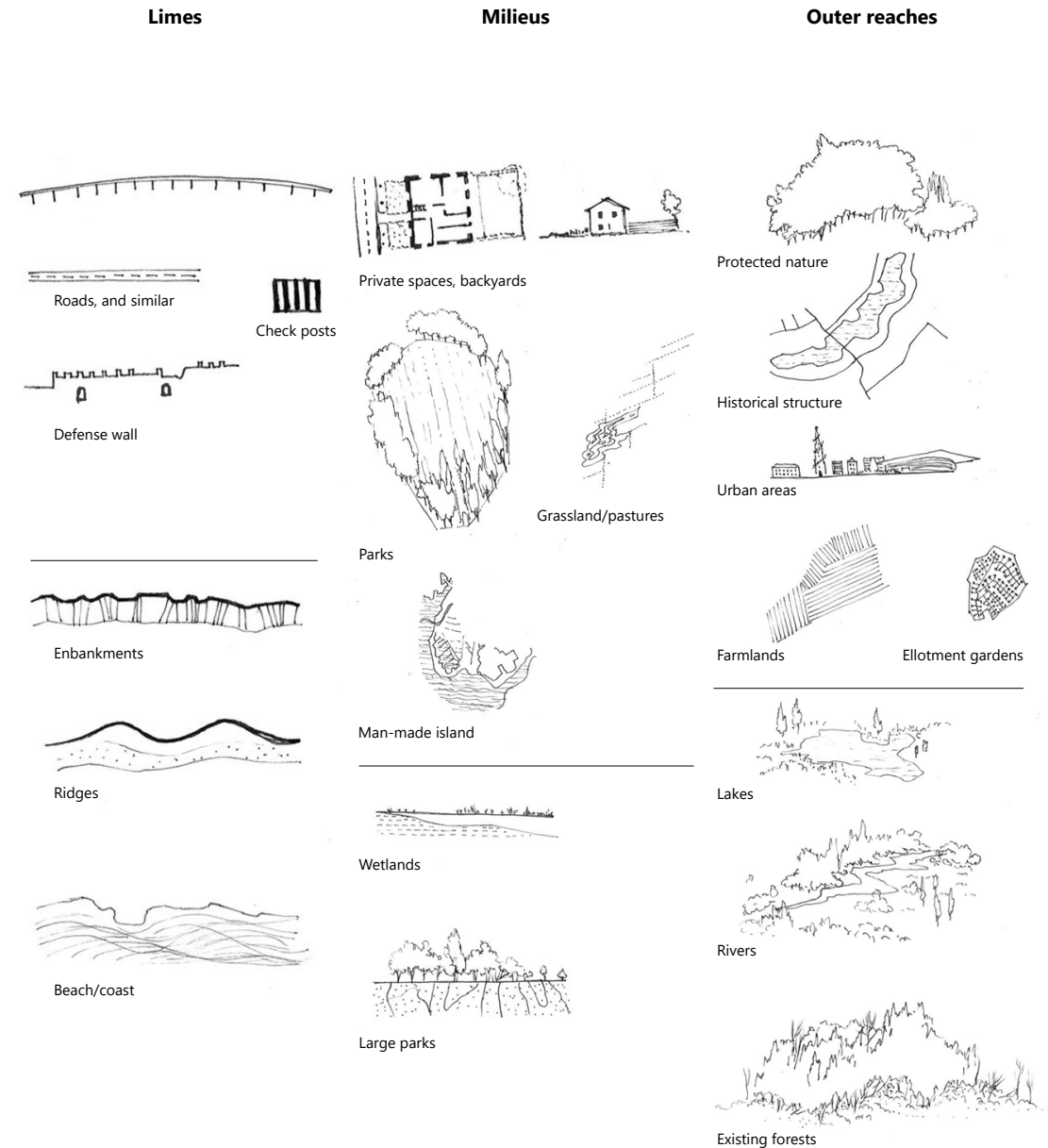
Borders : a new way point of life

We know the world maps give the impression of a flattened world with the edges distant from each other, and whose land is divided by as many borders as there are nation-state. But the earth is a single, continuous, curving surface. This continuous, inhabited border, a Mobus strip, without beginning or end, without interior or exterior, offers us an interesting graphic structure. It represents seamless, continuous but heterogeneous territory whose shape, size, and nature are constantly changing. This chapter does from a perspective of friction and tectonics between different living things.

Through their presence, their growth, and their movements, living things can generate varied effects—erosion, concretion, construction. These effects serve a purpose: they allow living things to manage the relationships between their body and other's bodies by transforming mineral or plant matter (In the case of humans), by making organic or olfactory deposits (for certain animals), or by emitting chemical signals (for plants).

Questions arises: what are the methods and conditions of co-construction of common space, and for cohabitation with other living things?

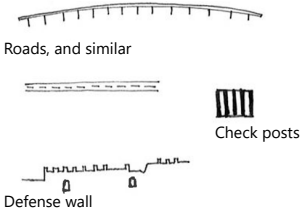
Human lines
CONSTRUCTION



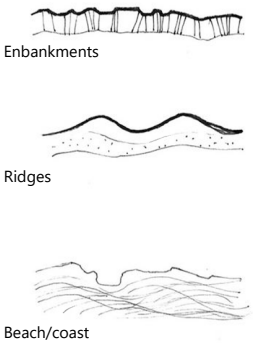
Non-Human lines
NATURE

Limes

Human Borders
Infrastructure

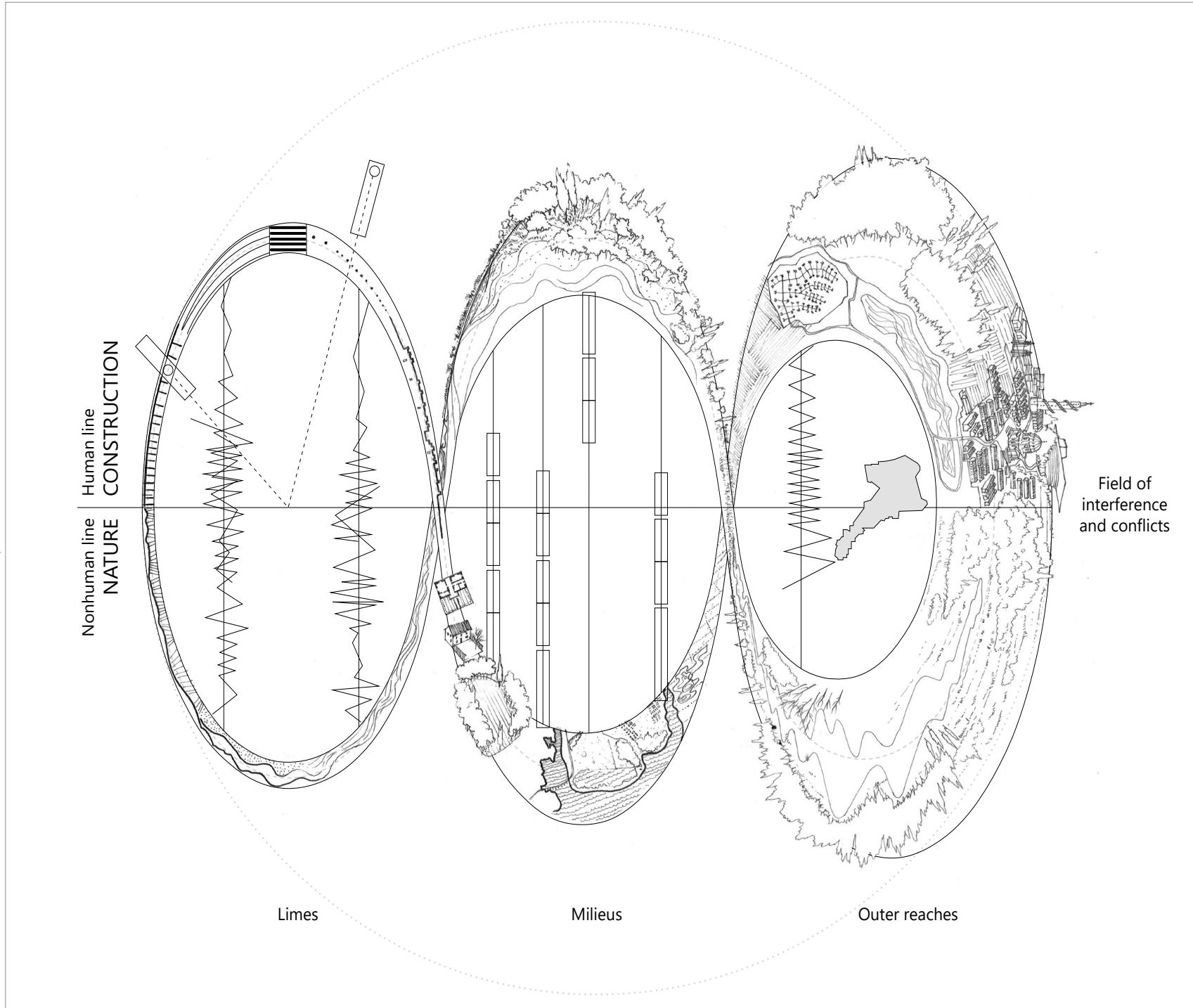
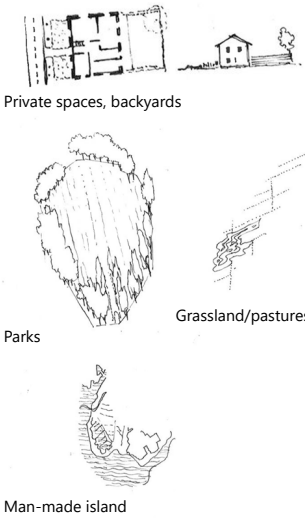


Non-Human Borders
Topographies

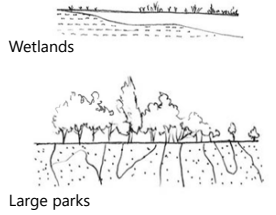


Milieus

Human Borders:
Threshold

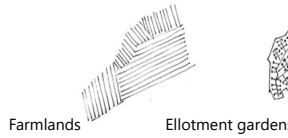
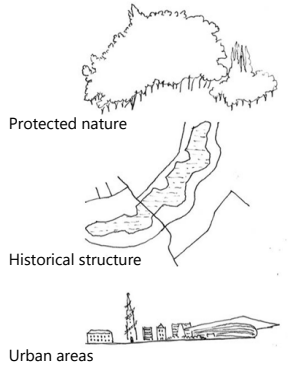


Non-Human Borders:
Ecotones

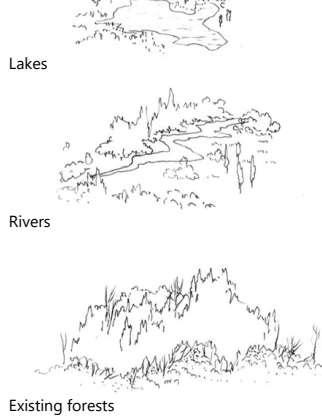


Milieus

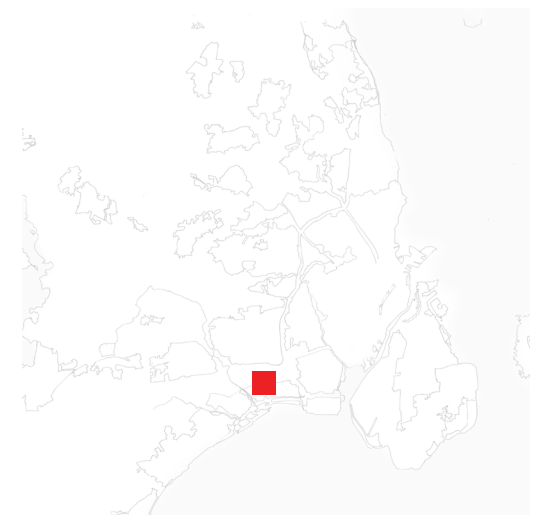
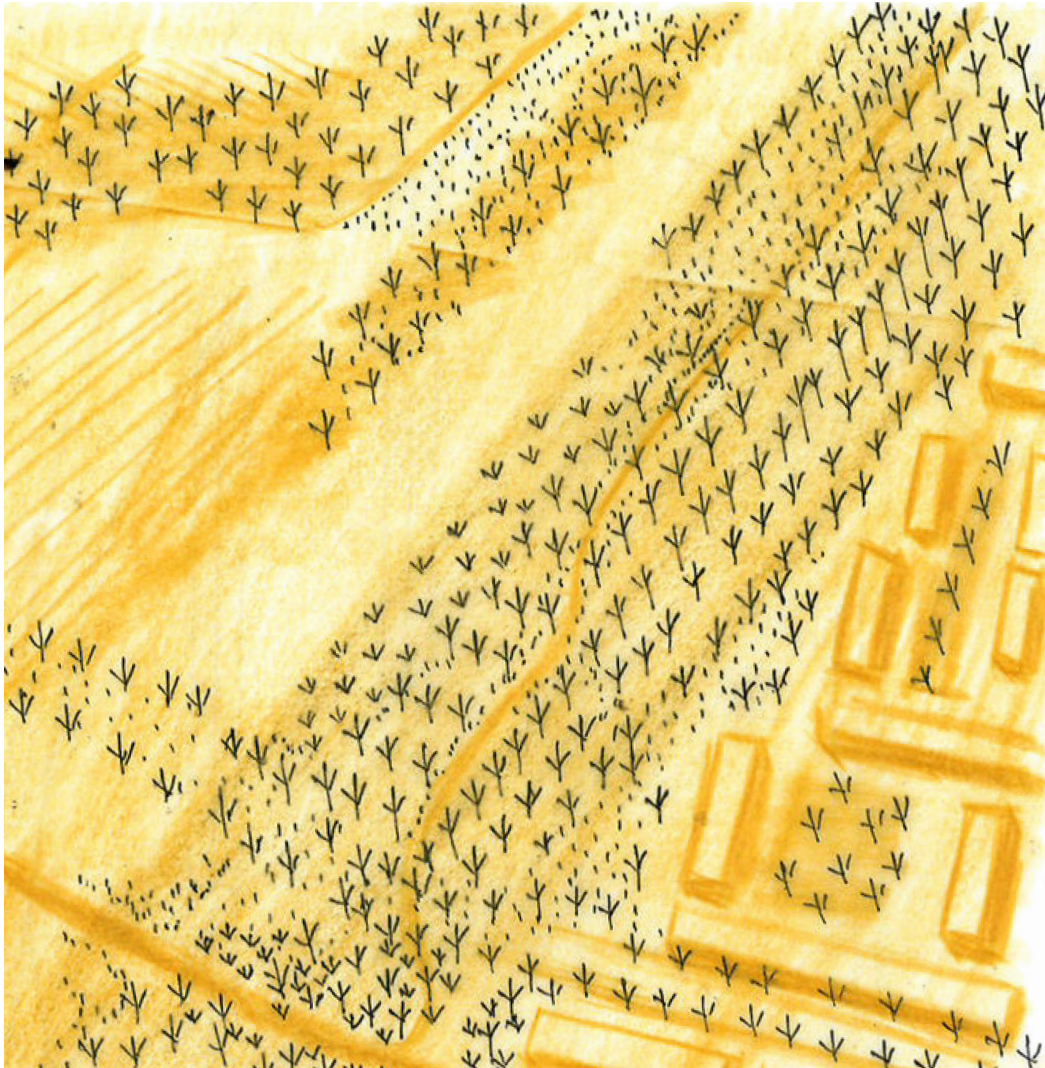
Human Borders:
Broder region



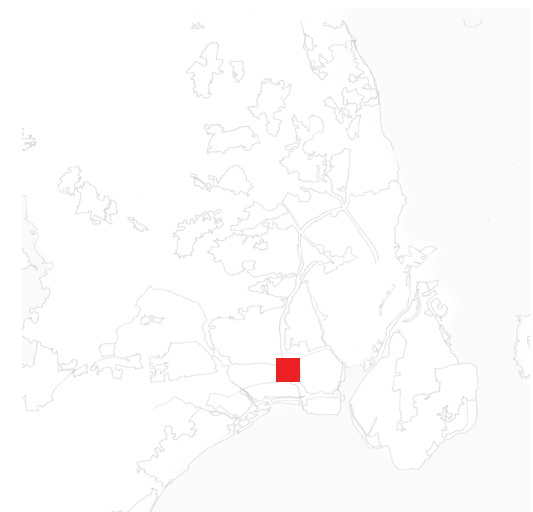
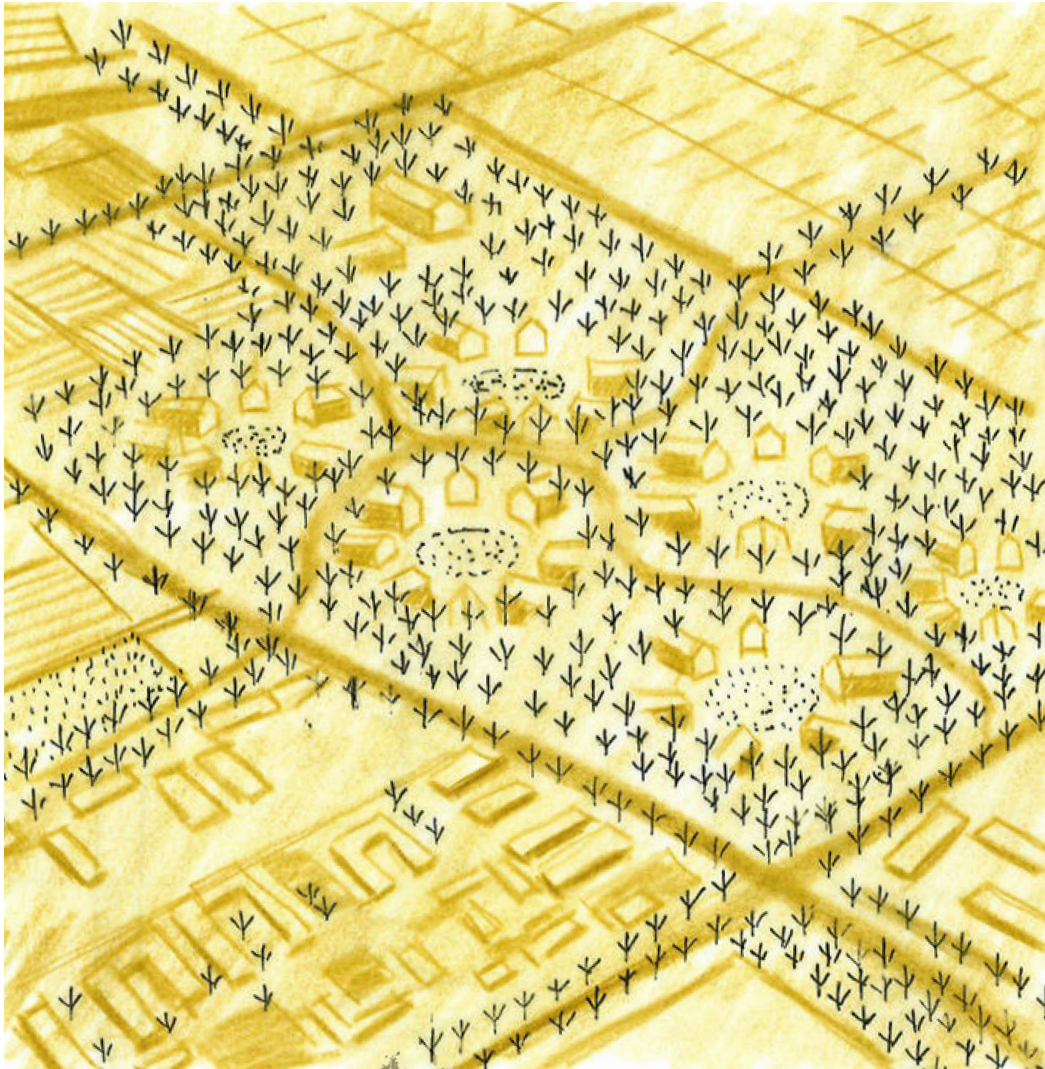
Non-Human Borders:
Biofence



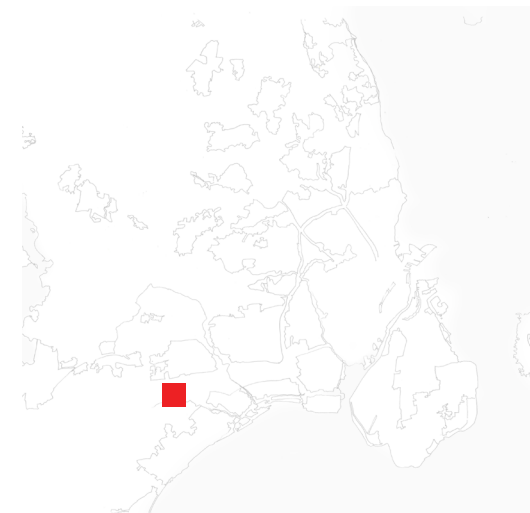
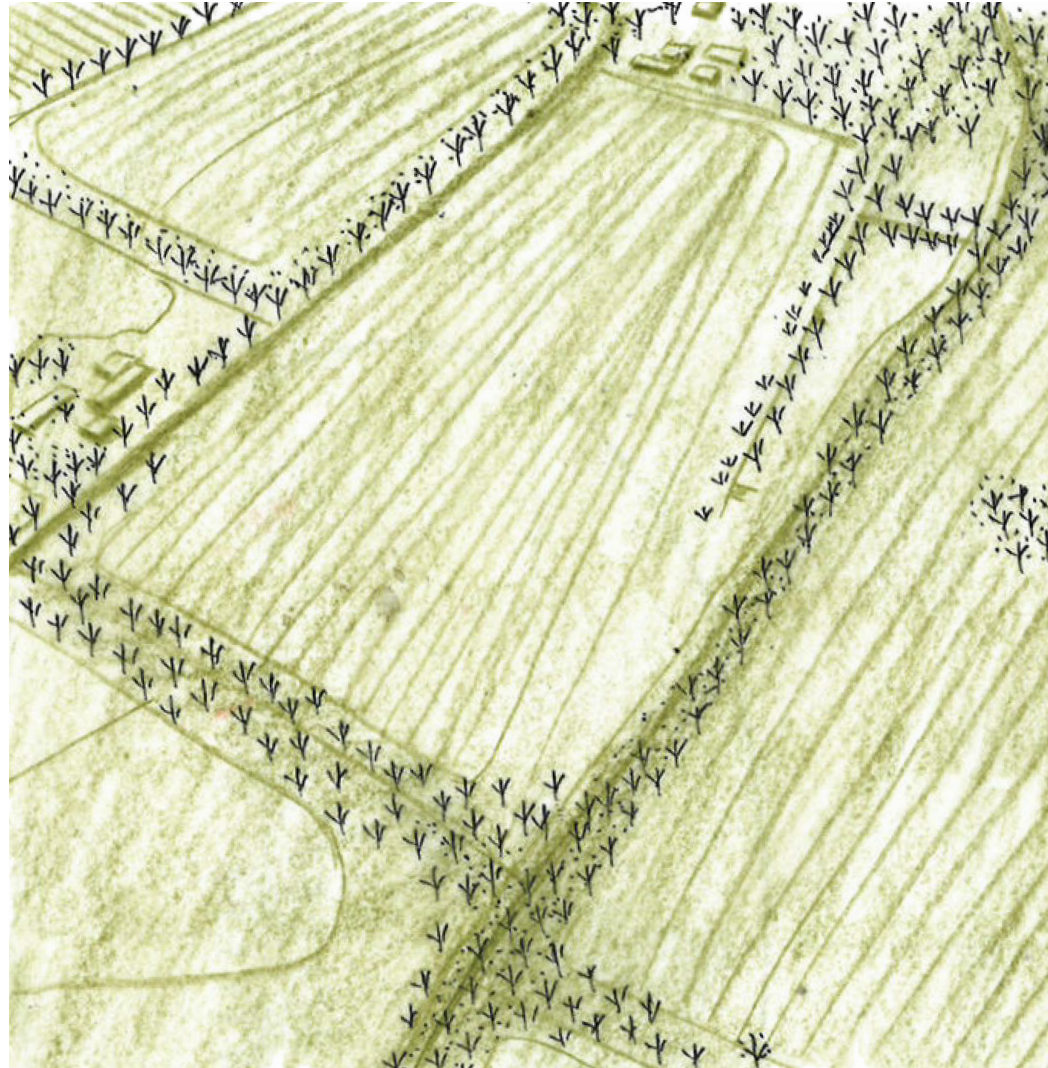
Limes
(Line)



Milieus (Places)



Outer reaches (Territories)



Core forests

The proposed idea of Core Forests gives nature (particularly tree cover) a priority for development. The current state of various functions will be carried out but either under the 'forest canopy' or within the 'forest rooms'.

A crucial case of intensive farming in this green wedges will have to be converted into more soft farming with smaller scale operations. As the Core forests are largely reserved for human and

other than-human to benefit. Core forests are situated in the inner wedge areas, making them more relevant to transform them for benefits to citizens of the Greater Copenhagen region.

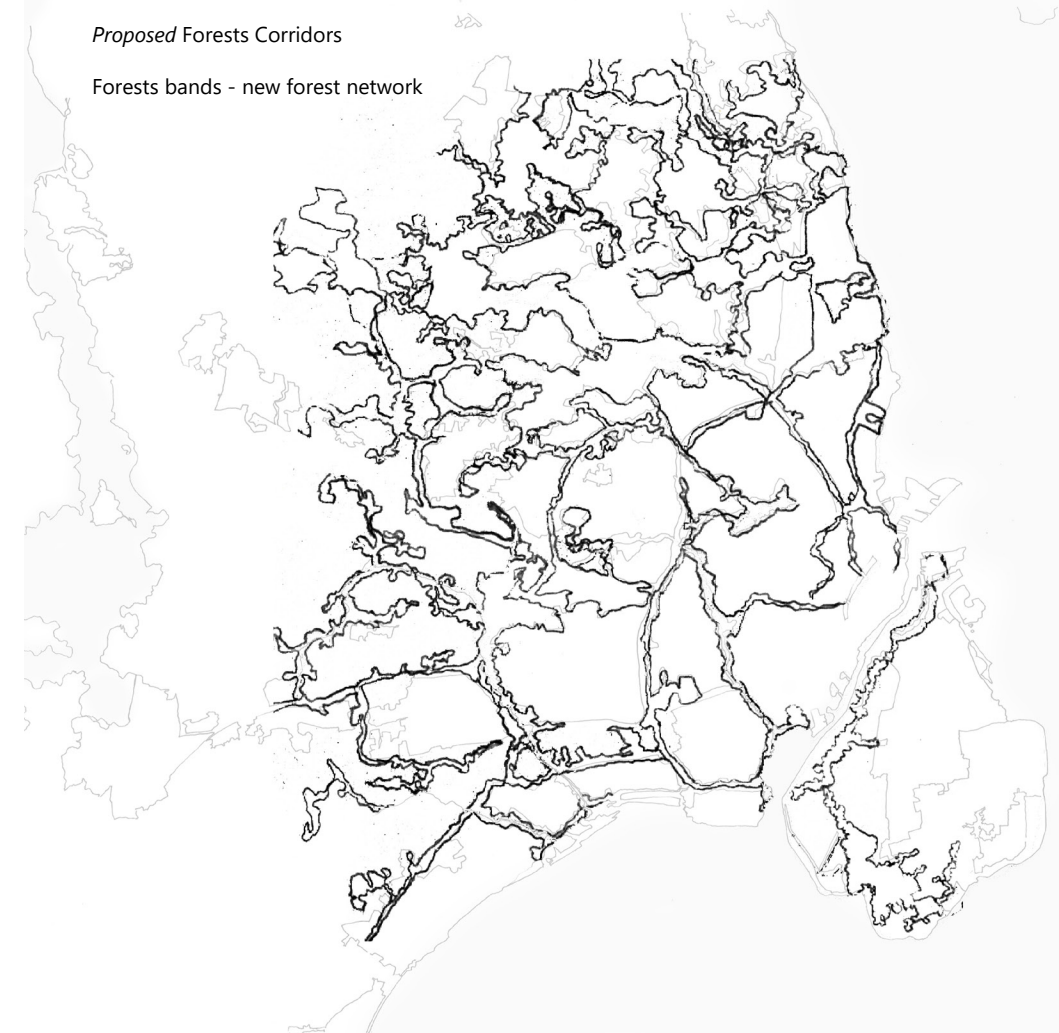
The intensive and larger scale agricultural activities can be accommodated into outer wedge area.



New forest corridors

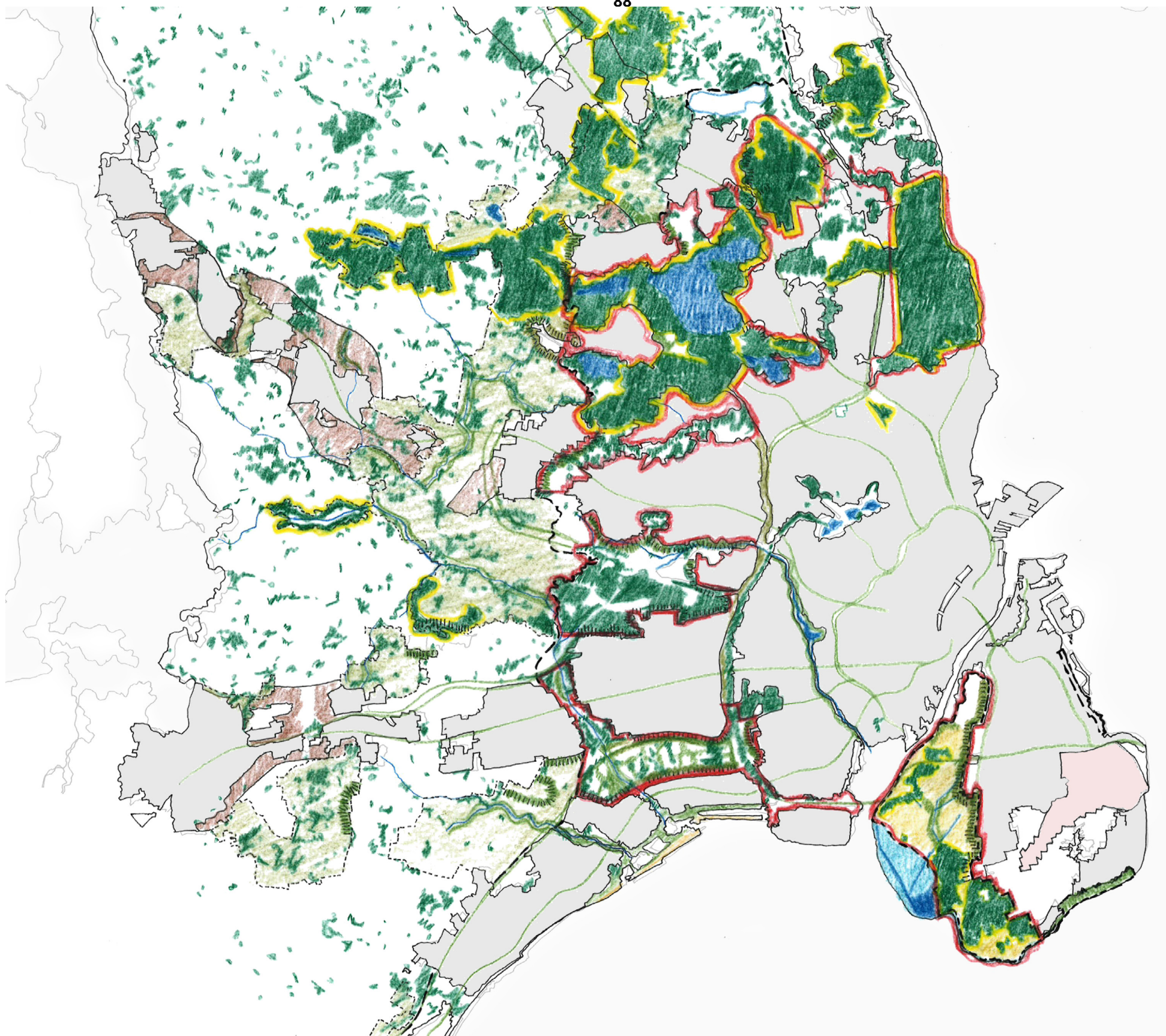
The newly introduced forest bands play a crucial role in establishing a continuous forest structure across the region. Beyond increasing overall forest cover, this network serves as a foundation for extending forest landscapes into urban areas. These forest bands are strategically developed along the edges of watercourses and transport infrastructure, creating ecological corridors that connect fragmented habitats. Such an







approach fosters multiple levels of interaction between people and nature, enhancing accessibility to green spaces while providing immersive experiences within natural environments.






Forested Copenhagen

Territorial vision





-  Urban areas
-  Existing forest cover
-  Protected nature
-  National parks
-  Lakes
-  Water courses







Limes

-  Membrane
-  New forest corridors
-  New tree lines (*in urban areas*)

Milieus

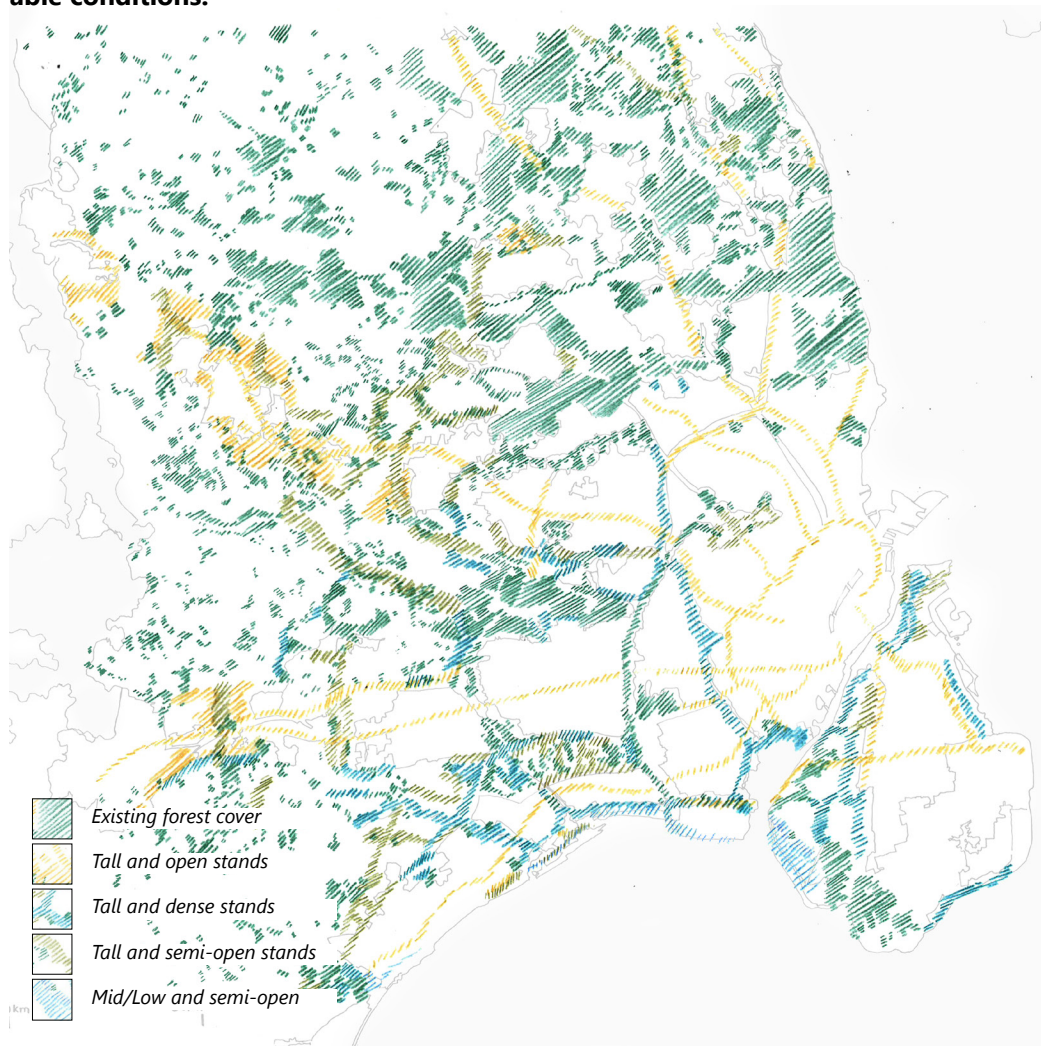
-  Core forests
-  Forest rooms

Outer reaches

-  Forest pastures, farms
-  Future urban expansion
-  Wetland
-  Border-Core wedge
-  Border-Outer wedge
(*Edge of finger plan area*)
-  Copenhagen International Airport

Configuration of forest structure

The stand configuration map serves as a foundational layer for selecting species and developing the spatial design strategy. In this case, a structural approach is explored by differentiating woodland types according to tree height and vertical stratification, while also considering woodland configurations based on their spatial character, ranging from dense and enclosed to open and permeable conditions.



Infrastructure in landscape

Copenhagen, the city growth went rapid then imagined. Particularly expanding towards north, where the landscape values were highly appreciated. Mainly the landscape visual and variety of landscape elements draw people to reside and the expand the growth along the lakes and some major transit corridors.

Urban edge

Many urban edges of the urban areas are exposed to vast open landscape with more or less low nature quality and growing urbanisation is encroaching into the green wedges. So in order to add more nature and control urban sprawl, new forest will be required to develop along the urban edge.

Streetscapes

In order to blur the dichotomy of urban and nature, here the linear forests are introduced to extend nature into suburb areas of Greater Copenhagen region. Structural approach of tree layers is explored to achieve more vegetated nature along the traffic corridors and other open spaces.

Agricultural shift

In case of increasing forest cover in the green wedges, the working methods of agricultural shift will be required. More than half of the land use in green wedges is utilised for intensive agricultural purposes. This case needs to be changed into small scale soft farmings, where the functions are still carried out but in less intensive ways, while enabling more space for forests growth and other social benefits.

Types of interaction/conflicts

1 Major infrastructure

2 Wedge and urban edges

3 Streetscapes

4 Change in agricultural methods

Finger plan 1947

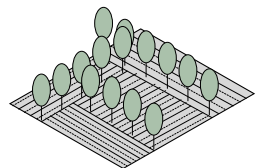
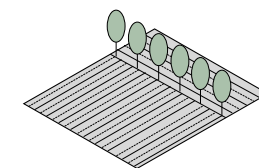
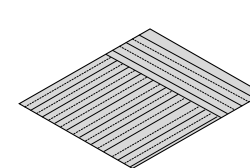
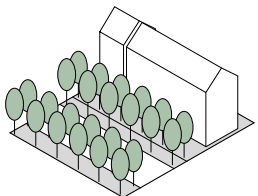
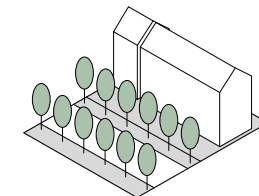
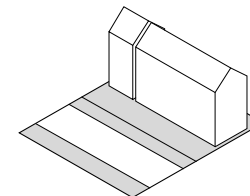
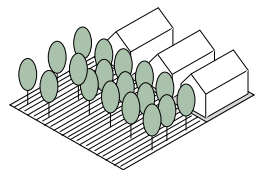
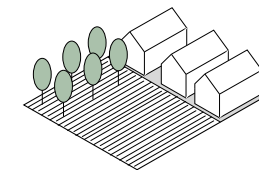
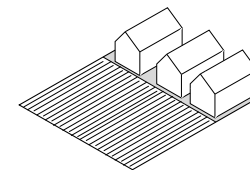
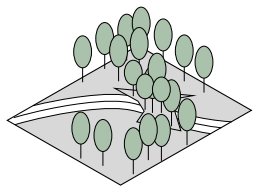
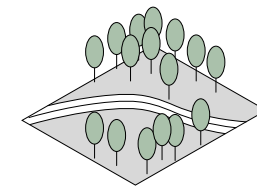
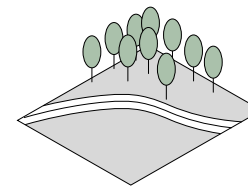
Finger plan 2019

Finger plan 2050

1.0

1.5

2.0



Current situation
Vallensbæk wegde (South-west wedge)



The project is further elaborated on parts of vision area, to municipal level (regional design). Here the details are worked out for Vallensbaek wedge south-west of the city, in a try to answer to future development on addressing current challenges of the landscape and city. This is amid at improving functional uses of green space, fragmented nature and spatial quality to strengthen coherence of the area, further enabling growth of forest and prioritising nature.



Current situation

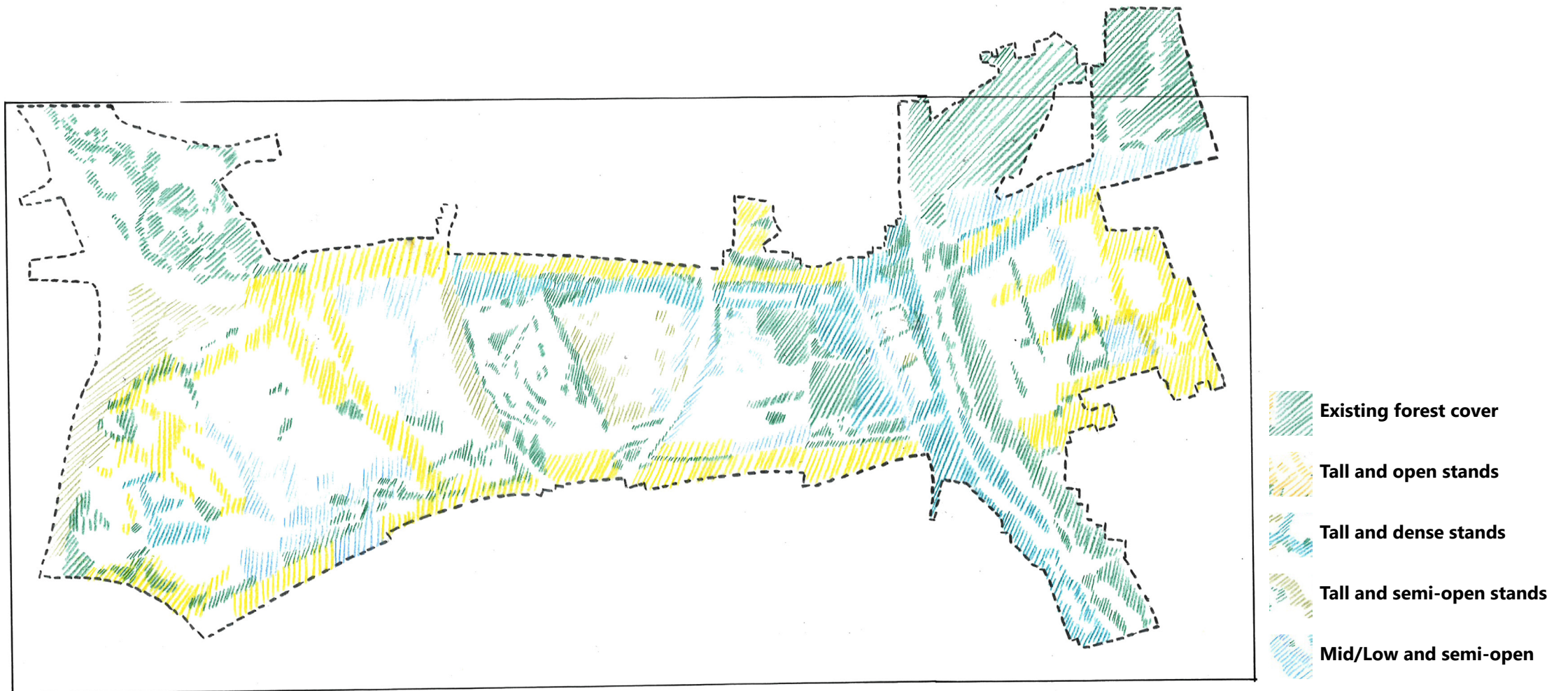


Proposed situation + 50 years

Proposed situation + 50 years
Vallensbæk wegde (Core forests)



Proposed Stand type configuration
Vallensbækk wegde (Core forests)





Into Milieus_Local scale design

Avedøre, on the west-south side of the Copenhagen city is chosen for local scale design proposal. Considering various posed challenges, Avedøre needs urgent attention to address and redevelopment of the area. At first, a forest cover is introduced and then four locations are chosen to design for local scale proposal on spatial and management aspects. Which will introduce new ways and levels

of interactions and immersion into nature in and around the area. From residential backyard to managing public forests, are explored.

New forest of Avedøre

The new forests introduced in the area create a variety of experiences and spaces that support different functions and activities. At the same time, these forests are designed as flexible landscapes that can accommodate future uses and emerging activities. The inherent qualities of woodland environments make this spatial approach particularly suitable for complex urban areas, especially those characterized by a rural

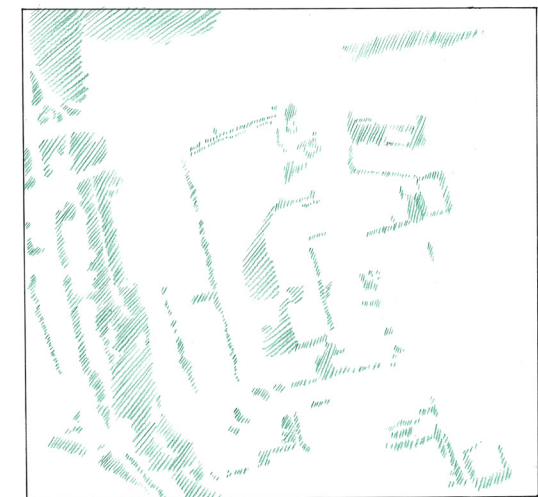
spatial identity, where urban and rural characteristics coexist and interact.



Proposed situation + 50 years



Current situation

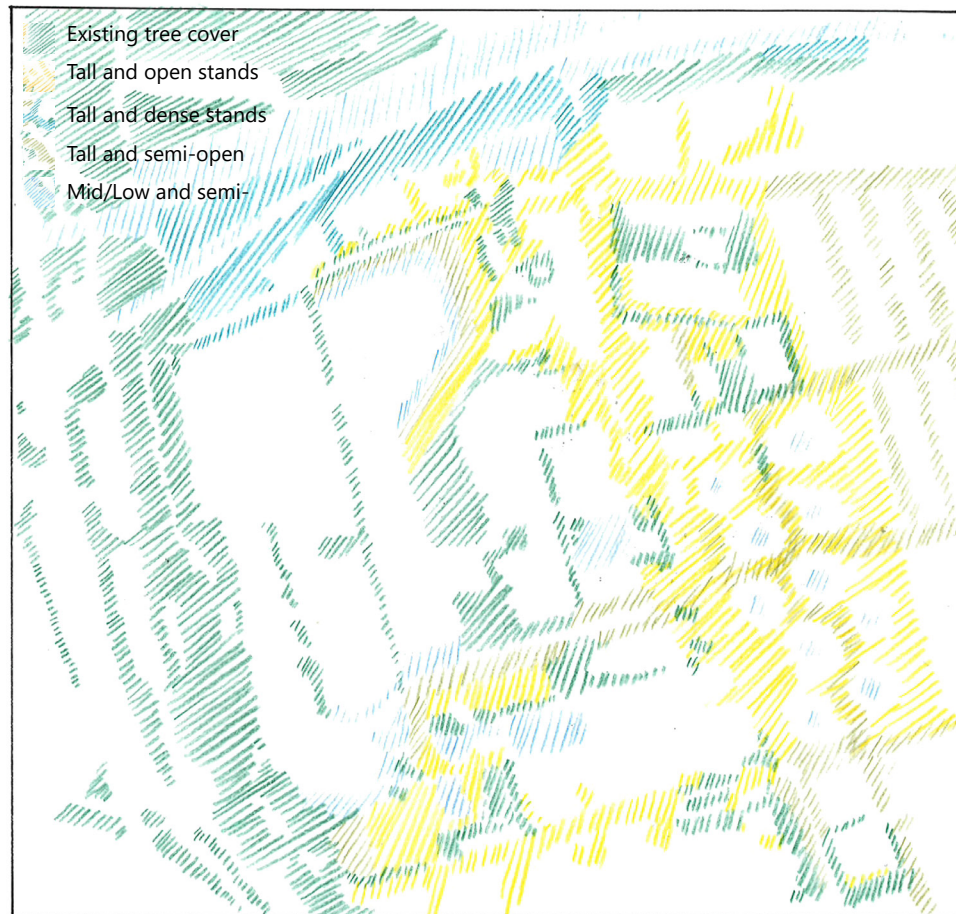


Current tree cover

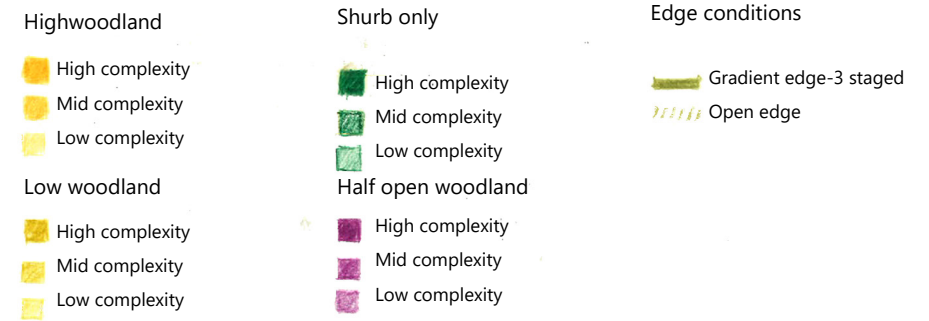
Planting strategy

The map below shows proposed new forest cover and its spatial configuration map. Different woodland stand types are explored to achieve various spatial needs to suits specific locations and thier context. This will not just create varying functional appropriation but also aid in improving spatial qualtiy of the area, creating various experiential characters to make the area more interesting insensorial way.

The secondly on the right page, shows Planting strategy for the forest, where this method will help to guide growing of forests and increase variety of species types and other qualities.



Proposed situation + 50 years
 Configuration Map (Stand type)

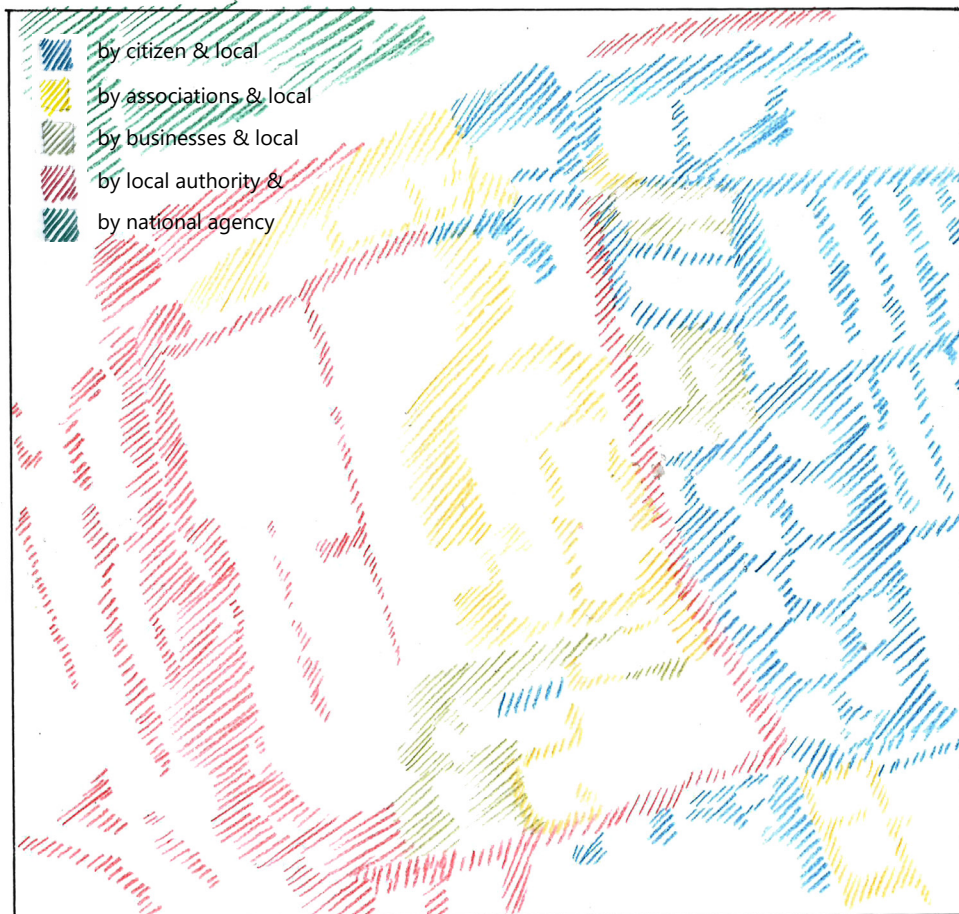


Proposed situation + 50 years
 Planting strategy Map

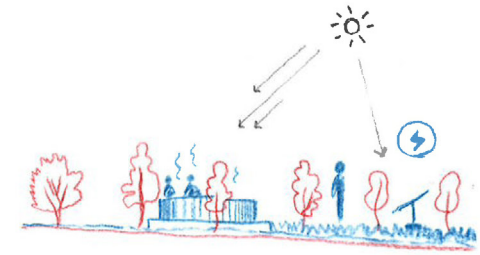
New shared responsibility

The growth and maintenance of forests have been challenge, as also seen in historical development of green wedges, this project stems from management perspective too. A new shared responsibility can enable a sufficient growth at vast scale, where management is carried out by various actors who in collaboration manages while they can use certain designated parts of forests and make personal alteration.

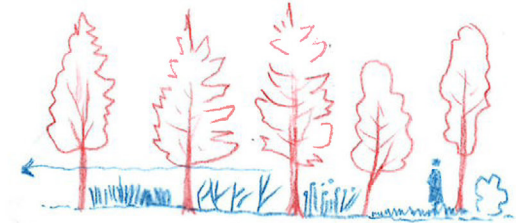
The stand map below shows the shared responsibility distribution for proposed forests cover for Avedore neighbourhood. In such cases, urban forestry's structural approach helps use horizontal floor but also verticality of the trees for various uses and management aspect (as shows in diagram on next page on right). It not just helps managing but opens new realm of possibilities to use and improve spatial quality in the daily interaction with surroundings.



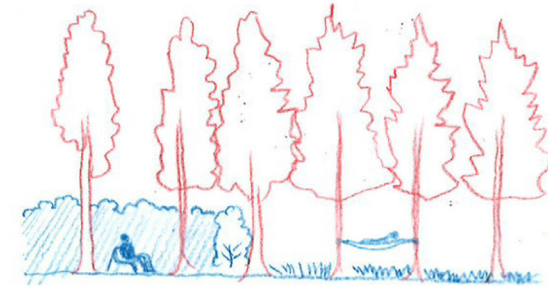
Proposed situation + 50 years
Tree layer Management Map



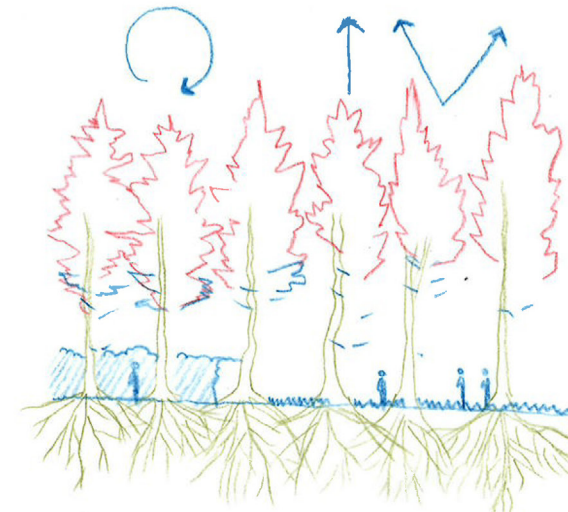
Current situation



Proposed situation + 5 years



Proposed situation + 15 years



Proposed situation + 25 years

New Shared responsibility

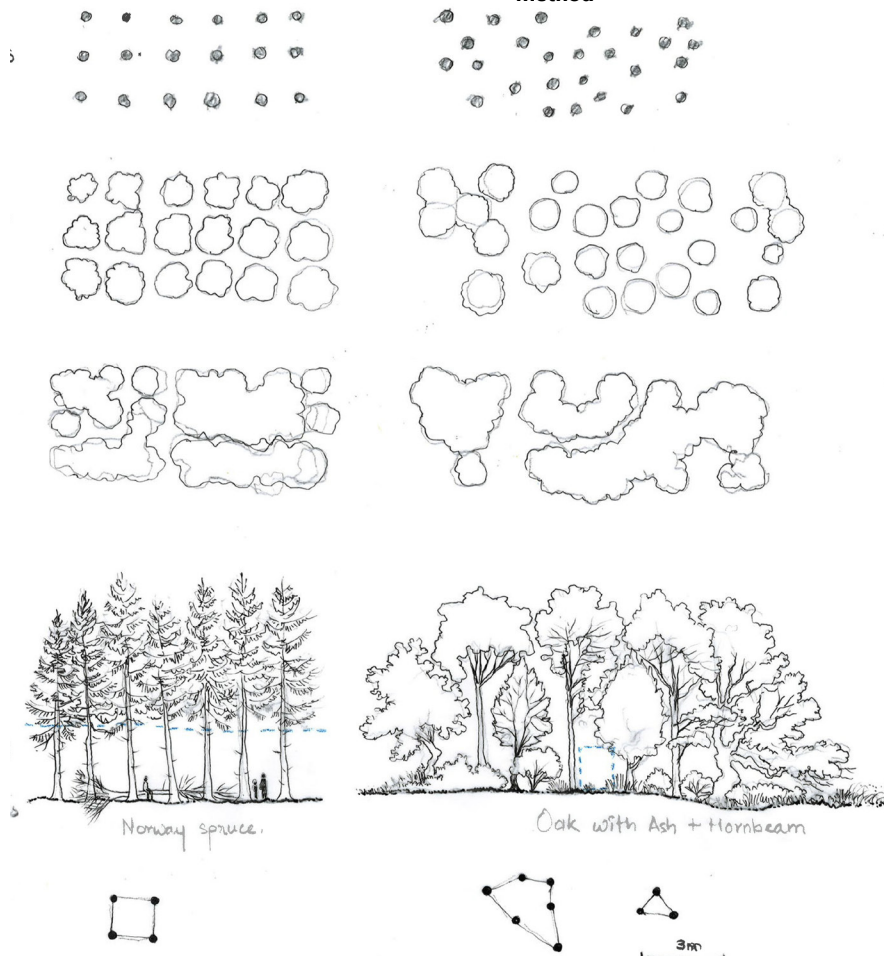
- by Nature
- by Citizens
- by Governing authorities

New shared responsibility

In order to achieve spatial quality in the landscapes of green wedges, various woodland categories are explored. Here, the drawing below shows two extremes of woodland types and their composition. From left, i) structured planting method and ii) non-hierarchical method. These extremes help to understand possible solutions on planting configuration and how the woodland's look and feel will be once when matured.

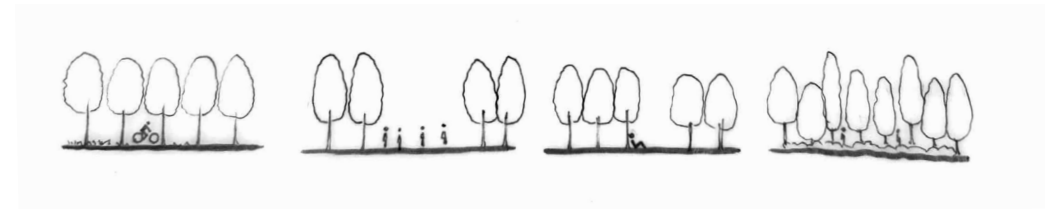
Structured planting method

Non-hierarchical planting method



Design projection

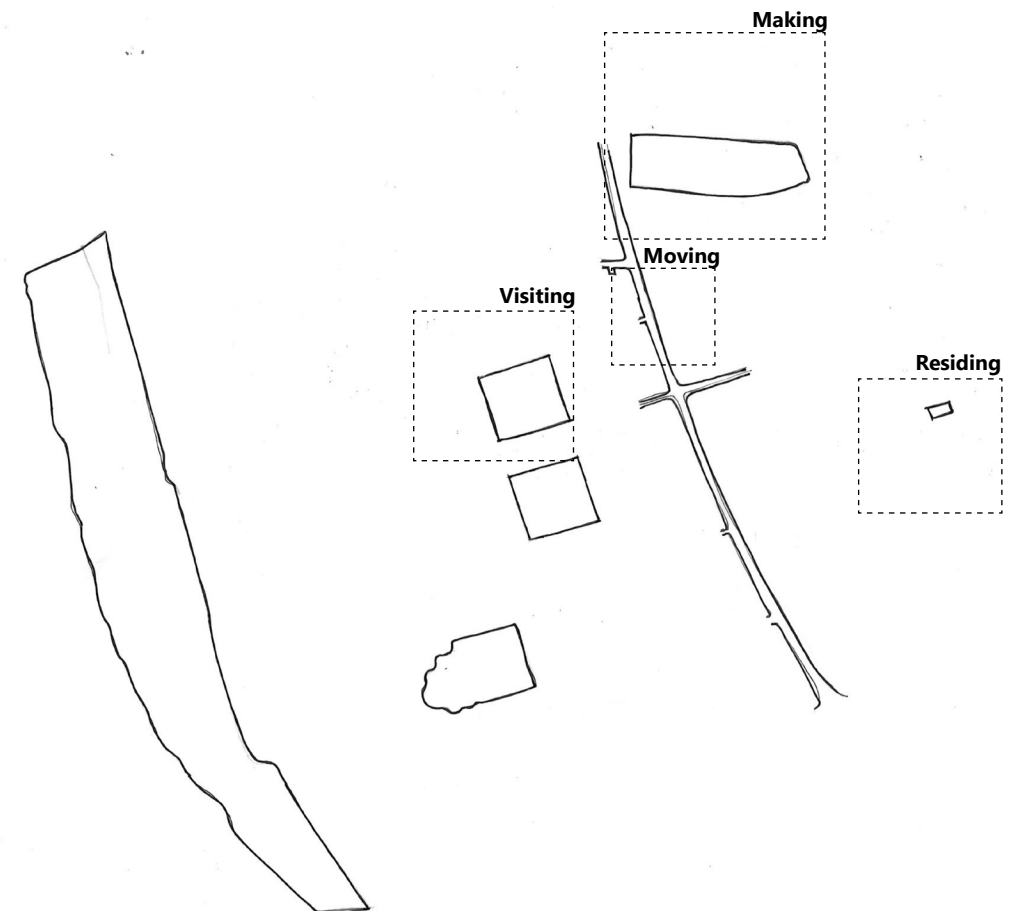
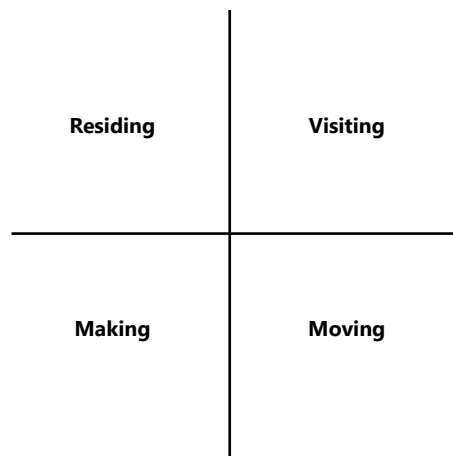
Towards human scale



Four places_Local scale design

And lastly, at local scale, the project aims at one of the most crucial and pressing challenges of growing and managing new forests and adding humane scale into the urban context. Here the idea of management of forest itself becomes the means of bringing humans close to nature, by deciding, using and sharing responsibility. Based on analysis, four major occupations in the region are identified.

Residential (Residing), productions (Making), (Visiting) places for various uses and commuting (Moving) through the landscape. These four occupations becomes an example to develop the Greater Copenhagen region, which is largely a mix made up of these occupations and open landscape.



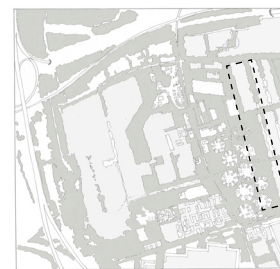
Residing on the forest edge



Proposed situation + 50 years



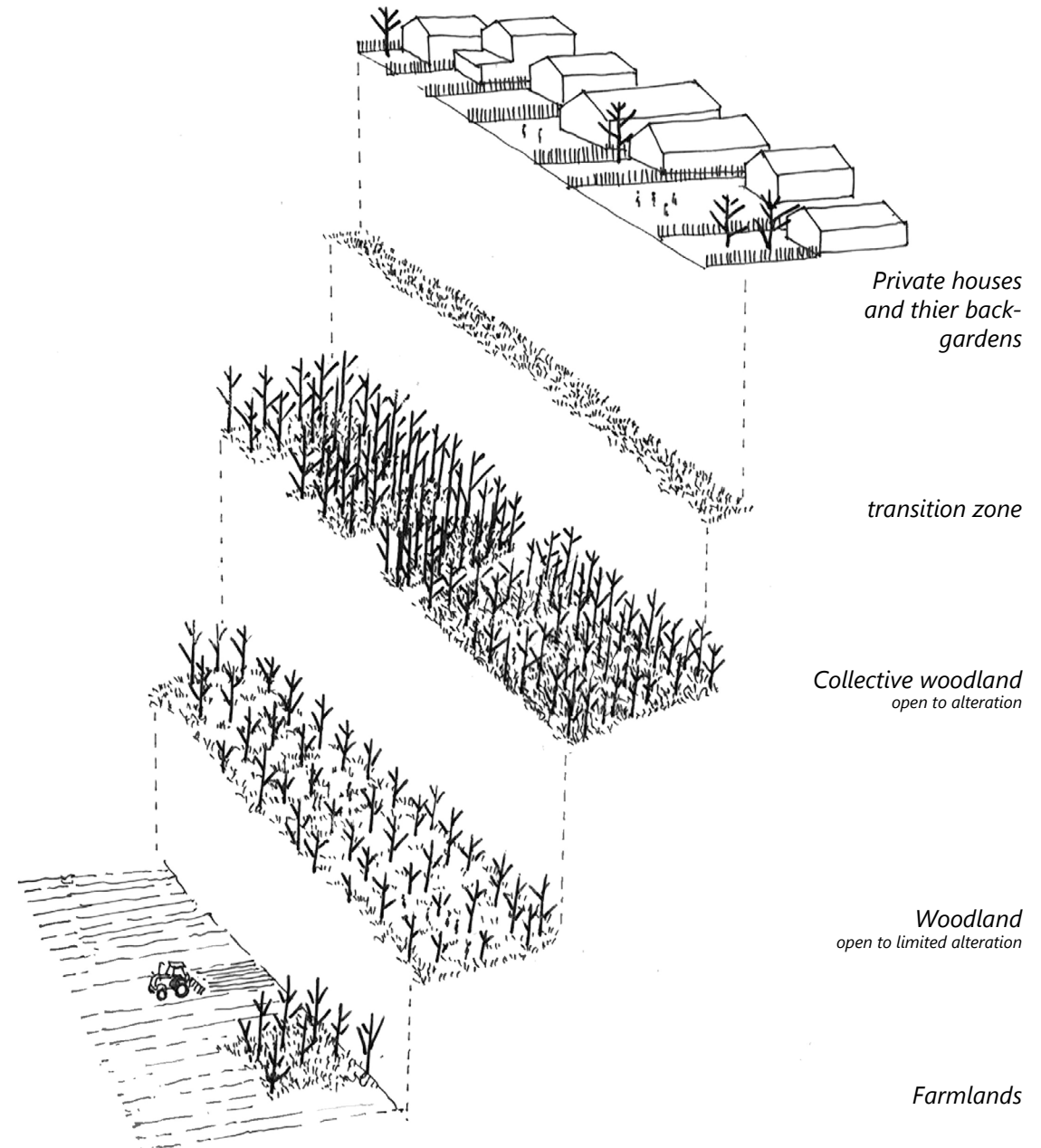
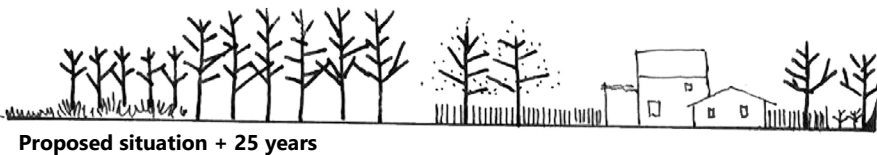
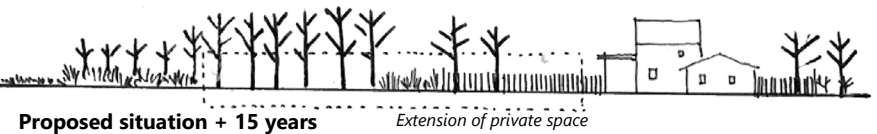
Current situation

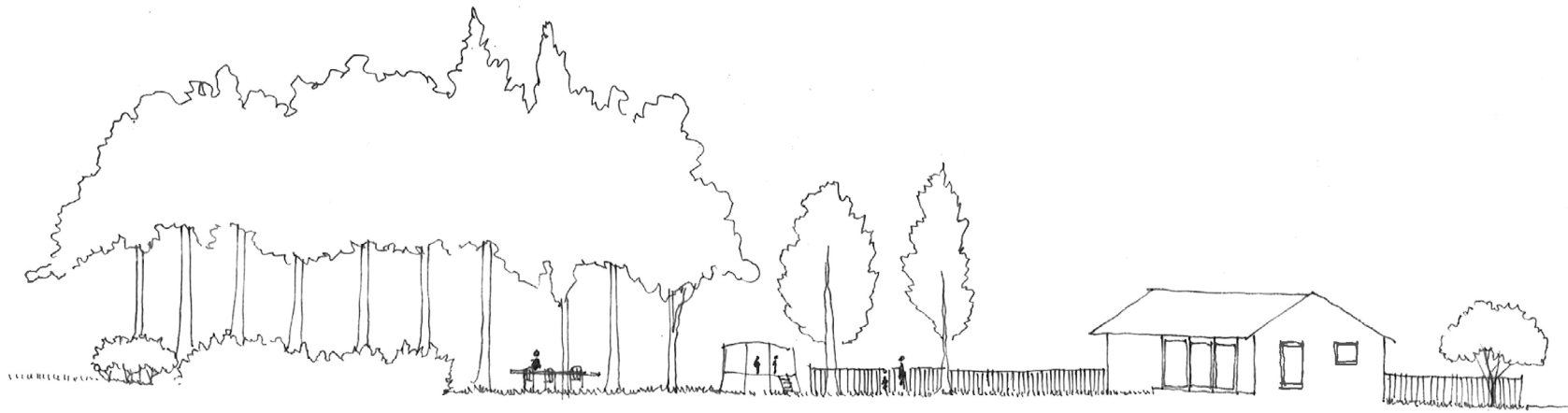


The Membrane

The idea of the 'Membrane' is explore here using forestry design principles. Trees are the building blocks here to create a forest band along the egde of the urban areas and green wegdes. Structural approach of woodland and woodland edge types are considered as a base to how and what type of character a space is required and look. The Membrane form a transition from private space to public.

Creates a transition threshold that helps to conrtol the urban sprawl yet blur the strict edge rules of borders. Here, borders are soften by allowing citizens residing along the urban edge to use and take part in managing urban forests. This border becomes a ex-tention of private uses into public realm. Forming a new approach to dissovle the dichotomy of forest/nature and urban/culture.





Farmland

Public forest

Collective forest

Private house + back/frontyards

Common forest (streetscape)

*High woodland
- multi-layered stand*

*High woodland
- one layer stand*

*Mid/low woodland
half open stand*

*Mid/low woodland
half open stand*

*Gradient edge
1 staged
shrub layer*

*Gradient edge
3 staged grading*

*Open egde
open to alteration*

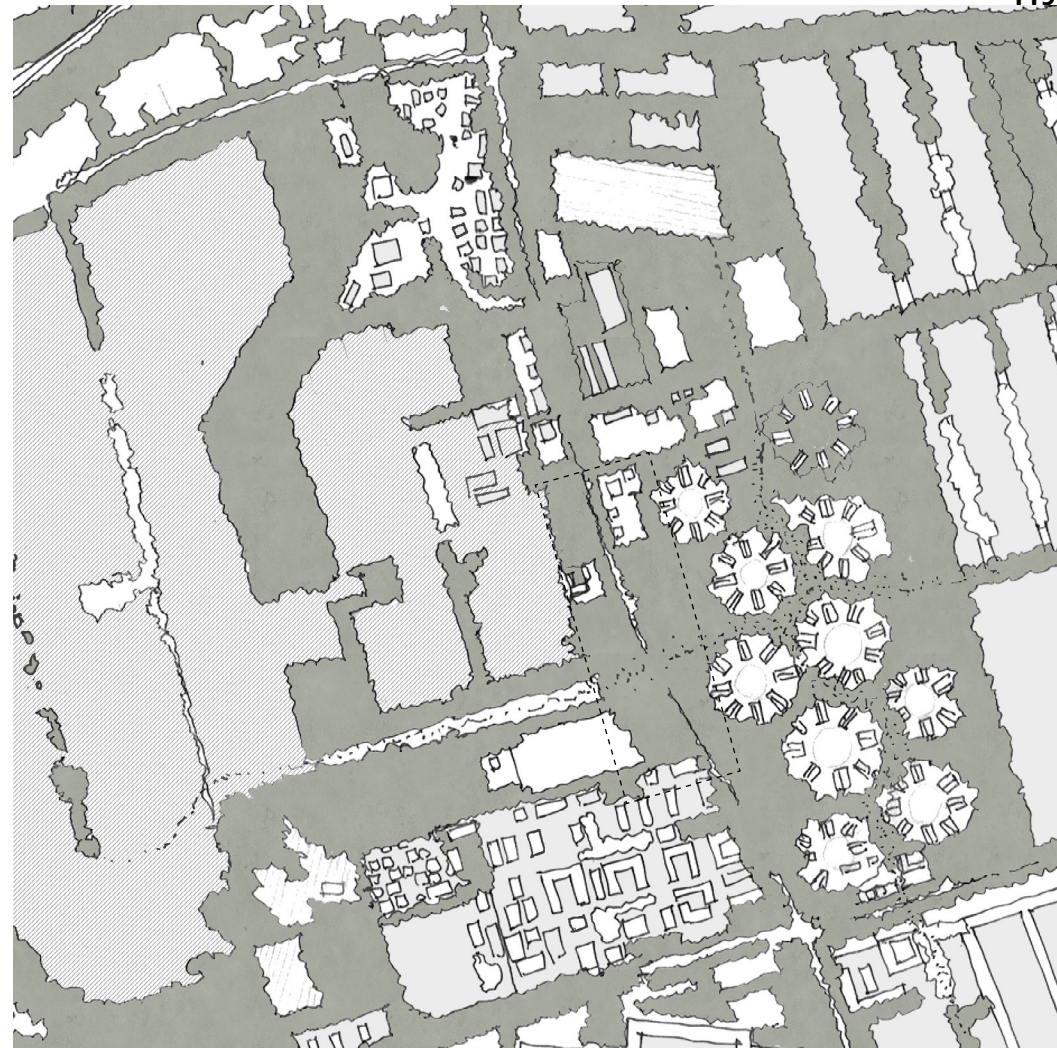
*Open egde
open to alteration*

*Immersion value
enterning*

*Immersion value
being near*

*Immersion value
daily interactions*

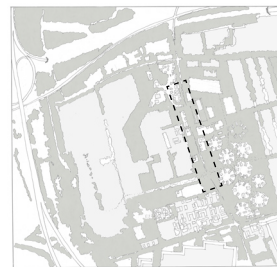
Moving through forest



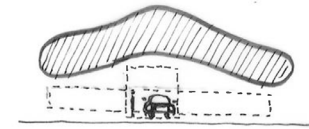
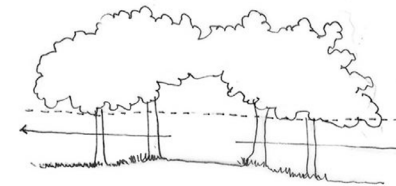
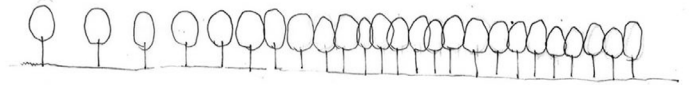
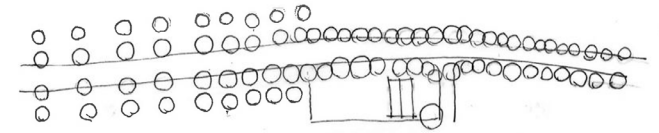
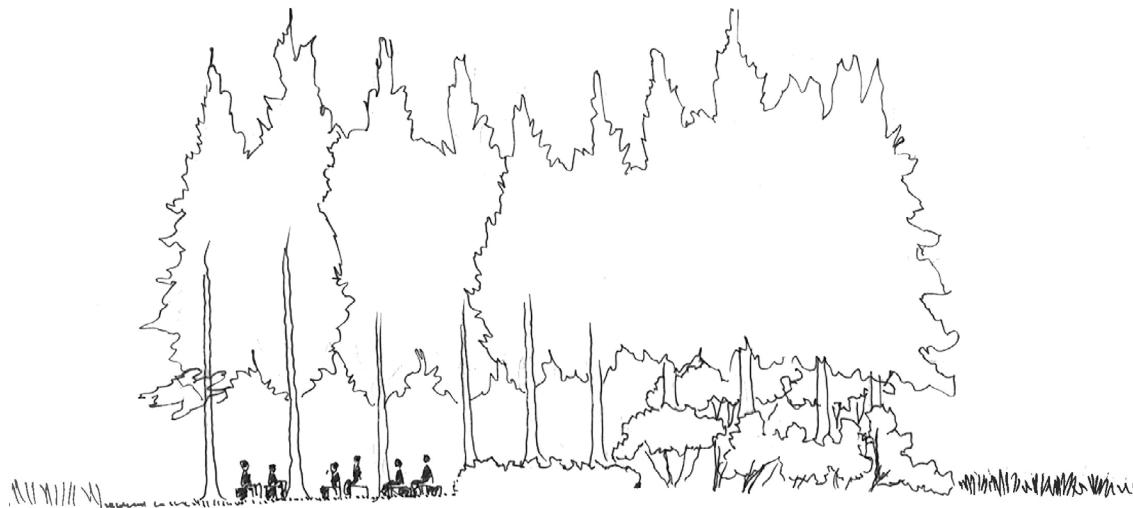
Proposed situation + 50 years



Current situation



Proposed situation + 25 years



Farmland

Public forest

Collective forest

Private house + back/frontyards

*High woodland
- multi-layered stand*

*High woodland
- one layer stand*

*Mid/low woodland
half open stand*

*Gradient edge
1 staged
shrub layer*

*Gradient edge
3 staged grading*

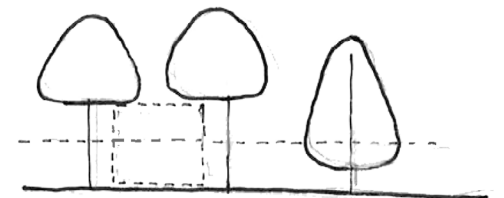
*Open egde
open to alteration*

*Open egde
open to alteration*

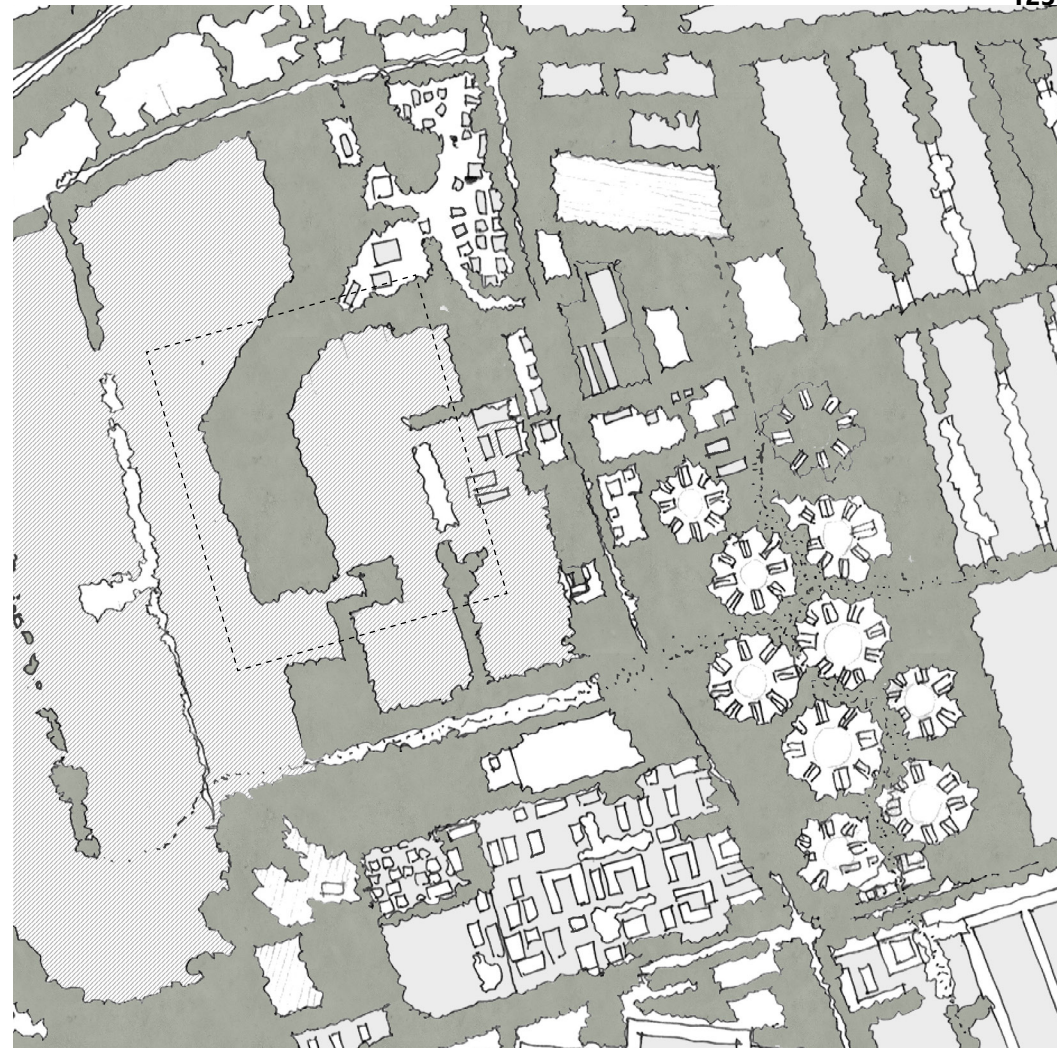
*Immersion value
viewing*

*Immersion value
enterning*

*Immersion value
being near*



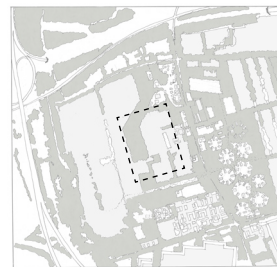
Visiting in the forest



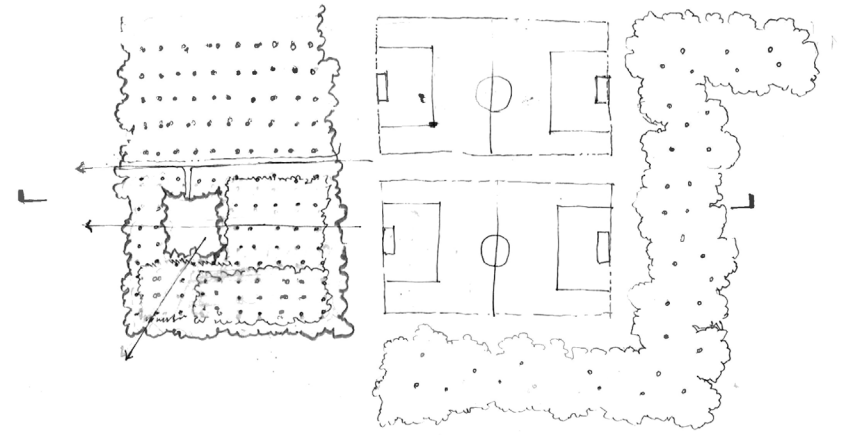
Proposed situation + 50 years



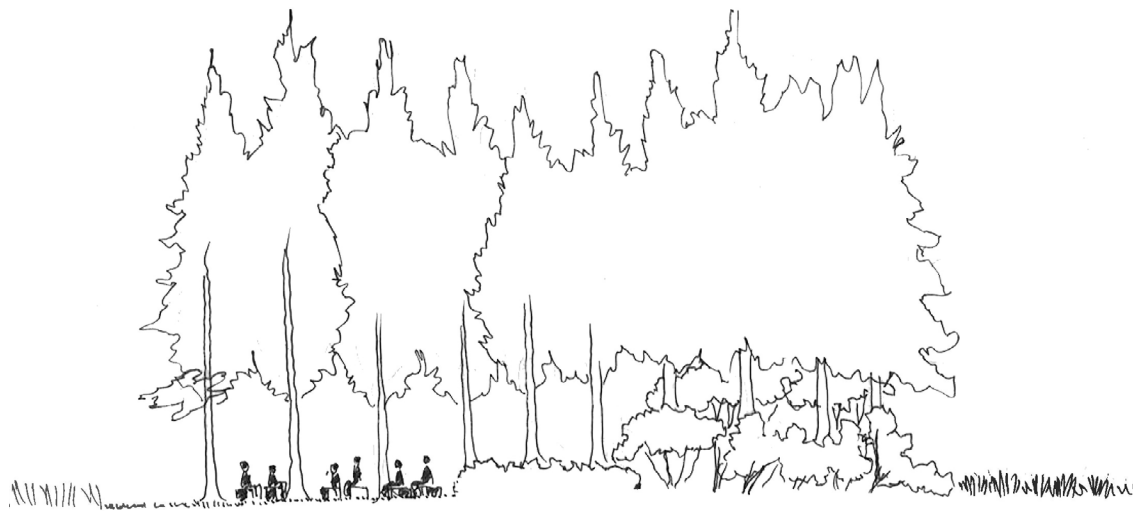
Current situation



Proposed situation + 5 years



Proposed situation + 5 years



Proposed situation + 5 years



Nature area

Collective forest

Public forest

sports feild (assocations)

High woodland
one-layer stand

High woodland
multi-layered stand

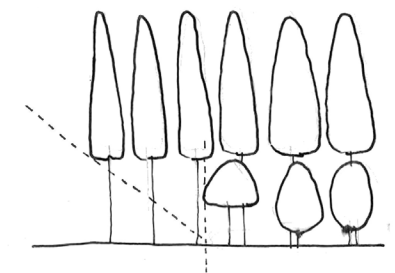
Open edge
with field layer

Open edge
with field layer

Gradient edge
2 staged

Open egde
open to alteration

Tree type and spatial organisation



Making *with the forest*

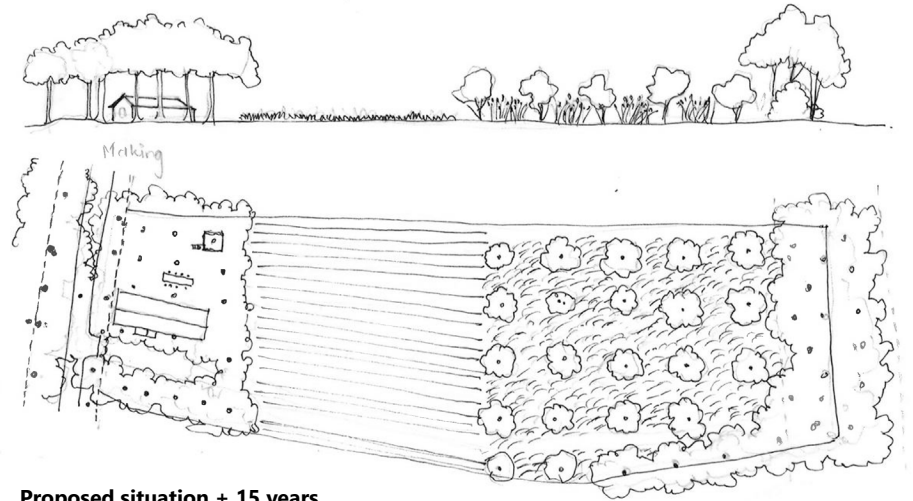


Proposed situation + 50 years

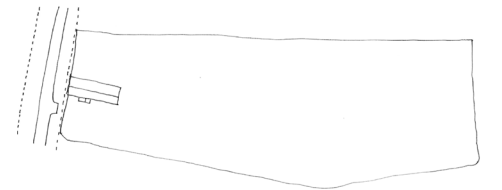


Current situation

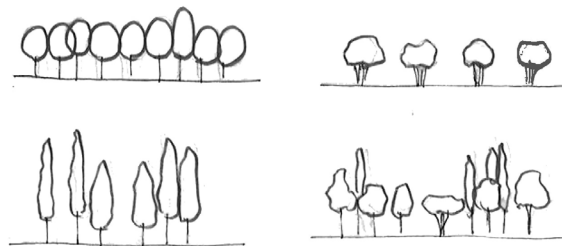




Proposed situation + 15 years



Current situation



Tree type and spatial organisation

Proposed situation + 15 years



Neighbourhood road	Private house + backyard	Collective forest	Soft farming-Only crops	Soft farming-Crops + Trees (Orchard)	Collective forest	Public forest	Collective forest
High woodland one layer stand	High woodland one layer stand	High woodland one layer stand	forest meadow shrub layer	Low woodland half open stand + shrub layer	High woodland one-layer stand	High woodland multi-layered stand	High woodland multi-layered stand
Open egde with field layer vegetation	Gadient edge 3 staged grading	Open egde open to alteration			Open egde open to alteration	Gadient edge 3 staged grading	Gadient edge 3 staged grading
Immersion value daily interactions	Immersion value entering	Immersion value being near	Immersion value daily interactions	Immersion value daily interactions	Immersion value entering		Immersion value daily interactions

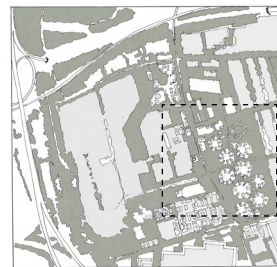
A forest to living in



Proposed situation + 50 years



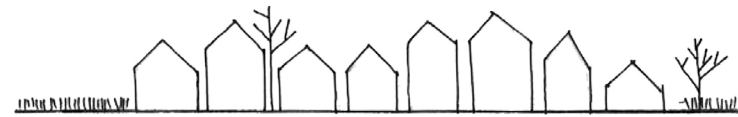
Current situation



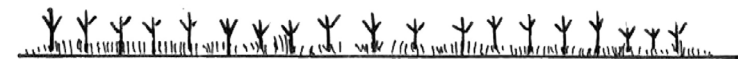
Infrastructure in landscape

This site sits in the Avedore neighbourhood. The land of the site is designated in the zone of new development. The question arises is how such new development on edge of green wedges can be developed to maintain the ideas of core forests. In such cases, forest is first introduced to the site. Various species combinations are used to develop forests at fast growth. Which in 15-20 years can be ready for some clearing and

add new housing within it. A place to live in forests. A neighbourhood made up of forests canopies can integrate various residential functions through structural approach. From private backyards to public forests, in this way, high amount of forest cover can be achieved and managed in and around the green wedges. The circular patterns are concept that supports social cohesion and pattern inspired from summer house typologies in the same area of Vallensbaek wedge.



Current situation



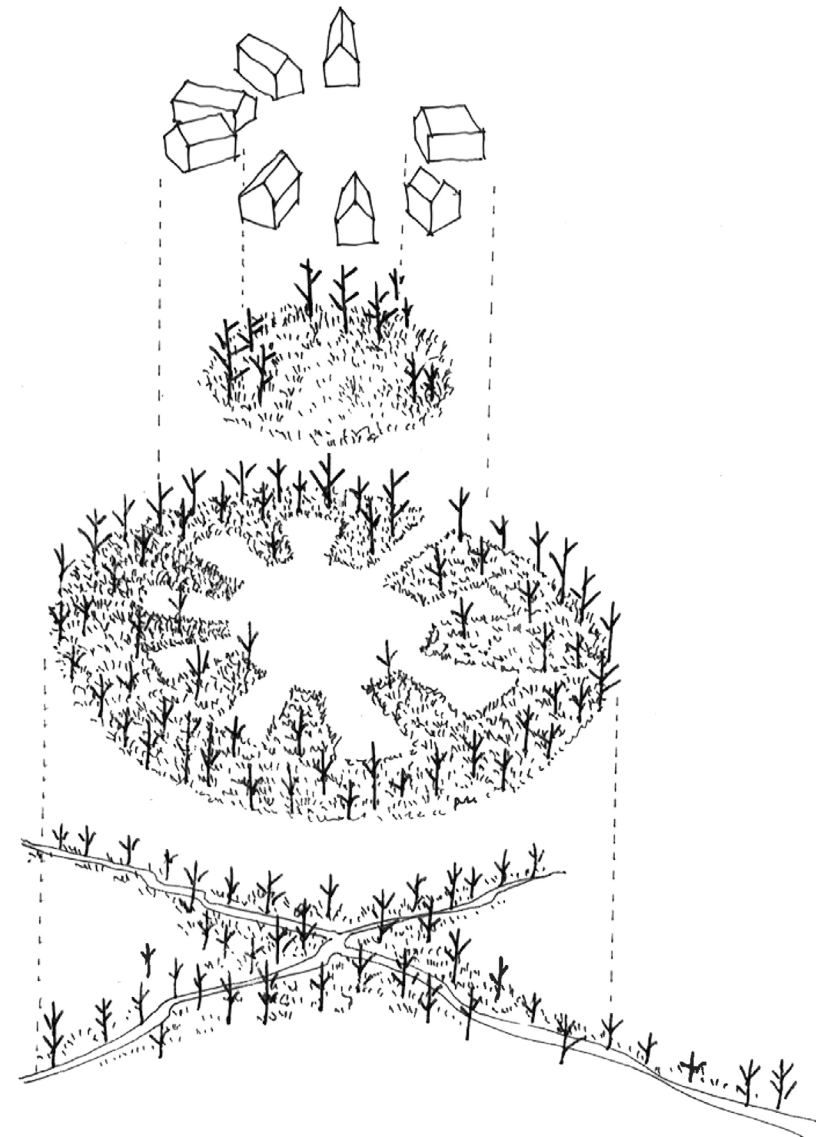
Proposed situation + 5 years



Proposed situation + 15 years



Proposed situation + 25 years



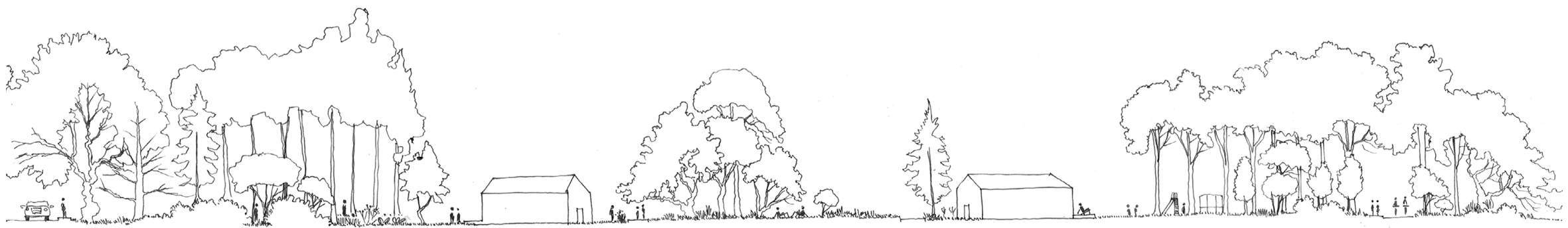
Private houses and their back/front gardens

Common forest

Collective forests

Public forests

Proposed situation + 25 years



Neighbourhood main road	Public forest	Collective forest	Private house + backyard	Common forest	Private house + backyard	Collective forest	Public forest	Neighbourhood street	Public forest
	<i>High woodland - multi-layered stand</i>	<i>High woodland - one layer stand</i>		<i>Mid/low woodland half open stand</i>		<i>High woodland one-layer stand</i>	<i>High woodland multi-layered stand</i>		<i>High woodland multi-layered stand</i>
<i>Open egde with field layer vegetation</i>	<i>Gadient edge 3 staged grading</i>	<i>Open egde open to alteration</i>				<i>Open egde open to alteration</i>	<i>Gadient edge 3 staged grading</i>		
<i>Immersion value daily interactions</i>	<i>Immersion value entering</i>	<i>Immersion value being near</i>	<i>Immersion value viewing</i>	<i>Immersion value daily interactions</i>	<i>Immersion value viewing</i>	<i>Immersion value being near</i>	<i>Immersion value entering</i>	<i>Immersion value daily interactions</i>	

4

Between forest

Conclusion
Looking back at forest territories

Reflection
Academic relevance
Societal and moral relevance
Reflection on methodology

References
Image Bibliography
Appendix

Helix loop: Map making

Precedent
Sletten Forest Lab, Denmark
Nature village in Middlefart, Denmark
Alnarp Landscape Lab, Sweden
Co-management, Denmark, Germany, UK

Copenhagen and society

Conclusion

Looking back at forest territories

Urban forestry has the potential to redefine the green wedges in the Copenhagen region by strengthening its underlying base landscape of the region. The introduced forest here does it by adding landscape quality which not just ecological or climate but also spatial quality. It is the inherent quality which will support the various challenges stated in the project.

How can urban forest infrastructure aid in strengthening green wedge works in socially just way? The project begins with first step by understanding various relevant underlying layers of landscape to built upon the base landscape. First, the anthropogenic challenge on new forest cover as part of National goals is added at various locations across the capital region. This base forest will then support and provide places for nature development and in result help the citizens in the region on various levels. Secondly the 'areas of interactions' (limes, Milieus, Outer reaches) are identified to create a focus and under the nature of various forces influencing the built environment around. With their understanding, influence of either can be adjusted to create a balance that is adaptive and support nature development, not just urban activities.

How can the new urban forest infrastructure aid in dissolving the dichotomy of urban/nature and strengthen spatial integrity? The edges between urban areas and green wedges are crucial. On introduction of finger plan in 1947, the designate zones of green wedges couldn't alone control the urban sprawl. In an attempt to solve the dichotomy of urban and nature, first step was to aid a landscape base approach to manage the urban sprawl. Here, the ideal of 'The membrane' is introduced to create a wall like structure but which is permeable in its spatiality. Tree forest as a base component in building the Membrane helps support various possibilities of functional uses of the space available under the tree canopies. Forest spatial approach here provides various opportunities to use the forest floor and other layers, yet at the same time the Membrane (a forest band) aid in controlling urban sprawl. Further, to blur the dichotomy of urban and nature, various mobility infrastructure and green spaces are identified where the forest of green wedges is proposed to continue with same structural approach of forest to obtain various benefits.

What alternative governance and management strategies can aid this new urban forest infrastructure? **Forestry provides a new possibilities on not just using the spaces underneath their canopies, but also its inherent structural quality provides new ways to grow and manage them at territorial scale. A new shared responsibility is introduced here, where a 'Vertical Approach' is developed in how tree forests are grown and managed. I am highlighting the term vertical to help understand the possible use of height of a tree to take advantage for this new approach. Secondly, a collaborative process is key in growing and managing the proposed forest. Here, the responsibilities are shared at various levels, from National agencies to citizens of a neighbourhood. The introduced forests are shared in three categories, i) By forests authorities ii) by organisations iii) by citizens. In case of managing, either two or more collaborators will manage the vertical layers of tree forests. A new way such as this can help in achieving the goals for forest growth and new methods that puts less pressure on any one entity.**

How can urban forestry help provide base for heterogenous uses and managing? **The forest structural approach with its inherent spatial quality helps in creating built spaces under their canopies. Spaces built of landscape components, which can help in providing spaces with flexibility, various scales, volumes and character to accommodate heterogenous functions in it. One the key forested landscape element used it woodland types to take advantage of their inherent spatial quality. Secondly, to address the spatial perspective, at glance two forests character extremes are taken in considerations. Which will further aid in creating the forests with various qualities but also spatial character that are interesting. A spatially sound landscape will provide sensorial qualities that can improve bodily experiences and mental wellbeing.**

Discussion

A German scientist in early 19th century pointed out that human civilisations would destabilise the nature with the rate of exploitation. And in today, after 200 years, the realities testify to Humbolt's assessment. Our lifestyle has changed the Earth's systems to extreme levels that it has destabilised the climate. We are now in new man-made era, the Anthropocene.

This is the result of human interference in such an extent that the idea of humans as different than nature, and not same forces. Today, humans and nature are part of same world but on different sides and though dependent on each other.

This notion, are also have influences the planning of urban areas. There is a need for new practice which re-considers the relationships between human and nature. Making cities natural systems that work with nature, rather than against it.

Urban nature is not the nature that humans knew in the wild or nor is it the former typologies of landscapes. The new typologies should be developed to adjust to urban context and their management methods. Today, such a proposal might seem utopian to implement. But the current state of our cities and the earth suggests that new approach and take on urban development is crucial. Nature here is becomes the base of urban development.

Academic relevance

As designers, our process on designing and making has sifted a lot with computer generated images and commercial demands to fit in industrial details of building materials. Such actions have limited our thought processes and the take on design approach. It becomes difficult to me to carry out complex issues such as environmental and social care in practices. It is important to develop new ideas and alternative ways to think about the approach to create a meaningful urban environments and adaptive places-places that support an interconnected world in which all can thrive. If we define intelligence as the ability to successfully solve and respond to novel problems with our environment, then we are defining the very essence of the plant behaviour (Botanical mind, 2020). Today, many new developments of urban environment rely on technological solutions, which do solve issues but for shorter time span or with high demand for resource extraction to run those projects. I would rather ask to use science instead of only technology to achieve goals on projects. This is a base problem, and a starting point can be the academic institutions which can direct new generations of designers to take right role and approach in developing our surroundings.

The new relationship with nature would require new methods for designers and management teams to adopt.

In considering educational institutes, these new methodology can help shape the future at large scale and still making sense for local situations.

Further, to facilitate new ways of managing and growing new forests would require new knowledge, to understand the process, the actors participating and their motivations to collaborate. During the course of research process, I encountered many more questions which can help develop new valuable insights. Following are the questions,

What actors are involved and what are the motivations of societal actors for becoming involved?

-What factors helps increase the involvement in managing the shared spaces?

-What are the instruments to facilitate the process?

-How can government interact with citizens?

-What are the stories binding people and places?

Societal and moral relevance

The proposed new forests and landscape for the Capital Region are developed on the principles of shared responsibility, careful planning, and social considerations. This new landscape aims to revive and strengthen the relationship between urban areas and nature. However, a project of this scale, designed to serve such a large population, will inevitably face certain limitations and challenges that may affect its overall success. As the proposal is largely based on a co-management approach, its implementation is likely to vary across different locations depending on local conditions, governance structures, and the motivation of communities to participate in the growing, management, and use of these forested spaces.

As discussed in the section on academic relevance, further research will be necessary to expand knowledge on implementation strategies and the preparatory measures required for successful execution.

The scale of the Capital Region and the existing framework of Copenhagen's Finger Plan present challenges of their own. Accommodating the proposed zoning and planning changes will require careful consideration of how these new forest zones may affect not only people's daily lives but also property ownership, land use patterns, and spatial configurations during the process of

forest establishment. The proposed forests are not only intended for a single area or specific group of people; rather also they are designed to serve a broad population, including residents of the Municipality of Copenhagen as well as those living throughout the wider Capital Region.

In relation to the Finger Plan, the proposed increase in forest cover has the potential to create significant positive impacts. Enhanced tree cover and associated spatial transformations can contribute to addressing some of the challenges faced by Copenhagen's most densely urbanized areas. The proposed strategies here tries to suggest alternative means of growing and managing forests to work on a large scale such Capital region. Lastly, the forests addition not as main research goals, but also help in addressing some of the Anthropogenic challenges.

Reflection on design and Methodology

Socio-spatial redevelopment as a urban forestry project. The topic of my graduation project takes consideration of Lab urban forestry or Forest urbanism and Flowscape studio.

The lab urban forestry at its base uses tree as building blocks, and so dose this project, uses trees as a base landscape component to create new forests to develop new nature that will support social needs of the day in regional Copenhagen. This project is territorial at large, proposing a forest as landscape infrastructure providing varoius solutions to posing challenges.

At large I have taken Landscape Architecture to translate the forestry ideas into proposed spatial design for the region. Adding new forests with spatial quailities and management are central to the proposal, to redefine the green wegdes of the Copenhagen's finger plan to accomodate social needs. Spatial perspective is central, so is the experiential design all three is important. As scale continuum is important here, explored both in research and design.As each level of forests development adds up to the other. Together forming a territorial forested landscape in the region.

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Appendix

New thinking - Terra forma

Point of life: a new way looking at the world and map making

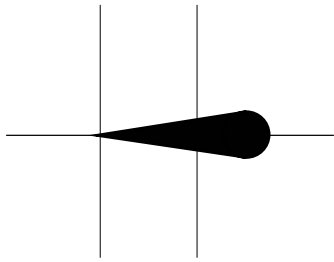
Borders

Conventional world maps portray the Earth as a flattened surface, with distant edges and territories fragmented by the borders of nation-states. In reality, however, the planet is a continuous, interconnected, and curved surface. This inhabited continuum can be imagined as a Möbius strip: a seamless form with no clear beginning or end, no inside or outside. As a graphic and conceptual structure, it suggests a territory that is continuous yet diverse, constantly reshaped in its form, scale, and character.

This perspective invites an examination of the frictions and tectonic interactions among different forms of life. Through their presence, growth, and movement, living organisms produce a range of effects, including erosion, accumulation, and construction. These transformations serve practical purposes, enabling organisms to negotiate relationships between their own bodies and those of others. Humans, for example, alter mineral and vegetal matter; animals may leave organic or olfactory traces; and plants communicate through the emission of chemical signals.

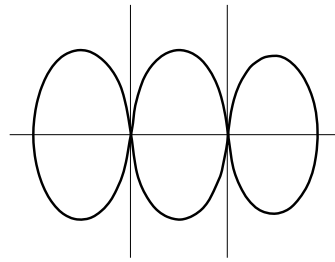
Such interactions raise important questions about the ways common spaces are collectively produced and maintained. Under what conditions can different forms of life co-construct shared environments, and how can they coexist within them?

Following page from 152 to 155 explains the making of the map:



From the known world to unknown frontiers

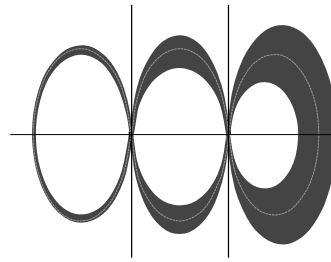
1 Identify and provide a morphological classification for a given territory's types of borders: limes or milieux or outer reaches. Limes correspond to known borders, whereas outer reaches designate unknown worlds. Milieus lie between these two extremes, corresponding to interface territories.



Möbius loop

2 Manipulate the border line to obtain a continuous and infinite line. We thus obtain a double helix that, inspired by the Möbius strip, curves over on itself on either end of the chain. The mapped world is continuous, without beginning or end; we cannot reach its edges without finding ourselves in the midst of the loop again, somewhere on the continuum of a sequence of places.

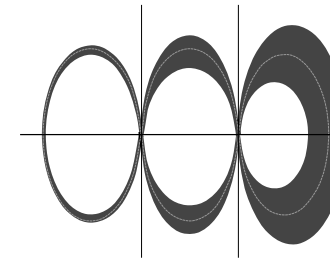
Border-thickening phenomenon



Limes Milius Outer reaches

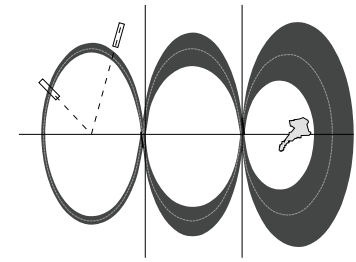
3 Adjust the thickness of the strip according to the morphological classification determined in the first step, with limes consisting mainly of narrow or tenuous places, milieus of wide or thick spaces, and the outer reaches of vast territories with an inaccessible horizon.

Human lines



Nonhuman lines

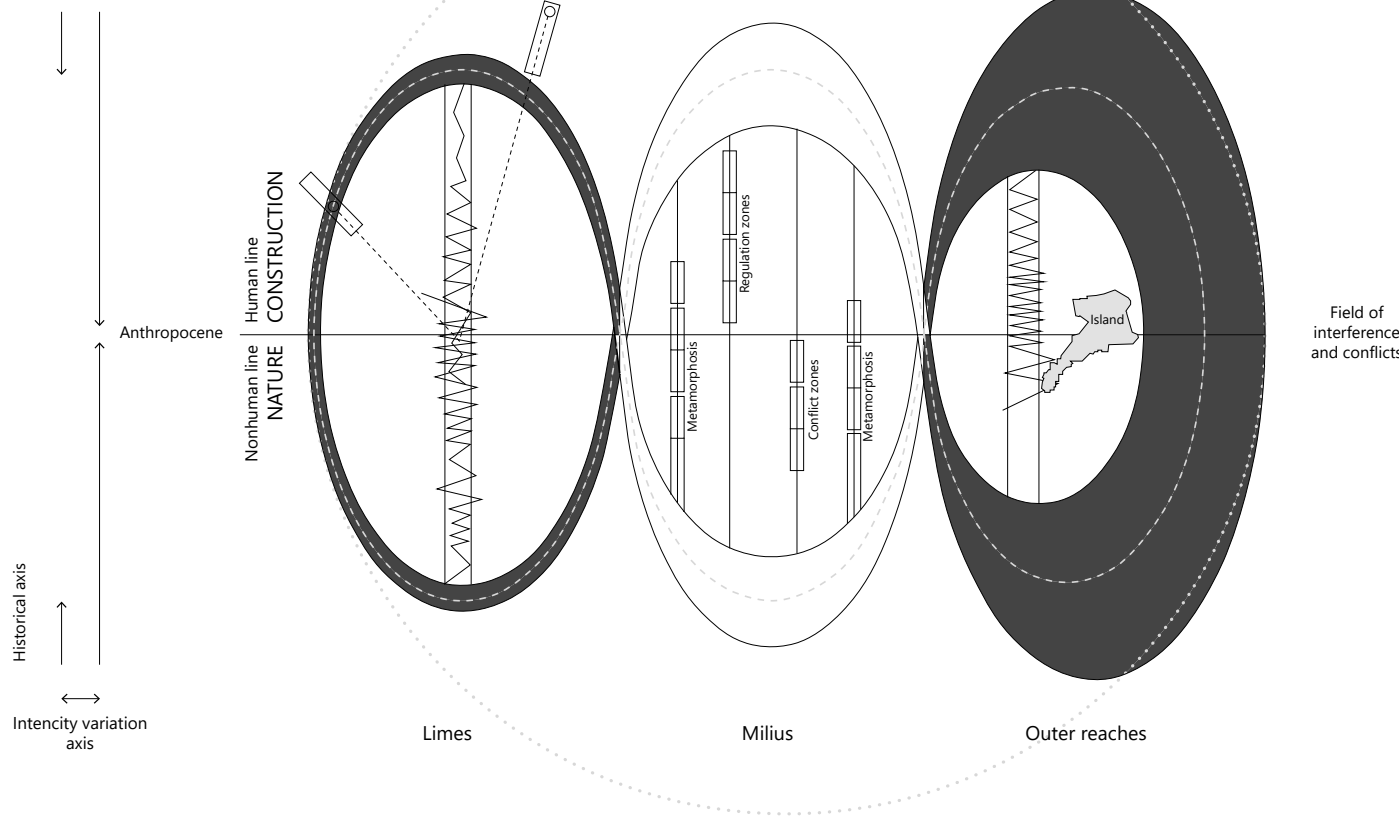
4 Distribute the border spaces on one strand of the helix depending on their human or nonhuman affiliation. The strands cross and merge into each other; the human and nonhuman worlds sometimes face each other and sometimes intermingle. Map the materiality of these border worlds according to the principles of tapestry (an axonometric representation, in which the features of certain entities are exaggerated to emphasize their importance).



Embassies Island

5 Based on the territory studied, identify the types of relationships between the strands of the helix: exchange zone, regulation zone, metamorphic zone, or conflict zone. Place them on the map on the lines that stretch between the strands.

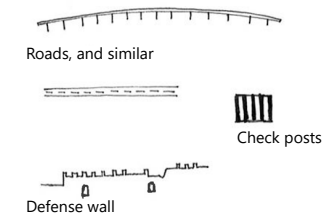
6 For each of the relationships identified, establish the oscillogram of the balance of power. Variations in intensity characterize the relations in a more or less marked way, locating and revealing the invisible forces that fabricate the borders: exchanges, regulations, metamorphoses, or conflicts.



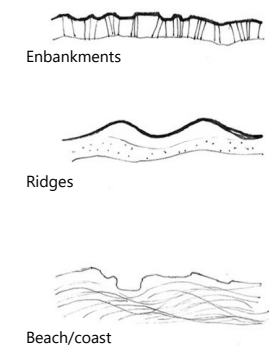
7 Place "ancillary" or neutral territories outside of the helix, along with territories that could be sites of reconciliation: embassies, border-territories (e.g., islands).

Limes

Human Borders
Infrastructure

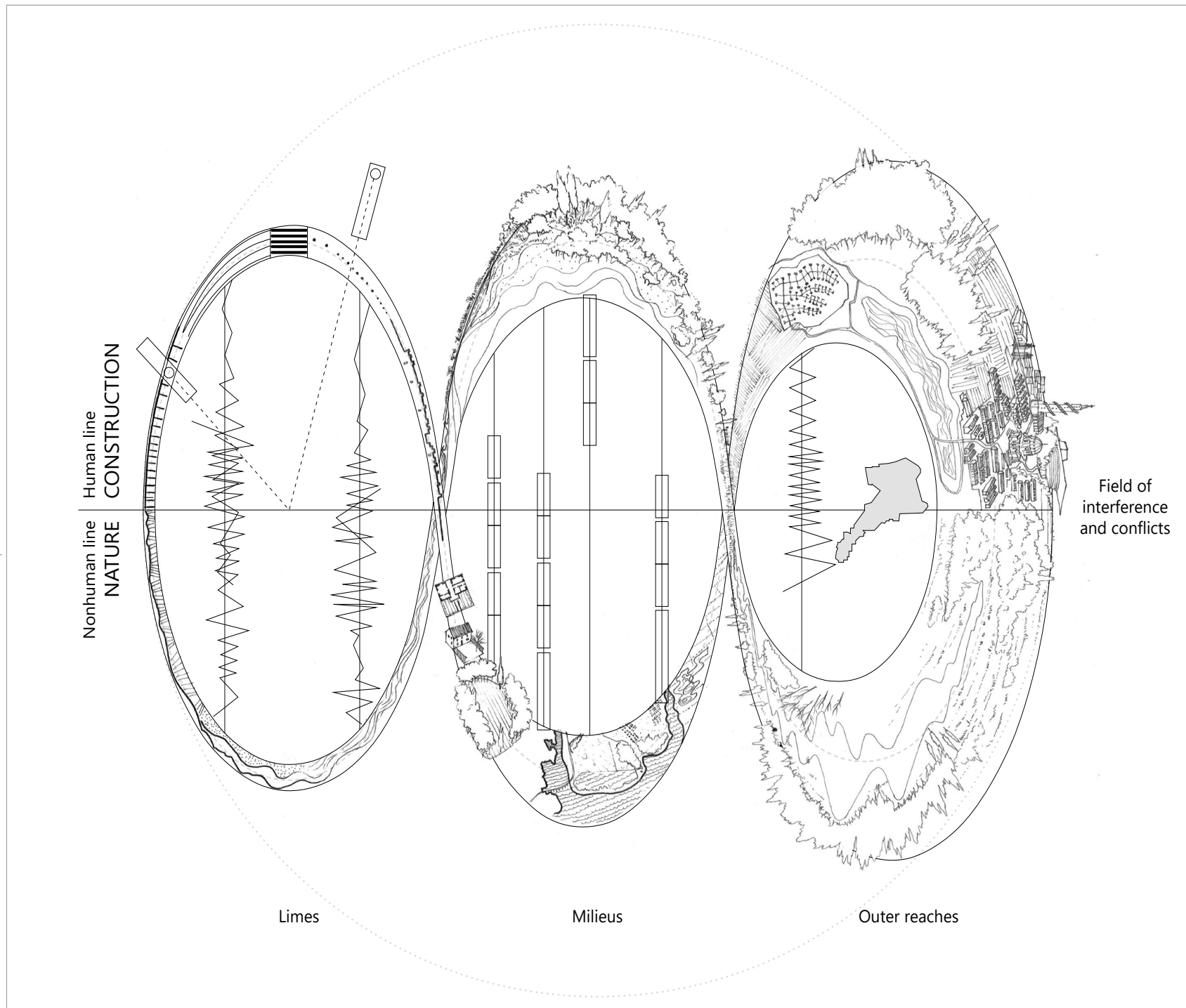
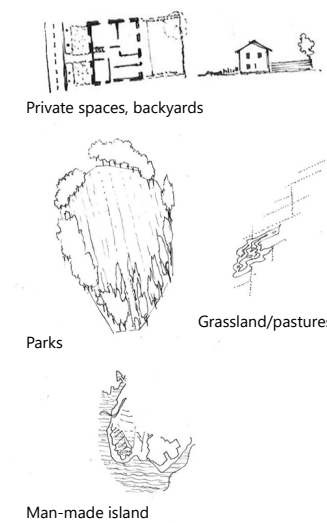


Non-Human Borders
Topographies

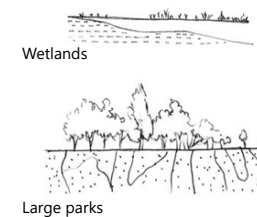


Milieus

Human Borders:
Threshold

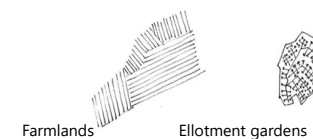
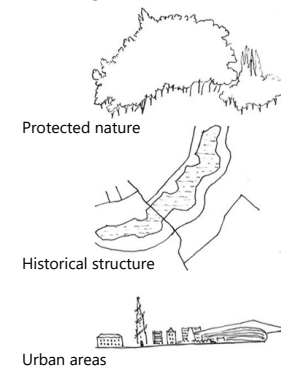


Non-Human Borders:
Ecotones

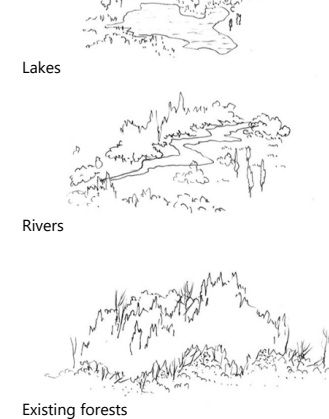


Milieus

Human Borders:
Broder region



Non-Human Borders:
Biofence



Precedent studies

DESIGN PRINCIPLES



The seed pool model, Sletten, April 2006. The pioneer wood of *Betula pendula* (H40) is emerging.



The seed pool model, Sletten, August 2010. Lush field layer of grass and herbs beneath the light canopy of *Betula pendula* in H40.



The seed pool model, Sletten, August 2010. Lush field layer of grass and 'escaping' garden perennials under the light canopy of *Betula pendula* in H40.

CO-CREATING URBAN WOODS



Co-management day, September 2010 in a low woodland of *Tilia cordata* (H35).



Co-management zone (2022). Leaving the garden means entering the wood (H35).

Co-management zone in September 2022: a garden that dissolves into a woodland. A walk into the low woodland of *Tilia cordata* (H35), ending as a window to the pasture behind.



Sletten landscape lab experiment for urban forest
Shared responsibility by resident, Denmark



Linn's square, Spatial exploration with creative Management, Malmö, Sweden

From left, SLA, Woods go urban

under the **forest canopy**