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Tomorrow's (P)ARK

Designing the biggest continuous Nature and Landscape Network of North-West Europe

Colophon

Tomorrow's (P)ARK
Designing the biggest continuous
Nature and Landscape Network of North-West Europe

Master Thesis P5 Report
MSc. Landscape Architecture

TU Delft Department of Architectural Engineering +Technology
BK Bouwkunde

LANDSCAPE ARCHITECTURE

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Landscape for the Future
CONNECTING NATIONS WITH THE HELP OF NATURE

(P)ARK

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Heel erg bedankt!



Fig. 1 Sediment Flow (NASA, 2018)

There are monstrous changes taking place in the world, forces shaping a future whose face we do not know. Some of these forces seem evil to us, perhaps not in themselves but because their tendency is to eliminate toher things we hold good... When our food and clothing and housing all are born in the complication of mass production, mass method is bound to get into our thinking and so eliminate all other thinking.

John Steinbeck (1952) East of Eden



Fig. 2 North Sea (NASA, 2018) From: eoimages.gsfc.nasa.gov

Executive summary

We are living in a time of constant change and turbulence, where human activity has had a significant impact on our planet. As the dominant species, we have achieved remarkable feats such as building grand cities, advancing technology, exploring the moon, and even creating artificial intelligence capable of writing literature. However, this progress has come at a great cost to the natural world, and it is disheartening to look back at the destruction caused in our pursuit of power and advancement. We must acknowledge that this is not a game of "playing God."

Our actions have brought us to the brink of extinction for many animal and plant species in the Anthropocene era, where humans dominate. The IUCN Red List reports that around 28% of species evaluated are threatened with extinction, including those classified as Vulnerable, Endangered, or Critically Endangered. Some groups, like amphibians and corals, have even higher proportions of threatened species. This raises the question: how could such a supposedly intelligent civilization cause such devastation?

Given the critical state of our environment, we are reminded of the story of Noah's Ark and humanity's ability to preserve biodiversity and protect innocent beings. Regardless of our beliefs, this tale and its message are more relevant than ever. Can we create a modern-day ark, a project with such an ambitious goal?

In the midst of the ongoing sixth mass extinction, it has become clear that immediate and drastic measures are necessary to protect the remaining biodiversity of our planet. Although we cannot reverse the damage already done, we can take proactive steps to reduce further destruction and preserve the delicate balance of our ecosystems. The Doughnut of social and planetary boundaries reminds us that our actions must stay within the limits that sustain life as we know it.

To achieve this mission, Project Tomorrow's (P)ARK aims to create the most extensive national park in Northern Europe by using the protected areas of Natura 2000 and a one-kilometer buffer zone to create an interconnected structure. This structure has been meticulously designed to harmonize with the major cities of the

Netherlands, Germany and Denmark, permeating and spreading throughout different spatial segments. The result is an incredible and attractive hypothetical model of a new living environment.

Recognizing the limitations of my abilities to improve the world as a whole, my work will instead concentrate on tackling one significant spatial issue: landscape fragmentation. For centuries, fragmentation has been a major factor in the decline of ecosystem biodiversity. I aim to identify the specific types of fragmentation in a detailed area and propose individual solutions, confident that resolving these issues on a smaller scale will have a cascading effect throughout the future park. Alongside addressing pre-existing fragmentation, I will also prioritize minimizing new fragmentation and enhancing ecological connectivity.

Additionally, I aim to explore the theme of the pedestrian path that winds through the national park. I firmly believe that walking can promote an appreciation of the natural beauty and importance of the surrounding landscape. My approach to this project involves accentuating the path's scenic qualities, recognizing the unique perspectives of each viewer, noting seasonal changes, and incorporating architectural features that visually tie the area together. Essentially, the pedestrian path represents a modern "pilgrimage" to discover a renewed relationship between humans and nature, replacing traditional religious concepts with a reverence for the natural world. Furthermore, because landscape fragmentation is intertwined with human segregation, addressing the former requires an understanding of the latter.

Through this innovative and ambitious initiative, we aim to create a haven of natural beauty and ecological preservation that will continue to inspire for generations. Although we may not be able to stop the sixth mass extinction, Project Tomorrow's (P) ARK represents a tangible step towards safeguarding what is left.

(P)
ARK



Fig. 3 Caspar David Friedrich, Wanderer above the Sea of Fog, 1817 (Kunsthalle Hamburg, January 5, 2023)

Fascination

At present, the impact of human society has transformed almost every square meter of the earth's surface and beyond. These events led Nobel laureate Paul Crutzen to name this New Geological Age – the Anthropocene . What does this historical period bring us and what situation do we find ourselves in?

We are standing on the edge of the sixth mass extinction of species, this process of biodiversity loss is unprecedented in the last million years . One million species out of roughly eight million are threatened. According to IPBES reports, one of the main reasons for the loss of biodiversity is the loss of natural animal habitats. People are drastically reducing natural places and processes that have not been affected by humans before (IPBES, 2019) .

There are currently over 250,000 protected areas on Earth, spread across 245 countries and territories. This makes up 13% of the remaining unadulterated natural environment. The requirement of the CBD is that by 2021 another 4% of the protected area should be secured. The critical question, however, is not only the creation of new territories, but above all the way in which we keep what we have on Earth in the times of Climate changes.

Same as the rest of the World, the European Union is currently struggling with the trend of loss of natural animal habitats, which is slowly leading to a Domino Effect. Nature is undoubtedly losing its life-giving systems to man, and up to 81% of habitats at the EU level are in a poor condition. In other words: the way our society lives is unsustainable, it's literally invasive. Landscape fragmentation, intensive agricultural activity, deforestation, desertification, urbanization, pollution, uncontrolled construction, and use of transport infrastructure, uncertain future are the problems we have to face. After listing these facts and the harsh reality that we, as the emerging generation, face, I gradually come to the core of my story and fascination. I grew up in the heart of the Gratzen Mountains nature reserve, one of the least-visited natural tourist spots in the Czech Republic. Since my early childhood, I have perceived the beauty and importance of nature here. With the relentless passage of time, I began to observe certain changes, natural "disasters" in the form of a small beetle - the bark beetle, or relentless drought. Thus, with my own eyes, I began to perceive the decline in the health of the landscape and all its forms, including forests, in a relatively short period of time. Probably due to my curiosity about finding the answer to the question: Why are these things happening? I started to demand information and explanations. Perhaps it was this curiosity that led me here, to the faculty where I study landscape architecture. But I will return to my story and the process of searching that began somewhere with natural science and biology literature, but very quickly redirected me to the study of history, which hides a great many answers to WHY these events are happening. In short, I began to uncover that many ecological disasters have their origins in much earlier times. For example, I will specifically refer to the example of Habsburg planting of spruce monocultures or the construction of drainage measures in the times of communist Czechoslovakia.

I know that this work specifically does not deal with the issues of the Czech landscape, but it provides me with an explanation for why I decided to work on this thesis. For millennia, humans have changed the shape of the landscape, as well as the ways in which we use and perceive the natural environment. We already have scientific evidence that these processes of landscape colonization have caused the downfall of multiple Empires and Civilizations.

Therefore, I would like to end this short passage with a call for social attention towards the environment. In the book "The Fall of Rome," Kyle Harper opens up a theory supported by scientific research that reveals that the fall of this civilization, on which our European civilization is built, was largely due to the triumph of nature over human ambition. In other words, in layman's terms, the contribution of climate change and epidemics also played a role in the downfall of such a dimension of civilization. Edward Gibbon, the great English historian of the fall of Rome, said: "The decline of Rome was the natural and inevitable effect of immoderate greatness." Sic transit gloria mundi.

It is precisely for this reason that I direct my work towards a topic that I consider to be very, very important. Can we, as a modern and developed society, recognize situations that can lead to disaster?

To avoid sounding so pessimistic, I have decided to dream and create. I have chosen to believe in human intellect and industry and come up with some innovation for a new "living environment" where nature benefits from the presence of humans and has a chance to thrive and grow. Therefore, I embark on and look forward to the Tomorow's (P)ARK project, which explores the vision and idea for the largest international park in North-West Europe.

I would like to thank all those who contributed to this work and wish us all strength for an uncertain future.

Table of contents

ACKNOWLEDGEMENT 4
EXECUTIVE SUMMARY 9
FASCINATIONS 14

INTRODUCTION/ **IN TO OUT**

20
Problem field/ Statement 22
Sixth mass extincion 24
Habitat loss 28
Landscape fragmentation 34
Nature protection/restoration 38
Relevance 40
AIM

STRUCTURE & THEORY/ **OUT TO IN**

54
Research objective 56
Research Framework 57
Methodology 58
Theoretical Framework 60
Richard Weller – WORLD PARK 62
Van Gogh National Park- "New Style" 64
De-Growth/ Post-Growth Theory 66
Bioregionalism 68
R. R. Forman – Landscape Ecology Principles 70
Rewilding theory 74
CONCLUSION

MULTISCALE ANALYSIS/ **FROM BIG TO SMALL**

Through the scales 78
+Why North- West Europe? 80
Atlantic and Continental biroegions 84
1st pilar: Nature Systems 86
Nature Dynamic 88
2nd pilar: Cities and Infrastructure 100
Physical borders 102
Landscape fragmentation Types 106
3rd: Spatial Structure of Cultural landscapes 110
Problems of farming 114
4th pilar: Wahlking - Pathways Past 118
Site visit 122
CONCLUSION: Advantages & Disadvantages 135

PRINCIPLES

Design principles XL 138
Design principles M- S: Extra Urban 143
Design principles M- S: Urban= Cities are integrated 145
Human Involvment 146
Long term strategy 148

DESIGN

Complexity of the project = New form of National parks 153
North- West Europe System 154
Vision 2100 156
Hiking Path: From Amsterdam to Copenhagen 158
Visual Culture of Hiking Path 160
Regional Synthesis: Bremen x Hamburg 164
Landscape Architecture in Doughnut 170
Design location - Spatial Analysis 172
Design Strategies 174
Research Through Design 176
Main Plan 178
Design location NO.I 182
Forest 187
Agroforestry 193
Regenerative Agriculture 194
Design location NO.II 198
Heathlands 203
Orchards 209
Riverlandscape 215
Overall Systems 216
Time Frame 218
VISON FOR THE FUTURE 222

CONCLUSION & REFLECTION

Outcomes 230
Conclusion 234
Reflection 236
The Changing Perception of Nature: A Jurney Through Time 240

BIBLIOGRAPHY 242
LIST OF FIGURES 246

Introduction

1

Problem field/ Statement
- Sixth mass extincion
- Habitat loss
- Landscape fragmentation
- Nature protection/restoration

Relevance

AIM

Problem field

Tomorrow's (P)ARK is a highly complex project that faces numerous challenges in its visualization and implementation. The landscapes and nations it crosses share many similarities, but they are also distinct in their morphology, culture, and history. For these reasons, this work aims to address four common issues that have a significant impact on the shape and future functioning of the landscape in northeastern Europe (same as for many other nations), which is a unique area with countless species of animals and plants dependent on it.

Sixth Mass Extinction

One of the initial challenges addressed in this work is the phenomenon of declining animal and plant biodiversity, which is now associated with an event scientists have begun calling the sixth mass extinction (Anthropogenic extinction). This event, caused by human activities and societal organization, represents the first time in history that humans have been responsible for such a phenomenon. Although we cannot reverse this event (meaning we cannot bring back extinct species), it is possible to minimize the loss of the remaining biodiversity that still exists.

Habitat Loss

Natural communities, which serve as vital ecological environments supporting diverse organisms, are also facing endangerment alongside individual animal and plant species. Specifically in Europe, important ecosystems such as forests, peatlands, and heathlands are under threat. The rapid expansion of cities, construction of highways, and proliferation of roads have resulted in the fragmentation of these natural environments. This fragmentation has had detrimental effects on their ecological functioning, compromising their ability to provide suitable habitats, maintain biodiversity, and support the intricate interactions between species.

Landscape Fragmentation

The phenomenon of fragmented landscape is one of the biggest problems in densely urbanized European landscapes, leading to a significant decline in biodiversity. It primarily involves the spatial division of what was once a cohesive natural environment. Today, the landscape is traversed not only by narrow footpaths but also by wide asphalt roads, highways, power lines, gas pipelines, canals, railways, and many others. A landscape crisscrossed with paths leading to all the beautiful places may seem friendly to us, but for many organisms, it can be different. Some organisms cannot overcome these linear structures and objects, making them insurmountable barriers. As prisoners of these inescapable "newly created islands," they have a limited range of movement, restricted food sources, and limited choice of mates. The result is populations that are both numerically and genetically weaker and more vulnerable to extinction. It is almost ironic that the construction of a few roads, occupying such a small area and causing forest fragmentation, can have such fatal consequences. For these reasons, species that lack fast wings, large legs, or a large number of seeds fill the columns of endangered or extinct species on the EU Red List every year. The well-known Theory of Island Biogeography describes the colonization and extinction of species on isolated islands at various distances from the mainland. On large nearby islands, colonization occurs more quickly, while on distant ones, extinction happens faster (Robert H. MacArthur and Edward O. Wilson, 1967). Perhaps you are now asking yourself whether we have indeed replicated the issues described by the theory of island biogeography in our European landscape. The answer is yes. An "island" in this sense can be a grassy area in the middle of a roundabout or a group of trees in a monoculturally cultivated field. It is here that the crucial significance of interconnected structures in maintaining the natural richness, which represents the entire field of Landscape Ecology(Richard T.T.Forman, 1996), becomes evident.

Nature protection

Just as our range of cultures has evolved, the same applies to the efforts to protect natural resources. The first conservation efforts and initiatives can be found in ancient cultures such as Hindu, Roman, Mughal, and others. From the times when we protected sacred groves or sacred hills to the early conservation steps taken in Yellowstone and Yosemite (19th century America), we have reached a point where we actively need to politically and legally control and protect the animal and species composition, primarily for ourselves and for our own sake. For these reasons, organizations have been established by united nations and on different continents to oversee the quality of conservation and aim to maintain the quality and standards of current protection. Some of these organizations include the United Nations Environment Programme (UNEP), Convention on Biological Diversity (CBD), International Union for Conservation of Nature (IUCN), and United Nations Development Programme (UNDP). Despite the appearance of these organizations and efforts being sufficient, current nature conservation and its forms visibly need to undergo a significant transformation and reassess today's fragmented protection of scattered islands and fragments of national parks or other official forms of reserves. For these reasons, it is important to begin reevaluating this fragmented structure and transform it into a network of connected corridor structures that facilitate the migration of organisms from one area to another, thus enhancing genetic biodiversity, as outlined, for example, by the theory of metapopulation developed by Richard Levins and others. It is certain that for the preservation of a rich variety of life on Earth, not only a number of destructive systems but also nature conservation itself must undergo radical transformation.









Fig. 4 **(Schemes designed by author, November 2022)**

Sixth Mass Extinction

Holocene extinction, is an ongoing event that is causing the loss of many plant and animal species at an unprecedented rate. This extinction event is being driven primarily by human activities, including habitat destruction, pollution, climate change, and overexploitation of natural resources.

According to a report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) published in 2019, around one million plant and animal species are threatened with extinction, many within decades, more than ever before in human history. This represents about one eighth of the world's total number of known plant and animal species. Furthermore, the rate of extinction is now 100 to 1,000 times higher than the natural rate, and is accelerating.

Europe has also experienced significant losses of plant and animal species due to human activities. For example, according to the European Red List of Threatened Species published by the International Union for Conservation of Nature (IUCN) in 2020, 42% of European butterfly species, 15% of bird species, and 30% of amphibian species are threatened with extinction. Additionally, over 1,000 species of vascular plants are considered to be threatened in Europe.

The loss of biodiversity has serious consequences for ecosystems and the services they provide to humans. For example, the loss of pollinators such as bees and butterflies can reduce crop yields and threaten food security. The loss of forests and wetlands can reduce the ability of ecosystems to store carbon and regulate the climate. The loss of biodiversity can also have cultural and spiritual impacts, as well as affect human well-being and health.

If there is danger in the human trajectory, it is not so much in the survival of our own species as in the fulfillment of the ultimate irony of organic evolution: that in the instant of achieving self- understanding through the mind of man, life has doomed its most beautiful creations.

(E. O. WILSON)

To address the sixth mass extinction, it is important to take action at all levels, from individual actions to continental policy changes. This includes protecting and restoring natural habitats, reducing pollution, supporting sustainable agriculture and fishing practices, and promoting education and awareness about the importance of biodiversity. Stronger laws and regulations are also needed to protect endangered species and their habitats.

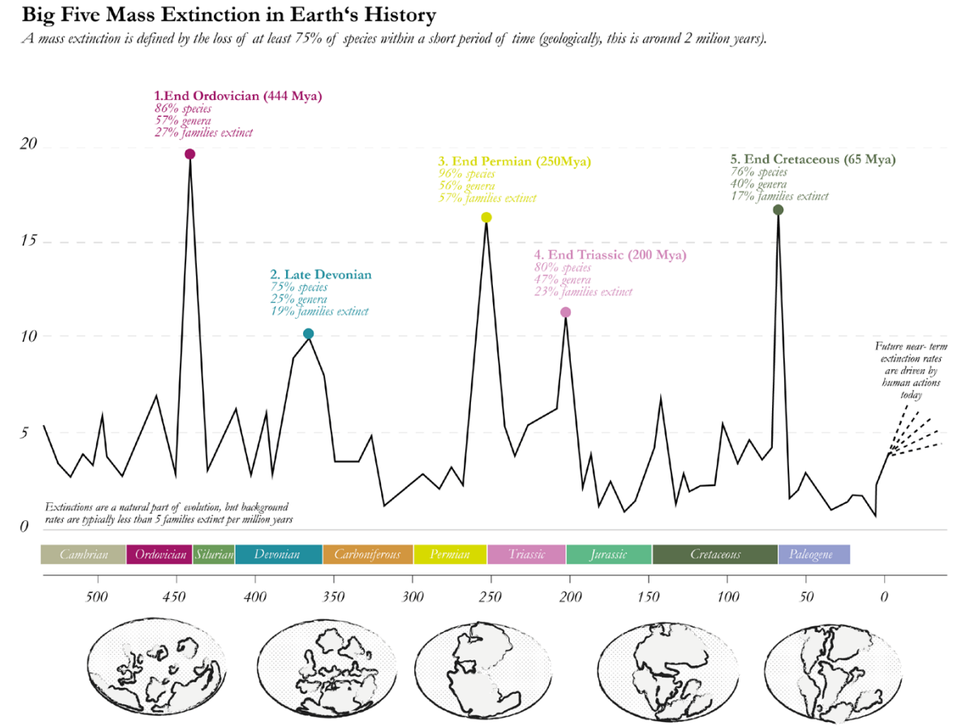


Fig. 6 Vertebrate biodiversity losses point to a sixth mass extinction (Barnosky et al.2011; Howard Hughes Medical Institute; McCallum 2015)

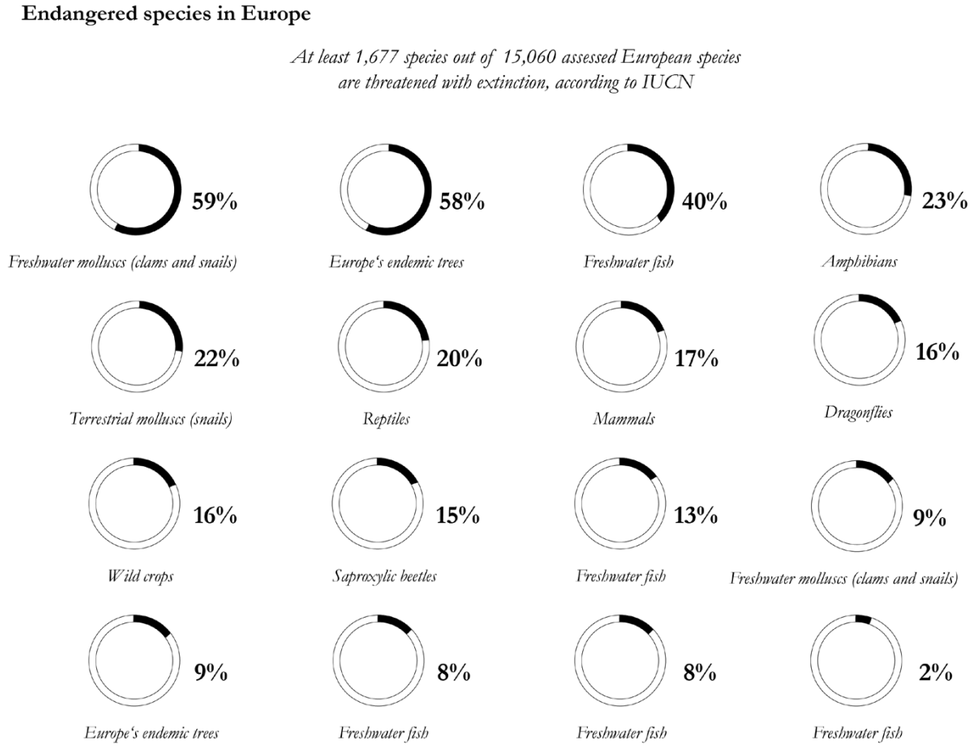


Fig. 5 Infographic on the most endangered species in Europe (Europarl.eu, IUCN European Red List, 2015 and 2019)

Habitat loss/ destruction

“Landscape represents an irreplaceable value, the loss of which affects the whole society. The aesthetics of the European landscape is subject to long-term widespread degradation.” (Cílek, 2011, p.51)

The loss of habitats in Europe is a complex phenomenon that involves a range of human activities, including agriculture, urbanization, forestry, and industrial development. These activities have led to the fragmentation and conversion of natural habitats, such as forests, wetlands, and grasslands, into more intensive land uses. This has resulted in the degradation, loss, and isolation of habitats, which can have severe consequences for biodiversity and ecosystem services.

Forests are among the most important habitats that are under threat in Europe. According to recent studies, Europe has lost nearly half of its forest area over the past 6,000 years, and the remaining forests are under constant pressure from human activities (Roberts et al., 2018). For instance, deforestation for timber and agricultural land, as well as urbanization and infrastructure development, continue to drive the loss and degradation of European forests, which is impacting on the ecosystem services they provide, such as carbon sequestration, water regulation, and habitat for wildlife.

Wetlands are another key habitat type that is under threat in Europe. Wetlands are some of the most biologically diverse ecosystems on the planet, providing crucial services such as water purification, flood protection, and carbon storage. However, over the past few decades, some places over the Europe has lost more than 50% of its wetlands, mainly due to drainage for agriculture and urbanization (Zedler, J.B.& Kercher, 2005). This has resulted in a decline in the biodiversity of wetlands, and the loss of many species that rely on these ecosystems for survival.

In order to address the issue of habitat loss in Europe, it is essential to understand the underlying causes and to implement effective solutions. One approach is to create protected areas, such as national parks and nature reserves, to safeguard habitats and species from human activities. Another approach is to promote sustainable land use practices, such as agroforestry and green infrastructure, which can help to balance economic development with the protection of biodiversity and ecosystem services. Furthermore, effective policies and legislation, such as the EU’s Biodiversity Strategy 2030, can also play a critical role in reducing the drivers of habitat loss and ensuring the conservation and restoration of Europe’s precious habitats.

The Red List of European Habitats is an important tool for assessing the conservation status of habitats across Europe, and identifying those that are most at risk of loss or degradation. The list is compiled by the European Commission, and provides a comprehensive overview of the state of Europe‘s habitats, as well as the pressures and threats that they face.

The Red List includes a wide range of habitats, from forests and grasslands to wetlands and marine environments. Each habitat is assigned a conservation status, ranging from „Least Concern“ to „Critically Endangered“. The status of each habitat is determined by a range of factors, including the extent of the habitat, its fragmentation, and the pressures that it faces, such as land use change, pollution, and climate change.

According to the latest Red List of European Habitats, published in 2020, many of Europe‘s habitats are under threat, with nearly 30% of habitats assessed as being of conservation concern. The most threatened habitats include:

Coastal sand dunes - These habitats are under threat from urbanization, tourism, and invasive species. They are particularly important for biodiversity, providing habitat for a range of plant and animal species, as well as protecting coastlines from erosion.

Lowland hay meadows - These habitats have declined by more than 80% in Europe over the past century, mainly due to changes in land use and intensification of agriculture. They are important for the conservation of grassland species, and for the provision of ecosystem services such as pollination and soil fertility.

Mediterranean temporary ponds - These habitats are under threat from changes in land use, including urbanization and agricultural intensification. They are particularly important for biodiversity, providing habitat for a range of amphibians and invertebrates that are adapted to the unique seasonal fluctuations of these ecosystems.

Peatlands - Peatlands are important habitats that play a crucial role in regulating carbon emissions and storing carbon. They are under threat from drainage for agriculture and forestry, as well as peat extraction for horticulture and energy production. The loss and degradation of peatlands can have significant impacts on biodiversity, as well as on climate change.

Temperate heathlands - These habitats are under threat from changes in land use, particularly the intensification of agriculture and forestry. They are important for the conservation of heathland species, such as birds, reptiles, and insects, and provide a range of ecosystem services, such as carbon storage and water regulation.

In conclusion the EU Red list is a valuable insight into the state of Europe‘s habitats, and highlights the need for urgent action to conserve and restore these important ecosystems.

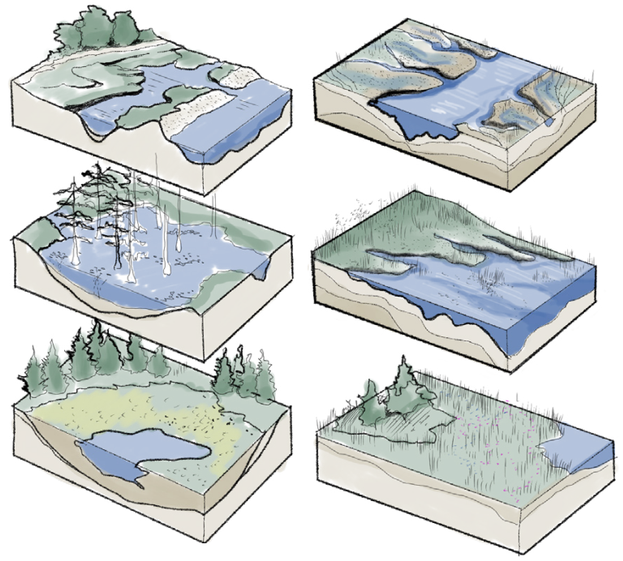


Fig. 7 Red list Habitats (Made by author, 2023)

1,5

3

4,5 km

Fig. 8 Lower Saxony (Google Earth, 2023)

Landscape fragmentation

“Few of us would want to live alone on a deserted island. However, many organisms encounter this fate more frequently than one might think.” (Cílek, 2011, p.57)

Landscape fragmentation refers to the process of breaking up a continuous habitat into smaller, isolated patches, often as a result of human activities such as agriculture, urbanization, and infrastructure development. This process has significant impacts on biodiversity, as it alters the composition, structure, and connectivity of habitats, and affects the distribution and abundance of species.

Landscape Fragmentation and Biodiversity

The impacts of landscape fragmentation on biodiversity can be understood through three main mechanisms: **habitat loss, edge effects, and isolation**. Habitat loss occurs when a large area of habitat is converted to a different land use, such as agriculture or urbanization. This reduces the availability of suitable habitat for species, and can lead to population declines and local extinctions. Edge effects refer to the changes in physical and ecological conditions that occur at the boundaries between habitat fragments and their surrounding matrix. These changes can include increased temperature, light, and wind exposure, as well as changes in vegetation structure and composition. Edge effects can alter the behavior, physiology, and distribution of species, and can create barriers to movement and dispersal. Isolation occurs when habitat fragments are separated by unsuitable habitat or barriers to movement, such as roads or urban areas. This reduces gene flow and can lead to genetic drift, inbreeding, and reduced genetic diversity, which can increase the risk of local extinctions and reduce the adaptive capacity of populations.

The impacts of landscape fragmentation on biodiversity are complex and context-dependent, and can vary depending on the size, shape, and configuration of habitat fragments, as well as the ecological characteristics of the species in question. However, some general trends can be observed. Small, isolated fragments are more vulnerable to the negative impacts of fragmentation than larger, more connected fragments. Species with limited dispersal abilities, such as amphibians and small mammals, are particularly vulnerable to the impacts of landscape fragmentation, as they may not be able to move between habitat fragments or across barriers. Species with specialized habitat requirements, such as those that depend on specific vegetation types or microhabitats, may also be more vulnerable to the impacts of fragmentation, as their suitable habitat may be lost or

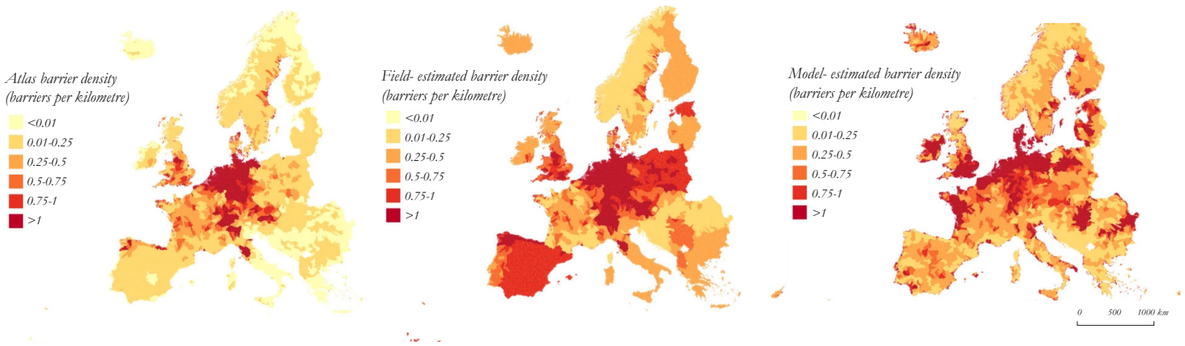


Fig. 10 Atlas of barriers in Europe (Belletti, B., Garcia de Leaniz, C., Jones, J. et al., 2020)

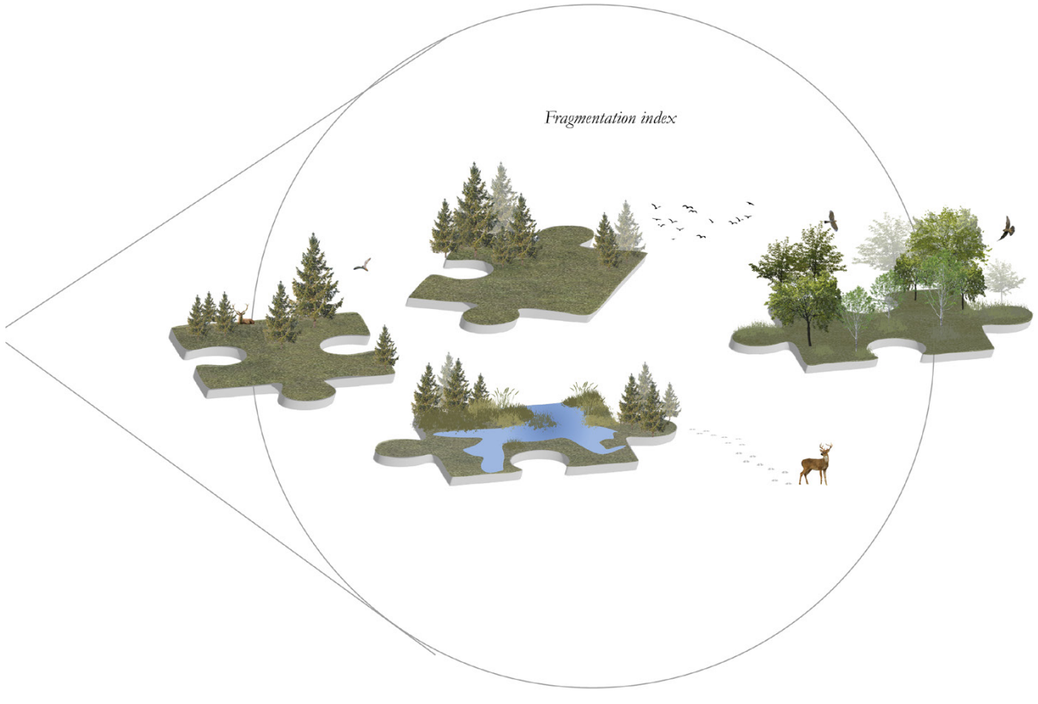
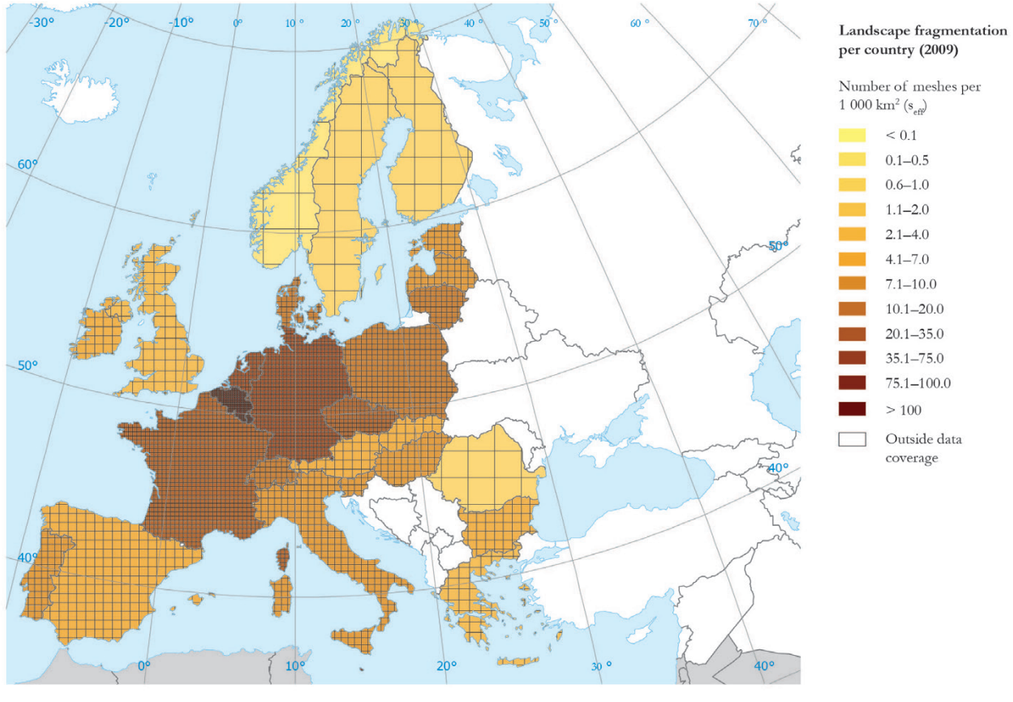


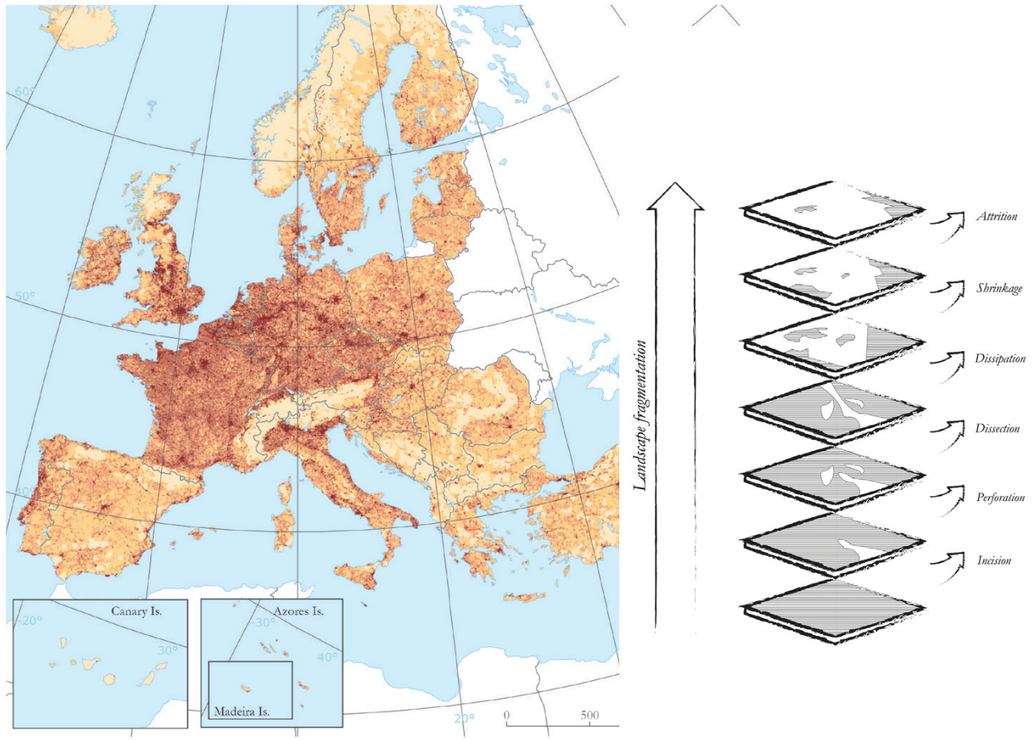
Fig. 9 Nature Puzzles (Made by author, 2022)



Landscape fragmentation per country (2009)

Number of meshes per 1 000 km² (s_{eff})

- < 0.1
- 0.1–0.5
- 0.6–1.0
- 1.1–2.0
- 2.1–4.0
- 4.1–7.0
- 7.1–10.0
- 10.1–20.0
- 20.1–35.0
- 35.1–75.0
- 75.1–100.0
- > 100
- Outside data coverage



Fragmentation pressure (number of meshes per 1 000 km²) of urban and transport infrastructure expansion

Very low | Low | Medium | High | Very high | Outside coverage

Landscape fragmentation pressure in Europe

Land take, urban sprawl and economic activities lead to habitat fragmentation, decreasing the resilience of ecosystems. Monitoring fragmentation supports policy actions that aim to ensure remaining habitats can support biodiversity. Fragmentation affects all areas of Europe, even very sparsely populated ones. Moreover, in the EU plus the United Kingdom, 27% of land is considered highly fragmented where habitats are less than 0.02km2 on average. However, policy measures to protect certain areas seem to be effective in preventing fragmentation, particularly in protected areas.

Landscape fragmentation refers to the process of breaking up continuous habitats into smaller units or patches, which is primarily caused by the expansion of urban and transport networks. This fragmentation has significant implications for the environment, society, climate change adaptation and mitigation, and biodiversity.

The EU biodiversity strategy for 2030 seeks to safeguard and restore nature, including addressing fragmentation. Furthermore, fragmentation affects the implementation of the EU strategy on green infrastructure and the attainment of the long-term goals of the EU common agriculture policy, such as sustainable natural resource management, climate action, and balanced territorial development.

In the EU-27+UK, large areas have been fragmented due to urban and transport infrastructure expansion, with each km² containing approximately 1.4 habitats, averaging 0.68km2 per habitat. Highly fragmented areas, where habitats are less than 0.02km2, make up 27% of the land in the EU-27+UK. As the distance from urban centers increases, fragmentation decreases. For instance, villages have an average habitat size of 0.12km2, rural areas 0.8km2, and uninhabited regions 5.3km2. However, strongly fragmented habitats persist, with less than 0.02km2 habitats accounting for 79% of land in suburbs, 61% in villages, and 53% in rural areas. Even in mostly uninhabited regions, more than 20% of the land is made up of habitats of less than 0.02km2. (European Enviroment Agency, 2022)

Croplands are the second most fragmented ecosystem type after urban areas, with an average habitat size of 5km2. On average, grasslands have an 8km2 habitat size, while forests are more continuous with an average habitat size of 27km2. Coastal ecosystems are facing mounting pressure from urban sprawl, transport infrastructure, and other development, which jeopardizes the movement of wildlife. Coastal ecosystems have an average habitat size of approximately 0.4km2, while inland areas have an average habitat size of 0.9km2. Protected areas have been effective in safeguarding habitats. Average habitat size in non-protected areas in the EU-27+UK is around 0.6km2, while in protected areas, the average habitat size is 20km2.

Fig. 11 Landscape Fragmentation (European Enviroment Agency)

Fig. 12 Landscape Fragmentation Steps (Made by author, 2022)

Fig. 13 Watch for Deer (VM, September 30, 2020) From: https://www.goodfellow.af.mil/Newsroom/Article-Display/Article/375470/watch-for-deer-on-roadways/

Nature protection

“Nature has its own history, which is a system of experiences. Nature is a monument that has a future.” (Cílek, 2011, p.27)

Why are new protected areas being established - for what or for whom? Ultimately, it is for us, for people. Even if we were to destroy nature to the fullest extent, setting evolution back millions of years, from its perspective, it would be a marginal episode, perhaps just a new opportunity, but not from our human standpoint. Our time as a species, let alone on a generational scale, is orders of magnitude shorter than the time of nature on this planet. That is why we primarily protect nature for ourselves and, above all, from ourselves. In the following lines, we will delve into the history of nature conservation and its challenges, which lead to objective criticism and raise questions that shape the discussion on the future direction of conservation.

The first known cultural effort to protect nature is believed to be through the establishment of sacred groves, protected wilderness forests or sacred hills, which held religious significance. These sacred landscapes have their traditions in Indian, Indonesian, Maori, Greek, and even Celtic culture. The earliest documented mention of nature conservation is considered to be the stone edicts of the Indian king Ashoka (Chakravarti, Monmohan (1906). “Animals in the inscriptions of Piyadasi”. Memoirs of the Asiatic Society of Bengal. 1 (17): 361–374.) , dating back to around 260 BC, which served as a type of agreement to preserve natural resources. In Mongolia, a protected reserve was established which included the separation of the sacred mountain Bogd Khan, with evidence of a much older culture of conservation dating back to the 13th century (Milner-Gulland, 2004; as mentioned in Brockington, Duffy & Igoe, 2008) . However, it was not until almost 2,100 years later that the first true national park, as we understand it today, was established with the creation of Yellowstone National Park on March 1, 1872.

In collaboration with geologist and naturalist John Muir, Olmsted played a crucial role in advocating for the establishment of Yosemite National Park in 1890, one of the first national parks in the world. This marked a significant shift in conservation philosophy, as it recognized the inherent value of nature and sought to preserve it for future generations rather than exploiting it for immediate economic gain.

If we delve deeper into the exploration of the philosophy behind the establishment of national parks, it will inevitably lead us to the name of Frederick Law Olmsted. He defined and shaped the future of preserving natural wonders worldwide (Dwight T. Pitcaithley, 2001) and also laid the foundation for the field of landscape architecture.We can objectively define that since then, this phenomenon has been increasingly addressed, mainly because a number of experts began to notice that the intensive development is causing a decline in the diversity of nature. In landscapes that are intensively used and managed, and are constantly changing, protected areas are a very important refuge for many rare and endangered organisms.

Frederick Law Olmsted’s pioneering work and his advocacy for the creation of urban parks and national parks set a precedent for the future of nature conservation. His vision and design principles continue to inspire landscape architects, environmentalists, and conservationists around the world. The legacy of Olmsted’s contributions can be seen in the expansive network of national parks and protected areas that serve as invaluable havens for nature, offering countless opportunities for people to connect with the natural world and experience its transformative power.

In today’s context, the conservation of nature has become an increasingly critical issue, as we face numerous environmental challenges and the urgent need to protect and restore our natural ecosystems. While there have been significant advancements in scientific understanding and conservation efforts, there are also important criticisms and challenges that need to be addressed.

The protection of nature itself and the entire current political construct of the United Nations has undergone a series of turbulent changes. Put simply, from viewing nature as a romantic relic of the past, we have come to a modern way of nature conservation based primarily on scientific understanding of relationships, rather than ecological fundamentalism.

In critical reflection, the establishment of protected areas and the conservation of nature have undergone significant but evolving transformations throughout history. While there have been notable successes in preserving iconic species and landscapes, there is a pressing need to reevaluate traditional conservation approaches. The current paradigm often prioritizes certain species or ecosystems, neglecting the conservation needs of less charismatic organisms and overlooked habitats. This biased focus can lead to imbalances within ecosystems and a loss of overall biodiversity (Brockington, Duffy & Igoe, 2008). Additionally, the changing political landscape and growing environmental challenges demand a more comprehensive and scientifically informed approach to nature conservation. It is crucial to move beyond romantic notions and embrace a holistic understanding of ecological relationships in order to create innovative and effective forms of protected areas that can address the complex and urgent conservation issues we face today.



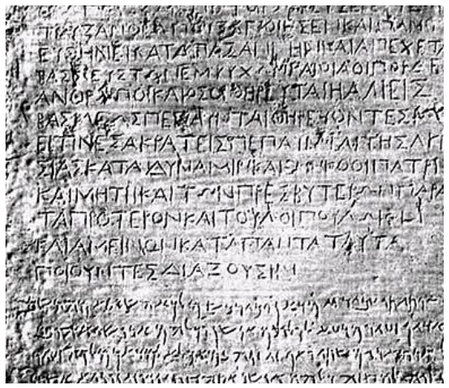






Fig. 14 Hertenjacht, anoniem, Michael Ostendorfer, 1571 (Rijkmuseum, 2023)
Fig. 15 Edicts of Ahoka (Wikipedia, 2023)
Fig. 16 Panoramic view of Yosemite Valley and Half Dome in Yosemite National Park, ca.1890-1900 (George Fiske, Wikipedia, 2020)
Fig. 17 Buffalos on Green Grass Field Near Hils (Pexels, Gintarė Kairaitytė, Jun 28)



Fig. 18 Ark van Noach, Symon Novelanus, 1577 - 1627 (Rijksmuseum, November, 2022)

Relevance

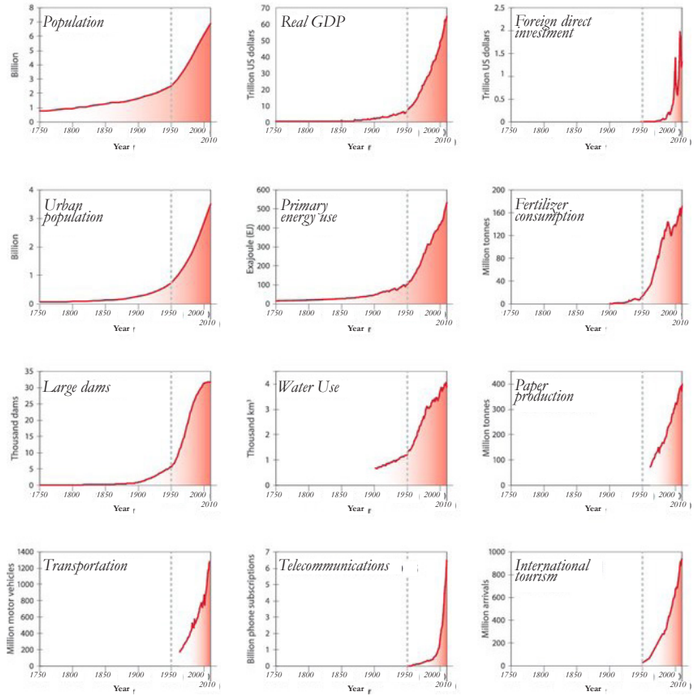
Taking into account all the issues mentioned earlier, it is clear that if we want to stay on Earth and avoid being sent into orbit to search for a new planet for life, we must change a number of destructive systems that are weakening our planet. The fact that living conditions are becoming more extreme for all species on the planet (temperature differences, flash floods, low groundwater levels, etc.) makes it more than certain that warnings based on countless scientific studies and measurements must be taken seriously, and we must start working within sustainable boundaries to reverse the situation. In other words, our paradigm must change. We must stop thinking only of ourselves and the short-term horizon. We need to return to a state where we consider the condition in which we pass on the Earth to future generations.

And now the question arises: what do we need to do to preserve species diversity and a functional and healthy landscape for newcomers? At this point in the story, we can refer to a historical (Christian) story, Noah's Ark, which depicts the efforts and work of one person who, through his task, conviction, and diligence, managed to save many. Today, based on all scientific evidence, we know that such an event is highly unlikely to ever occur. But at least ethically and metaphorically, I would like to take the opportunity to call for attention and ask the question: Are we, as a civilized modern society, capable of initiating something similar? Are we capable of creating an ARK for the 21st century, which aims to create a new territory capable of saving all species living within it from a major catastrophe?

It is evident that one boat is not enough; it is too small. However, if we create a project of a scale that corresponds to the social destruction and crisis, it is possible to overcome many problems of the "modern society of the twentieth century" and avoid extinction, as happened to great empires like the Roman Empire, Greek antiquity, the Incas, and many others.

The project is a relevant attempt to find solutions for the complicated situation we find ourselves in: global warming, extreme weather, land use change, large urban agglomerations, population growth, drinking water, natural destruction, loss of biodiversity, more frequent natural disasters, and many others. These are all problems that it addresses and offers an alternative, subject to investigation by experts from various social sectors to confirm and explore whether such a concept can be widely activated and to examine the premises and scenarios.

Socio- economic trends



Earth system trends

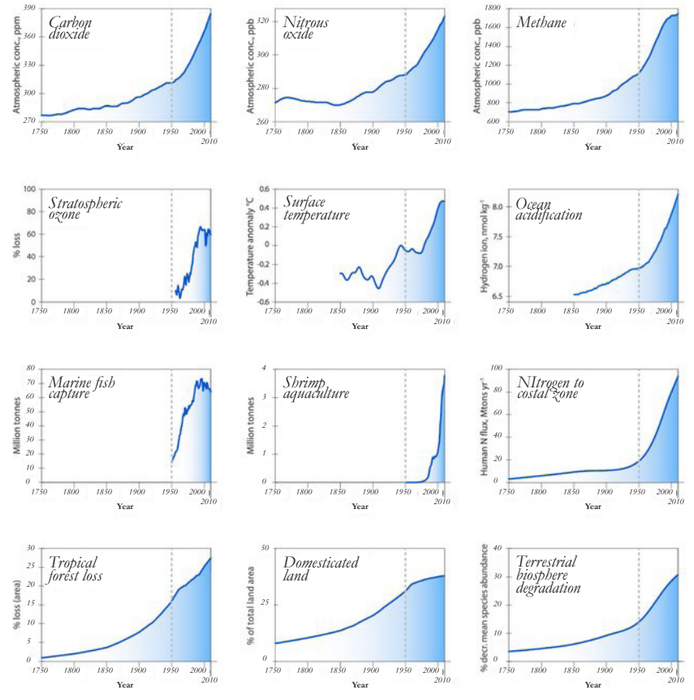


Fig. 19 Trends from 1750 to 2010 in indicators for the structure and functioning of the Earth System(Steffen et al., 2015)

AIM

Biggest International Park

The aim of this project is to create the largest national park in Europe, which seeks to sustainably incorporate urban structures, that undoubtedly contribute to the visual character of the European landscape, and create a new model of conservation. It represents a novel approach in which nothing is segregated, but rather it symbolically unites humans and nature.

In the previous chapter, I mentioned the relevance of such an initiative, and now I would like to outline and offer you a spatial solution that can serve as a concept comparable to Noah's Ark. However, it is not a ship but a landscape and natural structure that aims to strengthen natural elements and outline the direction of future human life on Earth, a new way of organizing national parks, and an ecologically sustainable and resilient environment capable of withstanding climate change in the long run and adapting over a longer time horizon.

This new ARK, this new national park, is designed in the northwest region of Europe, with a specific focus on the Netherlands, Germany, and Denmark. Several reasons led to the selection of this area. Firstly, it is based on the fact that this region shares the same bioregions, making the connection meaningful as it supports similar animal species and also encompasses similar or identical plant species. From a spatial perspective, it is evident that northwestern Europe is one of the most affected areas in terms of landscape fragmentation, deviation from potential natural vegetation, proportion of harvested primary products, urbanization, and pollution caused by light pollution. You can find all these analyses in the third chapter, which provides a more comprehensive overview (chapter 3, page 101). These reasons already highlight the problems and opportunities at the very beginning. Natural conditions offer us an ideal environment for such a continuous landscape network, but human behavior becomes an obstacle.

And why does such a concept need to be vast? According to Richard Weller, new initiatives must match the scale of destruction and problems associated with our development (R. Weller, 2019). That is why I am creating an intervention that, when reaching its final stage, will be visible from space and may create a linear element that is not necessarily an architectural intervention like the Great Wall of China. Therefore, I look forward to a time when Europe's initiative, clearly demonstrating its stance, will be visible from space. We celebrate nature as it is the source of all life on Earth.

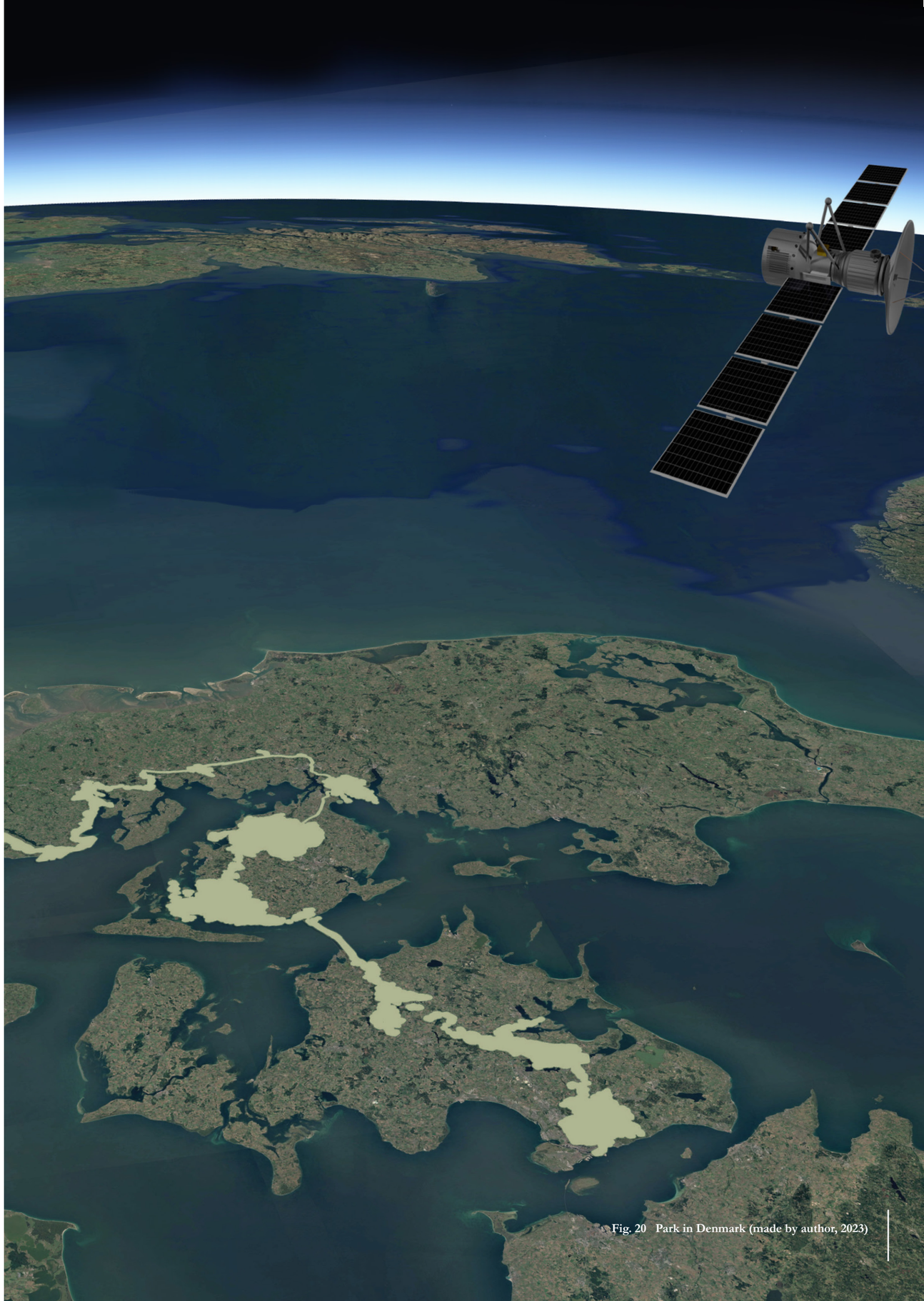


Fig. 20 Park in Denmark (made by author, 2023)

Tomorrow's (P)ARK

(P)ARK

15 879,11 km^2

1587953,76 *ha*

(Perimeter: 5102261,29 m)

Copenhagen
Snoghoj
Slagelse
Flesburg
Svendborg
Zwolle
Lübeck
Hamburg
Groningen
Oldenburg
Bremen
Assen
Zwolle
Amsterdam

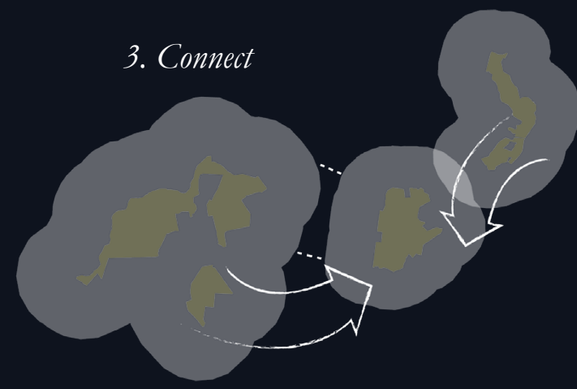
1a. Extend *or* *1b. Create*



2. Protect



3. Connect



4. NEW

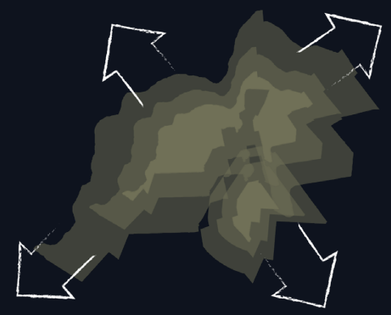


Fig. 21 Form of the Tomorrow's (P)Ark (graphic made by author, 2023)

Amsterdam- Copenhagen

WALK

Amsterdam - Copenhagen

1681 km.

451,14 hours

Connections



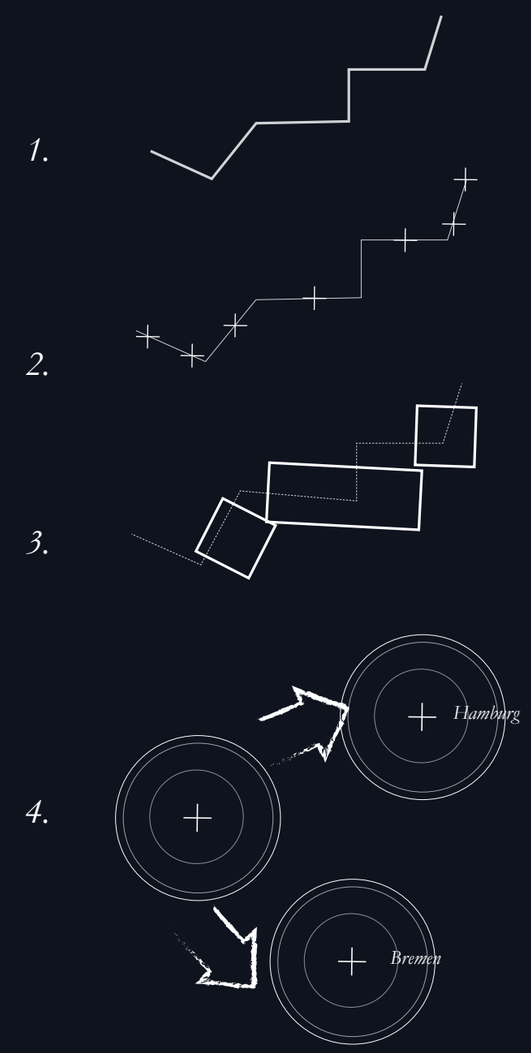


Fig. 22 Walking through Tomorrow's (P)Ark (graphic made by author, 2023)

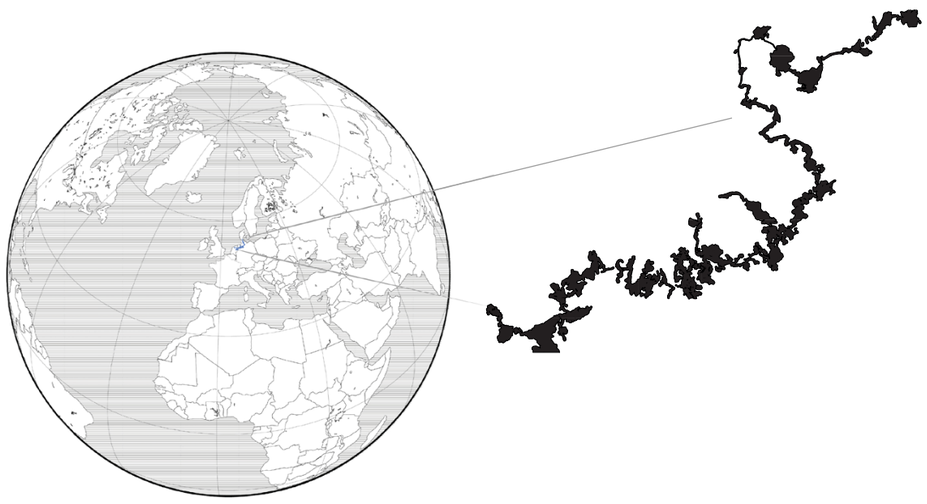
Continuous network

The aim is to create a new pattern, a form of a national park. But at the same time, it is primarily about the concept of a continuous landscape and nature network. That is the fundamental difference between the current form of selective protection of certain landscape segments and where we want to go - towards a coherent network that connects them and creates a strong unified structure instead of scattered elements.

The principles that lead to the creation of such a structure are depicted on the previous slide (fig. 18 & 19) and described in detail in the Design Principles chapter located on page 138 Specifically, the following broad principles are represented: Extend/Create, Protect, Connect, Fill and Renew. However, the most important role here is played by the creation of an imaginary one-kilometer buffer, which is based on the existence of current protected areas that play an indispensable role in such an endeavor. Without the existing biodiversity resources, we cannot expand and strengthen genetic and species biodiversity in general. Alternatively, we could collaborate with geneticists, but I believe that would be much more demanding financially and in terms of implementation.

This interconnected network is fundamentally a simple holistic idea that aims to connect the fragmented pieces of the wilderness puzzle and find ways to integrate elements such as the city into a purely green, wild environment. Once the area for implementation is determined, we can start applying specific techniques and practices that will contribute to rewilding.

The main goal of this work is to highlight the importance of connection and a unified natural synthesis in today's overly urbanized world. Relationships and connections play a crucial role in a successful and functional living environment because everything is interconnected. A forest, even a dry forest, depends on a stream, and the stream depends on the vegetation that protects it from high temperatures to maintain water quality, and so on. I am confident that through such efforts, we can not only rectify fatal mistakes in understanding and treating the landscape but also address the perennial conflict between human beings and nature.



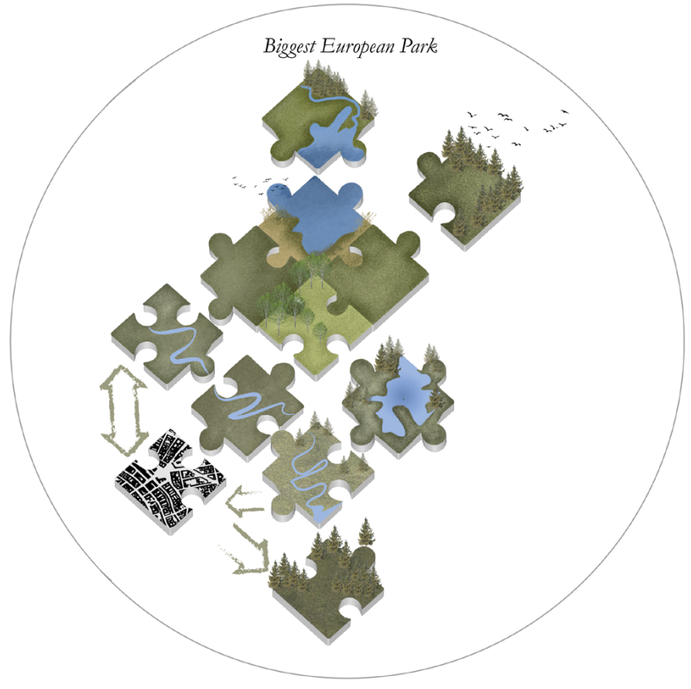


Fig. 23 Nature Puzzles (Made by author, November 30, 2022)

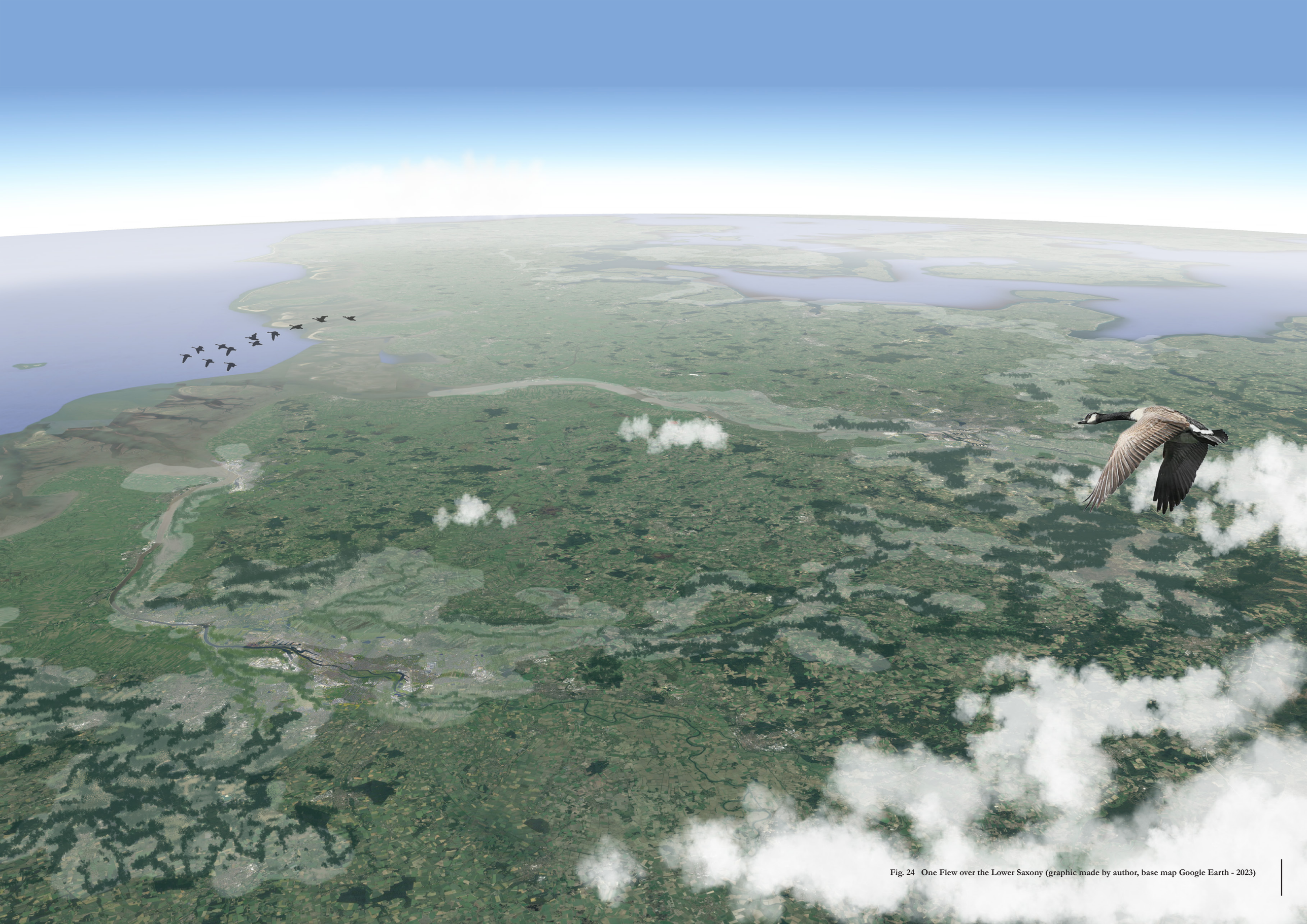


Fig. 24 One Flew over the Lower Saxony (graphic made by author, base map Google Earth - 2023)

2

Structure and theory

Research Onjective
Research Framework
Methodology
Theoretical Framework
Richard Weller – WORLD PARK
Van Gogh National Park- “New Style”
De-Growth/ Post-Growth Theory
Bioregionalism
R. R. Forman – Landscape Ecology Principles
Rewilding theory
CONCLUSION

Research Objective

This chapter will deal with the theoretical structure and background of the project. In the introduction, the fascination, problem field and aim of the project is explained. Subsequently, a research objective and research questions are formulated.

The objective of this thesis is to:

“Design the biggest continuous Nature and Landscape Network of North-West Europe, and create initiatives for the Protection and Restoration of Biodiversity, by studying how landscape connectivity and rewilding can create a habitat for all species to share.”

To reach this objective and give answer to the main research question -

“How can landscape connectivity and rewilding be used to design the biggest continuous Nature and Landscape Network of North-West Europe, and create a habitat for all species to share?”,

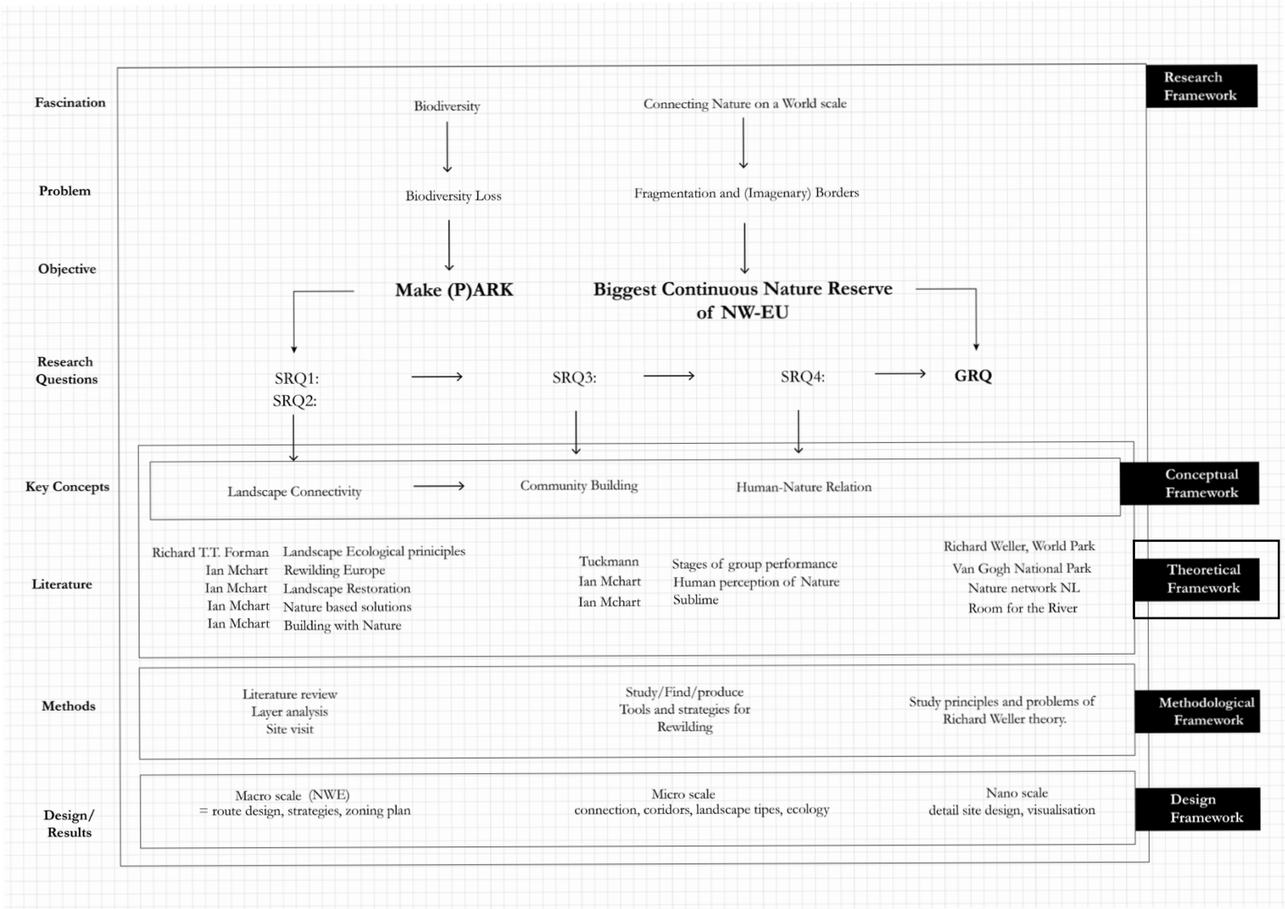
- the research is divided into smaller sub-research questions (see on next page). The first two sub-questions are of a more theoretical and analytical character, the last two sub-question are looking for the best design solutions, using the results of the prior questions.

The structure of the overall research, and how each sub-question contributes to the objective will be discussed in more detail in the research framework and the methodology.

STRUCTURE

Objective	*Design the biggest continuous Nature and Landscape Network of North- West Europe, and create initiatives for the Protection and Restoration of Biodiversity, by studying how landscape connectivity and Rewilding can create a habitat for all species to share.*	
GRQ	**How can Landscape connectivity and Rewilding be used to design the biggest continuous Nature and Landscape Network of North- West Europe, and create a habitat for all species to share?**	
Sub-Research Questions - SRQ		
SRQ1	How does landscape connectivity impact Biodiversity and ecosystem services, and what are the potential consequences of fragmentation?	**Chapter 1**
SRQ2	How can the human experience of Nature and the Landscape be integrated into the design of a continuous Nature and Landscape Network in North-West Europe, and what are the potential benefits of this approach?	**Chapter 2**
SRQ3	What are the most effective Rewilding design strategies for promoting landscape connectivity and preserving natural habitats?	**Chapter 2**
SRQ4	What are the different types of nature ecosystems present and how do they relate to the overall biodiversity and landscape connectivity in this area?	**Chapter 3**

Research framework



Research framework shows the overall structure of the research. From top to bottom, it describes the steps that are taken in relation to their own corresponding framework.

The introduction, together with the structure and theory chapter explains the fascination and motivation, the problem and aim, and the methodology and research structure of the thesis.

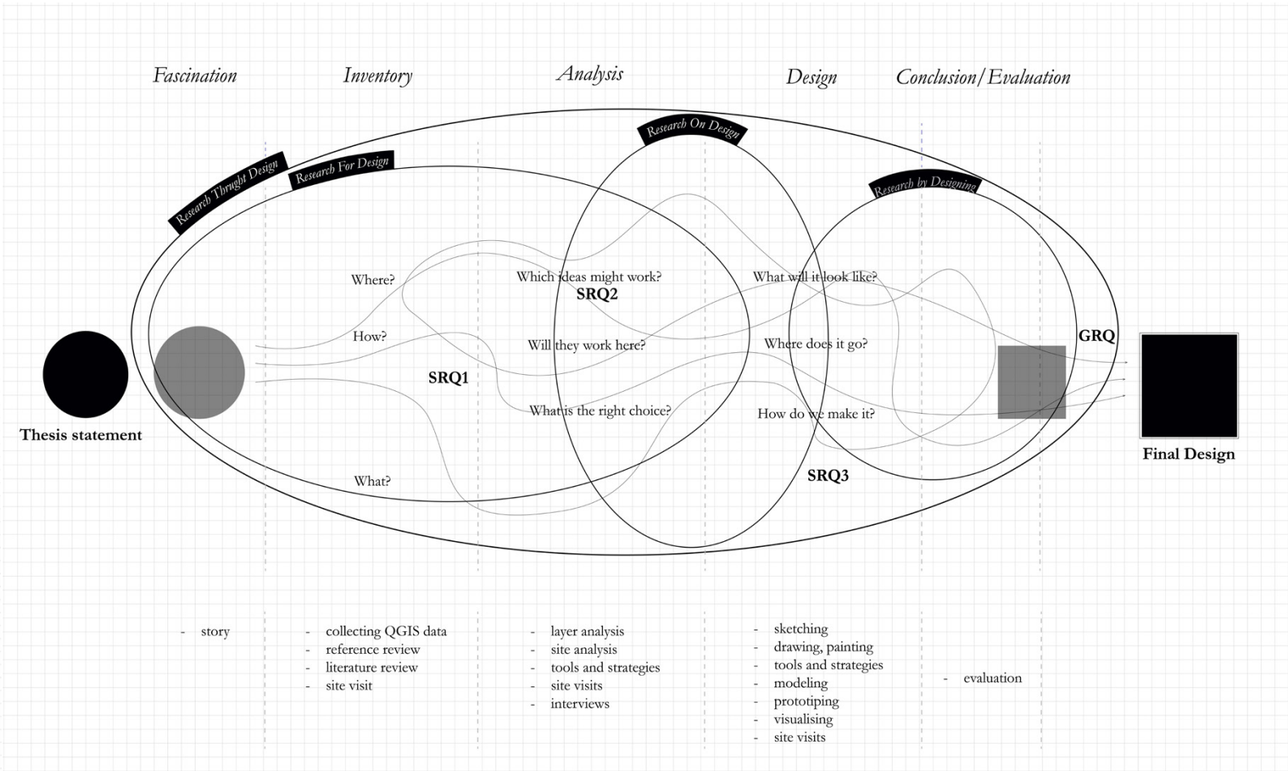
Each sub-research question is focused on a key concept, shown in the conceptual framework, and is studied each in their respective chapter. The first part will be of a theoretical character, informing the analysis part of the thesis. Afterwards, the results will enter the design framework, where the research through design process will look for the best design solutions.

The design will be conducted throughout different scales. Ultimately, the design together with all the answers on the sub-research questions will work towards giving a complete and fulfilling answer to the main research question.

In the methodology section on the next page is described what approaches will be used to achieve this. Unlike the research framework might suggest, this is not a linear process but will be adjusted accordingly throughout the research.

STRUCTURE

Methodology



The main methodology, or strategy, used in this thesis is in line with what many (Steenbergen et al., 2002, 2008; Deming and Swaffield, 2011; Nijhuis & Bobbink, 2012; Groat & Wang, 2013; Lenzholzer et al., 2013, 2017) have described as **'research through design(ing)'**.

As shown in the figure above, each stage of the project will make use of various methodologies. The road towards a final design is not linear, but rather an iterative process. Throughout the project, at any time, the process will be questioned and adjusted if necessary. The research questions will guide this process.

The methods used should reflect all the skills and knowledge gained during my studies. A combination of digital and analog methods, like sketching, (GIS) mapping, modeling and others are used.

By studying other's work, the design process will be theoretically supported (research for design), and by researching possible design interventions (research on design), the right considerations for the final design can be made. Ultimately, the research by design phase represents the process of testing different designs and selecting the option(s) that best answers the research questions, and is in line with the conditions formulated in the theory chapter.

Theoretical Framework

This chapter will include the 'research for design' part as mentioned in the research framework. To support the design, first the question WHY? needs to be answered. This is partly been covered by the problem statement, but this theoretical background will elaborate by studying three main groups of supportive literature:

(1) It all starts with analysing the fascination for continuous landscape design, embodied by the World Park project by R. Weller (2020). On top of that similar efforts like the Van Gogh National Park will be studied to learn from precedent projects alike.

(2) To support the analysis, we need to develop a sound picture of the societal context in which we will design. This part provides an overview of the paradigms in which the design will work. It will try to answer the questions about 'What is right?' and 'Will it work (here)?'

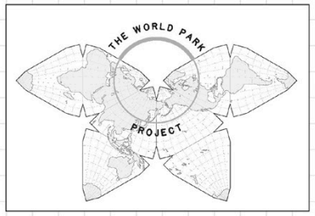
(3) The third part aims to answer what ideas might work, and how they will work. Literature from various fields are studied to provide the right tools to begin designing. These principles will later in the research by design method be used in combination with site specific analysis, embedded within the societal context.

The aim is to bring an useful academic contribution to the field of landscape architecture that builds on previous theories, but on itself will be inspiring, intriguing and maybe even provoking. It should bring forward landscape architecture both as an academic discipline, as well as a professional field, by contributing with new knowledge and inspiring ideas. Specifically landscape architects are capable to combine work of other professions and show new and innovative solutions using systematic thinking and creative designs.

The purpose is to look beyond the possible or likely futures, but imagine what futures will be preferable, even though they are not (yet) possible.

STRUCTURE

Ispiration



World Park (2020)
Richard Weler

In the 19th century, we had national parks. The 21st century needs a new model for a global culture: a world park (R.Weller, 2020). The World Park is a continuous landscape of restored habitat with three major walking trails reaching from Patagonia to Alaska, Namibia to Turkey, and Australia to Morocco. The World Park connects 19 biodiversity hotspots, 55 nations and secures 163000 km2 of habitat for all species to share.



Van Gogh National Park
Province of North Brabant, NL

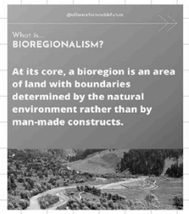
Van Gogh National Park org.

Rewilding is a progressive approach to conservation. It's about letting nature take care of itself, enabling natural processes to shape land and sea, repair damaged ecosystems and restore degraded landscapes. Through rewilding, wildlife's natural rhythms create wilder, more biodiverse habitats.

Paradigm



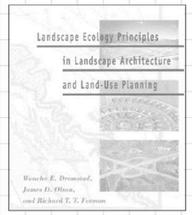
Degrowth theory
New economic paradigm



Bioregionalism
Allan Van Newkirk

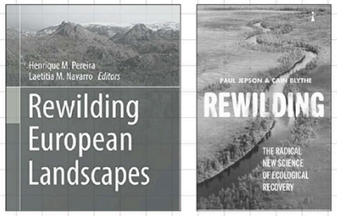
Theory of explorint the possibilities of developing a relatively non- arbetrary method of planning for the wild biological realities of landscape.

Instruments



Landscape Ecology Principles
Richard T.T. Forman

Landscape ecology has emerged in the past decade as an important and useful tool for land-use planners and landscape architects. While professionals and scholars have begun to incorporate aspects of this new field into their work, there remains a need for a summary of key principles and how they might be applied in design and planning.This volume fills that need. It is a concise handbook that lists and illustrates key principles in the field, presenting specific examples of how the principles can be applied in a range of scales and diverse types of landscapes around the world.



Rewilding Theory

Rewilding is a progressive approach to conservation. It's about letting nature take care of itself, enabling natural processes to shape land and sea, repair damaged ecosystems and restore degraded landscapes. Through rewilding, wildlife's natural rhythms create wilder, more biodiverse habitats.

Rewilding European Landscapes

Richard Weller- World Park

The World Park is a novel conservation initiative led by Richard Weller and his team at the Department of Landscape Architecture at the University of Pennsylvania, which aims to connect 19 biodiversity hotspots and secure 163,000 km2 of habitat across 55 nations for all species to share (R.J.Weller, 2020). This ambitious project has been in the making for several years and seeks to restore landscape connectivity in regions where the original habitat for many species has been depleted by at least 70%, putting them under imminent threat of further destruction (Parksjournal, 2021).

The World Park project is based on real data and requirements set by the UN, as well as the need to stop the massive loss of animal biodiversity that we are currently facing and that we ourselves have caused. The authors criticize the current way of protecting nature and rely on some critics such as Dan Brockington, R. Duffy, and J. Igoe, who wrote the book „Nature unbound: Conservation, capitalism, and the future of protected areas“. They are concerned about the current situation in which we are only expanding territorial protection instead of creating coherent and meaningful strategies and initiatives that offer a clear vision of the landscape‘s shape and message.

The authors of the project responded to the call for a new spatial form of nature conservation and more inclusive land management. This new form of landscape protection connects nations, countries, and private landowners with the aim of creating a continuous international/planetary park linking protected and restored habitats for both conservation and recreation purposes.

The World Park project emphasizes the physical and psychological act of walking as a means of promoting cardiovascular and pulmonary fitness and general well-being. While the park offers picturesque scenery along its trails, its greater mission is to focus on ecological reconstruction of denuded lands between destinations, inviting walkers to stop and work towards this goal.

The planning and design of the trails and restoration projects require the expertise of local stakeholders, governments, and Indigenous people. The World Park Rangers, a global corps of young people interested in conservation, would undertake various projects such as trail and campsite construction, reforestation, and wildlife rehabilitation. The World Park Project provides funding and coordination assistance to tailor each portion of the trail to actual ground conditions, cultural requirements, and species needs.

Overall, the World Park project is a new approach to conservation that seeks to address the crisis of biodiversity loss. It offers a vision of a connected global landscape that links protected and restored habitats and provides opportunities for both conservation and recreation.

STRUCTURE

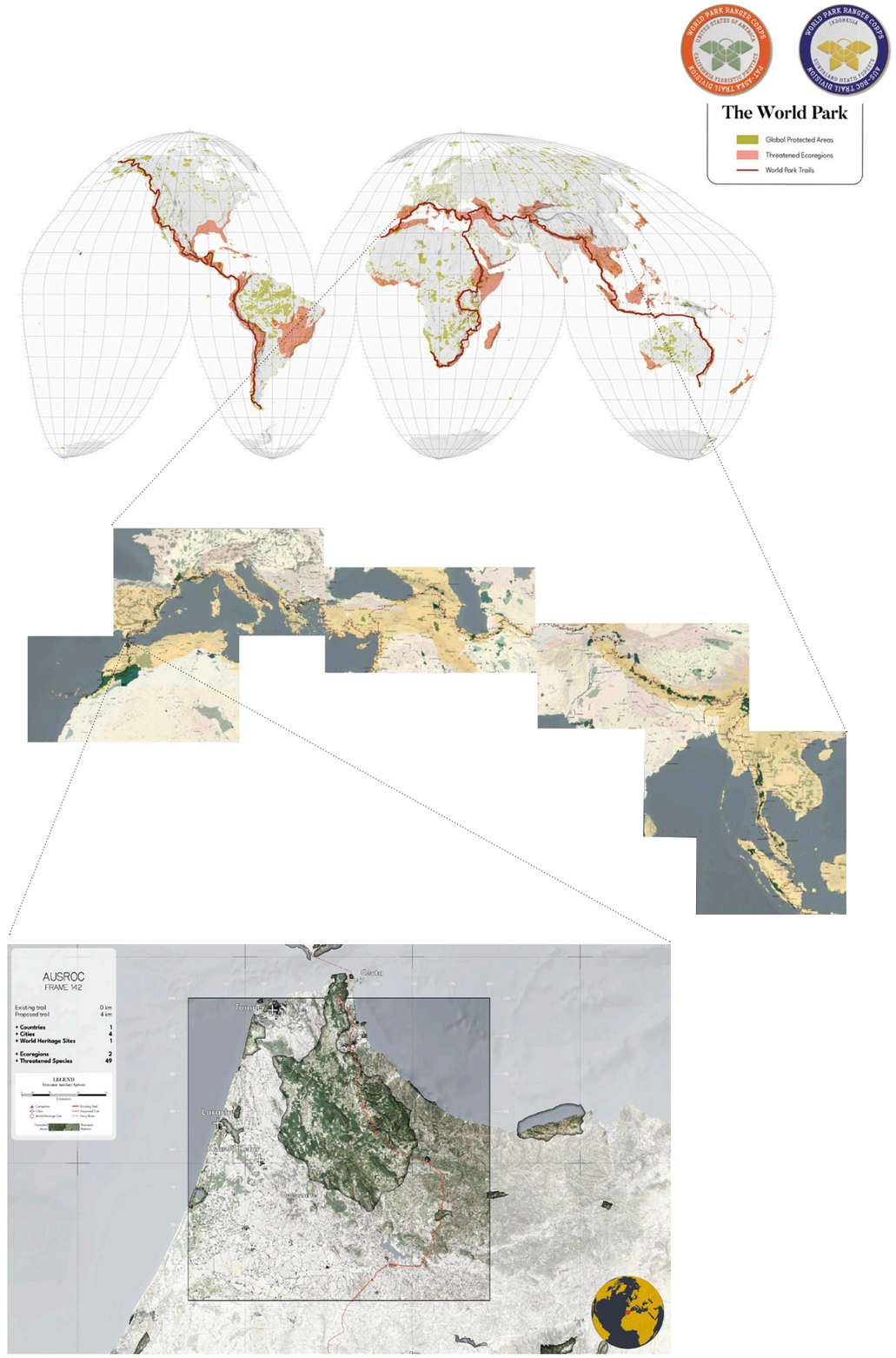


Fig. 25 World Park Project (made by Prof. Richard Weller and his students, 2020)

Van Gogh National Park "New Style"

Worldwide, there are various definitions of a 'National park'. The challenges we face in nature conservation, bring people to think about new models of national parks. As well in the Netherlands, where since the decentralization of nature policy in 2011 there has been a continuous effort to come up with a new vision for 'National Parks of World Class'. There has been established a 'Standard for National Parks' (Bureau National Parken, 2018) to test the status (and applications) the national parks new style. The strategical goals aim for:

(1) An increase the quality of nature, heritage, experience and space;
(2) An improvement in the quality of NPs by looking for synergies with agricultural, energy, and climate challenges;
(3) A more attractive NP and increase in number of international visitors;
(4) A stronger connection of nature and society;
(5) A stronger market position and branding for the NPs.

So far, the new standard for national park has been unsuccessful to operate within the current Dutch Nature Law. The inclusion of cities, villages and farmland seems to be one of the biggest obstacles. Other then that, critics ask for adopting an international standard like using the UNESCO's (Twynstra Gudde, 2021).

Nevertheless, the program has started a movement of thinking differently about nature conservation, that has generated some interesting results. Firstly, there is a trend of inlcluding national parks in a larger context. The reason for this (Nationale Parken Bureau, 2018) is that bigger landscape parks can have a better branding and international status. Furthermore, in a man-made country like the Netherlands, agrarian and cultural landscapes are a fundamental part of the natural domain. Unfortunately, these landscapes are often under the biggest pressure and for that reason more difficult to match with the 'traditional' definition of natural area.

But by excluding the broader landscape, and putting a fence around our small patches of 'real' nature, we miss an opportunity for larger systematic thinking that could benefit both. The Van Gogh National Park aims to do that. Although the park has no official status yet, there are already more then 50 partners involved and several succesful pilot projects are carried out. By using Van Gogh's legacy, the park will have international appeal, and makes nature conservation park of a larger narrative in which every intervention in the public domain matters, becasue it is part of this larger narrative about improving spatial quality in general.

In conclusion, if we want to take nature conservation seriously, we have to see it in a larger context. We have to absolutely make sure that the current condition of our natural landscape will not collapse further, and after that find new legislative forms, or innivative pilot projects that will stretch beyond the borders of our natural areas and incluse larger landscape systems that can deal with the challeges we face on a systematic level. A stronger identity, and thourough collaboration can help with that, but still requires a lot of imagination and political will.

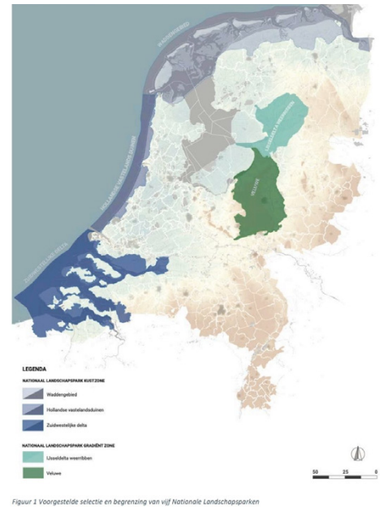
STRUCTURE



Fig. 26 Van Gogh National Park Vision (VanGoghNP, 2023)



Fig. 27 Dutch National Parks (in formation*)From: www.nationaleparkenbureau.nl



Figuur 1 Voorgestelde selectie en begrenzing van vijf Nationale Landschapsparken

Fig. 28 National Landscape Parks of World Class From: www.nationaleparkenbureau.nl/

Degrowth theory

As we are potentially approaching the end of the neo-liberal world order, we see institutions adopting or flirting with alternative economic models. Perhaps the most well known example is the circular economy. While it is evidentially good to minimize waste and optimize use of recourses, this economic model is so neutral that it can be used for almost any kind of social ecological policy (Savini, 2022).

The dominant policy response to climate change and ecological breakdown, opted by governments as well as the sustainable development goals (EEA, 2021; UNRIC 2022) is the notion of green-growth. Dependent on eco-modernistic, technical solutions and substitutions, green growth theory asserts to absolutely decouple (see fig. 26) GDP growth from resource use and carbon emissions (Hickel & Kallis, 2020). In their study based on historical trends and model-based projections, Hickel and Kallis (2020) found that there is (1) "no empirical evidence that absolute decoupling from resource use can be achieved on a global scale against a background of continued economic growth, and (2) absolute decoupling from carbon emissions is highly unlikely to be achieved at a rate rapid enough to prevent global warming over 1.5°C or 2°C, even under optimistic policy conditions."

Alternatively, Post-growth thinking is an approach that opposes green-growth, by stating that infinite growth is not possible on a finite planet. "Post-growth thinking happens as soon as one accepts that there are planetary boundaries which cannot be respected if industrialized societies double their economic output every 23 years or so (assuming a growth rate of 3% per year) (Savini, 2022)." For that reason post-growth thinking is not a strategy, but is simply recognizing that the solution for our current social-ecological challenges should not lie in finding new technologies but require a system change.

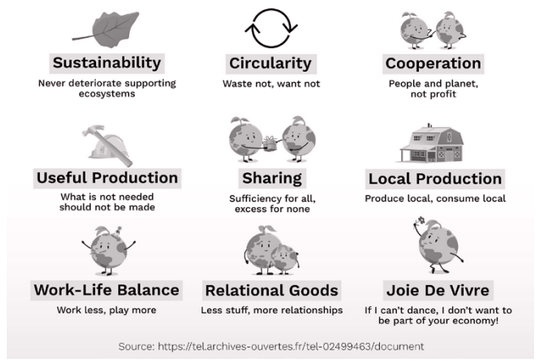
Economist Kate Raworth (2017) developed a tool known as the Doughnut model, increasingly used by policy makers. Cities like Amsterdam, Copenhagen Brussels, and Glasgow already adopted this tool (Nugent in Time, 2021). The doughnut's inner circle represents our social foundation, the outer boundary our ecological ceiling. The tool helps to analyze on which sectors we fall short, or where we overshoot our ecological ceiling.

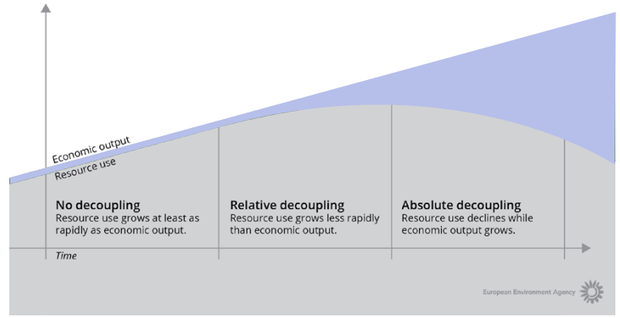
The De-growth theory argues that this overshoot can only be solved by limiting excess consumption and production. While its true that the past decades we have become much more efficient in terms of production, we also consume more. The speed at which natural systems decline, can simply not wait for technological solutions. We need to reduce the demand, and distribute resources more evenly.

The problems we face are so urgent that the most effective solution is to reduce our excess consumption and give more space to nature. We have to realize that for years we have exploited our natural systems without compensation. It is obvious that transforming from a non-sustainable economy to a sustainable one, while demanding compensation within the current growth oriented paradigm will cost money. The consequences of biodiversity-loss and climate change, arguably, will cost more. Instead of thinking about growth in GDP, a modern society can now afford to think of growth in terms of wellfare, beauty and a healthy society.
That is what the (P)Ark projects wants to express.

STRUCTURE

Principles of Degrowth





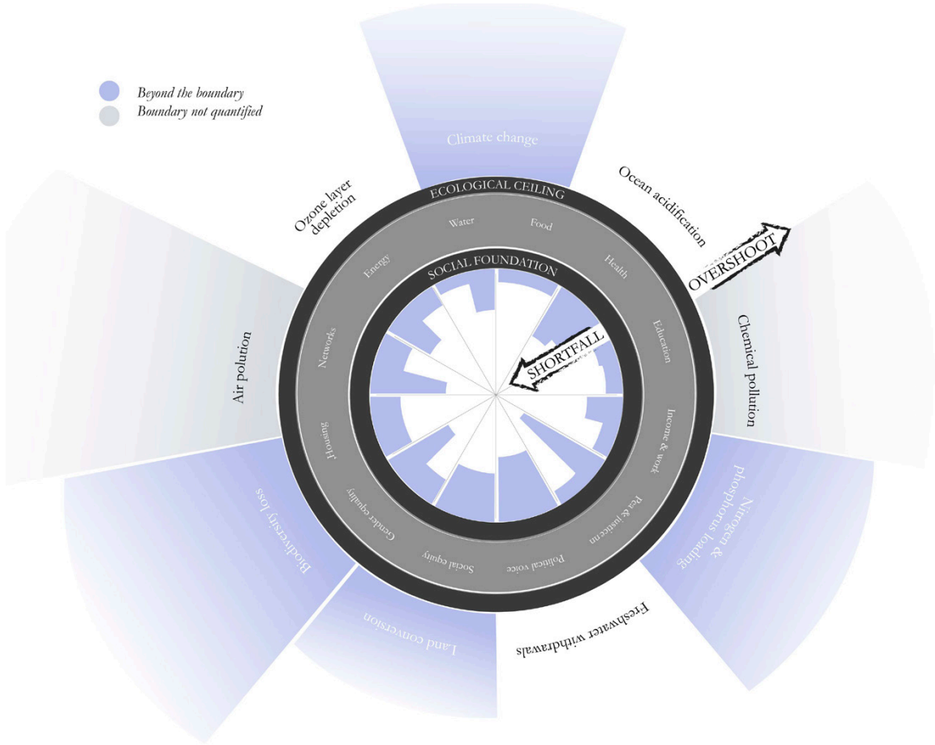


Fig. 29 Doughnut Economy (Raworth, 2017)

Bioregionalism

While biodiversity loss is a global problem, nature conservation is mostly concerned with clearly defined, national or regional areas. of course, nature conservation organizations, operate nationally and sometimes internationally, but their actual impact is directed at a smaller scale, simply because we, as a society, like to have clear borders. But when you think about it, 'nature' is not limited to the imaginary borders humanity created, only by the impact of human intervention (which can change drastically once one of these borders are crossed).

For example, by naming a 'protected' nature area, it implies that outside of this area nature matters less, and therefore we can often see a sharp contrast between what is perceived natural and cultural. While essentially, nature is everywhere and should be(come) an integral part in every part of how we structure our society. **Bioregionalism** tries to bridge the growing gap of the ecological and the cultural by re imaging and reshaping the meaning of boundaries.

The term bioregionalism, introduced by Allen van Newkirk (1975) has been introduced to "explore the possibility of developing a relatively non-arbitrary method of planning for the wild biological realities of landscape." Sale (1985, p. 43) describes a bioregion as 'a place defined by its life forms, its topography and its biota, rather than human dictates; a region governed by nature, not legislature.' A bioregion is defined in a very flexible way by natural, ecological boundaries, especially the watershed (catchment or drainage basin). 'Bioregionalism stands opposed to global monoculture and supports regional diversity (Alexander, 1999).'

There are many ways to map and distinguish bioregions, but perhaps the mapping itself here is the most important activity. This allows us to better understand the natural conditions and processes and in return helps us to determine its ecological limits. As an example, in North-West Europe a potential bioregion is the coastal landscape and hinterladn around the Waddenzee. Covered by the Netherlands, Germany and Denmark, these three countries share a similar socio-cultural background, have similar economies, and are all located on the north european plain sharing similar flora and fauna.

While some go as far as creatin their own independence group (i.e. the Cascadia Bioregional Party), this thesis will use the concept like Thomashow (2001) describes it as "an alternative framework for governance, the idea above all represents a cultural vision that addresses moral, spiritual and aestethic concerns. It changes not only the boundaries of governance, but the boundaries of perception as well. Indeed, the reinhabitation of landscape is fundamentally a challenge of perception as well as citizenship."

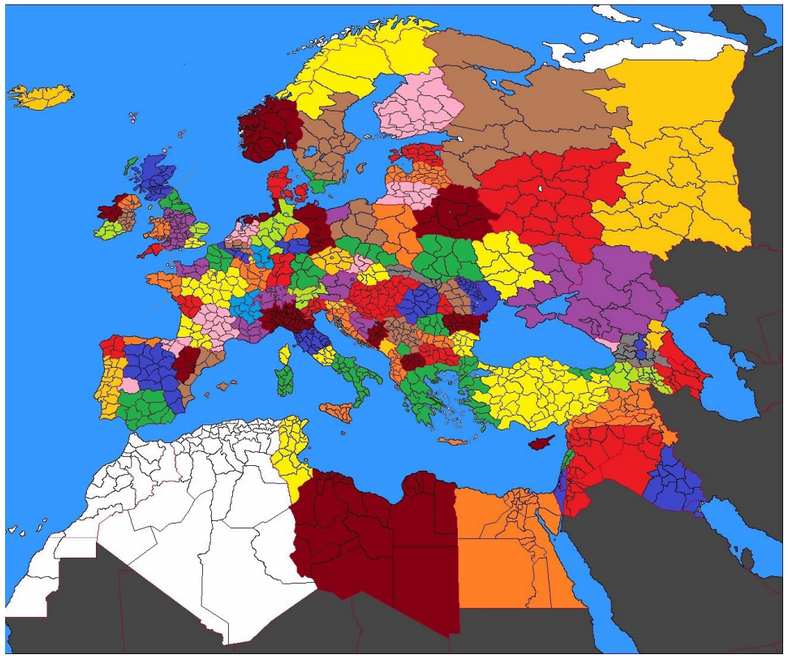


Fig. 30 Europe perceived as bioregions? (The alternative, 2000)

Fig. 31 Map of Europe with bioregions and sample size per country (Kaijser , Birk & Hering, 2022)

Landscape ecology principles

Biodiversity must be conserved as a matter of principle, as a matter of survival, and a matter of economic benefit. (UNEP,IUCN & WWF,1992)

Landscape ecology can be broadly defined as the science and art of understanding and enhancing the interplay between spatial patterns and ecological processes across diverse scales and organizational levels. " It's not only a field of study but also represents a new scientific perspective or paradigm that is relevant to a range of ecological, geophysical, and social sciences (Wu J, Hobbs R, 2007). The ultimate goal of this endeavor is to provide a scientific foundation and practical guidelines for the development and maintenance of environmentally, economically, and socially sustainable landscapes.

These practices have been employed for several decades but they needed key principles. It is for these reasons that a group of authors decided to publish a comprehensive handbook that explores and presents the fundamental principles and concepts of landscape ecology, which can be applied at various scales, with the aim of mitigating the landscape fragmentation and degradation that is increasingly evident in our surroundings (Wenche E. Dramstad, James D. Olson & Richard T.T. Forman, 1996, page 7).

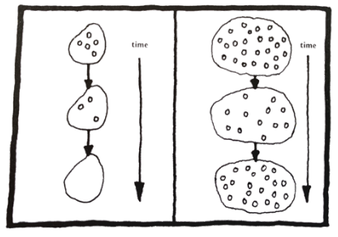
This book explores various topics related to landscape structure, connectivity, fragmentation, scale, and dynamics. It is divided into sections, the first of which focuses on the principles used to enhance natural connections in the landscape. The second section primarily delves into practical applications and provides compelling examples across multiple fields.

The initial chapter encompasses subsections such as Patches, Edges, Corridors, and Mosaic. From these subsections, key principles are selected on the following pages (see fig. ...) . These principles offer fundamental insights into the functions of individual landscape elements or present crucial facts that need to be considered.

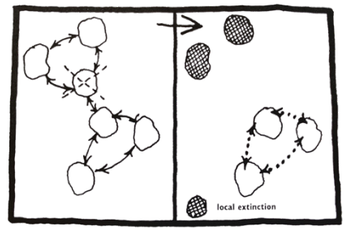
• The first row of selected principles for Patches discusses the potential disappearance of elements based on their size and provides guidance on selecting appropriate patches for conservation purposes.
• The second row emphasizes the importance of eliminating sharp boundaries or blending edges.
• The third row addresses the selection of corridor tools, their sizes, and possible forms.
• Lastly, there is a group focused on suitable arrangements for a functional mosaic.

In conclusion, by understanding landscape ecology principles, professionals can make informed decisions and design interventions that promote ecological sustainability and conservation.

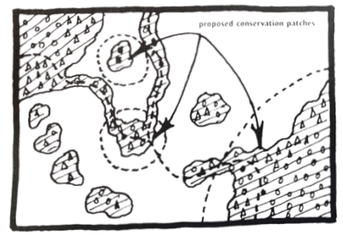
STRUCTURE



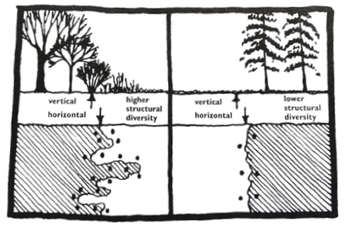
LOCAL EXTINCTION PROPABILITY



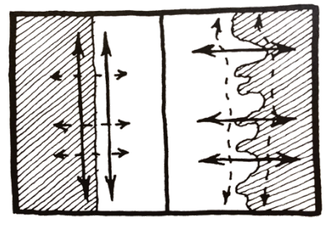
METAPOPULATION DYNAMICS



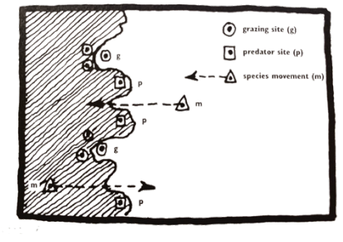
PATCH SELECTION FOR CONSERVATION



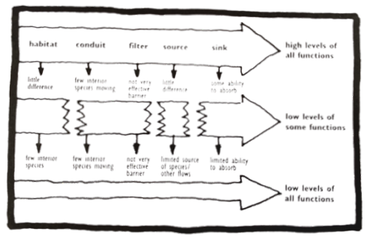
EDGE STRUCTURAL DIVERSITY



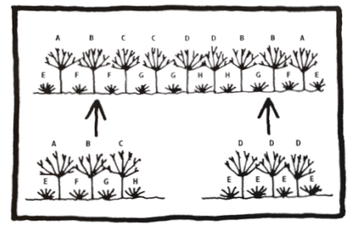
STRAIGHT AND CURVILINEAR BOUNDARIES



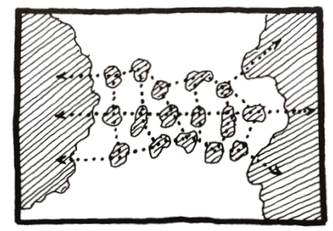
COVES AND LOBES



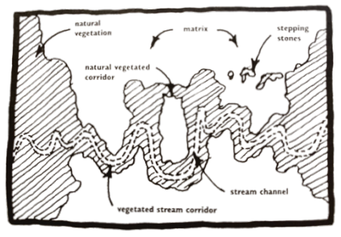
CONTROLS ON CORRIDOR FUNCTIONS



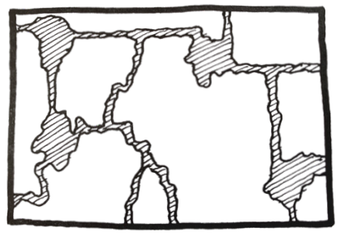
STRUCTURAL VERSUS FLORISTIC SIMILARITY



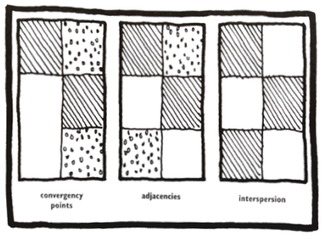
CLUSTER OF STEPPING STONES



LOOPS AND ALTERNATIVES



DISPERSAL AND SMALL CONNECTED PATCH



MOSAIC PATTERNS FOR MULTIHABITAT SPECIES

Fig. 32 Landscape Ecology Principles in Landscape Architecture (Dramstad, Olson & Forman , 1996, page. 20-40)

Rewilding theory

Rewilding is an innovative and inspirational way of restoring Europe's wild nature. By allowing natural processes to reshape and enhance ecosystems, rewilding can revitalise land and sea, helping to alleviate some of society's most pressing changes and creating spaces where nature and people can thrive in harmony. It's also about the way we think. It is about understanding that we are just one species among many, bound together in an intricate web of life that connects us with the atmosphere, the weather, the tides, the soil, fresh water, the oceans and every other living creature on the planet " (Rewild Europe, 2023)

One of the key reasons why rewilding is important is the urgent need to address the ongoing loss of biodiversity and the degradation of ecosystems. Our planet is facing a biodiversity crisis, with species disappearing at an alarming rate and habitats being destroyed or fragmented (Richard T.T. Forman, 1995, ninth print 2006). Rewilding offers a proactive and holistic approach to conservation, aiming to restore ecological balance and halt the decline of species and ecosystems.

Furthermore, rewilding acknowledges the intrinsic value of nature. It recognizes that ecosystems have inherent worth, regardless of their utilitarian value to humans. By restoring habitats and allowing natural processes to unfold, we are not only safeguarding the survival of species, but also preserving the beauty, diversity, and resilience of our natural world. This recognition of intrinsic value encourages a shift in our perspective, moving away from a purely anthropocentric worldview and towards an ecocentric mindset that appreciates the interconnectedness and interdependence of all life forms.

Based on real-world practice, I have summarized and subsequently visualized some significant procedures and guiding principles for rewilding distilled from validated studies (Carver et al., 2021) and information provided by organizations such as Rewild Europe, which are integral to this movement. These principles are spread across the following double page. The depiction of these principles is divided into practices and procedures primarily focused on plant and animal species and habitat restoration. The opposing page primarily focuses on the theoretical and social aspects of the matter, including maintenance, the importance of engaging local entities, schools, companies, or individuals. Lastly, I would like to emphasize the importance of involving experts, ecologists, and scientists who should monitor the success of the entire endeavor to restore wild nature on-site and in the long term. It is their task to analyze and draw scientific conclusions that can contribute to further development.

In conclusion the initiative aims to strike a balance between allowing nature to thrive autonomously and enabling people to derive economic benefits from it. It encompasses a range of attributes and opportunities that resonate with diverse stakeholders, including the European Commission and local landowners. This visionary approach to conservation represents a paradigm shift in Europe, with the overarching objective of cultivating a more untamed and natural European landscape in the twenty-first century.

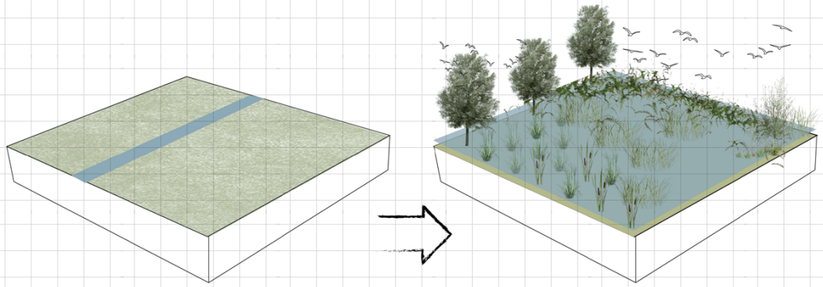
STRUCTURE



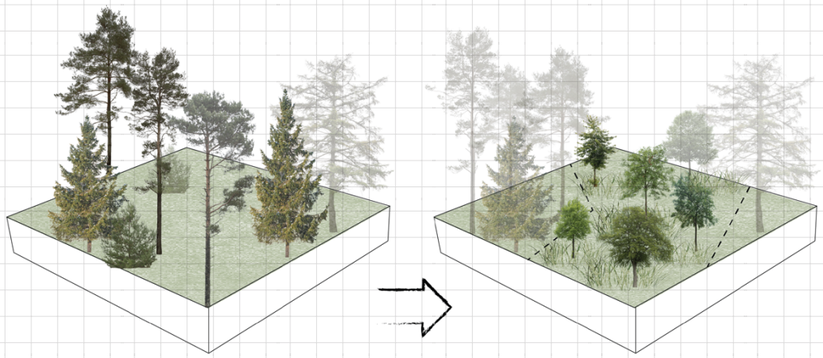
Fig. 33 European bison making comback (Rewilding Europe, Daniel Mirlea)

Rewilding principles

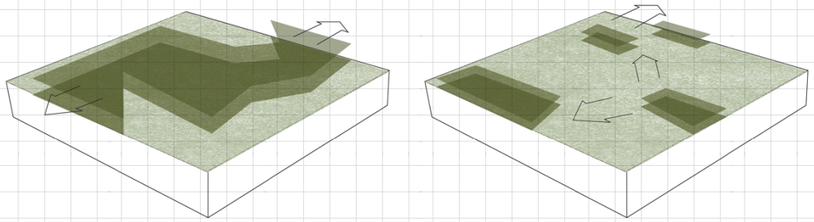
Habitat restoration



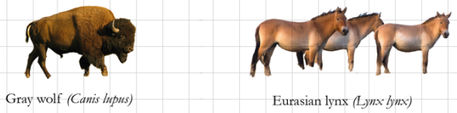
Species reintroduction



Connectivity



Predator reintroduction

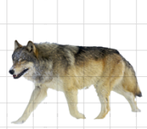


Gray wolf *(Canis lupus)*

Eurasian lynx *(Lynx lynx)*



Gray wolf *(Canis lupus)*



Gray wolf *(Canis lupus)*



Eurasian lynx *(Lynx lynx)*

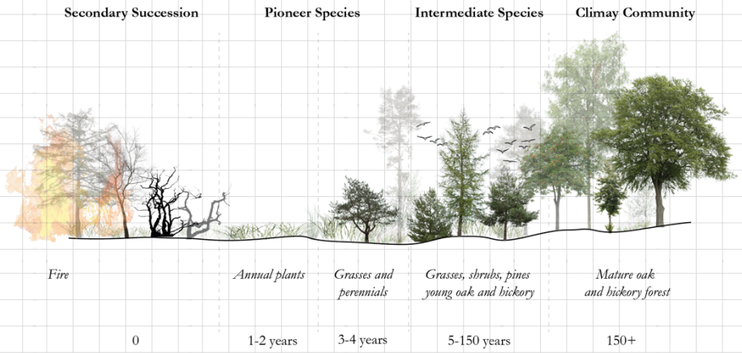


Golden eagle *(Aquila chrysaetos)*



Brown bear *(Ursus arctos)*

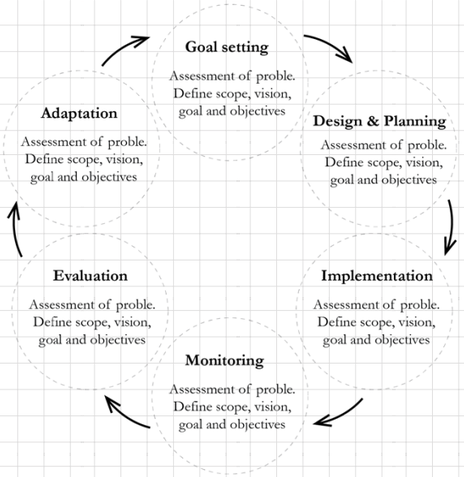
Natural disturbance



Public awareness and education



Monitoring & adaptive management

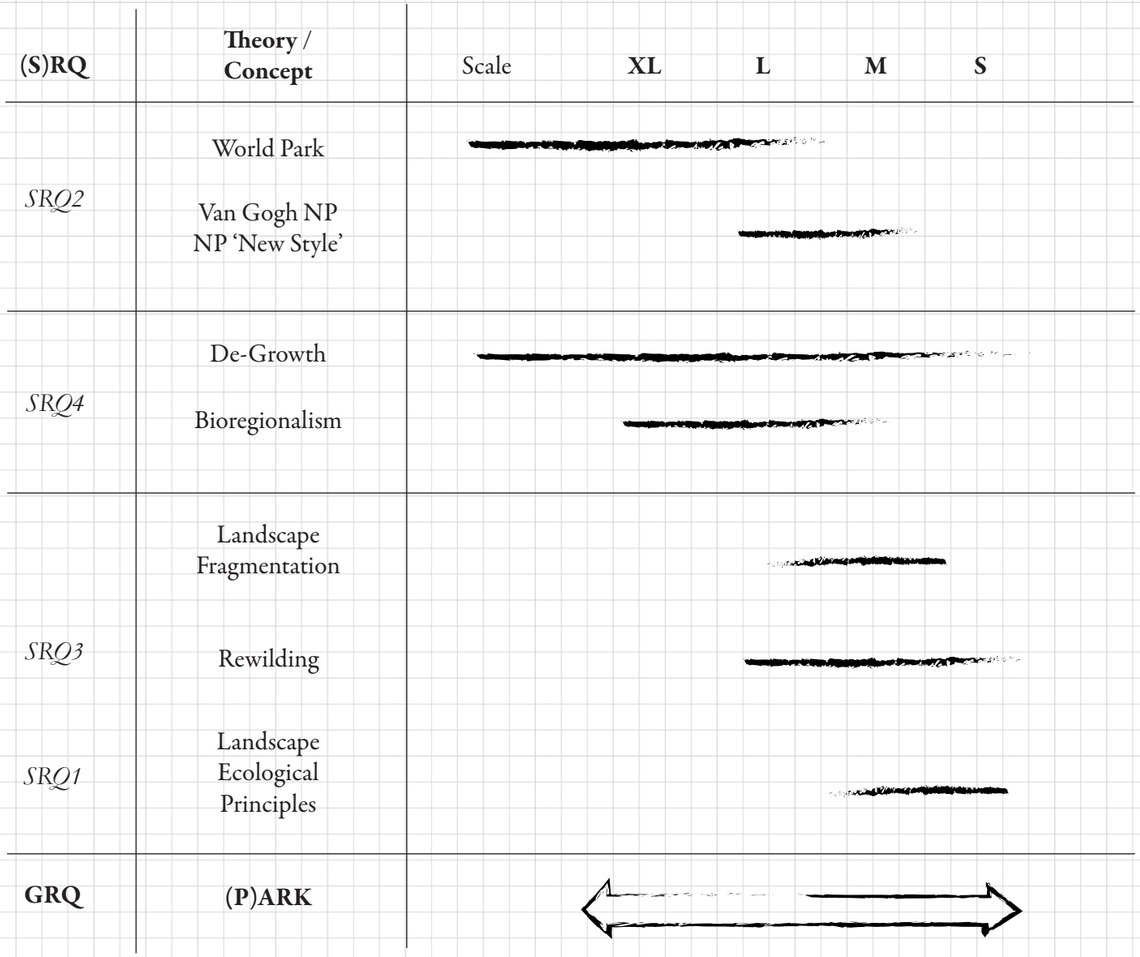


Colaboration and partnership



Fig. 34 Rewilding Principles (by Author, 2023; based on Carver S, et al. 2021, from https://conbio.onlinelibrary.wiley.org/doi/10.1111/cobi.13730 b)

Theoretical Framework



Conclusion

Based on an extensive review of the research papers presented earlier, the diagram on the preceding page clearly delineates the specific scales at which individual theoretical foundations are applied.

Implementation on XL:
For the largest scale, inspiration was drawn from the visionary approach of the World Park project. This project aims to create a structure of continental magnitude, as it is the appropriate scale to address the immense environmental impact caused by humanity. Additionally, the principles of De-Growth theory were incorporated, offering a highly functional model capable of determining the thresholds that delineate planetary boundaries. In essence, De-Growth theory advocates for a sustainable economy and promotes equilibrium.

Implementation on M:
At the medium scale, the formation of the Vang Gogh National Park in southern Netherlands was studied. This initiative seeks to integrate larger cities and communities into national parks, thereby fostering the understanding that nature transcends boundaries. The project has initiated a paradigm shift in nature conservation, yielding intriguing outcomes. Notably, there is a growing trend of contextualizing national parks within broader landscapes. The project is currently in the planning and participatory phase, playing a pivotal role in exploring practical experiences.

Implementation on S:
For smaller scales, the principles of Bioregionalism theory are employed, highlighting the advantages of incorporating natural characteristics into development and adaptation planning. Moreover, this theory serves as a valuable indicator for identifying suitable locations where similar concepts, such as the Tomorrow's (P)Ark project, could be realized.

As we delve into finer details, the reality of landscape fragmentation is confronted, a challenge that can be addressed through various design elements and principles offered by Landscape Ecological Principles. These principles categorize elements into corridors, patches, mosaics, or emphasize the importance of intermingling through the use of straight edges**. These fundamental components play a crucial role across all scales within (P)Ark, infusing the project with meaning within a broader context, while attending to intricate nuances.**

Implementation on S:
To further refine the approach, the tenets of Rewilding theory are turned to, aiming to reintroduce and rehabilitate diverse ecotopes, alongside the reintroduction of large wildlife species that play a significant role in the rewilding concept. By comprehending natural processes such as succession, erosion, water retention in landscapes, and the dynamics of plant communities, the transformative journey of (P)Ark can be visualized at a level of detail that enables local communities to envision the potential environmental outcomes.

In conclusion, it is worth noting that certain theories and literature intersect and weave through all stages and scales of the project, reinforcing the interconnectedness of the approach.

Multiscale Analysis

3

Through the scales
+Why North- West Europe?
Atlantic and Continental biroegions
1st pilar: Nature Systems
    Nature Dynamic
2nd pilar: Cities and Infrastructure
    Physical borders
    Landscape fragmentation Types
3rd: Spatial Structure of Cultural landscapes
    Problems of farming
4th pilar: Wahlking - Pathways Past
    Site visit
CONCLUSION: Advantages & Disadvantages

Through the scales

The project was developed and created through and between three scales, which provided the project with either context, meaning, or detail. Just as it is attached to the map, it is divided into XL, M, and S scales. This scale not only works with the design itself but also here in the analysis chapter. To understand and clarify the connections, it is necessary to say that the project started at the continental level with the XL scale, not as we are usually accustomed to with the S scale. Through research, academic studies, and literature, I first tried to find a suitable location where it would make ecological sense to build such an idea of an internationally scaled park. This selection was supported by other facts, such as a high percentage of landscape fragmentation. In other words, not only does northwestern Europe make sense based on bioregion, soil, and water conditions, but it is also one of the most urbanized landscapes that bring a range of problems, such as the functionality of ecological services.

Once the location was chosen, I began to delve into more specific aspects such as history, sociology, culture, and even national parks in the given area. With the M scale, which I refer to as regional, a predominantly similar process took place as with XL but involved much greater detail, allowing me to explore not only facts but also possibilities. My design through research, therefore, moved forward and backward; I proposed options and paths where it would be suitable to lead the park and always tried to verify and supplement them with characteristics of the locality. When the Hamburg-Bremen solution was selected, I started to dive into it in detail and explore, understand through sketches, modeling, intuitive design, or even site visits. And at this point, similar to the previous scale, I moved between M and S, up and down, and sometimes back to the context of Northeast Europe. Working with scales, therefore, was one of the most demanding tasks, literally not going crazy from it. I believe that in the final phase, I was able to not get lost.

In the following pages, you will traverse scales up and down, just like me in the process of work. But you will also browse through the pillars on which the project is built: Nature Systems, Cities & Infrastructure, Spatial structure, and Walking (experience of the landscape). Sometimes you will see large scales followed by small ones; however, all these elements are related to the project and have allowed it to develop down to the smallest detail, such as a tree.



Fig. 35 Overview of Scale (by Author, from Google Earth, 2023)

+ *Why North-West Europe?*

There are several reasons why this project is situated in the context of Northwestern Europe. Firstly, it is based on the theory of bioregionalism, one of the earlier mentioned theories. I sought to find a suitable environment where it makes ecological sense to connect nations through nature. After studying soil maps, geomorphology, and eco-regions, Northwestern Europe, with a specific focus on the Netherlands, Germany, and Denmark, emerged as the chosen region. These countries share a significant geological history and are among the largest lowlands on the planet. The landscape was shaped by the forces of water, including the sea, rivers, and glaciers, which created distinct features of the territory.

Within this geological plateau, we can find numerous similar natural configurations such as heathlands, mixed forests, wetlands, river valleys, open plains with low vegetation, dunes, and more. In terms of species diversity, these areas share a similar range of fauna dependent on the geological substrate. Considering that this region experiences one of the highest levels of fragmentation in Europe, it seemed like an ideal location for the project.

Another crucial factor is the cultural identity of the region. These territories have been influenced for centuries by resilient ancient cultures that interacted due to trade and their coastal locations. The specific groups include Vikings, Frisians, and Saxons. Within the settlement of the entire Wadden Sea area, we can also observe developmental similarities, such as the way of life on elevated mounds called terps, which were created by people over centuries to withstand the daily forces of the sea (tides, floods). Despite the passage of thousands of years, we can still perceive progressive trends in cultural and political arrangements.

Considering the current state of economies and developments in the aforementioned countries (NL, GN, DE), we can infer that these cultures have the capacity to invest similar resources into the development of such a progressive project with the goal of addressing one of Europe's largest environmental challenges. For these reasons, I wanted to focus on economically stable and progressive countries in their development. They can serve as an example and, if successful, help implement similar initiatives in the rest of Europe.

Data

AREA OF

NATIONS

Netherlands
Germany
Denmark

LAND AREA OF

14 900 km²

WATER AREA OF

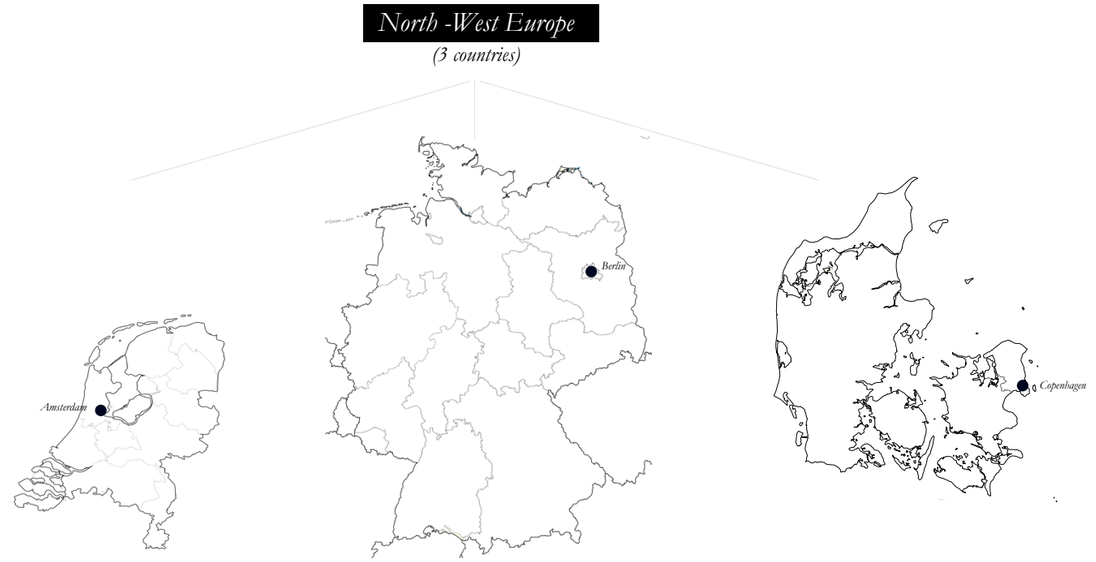
14 900 km²

POPULATION

20.81 milion

POPULATION OF

10.000.000 birds

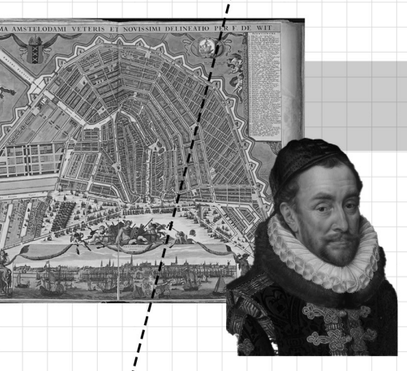


MULTISCALE ANALYSIS

Fig. 36 Timeline of Cultural History (by Author, 2023)

The Netherlands





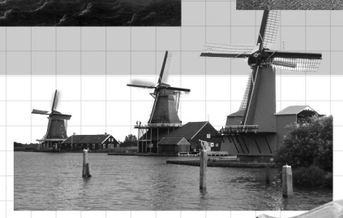
1275
Amsterdam

William of Orange



1566-1648
80 years' war













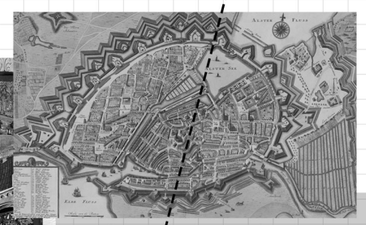
1930
NP Veluwezoom



Frisians

Funnelbeaker Culture

Roman Empire





Germany







Martin Luther





1970
Bavarian Forest NP







1614-1648
30 years' war

Otto 1

500
Hamburg

Corded Ware Culture

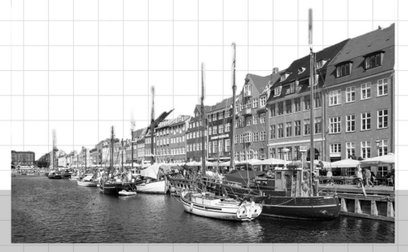
Saxons







Frederick VI of Denmark









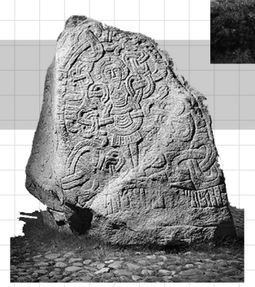


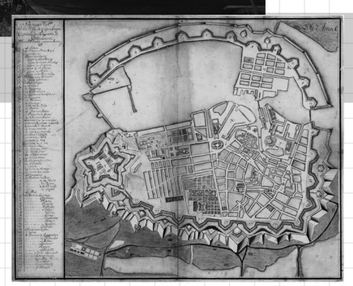
2007
Thy National Park

Vikings



Denmark





1176
Copenhagen

MULTISCALE ANALYSIS

Atlantic and Continental bioregion

The Atlantic Region, spanning from the United Kingdom and Ireland to Spain and Portugal, includes the Netherlands, parts of Germany, Denmark, Belgium, and France. Its proximity to the sea, combined with its flat and low-lying land, results in an oceanic climate that extends far inland, characterized by mild winters, cool summers, westerly winds, and moderate rainfall throughout the year. This region boasts more than half of Europe's extensive and diverse coastline, including the productive North Sea and North-east Atlantic Ocean. The dynamic coastline features a range of habitats, from wind-swept cliffs and rocky headlands to sandy beaches and intertidal mudflats.

The Atlantic Region is also home to several major rivers, such as the Gironde, Loire, Rhine, Thames, Seine, and Schelde, which create vast estuaries of significant economic and biological value. While the region may not exhibit the highest levels of biodiversity, it compensates with abundant animal populations. For example, the Waddensea alone supports approximately 12 million migratory birds at various times of the year. The marine environment benefits from the Gulf Stream, which brings warm currents and nutrient-rich waters from the Caribbean, creating an ideal habitat for a wide range of marine organisms. However, this productive ecosystem faces numerous challenges, including overfishing, pollution, abstraction, and shipping traffic.

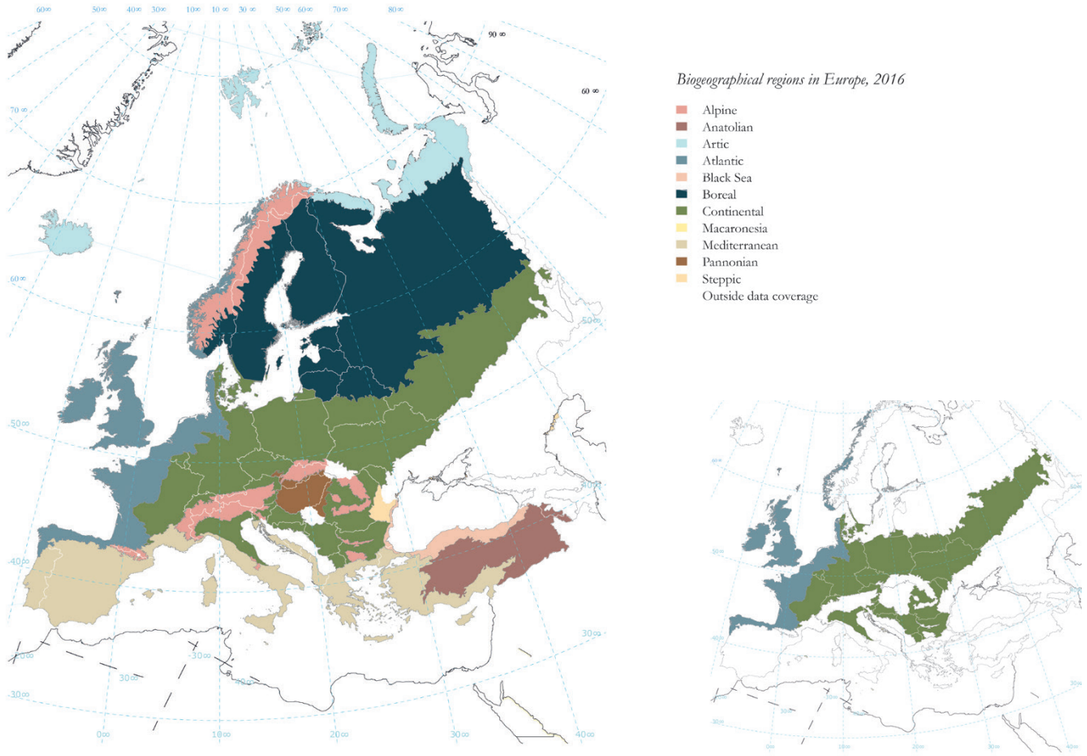
On land, the Atlantic Region has experienced significant biodiversity loss due to historical factors. The last glaciation and centuries of human exploitation have led to the alteration and degradation of natural environments. Forests, once dominant habitats, have been systematically cleared since the Middle Ages. The region's undulating topography and long growing seasons have facilitated the expansion of modern agricultural and urban areas, resulting in a predominantly artificial landscape. Natural and semi-natural habitats now exist as fragmented patches amidst an increasingly developed environment. Pollution from pesticide and fertilizer use, as well as industrial effluents, further contribute to the challenges faced by the region's ecosystems.

Nature conditions and systems in the Continental region of Europe are characterized by a unique blend of diverse ecosystems, varied climates, and remarkable biodiversity. The region boasts a wide range of natural features, including vast forests, expansive wetlands, majestic mountain ranges, and winding rivers.

One notable aspect of the Continental region's nature conditions is its exceptional forest cover. Sprawling forests, such as the Black Forest in Germany, the Białowieża Forest between Poland and Belarus, and the Ardennes Forest in Belgium, provide vital habitats for numerous plant and animal species. These forests not only serve as havens for wildlife but also play a crucial role in carbon sequestration and maintaining the overall ecological balance of the region.

Moreover, the Continental region is renowned for its extensive wetlands and river systems. The Danube River, Europe's second-longest river, flows through several countries in the region and supports a rich array of aquatic life. The Danube Delta in Romania, a UNESCO World Heritage site, is home to a diverse range of bird species and represents one of Europe's most valuable wetland ecosystems.

The region's mountainous areas, such as the Alps and the Carpathians, showcase breathtaking landscapes and harbor unique flora and fauna. These mountains provide important habitats for alpine species and offer opportunities for outdoor activities like hiking, skiing, and mountaineering. Additionally, the region's mountains contribute to the regulation of water resources, acting as natural water reservoirs and playing a crucial role in supplying freshwater to surrounding areas.



Wetlands	Northern Atlantic wet heaths with Erica tetralix European dry heaths Active raised bogs Transition mires and quaking bogs Alkaline fens
Coastal	Estuaries Salicornia and other annuals colonizing mud and sand Shifting dunes along the shoreline with Ammophila arenaria („white dunes") Fixed coastal dunes with herbaceous vegetation („grey dunes") Humid dune slacks Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
Rivers and lakes	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)
Grasslands	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe) Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)

Fig. 37 Biogeographical regions in Europe (European Environment Agency, 2022)

1ST PILAR

Nature and systems

Nature and all the processes occurring within it were one of the most important pillars for the new park. For these reasons, as already mentioned, there was a relatively comprehensive examination of the qualities of Northwestern Europe, specifically focusing on the Netherlands, Germany, and Denmark, where natural configurations are very similar and could be further explored on a smaller scale. The research topics included geology, pedology, bioregions, water systems, and cultural similarities. Lastly, the shape of Tomorrow's (P)Ark was projected onto real natural conditions, followed by an indication of opportunities and threats distilled in the conclusion of this chapter.

One of the first explored topics was geology. The northern European region extending eastwards towards Poland is the second-largest lowland area in the world. All three regions have experienced geological processes related to sedimentation and the interaction of land and water. They share a history of being shaped by rivers and have benefited from fertile soils resulting from sediment deposition. Additionally, the North Sea has influenced the coastal areas of Denmark, Lower Saxony, and the Netherlands, with coastal processes playing a role in shaping their landscapes.

Despite these similarities, each region has unique geological features and processes that have influenced their current landscapes. Specific geological events, including glaciation, mountain-building, and sedimentation, have contributed to the distinct characteristics of Denmark, Lower Saxony, and the Netherlands.

As mentioned twice in this work, the theory of bioregionalism plays a significant role in seeking landscapes or regions that share similarities in the character of natural conditions. For the territory of the new (P)Ark, it is the Atlantic and continental ones. As a small reflection on this thought process, in this paragraph, I would also encourage the utilization of these similarities and qualities for regional development, perhaps as a theme for regional development.

Regarding water conditions and spatial organization, we can also find some common topics, such as rivers' spatial presence and water management. All three regions are intersected by major rivers. Denmark is traversed by rivers like the Gudenå and the Skjern, while Lower Saxony is crisscrossed by rivers including the Elbe, Weser, and Ems. The Netherlands is known for its extensive river network, with the Rhine, Meuse, and Scheldt being prominent. Consequently, all three regions have developed comprehensive water management systems to regulate river flows, prevent flooding, and ensure water availability for agriculture, industry, and urban areas. Other similarities in this area include polder systems, water pollution and water quality, coastal protection, and water collaboration.

Lastly, I would also mention the social similarity of giving great attention to cooperative governance and social welfare. Denmark, Lower Saxony (Germany), and the Netherlands are recognized for their social welfare systems and cooperative governance models. These societies emphasize principles such as social equality, welfare provision, and citizen participation. The presence of welfare states and a focus on consensus-based decision-making are cultural traits shared among these regions.

Although these three countries share a number of similarities both in the social and spatial sectors, it is important to note that each has a wide range of exceptional characteristics that should be highlighted on a regional scale and incorporated into their strategies.

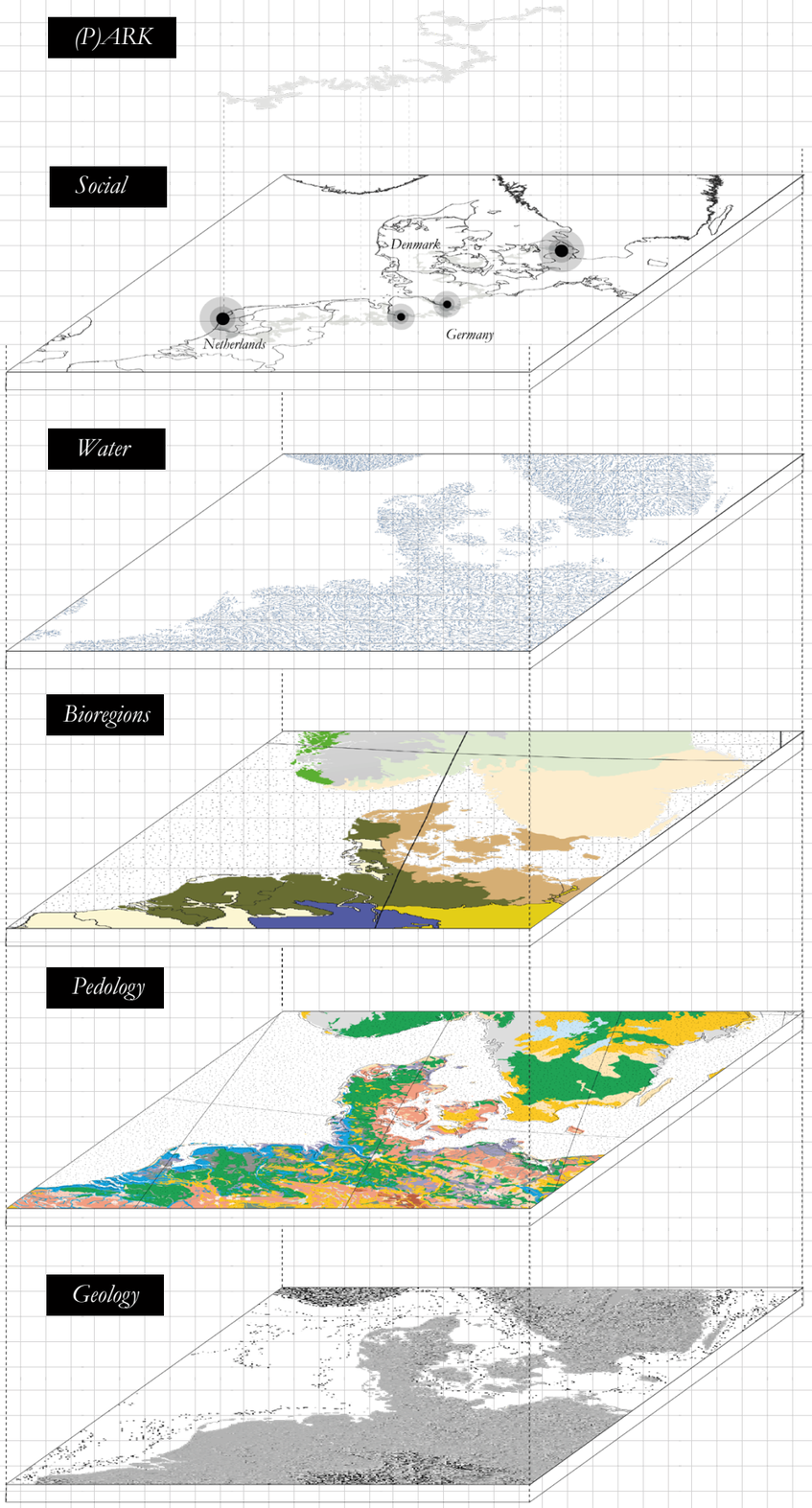


Fig. 38 Layer Analysis of North West Europe (by author, 2023)

Nature dynamic

Lower Saxony, located in northern Germany, is blessed with a diverse and captivating natural landscape. Its unique combination of soil composition, vegetation patterns, water dynamics, and rich biodiversity paints a vivid picture of nature's intricate tapestry. This part tries to dive into the distinctive features of Lower Saxony's natural environment, highlighting its significance and shedding light on the challenges faced in preserving this remarkable land.

Soil Composition
Lower Saxony's soil exhibits remarkable diversity, ranging from fertile alluvial soils near rivers to nutrient-poor sandy soils found in coastal areas. The Geest region, characterized by its sandy and loamy soils, supports a variety of crops, while the marshlands along the coast boast peaty soils, creating ideal conditions for wetland vegetation and unique fauna.

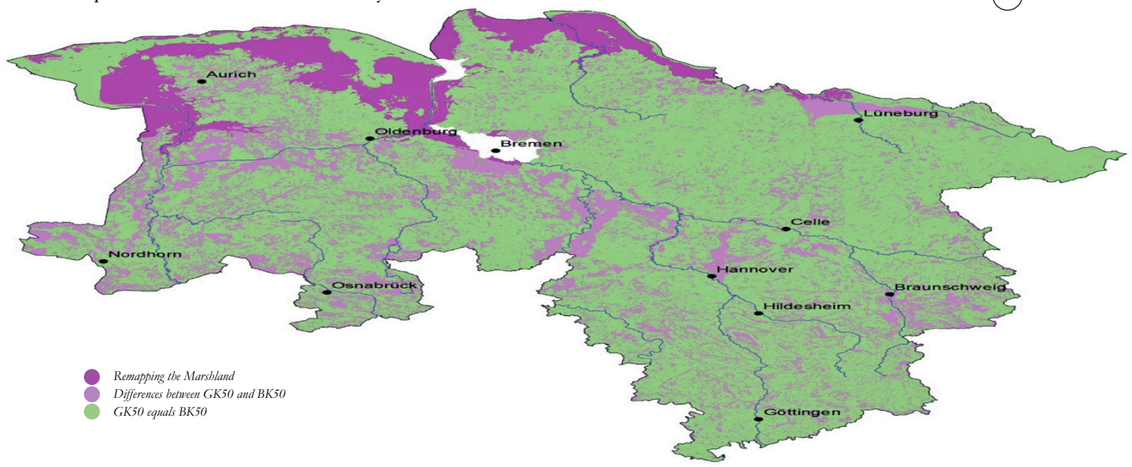
Vegetation Patterns:
The vegetation of Lower Saxony showcases a rich mosaic of ecosystems. The extensive heathlands, such as Lüneburg Heath, heather, gorse, and grasses, providing vital habitat for endangered species like the European nightjar. Ancient oak forests, like the Osnabrück Woodland, offer refuge to diverse flora and fauna, including rare orchids and woodpeckers. Additionally, fen meadows and wetlands host a wealth of plant species, supporting a variety of migratory birds.

Water Dynamics:
Water plays a crucial role in shaping Lower Saxony's natural landscape. The region is traversed by rivers such as the Weser, Ems, and Elbe, which sustain diverse aquatic ecosystems and provide breeding grounds for fish species. The interplay between rivers, lakes, and marshes creates dynamic wetland habitats that support numerous waterfowl, amphibians, and aquatic plants.

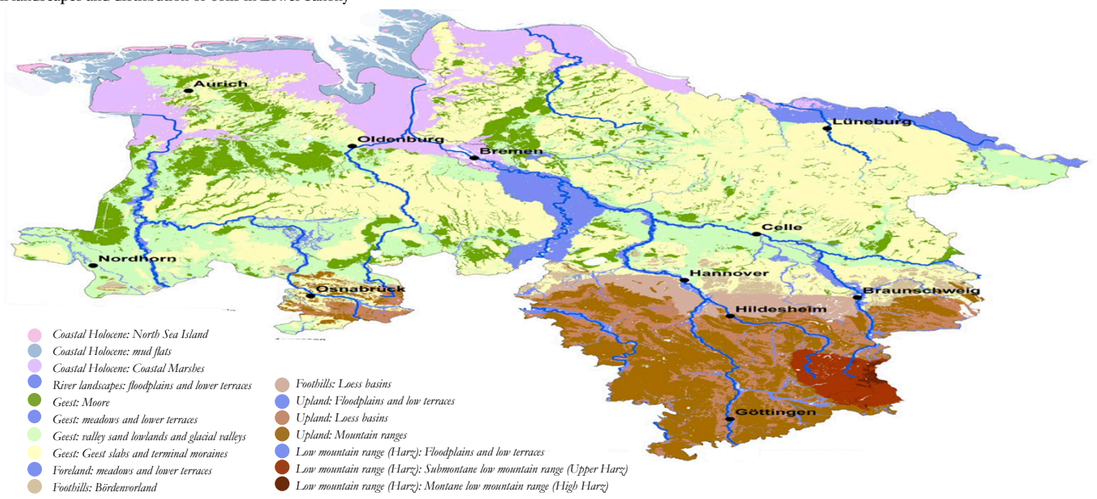
Fauna and Flora:
Lower Saxony's diverse habitats nurture a rich tapestry of fauna and flora. The Wadden Sea, a UNESCO World Heritage site, provides vital feeding grounds and breeding sites for millions of migratory birds. The region is also home to iconic wildlife, including red deer, European beavers, and even the occasional wolf. The unique intertidal ecosystems of the North Sea coastline harbor a wealth of marine life, including seals and porpoises.

Despite its natural splendor, Lower Saxony faces several conservation challenges. Fragmentation of habitats due to urbanization, intensive agriculture, and infrastructure development poses a threat to the connectivity of ecosystems, impacting wildlife migration patterns. The draining and conversion of wetlands for agricultural purposes have led to the loss of vital breeding and feeding grounds for waterbirds. Climate change, with its associated risks of sea-level rise and altered rainfall patterns, further exacerbates these challenges.

Soil landscapes and distribution of soils in Lower Saxony



Soil landscapes and distribution of soils in Lower Saxony



Geomorphology

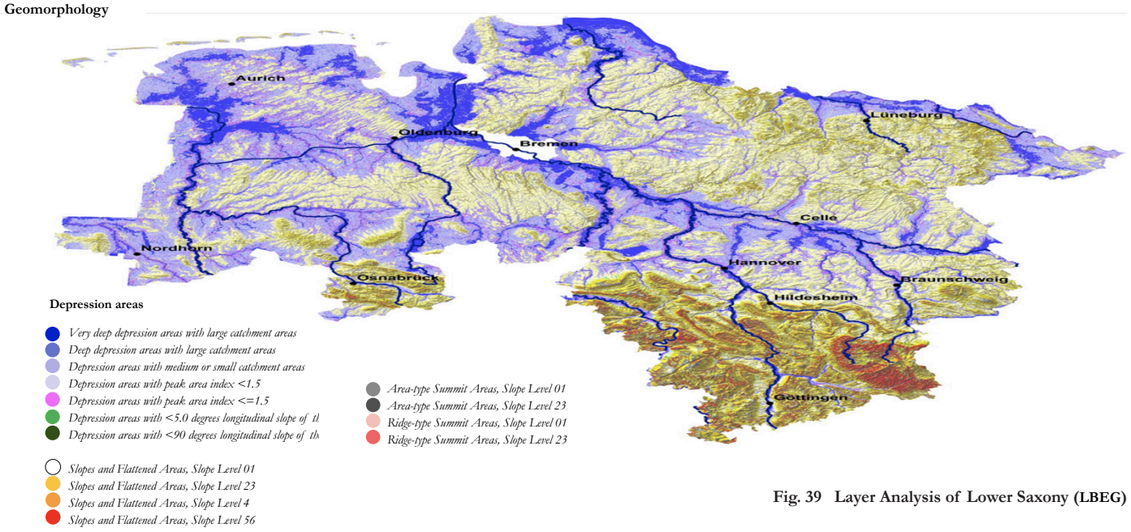
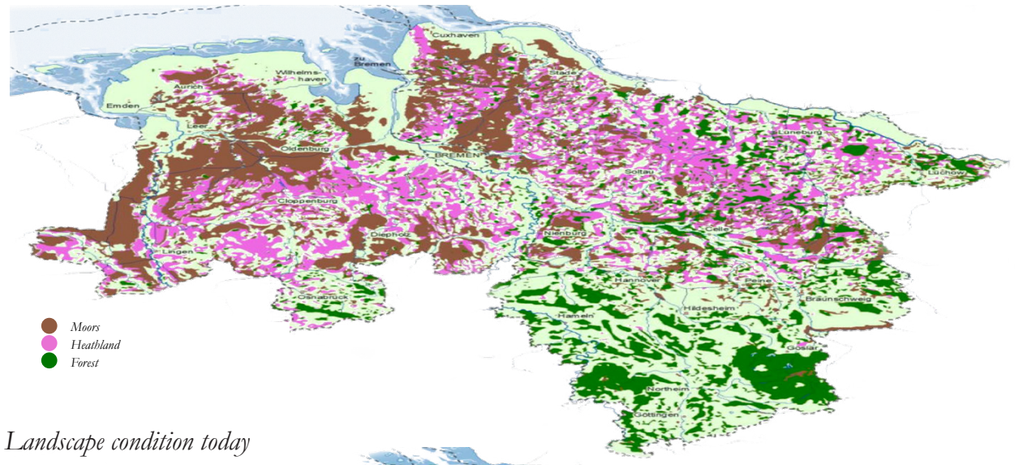
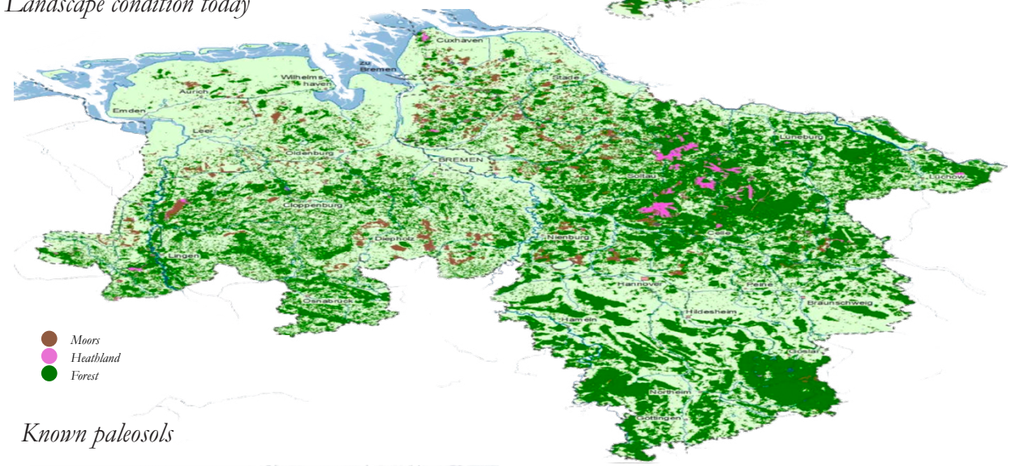


Fig. 39 Layer Analysis of Lower Saxony (LBEG)

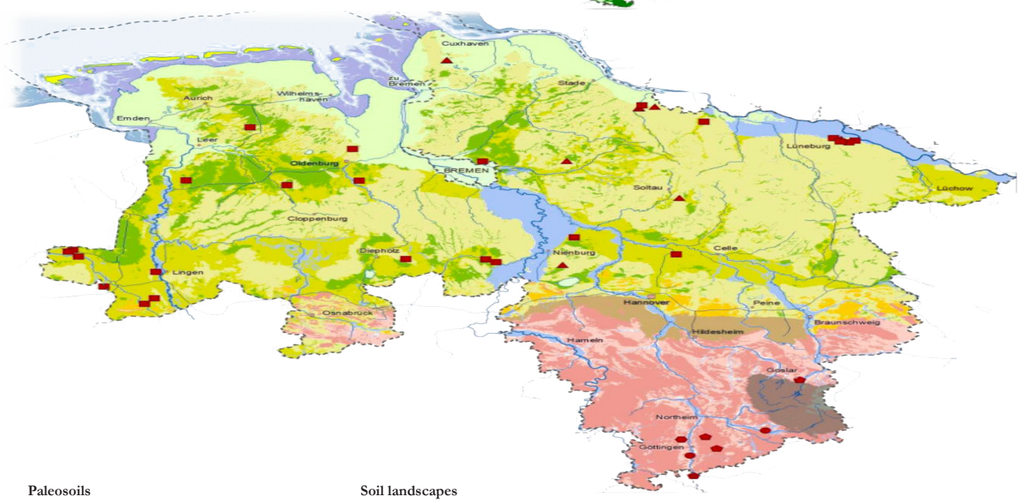
Landscape condition of Lower Saxony 1800



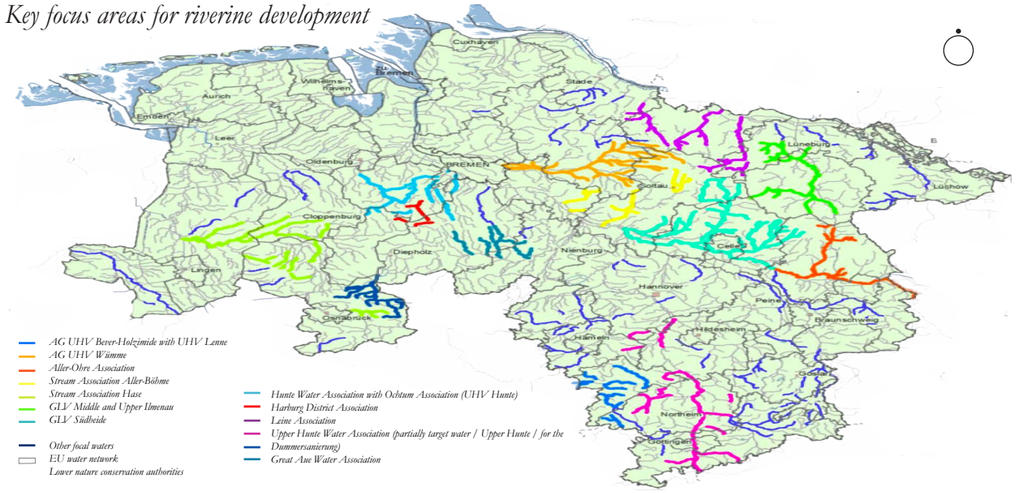
Landscape condition today



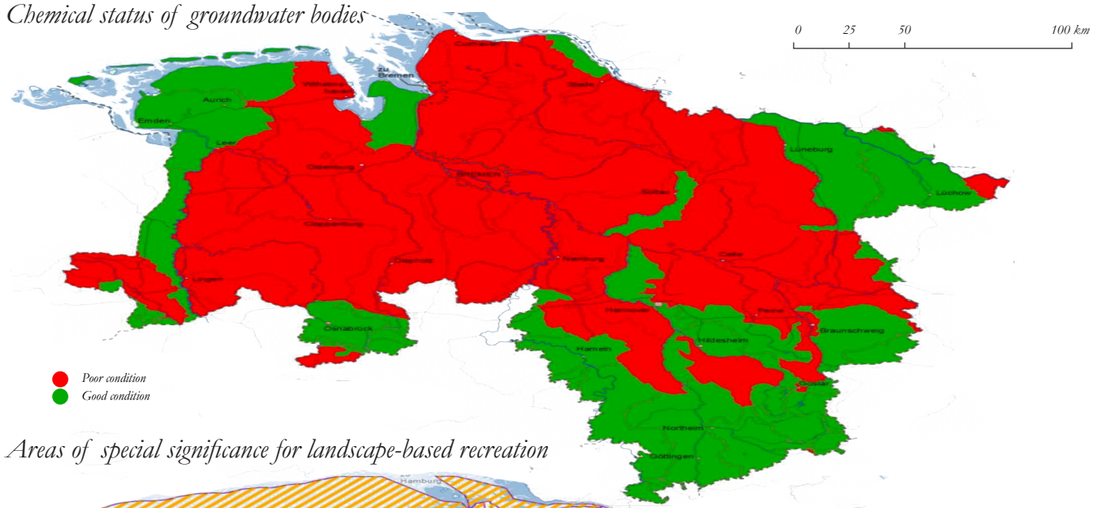
Known paleosols



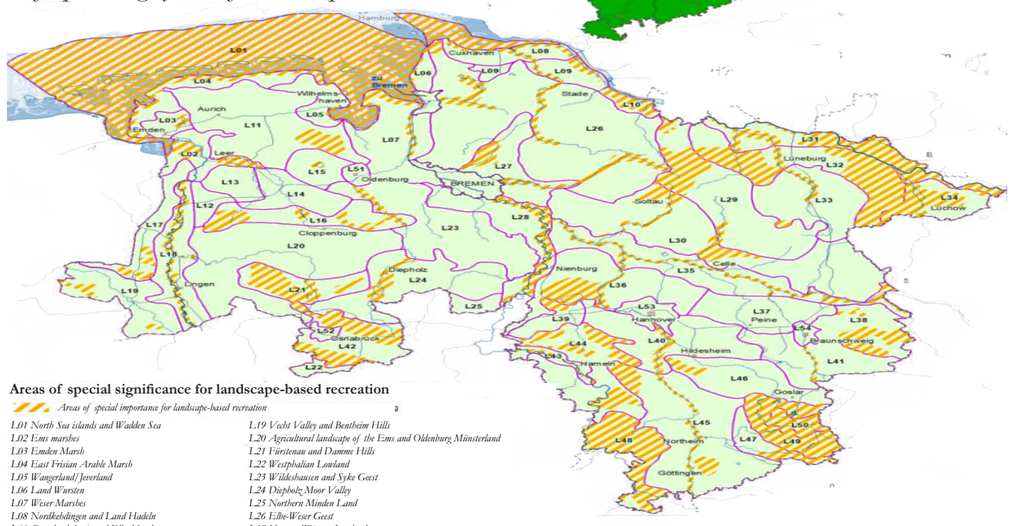
Key focus areas for riverine development



Chemical status of groundwater bodies



Areas of special significance for landscape-based recreation

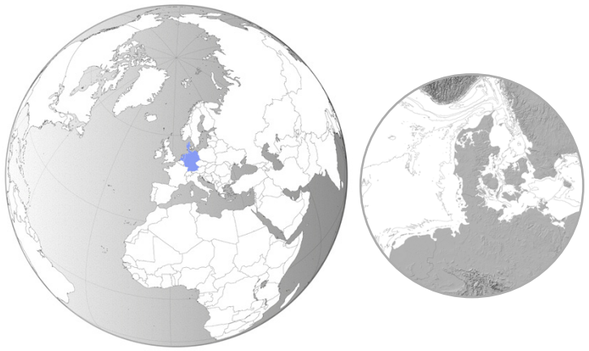


Areas of special significance for landscape-based recreation

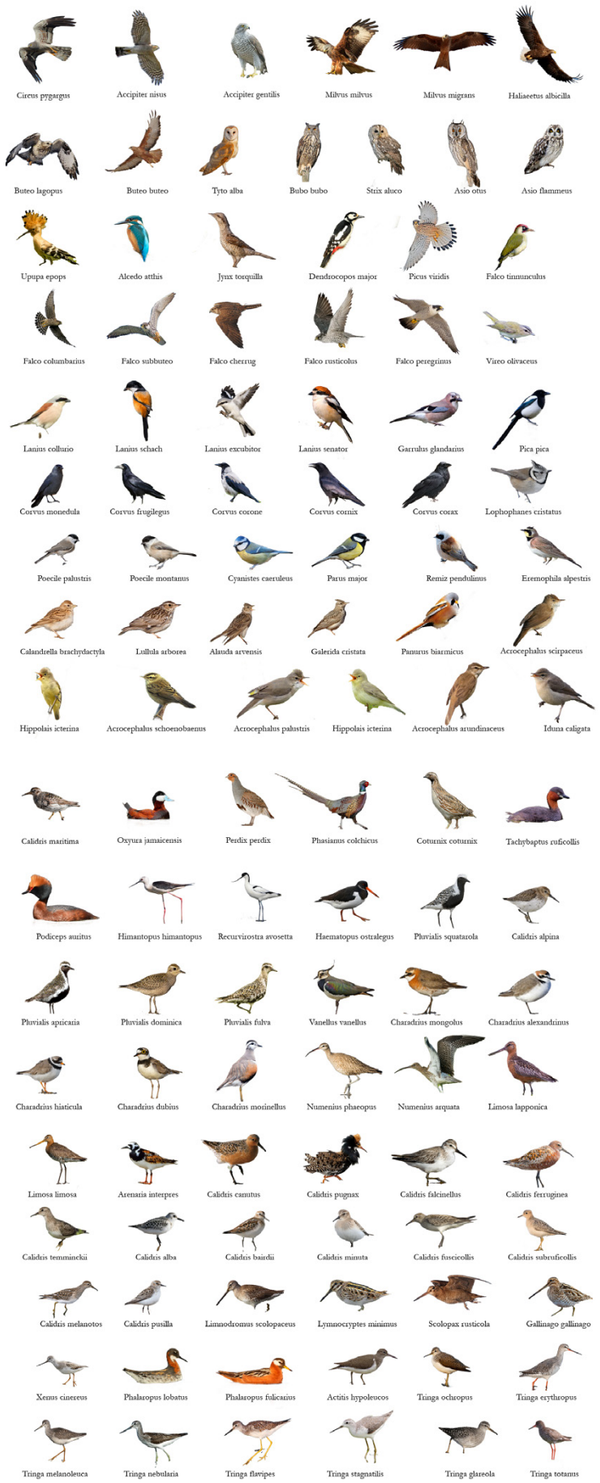
Areas of special importance for landscape-based recreation

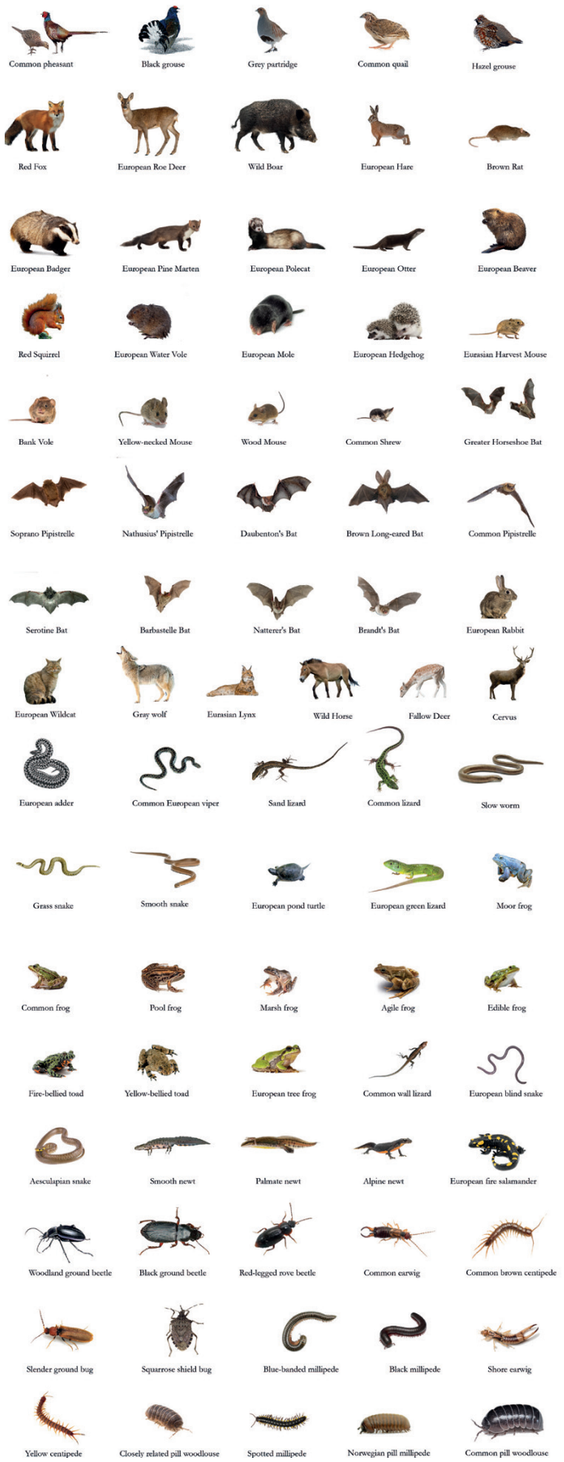
L01 North Sea islands and Wadden Sea
L02 Ems marshes
L03 Emden Marsh
L04 East Frisian Arable Marsh
L05 Wangerland/Jeverland
L06 Land Wursten
L07 Weser Marshes
L08 Nordkehdingen and Land Hadeln
L09 Grassland-dominated Elbe Marshes
L10 Altes Land
L11 East Frisian-Ammerland Geest and Fen Areas
L12 Cultivated Moors south of Papenburg
L13 Rhauderfehnland
L14 Northern Oldenburg Münsterland
L15 Ammerland Nursery Landscape
L16 Forest-rich Moraines of the Ems-Hunte Geest
L17 Bourtanger Moor
L18 Ems Valley
L19 Vecht Valley and Bentheim Hills
L20 Agricultural landscape of the Ems and Oldenburg Münsterland
L21 Fürstenau and Damme Hills
L22 Westphalian Lowland
L23 Wildeshausen and Syke Geest
L24 Diepholz Moor Valley
L25 Northern Minden Land
L26 Elbe-Weser Geest
L27 Hamme-Wümme Lowland
L28 Middle Weser Lowland
L29 Hohe Heide
L30 Verden and southern Lüneburg Heath
L31 Elbe Valley
L32 North and East Heath
L33 Uelzen Basin
L34 Wendland Valley
L35 Aller Valley
L36 Hanoverian Moor Geest with Leine Valley

Fig. 40 Layer Analysis of Lower Saxony
Fig. 41 (Niedersächsisches Ministerium für Umwelt, Energie, Bauen und Klimaschutz)









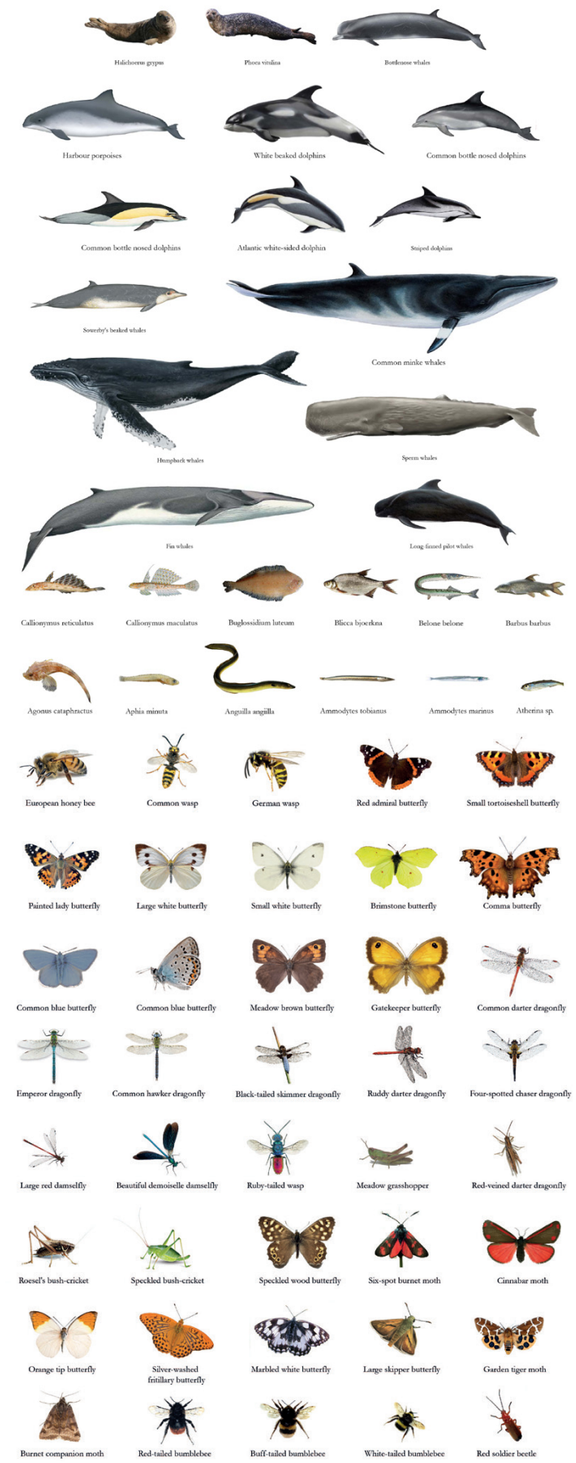


Fig. 42 Indication of Species in the (P)Ark (by Author, 2023)

Nature protected Sites in Lower Saxony

- Nature areas & Natura 2000
- One kilometer buffer
- Tomorrow's (P)ARK

1. Butjadinger Marsch
2. Strohauser Plate
3. Bremer Schweiz
4. Blockland - Burgdammer Wiesen¨ Oberneu-
5. lander Feldmark
6. Wümmeniederung unterhalb Rotenburg
7. Grafeler Holz, Hamerloh und Lintel
8. Ekelmoor
9. Obere Wümmeniederung
10. Oberes Eintautal
11. Seemoor und Schwarzes Moor bei Zahrensen
12. Lüneburger Heide
13. Rosengarten - Kiekeberg - Stuvenwald
14. Moore bei Buxtehude
15. LSG des Kreises Pinneberg
16. Außendeich Nordkehdingen
17. LSG Neuland
18. Großensee
19. Rethwisch
20. LSG Palingener Heide und Halbinsel Teschow
21. Pönitzer Seenplatte und Haffwiesen

0 500 100 200km

Natura 2000 & nature reserves
Geomorphology
National Borders
One kilometer buffer

Fig. 43 Natura 2000 Areas in North West Europe (European Enviroment Agency EU, 2022)

Fig. 44 National Nature protection (EEA, 2022)









Currently, the management of national parks, protected areas, and nature reserves is divided among various organizations with specific focuses on territories, themes, or districts. Each country is subject to European requirements as well as regional and national ones, resulting in a relatively fragmented and complicated mosaic, likely resembling the natural reserves themselves. To understand the organization and functioning of this network, I have analyzed the orientations, focuses, and distribution of these organizations across the Netherlands, Germany, and Denmark.

Objectively, we can say that each of these countries has hundreds of organizations, non-profit organizations, and national programs dedicated to the state and health of the landscapes. Thanks to them or their programs and efforts, we are currently witnessing the preservation of ecotopes that have been disappearing from our traditional landscapes for decades.

However, it is unfortunate that in modern democratic Europe, we still encounter obstacles posed by populist politicians or profit-driven corporations who simply do not align with many nature conservation goals. For these reasons, in this part, I reflect on this reality and raise the pragmatic question: Wouldn't it be beneficial to have one overarching organization that can shield the smaller influential players and withstand populist pressures?

The nature organizations in Northwest Europe (Netherlands, Germany, Denmark) have a significant role in advocating for nature conservation and sustainable development in the region. However, a critical analysis reveals areas that need improvement. These include the need for greater diversity and inclusion within the organizations, enhanced public engagement to foster a sense of ownership and responsibility towards nature, an increased focus on addressing the challenges posed by climate change, and the importance of collaborative partnerships to maximize impact.

By addressing these concerns and working towards these goals, the new organization of Tomorrow's (P)Ark can enhance its influence and contribute to a more sustainable and environmentally conscious future in Northwest Europe. Through strategic planning, effective communication, and collaborative actions, this organization can lead the way in promoting nature conservation, sustainable development, and the preservation of biodiversity in the region.

Fig. 45 Nature Conservation Organisation in North West Europe (by Author, 2023)

2ND PILAR

Cities and Infrastructure

The most significant environmental obstacle and a significant threat to natural systems are not human beings as a biological form but as conscious agents shaping the environment. Over the centuries, there has been evident and increasingly intense development. The construction of large cities, highways, railways, airports, and other infrastructures such as power lines or gas pipelines has actively contributed to, and continues to contribute to, the fragmentation of the environment, which has been divided into smaller pieces.

When selecting the location, I also considered the density of urban structures, where visible disruption is evident, possibly exceeding the threshold of sustainability. As seen from the attached maps (Figure 43), for these reasons, I chose to focus on the territories of the Netherlands (the second most densely populated area), closely followed by Germany, and lastly, Denmark. These places are in urgent need of restoring various natural habitats and overall replenishing the landscape with a robust and resilient structure, essentially creating conditions for nature to thrive again.

Greater attention should be given to cities, their infrastructure, and the consequences they have on the environment, where over 37.5 million people live, most of whom require modern living conditions. Not only are their lives built on artificial landscapes suffering from various urbanization side effects (poor water quality, low water retention, erosion, etc.), but this problematic layer is further compounded by high-voltage power lines, railways, gas pipelines, solar power plants, and wind turbines. From a minimalist standpoint, it is simply overcrowded. This has implications such as light pollution (Figure 43), heat islands, reduced evaporation, an unhealthy living environment, and much more.

However, these issues are not only associated with urban and suburban components but also with agricultural infrastructure, which has undergone significant modernization and development over the past 100 years and currently contributes to the worsening state of climate and living conditions on our planet. However, it doesn't seem to be improving entirely. The state of our rural landscape is alarming, not just in the context of the Netherlands, where significant political battles between farmers and the authorities are currently taking place. It is almost heartbreaking that speculation on such evident impacts of our actions is still being debated. There should be laws that establish procedures, practices, and rules for managing the landscape. Even though most of the land is privately owned, states should have measures to motivate private landowners and enforce systemic changes. After all, everyone has an ethical right to the landscape. Every person has the right to drink water, breathe air, and have space for life.

To rectify these systemic errors, it is necessary to actively and promptly take action and change the destructive systems we have created, which contribute to the destruction of the very foundation on which life depends. As long as we have a place to live, drinkable water, food, and resources, humanity will always survive. To secure the vision of these pillars, we must adopt entirely different techniques, cease large-scale chemical usage, adapt cities and villages to rising temperatures, and make them sustainable for life. I believe that this entire endeavor can provide insights into one of the many approaches that strive to prevent the inevitable collapse that will undoubtedly occur if we do not act immediately.

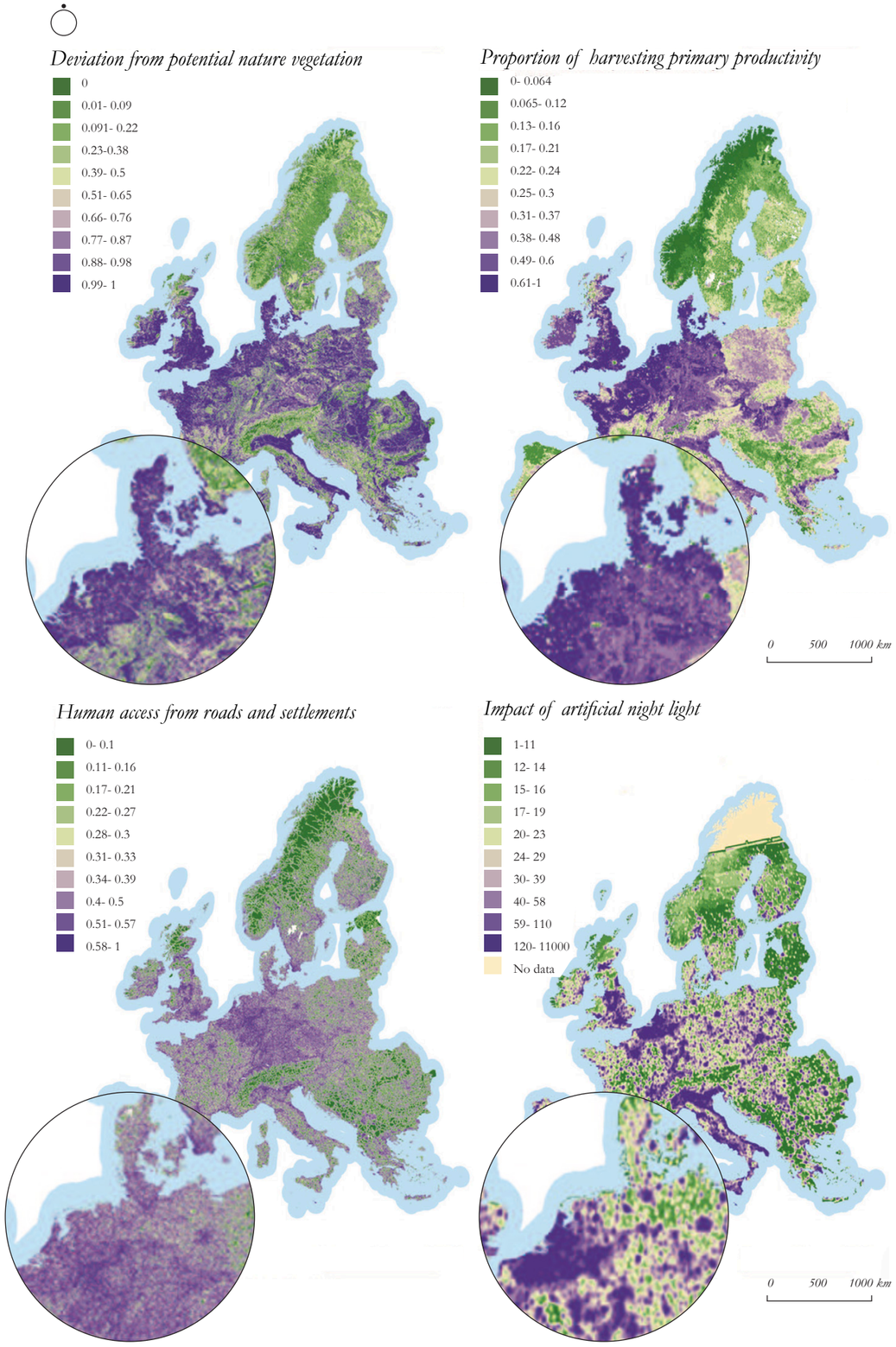


Fig. 46 Index of nature potential and desruptive human activities in Europe (Henrique Pereira, Laetitia Navarro, Laetitia Navarro, 2016)

Physical borders

The modern world is intricately interconnected by both imaginary and physical boundaries. As mentioned on the previous page, the environment is essentially a vast minefield for animal and species diversity. It forms an ongoing cycle from which escaping is not easy. This is particularly evident on the scale of the Netherlands, a country that appears to have almost no natural elements remaining and ranks as the second most urbanised place in Europe. The perception of these physical boundaries poses a significant challenge for the emerging generation, as they must realise the actual consequences of every new intervention in the landscape. In this regard, it is worth highlighting the impact of transportation engineers, who readily propose direct lines into the countryside. However, are we fully aware of what we are sacrificing for the sake of short-term comfort?

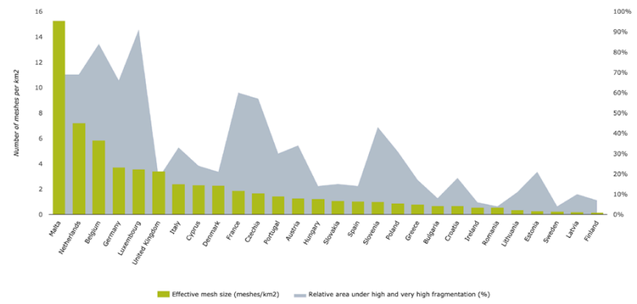
Physical boundaries take various forms, specifically encompassing the construction of cities, villages, roads, highways, dams, reservoirs, power lines, and other elements.

In the northwest region of Europe, the most urbanised areas are Southern Holland, Utrecht-Amsterdam, and in the Lower Saxony region, Hannover, Bremen, and Hamburg. In Denmark, the eastern coastline is heavily urbanised due to historical reasons associated with overseas voyages and a trading network of cities. This development began with the arrival of the Vikings and significantly flourished in the early 17th century when East India Companies were established as a result of naval power struggles. During that time, cities such as Amsterdam, Bremen, Hamburg, and Copenhagen experienced their renaissance. In the northeastern parts of Europe, the Dutch East India Company operated since 1602, and after 1616, the Danish East India Company joined. It is certain that these events helped these places flourish, strengthen their economic sectors, and attract people to work in the cities.

Currently, in the Netherlands, approximately 15% of the total land cover is occupied by cities or transportation infrastructure. In Germany, this trend is slightly lower but very similar, with a total area of 13.6%. Finally, Denmark, according to statistics from these countries, has the least density. Regarding Denmark's urban coverage, the previous statement was incorrect. According to the World Bank's World Development Indicators, as of 2018, approximately 8.2% of Denmark's land area is classified as urban.

It is necessary for similar projects to apply strategies that will better connect urban agglomerations such as Rotterdam, Hamburg, and other regional cities with the rural areas. These strategies should incorporate practices that retain water in urbanized landscapes, promote the planting of parks and trees on streets, and emphasize the appropriate selection of materials to help mitigate the urban heat islands that become increasingly inhospitable during long-term heatwaves. Cities should pay more attention to these facts and begin preparing strategies for the coming months.

Figure 2. Landscape fragmentation in European countries, 2018, EU-27 and the UK



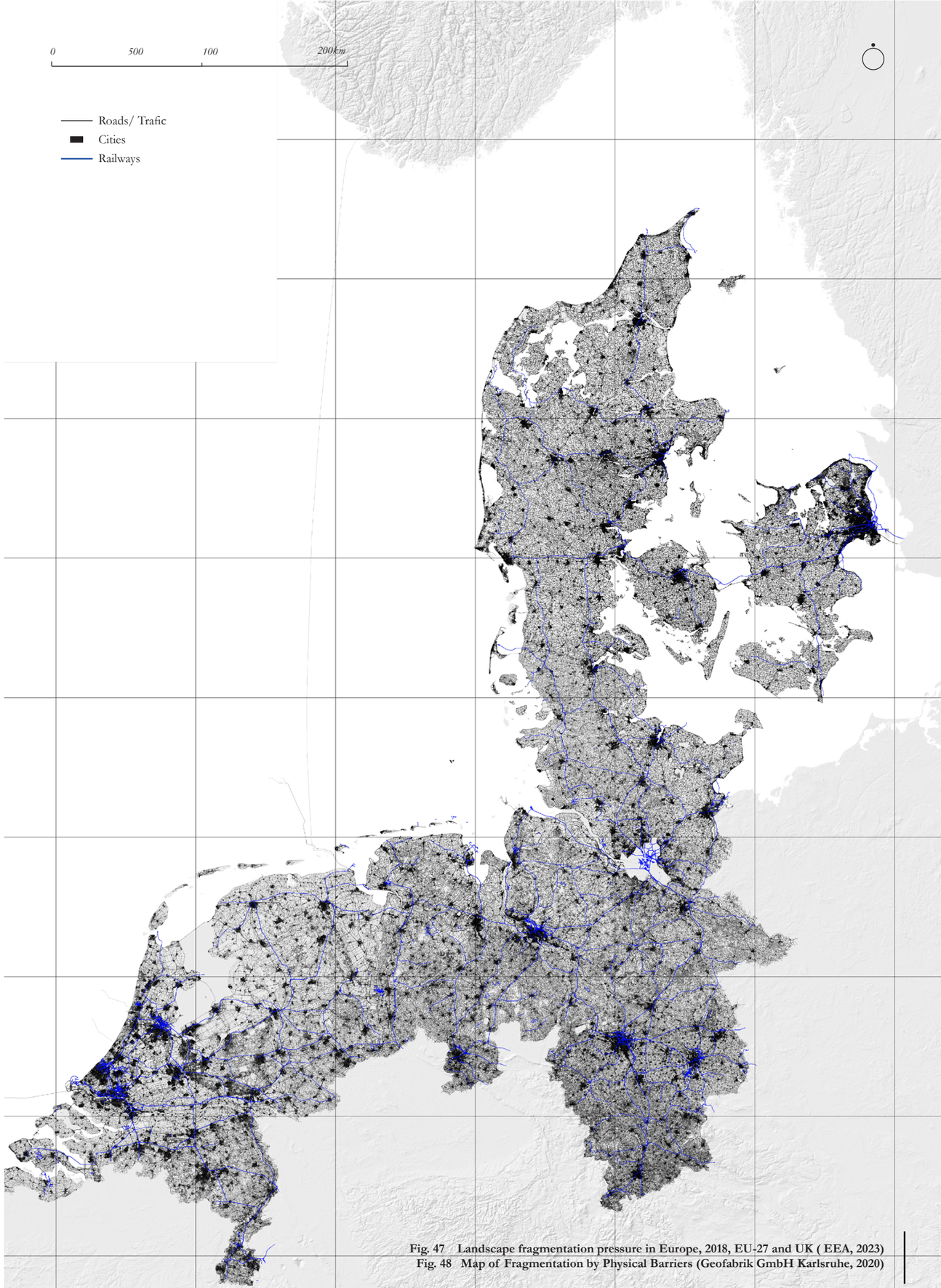


Fig. 47 Landscape fragmentation pressure in Europe, 2018, EU-27 and UK (EEA, 2023)
Fig. 48 Map of Fragmentation by Physical Barriers (Geofabrik GmbH Karlsruhe, 2020)

0 25 50 100 km

Roads/ Trafic
Cities
Railways

Fig. 49 Map of Fragmentation Bremen x Hamburg (Verburg & Overmars, 2009)

Landscape fragmentation Types

Landscape fragmentation, as revealed through my analysis of northwest Europe, refers to the division of expansive, contiguous natural landscapes into smaller, isolated patches. Various types of fragmentation have been identified, each presenting unique challenges and implications:

Habitat Fragmentation (6) stands as a prominent issue, characterized by the subdivision of large natural habitats into smaller, disconnected patches. This degradation is primarily attributed to human activities such as urbanization, agricultural expansion, and logging. The consequences of habitat fragmentation include the loss of biodiversity and disruptions to ecological balance.

Barrier Fragmentation (1) arises when human activities, such as road construction or urban development, disrupt natural barriers like rivers, mountains, or forests. These disruptions hinder the movement and migration of both flora and fauna, leading to further isolation and fragmentation.

Patch Fragmentation (3) occurs when natural landscapes are divided into smaller, irregularly shaped patches of varying sizes. This fragmentation can result in shifts in species composition and alterations to essential ecosystem processes, impacting the overall health and functioning of the landscape.

Perforation Fragmentation (5) arises when human actions create isolated, smaller patches within larger natural areas. For instance, clear-cutting or mining can leave behind barren patches within forested landscapes. The presence of these isolated patches reduces the connectivity of the natural environment, negatively affecting biodiversity and ecosystem functioning.

Linear Fragmentation (2) involves the division of natural landscapes by linear features such as roads, power lines, or pipelines. These linear features act as barriers to the movement and migration of species, and they also alter microclimates and ecological processes along their paths.

Islandization Fragmentation occurs when vast natural areas become surrounded by human-modified landscapes, forming isolated "islands" of natural habitat. This isolation reduces the connectivity between these habitats, hindering the movement and migration of species between patches.

Edge Fragmentation/Edge effect (4) transpires when the edges of natural areas are disrupted by human activities like land clearance for agriculture or urban expansion. Such disturbances can have adverse effects on microclimates and ecological processes at the fragment's edge.

Addressing landscape fragmentation is crucial for the preservation and restoration of ecosystems. It requires strategic planning and conservation efforts to promote connectivity between fragmented patches, protect natural barriers, and mitigate human-induced disruptions. By adopting sustainable practices and considering the long-term implications of human activities, we can strive to minimize landscape fragmentation and safeguard the integrity of our natural environments.

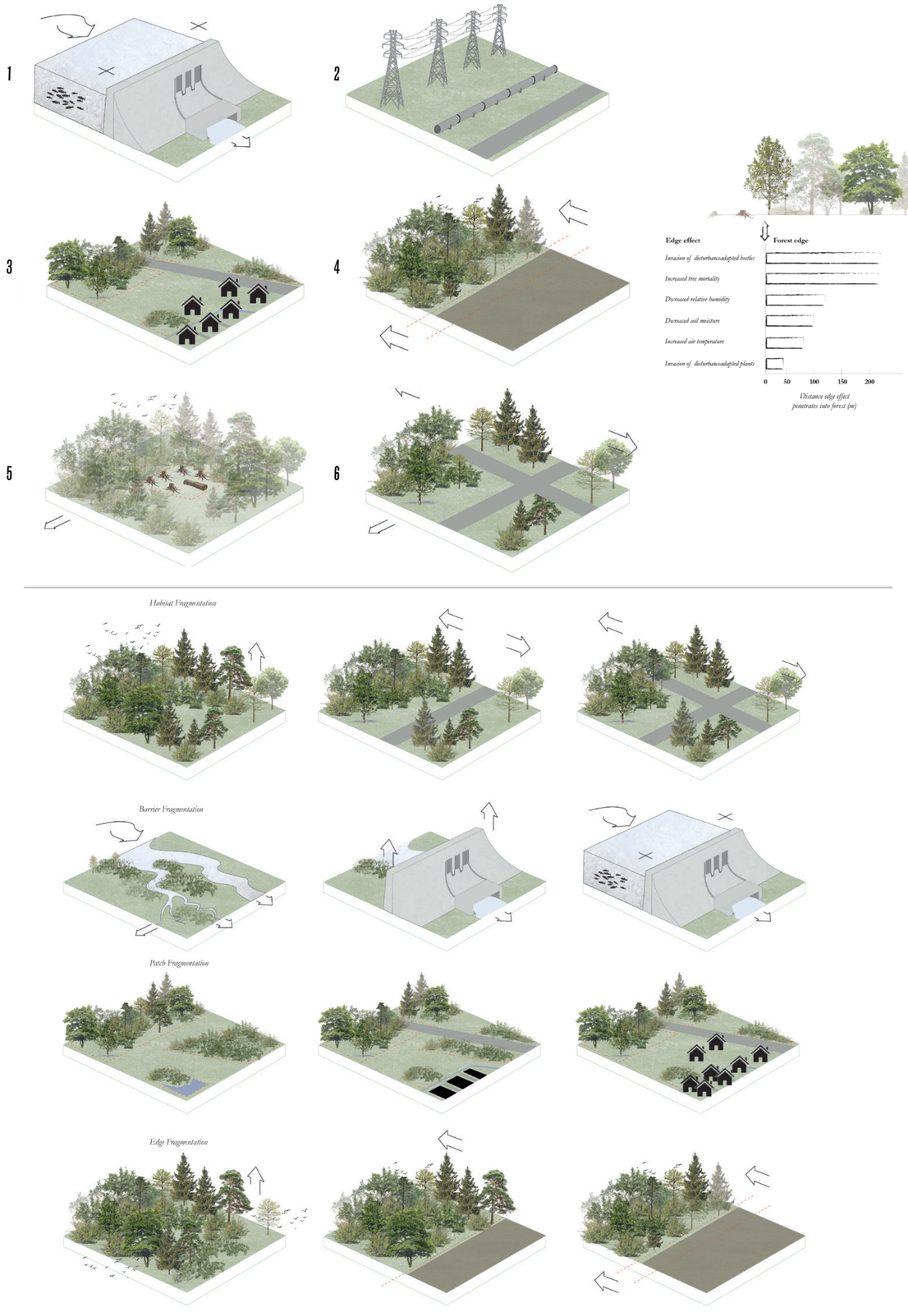


Fig. 50 Types of Landscape Fragmentation (by Author, 2023)

And all these environmental developmental changes in which we live have brought us to a point where we can observe a significant weakening of ecological services in the regions of Northwestern Europe.

In the fast-paced modern world, where technological advancements dominate our daily lives, it is crucial to pause and reflect upon the essential role that nature plays in our existence. The intricate web of life, with its diverse ecosystems and organisms, provides us with a multitude of invaluable services known as ecological services. These services, often taken for granted, form the foundation of our well-being, sustaining us physically, emotionally, and spiritually. However, our actions have led to widespread destruction and degradation of these natural systems, threatening the very services that we rely upon. It is imperative that we recognize the significance of ecological services and take urgent action to preserve and restore them.

Academic research has extensively studied the concept of ecological services, shedding light on their profound importance and the consequences of their degradation. One key theoretical framework is the Millennium Ecosystem Assessment, a comprehensive study that highlighted the direct and indirect benefits that ecosystems provide to humanity. It categorized ecological services into four main types: provisioning services (such as food, water, and timber), regulating services (including climate regulation and disease control), cultural services (like recreation and aesthetic enjoyment), and supporting services (such as nutrient cycling and soil formation).

Further studies have emphasized the interdependence of ecological services and the intricate relationships within ecosystems. Research has shown that the loss or decline of one service can have cascading effects on others, disrupting the delicate balance that sustains life. For instance, deforestation not only diminishes carbon sequestration and climate regulation but also disrupts water cycles and affects soil fertility. Understanding these interconnected relationships is crucial for formulating effective conservation strategies.

The Destruction Dilemma: Unfortunately, our current trajectory is marked by widespread destruction and degradation of natural ecosystems, leading to the loss of numerous ecological services. Rapid urbanization, unsustainable agricultural practices, deforestation, pollution, and climate change are among the major drivers of ecosystem degradation. This destruction not only threatens biodiversity but also jeopardizes our own well-being. The loss of pollinators, for example, hampers food production and puts our agricultural systems at risk. Similarly, the degradation of wetlands and forests compromises water purification processes, leading to water scarcity and increased vulnerability to natural disasters.

The preservation and restoration of ecological services should be at the forefront of our environmental consciousness. Recognizing our deep dependence on nature and the multitude of benefits it provides is essential for shaping sustainable policies and practices. We must strive for a harmonious relationship with the natural world, understanding that our well-being is intricately linked to the health of ecosystems. By implementing conservation measures, promoting sustainable land and resource management, and fostering a sense of stewardship among individuals and communities, we can work towards restoring ecological services and ensuring a thriving and resilient planet for future generations.

This short intermezzo on ecological services serves as a crucial reminder of the importance of these services in the context of landscape fragmentation. It underscores the urgent need to address the ecological crisis and provides a theoretical foundation for understanding the significance of ecological services in shaping our landscapes and the well-being of both humans and nature. By integrating this knowledge into our decision-making processes, we can pave the way for a sustainable and balanced coexistence with the natural world.

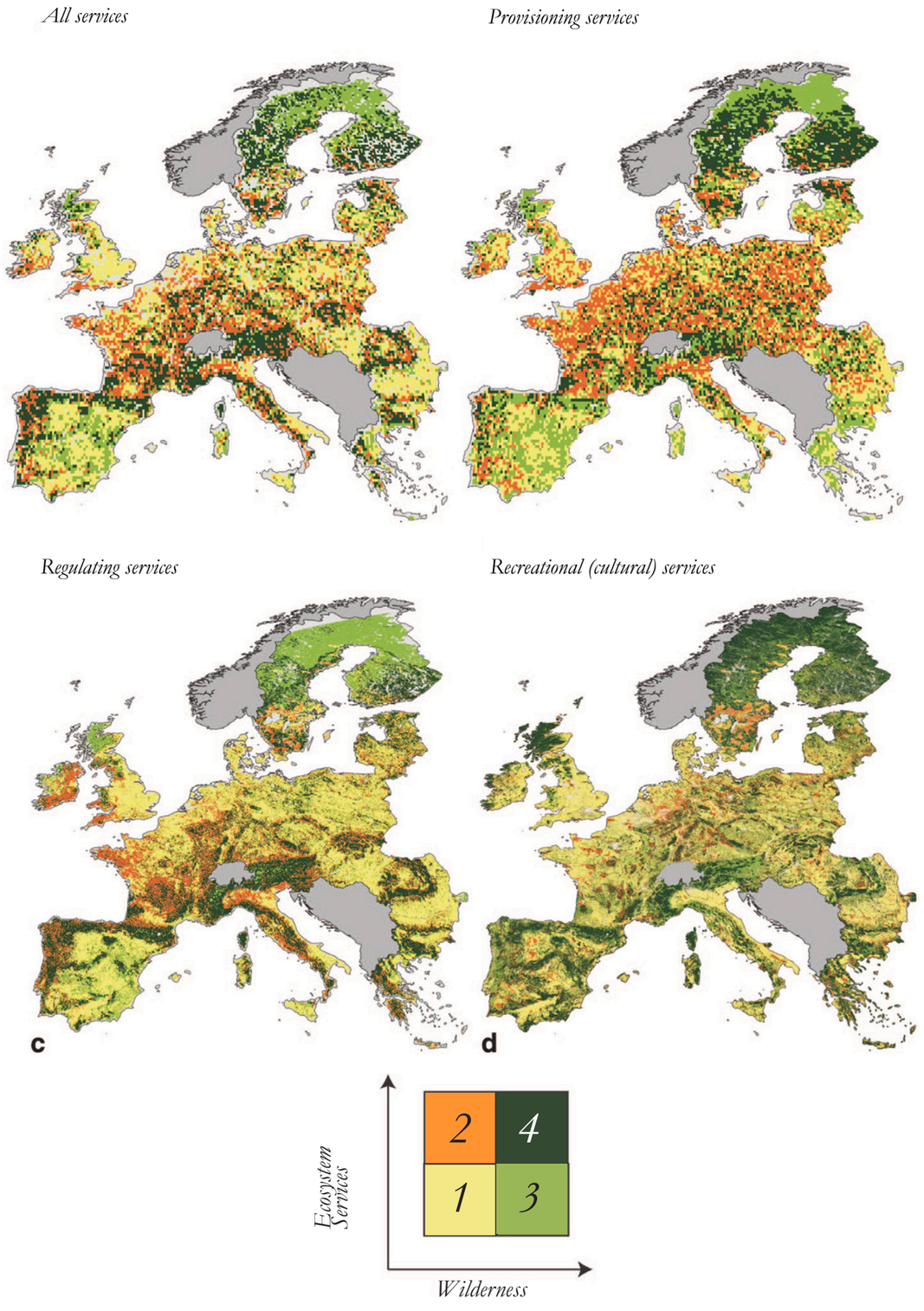


Fig. 51 Ecosystem Services and Rewilding Index of Europe (Henrique Pereira, Laetitia Navarro, Laetitia Navarro, 2016)

3RD PILAR

Spatial structure of Cultural landscapes

The structures of cultural landscapes are exceptional phenomena on our planet. They are essentially artificially created landscapes within landscapes, templates in which they may be as awe-inspiring as natural formations that have taken centuries to form. Cultural landscapes represent environments where humans had to adapt to both natural conditions and unfavorable circumstances in order to survive and sustain themselves. Through various adaptations, they embody a range of captivating spatial configurations, symbolising intellect and the brilliance of holistic thinking.

Currently, they bear witness to the ways in which continental farming was conducted, serving as living histories that document our own identity and ancestral origins. From the breathtaking terraced fields of Sri Lanka to the rice fields of Italy, from the medieval European three-field system to the Habsburg era's forest grazing, each exemplifies significant methods of agricultural management. The Netherlands, with its concept of polders, canals, and dikes, has played a crucial role in shaping destinies. Through their practices, neighboring nations such as Lower Saxony and Denmark were gradually educated, eventually influencing landscapes in far-reaching countries like America, China, and beyond.

This spatial arrangement is likely the most characteristic element of North Western Europe. The originally vast and marshy conditions were drained into the North Sea, featuring towering windmills, embankments, fields divided according to water or geological formations, and an endless flatness without significant elevations.

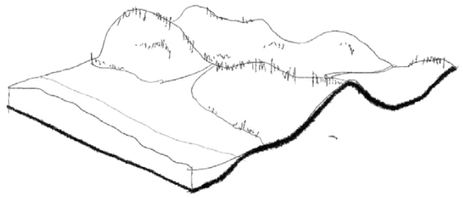
Additionally, the presence of hedgerows and field boundaries is a defining aspect of the landscape in North Western Europe. These linear features, often consisting of densely planted shrubs or trees, serve as natural boundaries between fields, providing structure and delineation to the agricultural landscape. Hedgerows offer numerous benefits, including acting as windbreaks, preventing soil erosion, and providing habitats for wildlife. They also contribute to the aesthetic appeal of the countryside, with their vibrant foliage and seasonal blossoms adding color and texture to the open fields.

While North Western Europe's spatial landscape characteristics possess a unique charm, it is important to acknowledge that they are not without their challenges. One significant issue is the ongoing threat of urbanization and land development. As cities expand and populations grow, there is increased pressure to convert agricultural land and natural areas into residential or industrial zones. This encroachment on the landscape disrupts the delicate balance between human activities and the environment, leading to habitat loss, fragmentation, and a decline in biodiversity.

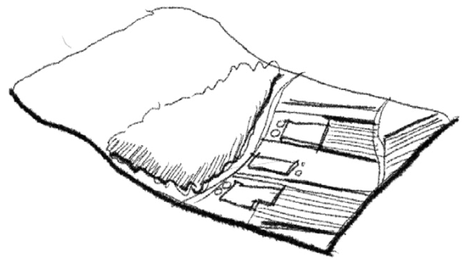


Fig. 52 Land use of North West Europe (ESRI, 2023)

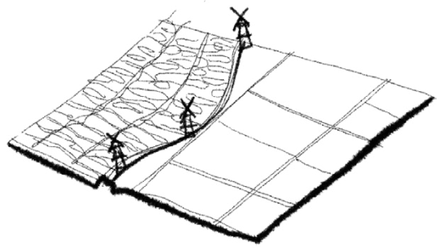
NL: Dunes



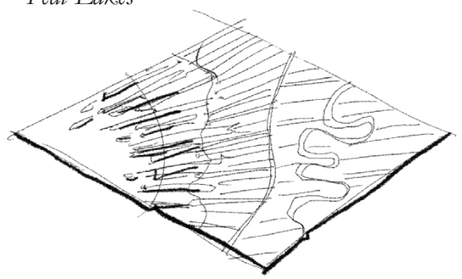
Bulbs



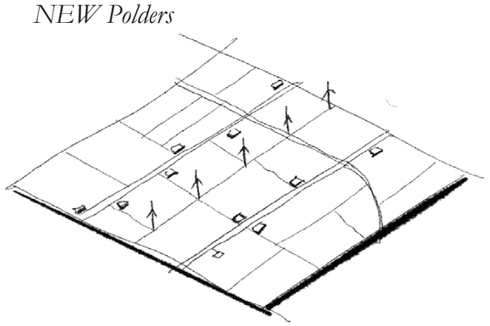
OLD Polders



Peat Lakes



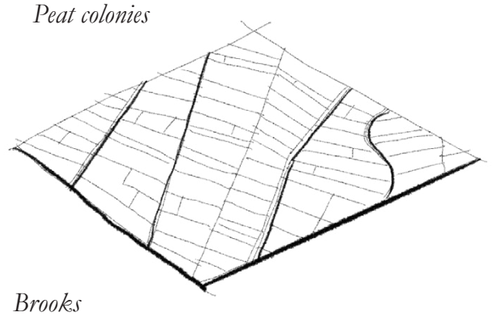
NEW Polders



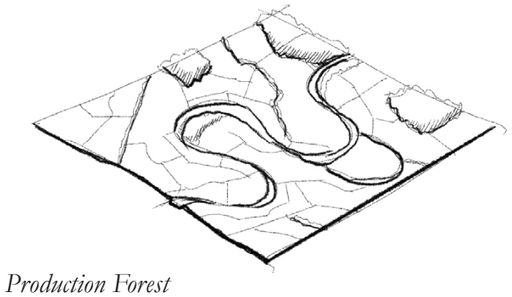
Heide



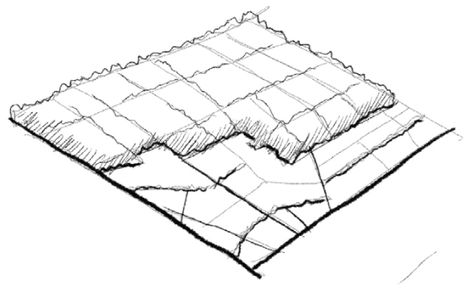
Peat colonies



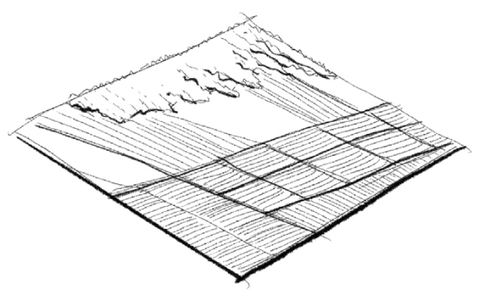
Brooks



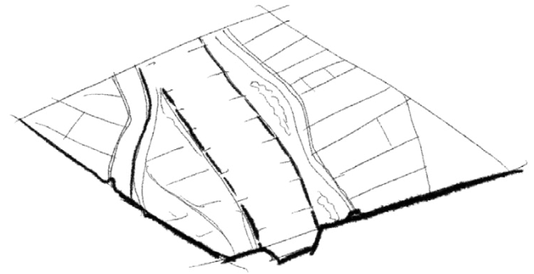
Production Forest



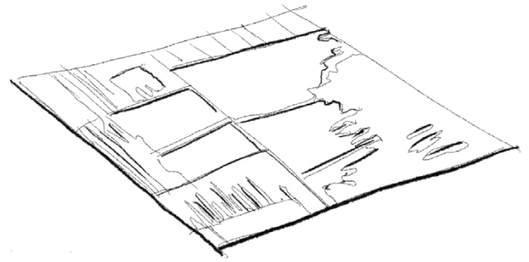
Peat extraction



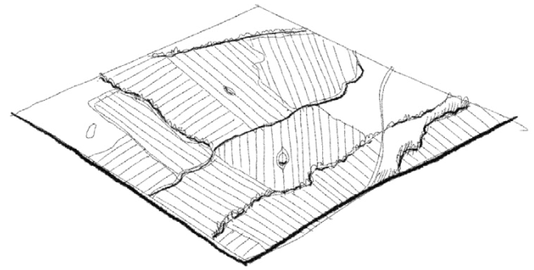
River



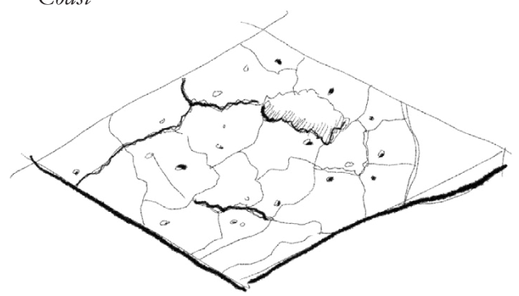
Peat Marsh/ Moor



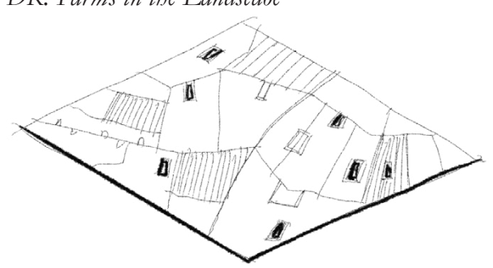
GR: Farms in the Landscape



Coast



DK: Farms in the Landscaoe



For a detailed understanding of the spatial cultural structure of Northwestern Europe, I studied the areas using orthophotomaps, as well as QGIS data and real on-site experience. This allowed me to comprehend its past, present, and potentially transfer the best practices into the future.

The characteristics of the spatial structure of cultural landscapes in Lower Saxony, the Netherlands, and Denmark can vary due to their unique geographical, historical, and cultural contexts. I will outline some typical features below.

Settlement Patterns: The spatial structure of cultural landscapes in these regions often exhibits a mix of urban and rural settlements. Urban areas are characterized by densely built-up environments with a concentration of buildings, infrastructure, and commercial activities. Rural areas typically consist of dispersed villages, farmsteads, and agricultural fields
In this group, we can also find interesting features such as the historical construction of terps, which were built in response to tides and provided safety to the inhabitants. The construction of terps is a testament to the innovative ways in which human societies adapted to and coexisted with the natural environment in the past.

Agricultural Landscapes: Agriculture plays a significant role in the cultural landscapes of Lower Saxony, the Netherlands, and Denmark. This clearly demonstrates the fact that agriculture represents more than 57% of the land cover. Agricultural fields, farms, and livestock grazing areas are commonly found, reflecting the historical importance of farming and the agricultural heritage of these regions. The landscape may include traditional farming practices, such as dikes or polders for water management.

Natural and Built Heritage: The spatial structure of cultural landscapes often incorporates elements of natural and built heritage. Historic buildings, landmarks, monuments, and protected natural areas contribute to the cultural and aesthetic value of the landscape. These features serve as reminders of the region's history, traditions, and cultural identity. This is represented specificali by peat marshes, heide, costal landscape or features like costal defence system or Waterlinie.

Water Management: Given the geographical location of these regions, water management is a crucial aspect of the spatial structure of their cultural landscapes. Drainage systems, canals, dikes, and flood protection measures are common features, reflecting the need to control water levels and prevent flooding in low-lying areas.

Lastly Infrastructure Networks: The cultural landscapes in these regions are marked by well-developed infrastructure networks, including roads, highways, railways, and waterways. These networks facilitate transportation, communication, and economic activities, connecting urban centers with rural areas and promoting regional integration.

This ethereal landscape is a masterpiece crafted by human hands, a testament to the enduring traditions that have graced our past centuries. It stands as an extraordinary mosaic, showcasing our remarkable ability to adapt and triumph over adversity. Like a mystical beacon of hope, it whispers that we possess the power to conquer once more, embracing the challenges that lie ahead.

Fig. 53 Cultural Landscapes of the (P)Ark (by Author, 2023)

Problems of farming

Agriculture, as a fundamental human activity, profoundly influences the landscape in numerous ways. And since agriculture is one of the biggest challenges related to the nature environment I wanted to explore the complex relationship between agriculture and the landscape, considering factors such as land use changes, soil composition, biodiversity loss, water resources, and visual aesthetics. By delving into these interconnected aspects, we can gain a deeper understanding of the intricate dynamics and challenges associated with agricultural practices. On the attached map, approximately 56% of the land in this area is covered by agricultural landscapes. During my research, I have identified several critical factors that represent the foremost challenges associated with agricultural practices. These factors encompass

Land Use Changes: One of the most visible impacts of agriculture on the landscape is the conversion of natural habitats into agricultural fields. Forests and grasslands are frequently transformed to accommodate cultivation, resulting in the loss of biodiversity and habitat fragmentation. The scale and intensity of agriculture determine the extent to which these changes occur, posing challenges for the preservation of ecological balance.

Soil Composition and Degradation: Agricultural practices significantly influence soil composition, with consequences for both productivity and sustainability. Intensive cultivation, irrigation, and the application of fertilizers and pesticides can lead to soil degradation. This degradation manifests as erosion, nutrient imbalances, and reduced organic matter content, compromising soil fertility, water-holding capacity, and overall ecosystem health.

Biodiversity Loss: The conversion of natural habitats and the adoption of monoculture practices in agriculture contribute to the loss of biodiversity. As diverse ecosystems are replaced by homogeneous agricultural landscapes, many plant and animal species struggle to find suitable habitats. This loss of biodiversity disrupts ecological communities, reducing resilience and potentially leading to ecological imbalances and cascading effects.

Water Resources: Agriculture significantly impacts water resources, both in terms of quantity and quality. Irrigation practices, necessary to meet the water demands of crops, alter natural water flows and can deplete water sources. Furthermore, the application of fertilizers and pesticides can contaminate water bodies, affecting aquatic ecosystems and posing risks to human health. Balancing water needs for agriculture with the conservation of water resources is a critical challenge.

Visual Aesthetics and Cultural Landscape:
Beyond ecological impacts, agriculture shapes the visual aesthetics and cultural landscape of an area. The arrangement of fields, farm structures, and agricultural landscapes contribute to the unique character and identity of a region. Preserving and enhancing visual aesthetics while optimizing agricultural productivity is a complex task, requiring careful planning and consideration of cultural values.

Agriculture's influence on the landscape is multifaceted and intricate, with far-reaching implications for land use, soil composition, biodiversity, water resources, and visual aesthetics. Recognizing the complexity of these factors is essential for developing sustainable agricultural practices that minimize negative impacts while safeguarding ecological integrity and cultural heritage. Addressing these challenges calls for interdisciplinary research, collaborative efforts, and informed decision-making to ensure a harmonious relationship between agriculture and the landscape for future generations.

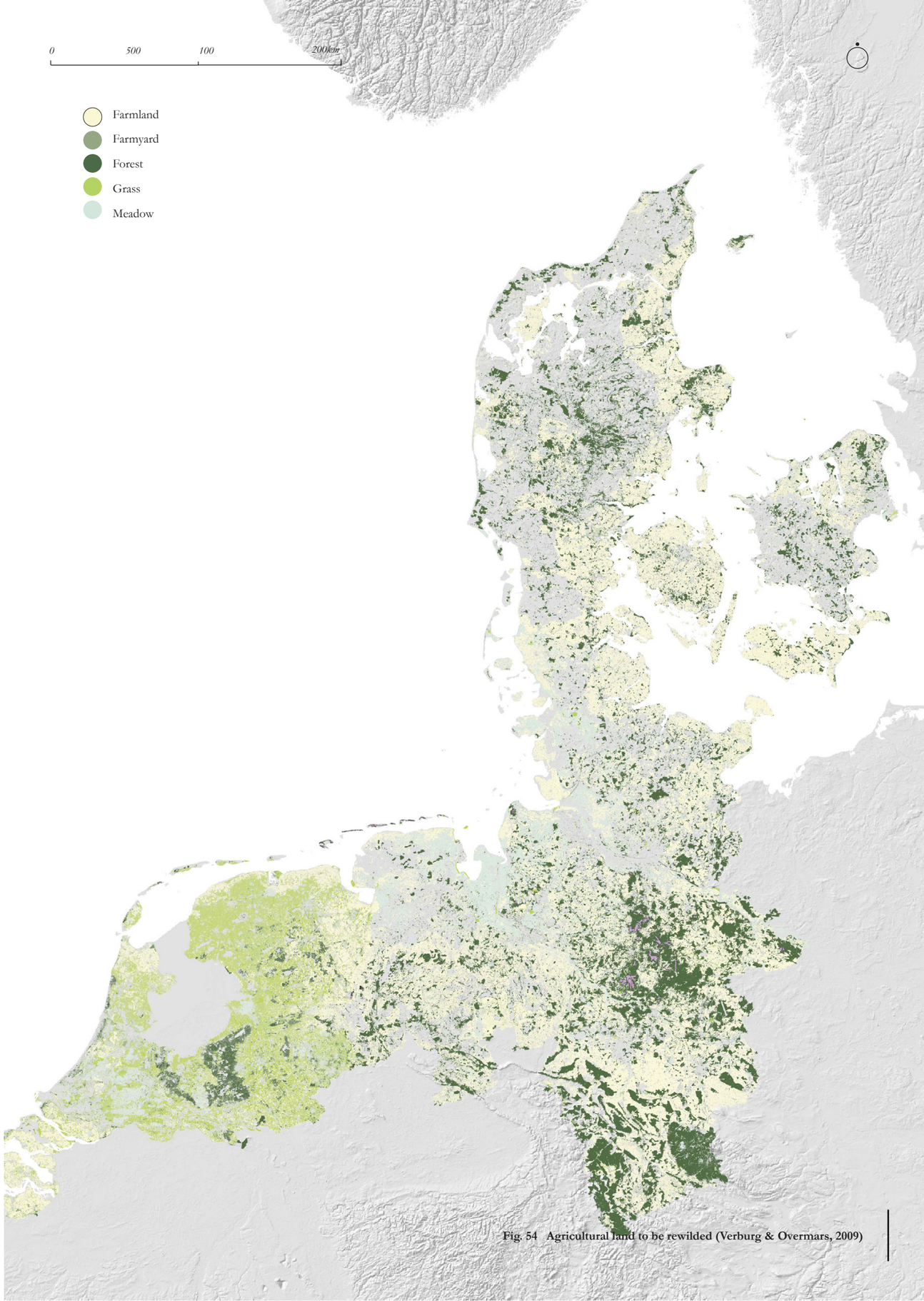
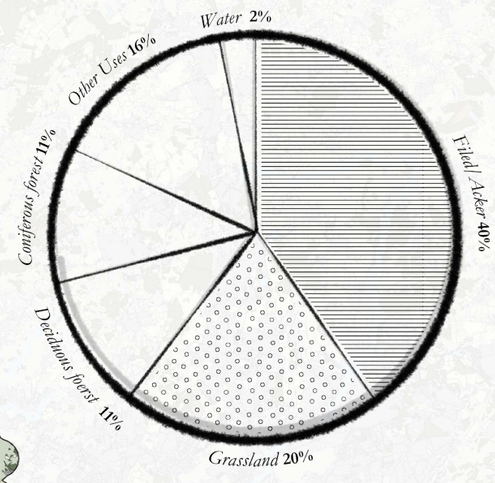


Fig. 54 Agricultural land to be rewilded (Verburg & Overmars, 2009)

Potential

Legend:

- Highking Path
- Rooting path
- Detail design locations
- Grassland
- Agricultur- cropland
- Agriculture- grassland
- Forest
- Peat
- No- indicated
- Water
- Water- marshland
- Urban



0 25 50 100 km

Fig. 55: Land use in the Park (by Author ; from Geofabrik GmbH Karlsruhe, 2022)

4TH PILAR

Walking: Pathways Past

Walking is an intrinsic aspect of human existence that transcends cultural, geographical, and historical boundaries. It serves as a conduit linking people to the natural world, forging connections with diverse landscapes spanning from majestic Himalayan mountains to expansive African deserts, from the lush Amazon rainforests to the frozen Arctic plains. By traversing these environments on foot, we immerse ourselves in their wisdom and unravel their hidden treasures.

The origins of walking can be traced back to ancient times when our ancestors roamed lands in search of sustenance and refuge. Walking was not only essential for survival but also facilitated community bonds. Trade routes, such as the Silk Road, emerged, fostering the exchange of goods, ideas, and cultures between Eastern and Western civilizations (Somoza Medina, X., Lois González, R.C. & Somoza Medina, M. Walking, 2023) Concurrently, walking became intertwined with the pursuit of not just resources but also the divine, as pilgrimage rituals emerged, particularly in shaping the early foundations of Christianity in southern Europe. Journeys through the countryside carried multifaceted meanings and dimensions, etching an indelible mark upon the genius loci of Europe. Even today, these paths offer a gateway to uncovering places and embarking on a unique voyage through living history.

In our globalized world, walking in the countryside provides an opportunity to rediscover our intrinsic connection to nature and to our fellow human beings. Embarking on long-distance trails like the Pacific Crest Trail in North America, the Kungsleden in northern Sweden, or Europe's extensive network of long-distance trails, we encounter individuals from all corners of the globe. Walking becomes our universal language, binding us together in a shared pursuit of adventure. In these moments, cultural, linguistic, and geographical barriers dissolve, unveiling the common threads that weave our collective humanity.

Furthermore, walking serves as an antidote to the fast pace of modern life. In a world characterized by constant technological interconnectivity and social media engagement, we often find ourselves detached from nature and our inner selves. Walking allows us to decelerate, attuning our senses to the whispers of the wind, the rustling of leaves, and the fragrance of wildflowers. Through this communion with the countryside, we restore our natural equilibrium and discover serenity amidst the tumult of contemporary existence.

Ultimately, walking in the Landscape epitomizes the symbiosis between nature and the human spirit. It not only enables us to explore the outer world but also offers a path of self-discovery. With each step, fresh perspectives unfold, leading us to a profound understanding and harmony. Consequently, this awareness extends to the importance of nature conservation, sustainable travel practices, and the celebration of cultural diversity.

Irrespective of our location on the planet, walking in the countryside presents an avenue to reestablish our connection with nature and our fellow human beings. It is both an homage to the land we inhabit and a tribute to our individual journeys. Like a poetic verse, each step becomes a word, every vista transforms into a line, and the entire odyssey becomes an epic narrative. As poets of our own path, our task is to perceive and share the innate beauty bestowed upon us by nature.

As part of my analysis, I decided to explore and experience a significant portion of the Lower Saxony region. I documented my journey through photographs and also collected plants along the way, which I later used to create an herbarium. You can find the herbarium, along with the route and photographs, on the following pages.



Fig. 56 European long distance paths (ERA Foundation Waymarked Trails:, 2023)



Fig. 57 Reiziger met een hond, Anthonie Waterloo, 1773 - 1832 (Rijkmuseum , 2023)

Lower Saxony Hiking experience

I decided to visit Lower Saxony, which became a medium-scale site for this thesis. I walked, stayed, contemplated, and took photographs through this landscape to immerse myself in the character of this nature and understand certain features that could be integrated into the design. The site visit played a significant role in the entire process and was an integral part of creating a hiking trail for hikers to traverse. Thanks to this, I gained awareness of what characters travelers, tourists, or locals would perceive and how. Altogether, I made stops at 14 locations, which are depicted and recorded on this map. Locations 8-12 are the sites within the area of my detailed design.

Fig. 58 Map with Highlights along the Trail (by Author, 2023; from Google Earth)

1. Burgdammer Wiesen
2. Borgfeld
3. Wümmeniederung mit Dünen
4. Ottersberger Moor
5. Wümmeniederung-Rotenburg Obere
6. Wümmeniederung
7. Ekelmoor
8. Obere Wümmeniederung
9. Oberes Fintautal
10. Barrler Dünen und Wacholderheide
11. Höpener Heide und Höpener Berg
12. Lüneburger Heide
13. Seppenser Bach
14. Rosengarten - Kiekeberg - Stuvenwald












Fig. 59 Fischerhuder Wümmeniederung (Pictures made by Author)



Fig. 60 Ekelmoor (Pictures made by Author)



















Fig. 61 Schneverdingen(Pictures made by Author)



Fig. 62 Hassel (Pictures made by Author)

Relicts of Lower Saxony



Quercus robur -Pedunculate oak



Fraxinus excelsior- European ash



Sorbus aucuparia- Rowan



Fagus sylvatica- European beech



Betula pendula - European white birch



Alnus glutinosa- Common alder



Salix caprea- goat willow



Acer pseudoplatanus - Maple



Picea abies- European spruce



Pinus sylvestris- Scots pine



Pinus strobus- Eastern white pine



Larix decidua- European larch

During the field survey, I created a small herbarium as I trav- eled, representing the most commonly encountered species across the areas I visited. I visually divided this herbarium into four categories: trees, grasses, herbs, and shrubs. I believe that gaining knowledge about the local flora led to a deeper understanding of the range of species that pri- marily represent the potential natural vegetation in the area. Through this form of exploration, I have acquired a certain understanding of the native vegetation, which I later strive to assess and utilize in the design process.

HERBARIUM



Bromus erectus Huds.



Festuca pratensis Huds.



Poa compressa L.



Holcus lanatus L.



Cynosurus cristatus L.



Dactylis glomerata L.

Lolium multiflorum Lamk.



Festuca rubra L.



Elytrigia repens (L.)



Festuca ovina L.



Bromus inermis Leysser



Trisetum flavescens (L.) P. B.



Rumex patientia- Patience dock



Centaurea cyanus- Cornflower



Achillea millefolium- common yarrow



Artemisia vulgaris- common mugwort



Symphytum officinale- Comfrey



Campanula rotundifolia



Larix decidua- European larch



Glechoma hederacea- ground-ivy



Lamium purpureum- red dead-nettle



Tanacetum vulgare- common tansy



Urtica dioica- Stinging nettle



Origanum vulgare-



Larix decidua- European larch



Prunus spinosa- blackthorn



Larix decidua- European larch

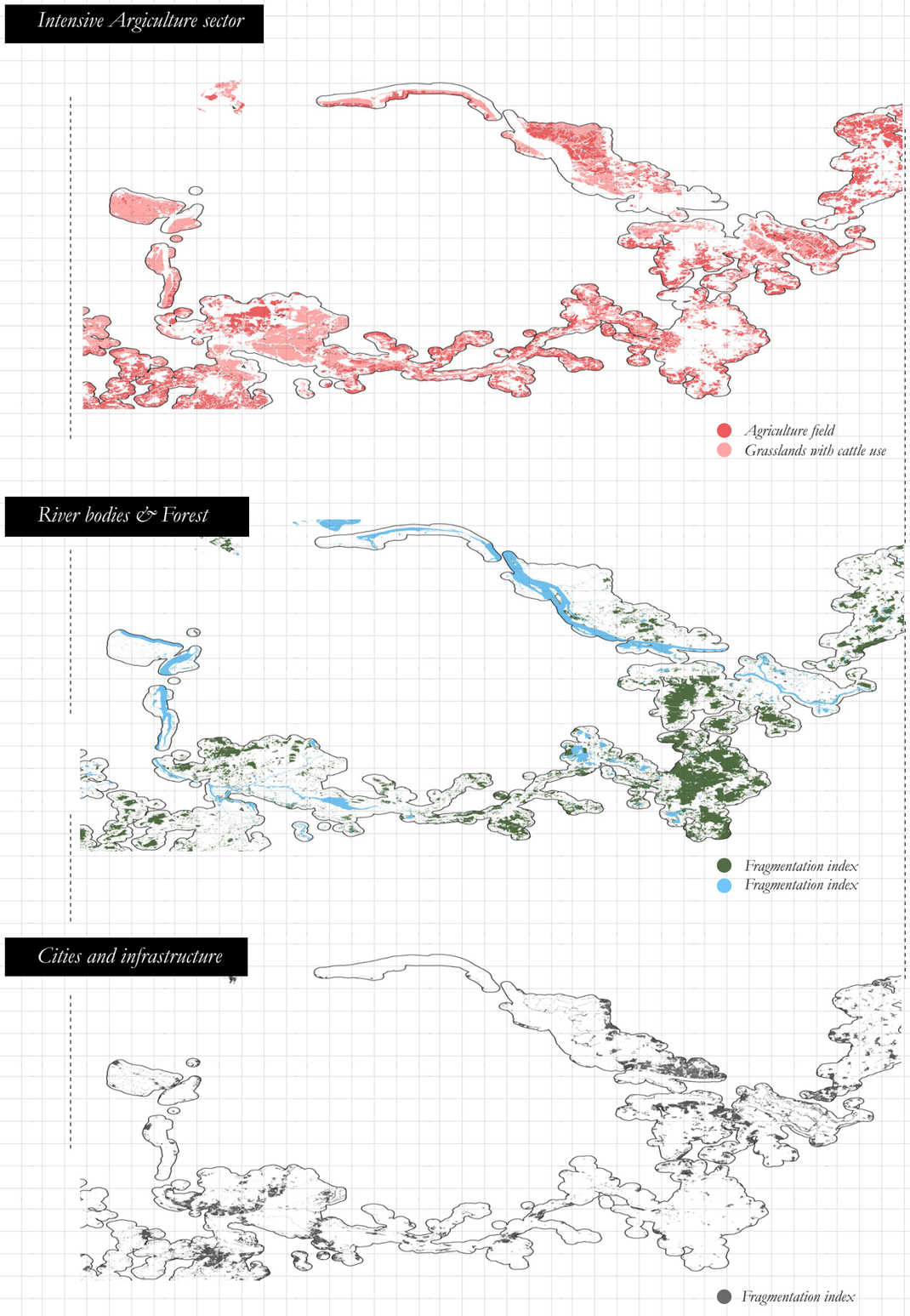


Elaeagnus umbellata- umbellata oleaster

Corylus avellana- Common hazel

Sambucus nigra- black elder

Fig. 63 Herbarium with Species from the Site (by Author, 2023)



Conclusion

At the conclusion of the analysis, I wanted to summarize this stage and derive a clear and coherent conclusion for the territory of Lower Saxony, which has become the focal point of moderate scale, namely Hamburg-Bremen. This region has been historically significant due to its biodiversity, shaped over centuries by geological movements, human presence, and notably, its proximity to the North Sea, numerous streams, and rivers. These conditions create a suitable environment and habitat for hundreds of thousands of migrating birds, traveling from northern landscapes to Africa and back. It is therefore not only a regional wildlife source but also a globally indispensable location, particularly referring to the western coast, the Wadden Sea.

So, what are the advantages and disadvantages? I divided the conclusions of the analysis into several potential sectors that play the most significant role. These sectors are agriculture, forests and water bodies, and finally, urban areas represented by cities and infrastructure.

Agricultural landscape: The agricultural landscape is highly prevalent and distinctive in the territory of Lower Saxony. It covers approximately 57% of the total area with agricultural utilization such as pasture or productive fields. In this sector, there needs to be a significant transformation of invasive practices, implemented through the Tomorrow's (P)Ark initiative. Agriculture is simultaneously one of the biggest challenges for various ecosystems, either destroyed for agricultural practices or actively suppressed through the absence of heavy machinery, the use of chemicals, or represented by extreme monocultures that pose insurmountable obstacles for biodiversity. Within these changes, a smart integration plan for renewable energy sources should also be developed.

Forests & Water bodies: The territory of Lower Saxony has historically been rich in forests and water bodies. Unfortunately, in both cases, the area has undergone negative transformations, with substantial forest areas cleared and water meanders straightened, going against the principles of organic nature. For these reasons, a systematic plan should be established, not only in this region but throughout the entire (P)Ark territory, to determine which locations and horizons should be reforested and transformed using succession to enhance ecological quality and simultaneously serve local economies or future construction development as a source of materials. In terms of water conditions, it is recommended to systematically restore the arms of old meanders in suitable areas, and land depressions can help create future ponds or wetlands, which are vital components of the landscape. These water bodies actively contribute to the functioning of forests and the retention of carbon dioxide. Lastly, I would also recommend utilizing the technique of flowing meadows, historically used for soil revitalization and currently for the restoration of natural plant communities such as vanishing orchid meadows.

Urban areas (cities, infrastructure): The territory is home to two major agglomerations: Hamburg and Bremen. These cities present a range of significant social dilemmas. It is necessary to reconnect the cities to their surroundings through systematic planning of green corridors and urban systems, allowing fresh air to enter and cool the cities, contributing to the quality and satisfaction of life. Systematic guidelines should be developed for planning cities in the context of the landscape, ensuring that sharp boundaries are not created. In other words, suburbs should become green paradises not only because they are closest to the outskirts but because they serve as important landmarks that blur sharp human structures and connect them with the nearby national park. Cities should also begin planning sustainable construction using local materials and focus on affordable housing for the younger generation. They should motivate and implement necessary changes, aligning with the residents' vision of a healthy landscape both within the cities and their surroundings, which significantly influence them.

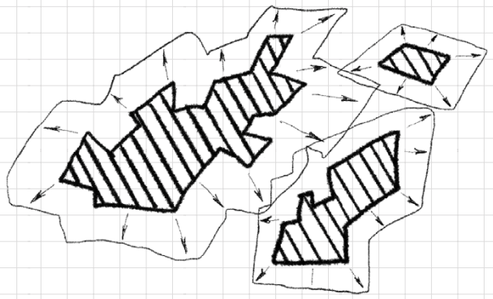
Fig. 64 System Layers Analysis (by Author ; from Geofabrik GmbH Karlsruhe, 2022)

Design Principles- Destilation

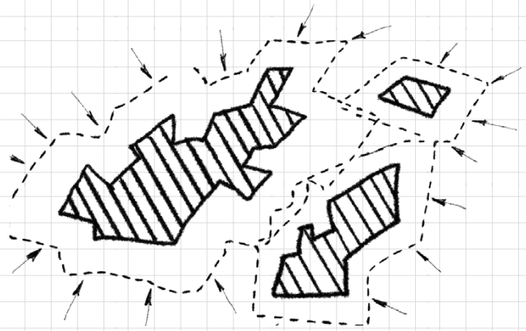
4

Design principles XL
Design principles M- S: Extra Urban
Design principles M- S: Urban= Cities are integrated
Human Involvment
Long term strategy

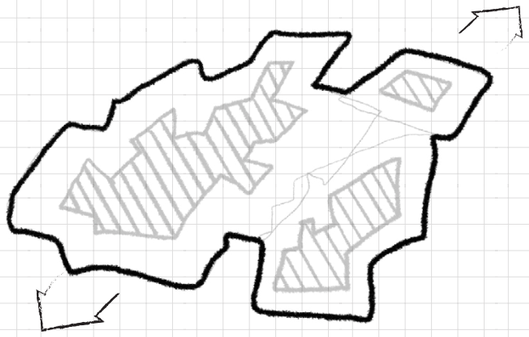
Extend/ Create



Protect

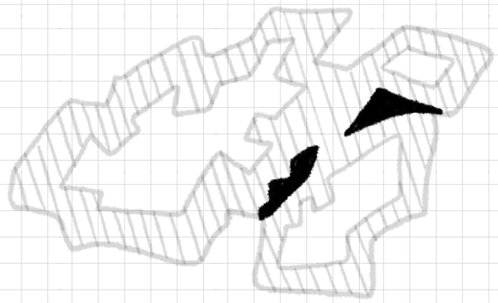


Connect

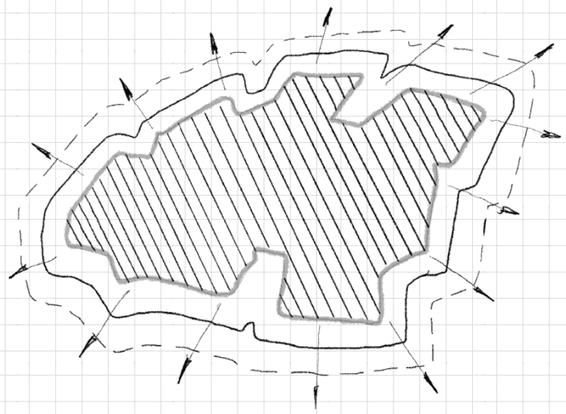


The most significant step and objective is the connection of individual nature reserves and parks in order to create a strong landscape structure that enhances genetic and ecological biodiversity, aiming to mitigate or even halt the massive species extinction. This connectivity lies in a sort of new management approach that will not be invasive, allowing nature to thrive, reproduce, and contribute to the restoration of the relationship between humans and nature.

Fill



Renew/ RESONATE



Design principles: XL

To create a park of such scale, it is necessary to establish broad principles. The first step is the search/establishment of a strong structure within a suitable environment that is biologically diverse. Without such an environment, we are unable to create a truly meaningful and robust structure. Therefore, the park itself is built upon one of the strongest protected areas, Natura 2000, and other international conservation structures. After selecting the appropriate location and direction, we will create a one-kilometre buffer zone.

The purpose of such a buffer is to create a non-invasive environment that, over a certain time horizon, will transform into a space where these national parks and Natura 2000 areas can expand. In other words, in this case, it involves establishing a MINIMUM THRESHOLD, the FIRST STEP in the societal transformation required to truly preserve the European biodiversity palette and avoid mass extinction/decline of animals and plants that were once very common. **Therefore, this offset aims to protect the remaining biodiversity assets we have while concurrently creating a CONNECTED landscape structure.**

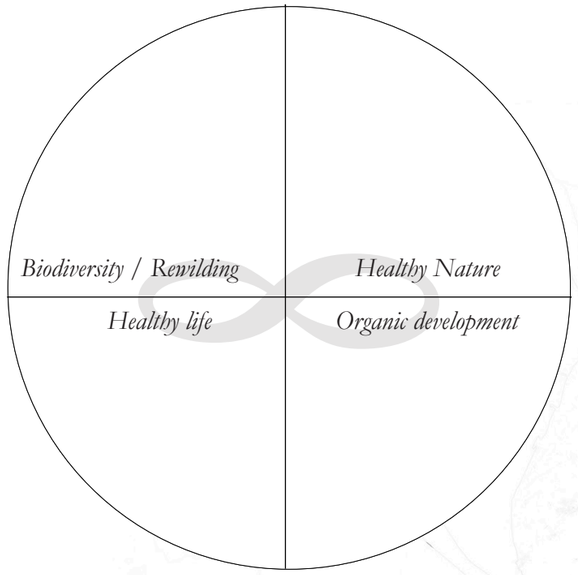
When we create this offset, it may result in certain gaps or perforations in the area that need to be filled to prevent unintended consequences. For these reasons, the (P)ARK structure is enhanced with these additional sites.Only in this way will we achieve a cohesive structure that will have no internal gaps.

In a situation where we achieve all these steps, a strong landscape structure capable of facing an uncertain future and protecting all animal and plant species within it will be established. It strengthens the functioning of the existing ecotopes on-site. These natural and significant ecotopes include pine and mixed forests, heathlands, peat bogs, grassy plains, and both small and large wetland configurations. Thousands of species live within these natural arrangements, with many being classified as endangered and several dozen appearing on the red list.

So, what does the future hold for this "buffer"? The future I envision is a state I refer to as resonance. It is the spreading of similar ambitions to the wider surroundings. It becomes a place that can serve as an inspirational source for the transformation that Europe as a whole will have to undergo in the future.

Fig. 65 Large Scale Design Principles (by Author, 2023)

Design scale XL-M

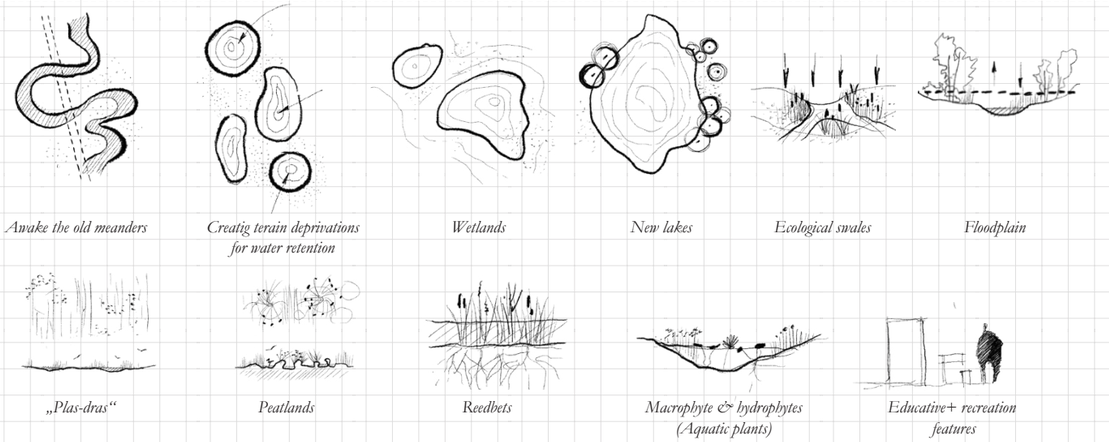


This idea aims to create a non-invasive environment where the needs of humans and the environment merge into one (**see diagram in the upper left corner**).

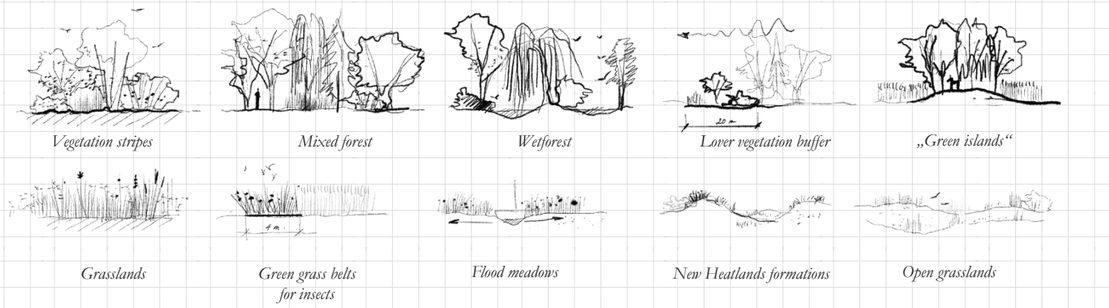
By applying large-scale design principles, we should be able to achieve such an abstract landscape structure (**see large scale map**) that combines and, most importantly, connects a series of nature reserves with various ecotypes to nearby urban structures. To achieve these goals, it is necessary to establish design principles even on smaller scales to create a new structure of a continuous national park that connects nations through nature and ensures a positive future for the species living within it. You can find then on following pages.

Fig. 66 Landscape Structure with 1km buffer applied (by Author, 2023)

Water systems



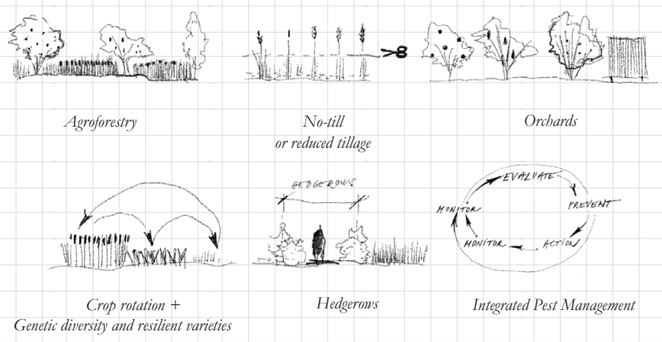
Green structures



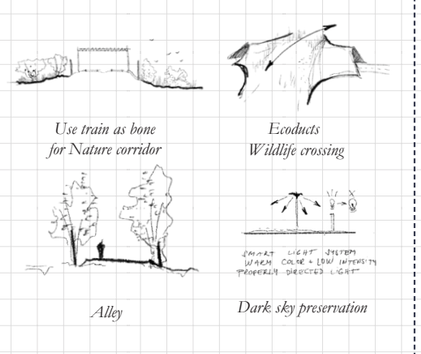
Rewild practices



Agriculture „TransFORMATION“



Infrastructure



Design principles M - S
Extra-Urban

For medium and small scale, a toolbox of solutions has been created that address four themes related to the fragmented landscape and aim to mitigate this spatial phenomenon in Extra- Urban Landscapes. These four sectors are the water system, green structures, agriculture transformation, and infrastructure. Each intervention aims to strengthen or create new ecotopes that provide shelter and expand habitat for a variety of animal and plant species. Together, they will create a robust mosaic of cultural landscape, which has the potential to survive and adapt to an uncertain future associated with climate change, social pressures, and similar challenges. **The final aim of this range is to provide these guidelines to individuals, local communities, and other communities to achieve the targets of a resilient landscape. These guidelines encompass both small and large interventions that each of us can undertake.**

The first section of principles focuses on water-related systems and ecotopes. It encompasses a range of small and large interventions aimed at showcasing water on a larger scale or addressing water retention in open landscapes. Given that the landscape is increasingly facing water scarcity during warm periods of the year, it is necessary to maximize the areas that contribute to rainwater retention and strengthen and stabilize existing ecotopes. Within the water system section, the phase of water purification using natural systems such as reed beds or aquatic plants is also crucial. In other words, phytoremediation should occur, and in cases of severe pollution, mechanical removal methods should be employed. After all, if water is the foundation of life, it must not be transformed into poison.

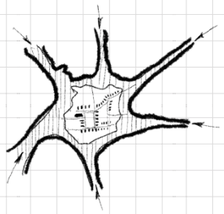
The next group consists of green structures that primarily create dry corridors, allowing a variety of mammals, birds, and amphibians to migrate and strengthen genetic biodiversity across Lower Saxony. To select suitable plant communities for each formation, consultation with local professionals and ecologists is necessary to ensure proper integration and connection with existing natural plant species. The goal is to achieve a natural integration of what should naturally be found in the area.

A significant, perhaps the most significant, role in the functioning of such a concept is the strict transformation of intensive agriculture. It is necessary to limit various practices such as excessive soil chemicalization and the excessive use of fertilizers, which turn naturally poor soils into rich ones. Another example of a technique is intensive ploughing, which prevents soils from retaining carbon dioxide. Therefore, there should be a shift towards appropriate techniques and the introduction of new methods such as no-till agriculture. This technique also helps control erosion, which is currently a local problem. Finally, the implementation of techniques such as orchards and agroforestry, which combines fruit orchards with a crop rotation system, should be encouraged.

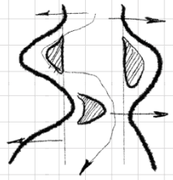
The last component of the proposed spatial principles involves interventions related to infrastructure. These measures mainly aim to minimize landscape fragmentation. A crucial guideline is also the transformation of public lighting, which must be carefully selected to avoid harming and dispersing the nocturnal wildlife in natural areas.

Fig. 67 Extra Urban Design Principles (by Author, 2023)

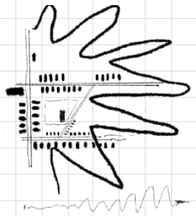
Big scale planning- "green maps"



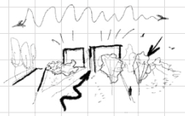
Big green planning



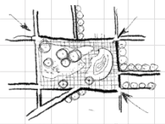
Flood planes = water integration



No straight borders = blending



Green inclusive districts



Public spaces

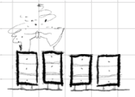
Public involment



Urban gardening



Volunteer programs
Community programs

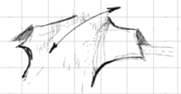


Beekeeping

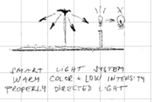


Eco-friendly maintenance program

Conflicts



Landscape fragmentation



Light pollution



Overpopulation



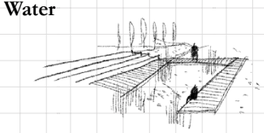
Housing shortages



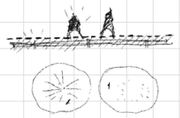
Polution

Activities

Water

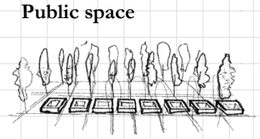


Outdoor swimmingpools



Water parks

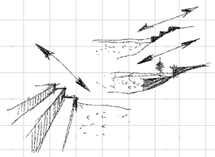
Public space



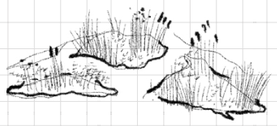
Market place



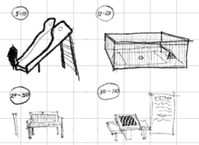
Public greenery



Contact with water



Small ecological islands

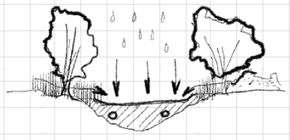


Multi - age public elements

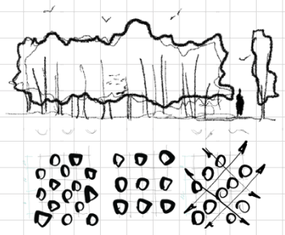


Permeable Pavement

Ecological techniques



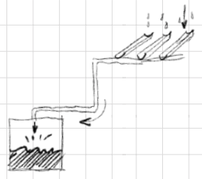
Sustainable Drainage Systems



Urban Forests



Waste Management



Rainwater Harvesting

Design principles M - S

Urban= cities are integrated

A very important part of the new vision for the structure of national parks is the integration of cities and villages into the overall conservation framework. This is because these cultural structures are significant components of the global landscape. Therefore, it is necessary to find solutions and answers to how these urban agglomerations can become national parks and how we can organically connect them to natural structures and systems. As part of the study, a range of design solutions has been developed, aiming to establish minimal steps that could assist in this transformation and embrace biodiversity.

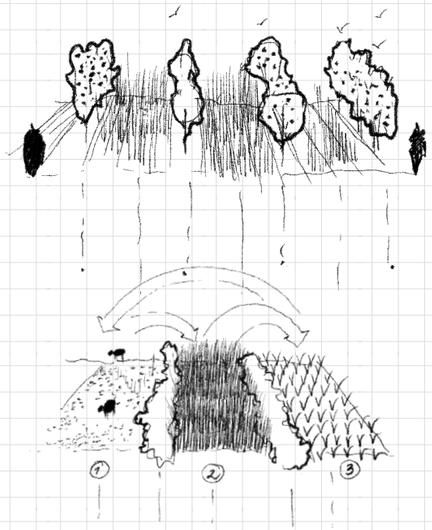
First and foremost, there are large-scale steps within urban planning that propose a coherent and meaningful green infrastructure through which natural reserves can be integrated into the fragmented and dense structure of cities or larger villages. These green plans should include the spatial language and defined palette of plants and trees that closely mimic the potential map of natural vegetation or propose suitable resilient species for adaptation. These specific species will be utilized within green and blue infrastructure, which aim to make cities more resilient and livable in times of global warming. The selection of species could be guided by urban forestry nurseries, governed by municipalities and policies, making these strategies more accessible for individual property owners or developers. Such steps contribute to an overall and clean vision of public green spaces. Another large-scale solution and proposal is the increased allocation of space for rivers and riparian parks, which could enhance infiltration capacity. This approach provides rivers with more space, reduces the susceptibility of cities to flooding, and simultaneously creates popular places for urban recreation. Last but not least, there must also be a revision of sharp and incompatible boundaries with organic ecotopes found in the open landscape. For these reasons, it is necessary to reconsider old ways and blur the sharp edges of urban areas.

The social aspect of these plans also includes public participation for suitable placement and integration of specific programs and gaining public acceptance. Within this design palette, I have identified four types of public involvement that aim to improve the relationship between residents of different neighborhoods and public life, while simultaneously fostering a more environmentally conscious mindset towards our surroundings. Specifically, these include urban gardening, volunteer programs for managing public green spaces, including large parks, beekeeping involving all age groups, and ecologically friendly management aimed at educating about more sustainable practices.

Lastly, two sections are complemented: social activities related to spatial interventions and ecotechniques that strive to be truly environmentally friendly. Within the water infrastructure, cities will be equipped with various places where people can interact with water and even cool off on hot summer days, thanks to the water quality. Farmer's markets will be integrated into public life, symbolically connecting the urban and rural areas and promoting local economy rather than the global one.

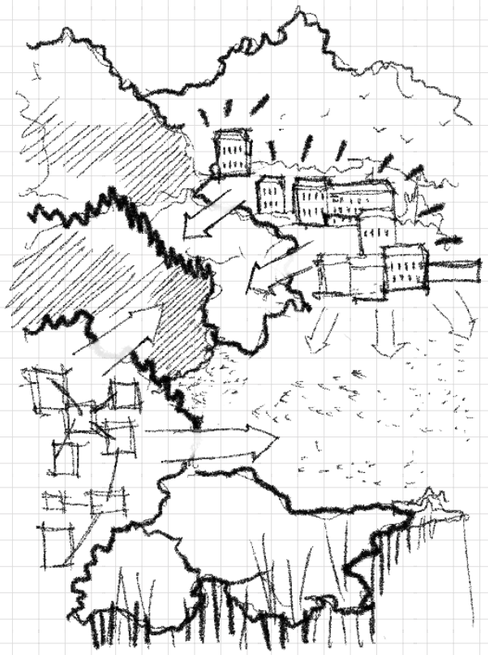
For equitable utilization of public spaces, it is also necessary to consider the integration of multi-age features that can appeal to different age groups and contribute to the formation of stronger and more personal communities. And finally, amidst all these elements, there is a palette of ecotechniques that primarily aim to make cities more resilient to droughts, temperature fluctuations, and facilitate the integration of a wide range of wildlife.

Fig. 68 Urban Design princples (by Author, 2023)





Ecological agriculture

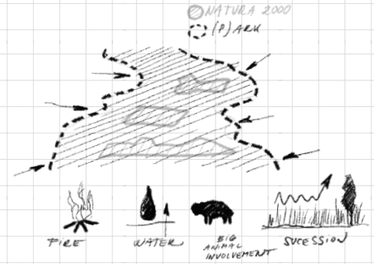




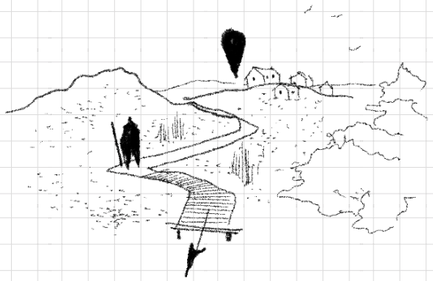
Adaptive housing
Urban development

Human involvement in this new structure of nature conservation plays a significant role and, in a way, changes our perspective on the current methods of protecting the environment. Humans and their activities have a place within this framework, but they require a certain, relatively strict transformation. One of the first processes in which humans are involved is agriculture and economy, in other words, the land provides us with food. When we consider the percentage of agricultural areas in the proposed area, it is evident that this sector must undergo a strict transformation that prohibits or restricts invasive techniques and replaces them with sustainable agricultural practices such as agroforestry, no-till farming, crop rotation, and environmentally friendly production of construction materials.

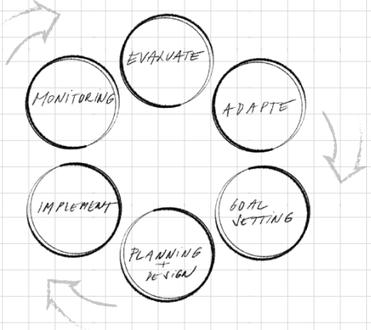
Tomorrow's Park project includes and acount with vision for urban expansion. This phenomenon and the need to create sustainable housing units are taken into consideration. However, it is important to note that the project has a time horizon of 20-30 years, during which the area will be capable of producing natural materials for this transformation. Local agriculture and economy should also address this need for non-invasive building materials such as wood, industrial hemp, reeds, and other bio-based materials. This transformation, therefore, aims to redirect from global resources to local sources. These new settlements should be appropriately and environmentally integrated into the territorial plan of the project (P)ARK.



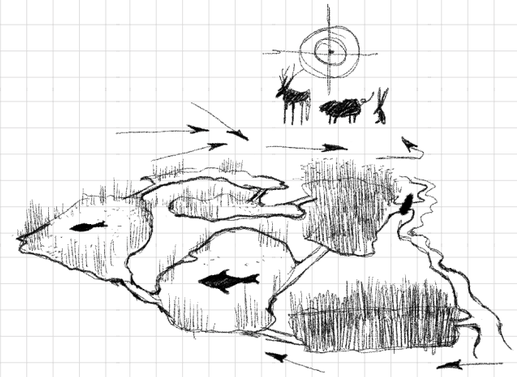
Rewilding practice
+ maintanance of nature sites



Walking/ hiking
Ecological tourism



Monitoring ++



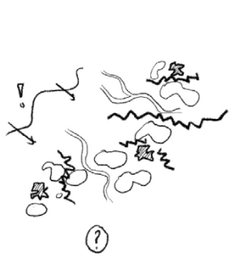
Hunting & Fishing
+freshwater aquaculture

From the perspective of protecting natural structures and highly valuable biodiversity centers, it is necessary to involve rewilding practices that will be implemented by trained teams of experts and volunteers. These practices include, for example, nature disturbance, predator reintroducing, species reintroducing, and a continuous effort to create a connected complex of nature. These expert groups will also be responsible for the work associated with monitoring and evaluating successes and failures. Only based on such research will we be able to assess how well and successfully the large-scale transition has been carried out. In order to provide suitable support for scientists and researchers, a set of mobile small laboratories that can be moved around the landscape must be created. This architectural infrastructure should have a unified visual style to be recognizable, and this visual style should be inspired by the principle of mimicry, blending in with the surrounding landscape.

An important aspect of the entire concept is also the experiential element, specifically walking and hiking. It allows not only local residents but also tourists to immerse themselves in and experience the landscape. It involves a network of trails, including a main trail that runs from Amsterdam to Copenhagen. Along this route, there are non-intrusive nature camps where hikers can rest or stay overnight. This new layer of tourism should be centrally monitored, and relevant organizations should be aware of the number of people using the trail. In case of overcrowding, it is necessary to reduce this number or plan accordingly to avoid disturbing the animal species living in protected areas.

The last component in this brief list is hunting, fishing, and freshwater aquaculture, which aim to maintain large groups of mammals and fish communities in harmony. Local residents will have access to locally sourced game meat.

Long time strategy for the project (P)ARK



Identify Hotspots

forget about fragmentation, solve imagenairy boundaries

Now



Organise as one

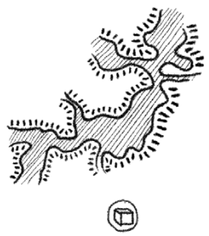
Imagine the biggest continuous park, linked by trails

2040



Rewild

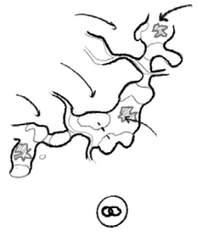
Strengthening natural areas, rewilding



Solidation

A strengthened and resilient structure of cultural landscape

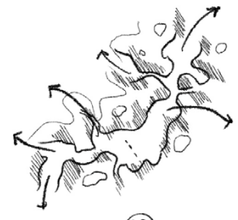
2065



Continuous Refuge for All

carbon sink, climate buffer, biodiversity hotspot

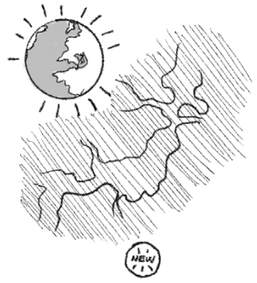
2080



Symbiose & Flourish

co-living with nature, go to the symbiocene

2100



INNOVATION

breeding ground for all species and innovation

2120



resoNATION

New culture of nature conservation, fully protected planet

???

P - roblem
P - ark
P - robability
P - arking
P - eople
P - ower

PARK

ARK

(P) ARK

= Designing the biggest continuous Nature and Landscape Network of North-West Europe.

In the initial phase, it is important to identify suitable areas for the creation of a natural park. This selection should be based on similarities in geological formations, soil conditions, ecotopes, and spatial arrangement. Along with identifying hotspots, it is also necessary to determine the type of landscape fragmentation and territorial conflicts that need to be addressed or resolved. In the following step, it is essential to begin implementing appropriate principles aimed at overcoming perceived boundaries (national borders, etc). Such principles include large-scale corridors, a system of natural patches, and similar approaches.

Thanks to these initial steps, we are able to conceptually organize the landscape into a cohesive formation that is connected by large green and blue infrastructures, creating a unified and coherent natural reserve instead of a fragmented landscape. This cohesive arrangement is further complemented by the newly created trail, which aims to connect humans with nature and provide them with a scenic natural experience.

DESIGN PRINCIPLES

ORGANISE AS ONE: The third phase aims to rewild the whole area. It is a period during which a range of principles is applied to facilitate the growth and adaptation of newly created ecotopes. In this phase, large grazers such as bison, wild horses, or herds of wild sheep are introduced. They assist in the dispersal of plant species across their corridors. Other techniques implemented include natural disturbances such as controlled burning (small-scale local fires) or managed flooding. This entire process is accompanied by a relevant monitoring system and involves the expertise of specialists in biological diversity and conservation management.

REWILD: This initial forty-year horizon allows ample time for the development of a diverse range of plant and animal species to strengthen the ecosystem and enhance its resilience for future adaptation to climate change. However, this is contingent upon the implementation of recommended elements and techniques. At this stage, the landscape should retain sufficient water to support natural processes, sequester carbon dioxide, and simultaneously provide a sustainable amount resources for local communities.

CONTINUOUS REFUGE FOR ALL: Over a sixty-year horizon in a positive scenario, we can expect the continuous park to transform into a strong natural structure that addresses several issues such as the decline of genetic biodiversity, carbon sequestration, water retention, population growth and similar challenges. In this situation, we can assume that we have reached a point where the environment provides a safe refuge for all.

SYMBIOSE & FLORISH: "The farmer had to think in the long term - symbolically expressed by planting a tree. And he followed an important principle: to leave the farm and its resources to future generations in the same or even better condition than he received it" (Arne Naess). These words best capture the essence of this sixth phase. The environment currently offers a positive future for future generations, new innovations, and ecological technologies that will care for the created environment for the benefit of a positive future for all who come.

INNOVATION: During this period, it is conceivable that all policies will undergo a transformation, and as an advanced modern society, we will begin to protect nature using means and methods that we cannot yet envision today. Although it is a brief portrayal, I envision a scenario where global protection of land and soil will be established.

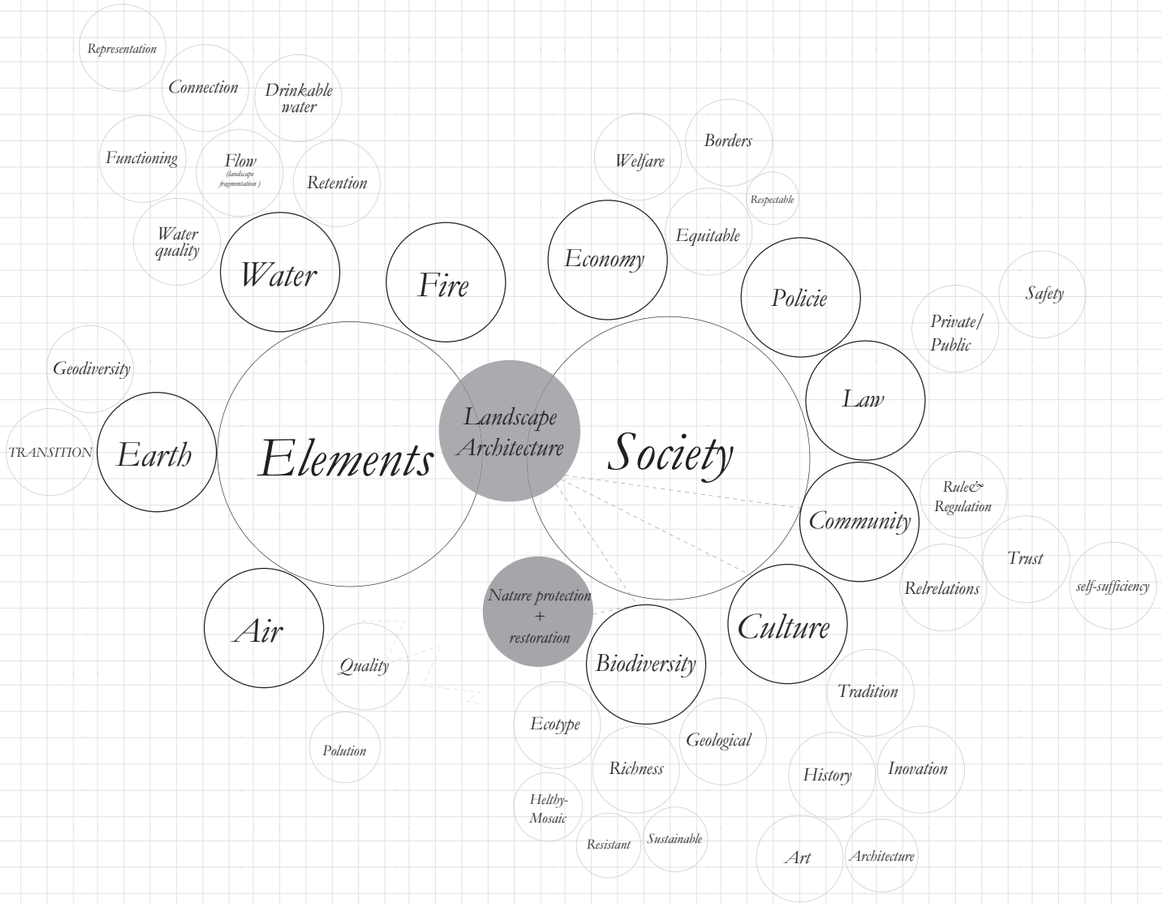
resoNATION: The century-long transformation brings about a new phenomenon called resonance, signifying that the hypothetical park begins to transcend its boundaries as the surrounding environment undergoes transformation as well. The main principle of growth from the inside out continues to unfold. This means that under favorable conditions, both the development of various ecotopes and the prosperity of human economies thrive. In this phase, efforts should culminate in the symbolic fulfillment of the literal connection between humans and nature at all levels.

Design interventions

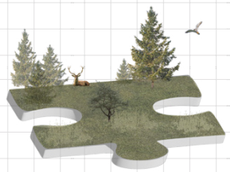
5

Complexity of the project = New form of National parks
North- West Europe System
    Vision 2100
    Hiking Path: From Amsterdam to Copenhagen
    Visual Culture of Hiking Path
Regional Synthesis: Bremen x Hamburg
Landscape Architecture in Doughnut
Design location - Spatial Analysis
Design Strategies
Research Through Design
Main Plan
Design location NO.I
        Forest
        Agroforestry
        Regenerative Agriculture
Design location NO.II
        Heathlands
        Orchards
        Riverlandscape

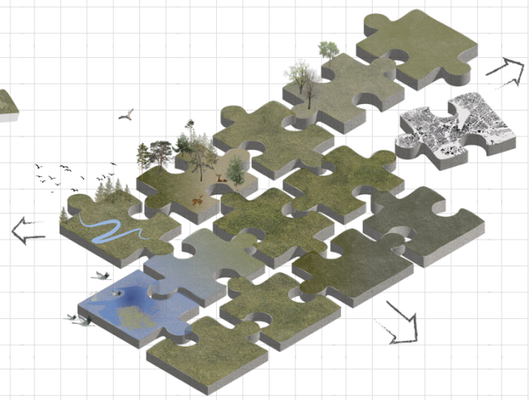
Overall Systems
Time Frame
VISON FOR THE FUTURE



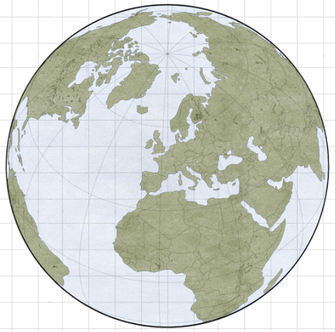
Protected areas visualised as fragmented puzzle



Aim of Tomorrow's (P)Ark



Global scale protection



Complexity of the project
=New form of national parks

To apply such an initiative, many changes are necessary. Primarily, it involves political shifts, a vision of coherent regional development, education, a comprehensive approach to landscape conservation, and many other aspects (fig. 45). To implement it, a team of experts from every field (ideally representing all participating countries) and many others should be established. This will allow us to incorporate all relevant aspects into the project. It is crucial to establish an international commission to oversee the implementation of all necessary steps and coordinate communication among the different policies of the participating countries involved in the project. It is essential to involve information about local needs, objections, and input from all participants, including comprehensive social participation, to achieve consensus and initiate the project.

Considering that this proposal cannot address all: political, economic, or legal aspects, I will focus primarily on the industry I understand and can grasp, which is the functioning of current nature conservation. As mentioned in the first chapter, the current approach to conservation primarily focuses on selectively protecting the most endangered animal and plant species, treating them as separate fragments. However, it is increasingly evident that such an approach is unsustainable in the long run, as landscape systems operate across the entire planet. For these reasons, there is a growing debate among experts as to whether it is time to radically change conservation practices. We should aim to comprehensively protect larger sections of land, working to repair landscape fragmentation and facilitate genetic and ecotypic biodiversity.

The main goal of this work is to find and offer a new vision of spatial organization and the form of a natural park. This park aims to enhance animal and plant biodiversity and prevent the sixth mass extinction by connecting the complex and problematic landscape with fragmented remnants of "wilderness." This chapter will focus on a detailed description of this specific design proposal within the context of Northwestern Europe (NL, GM, DE), with a specific focus on Lower Saxony. Like the previous chapter, this section will be divided into three scales. The first will present the large-scale park, including necessary information. Next, a regional vision for the Bremen-Hamburg area will be outlined, followed by a study that delves into a smaller scale, demonstrating how such a transition can be spatially achieved to strengthen existing nature reserves and further connect them with the relatively dense urban environment.

Fig. 69 Landscape Architecture in context and Nature Puzzle (by Autor, 2023)

North -West Europe System

The concept of Tomorrow's (P)ARK for Northwest Europe is a comprehensive synthesis consisting of many elements and addressing a range of issues. Essentially, this system can be divided into three sectors: social, cultural, and dedicated to the landscape. These three pillars are conceptually represented on the adjacent side to provide a brief overview of the individual efforts of each sector.

The new hypothetical landscape synthesis is like a "strudel" that carries and symbolically connects a number of historic cities, countless villages, and smaller neighborhood estates scattered across the countryside. This means that it connects various communities, visual uniqueness, and associated customs. It is certain that these local peculiarities need to be taken into account and incorporated into the visual language and overall strategy.

In the case of linking individual policies and arrangements, our goal is to create a stronger initiative for implementing the Degrowth strategy, which underpins the success of such a project. It is therefore necessary for regional representatives to come together and plan local participation coherently and systematically, aiming to find a consensus among local users, residents, as well as large companies and others. The representation includes major urban structures such as Amsterdam, Hamburg, and Copenhagen, which are also key destinations of the newly proposed route that connects them.

There are approximately 350 national parks and protected areas across the entire territory. The subject of protection here encompasses about 24 ecotopes, such as river landscapes, peatlands, heathlands, mixed and pine forests, marshes, tidal streams, river estuaries, salt marshes, and many others. From the outset, it is therefore a rich mosaic of different and valuable environments that, if strengthened and experiencing upward growth, can enhance and expand the mosaic of the landscape, attracting various species and providing them with a vision of a positive future environment that has long-term prospects, resilience, and strength.

Many agricultural sectors and complexes can be ecologically valuable areas. Unfortunately, the percentage of these cases is very small compared to places where current conventional farming practices are employed. It is necessary to reduce a number of conflicting approaches and methods by which we cultivate the land and which are supported by current policies. Similarly, in many cases, it is necessary to start using non-invasive but more efficient techniques that can produce significantly more products in a smaller space. Therefore, with consideration for the future, even inevitable, this sector must undergo a major transition, given the fact that agricultural land occupies more than half of the world's habitable land (UN Food and Agriculture Organization). Thus, it is essential for political behavior and direction to signal this need for significant change and find adequate ways and procedures to motivate owners of fertile land.

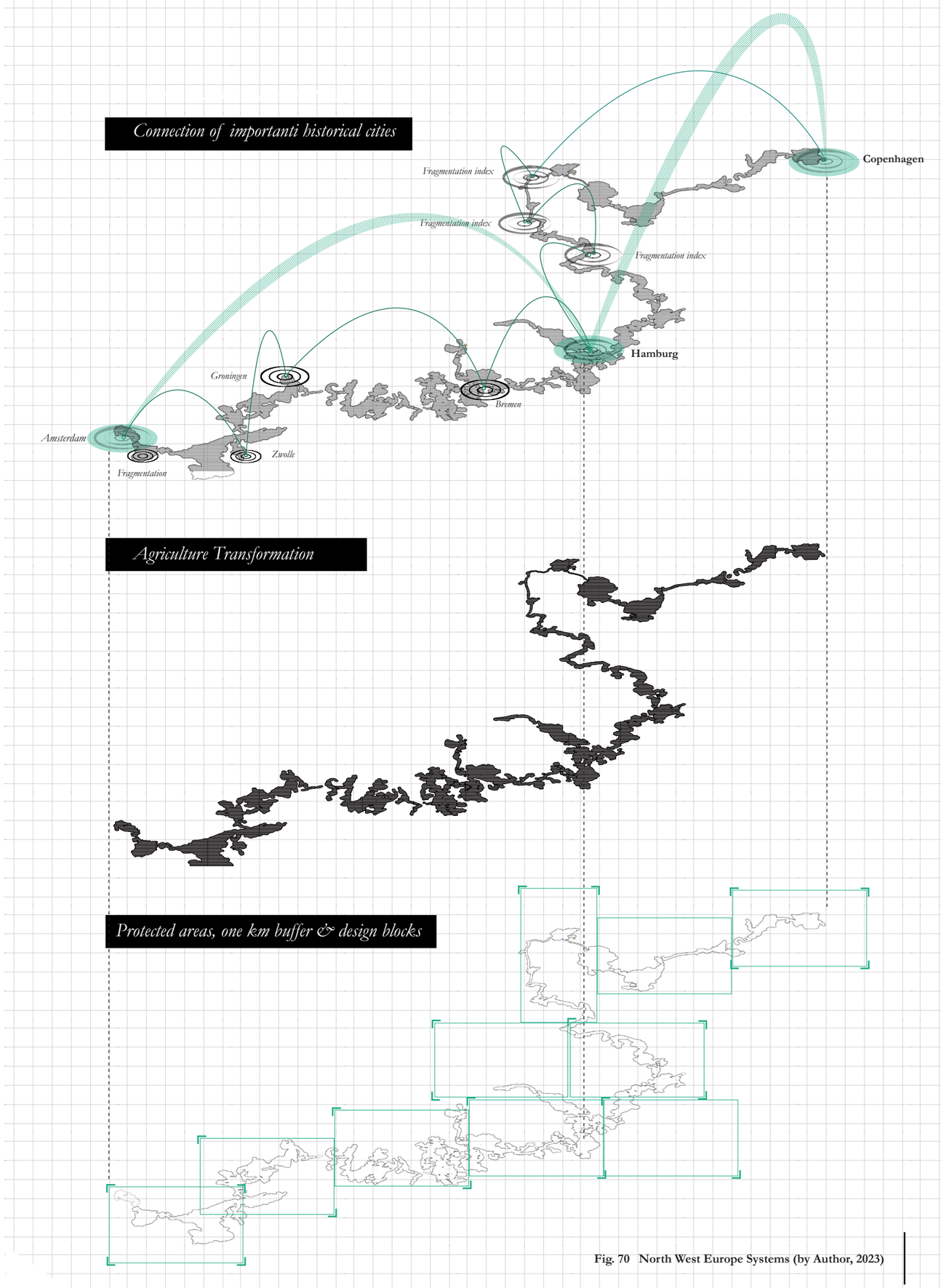


Fig. 70 North West Europe Systems (by Author, 2023)

VISION 2100

The vision of the project for the year 2100 is presented on this map, represented by two layers: Extra Urban and Urban.

The first layer depicts the landscape structure in which nature expands beyond its old boundaries. The territory has undergone a significant transformation, primarily due to the implementation of the concepts presented in the first chapter of this study: degrowth theory and rewilding theory. By applying these methods, we are able to imaginarily break free from various boundaries, such as political declarations of protected areas, towns, villages, or regions. Simultaneously, we address two fundamental questions: how the space will look in the long-term and how the economic aspect of the project will function. To be more specific, agricultural areas, which are one of the most prevalent land uses in Lower Saxony, have undergone significant transformation. Firstly, new methods of non-invasive farming have been designed, while the fields and pastures themselves have decreased, making room for natural structures that form the basis of this sustainable and healthy environment for all species residing within them. This structure eliminates political boundaries and connects nations through nature, reminding us that nature knows no borders, as its essence and functioning lie in unity, complexity, and interconnectedness.

And the second layer represents the urban system, which, after strengthening the extra-urban, must be connected to a strong and healthy natural structure, mainly considering the fact that some cities are more biodiverse than suburban areas. Therefore, it is important to connect these environments and enable the movement and circulation of animal species.

In this case, it is necessary to create comprehensive plans for connecting cities to their surroundings. This connection needs to be established in all relevant major cities and even in the case of poorly connected villages to the outskirts. In the framework of local and international cooperation, it would be most suitable for these concepts to be developed by local architects and landscape architects who will have strictly defined rules and requirements, topics, and techniques to work with. These guidelines should be established based on participation. Here, the rule applies that participation is organized by local polici who adjust this public discussion even before the start of the design process. Based on all the requirements and information, architects and landscape architects are invited to participate, continuing to be involved in the subsequent steps of the process, actively discussing the ongoing design and evaluating how it meets the requirements.

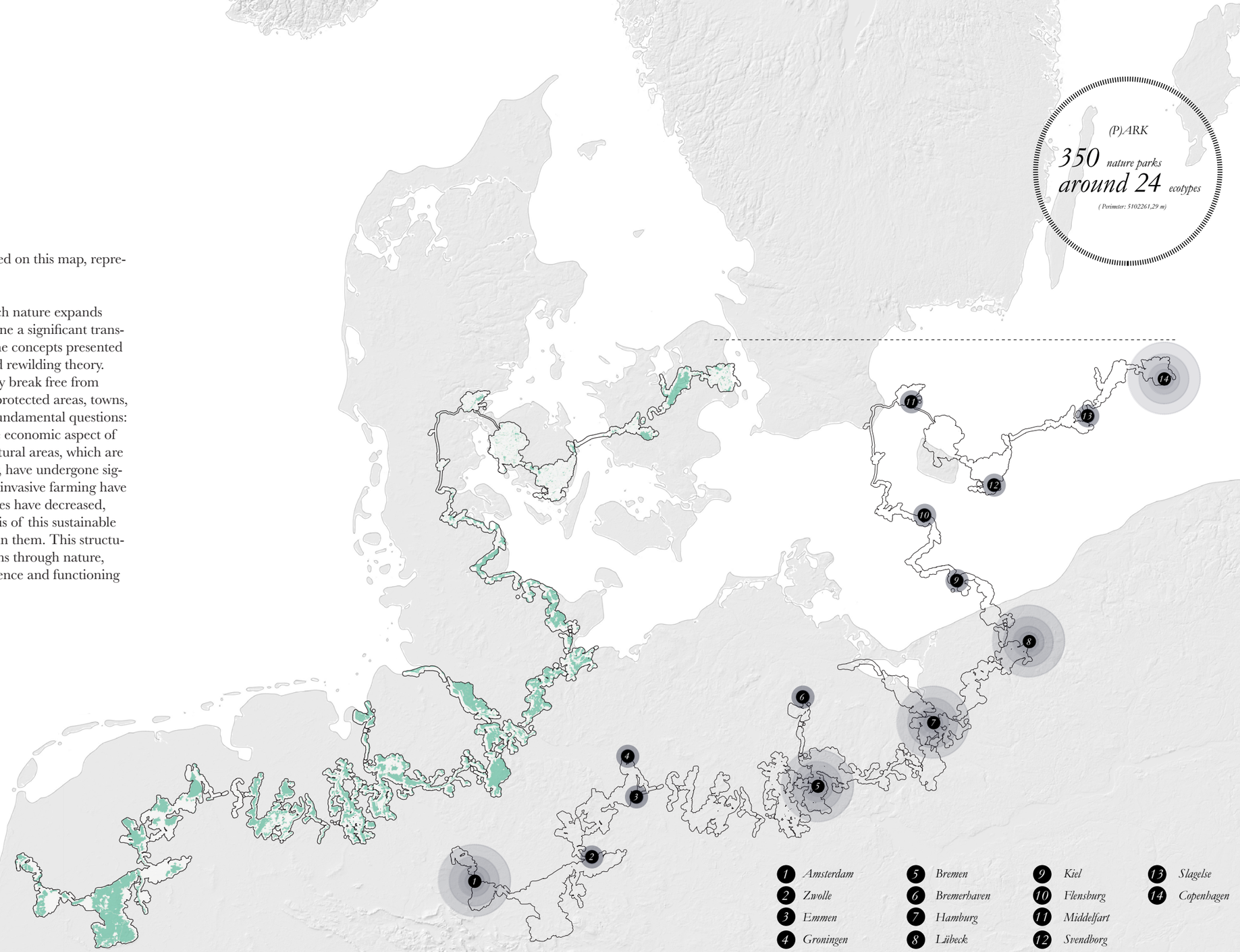


Fig. 71 Vision map of the Landscape Structure (by Author 2023; based on Copernicus.eu)

Hiking Path Amsterdam- Copenhagen

Part of the project is the proposed hiking trail that spans the entire territory and connects Amsterdam, Hamburg, and Copenhagen through the concept of walking. This trail measures just under 1700 km and can be completed in approximately 420 hours. Translated into daily performance, it can be walked in two months (considering an ability to walk 5-6 hours per day at a pace of approximately 4 km per hour), which amounts to approximately 25 kilometers per day, with no significant elevation gain.

The trail is interwoven with a network of campsites and natural accommodations that should be spaced every 10 kilometers along the hiking section. This allows for a range of options in which each individual can comfortably plan their schedule and easily navigate the availability of water, food, safe fire usage areas, or showers at regular intervals. Local rangers will oversee each hiking segment and, upon registration of each active hiker, they will have knowledge of the current number of participants. In the event of any difficulties or issues along the trail, the rangers will be able to intervene and, if necessary, repair any damages to roads, bridges, or campsites. In the case of Germany, it will be necessary to officially designate the natural accommodations as campsites since current legislation does not permit camping anywhere. For these reasons, it is proposed to design this network of campsites and accommodations and seek approval from the local government.

To ensure maintenance and minimize expenses from public funds, the concept should be 60% self-sustainable, and for this reason, a symbolic contribution should be organized for using this campsites network. The price for using a non-commercial campsite, which also covers the trail's maintenance, is 10 euros per night. These contributions should be organized through a mobile application where you specify where you stayed, and in case of any discoveries or issues, you can report these facts as well. These contributions will then be distributed according to the territory to the respective local ranger station.

The reason why we decided to incorporate walking in this project is primarily due to the perception of the importance of a healthy nature in human existence on this planet. It has been a long time since the days when pilgrims started walking on sacred journeys for religious reasons. I wish for people to return to this pursuit, not in search of God, but to discover the beauty and significance of nature, without which we cannot exist.



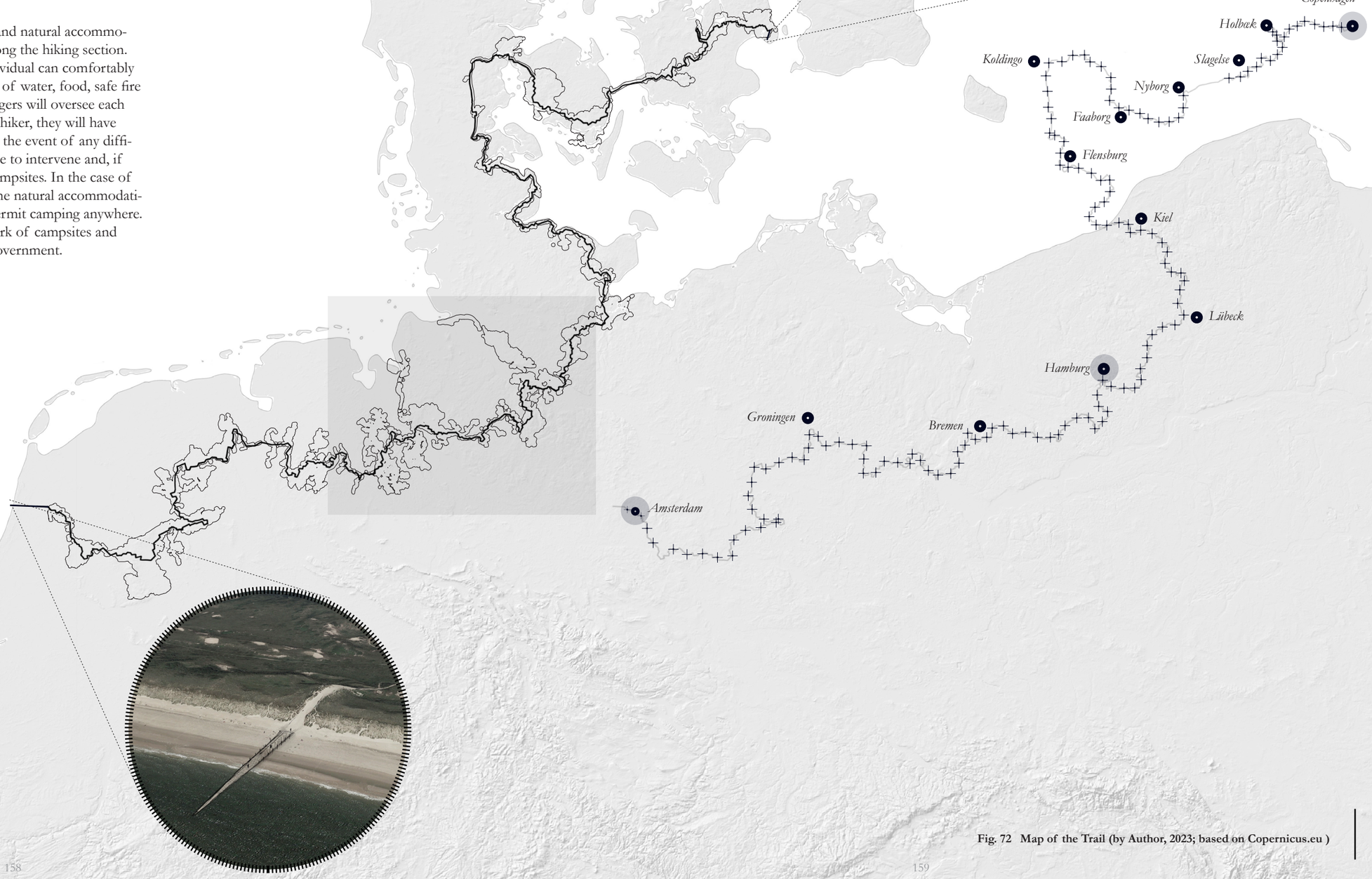


Fig. 72 Map of the Trail (by Author, 2023; based on Copernicus.eu)

Visual culture of Hiking path

Furniture, educational boards, wayfinding system, campsites.

Within the framework of the new hiking path, a visual culture of furniture, educational boards, orientation systems, and wilderness camps organized by local governments is proposed. This visual culture should respect the local architectural style, draw inspiration from history, and adapt these forms for present-day use and the current landscape. The preferred materials for implementation are natural materials such as local wood, clay bricks, reeds, willow wicker, recycled glass, and others. By using these natural construction materials, the aim is to reduce the consumption of mainstream materials that contribute to a large carbon footprint, such as the commonly used concrete.

Educational boards are placed along the entire path, showcasing the historical practices of traditional agriculture that have shaped the current and past environments. They will also present the animal species living in the area and projects implemented as part of the major transformation that brought about these changes. These information boards aim to explain the interventions and reflect on the results.

Similar to the distribution of informational boards, a navigation system will be installed to inform hikers about the distance to accommodations, campsites, stores, information centers, and provide an overview of the location. This means that hikers will know their position in terms of kilometers and their location on the trail. Along with this pedestrian navigation, the entire trail will be marked with signs indicating whether hikers are heading in the right direction.

Just as sacred trees or groups of trees were planted in medieval landscapes, new “significant pilgrimage trees” will be planted at important locations, milestones, or intersections. These will be complemented by benches or furniture that offer a pleasant resting spot for both locals and hikers.

Wilderness camps, newly created near significant nature reserves but at a sufficient distance to avoid disturbing nesting birds and other species, will have dimensions of 15x15 meters, comfortably accommodating six double tents. In this area, there should be access to water sources and a designated fire pit where small fires can be safely lit.

Another element of the residential and recreational landscape is viewpoints that allow experiencing the landscape from a higher perspective. These viewpoints will be built in a new style but following the example of observation platforms found in Lower Saxony, designed for hunters. The technique of using local wood will be employed to make the structures less detectable to animals.

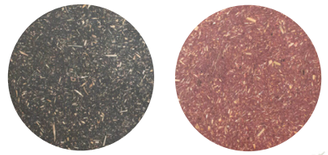
The last architectural intervention mentioned along the trail is research centers for scientists and other professionals. These research centers may vary in visual expression and size. However, they all share the concept of mimicry, aiming for the best possible integration and camouflage. They could be large interventions containing lecture halls and small accommodation spaces (several bunks for around 20 children or adults), or they could be small, mobile units.

Materials of the Path



Major paths - mostly urban areas *Wetland passageways* *Wetland passageways*

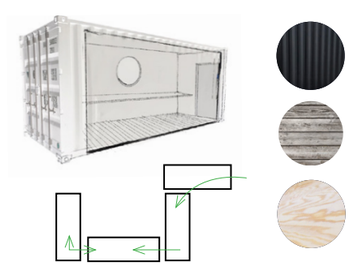
Education boards + orientation system



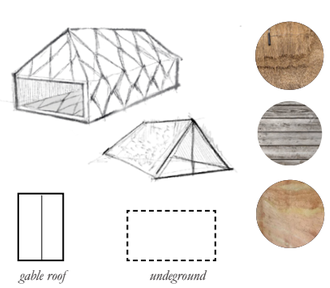
Nature trails

Education or informative boards *Orientation board* *Orientation board*

Research centers - MIMICRY



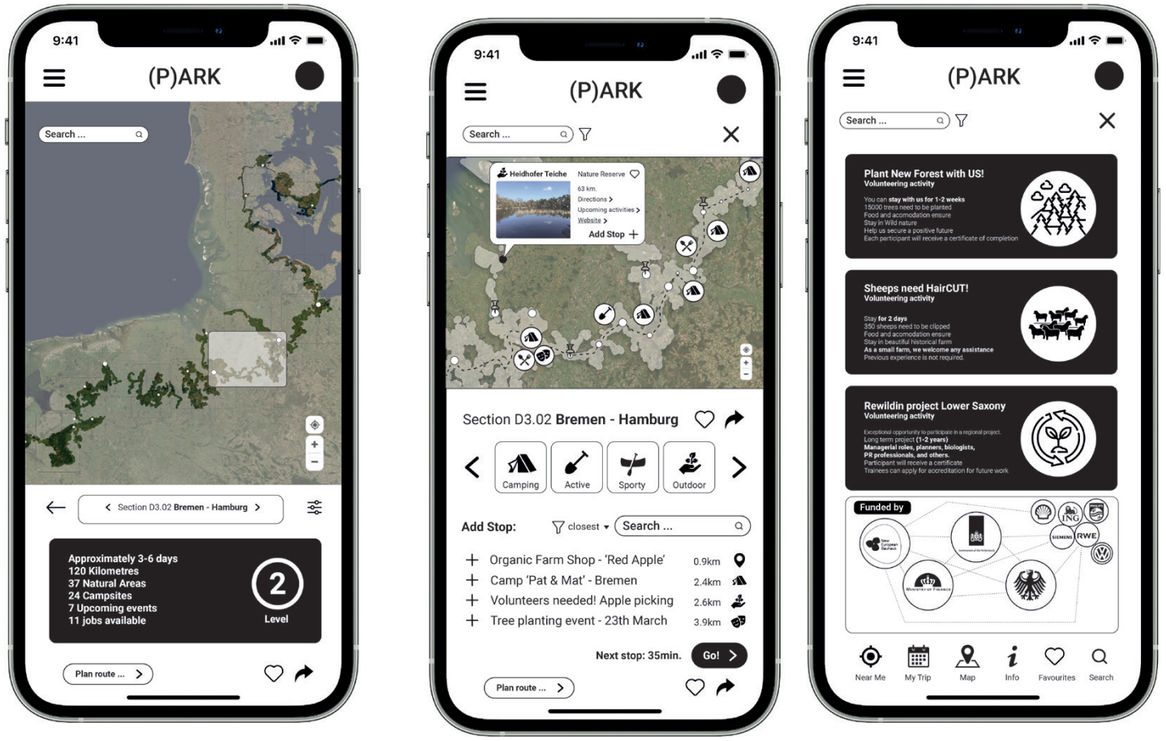
Mobile Research Cabines

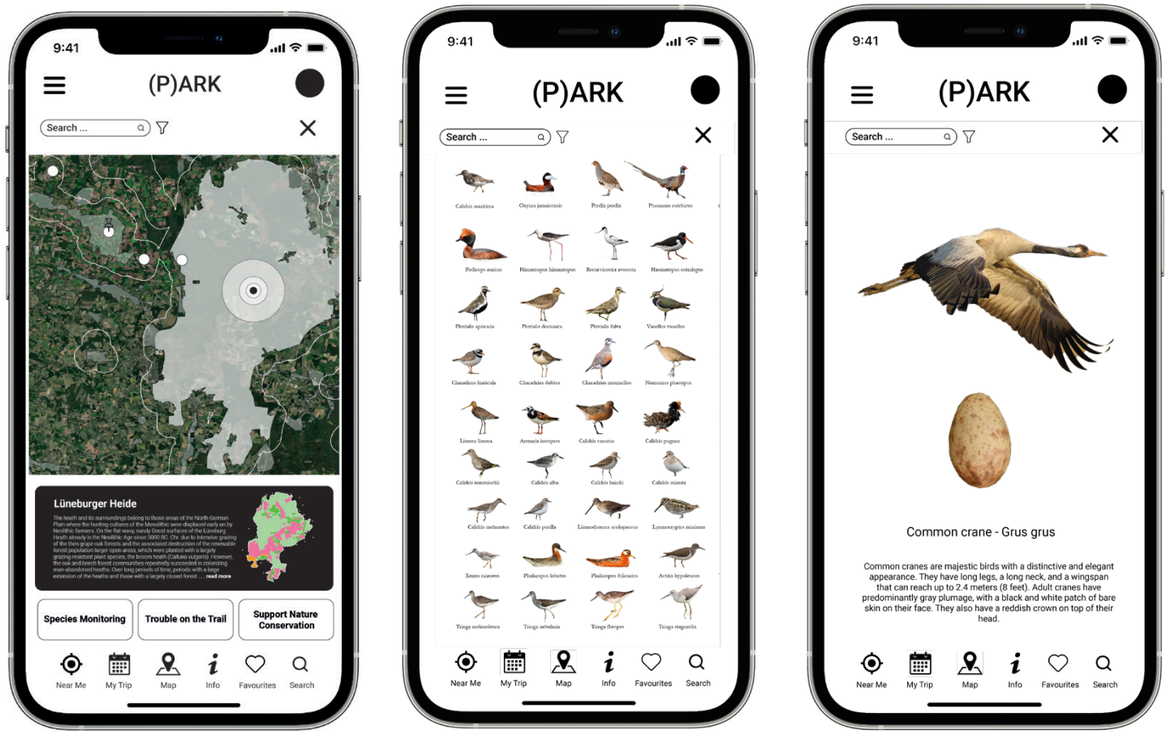


gable roof *undeground*

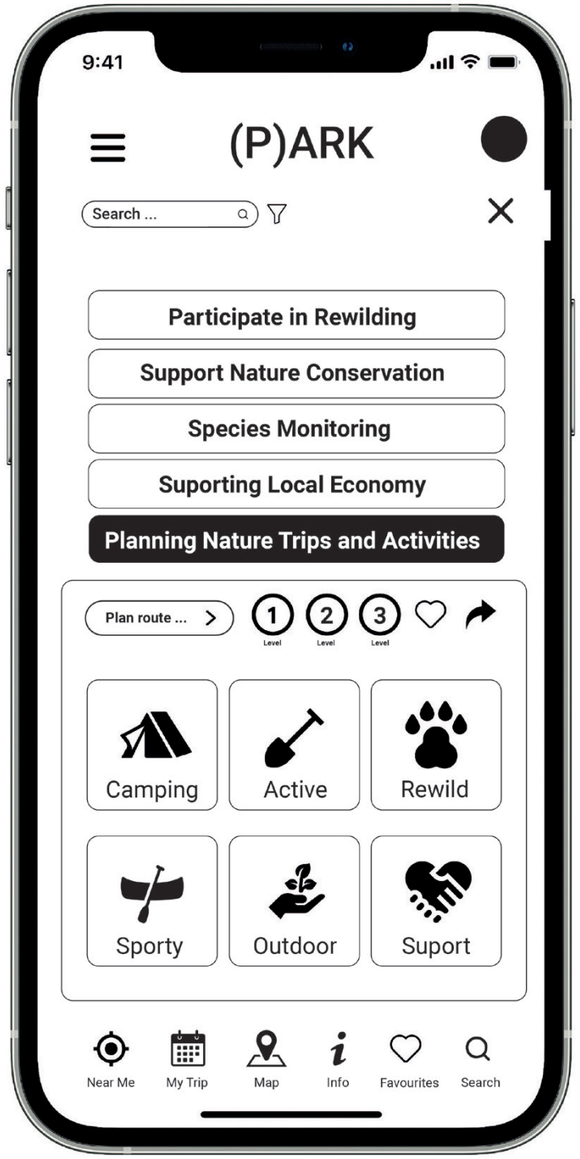
Static Research Centers

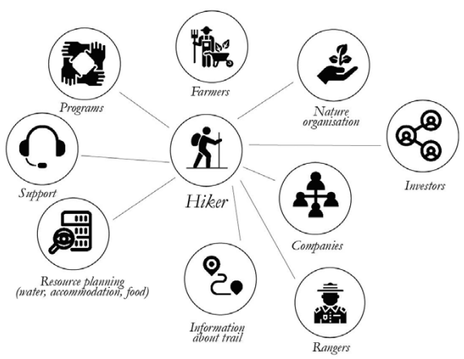
Fig. 73 Visual Language of the Trail (by Author, 2023)





DESIGN INTERVENTION





As part of the visual culture and easy orientation for (P)ARK, a mobile application will also be developed. This application will provide a safe platform for organizing a variety of volunteering activities, establishing long-term collaborations, and providing information on the availability of campsites. It will be accessible to every visitor, hiker, and private landowners.

The goal is to create a secure platform that also unifies goals, ideas, landowners, and countries. It provides a space for communication and connection. Displayed on the main screen are the following key points: Participate in Rewilding, Support Nature Conservation, Species Monitoring, Supporting Local Economy, Planning Nature Trips and Activities, Walking.

It is a communication and navigational channel that helps in today's electronic age to practically plan where you want to go, who you want to meet, and where you want to stop. However, it offers many other advantages, such as practical advice for beginner hikers, a list of animal and plant species in specific locations (educational aspect of the application), and also provides information about historical practices in certain landscapes, contributing to an understanding of how our European landscapes have formed.

In the new application, it will be possible to plan your journey, including locations for overnight stays, shopping, or staying with local farmers or help with nature conservationists. It serves as a source of information about nature reserves, projects, animal species, and also as a monitoring platform where you can report any findings related to environmental disturbances or wildlife.

Last but not least, it serves as a channel through which you can make small contributions for accommodation in natural campsites and support local rangers and the organization that manages and maintains them. You can also donate money to other associated projects, such as the "Plant a Tree" program and more. It is a platform that offers many opportunities, ensures coordination, and connects all stakeholders involved in this initiative.

Fig. 74 (P)Ark App User Interface (by Author, 2023)



DESIGN INTERVENTION

Regional synthesis Bremen- Hamburg

The synthesis of protected areas is a mosaic of significant protected cultural landscapes and an ecological mosaic of mixed forests, heathlands, river valleys, springs, peatlands, sandy plains, and others that are characteristic of this geological locality, which was primarily shaped by the forces of the sea and rivers, and later by the impact of glaciers, which also created the geomorphology of southern Holland.

In the context of the largest spatial transition, the agricultural sector undergoes changes on an all scales (L,M,S) . These interventions and measures aim to minimize the use of chemicals and large-scale mechanization, which are significant contributors to the decline in animal biodiversity (...). However, it is also crucial to consider the spatial transformation within the context of natural areas. According to several sources, agricultural transformation is inadequate in many cases, which is why, within the first 5 years, an agreement should be reached with private landowners or the local government should acquire these areas. These decisions should be based on calculations aiming to convert 15% of the current agricultural land. As indicators for selecting where and how these areas should be chosen: they should be in close proximity to existing national parks to expand these biologically diverse significant locations, and they should also be agricultural areas that could help create ecologically significant stepping stones within the current monoculture. These interventions can facilitate better movement of animal species or serve as a safe environment for their livelihoods.

In the context of the regional concept, there is a need to establish an organization that will contribute to the organization of city involvement and similar structures in the regional recovery plan for Tomorrow's (P)ARK. In this sector, the creation of universal strategies is necessary, which smaller or larger studios can then follow to come up with suitable proposals. Cities should have a green plan in place, which would include green corridors leading from the city center to the outskirts. Additionally, smaller circular migration corridors should be created, working with the principles of blue-green infrastructure. Such areas can become suitable places for the establishment of forest nurseries, which can later be distributed to the necessary districts. Lastly, the final green aspect should work towards blurring sharp boundaries and visually prevent the formation of sharp edges and lines that nature does not naturally create.

Therefore, it can be said that at the current stage, while the plan is being developed, a preparatory program should already be implemented, such as forest nurseries or similar projects that ensure an adequate amount of vegetation in cities. Since these projects are organized by the city itself, they do not require as much expenditure as purchasing from other companies. Kindergartens and retirement homes can also be involved in this project.

Tomorrow's (P)ARK synthesis offers both dry and wet corridors, a range of diverse habitats to accommodate and satisfy all animal communities, while also considering human needs and future development.

Fig. 75 Synthesis in layers (by Author, 2023)

Regional map: Hamburg- Bremen

Fig. 76 Challenges Map (by Author, 2023)

Legend:

- Rivers, water
- Grassland
- Farmland
- Forest
- Urban

1. Waddensea
2. Bremen Grasslands
3. River landscape
4. Peat land
5. Historical Forest

Big city

Design location

53°10'35.11"N 9°48‘43.77“E

DESIGN LOCATION

Fig. 77 Design location Overview (by Author, 2023)

Landscape Architecture
in Doughnut

The Doughnut Economics theory by Kate Raworth, has proven to be a valuable evaluation tool adopted by more and more cities and municipalities (Amsterdam, Copenhagen, Brussels, etc.). Its most important principles can directly be projected onto landscape architectural design. The notion of a social foundation and an ecological ceiling, and the constant balancing between the two are perhaps essential to the profession. The goal, to position the world economy within these boundaries, can be translated to the (P)ARK project as the attempt to achieve a continuous and just landscape network.

To make this more concrete, the doughnut model can be adjusted into the different landscape types present at a certain location. Per landscape type, more detailed boundaries can be formulated. Subsequently, the intermediate steps until the ceiling has been reached can be described from regenerative to degenerative. In a natural condition, a landscape offers ecosystem services. Humanity found ways to use these services for our own good. Because these services differ for each landscape type and land use, the diagram shows the possible uses and its environmental impact.

This example is in not claiming to be complete, and should be studied further to make more explicit how much impact each land use has. But as an indication, it quickly becomes clear that our current practice is often already overshooting the ecological ceiling. In other cases, like nature areas, there is potential to 'harvest' or make more use of natural resources but that might not be preferable as to protect biodiversity. So the landscapes architects tasks, is to push our human practices into the doughnut, but in a balanced way. This is not an easy task, but the doughnut model can help to analyse our efforts.

Consequently, stakeholders and policy makers on each end of the spectrum can be identified and held accountable for their action. New strategies can be made to help one transition to a more sustainable, or more preferable state. This can be done either bottom-up, by supporting local initiatives for rewilding, community supported agriculture or cooperative housing schemes. Or top down, by nature protection laws, bans on pesticides and subsidies.

The next step will be to quantify these criteria, being aware of irreversible losses and the risk of ontological flattening. Based on these typologies, we can start to visualize a future landscape which is more ecologically and socially just. One that is highly connected and productive, while respecting natures limits. We have the skills to visualise what a future landscape within this doughnut can look like, and inspire or convince people that we need to respect earth's limits.

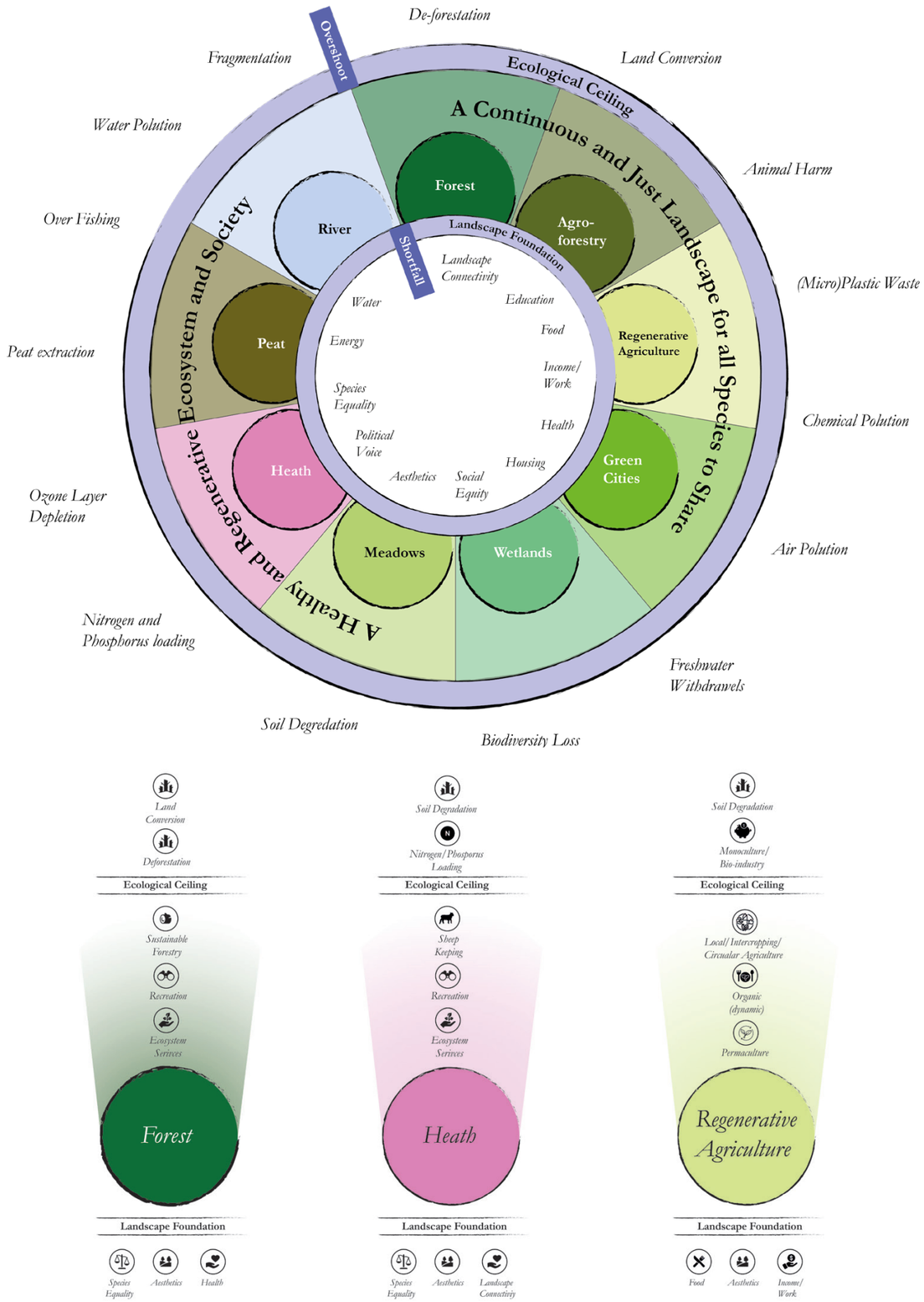


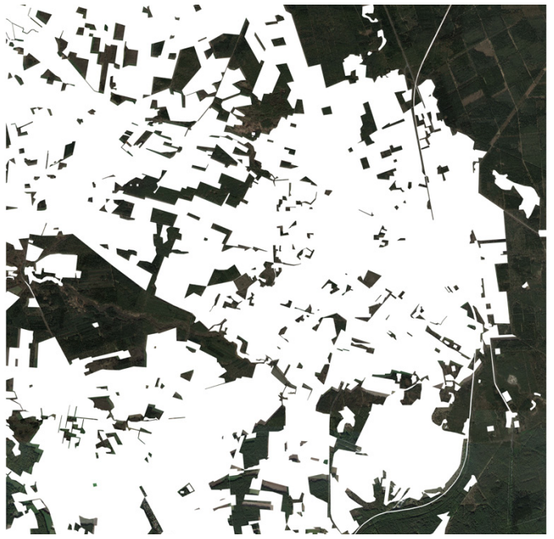
Fig. 78 Landscape Architecture Doughnut Analysis (by Author, 2023; adapted from Raworth, 2017)

Design location + spatial analysis

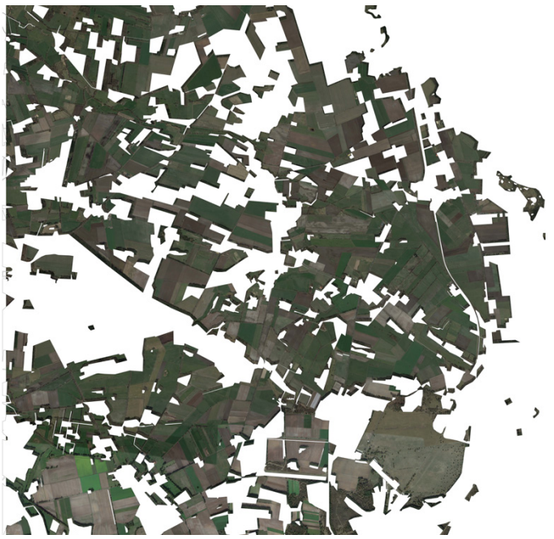
53°10'35.11"N 9°48'43.77"E



Fig. 79 Site Location (from Google Earth, by Author, 2023)



The landscape is composed of forests, which make up 29% of the area. These forests are largely comprised of mixed cultures, but also include plantations of pine or spruce monocultures. The soils here are mainly sandy and less moist, which are suitable conditions for dry heathlands. These heathlands are predominantly present in the eastern part of the territory, extending into the Lüneburg Heath. After visiting and conducting a detailed study, patch fragmentation was identified, primarily in the western part of the area. Extensive forests in this region have been logged for centuries, resulting in a fragmented mosaic of forests. Therefore, it is recommended to create a compact and robust ring of high-vegetation forest through small or large interventions. This would contribute to a healthy and strong ecotope.



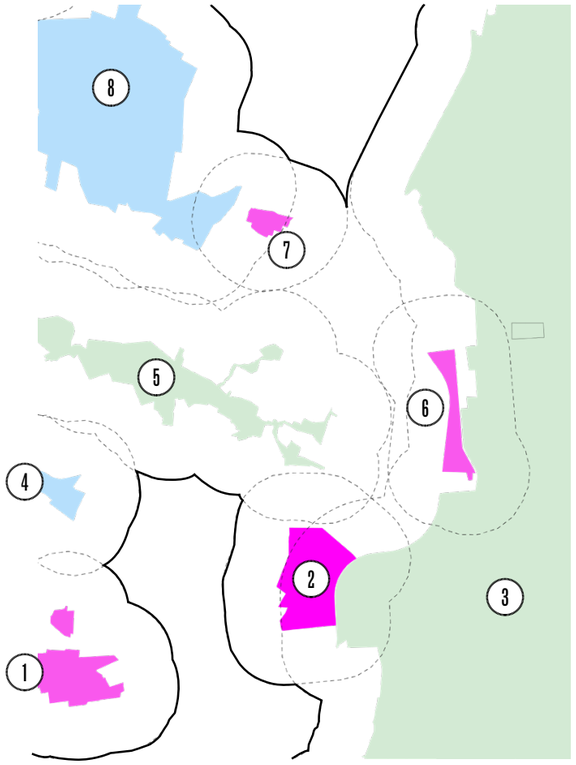
62% of the territory is composed of agricultural land or other low-vegetation ecotopes such as meadows or bare plains. The problem with the area lies in relatively large monocultures of a single crop. From satellite images, analyses, and direct experience, the presence of soil and wind erosion is evident. In terms of cultivated crops, it has been found that mainly cereals are grown in the area, but due to wind erosion, their yields are lower. For these reasons, it is necessary to implement landscape measures that work with the wind, as well as a much wider range of crops and plants that would enrich the landscape and, at the same time, eliminate the loss of the entire production in case of diseases.



The remaining 9% is covered by urban structures such as villages, small homesteads, roads, highways, or railways. The most significant feature in the Schneverdingen area is the railway junction, the L171 road, and the Bundesstraße expressway. The largest town in the area is Schneverdingen itself, with a population of just under 19,000. The local character of the landscape still reflects the historical architectural typology, with half-timbered houses made from locally fired bricks using local clay. Most roofs in the area are pitched, which also creates a sense of unified architectural style and character.

Design Strategies

Use of current protected areas



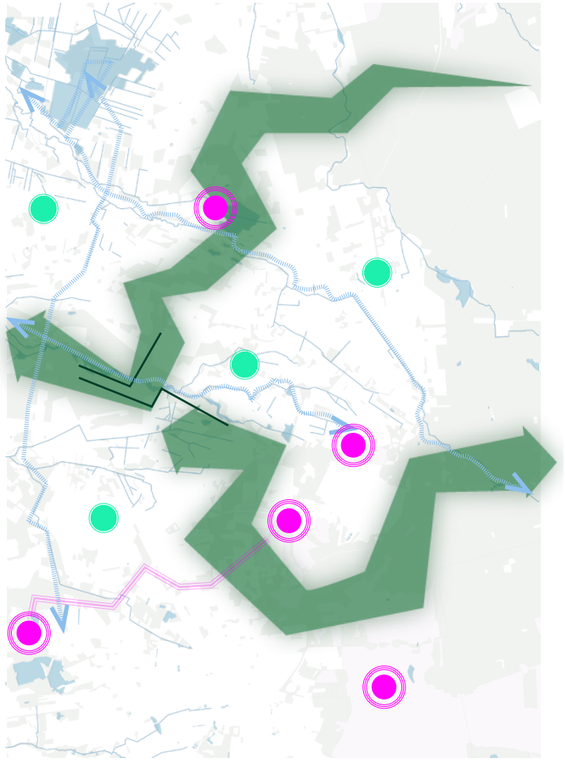
Heathland *Wetlands* *Forest* *1 kilometer buffer* *(P)ARK*

Natura 2000 & nature reserve

The creation of the entire nature park is based on mapping existing biodiversity cores, which are then encompassed by a one-kilometer offset (highlighted as a strong line in the diagram), where significant transformation takes place. In the case of areas for detailed design, these natural reserves are represented by three ecotypes: heathlands, forests, and water bodies (marshes, rivers, or streams). Heathlands (1,2,6,7) are represented in the following parks: Seemoor and Schwarzes Moor near Zahrensen, Höpener Heide and Höpener Berg, Barrler Dünen and Wacholderheide & Heidemoor near Ottermoor. Predominantly forested areas (3,5) are represented by Lüneburger Heide (largely forested areas combined with heathlands) and wet forests of Oberes Fintautal. Lastly, wet areas (4,8) include Obere Wümmeniederung and Moor near Osterwede. This framework served as the backbone on which the concept of expanding nature from the biodiversity center outward was built, aiming to achieve a natural environment boom bey

DESIGN EXPLORATION

Connections - gradient of connections

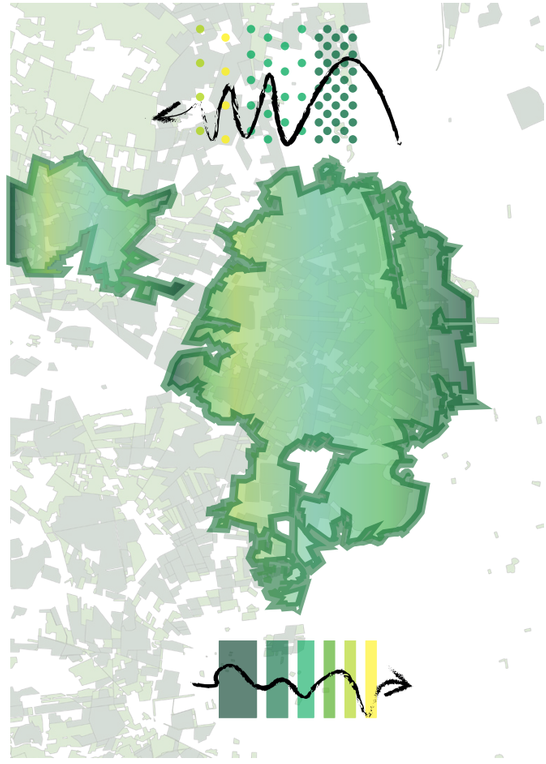


High- vegetation corridor *Wet coridors* *Heathland steppingstones*

Landscape connection = corridors

Based on the previous map, I started creating the main conceptual plan, which aims to establish connections between the fragmented "puzzles" and thus eliminate landscape fragmentation addressed in the previous chapters. Four main corridors are proposed for this area: the forest corridor, a **high-vegetation corridor** that allows movement primarily for large and small mammals, birds, and other microorganisms crucial for the functioning of the forest ecosystem. Another project is the creation and enhancement of heathlands, which have always been a characteristic landscape in Lower Saxony but have nearly disappeared due to large-scale agricultural transformation. For these reasons, I am creating a **network of new heathland patches**, also located along the forest corridors, enabling the movement of characteristic species. The third significant endeavor involves corridors dominated by **low vegetation** or agricultural areas, which have long been a source of rich biodiversity. Lastly, there is a **water corridor** where adjustments such as restoring the old meander of the Wumme River or introducing floating meadow practices are implemented.

Transformation of degradation techniques - Nature gradient



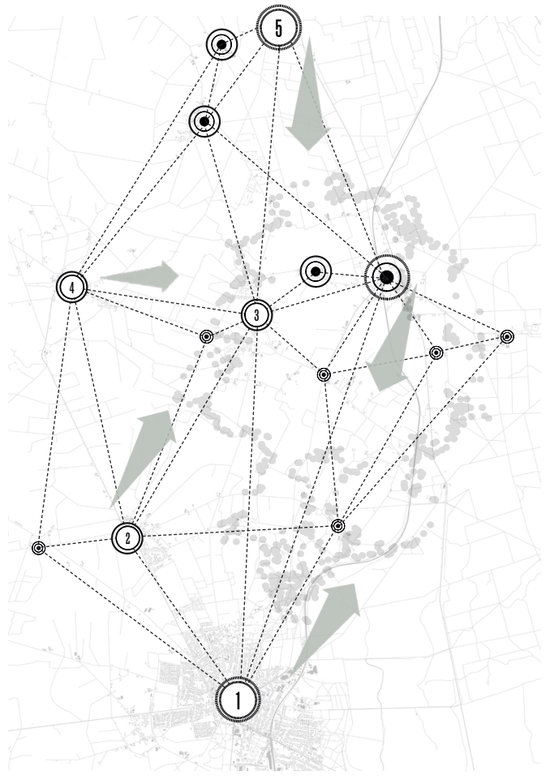
A rich mosaic of natural habitats

Landscape transformation & Gradient

The location of the detailed design includes significant agricultural areas, which are also a prominent feature of the landscape. Considering the importance of agricultural landscapes for numerous significant and endangered species, it means that they must remain prominently represented. However, they need to undergo significant transformation, particularly in terms of parceling and invasive practices such as chemical use and intensive plowing. For these reasons, it is necessary to strengthen and transform the existing agricultural areas into a form that allows for local food production as well as a landscape gradient and mosaic that accommodates and provides a safe space for as many animal and plant species as possible.

As mentioned in the previous chapter, focusing on rewilding, there are winning species and losing species. For this reason, I believe that if planners and landscape architects design diverse landscapes and recreate types and conditions that have already disappeared, we will no longer play the game of winners and losers. **The gradient from dense to less dense, tall to short, is the key to achieving this goal.**

Social- cultural cennection



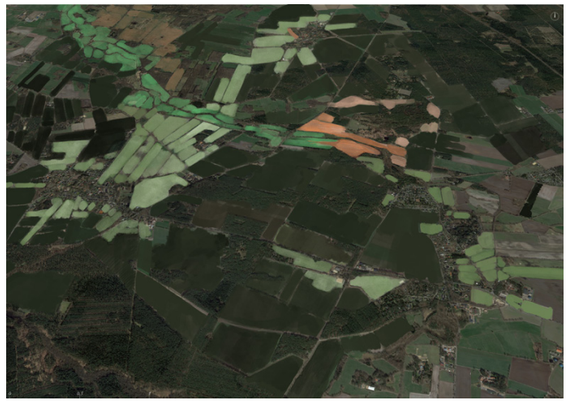
1 *Schneverdingen*
2 *Insel*
3 *Wintermoor*
4 *Wesseloh*
5 *Welle*
6 *Wintermoor (Zug)*

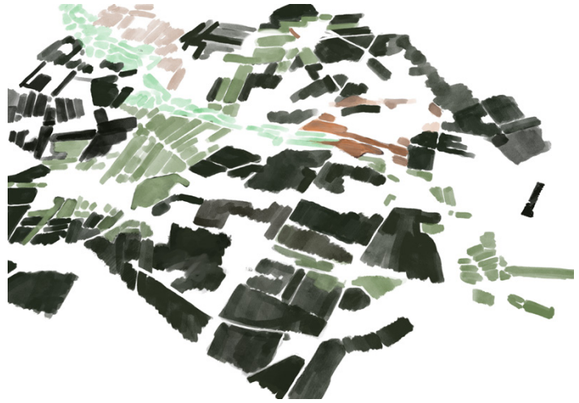
Resilient communities

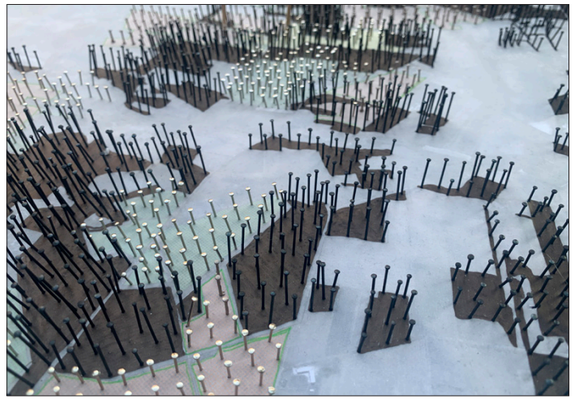
Last but not least, the question of care, attention towards the environment and nature arises. Therefore, it is necessary to work with local communities, including schools, kindergartens, businesses, and farmers, who are the future of the area. For these reasons, mobility, stopping points, activities, and education are of immense importance. It is appropriate to establish a minimum framework or a list of architectural or other elements that would fulfill these requirements.

As a specific example to illustrate these interventions, animal shelters can be incorporated, cider mills can be added to orchards, and public spaces in villages can facilitate weekly and weekend markets. Additionally, specific locations should be identified for the most suitable design or renovation of factories for local wood processing. As part of community planning, it is also important to specify suitable sites for future development, or to consider changes to the land-use plan in accordance with landscape changes and the intention of the Tomorrow's (P)Ark project.

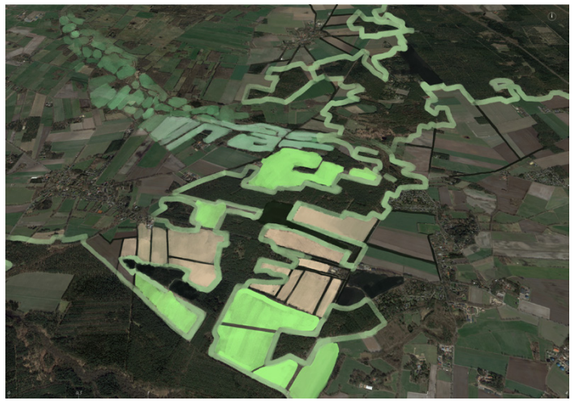
Closed Landscape

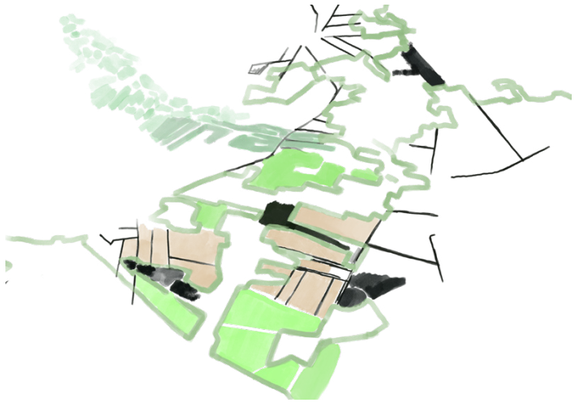


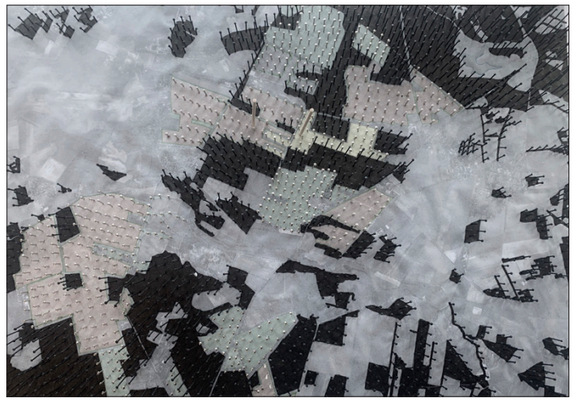




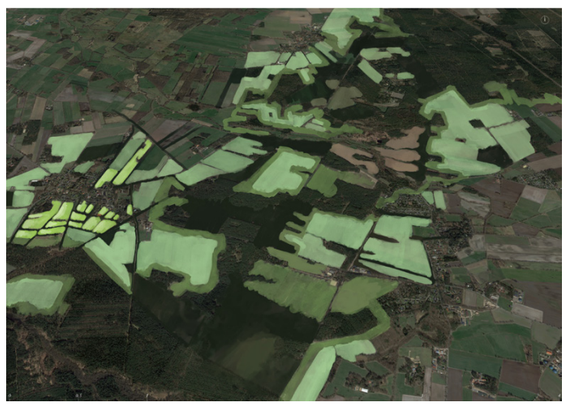
Enclosed Landscape

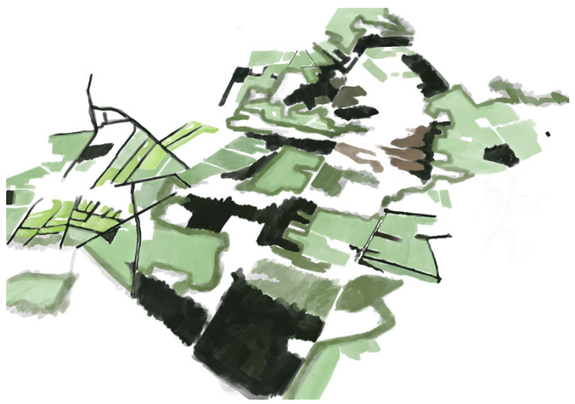


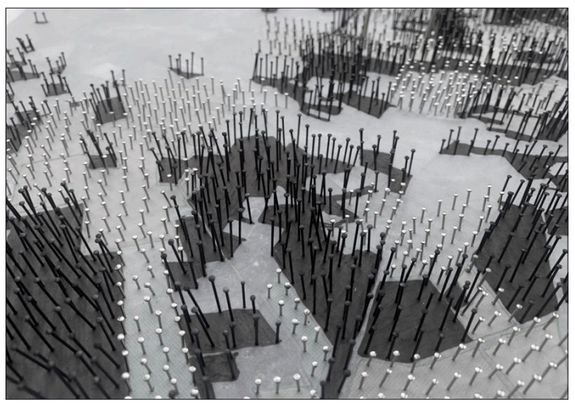




Middle-open Landscape







Research through Design

Given that this research was achieved through design and vice versa, it is necessary to document, at least briefly, this process of endless intuitive and rational "scribbling, drawing, modeling." On a smaller scale, I gradually designed individual locations within the area to verify the best form and spatial arrangement for each specific site. These exploratory designs were eventually categorized into three types.
Firstly: **Closed landscapes**, primarily presenting the potential for managed succession and the vision of an environment where the role of the forest would be assumed. From a biodiversity perspective, this might not be the most suitable solution, as this space would only be attractive to a certain range of species. Based on all the findings regarding the advantages and disadvantages of closed landscapes, I embarked on the complete opposite approach - **Open landscape**. Here, I aimed to propose minimal interventions and small patches of forest and heathland, which would create a narrow strip for the migration of both large and small mammals. Unfortunately, this option did not seem suitable either. Firstly, these landscapes have historically been represented by forests, and secondly, this variant did not express my grand gesture associated with the big vision of Tomorrow's (P)ARK.

For these reasons, I began experimenting with the only possible option, a middle way in the form of a moderately open landscape. Such a landscape represents cultural values and historical characteristics while providing ample space for nature to grow, develop, and thrive alongside human presence. In this variant, a relatively strong belt of forests was created, complemented by agroforestry landscapes that represent both tall vegetation and linear features of historical fields. Furthermore, attention is focused on creating a rich mosaic of additional high-vegetation ecotopes as well as low-lying areas such as meadows and agricultural fields. Simultaneously, there is a focus on water retention, restoration, and the creation of new wetland areas, as well as the reintroduction of heathlands, which are elements aimed at elevating these ecotopes that have disappeared from the landscapes where they belong and naturally thrive.

After careful consideration and testing, the following pages will reveal the final plan for the overall transformation of this area into a middle open landscape that preserves the past, prepares for the future, and embraces the present amidst significant changes.

Fig. 80 Design Explorations (by Author, 2023)

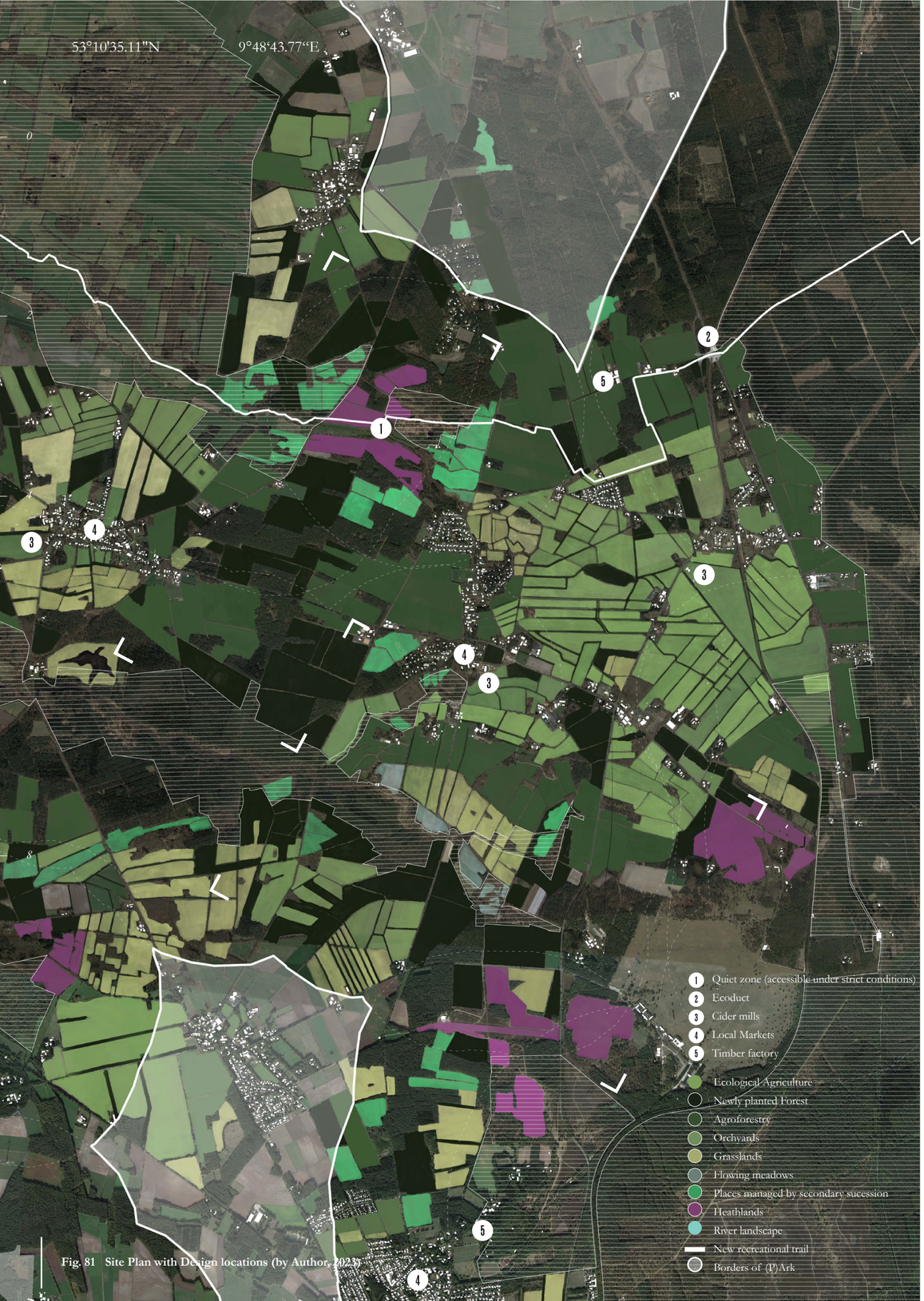


Fig. 81 Site Plan with Design locations (by Author, 2023)

High- vegetation ecotopes



Forest *Agroforestry* *Orchards* *Alleys*

Low- vegetation ecotopes



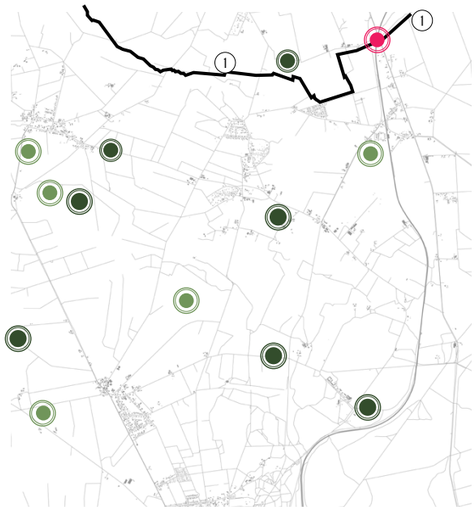
Grasslands *Second sucession* *Heathlands* *Ecologcial agriculture*

Water Layer



Flowing Meadows *New meander*

Main Architectonic intervention



1 *Camp site* *Cattle sheds* *Cider mills* *Ecoduct*

The overall master plan includes three layers based on height and vegetation characteristics, with each layer having its specific ecological role and representing different types of environments.

The first layer, called "High Vegetation Ecotope", consists mainly of forests, orchards, agroforestry, and other tall vegetation elements in the landscape, such as avenues and tree rows. This layer provides an opportunity for preserving and developing biodiversity through different tree species and contributes to the aesthetic and ecological value of the landscape.

The second layer, called "Low-Vegetation Ecotopes," includes meadows, heathlands, open areas with managed secondary succession, and ecological agricultural areas that have undergone proper transformation. This layer offers space for a rich mosaic of lower vegetation, which supports species diversity and provides a suitable environment for wildlife and plants adapted to open landscapes.

The final ecological layer is the "Water Layer," which includes river landscapes, flowing meadows, wet heathlands, and small marshes. Water plays a crucial role in the landscape, and this layer is essential for preserving and restoring wetland and aquatic ecosystems. Ditches, serving as water drainage channels from productive agricultural areas, are also present, and some of them may be filled to retain water in the landscape during dry periods.

Architectural interventions are carefully integrated into the landscape, with their primary purpose being to serve as shelters for wildlife and blend into the natural character of the environment. For example, in the orchards, cider presses are designed not only for producing cider but also for extracting honey from bees or processing alcohol. Other elements include shelters for farm animals such as goats, sheep, or chickens, which are essential features in the landscape, especially when their typology resonates with the traditional architecture of the region (gable roofs, solid structures made of local wood).

53°10'35.11"N 9°48‘43.77“E

Design location- Schneverdingen

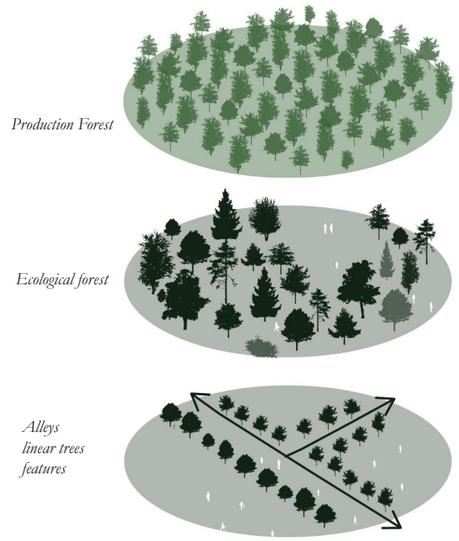
DESIGN LOCATION

Fig. 82 Artist Impression of the Site (by Author, 2023)

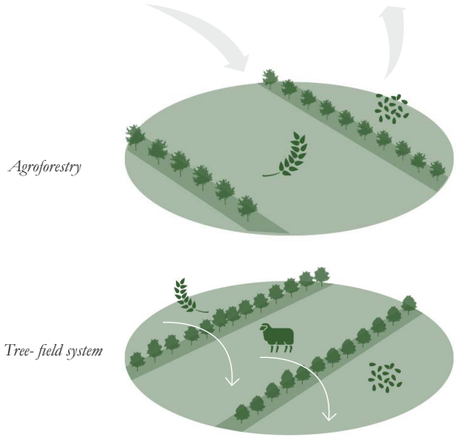


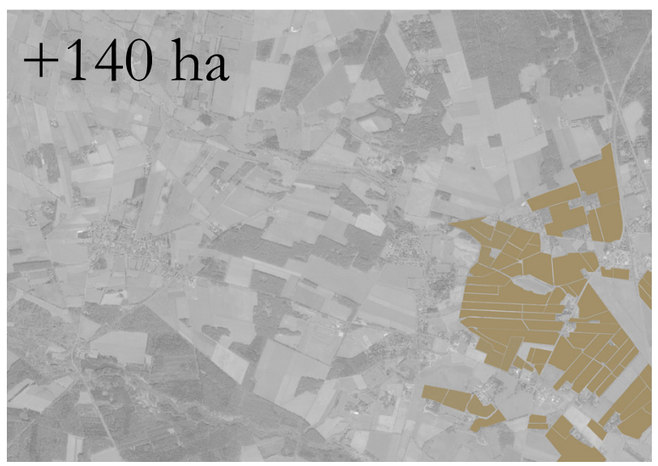
Fig. 83 Site Design NO.I: Agricultural Transformation (by Author, 2023)

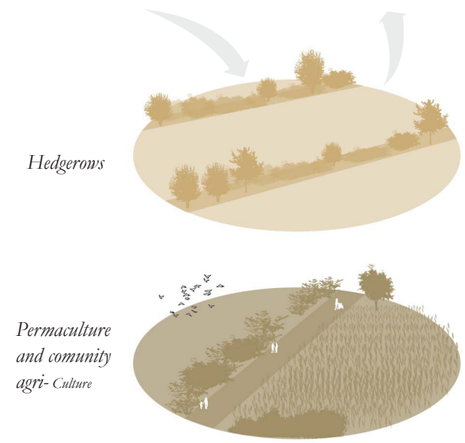


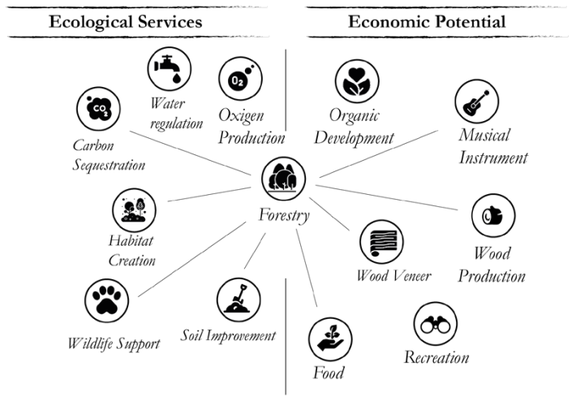


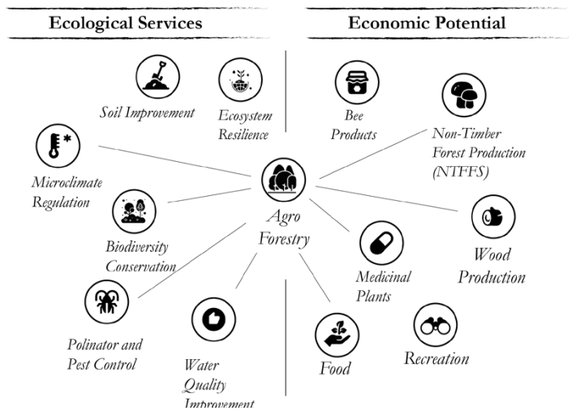


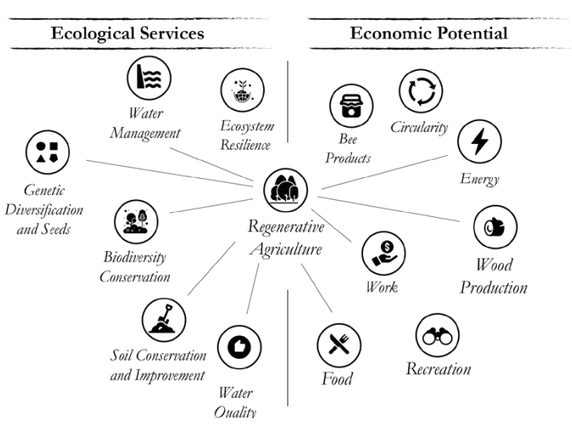












Forest/ Hight vegetation mosaic

I have chosen my place within the detailed masterplan for its historical significance in relation to a specific ecotope - a forest and moorland. This area historically housed important forest communities and moorlands that have developed over centuries due to management practices, grazing, and controlled burning. However, during the industrialization period, these specific natural formations suffered significant reduction and fragmentation. Therefore, the main element and layer in this particular area of the design becomes the forest itself - I am bringing back something that was natural to the landscape where it belongs. These forests are divided into three categories: Ecological forests, Productive forests, and linear elements such as tree avenues or alleys. Together, this forest area will add 158 hectares to the entire territory, creating a strong foundation for genetic and species biodiversity and its distribution in the landscape.

Agroforestry

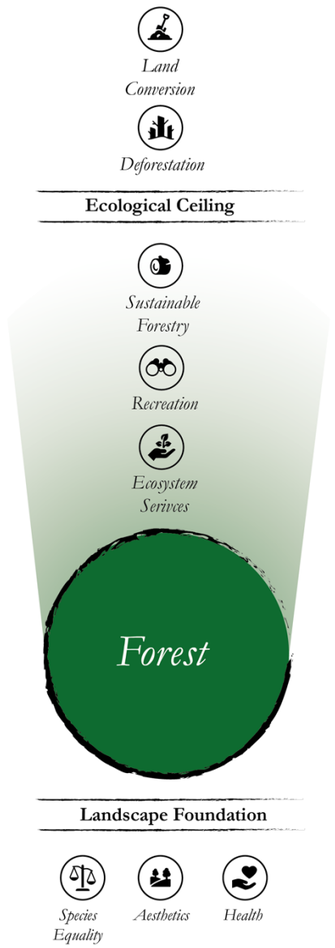
Agroforestry plays a significant role in the entire concept of the high vegetation layer. It combines tall vegetation with grassy and herbaceous understory. It can be seen as an extension of the forest, but with lower density, while also providing social and economic benefits. All types and specific details are depicted and explained on pages 190-191. Essentially, it involves the rotation of crops such as cereals, legumes, and oilseeds, which are separated by rows of fruit trees or trees that produce nuts or timber. This system is enriched by a three-field rotation, where crops alternate every year in the interstitial spaces between the trees, and every third year, the land rests or is grazed by livestock. Agroforestry not only offers its share of production but also contributes to ecologically valuable solutions in the agricultural landscape. That's why it is represented in this specific area.

Regenerative Agriculture

In the previous diagram for design principles (p.171), I described the importance of transforming current intensive agriculture and monoculture, which currently affects the healthy functioning of the landscape or brings additional risks such as landscape water drainage. For these reasons, I focus on this significant and necessary shift towards less invasive practices. The main changes occur through crop rotation practices within a three-year period, permaculture techniques, and the introduction of vegetation strips with minimal terrain deprivation, known as hedgerows. These hedgerows provide refuge for various animals and also ensure permeability throughout the territory. Corridors, therefore, encompass not only large-scale features like forests but also these significant modifications that play an important role in the functionality and vibrancy of the landscape mosaic.

Fig. 84 Site design Landscape layers (by Author, 2023)





Planning Instruments and Stakeholders



Forestry Strategy

National planning is needed to revalue wood as a high end material. New techniques make wood a interesting alternative building material and investment, while at the same time having the potential to fight climate change.

Forest Diversification / Re-juvenation

Monoculture production forests are vulnarable for pests and evaporate more than needed. By mixing coniferous forests with decidious species, forests will be more healthy and biodiverse. By removing old trees, new growth can develop.

Reforestation

Based on regional planning, local teams of conservationists and volunteers can plant new forests together. By involing locals, thez feel more responsible and take care for the forests.

Community Forest

Natural forests offer variety of food like mushrooms, berries and nuts. If done responsibly, hikers, locals, and restaurants can forage products from forest areas. This is only possible in designated areas to prevent disruption of endangered species and exhaustion of the system.

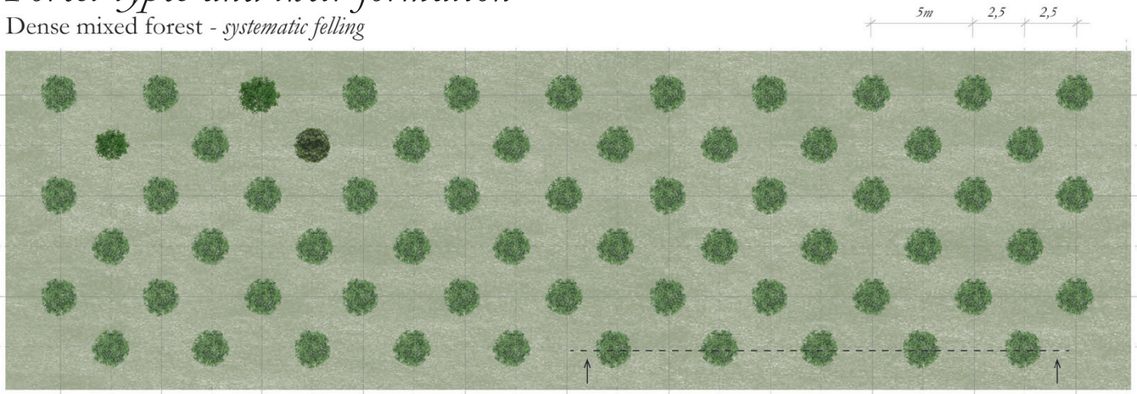
Forests have always been recognized for their contribution and importance in terms of biodiversity and landscape health. They represent both natural and, nowadays, mostly artificial landscape types that provide tranquility, production (primarily wood), and a source of food, such as a wide range of mushrooms and herbs. Forests have also served as hunting grounds for game animals by hunters. Since ancient times, their significance has been so great that we cannot imagine the shape of Europe or other parts of the world without them. However, the current alarming state of forest health raises concerns. Over time, our appreciation for forests, much like human society, has changed, and perhaps that is why the general public is not interested in the well-being of our trees. For these reasons, I believe and hope that if locals and people moving from cities to rural areas actively participate in the process of planting new forests, it may be possible to restore the loss of this primary environment. Simultaneously, we can contribute to the restoration of a connected and healthy network of nature, through which large and small animals can migrate across Lower Saxony.

Two types of forests are proposed for the area: ecologically significant forests primarily intended for nature to recover and regenerate through secondary succession, forming a coherent, interconnected structure suitable for wildlife migration and supporting a variety of endemic plants. Additionally, there are productive forests planted mainly near villages or small settlements. These forests serve as a long-term investment for timber harvesting, taking into account the fluctuating wood prices. However, forests, like orchards, are also planted in two or three generational strips. So even when some trees are felled, the forested area will never be bare, and this ensures that soil conditions are not disrupted. The remaining trees provide shade, creating an environment in which the new generation can safely grow. When discussing the establishment of new forests, it is also necessary to consider where forest nurseries will be located in the area, providing a place to nurture future generations. Perhaps from this perspective, cities can be utilized as a source and space for their cultivation—cities as nurseries for future forests.

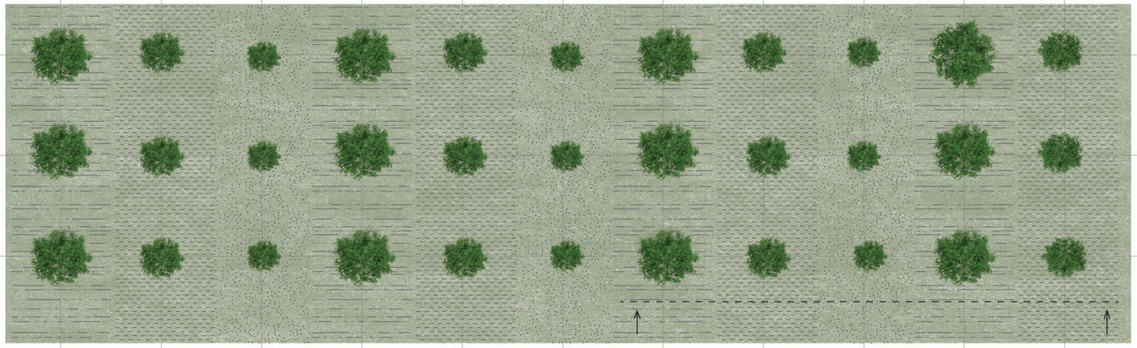
Fig. 85 Sustainable forestry and tree diversivication (by Author, 2023)

Forest types and their formation

Dense mixed forest - *systematic felling*

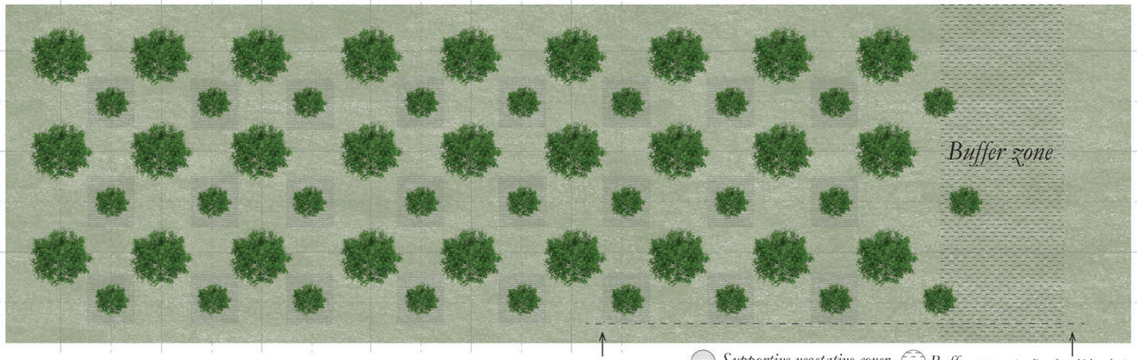


Three generations of trees with different undergrowth - *felling in different time horizons*



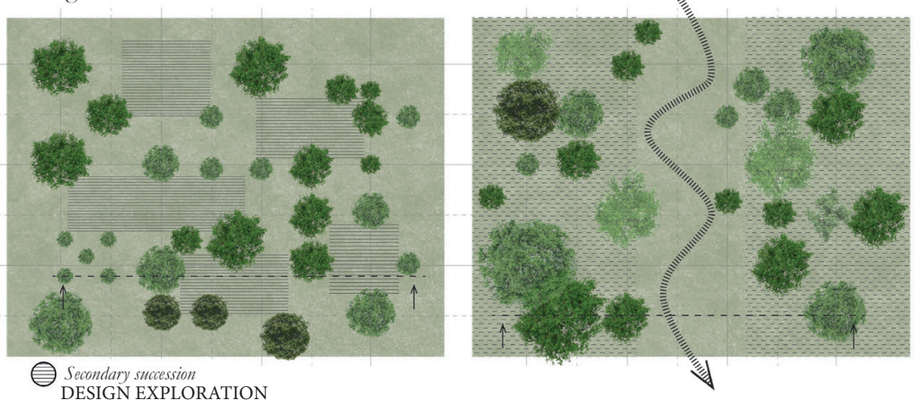
Two generations of trees - *felling in different time horizons*

Secondary succession *Bushy growth* *Herbs vegetation cover*



Supportive vegetative cover *Buffer zone* *(gradient from high to low)*

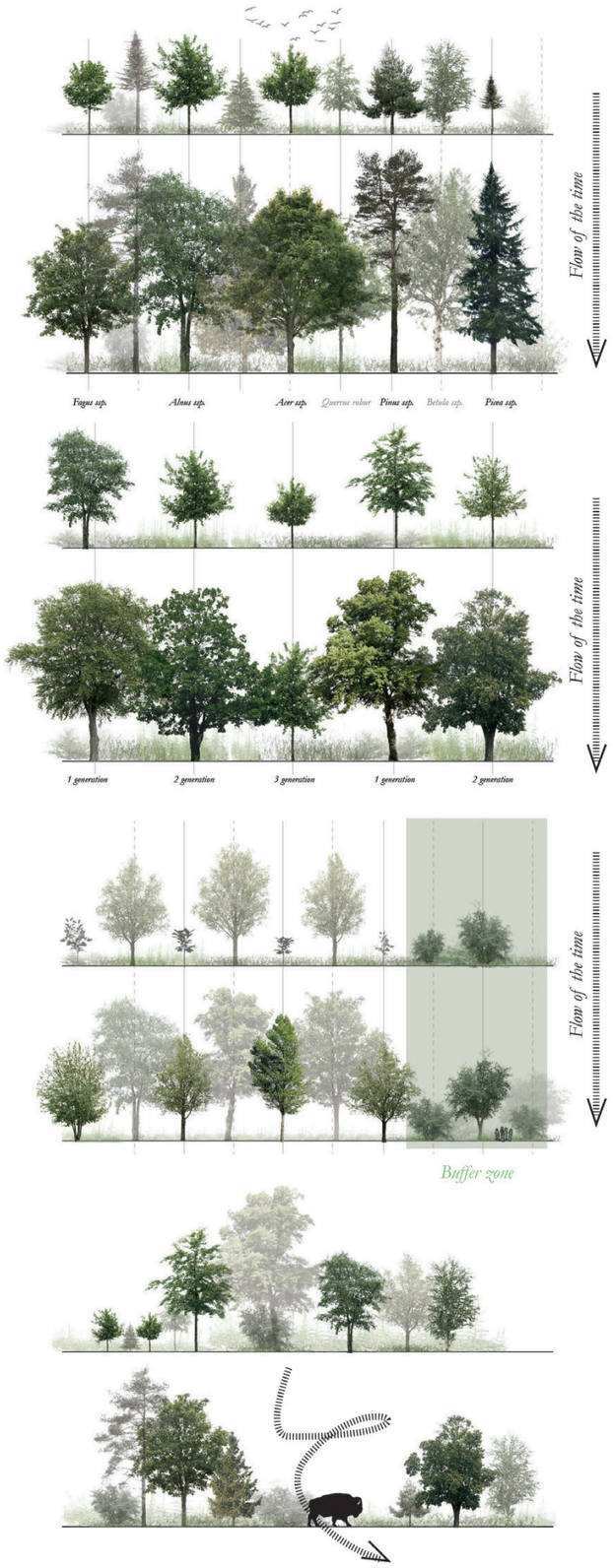
Ecological forest



Secondary succession

DESIGN EXPLORATION

Within the forests created to strengthen the ecological structure, the formation of small clearings and gaps allows larger mammals such as European bison and wild horses to migrate. This concept also builds upon historical practices of forest grazing, which provide numerous ecological benefits.







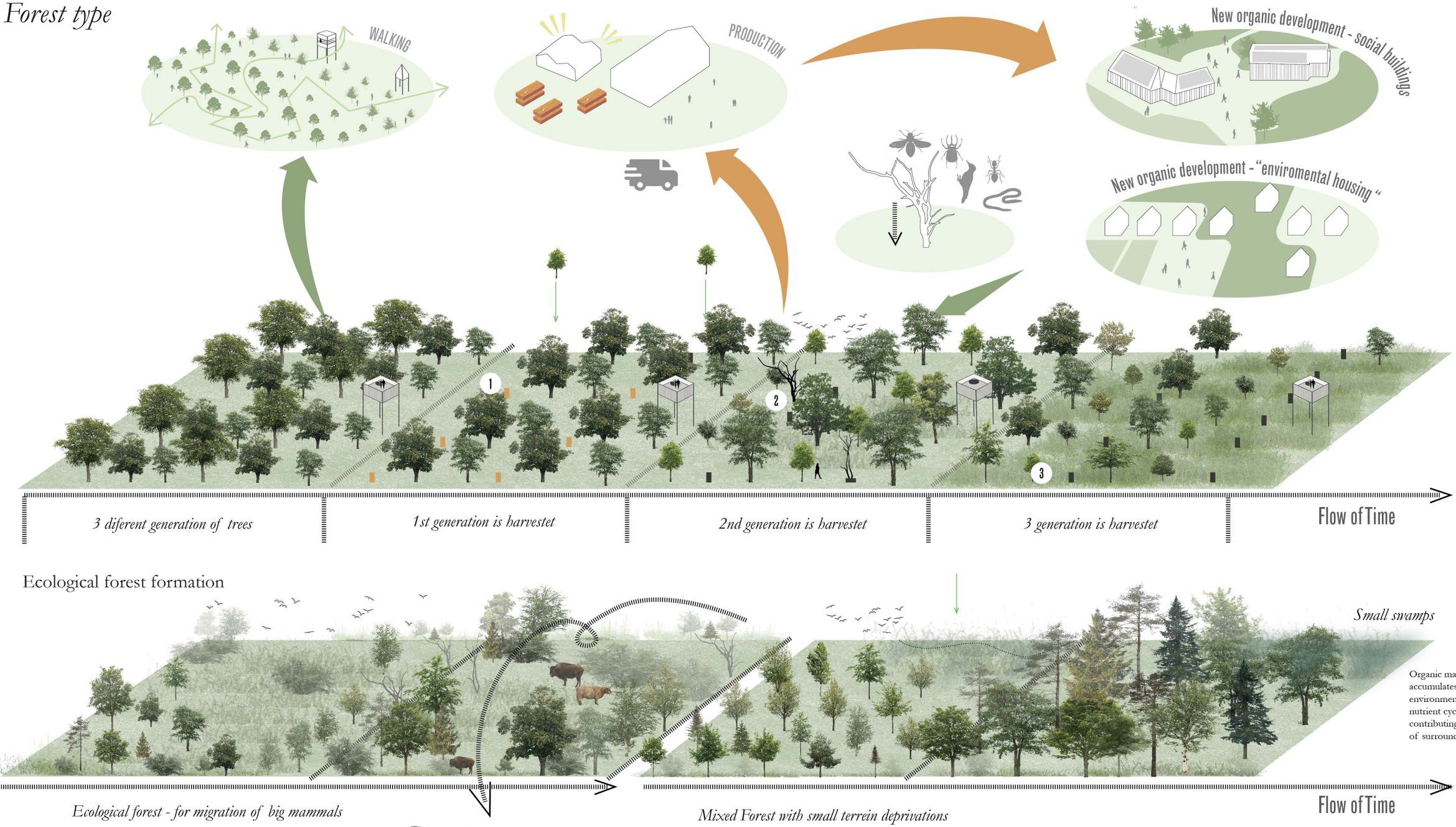


Regarding the management and care of mature and newly planted forests, the establishment of new areas for productive or ecological forests creates new job opportunities and involves local communities or nurseries. Through such participation and engagement of local communities, a stronger connection with the specific environment can be fostered, leading to greater consideration and significance. For each intervention, I attempted to create an illustrative site plan supplemented with technical solutions. In order to anchor and integrate these plans into the master plan, visual atmospheres were also created - visualizations depicting how the landscape may appear after implementation.

Fig. 86 Forest Typologies (by Author, 2023)

Fig. 87 Forest transformation (by Author, 2023)

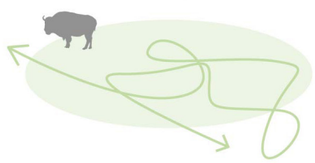
Forest type



Ecological forest formation

Ecological forest - for migration of big mammals

Mixed Forest with small terrein deprivations

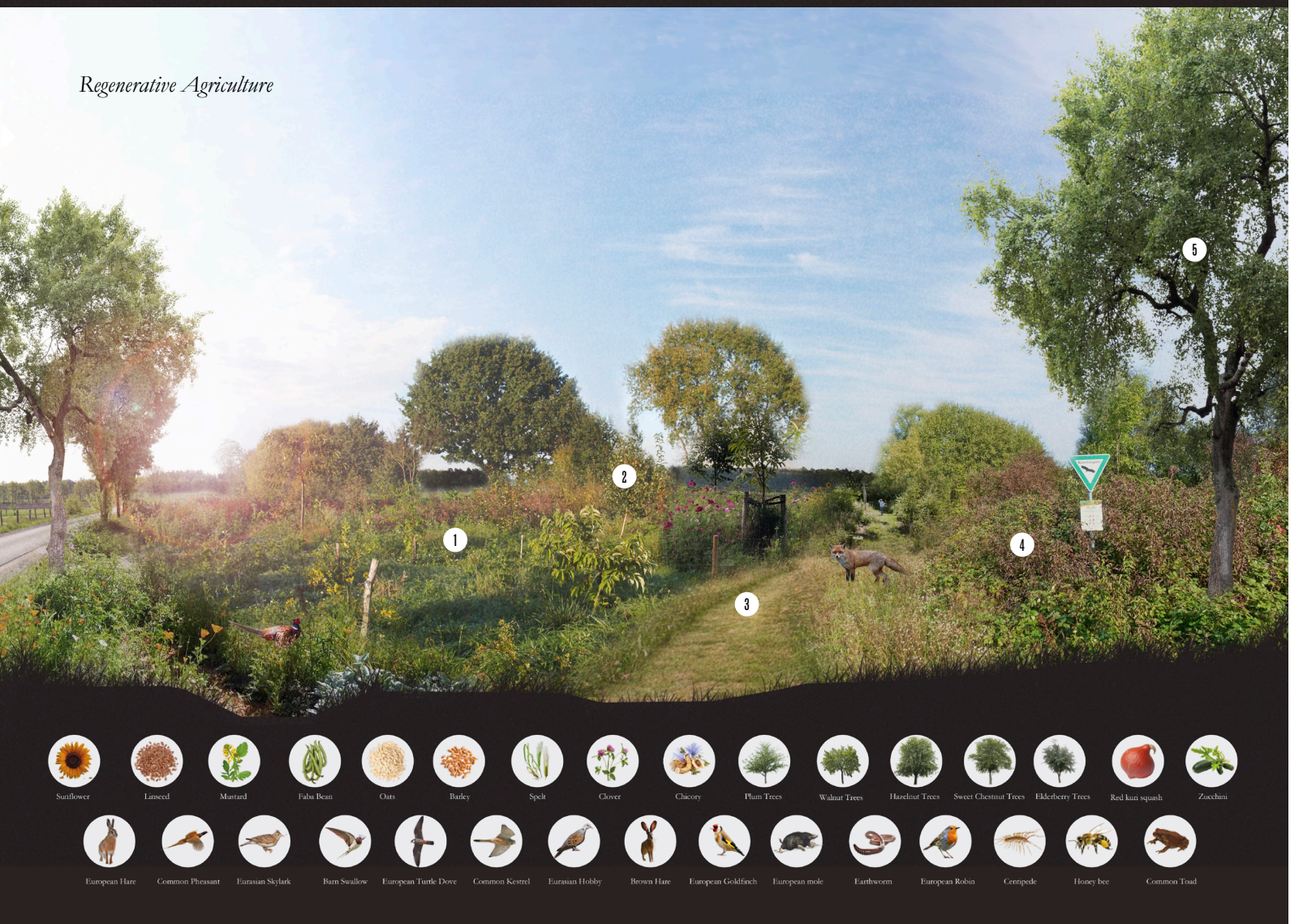


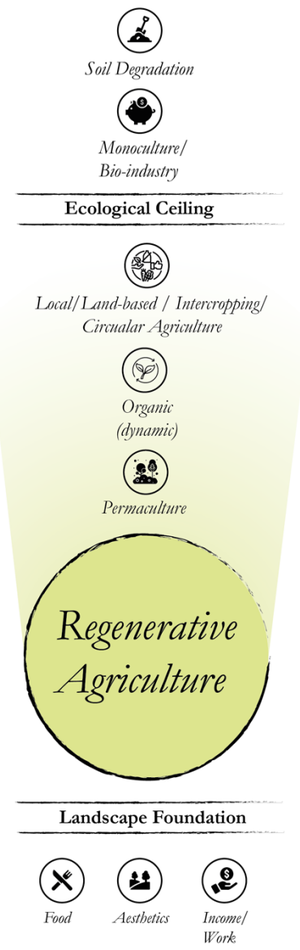
Forest areas are not just densely forested with trees, but they also offer open spaces - clearings where large reintroduced animals like bison or wild horses can roam and disturb the soil with their hooves. Their presence can accelerate the process of secondary succession and promote the expansion of plant species in previously undisturbed areas.

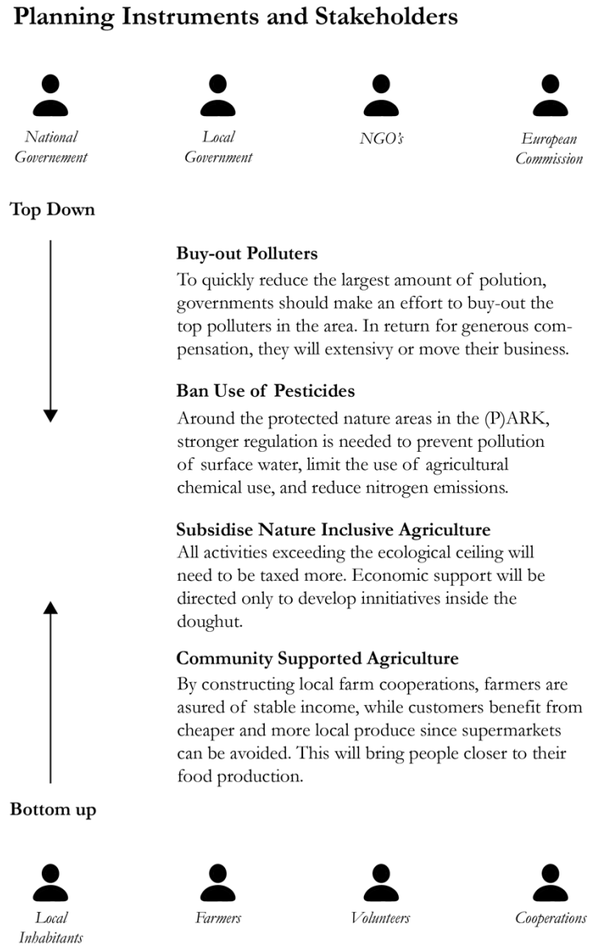
In certain parts of the forests, terrain modeling is carried out during preparatory works, which helps in water retention in the landscape. The primary goal and vision for these water bodies is to create smaller wetland-like areas that can provide habitat for the development of microorganisms in the water. These areas also help to sequester carbon dioxide and create a better microclimate for trees and other fauna.

The timber harvested from these sites can serve as a resource for future construction development in the locality, if the demand for it increases. By sourcing construction materials locally, we can begin to address the issues of current non-ecological construction practices, which contribute significantly to global pollution. Other local natural resources that can be utilized include reeds, mycelium, wool, and more.









Agriculture has undergone various transformations throughout history, and not all of them have had purely positive outcomes. As society has evolved, new methods of farming have emerged, and unfortunately, not all of these developments have been environmentally friendly or sustainable. The agricultural sector's contribution to global crises, such as climate change, cannot be ignored.

To address these concerns, there is a growing movement towards transforming and shifting practices to more non-invasive and nature-friendly approaches. One such transformation involves the conversion of large-scale agricultural landscapes into dense, diverse, and even wild patches. In this regard, I have delved into studying historical practices that were highly successful in terms of crop yields while also considering the preservation of essential elements for wildlife.

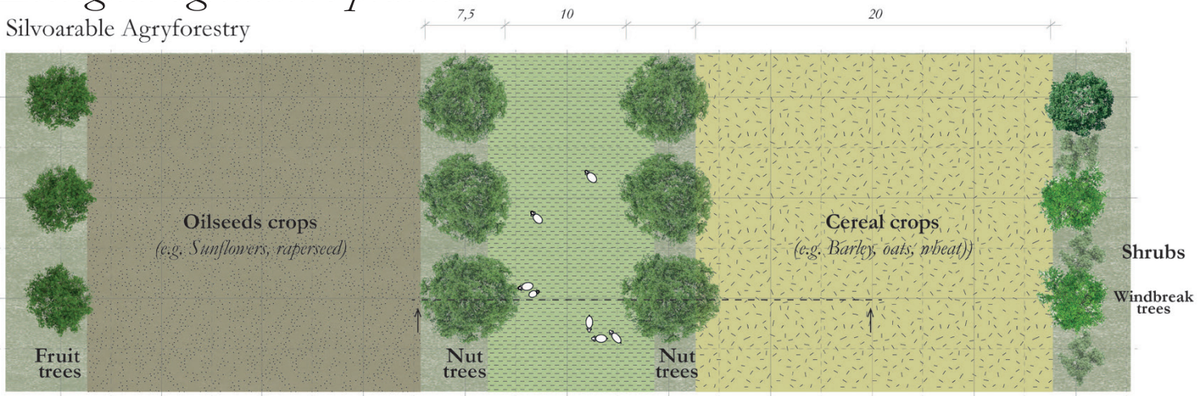
Two practices that I have adopted from the past and replicated are the three-field system and hedgerows. The three-field system is a historical crop rotation method that involves dividing arable land into three sections, with each section planted with different crops in rotation to optimize soil fertility and minimize pest pressure. Hedgerows, on the other hand, are linear rows of trees, shrubs, and plants grown along field boundaries, serving as windbreaks, wildlife habitats, and sources of biodiversity.

By reintroducing and implementing these historical practices, we aim to promote sustainable farming techniques that prioritize ecosystem health and resilience, while still meeting the needs for crop production and wildlife conservation.

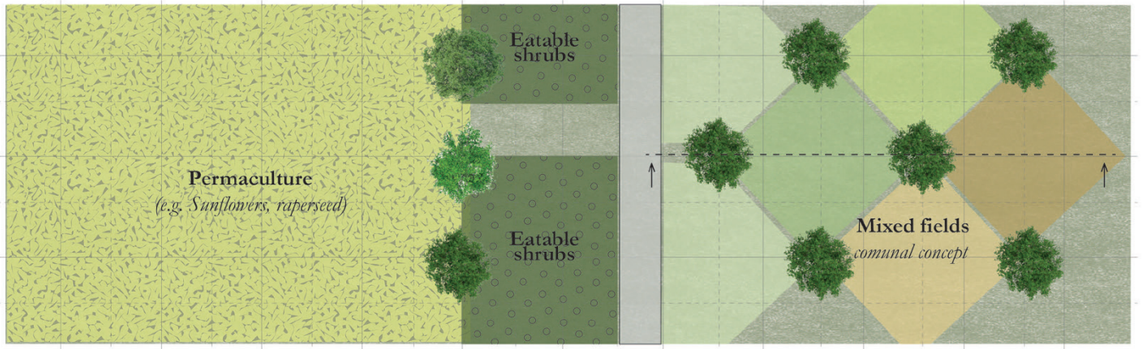
Fig. 88 Agriculture Transformation (by Author, 2023)

Ecological agriculture practices

Silvoarable Agryforestry

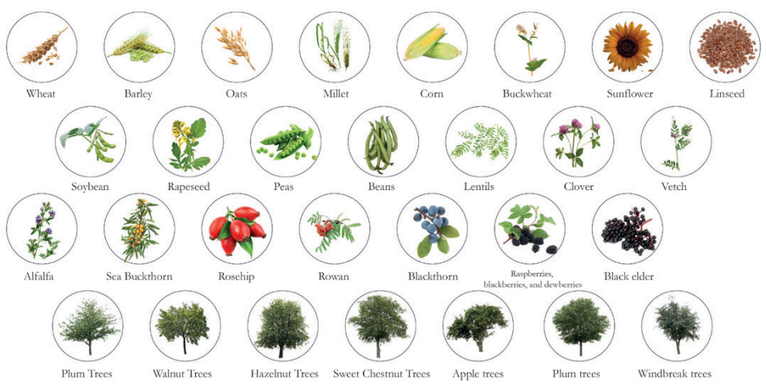


Crop Rotation

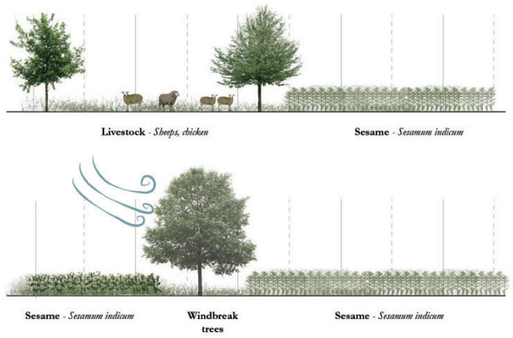


Crop rotation





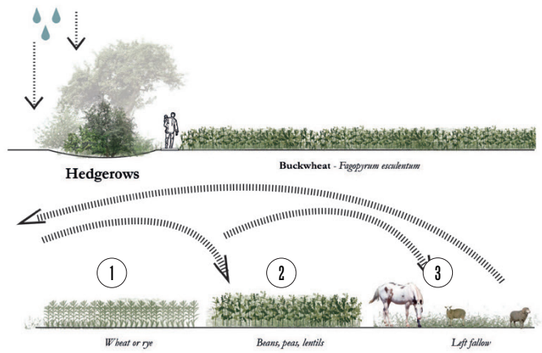
Selection of plants, vegetables, trees/ shrubs, and herbs should primarily align with the preferences of local communities as well as natural conditions such as soil, water conditions, etc. However, a crucial rule is species diversity; there should not be excessive planting of large monocultures. In the case of the three-field system, it is possible to cultivate larger yields on smaller plots, but they must be divided by strips of vegetation - hedgerows, which should be planted on smaller areas of land to prevent deprivation and also help capture water.











Three-field system

As mentioned before, agroforestry practices, the three-field system, and the use of hedgerows are primarily employed in this agricultural landscape. They provide a safe shelter or movement corridor between different patches of ecologically significant habitats such as wetlands, heathlands, or grasslands. Reflecting on the visual character of such interventions in the landscape, they may appear reminiscent of the 19th century with their simple and characteristic arrangement.

However, instead of continuously intensifying agricultural practices, we need to moderate and parcel the landscape into smaller sections. Utilizing a broader palette of crops

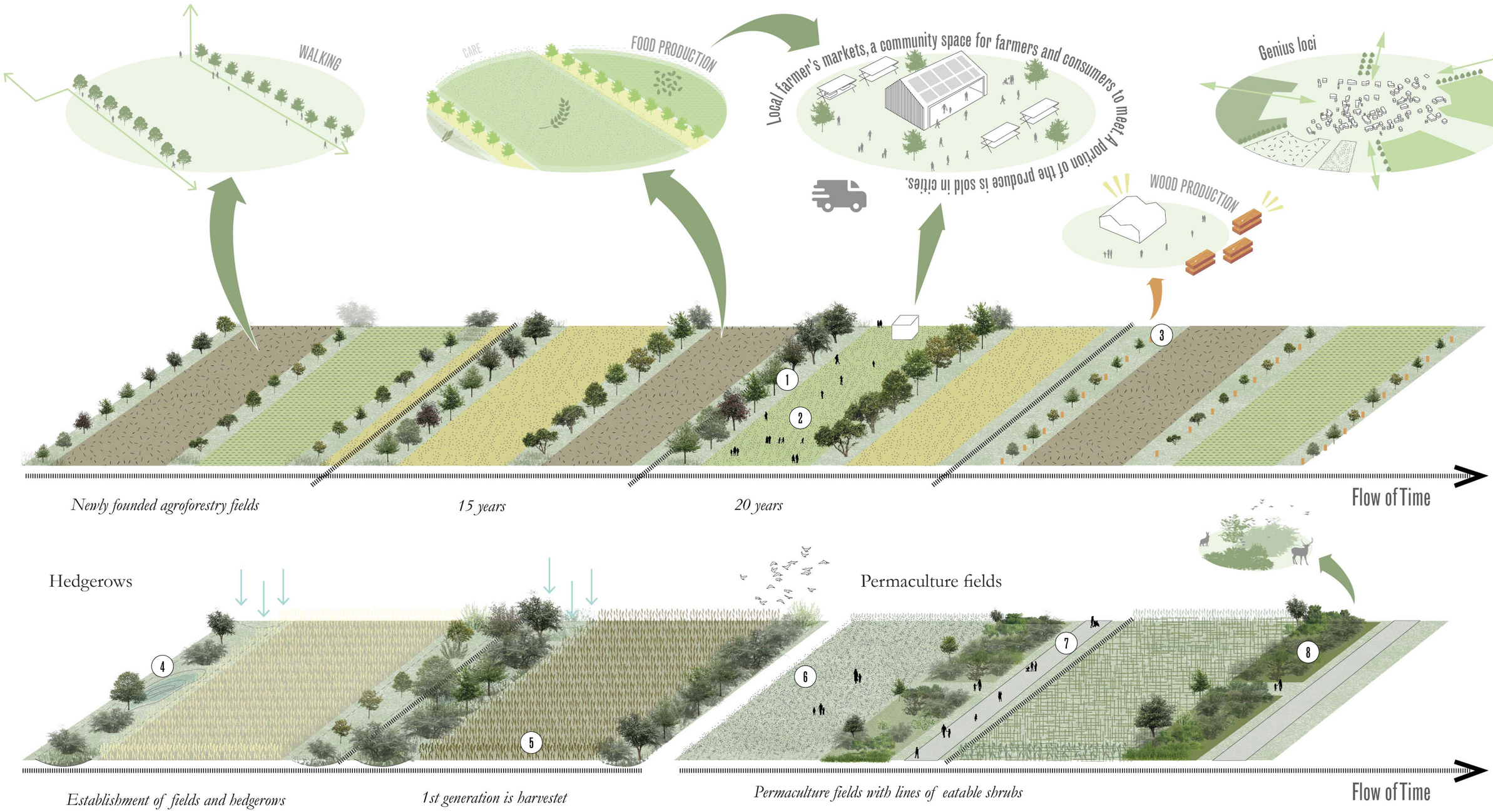


that are both productive and attractive, while also employing methods that do not require extreme chemical inputs, is crucial. One such element that replaces pesticides is the planting of herbaceous strips. These strips allow the return of naturally aggressive species that can help control pests like aphids.

By adopting these approaches, we aim to achieve a balanced and sustainable agricultural system that harmonizes productivity with ecological considerations. The goal is to minimize the negative impacts on the environment and promote practices that are both economically viable and environmentally friendly.

Fig. 89 Agricultural Typologies (by Author, 2023)

Fig. 90 Transformation of Farmland with Trees and Hedges (by Author, 2023)



By implementing agroforestry practices, the landscape is transforming from inaccessible to accessible. It allows people to traverse the countryside much more than before, and during these journeys, no crops need to be damaged.

DESIGN EXPLORATION

Within agroforestry, there is also the established three-field system, which alternates cereal crops, oilseed crops, leguminous crops, or fodder crops. This annual crop rotation ensures the healthy management of the soil itself, unlike the current situation where we provide it with nothing at all. Once every three years, the field also undergoes complete rest, and nothing will be grown on it. Only then can nature truly rejuvenate.

In the case of permaculture fields, I create strips of shrubs and smaller fruit trees alongside the road, which separate the road from the permaculture production plots. This serves two purposes. Firstly, it provides a suitable environment for a variety of animals that don't have to feed on the crops in the fields. Secondly, it allows pedestrians to enjoy the proximity of fruit that can be gradually harvested as they walk along the path. This way, you can savor a local snack while walking.

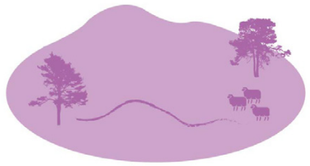
Last but not least, this kind of landscape arrangement also contributes to the distinctive character of the region. The linear elements aid in orientation, guiding people from urban areas into rural surroundings and vice versa. The landscape becomes an intuitive navigational tool, making you feel secure and at ease within it. It creates an environment where it is pleasant to stay and spend time.

Fig. 91 Site Design 2: Natural Transformations (by Author, 2023)

Floating Meadows
Newly planted Forest
Newly created Heathlands
Grasslands
Ecological Agriculture
Production Forest
Agroforestry
Places managed by secondary sucession
Orchards
Hiking Trail - Amsterdam x Copenhagen
Borders of Tomorrow's (P)Ark
1 Resting point on the age of the forest
2 Cider mill
3 Viewing tower on the age of Forest
4 Beehouses with the wooden cabin for honey production
5 Beaches for recreation (outdoor swimingpools)
6 Education boards
7 munity Permaculture gardens
8 Hedgerows



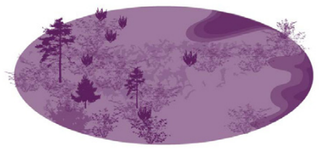
Heathlands: terrain modelation

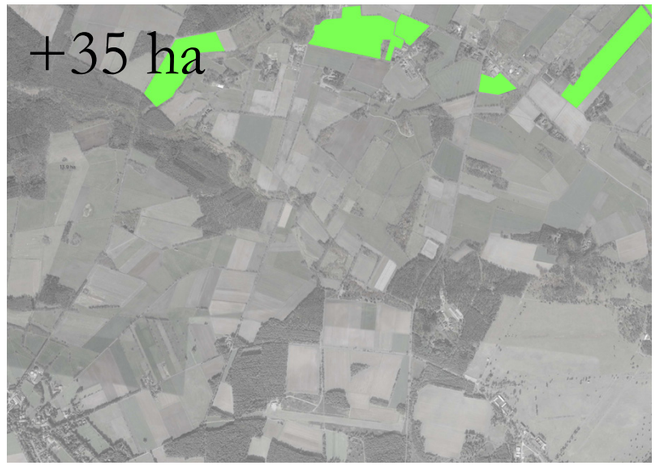


Heathlands dry condition

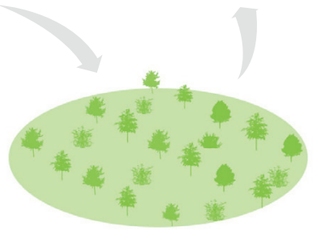


Wet Heathlands

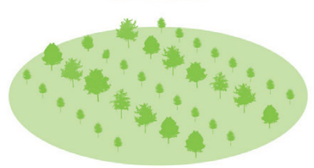




Two generation Orchards



Permaculture and comunity agri- CULTURE



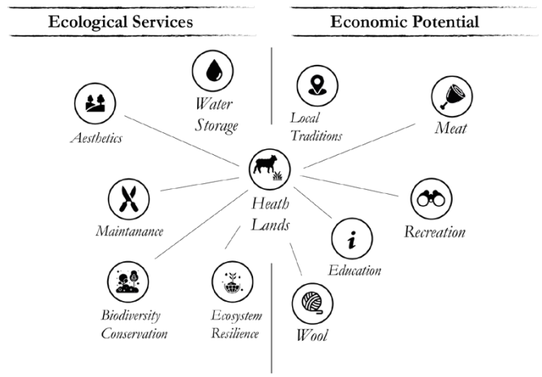


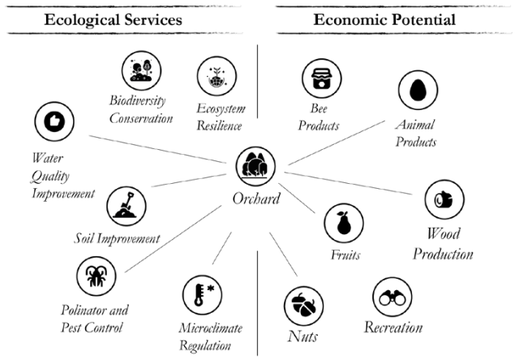
Restoration of the old meanders of the River Wömme

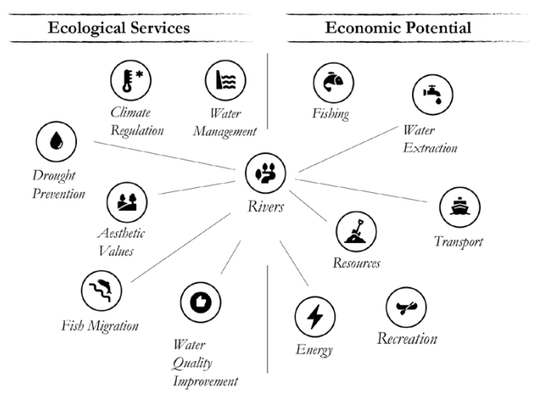


Floating Meadows









Heathlands

Heathlands are an element of the design that is planned from start to finish as a space for the recovery of an ecotope that is disappearing so drastically from the areas of Lower Saxony, where it was so abundant just two centuries ago. The ecotope of heathlands covers and replaces 100 hectares currently used for meadows or agricultural fields. These areas will undergo a long-lasting transformation from initial earthworks to the introduction of pioneering plants, followed by subsequent care and management. Despite all efforts and planning, this natural layer will reward us with countless ecological services, which are of immeasurable value (depicted in the attached diagram).

Orchards

Orchards are characteristic for their dual function, or rather, a range of benefits they provide both to the community in the form of products and their contribution to the local ecology. Orchards have historically been a traditional element of the European landscape. Initially, they were planted in monasteries and in close proximity to settlements. Later on, they became a common formation planted by both larger and smaller farmers as a source of fruit for the community and as a vitamin source during the winter season. Similarly, they have always been attributed with magical abilities, and farmers believed that magical women, known as dryads, lived in them. These stories are also associated with the territory of Lower Saxony.

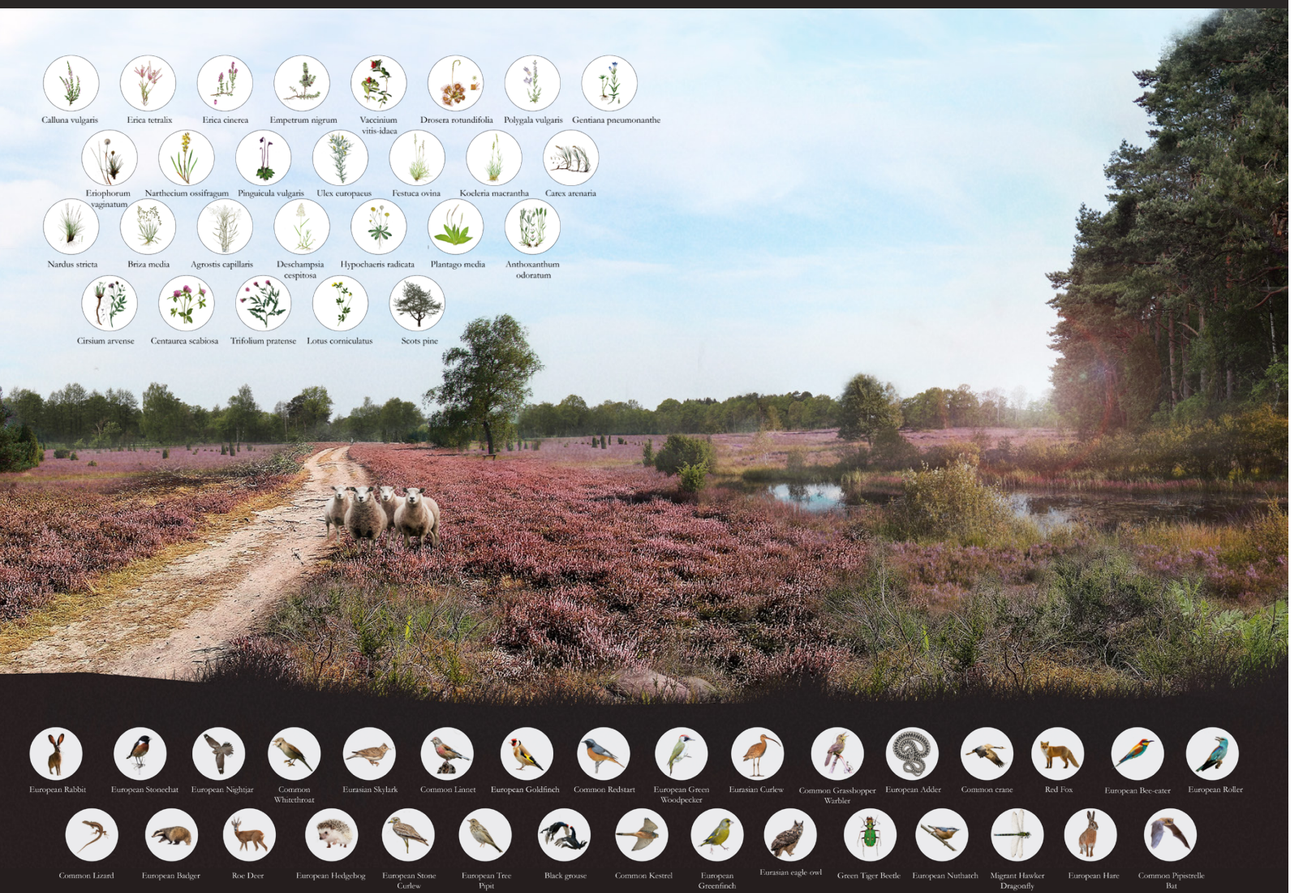
Linear elements in the landscape, a place to rest, providing shade, and local fruit as a reward for wandering in the countryside. All of this is an orchard and much more.

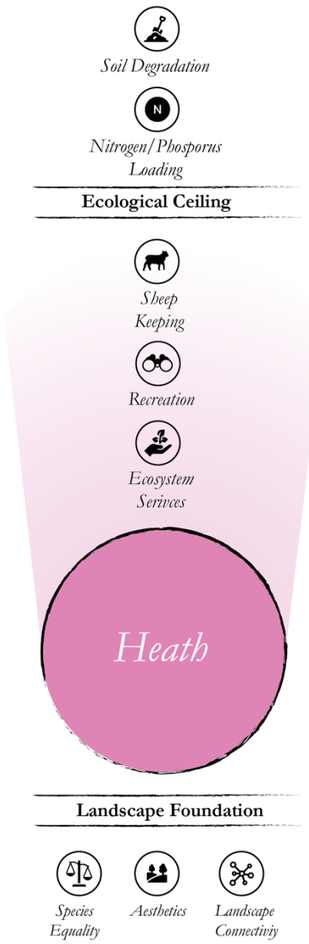
Riverlandscape

The landscape of the Womme River forms an important ecotope that meanders through the surroundings of Lower Saxony, originating in Lüneburg Heath, flowing through Bremen where it joins the Lesum, and lastly merging with the Wesser, which drains into the North Sea. It is the story of a river that shapes significant natural habitats, hosting not only meadow birds. In the areas of detailed design, the Wömme River has been reimagined and straightened. Within the space of the agricultural landscape today, the original shape of the meander finds its way back, inscribing a new form and a brighter future. Furthermore, I utilize certain existing meadows where the technique of floating meadows will be practiced, providing the soil with necessary nutrients and creating an environment for a variety of native orchids.

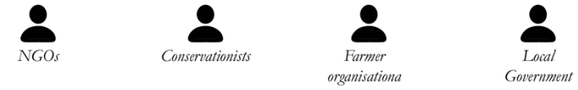
Fig. 92 Site Design landscape types (by Author, 2023)

Design site no. 4





Planning Instruments and Stakeholders



Top Down

Buy-out Polluters
To quickly reduce the largest amount of nitrogen polution, governments should make an effort to buy-out the top polutters in the area. This should prevent heathland from grassing up.

Drought Prevention
We need to have a critical look at (ground)water extraction nearby heatland. By increasing heathland we can increase the sponge effect on higher sandy soils.

Donating to Nature Conservation
Visitors of the sheep herd can donate or adopt a sheep to support their efforts in maintaining the heathlands. Donations will be used for maintanance, conservation and further rewilding projects.

Volunteering and Recreation
Users of the (P)ARK app and hikers of the trail can connect with local volunteers and organisations to remove tree growth, prevent grassing up, collect parking fee, and look after the sheeps.

Bottom up



New **Wet heathlands** are part of the project and play one of the most important roles in the biodiversity hotspot in the area, and they also have their cultural significance, why? Heathlands have been a significant part of Europe's cultural landscape for centuries. This is primarily due to practices such as sheep grazing, land use, peat cutting, and forest burning. Instead of causing an ecological disaster, these practices offered opportunities for the development of a different vegetation layer. Therefore, I consider this ecosystem as a co-operation between humans and nature, a place where animals and plants thrive from this natural harmony. As a symbol of cooperation and, most importantly, the presence of this natural typology, I expand it by trying to mimic nature, which is why I study and carefully shape it.

The total area being transformed into wet heathlands is **100 hectares,** and its main function is the protection and creation of space for the development of natural biodiversity. **This project does not offer or enable economic benefits, but it offers a wide range of other values and ecological services that are invaluable by money!** After centuries of human degradation and exploitation of the landscape, it is time to invest in the restoration of what humans have benefited from for centuries. Without these efforts and consideration for the transition between intensive land use and complete abandonment, it is necessary. It is actually one of the most crucial aspects of the entire large-scale project (P)ARK. **A non-commercial landscape!** A space and system without which we cannot survive.

The creation of wet heathlands is the first major challenge, but equally important is the establishment of order and a system for the care of these areas. The main representative in this regard will be a conservation organization that will develop a management plan, including precise procedures and timing. Pastoralists will also be approached, as they will have the opportunity to utilize these natural areas for active grazing. These pastoralists will be educated about the exact procedures and movement of herds. Further details are explained in the provided sheme.

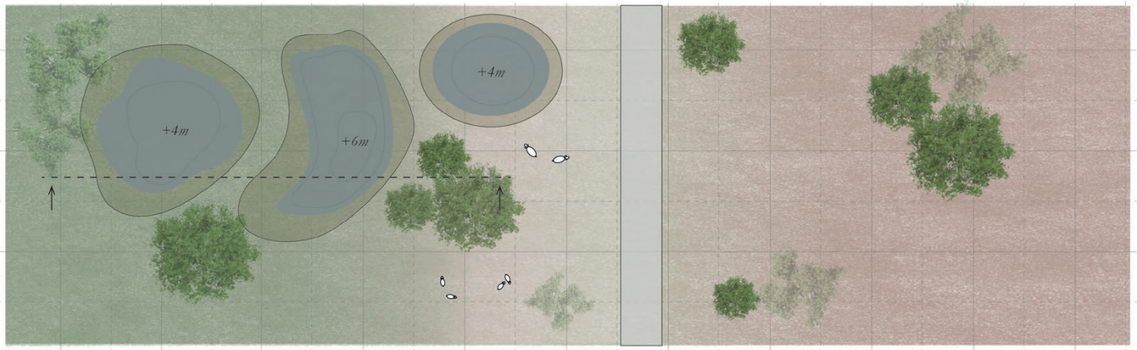
Fig. 93 Heathland Restoration (by Author, 2023)

Heathlands

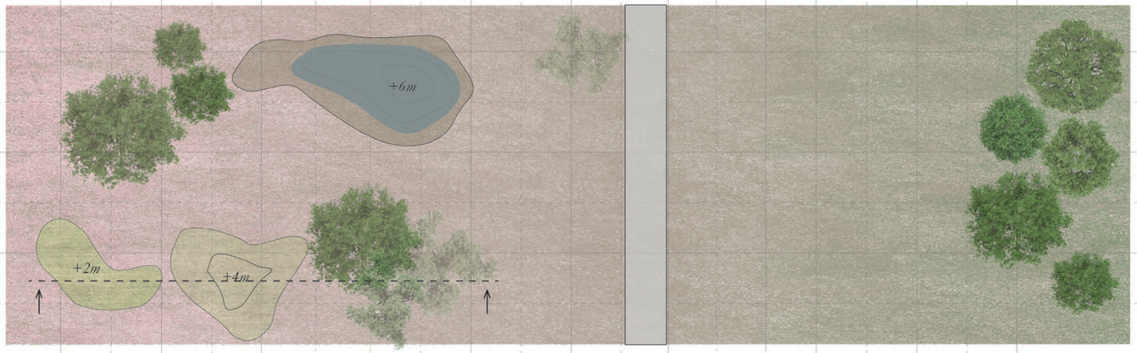
Heathlands terrain modelation- *systematic felling*



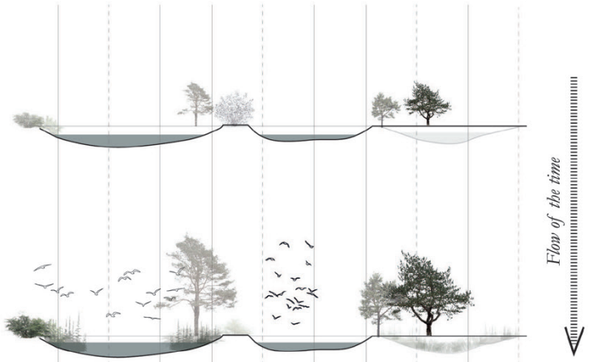
Wetheathlands - *felling in different time horizons*



Hight configuration - *felling in different time horizons*









Terrain modelation







The new heathlands are being created on sandy soils in close proximity to the existing ones. I am primarily focusing on establishing wet heathland types that hold significant importance not only for biodiversity but also for water retention in the landscape. For the proper functioning of this ecosystem, it is crucial to close off local drains that currently divert water from the fields. These channels are being closed and, to a large extent, filled in.

Visually and spatially, in the creation of wet heathlands, I primarily utilize several techniques and procedures. Firstly, there are terrain modulations that contribute to a range of significant qualities for both animals and plants.
These terrain modulations create landscape depressions - small ponds, while using the excavated soil to create mounds or hills. This is primarily done for certain qualities that can contribute to functionality. One of these qualities is Soil Moisture Regulation. The presence of a hill can impact water flow and drainage patterns. It can aid in retaining moisture in specific areas and preventing excessive water runoff, providing benefits to the hill itself and the surrounding vegetation. In the same time this play an important role in carbon storage and climate change mitigation. The waterlogged conditions slow down the decomposition process, resulting in the accumulation of organic matter and the sequestration of carbon in the form of peat. They can act as significant carbon sinks, helping to mitigate the impacts of greenhouse gas emissions.

In case of water shortage during the summer seasons, we will utilize water from the Womme River, which is situated nearby and has constructed reed filters to ensure that the wet heathlands receive the cleanest possible water.

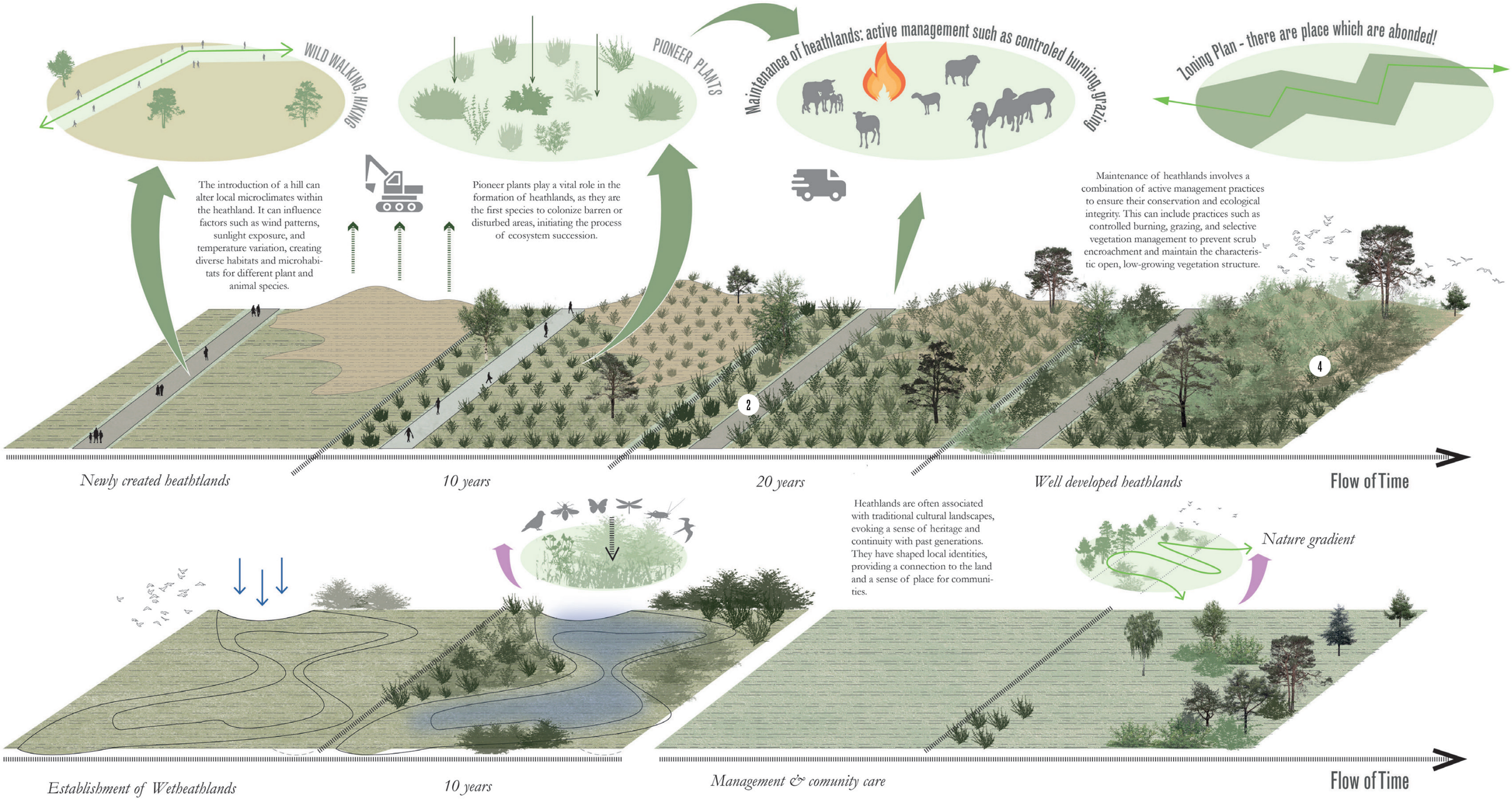
Once the terrain and water measures are completed, volunteers and experts can join the process of planting pioneer plants that will establish a stable composition of plant species characteristic of these habitats.

After the pioneer plants successfully establish, long-term management and care come into play. As mentioned earlier, management and care techniques play a crucial role, especially in wet heathlands. Otherwise, invasive plants may outcompete native species. Monitoring techniques are used, and plans are developed to prevent the proliferation of grasses and trees. In cases where the nutrient content is excessive due to rainfall and time, local burning or gradual removal of the topsoil layers may be considered.

Fig. 94 Heathland typologies (by Author, 2023)

Fig. 95 Transformation of Heathland (by Author, 2023)

Heathlands



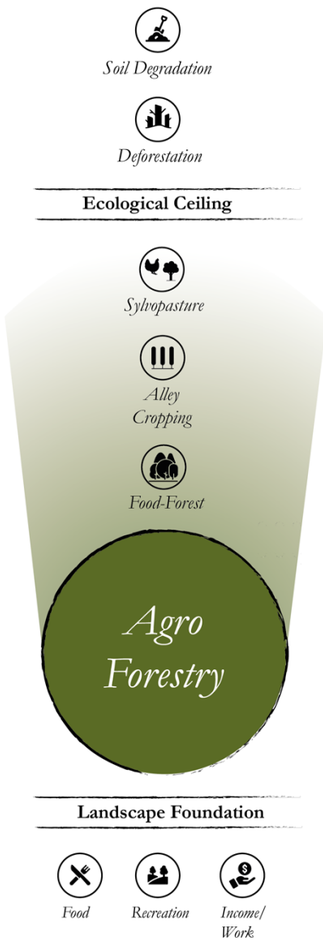
Within the spatial arrangement of this ecotope, there is a lot of diversity. Heathlands in the early stage undergo significant terrain modifications and soil regeneration processes. After these important spatial formations, pioneer plants are planted to colonize the area within a 20-year time horizon.

This transformation will shape the landscape into heathlands, which will effectively expand the protected natural areas. It will provide a home and breeding ground for a variety of species dependent on this ecotope. These animals include reptiles, insects, birds, as well as larger and smaller mammals.

If the establishment of new heathlands is successful, it is important to note that it is not the final step of the project. A highly precise and well-organized management is necessary. It may involve practices such as controlled grazing by sheep or localized burning to control invasive plant species. These management techniques are essential for maintaining the health and integrity of the heathland ecosystem.

The final and crucial element that requires attention in the plan is the establishment of boundaries and a gradual transition between the specific ecotopes and their surrounding areas. These transitions will facilitate natural blending and connectivity, addressing the issue of fragmentation that is prevalent today. By creating these gradual transitions, the ecological integrity of the landscape can be enhanced, allowing for smoother movement of species and promoting biodiversity.





Planning Instruments and Stakeholders



Buy-out Polluters

To quickly reduce the largest amount of polution, governments should make an effort to buy-out the top polluters in the area. In return to generous compensation, the will extensivy or move their business.

Bring back trees in the landscape

As result of mechanisation of the agricultural sector, historical trees and hedgerows dissapeared. Local governments should make a strategy for re-introducing trees in the form of agro-forestry, hedgerows and forests. This will protect crops, regenerate the soil, and increase biodiversity.

Agrotourism

To generate aditional income, farmers can profit from the increased amount of traffic along the hiking trail. By offering places to stay, in return for help on the farm, hikers can contribute to the (P)ARK system.

Community Forest

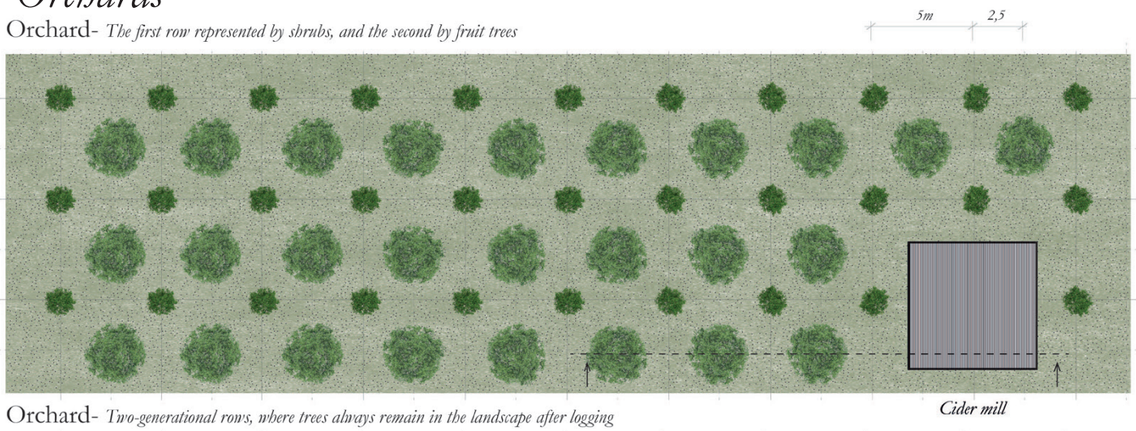
Closest to the natural areas, food forests can create a gradient or buffer zone that protects the nature but still provides some produce for the community. For a small contribution, people can start foraging for nuts, herbs, berries, and vegetables.

Orchards are a significant landscape feature of the European countryside. Trees played an important role in the lives of farmers and ordinary villagers. They were attributed with mythical qualities but were also a valuable source of vitamins in the form of fruits, nuts, and later, juices and alcohol. As a proper villager, you were expected to have at least a group of 5 fruit trees in your garden, including a representation of plum, at least two types of apple (summer and winter varieties), cherries, and pears. This fruit was consumed during the summer but also dried and prepared for the harsh winters when other sources of important vitamins were not available. Large farms, on a larger scale, planted trees, and this arrangement has been traditionally referred to as an orchard. Due to all these historical reasons and many others, I have decided to propose a series of orchards here in this locality. However, they are primarily intended to be a shared source of production, a place for gatherings, relaxation, recreation, and education. Why? Orchards are rapidly disappearing from our European landscapes, primarily due to diseases and limited profit per square meter. However, I believe that the main focus should not only be on yield but also on the character of the landscape, the atmosphere, and the experience of the place—the shade provided by the trees. When addressing any problem, including this one, research is crucial. In our case, it is necessary to conduct research in the initial phase, evaluate and verify various cultivars, and select suitable representatives for specific soil types. In the future, it is likely that continued research, grafting, and finding resistant species will be necessary to address the complex and difficult-to-specify challenges that lie ahead. Orchards are established near human settlements, villages, or towns, in the intermediate spaces between rural and urban areas. This proximity offers accessibility to the local population, who can spend time in these places, press cider during the season, extract honey, or participate in the harvest. I consider orchards to embody nature and a moderate society that values the benefits and presence of trees.

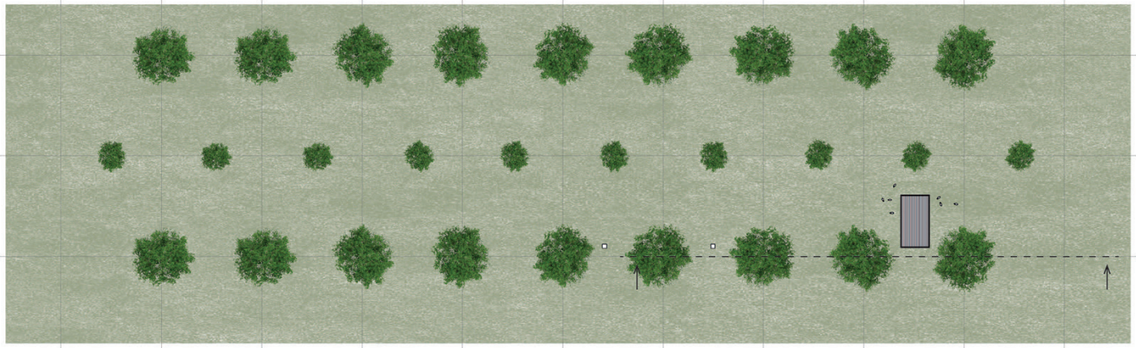
Fig. 96 Farmland conversion to Orchards (by Author, 2023)

Orchards

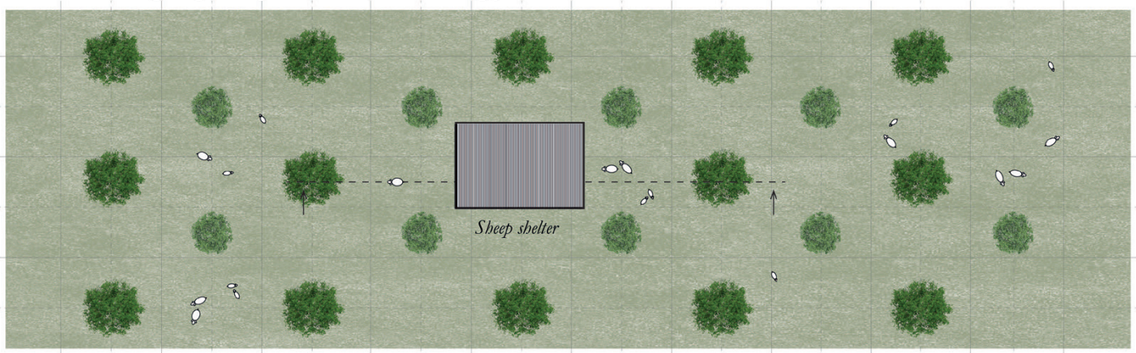
Orchard- *The first row represented by shrubs, and the second by fruit trees*



Orchard- *Two-generational rows, where trees always remain in the landscape after logging*



Orchard- *Planting in a quincunx pattern, with the middle trees being of shorter stature*



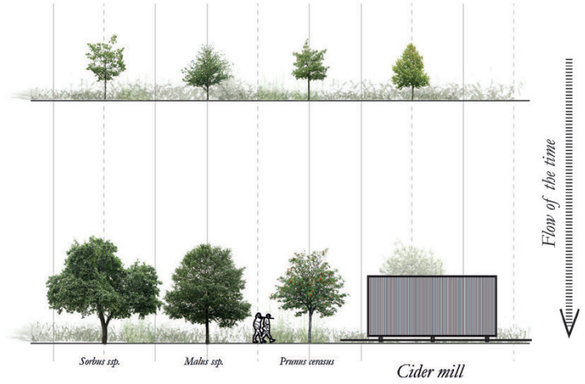
In the context of designing orchards and landscapes, I primarily worked with three patterns. However, they all share a common feature of mixing ages and alternating different trees or shrubs.

The first scenario demonstrates a double-row concept where lines of trees alternate with shrubs, creating visually and spatially larger spaces between the rows of trees. It also offers a much wider range of potential production in the form of shrubs like sea buckthorn, hawthorn, rowan, raspberry, etc.

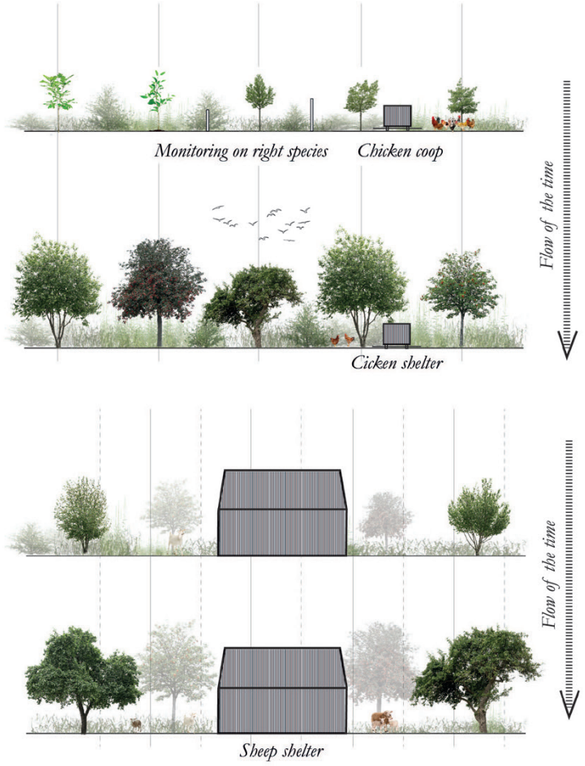
The second type of orchard represents a two-generation orchard, which means that even when one row needs to be cut down or becomes mature enough for felling, the meadows will never be empty.

The last type follows a similar principle to the second type but is planted in a pentagon shape, providing more space.

Newly planted orchards also include a range of small architectural interventions that serve either as shelters for animals (sheep, goats, chickens, horses) or as community spaces where neighbors from all age groups can gather. One of these community buildings is a cider mill. During the summer and autumn seasons, the community comes together at the cider mill for cider making and to collect local fruits from the orchard trees. During other months, the space can be used as a small outdoor lecture hall where children from nearby schools and preschools can learn about natural vegetation and the importance of a healthy environment. This can help strengthen or develop a deeper connection with the environment from an early age. This small building also has an extended roof, and during short walks, it can serve as a shelter to wait out a small storm or rain. These architectural elements should be constructed using local wood or other natural materials available in the immediate vicinity. They should also respect the form and typology of local architecture.









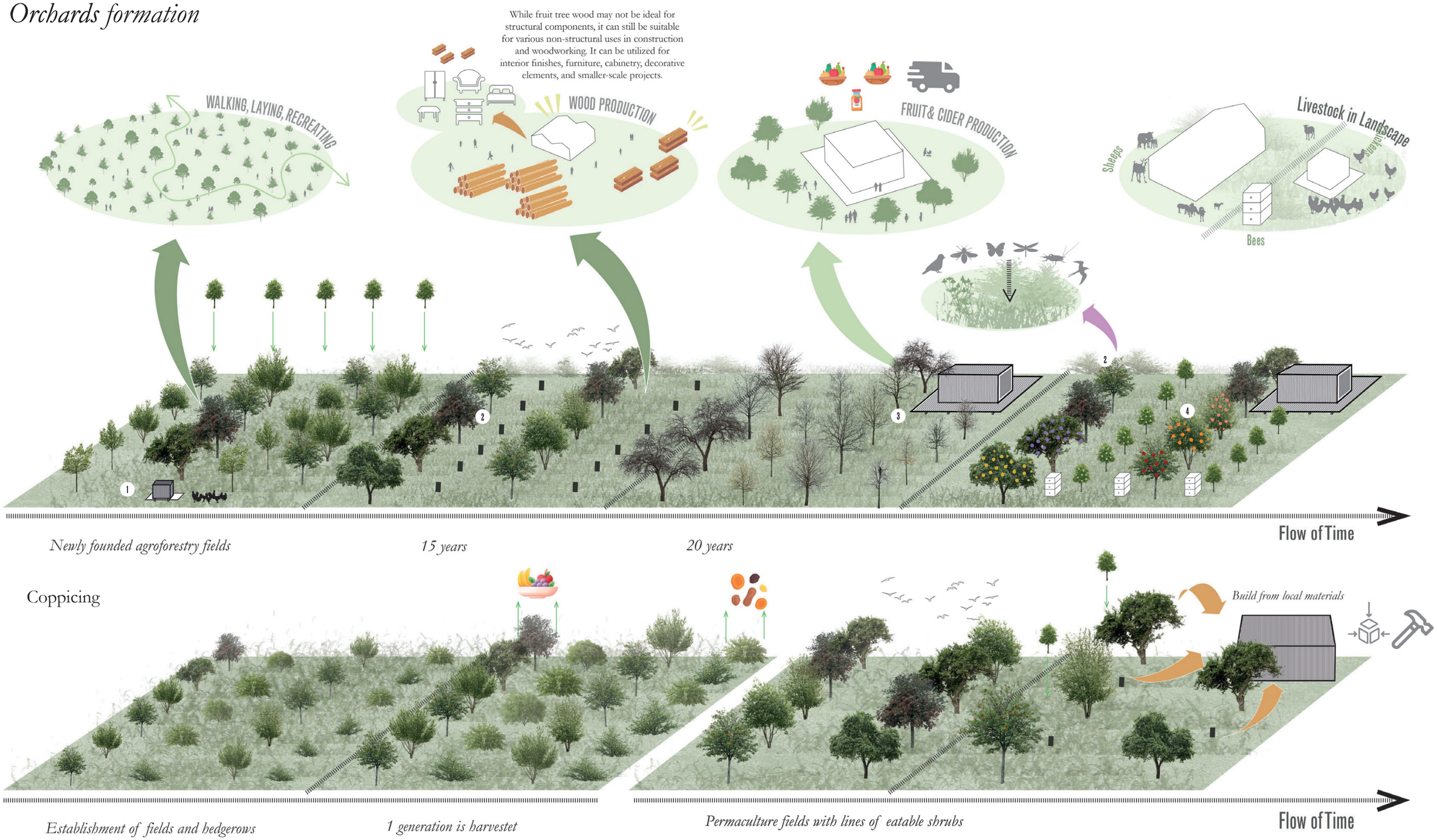


Orchards are visually enchanting spaces, resembling a picturesque feast for the eyes. They offer a tranquil refuge, vibrant life, and a multitude of activities. They also serve as communal gathering spots, where neighbors can share knowledge on beekeeping or other pursuits. Orchards act as open public spaces in rural areas, free from solid surfaces or concrete pavements.

During the final visual assessment of the spatial arrangement, various captivating visual atmospheres were crafted to enhance the overall experience.

Fig. 97 Orchard Typologies (by Author, 2023)

Orchards formation



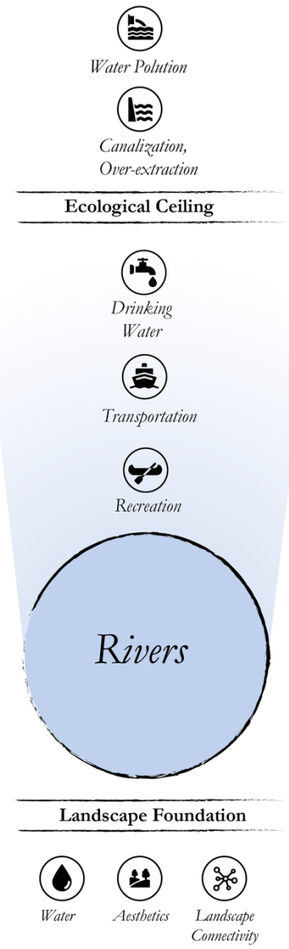
Recreation, walking, contemplation, and experiencing the landscape are integral parts of the orchards incorporated into Schneverdingen's landscape. They are complemented by small architectural elements in the form of wooden structures, primarily used by hunters as observation points. I utilize this typology for recreational purposes, providing a different perspective and unique experience.

Just like forests, these orchards also offer wood production over a longer period of time. However, the wood from fruit trees has different characteristics than that of mature forest trees. It is particularly suitable for furniture making or crafting musical instruments.

Cider mills, stopping points, and honey processing facilities are significant architectural interventions within this ecotope. They provide spaces for community events during fruit harvest, places for teaching grafting techniques for future suitable cultivars, or for bottling honey from local bees.

Cattle and other livestock also have their place in the landscape. Chickens, sheep, and goats are commonly found in the newly designed orchards. To provide them with safety and shelter, barns made of local wood are constructed in the orchards. These barns are designed in a way that they can be dismantled and relocated. Their structures and roof shape feature a gable roof, clearly expressing respect for local architecture and better integration into the landscape.





Planning Instruments and Stakeholders



Make Rivers a Legal Entity
Larger natural structures, that often have a special cultural importance, should have a legal status to protect it from further harm. Rivers for example should have the right for flowing, a balanced ecosystem, and being free from polution.

Ban dumping waste
With increasing drought, concentration of polutants and plastic become very problematic in european rivers. To protect both human drinkwater supply, and aquatic species, businesses should be stopped from dumping microplactics and other polutants in our surface water.

Water shed Restoration Projects
Local restoration projects should give more room to rivers, restore gradients, remove barriers and restore fish habitats and their migration routes. Vegetation along rivers and brooks can restore and purify the water.

Voluntairy River Cleanups
By mobilizing locals and users of the hiking trail, a combined effort can clean waterways along its entire length. Local governments, NGOs, and artists can support these activities and repurpose the collected plastics.

Water is the lifeblood of nature. It is an integral element of a functioning and healthy landscape. For these reasons, and also due to global warming and the associated changes and extremes, it is necessary to focus on the restoration of this layer. The Schneverdingen area is intersected by two ecologically significant rivers, both of which originate in the locality. The first one is the Wümme River, which is also the main backbone of the entire Tomorrow's (P) Ark project for the Lower Saxony region. It is in these areas, near the detailed design site in Lüneburg Heath, where the river originates. As part of a larger agricultural transformation, a significant portion of its meander in this area was straightened and, in some places, even relocated, as evidenced by some literature. In the 1920s, the Reich Labor Service (formerly the Voluntary Labor Service FAD) initiated the relocation of the river's channel. At the same time, the Wümme River was "lowered" to improve the drainage of surrounding lands. Particularly around Ottermoorer Weg, the Wümme River was clearly relocated to the north, which may have influenced the district boundary in some way (Wintermoor Archive, 2023). Based on these historical events, it is at least partially necessary to work on the regeneration of the old meander of this river, which also occurs in the central part of agricultural areas.

The second present river in the area is the Fintal River. In the project, it undergoes only minor modifications. Primarily, some small channels will be filled to provide space for the creation of new meanders. Another relatively significant element is the creation of floating meadows near the riverbanks, which aim to visually enhance the water landscapes and allow orchids and other local endemics to return to their natural habitat. All these major water plans are supplemented by a series of small interventions, such as small terrain passages, which, in a comprehensive assessment, can contribute to a healthy and unique microclimate for all species living in the area.

Fig. 99 Restoration of the Wumme River (by Author, 2023)

Phase I — Identify Hotspots — 2025
Phase II — Organise as One — 2035
Phase III — Rewild — 2045
Phase IV — Solidation — 2055
Phase V — Continuous Refugee for All — 2065
Phase VI — Simbiose and Flourish — 2075
Phase VII > — Innovation & Resonation — 2085 — 2100

Peat
Wetlands
Rivers
Green Cities
Walking
Development of Tomorrow's (P)Ark
Policy
Agriculture
Forest
Agroforestry
Heathlands
Meadows

Peat growth Strategy for CO2 capture
Peat Growth
Room for the River
Floodplains
Meadow Bird Wetlands
Water shed Restoration
Promote Walking and Tourism, through app and branding
Green Waterfronts, Sponge Cities
Resilient urban water strategy
Tomorrow's (P)Ark
Policy and Strategies
Agricultural Transition
Regenerative Agriculture
Afforestation Strategy
Sustainable Forestry
Agroforestry
Sandy Soil Sponge Strategy
Heathland Resotoration
Insect Strategy
Biodiverse Grasslands

Fig. 100 Biggest continuous Nature and Landscape Network of North- West Europe
by author, 2023



As we reach the culmination of this long journey, let us contemplate the magnitude of measures we can undertake for the environment we inhabit. Tomorrow's (P) Ark embodies a proposal, an idea, a theory that holds relevance on regional, international, and even transcontinental scales, as demonstrated by the work of Richard Weller and his students. Envision a magnificent environment that adapts and thrives alongside us, accommodating the ever-changing conditions of each passing year or decade. A place where the synergy between human labor and natural growth creates a harmonious coexistence, fostering not only the prosperity of humanity but also that of other species. This concept must, to some extent, materialize for meaningful change to occur—an environment that facilitates organic, non-invasive development and self-sustainability. This page and the subsequent ones depict a mere reflection of our aspirations for the expansion of the park. It weaves a network, a matrix that emulates the symbiotic nature of fungi, transmitting information and, in our case, spreading awareness.

Within this realm, children absorb knowledge through firsthand experiences and the transfer of wisdom, while learning about freedom, democracy, and ethical conduct towards nature. In essence, Tomorrow's (P)Ark is a visionary, albeit somewhat utopian, project that prompts pressing questions and offers a fresh perspective on a positive future.

Tomorrow's (P)Ark, a utopia we strive to create,
With measures bold, we shape our fate.
A sanctuary of growth and sustainability,
A testament to our shared responsibility.

In this poetic call to action, we find,
A vision of tomorrow, just and kind.
Let us rise, embrace the urgent quest,
For a positive future, we manifest.



Fig. 101 Regional Expansion (by Author, based on Google Earth, 2023)

How far this can go?

Fig. 102 An expanding vision for Europe (by Author, based on Google Earth, 2023)

Over all Vision for Future?

Fig. 103 Vision of a continuous Nature Network (by Author, based on Google Earth, 2023)

6

Conclusion & Reflection

Outcomes
Conclusion
Reflection
The Changing Perception of Nature: A Journey Through Time

Outcomes

SRQ1

SRQ 1: How does Landscape connectivity impact biodiversity and ecosystem service, and what are the potential consequences of fragmentation?

At the outset, it is important to recognize that Nature operates as a cohesive system, where individual elements or ecotypes rely on one another. Nothing can be detached from this interconnected system. Since the beginning, the landscape has been naturally divided by rivers and mountains, which act as impassable barriers for certain species. However, even these metaphorical natural barriers become sources of life, manifested in the form of rivers flowing through lowlands. In other words, a barrier like a mountain brings about a flow and is connected to territories thousands of kilometers away, such as through a major or minor river. This specific case manifest what Landscape connectivity means. What are all factors of connectivity: biodiversity, species distribution and migration, ecosystem functioning & ecosystem Services.

Connectivity enhances ecological processes and ecosystem functioning. It enables the flow of energy, nutrients, and water between different habitats, supporting ecosystem processes such as pollination, seed dispersal, and natural pest control. Connected landscapes can also mitigate the negative impacts of disturbances or natural disasters by allowing for the movement of species to more suitable habitats, promoting post-disturbance recovery and ecosystem resilience which are the sources for ecosysem services.

Ecosystem services are the benefits that humans obtain from ecosystems. Landscape connectivity contributes to the provision of various ecosystem services. For example, connected landscapes support pollinators, enhancing agricultural productivity through improved crop pollination. They also facilitate the natural regulation of pests and diseases, reducing the need for chemical inputs. Additionally, connected habitats can enhance water quality and quantity by promoting infiltration, reducing erosion, and maintaining healthy watersheds. Access to recreational areas and cultural services, such as aesthetic value and spiritual well-being, can also be improved through landscape connectivity.

So, what is Landscape fragmentation then? It is the complete opposite of connectivity. It is a phenomenon that divides, cuts, and fragments this previously coherent biodiversity palette into small, segregated pieces. Even a minor spatial change, such as a road, can become an insurmountable barrier for a species on which others depend, potentially leading to a domino effect or genetic weakening of the island community. There are various types of fragmentation, including habitat fragmentation, patch fragmentation, edge fragmentation, linear fragmentation, perforation fragmentation, islandization fragmentation, or perforation fragmentation. Despite their visual differences, they all contribute to the same problem.

If we were to summarize how landscape fragmentation contributes to landscape connectivity and its consequences, we can mention at least five impacts: habitat loss and isolation, loss of species and genetic diversity, edge effects and altered microclimates, reduced ecosystem functioning, and loss of connectivity and disrupted migration. Overall, fragmentation can disrupt key ecological processes and reduce the overall functioning of ecosystems. Fragmented habitats may experience changes in nutrient cycling, reduced efficiency in pollination, altered patterns of seed dispersal, and decreased natural pest control. These disruptions can have cascading effects on ecosystem dynamics, leading to changes in plant and animal communities, and potentially compromising the provision of ecosystem services on which human societies depend. This loss of habitat reduces the available resources and living space for species, particularly those with larger home ranges or specific habitat requirements.

All this permeable system and mosaic have provided conditions for a wide range of animal species. **From all and more reasons Landscape connectivity refers to the degree to which landscapes facilitate the movement of organisms and ecological processes across space. It plays a crucial role in shaping biodiversity patterns and influencing the provision of ecosystem services and mainly connestivity is the natural source of life flow.**

SRQ2

SRQ 2: What are the most effective rewilding design strategies for promoting Landscape Connectivity and preserving Natural habitats.

The most effective rewilding design strategies for promoting landscape connectivity and preserving natural habitats involve a multifaceted approach. Firstly, establishing and maintaining ecological corridors that connect fragmented habitats play a crucial role. These corridors should be strategically planned to address the specific needs of target species and ensure continuous movement across the landscape. Secondly, implementing habitat restoration and conservation efforts, such as reforestation, wetland restoration, and the protection of critical habitats, helps to expand and safeguard natural habitats. It is important to prioritize the conservation of intact and high-quality habitats to maintain biodiversity and ecosystem integrity. Additionally, promoting sustainable land-use practices, such as minimizing habitat fragmentation through thoughtful infrastructure planning, mitigating human-wildlife conflicts, and incorporating wildlife-friendly measures, is essential. Furthermore, engaging in collaborative partnerships involving local communities, landowners, and conservation organizations fosters shared responsibility and support for preserving natural habitats and promoting landscape connectivity. By integrating these rewilding design strategies, we can enhance connectivity, protect natural habitats, and safeguard the valuable biodiversity and ecosystem services they provide.

SRQ3

SRQ 3: How can human experience of nature and Landscape be integrate into the design of continuous nature and Landscape network in North- West Europe, and what are the potential benefits of this aproach?

The project includes three human activities that can significantly contribute to the establishment and acceptance of this landscape structure concept. The first activity is work, specifically the work associated with the care and effort required to manage agricultural fields, livestock, and natural wilderness areas. It also involves the maintenance of hiking trails, campsites, and regional ecotourism. All of these activities enable local communities to benefit and aim to provide a sustainable income locally, facilitating the transition between current activities.

Another activity is walking, which represents one of the pillars of ecotourism and has great potential to popularize and highlight the history and value of the landscape, as well as the genius loci of the places. Walking itself has a centuries-long tradition in the form of pilgrimage routes in places like Spain, Rome, or the Nordic countries. Unlike the search for a deity, **this journey initiates the exploration of a new relationship with nature,** understanding that we are an integral part of this breathtaking natural world. **Walking is perceived as a necessary process of personal transformation and perception in this context.**

The final human experience of this Ark is scientific knowledge, which is facilitated through local scientific teams spread across the entire territory of the new (P)ARK. These scientific teams are responsible for professional monitoring and evaluation, and based on this monitoring, conclusions are drawn regarding the best methods of care and implementation for the respective ecotopes. These centers will be located both in undisturbed zones, where human inactivity is necessary, and along viewing paths to educate tourists, locals, schools, and universities about the scale beyond the horizon that can be observed with the naked eye. In other words, education is provided to change public perception about the need for such a transformation, highlighting the wilderness areas that provide us with ecological services and resilience enviroment.

SRQ4

SRQ 4: What are the different types of Nature ecosystems present and how do they relate to the overall Biodiversity and Landscape connectivity in this Area.

Lower Saxony in Germany is known for its diverse range of ecosystems. Important and characteristic ecosystems include are: Coastal and marine ecosystems, wetlands, heaths, forests and grasslands.

Coastal and Marine Ecosystems: Lower Saxony has a coastline along the North Sea, featuring tidal flats, salt marshes, dunes, and estuaries. These coastal and marine ecosystems are important for migratory birds, fish species, and marine biodiversity in world scale.

Wetlands: Such as marshes, fens, and bogs. They can serve as natural filters, purifying water and providing habitats for various plant and animal species. They support biodiversity by hosting specialized wetland organisms and contributing to landscape connectivity through water corridors.

Forests: Lower Saxony is home to various forest types, including mixed deciduous forests, coniferous forests, and riparian forests along rivers. Forest ecosystems are key contributors to biodiversity, housing a wide array of plant and animal species. They enhance landscape connectivity by serving as corridors and providing shelter for wildlife movement.

Heathlands: The region contains extensive heathland areas, characterized by open, low-growing vegetation and unique plant communities. They provide important stepping stones for landscape connectivity between different habitats.

Grasslands: Traditional hay meadows, pastures, and heathlands are characteristic grassland ecosystems in Lower Saxony.
Grassland ecosystems support a variety of plant species and provide important habitats for grazing animals, insects, and birds.

Protecting and managing these ecosystems and maintaining landscape connectivity is essential for conserving biodiversity, preserving ecological integrity, and ensuring the long-term sustainability of Lower Saxony's natural environment.

GRQ

GRQ : How can Landscape connectivity and Rewilding be used to design the biggest continuous Nature and Landscape Network of North- West Europe, and create a habitat for all species to share?

This project resulted in the formation of a new International (P)ARK, an international nature park created in response to a range of environmental issues that are leading to changing living standards and conditions on planet Earth. It was developed through a thorough study of landscape ecology and rewilding theory, guided by ideas borrowed from bioregionalism and degrowth theory, which further emphasize the necessity of a significant change in our way of life. This project takes the form of a systematic approach with flexible boundaries, not a perfectly defined blueprint, but rather an ongoing process. It offers a relatively abstract concept of a park that defines how we should work towards our future.

To provide a clear conclusion to this research, I have decided to formulate symbolically seven principles that can contribute to the construction of a similar structure in the future. These principles should be systematically enriched through future research, aiming to provide a comprehensive framework for maintaining and enhancing biodiversity and creating a sustainable, thriving living space.

Identifying key corridors: Conduct a thorough analysis of the existing landscape to identify key corridors that can connect fragmented habitats. These corridors should consider ecological factors such as species movements, migration patterns, and dispersal abilities. By strategically designing and protecting these corridors, the network can facilitate the movement of species across large distances and promote genetic exchange.

Restoring and expanding habitats: Implement rewilding initiatives to restore and expand natural habitats within the network. This can involve reintroducing native plant and animal species, removing invasive species, and implementing habitat restoration techniques. By creating diverse and interconnected habitats, the network can support a wide range of species and provide resources for their survival and reproduction.

Enhancing ecological processes: Promote ecological processes such as natural succession, nutrient cycling, and hydrological dynamics within the network. By allowing natural processes to occur, the ecosystem can become self-sustaining and resilient. This can include restoring wetlands, promoting natural flooding regimes, and encouraging the development of natural forest ecosystems.

Incorporate Urban enviroment:
Within the framework of the project, individuals or landscape and urban planning offices are encouraged to create strategic plans for the integration of cities into the structure of national parks. Urban ring corridors, green and blue infrastructure, and even plans for how woodlands could become urban are all necessary elements for anchoring and integrating urban structures with the surrounding areas. This means connecting biodiversity within cities with what exists outside.

Walking: Promote walking as a tool of how to fix our relation with the natural enviroment.
Walking plays a crucial role in the Tomorrow's Park project, as it embodies the essence of restoring our connection with nature, embracing local environments, contemplation, and fostering cultural bonds through shared pathways. Recognizing the importance of pedestrian movement, the project encourages active community engagement and collaboration. By prioritizing walking as a means of exploration and enjoyment, the project aims to create a vibrant network of pathways that facilitate the appreciation of nature, enhance physical well-being, and strengthen the bond between individuals and their surrounding landscapes.

Engaging local communities and stakeholders/ Operate, cooporate, comunicate: Involve local communities, landowners, and stakeholders in the design and management of the network. Their participation and support are crucial for long-term success. Educate and raise awareness about the importance of landscape connectivity and rewilding, and foster a sense of stewardship among the people living in and around the network.

Collaboration and coordination: Establish partnerships and collaborations among various organizations, agencies, and institutions working in the field of conservation and landscape management. This can help pool resources, expertise, and knowledge to effectively design and implement the network. Coordinate efforts across political boundaries and sectors to ensure a cohesive and integrated approach.

Monitoring and adaptive management: Continuously monitor the network's effectiveness in promoting connectivity and supporting biodiversity. Implement adaptive management strategies to address any challenges or changes that arise. Regularly assess the network's ecological health and make necessary adjustments to ensure its long-term viability.

Conclusion

In conclusion, the design proposal highlights the importance of landscape connectivity in influencing biodiversity patterns, ecosystem services, and the overall functioning of ecosystems. The concept of landscape connectivity emphasizes the interdependence and interconnectedness of various ecological elements, fostering the flow of energy, nutrients, and water between habitats.

The outcomes demonstrate that landscape connectivity enhances ecological processes and ecosystem functioning, enabling the provision of essential ecosystem services. These services include improved pollination for agricultural productivity, natural regulation of pests and diseases, enhanced water quality and quantity, and access to recreational and cultural services. By promoting landscape connectivity, we can create a more resilient and sustainable environment that supports both ecological integrity and human well-being.

However, it is crucial to critically evaluate the use of specific boundaries, such as the one-kilometer buffer, as they may oversimplify the complexity of ecosystems. Future considerations should involve alternative shapes or configurations that better reflect the ecological dynamics and spatial relationships of the area.

Regarding rewilding design strategies, the most effective approach involves a multifaceted approach, including the establishment of ecological corridors, habitat restoration and conservation efforts, sustainable land-use practices, and collaborative partnerships. By integrating these strategies, landscape connectivity can be enhanced, natural habitats can be preserved, and biodiversity and ecosystem services can be safeguarded.

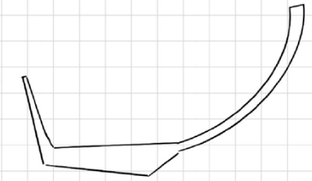
The integration of human experience of nature and landscape in the design of continuous nature and landscape networks in North-West Europe offers multiple benefits. Activities such as work, walking, and scientific knowledge can contribute to local communities' engagement and support for the transformation of landscapes. By providing sustainable income opportunities, highlighting the history and value of the landscape through walking, and fostering scientific education, public perception can be changed, promoting the understanding of the importance of wilderness areas and their ecological services.

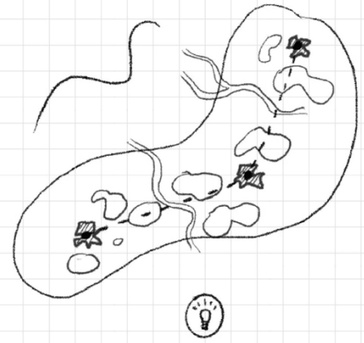
The presence of different nature ecosystems in the area, including coastal and marine ecosystems, wetlands, forests, heathlands, and grasslands, contributes to the overall biodiversity and landscape connectivity. Protecting and managing these ecosystems is crucial for conserving biodiversity, preserving ecological integrity, and ensuring the long-term sustainability of the region's natural environment.

To design the largest continuous nature and landscape network of North-West Europe and create a habitat for all species to share, several principles are suggested. These principles involve identifying key corridors, restoring and expanding habitats, enhancing ecological processes, engaging local communities and stakeholders, promoting collaboration and coordination, implementing monitoring and adaptive management strategies, and incorporating urban environments. By adhering to these principles and continuously enriching them through research, a comprehensive framework can be established to support biodiversity, create sustainable living spaces, and ensure the success of future landscape connectivity and rewilding initiatives.

The Keel

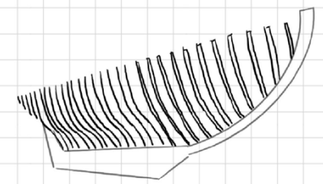
Starting point, creating the biggest **continuous landscape park** of North West Europe.





The Frames

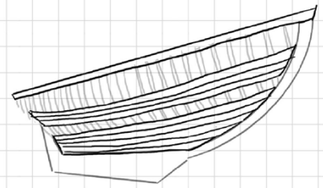
Gives shape to the park. The **framework** will consist of **biodiversity hotspots with a 1km buffer.**

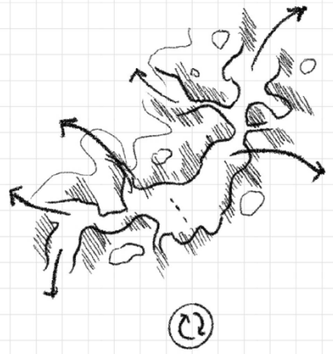




The Planking

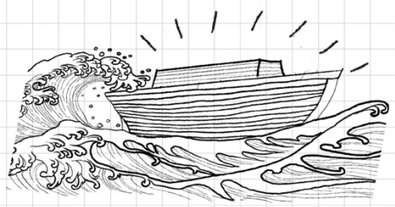
Will create **a solid hull** by bringing everything together. A waterproof design that **withstands future fragmentation.**





Disaster-proof

Resilient matter that withstands major disasters.



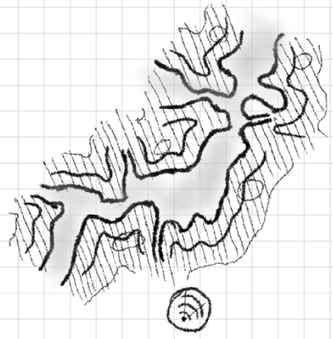


Fig. 104 Conclusion: How to construct a (P)Ark (by Author, 2023)

Reflection

Scope and academic relevance
This work is the result of a long search for a new structure of a national park. It was inspired by my fascination with the landscape, the perception of the landscape, as well as a fascination with natural systems, and most importantly, my long-standing question of whether landscape architects can contribute to new forms of national parks and nature conservation as such. Today, I know that our discipline has much to offer because in such difficult situations and times of uncertainty associated with environmental and social crises, it is certain that we need a comprehensive planning process that will involve diverse disciplines in the discussion. It also reminded me of the fact that no discipline should remain solely in the hands of one field because in the long run, it can become stagnant. For these reasons, landscape architects can stress a number of critical questions to ecologists and scientists, which, when answered and solutions found, can be incorporated into future designs for protection and its methods and forms. In the course of my research, I also recalled that one of the significant figures and founders of landscape architecture, Frederick Law Olmsted, contributed to the creation of a plan and the first model, predecessors to national parks. His groundbreaking Yosemite Report effectively created an intellectual framework for a national park system, which was initiated by Congress during the Civil War and other social unrest. Perhaps that is why now is an appropriate time to raise the critical question. Shouldn't this issue and the discipline of creating national parks be more integrated into the field of landscape architecture studies? I have answered this question for myself through this research, and I am convinced that it should be. **This project is applicable on both small and large scales. It is replicable at the level of Lower Saxony, as indicated by my map below, or even on a larger scale across the continent.**

Societal and environmental relevance
As a young generation growing up in a constantly changing world filled with more bad news than good, I wanted to create something that could make a difference in addressing the negative scenarios associated with biodiversity loss and climate change. Climate has always changed and will continue to do so, but what is urgent is how we have altered the climate through our practices and activities over the past 50 years. Given that climate change occurs on a long-term horizon, we are only now beginning to see the consequences of past decades and what awaits us in the future. The temperature increases in the next 20-40 years cannot be stopped. However, if we do not want living conditions on the planet to become increasingly unfavorable, we must start now to reverse the predictions of a +4 degrees Celsius rise, which would truly make parts of the world uninhabitable. This is the reality; we can no longer reverse everything through small-scale solutions. We must start building not just new houses, but also resilient natural environments that provide at least the conditions and climate to which we and our children have been accustomed. **Therefore, considering the significant changes that lie ahead, I believe that a project with such ambition can achieve a great deal and bring about many changes. What I appreciate about it is the offer of a precedent, to live in an environment that takes care of us when we, too, take an active interest in it and actively contribute to its quality.**

Evaluation of the design proposal
Design proposal showcases a visionary and comprehensive approach to Tomorrow's (P)ARK addressing ecological, social, and cultural aspects. It reflects a commitment to sustainability, biodiversity, and the creation of resilient landscapes that can inspire and serve as precedent for future projects.

The design proposal incorporates a one-kilometer buffer around the (P)ARK, it is important to critically evaluate the use of such a precise boundary. The decision to establish a specific distance may overlook the potential variations and complexities of the surrounding landscape. In the future, it may be necessary to consider alternative shapes or configurations that better reflect the ecological and functional relationships of the area. By embracing flexibility and remaining open to future advancements, the (P)ARK can evolve into even more inclusive and ecologically sensitive landscape.

Relation between research and design
The research-through-design methodology employed throughout the project demonstrates a commitment to generating new knowledge and pushing the boundaries of traditional landscape architecture practices. The testing of different options and learning from others' experiences further enriches the design process, ensuring a robust and informed approach.

Site visit and firsthand observations have clearly informed the design decisions, allowing for a deep understanding of the site's characteristics, constraints, and potentials. This attention to detail and contextual sensitivity is evident in the proposal's responsiveness to the specific site conditions and its ability to enhance the overall ecological value of the area.

Ethical reflection towards the complicated reality
In the pursuit of establishing the Tomorrow's (P)ARK, a grand vision of a vast international Nature Park, it is crucial to pause and reflect on the complex ethical considerations that arise from this ambitious endeavor. This reflection delves into the multi-faceted aspects of the project, contemplating issues such as the recognition of nature's rights and the integration of cities into the nature landscape network.

First and foremost, it is imperative to acknowledge the inherent value of nature itself. Nature, with its intricate ecosystems and diverse species, possesses an inherent worth that extends beyond its instrumental value to humans. Just as humans are protected by laws and rights, it is a pertinent ethical question whether nature should be granted legal rights as well. Recognizing nature's rights would signify a paradigm shift, acknowledging that we are but one part of a larger interconnected web of life, and that nature deserves protection and consideration in its own right.

In the context of creating the biggest continuous Nature and Landscape Network in North-West Europe, the integration of cities into the network presents both challenges and opportunities. While it may be challenging to envision cities being fully included within the network in their current form, there are ways in which urban areas can be integrated into the broader landscape and contribute to the conservation and enhancement of natural ecosystems. One approach is to prioritize green infrastructure and urban planning strategies that incorporate natural elements and biodiversity into the fabric of cities. This can include the creation of green corridors, urban parks, rooftop gardens, and the preservation of existing green spaces. By integrating these elements, cities can become stepping stones or nodes within the larger landscape network, providing habitats, connectivity, and ecological services for various species. This approach can help mitigate habitat fragmentation, promote urban biodiversity, and enhance the overall resilience of the network.

Additionally, cities can play a vital role in raising awareness and fostering a sense of environmental stewardship among their residents. Through educational programs, citizen science initiatives, and community engagement, cities can contribute to the understanding and appreciation of nature and the importance of landscape connectivity. This, in turn, can lead to behavioral changes and a collective commitment to sustainable practices both within and beyond urban areas.

The creation of Tomorrow's (P)ARK also necessitates confronting the ethical implications of land use and resource allocation. As we prioritize the preservation and restoration of natural habitats, difficult decisions may arise regarding competing human needs and economic interests. It is vital to engage in inclusive and participatory decision-making processes that take into account the perspectives and concerns of local communities, indigenous peoples, and various stakeholders. By valuing diverse voices and considering the social and economic implications, we can strive for a balanced and equitable approach that respects both human well-being and the integrity of the natural environment.

Balancing the decision of which nature to create, especially in relation to historical landscapes and the inclusion of human presence for the preservation of ecosystems like heathlands, is a complex ethical question. Inclusive and participatory decision-making processes involving local communities, indigenous peoples, scientists, conservation organizations, and government representatives can help address this issue. Recognizing the cultural and ecological significance of historical landscapes, it is crucial to engage with communities and respect their traditional knowledge to determine appropriate measures for preservation while considering the needs of the people living in and around these areas. For ecosystems requiring human involvement to prevent disappearance, finding a balance between natural processes and intervention is essential, considering ecological requirements, scientific research, and local community input. Decision-making should also prioritize biodiversity conservation, ecosystem processes, and resilience, integrating ecological, cultural, and social values. By fostering transparent and collaborative approaches, we can strive for harmonious and sustainable relationships between humans and nature, ensuring the preservation of historical landscapes and promoting biodiversity conservation.

Ultimately, the creation of Tomorrow's (P)ARK is an ambitious and transformative endeavor that demands careful ethical reflection. It requires us to recognize nature's intrinsic value, explore new relationships between cities and nature, engage in inclusive decision-making processes, and prioritize sustainability and resilience. By embracing these ethical considerations, we can strive towards a future where humans and nature coexist harmoniously, ensuring the preservation of biodiversity, the provision of ecosystem services, and the well-being of both present and future generations.

May this ethical reflection inspire thoughtful discourse and guide us towards an ethically and ecologically sound path in shaping our shared future.

Limitations
While the project of establishing a vast international Nature Park and implementing rewilding practices holds significant promise, it is important to consider some potential limitations and challenges that may arise. Securing sufficient funding for such a large-scale endeavor can be a major constraint, as costs associated with land acquisition, habitat restoration, infrastructure development, and ongoing management can be substantial. Resistance from stakeholders, such as local communities and industries reliant on natural resources, may arise due to concerns over economic impacts and land-use conflicts. Navigating through complex policy and legal frameworks at various levels can present challenges, requiring comprehensive reforms to support rewilding initiatives. Additionally, ecological limitations, including soil quality, suitable habitat availability, and invasive species, may restrict certain areas for rewilding. Building public support, fostering community engagement, and addressing misconceptions through effective communication and education strategies are vital for success. Robust monitoring and evaluation frameworks are necessary to assess ecological, social, and economic outcomes, but they require expertise and resources. By acknowledging and proactively addressing these challenges, the project can strive for greater success and sustainability in achieving its conservation goals.

Recommendations
In terms of recommendations for future studies, it is advisable to engage with international institutions actively involved in related issues, such as Rewild Europe and IUCN, to gain valuable insights and collaboration. The increasing trend of international collaborations on large-scale corridor restoration and the elimination of borders through nature connections should be embraced. Associations focused on rewilding policy and implementation can provide valuable inputs and background information on suitable areas for these initiatives, facilitating discussions on implementation possibilities.

Additionally, forming a multidisciplinary team of students is recommended to navigate the complexities of this large-scale design effectively. Latery students can focuse separately on a smaller-scale areas allows for a more focused and detailed analysis, enabling the team to provide comprehensive information and tackle the abundance of data and challenges involved.

Calculation and bussines plan need to be intoruced to show trought costs of it, can helps to owercome some of the limitation

What did I learn?
The study and creation of the Tomorrow's (P)ARK project have taught me a great deal and have tested and challenged me in terms of my future career. One of the most valuable lessons I have learned is the concept of design through spatial scales. I have never worked at a continental level before. Familiarizing myself with the vastness and diverse contexts of different regions has been both enlightening and humbling. It has broadened my perspective and deepened my understanding of the complexities involved in designing for large-scale environments.

Moreover, the project has highlighted the importance of collaboration and interdisciplinary teamwork. Engaging with experts from various fields, such as ecology, landscape architecture, and community development, has exposed me to different viewpoints and methodologies. It has reinforced the idea that effective design solutions arise from the synergy of diverse expertise and collective knowledge.

The exploration and examination of historical landscapes and their potential integration into the project have also been enlightening. Recognizing the significance of these landscapes and considering their preservation within the context of rewilding initiatives has prompted me to reflect on the delicate balance between human intervention and natural processes. It has emphasized the need for thoughtful and inclusive decision-making processes that take into account ecological, cultural, and social values.

The greatest lessons I have learned have come from weaving the entire narrative together for the very first time. It began with an unwavering fascination and deep-rooted connection to the natural world. This profound bond affirmed the power and intricacy that joy in a subject, one that resonates with your soul, brings to a project. Thus, I wish to gently inspire anyone who lingers upon these words to grant their imagination and personal fascinations the freedom to soar and dance.

Overall, the experience of working on the Tomorrow's (P)ARK project has been a transformative journey, pushing the boundaries of my professional growth and challenging me to think critically and creatively. It has instilled in me a sense of responsibility and a commitment to designing for a sustainable and inclusive future. I am grateful for the opportunities it has provided and look forward to applying the knowledge and skills I have gained in my future career endeavors.



Fig. 105 Lost in the Nature (Bisschops, 2023)

The Changing Perception of Nature: A Journey Through Time

At the very beginning of this entire project, and during official presentations, I mentioned how fascinated I have been with the history of the transformation of understanding and perceiving the Nature within the context of art and societal thought since my Secondary school. As part of my studies, I aimed to demonstrate how this paradigm shifted during certain cultural developmental phases. Ultimately, I wanted to show how the entire project and the idea of a new form of national park could contribute to changing the understanding of this life platform and, through strong intervention, rectify this relationship.

I am convinced that one of the reasons why we, as an advanced society, allow these destructive processes of destruction is the subconscious and real loss of this primal connection to our surroundings. I hope that this call for attention will stimulate thoughts and initiate change in many individuals. And even though we still cannot travel from Amsterdam to Copenhagen, I hope that you will soon venture out into nature and experience, just like I did during my visit to Lower Saxony, the sublime. But what does it mean? To feel sublime is to be swept away, captivated by the resplendent majesty, the indomitable vigor, and the enigmatic allure of the world that enfolds us. It is to be enmeshed in an ethereal communion with a realm surpassing our ephemeral existence. A heightened state of awareness unfolds, suffusing our senses, stirring our souls, and unveiling the very essence of our perception. I believe that working with such sentiments, immersing oneself in the experience and amplification of the beauty and interconnectedness of the landscape, can particularly aid landscape architects in elevating awareness of its splendor and the imperative to protect our Earth.

In medieval times, nature was perceived as a mystical realm, a divine creation known as Eden. It was regarded as something extraordinary, untamed, and God-made. Nature's beauty and abundance were seen as manifestations of the divine, invoking a sense of wonder and reverence.

With the rise of cities and the industrial revolution, the perception of nature shifted. The landscape was viewed as a source of livelihood, providing resources for the growing urban populations. Nature became intertwined with human needs, as forests were cleared for timber, rivers harnessed for energy, and land cultivated for agriculture. The landscape became a means of survival and sustenance.

As industrialization progressed, the perception of nature transformed further. The pursuit of profit and wealth took center stage, and the landscape became commodified. Nature was exploited for its resources, treated as a source of income and money. The relentless drive for progress and economic growth overshadowed our deeper connection with the natural world, as humanity began to resemble the mythical Leviathan, consuming and transforming the environment.

Hand in hand with the industrial revolution came the first signs of awakening to the need for environmental protection. Some individuals recognized the negative consequences of human actions on the natural world. Voices advocating for conservation and preservation emerged, warning of the potential loss of irreplaceable natural treasures and calling for a more harmonious relationship with nature. And this happend already 100 years ago!

In the mid-20th century, a profound shift in perception occurred when humans witnessed the first photo of the Earth from space. This iconic image, often referred to as the Blue Marble, revealed the planet as a fragile and interconnected entity. It evoked a sense of unity and vulnerability, prompting a collective realization of the Earth's finite nature and the need to protect and cherish it.

As history unfolds, numerous other stages of development have shaped our understanding of nature. Each era brought forth new discoveries, advancements, and challenges that influenced our perception. From ecological awareness and biodiversity conservation to the recognition of indigenous wisdom and the importance of interconnectedness, these stages have added layers to the complex narrative of our relationship with the natural world.

In contemplating the history of our perception of nature, we find ourselves reflecting on the loss of our primary connection to our surroundings. From the mystical Eden to the commodification of nature, we have traveled a path that has brought both progress and consequences. As we navigate the challenges of the present and envision a sustainable future, it is essential to rediscover our deep connection with nature, to reclaim our reverence and appreciation for the extraordinary and mysterious world that surrounds us. By doing so, we may yet find a way to restore balance and harmony between humanity and the natural environment, reweaving the threads of our fragmented relationship and embracing a more profound sense of unity.

Let me transport you to a realm where imagination dances with possibility, where Tomorrow's (P)ARK project unveils its poetic tapestry. It breathes life into the very essence of landscapes - an invitation to wander, to tread softly upon the earth, embracing the wisdom of LOCAL COMMUNITIES and their nurturing touch. It whispers of a harmonious union, where NON-INVASIVE PRACTICES become a sacred symphony, entwining humanity's vibrant threads with the tapestry of nature's grand design.

Within this realm, national customs converge, painting vivid strokes of biodiversity, each stroke a masterpiece in its own right. It cherishes the magic of connection, recognizing that even amidst bustling cityscapes, we are part of this extraordinary tapestry.

Embrace this vision, for it holds the power to reshape our world, to interlace hearts and souls, and to reawaken our profound comprehension of the intricate web that binds us all. Let these utopian dreams materialize, carrying forth their purest intentions, for we are not mere spectators, but active weavers of the unfolding story of our planet.



Fig. 106 A Change in the Perception of Nature (Rijksmuseum, Blue Marble 2000- NASA, colage by author, 2023)

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List of Figures

Figure 1 List of Figures

Figure 2 Sediment Flow (NASA, 2018) 5

Figure 3 North Sea (NASA, 2018) From: eoimages.gsfc.nasa.gov 8

Figure 4 Caspar David Friedrich, Wanderer above the Sea of Fog, 1817 (Kunsthalle Hamburg, January 5, 2023) 13

Figure 5 (Schemes designed by author, November 2022) 21

Figure 6 Vertebrate biodiversity losses point to a sixth mass extinction (Barnosky et al.2011; Howard Hughes Medical Institute; McCallum 2015) 23

Figure 7 Infographic on the most endangered species in Europe (Europarl.eu, IUCN European Red List, 2015 and 2019) 23

Figure 8 Red list Habitats (Made by author, 2023) 25

Figure 9 Lower Saxony (Google Earth, 2023) 27

Figure 10 Atlas of barriers in Europe (Belletti, B., Garcia de Leaniz, C., Jones, J. et al., 2020) 29

Figure 11 Nature Puzzles (Made by author, 2022) 29

Figure 12 Landscape Fragmentation Steps (Made by author, 2022) 31

Figure 13 Landscape Fragmentation (European Enviroment Agency) 31

Figure 14 Watch for Deer (VM, September 30, 2020) From: https://www.goodfellow.af.mil/Newsroom/Article-Display/Article/375470/watch-for-deer-on-roadways/ 33

Figure 15 Hertenjacht, anoniem, Michael Ostendorfer, 1571 (Rijkmuseum, 2023) 35

Figure 16 Edicts of Ahoka (Wikipedia, 2023) 35

Figure 17 Panoramic view of Yosemite Valley and Half Dome in Yosemite National Park, ca.1890-1900 (George Fiske, Wikipedia, 2020) 35

Figure 18 Buffalos on Green Grass Field Near Hils (Pexels, Gintarė Kairaitytė, Jun 28) 35

Figure 19 Ark van Noach, Symon Novelanus, 1577 - 1627 (Rijksmuseum, November, 2022) 37

Figure 20 Trends from 1750 to 2010 in indicators for the structure and functioning of the Earth System(Steffen et al., 2015) 39

Figure 21 Park in Denmark (made by author, 2023) 43

Figure 22 Form of the Tomorrow's (P)Ark (graphic made by author, 2023) 45

Figure 23 Walking through Tomorrow's (P)Ark (graphic made by author, 2023) 47

Figure 24 Nature Puzzles (Made by author, November 30, 2022) 49

Figure 25 One Flew over the Lower Saxony (graphic made by author, base map Google Earth - 2023) 51

Figure 26 World Park Project (made by Prof. Richard Weller and his students, 2020) 61

Figure 27 Dutch National Parks (in formation*)From: www.nationaleparkenbureau.nl 63

Figure 28 Van Gogh National Park Vision (VanGoghNP, 2023) 63

Figure 29 National Landscape Parks of World Class From: www.nationaleparkenbureau.nl/ 63

Figure 30 Doughnut Economy (Raworth, 2017) 65

Figure 31 Map of Europe with bioregions and sample size per country (Kaijser , Birk & Hering, 2022) 67

Figure 32 Europe perceived as bioregions? (The alternative, 2000) 67

Figure 33 Landscape Ecology Principles in Landscape Architecture (Dramstad, Olson & Forman , 1996, page. 20-40) 69

Figure 34 European bison making comback (Rewilding Europe, Daniel Mirlea) 71

Figure 35 Rewilding Principles (by Author, 2023; based on Carver S, et al. 2021, from https://conbio.onlinelibrary.wiley.com/doi/10.1111/cobi.13730 b) 73

Figure 36 Overview of Scale (by Author, from Google Earth, 2023) 79

Figure 37 Timeline of Cultural History (by Author, 2023) 83

Figure 38 Biogeographical regions in Europe (European Environment Agency, 2022) 85

Figure 39 Layer Analysis of North West Europe (by author, 2023) 87

Figure 40 Layer Analysis of Lower Saxony (LBEG) 89

Figure 41 Layer Analysis of Lower Saxony 91

Figure 42 (Niedersächsisches Ministerium für Umwelt, Energie, Bauen und Klimaschutz) 91

Figure 43 Indication of Species in the (P)Ark (by Author, 2023) 93

Figure 44 Natura 2000 Areas in North West Europe (European Enviroment Agenci,EU, 2022) 96

Figure 45 National Nature protection (EEA, 2022) 97

Figure 46 Nature Conservation Organisation in North West Europe (by Author, 2023) 99

Figure 47 Index of nature potential and desruptive human activities in Europe (Henrique Pereira, Laetitia Navarro, Laetitia Navarro, 2016) 101

Figure 48 Landscape fragmentation pressure in Europe, 2018, EU-27 and UK (EEA, 2023) 103

Figure 49 Map of Fragmentation by Physical Barriers (Geofabrik GmbH Karlsruhe, 2020) 103

Figure 50 Map of Fragmentation Bremen x Hamburg (Verburg & Overmars, 2009) 105

Figure 51 Types of Landscape Fragmentation (by Author, 2023) 107

Figure 52 Ecosystem Services and Rewilding Index of Europe (Henrique Pereira, Laetitia Navarro, Laetitia Navarro, 2016) 109

Figure 53 Land use of North West Europe (ESRI, 2023) 111

Figure 54 Cultural Landscapes of the (P)Ark (by Author, 2023) 113

Figure 55 Agricultural land to be rewilded (Verburg & Overmars, 2009) 115

Figure 56 Land use in the Park (by Author ; from Geofabrik GmbH Karlsruhe, 2022) 117

Figure 57 European long distance paths (ERA Foundation Waymarked Trails:, 2023) 119

Figure 58 Reiziger met een hond, Anthonie Waterloo, 1773 - 1832 (Rijkmuseum , 2023) 121

Figure 59 Map with Highlights along the Trail (by Author, 2023; from Google Earth) 123

Figure 60 Fischerhuder Wümmeniederung (Pictures made by Author) 125

Figure 61 Ekelmoor (Pictures made by Author) 127

Figure 62 Schneverdingen(Pictures made by Author) 129

Figure 63 Hassel (Pictures made by Author) 131

Figure 64 Herbarium with Species from the Site (by Author, 2023) 133

Figure 65 System Layers Analysis (by Author ; from Geofabrik GmbH Karlsruhe, 2022) 135

Figure 66 Large Scale Design Principles (by Author, 2023) 139

Figure 67 Landscape Structure with 1km buffer applied (by Author, 2023) 141

Figure 68 Extra Urban Design Principles (by Author, 2023) 143

Figure 69 Urban Design princples (by Author, 2023) 145

Figure 70 Landscape Architecture in context and Nature Puzzle (by Autor, 2023) 153

Figure 71 North West Europe Systems (by Author, 2023) 155

Figure 72 Vision map of the Landscape Structure (by Author 2023; based on Copernicus.eu) 157

Figure 73 Map of the Trail (by Author, 2023; based on Copernicus.eu) 159

Figure 74 Visual Language of the Trail (by Author, 2023) 161

Figure 75 (P)Ark App User Interface (by Author, 2023) 163

Figure 76 Synthesis in layers (by Author, 2023) 165

Figure 77 Challenges Map (by Author, 2023) 167

Figure 78 Design location Overview (by Author, 2023) 169

Figure 79 Landscape Architecture Doughnut Analysis (by Author, 2023; adapted from Raworth, 2017) 171

Figure 80 Site Location (from Google Earth, by Author, 2023) 172

Figure 81 Design Explorations (by Author, 2023) 177

Figure 82 Site Plan with Design locations (by Author, 2023) 178

Figure 83 Artist Impression of the Site (by Author, 2023) 181

Figure 84 Site Design NO.I: Agricultural Transformation (by Author, 2023) 182

Figure 85 Site design Landscape layers (by Author, 2023) 185

Figure 86 Sustainable forestry and tree diversivication (by Author, 2023) 187

Figure 87 Forest Typologies (by Author, 2023) 189

Figure 88 Forest transformation (by Author, 2023) 191

Figure 89 Agriculture Transformation (by Author, 2023) 193

Figure 90 Agricultural Typologies (by Author, 2023) 195

Figure 91 Transformation of Farmland with Trees and Hedges (by Author, 2023) 197

Figure 92 Site Design 2: Natural Transformations (by Author, 2023) 198

Figure 93 Site Design landscape types (by Author, 2023) 201

Figure 94 Heathland Restoration (by Author, 2023) 203

Figure 95 Heathland typologies (by Author, 2023) 205

Figure 96 Transformation of Heathland (by Author, 2023) 207

Figure 97 Farmland conversion to Orchards (by Author, 2023) 209

Figure 98 Orchard Typologies (by Author, 2023) 211

Figure 99 Transformation of Forests (by Author, 2023) 213

Figure 100 Restoration of the Wumme River (by Author, 2023) 215

Figure 101 Biggest continuous Nature and Landscape Network of North- West Europe *by author, 2023* *218*

Figure 102 Regional Expansion (by Author, based on Google Earth, 2023) 220

Figure 103 An expanding vision for Europe (by Author, based on Google Earth, 2023) 223

Figure 104 Vision of a continuous Nature Network (by Author, based on Google Earth, 2023) 225

Figure 105 Conclusion: How to construct a (P)Ark (by Author, 2023) 233

Figure 106 Lost in the Nature (Bisschops, 2023) 237

Figure 107 A Change in the Perception of Nature (Rijksmuseum, Blue Marble 2000- NASA, colage by author, 2023) 239

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