

adaptive reuse of landscape heritage:
a promising future for improving elderly
people's quality of life in shrinking Parkstad



adaptive reuse of landscape heritage:
a promising future for improving elderly people's quality
of life in shrinking area

Yueqi Tang [4901053]
Y.Tang-8@student.tudelft.nl

Delft University of Technology
Faculty of Architecture and the Built Environment
Department of Urbanism, Landscape Architecture track

AR3LA031
Graduation Studio: Landscape Architecture: Flowscape
Lab of Harvest

First mentor: Frits van Loon
Second mentor: Lidy Meijers

report for P5
50 June 2020
Delft, the Netherlands

I want to extend my sincerest thanks to my mentors and other tutors in Harvest lab. Frits and Lidy have given me a lot guiding and help with great care and patience. I've gained much knowledge supplement, widened design thinking and had deeper critical thoughts about landscape heritage, nature, society, culture and humanity etc. Also I want to thank group mates in Harvest lab that we do research and have discussions together. New thoughts would spark when we shared ideas and learn from each other. During the second half period of the project, in this special time of global health crisis, I'm grateful for the care and concern I receive from the university and teachers especially because I'm an international student. The care and support from my family and among all classmates also makes me feel warm and stay strong.

0 abstract

It seems that urban shrinkage has become a very 'normal' stage of urban development process in Europe. Starting in Germany during the late 1990s and early 2000s, and then slowly but surely spreading across most of Europe (Bontje and Musterd, 2012). Nearly half of Europe's cities – home to one-third of the continent's population – are shrinking in one way or another. Shrinkage is a very diverse and complex process in urban development, but one of the most intuitive phenomena is structural population loss, constant and considerable. Whether the reason for shrinkage is deindustrialization or postwar politics, urban lifecycle is the spatial effect of economic circular development (Martinez-Fernandez et al, 2012).

In a shrinking city or more generally, a shrinking area, social problems and economic problems are eventually affecting local residents' life, causing decrease in security, amenity, comfort, social vitality, etc., reducing economic circulations and putting the future of the region into worrying uncertainty.

Parkstad Limburg, in south part of Limburg Province in the Netherlands, has a long history, and

experienced rapid urbanization and development in 20th century due to mining industry. However, after shutting down of mine sites, this region has been facing shrinkage even till now. Before Industrial Revolution, Parkstad has an agricultural-based history since Roman time; although urbanization and expansion reduced farming area significantly, there are still many heritages of ancient natural landscape and agricultural production existing in Parkstad. The unique hilly landscape being found nowhere else in the country also makes the region a really popular tourism destination for visitors from home and abroad. Currently Parkstad is undergoing economic restructuring in this post-mining period and it's looking forwarding to a sustainable regional economic development using its tourism resource which has great potential.

Shrinkage has brought challenges as well as opportunities to Parkstad. In this post-industrial era, with the background condition of shrinkage, how to promote economic circulation and social vibrancy using local material to trigger new types of spatial programming? This landscape architecture design project, taking Parkstad as an example, proposes reintroduction of agricultural

landscape elements in order to reproduce the idyllic beauty and attract tourists. In small scale, a typical South Limburg farmhouse is transformed into a green care farm for the elderly with traditional agricultural elements such as high-stemmed orchard. How reintroduction of agricultural landscape elements can improve attract tourism and investment in a regional scale is also explained. This project is hoped to explore how adaptive reuse of landscape heritage especially agricultural heritage can improve living quality, boost economic activities, stimulate social vitality to present Parkstad with a regional development of positive circulation.

content

1 introduction

- 1.1 regional background: shrinkage
- 1.2 landscape condition
- 1.3 fascination
- 1.4 problem statement
- 1.5 research question
- 1.6 goal
- 1.7 relevance

2 methodology

- 2.1 theoretical framework
- 2.2 methodology

3 analysis

- 3.1 scopes
- 3.2 principles
- 3.3 typologies

4 designing exploration

- 4.1 strategies from principle
- 4.2 micro scale exploration
- 4.3 regional design

5 reflection

- 5.1 conclusion
- 5.2 discussion

6 reference

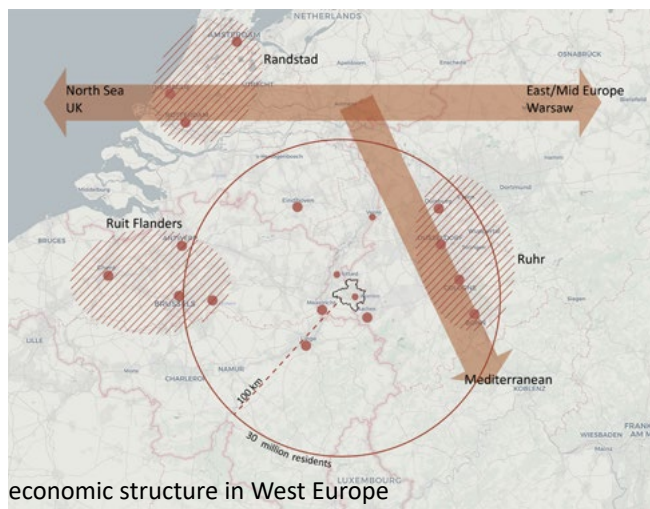
1 introduction

In this chapter, the background of the project will be presented, followed by understanding of the landscape quality. In the first part, it will become clear what the problems of the study region are and how the research question is formed. A vision is presented, as the goal of this project, to guide the establishment of research and design.



1.1 regional background: shrinkage

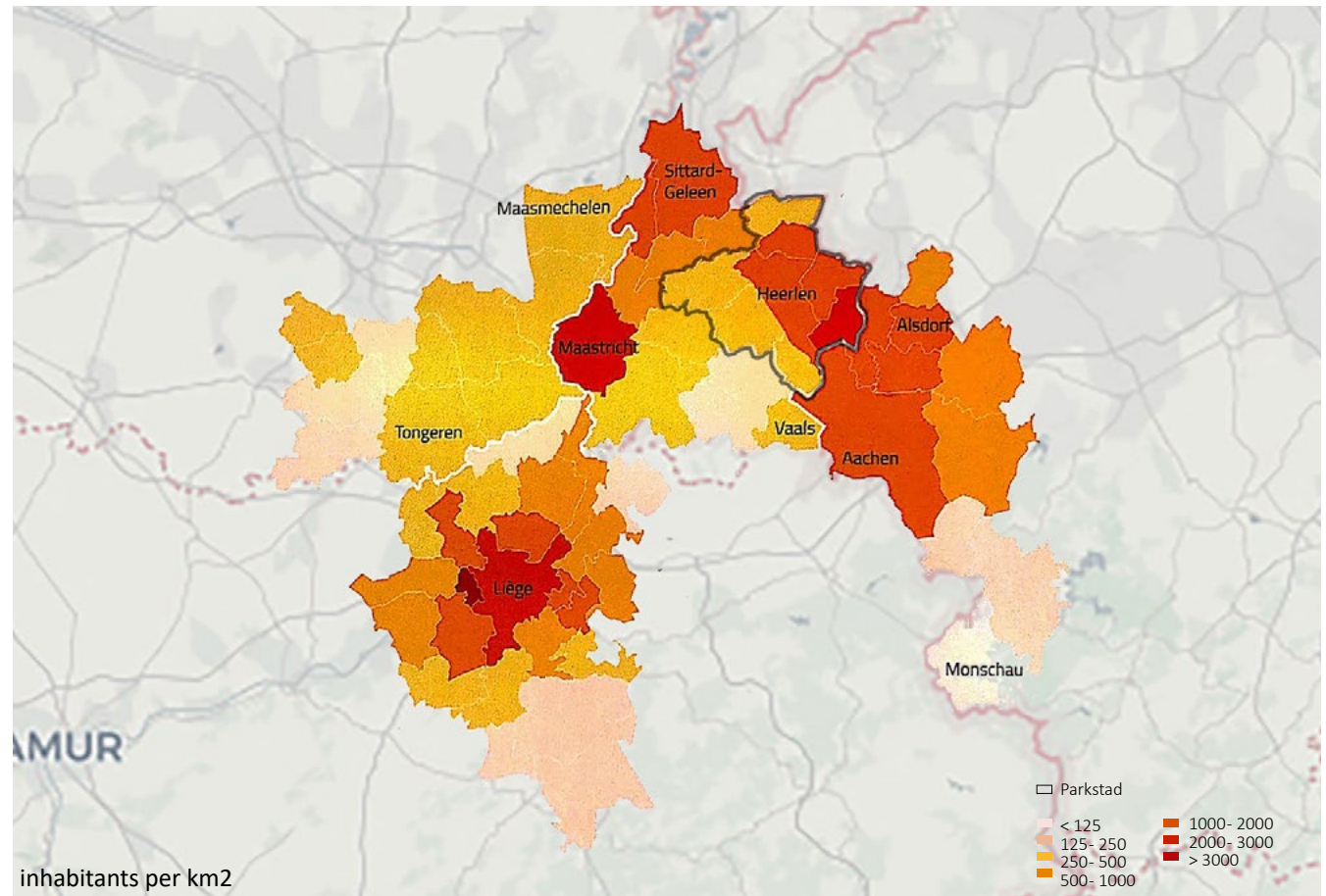
Since the beginning of the 21st century, the phenomenon of shrinking city has been widely discussed across Europe. In fact, nearly half of Europe's cities – home to one-third of the continent's population – are shrinking in one way or another. Given the global trends it is very likely that shrinkage is there to stay or even get more wide-spread. Shrinkage caused by deindustrialization is happening particularly in the 'rust belts' from Merseyside (UK) to Pays Noir (France) and the Rur area (Germany) (K. Pallagst et al. 2013, p.16). In the post-industry era, due to the globalization of the economy, global financial flows and the internationalization of product processes, two economic spines and several metropolis agglomerations has been attracting labor force like magnetic fields, causing imbalance in population distribution. This imbalance not only occurs with a country, but also is being witnessed across the

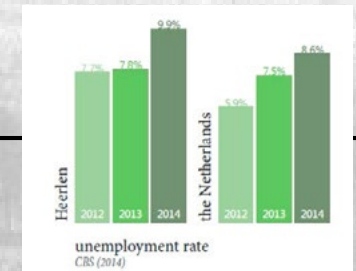
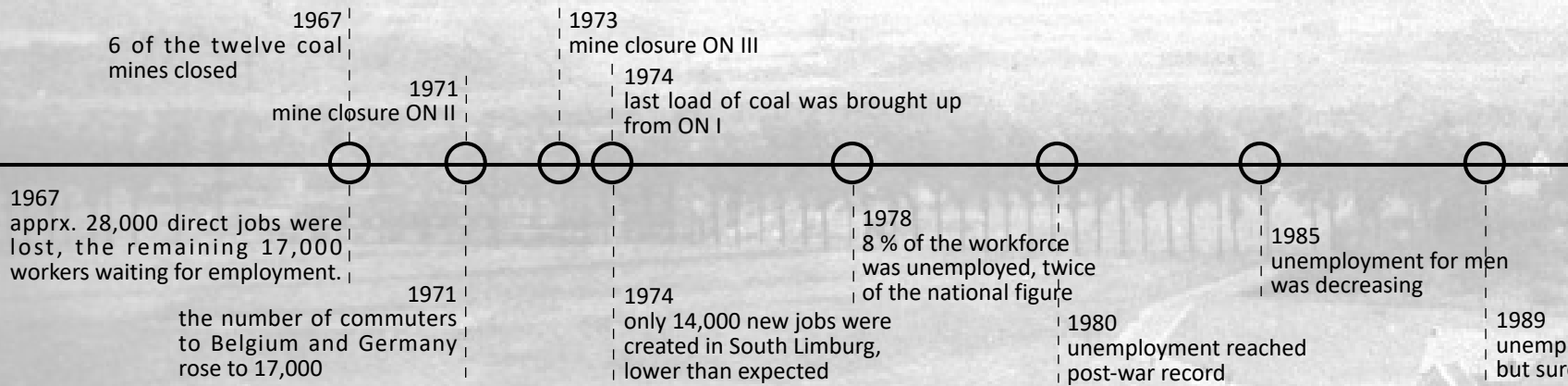


nation borders. Parkstad Limburg region in the south of the Netherlands is one of the regions that are experiencing shrinkage in west Europe. Its unique geographical location and economic position brings challenges as well as enormous chances for dealing with shrinkage.

Urban shrinkage is a phenomenon with multidimensional process and effects, and have economic, demographic, geographic, social and physical

dimensions that continue to evolve under global and local influences. The word expanded our simple understanding of 'decline' as a linear process. (Martinez-Fernandez et al, 2012) Typical manifestations of shrinkage can be seen in Parkstad, such as outflow of labor force, aging society, house vacancy, etc.



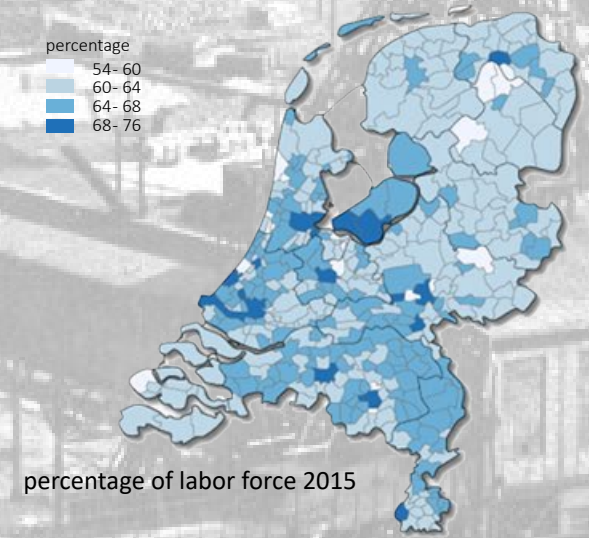
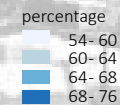
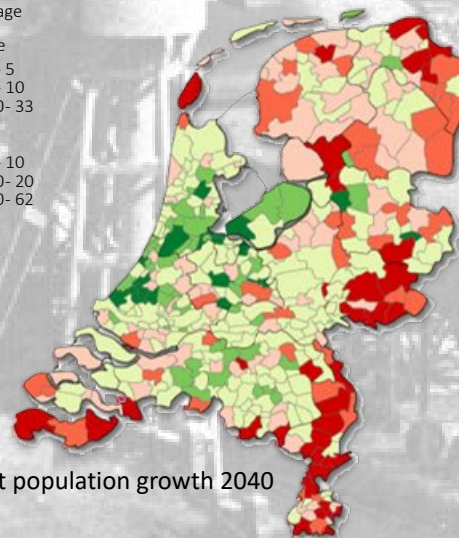
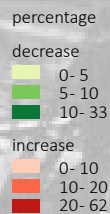
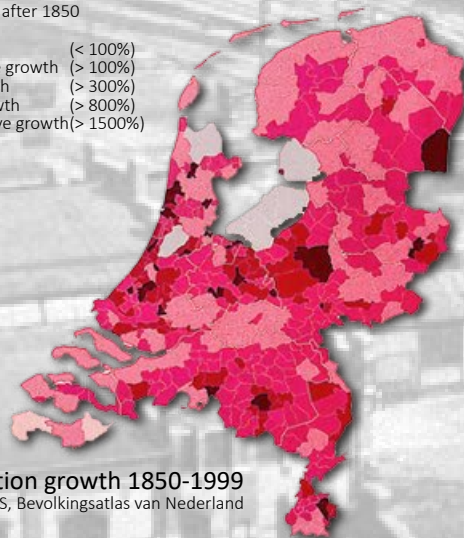
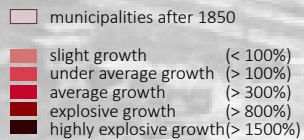


outflow of labor force

Parkstad is a former coal mining region, which grew demographically and economically fast from late 19th century to 1960s. Coal mining was the pillar economy, and it provided a living for one third of the South-Limburgers in its hey-day. So when the government decided to shut down the industry in late 1960s, the regional

economy has stagnated and then unemployment and emigration followed. Unlike its neighbor, the Ruhr region, Parkstad has been experiencing depopulation and outflow of labor force even till now. In the last three decades in 20th century, depopulation in Parkstad was caused by mismatch between white-collar employment and blue-collar labor force; in recent decades, this

continuous population decline has a selective character: especially young people are leaving the region for educational or career reasons (Elzerman and Bontje, 2015), whether they're going to the central Netherlands or search for opportunities across the border.

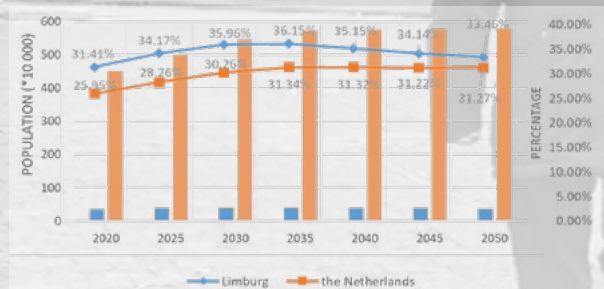


aging society

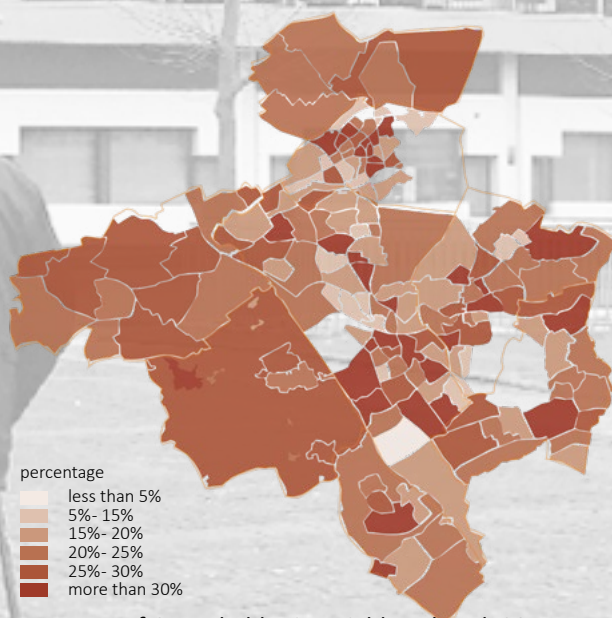
Aging population is another striking phenomenon of shrinkage. Actually it's now a worldwide concern that the number of persons aged 60 and over will triple globally by 2100. With the postwar baby boomers turning to senior age, a general trend of aging society can be noticed in the Netherlands. Moreover, due to aforementioned emigration of labor force, the population is aging faster in South Limburg than other parts of the country; more and more elderly people over 65 are left behind, taking up an increasing proportion of the population. It's estimated that in 2040, one elderly will be raised by one taxpayer.

house vacancy

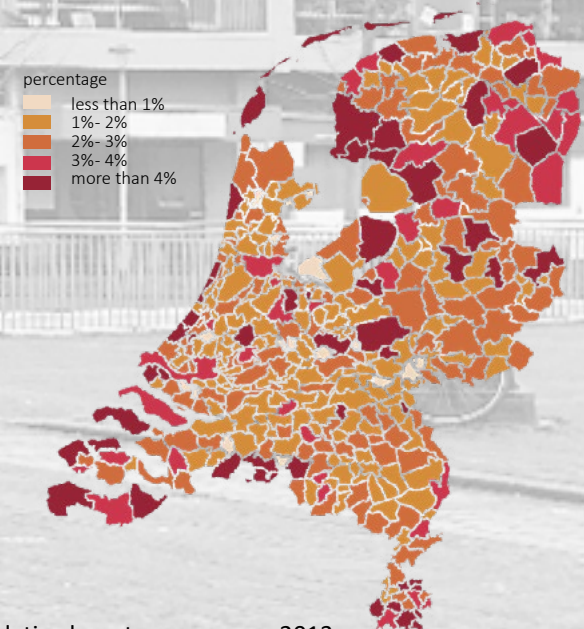
Because of people leaving, many housing buildings are left empty, both residential houses and business/commercial buildings. These unoccupied and waiting-to-be-diminished buildings are making people who still live in the neighborhood feel unsafe and unsecured, creating material waste and pollution into the soil. The region is thus losing its aestheticity and vitality.



forecast of population & percentage of 65+
source: CBS, 2018



percentage of 65 and older in neighbourhood, 2017
source: https://cbsinuwbuurt.nl/#wijken2017_perc_personen_65_jaar_en_ouder



Relative long-term vacancy, 2013

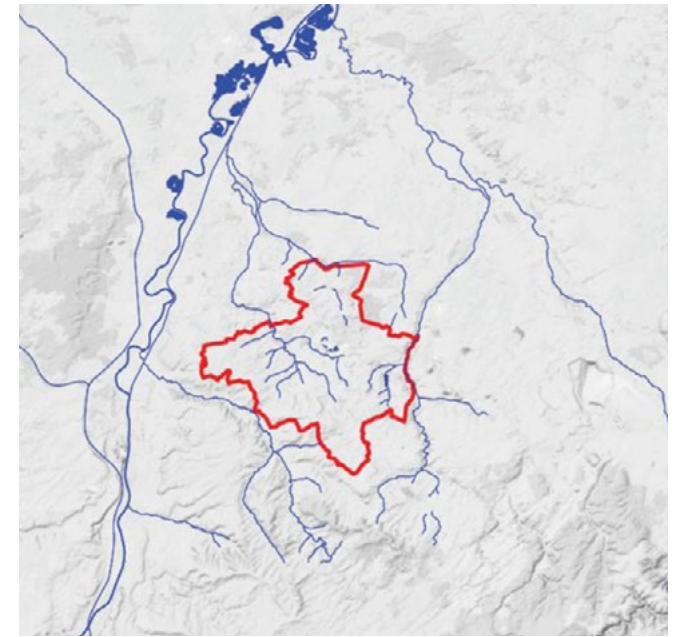
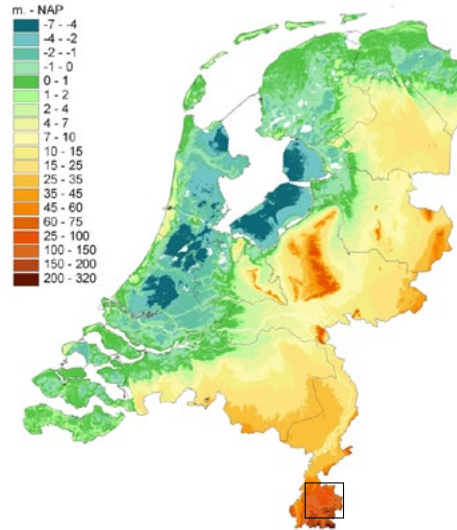
1.2 landscape condition

natural precondition

Because of the geo-tectonic movement, the Eurasian and African plates collided, which shaped the general topography of Europe. Due to this slow but steady movement, high mountains were raised in southern Europe. The ground is tilted: the further it goes towards north, the lower altitude. So South Limburg is the highest part in the country as it's the southmost region.

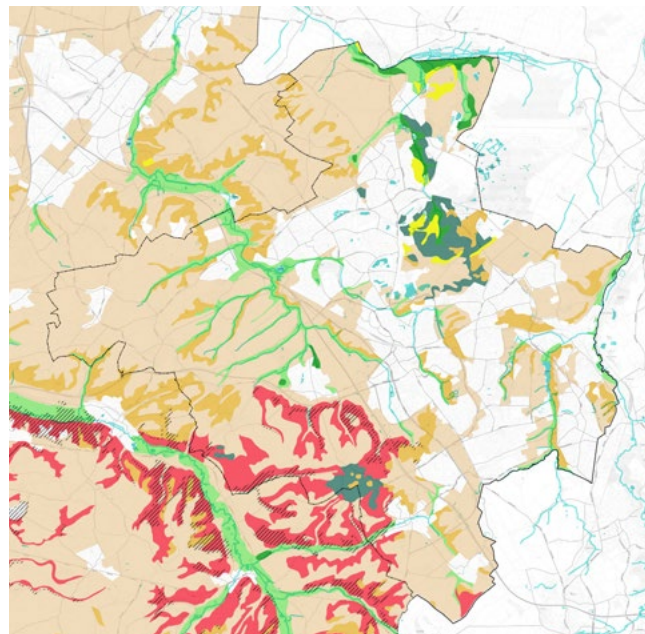
As a result of this geo-tectonic movement, this region is rich in loess soil covering limestone underneath, which is a fertile source for agriculture.

Water also plays an important part in shaping the landscape. Parkstad sits in Maas-Rhine basin. The tributaries, mainly Caumerbeek and Geleenbeek, flow from south to north and eventually join River Maas. These water flows cut into the plateaus, forming a great number of valleys in the landscape.



Legend

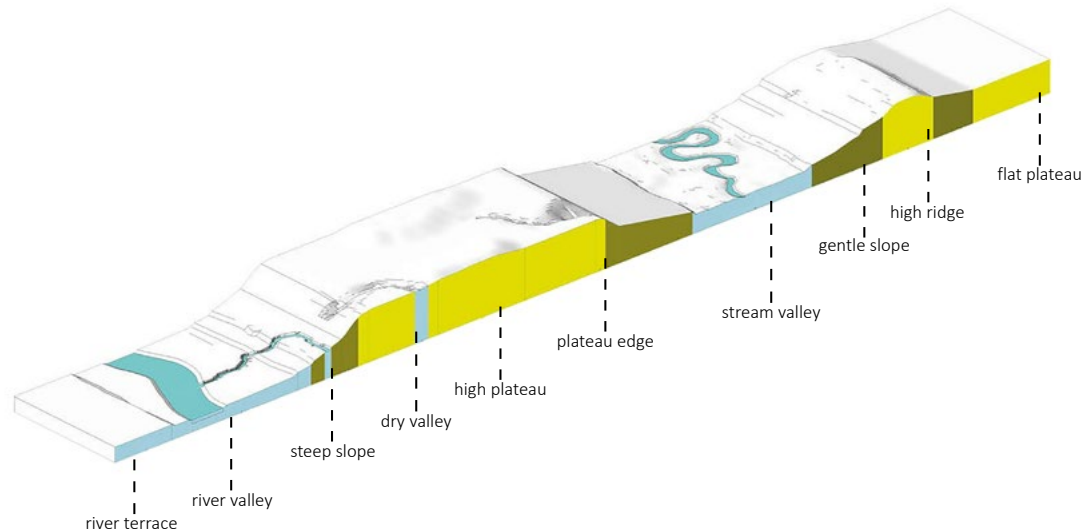
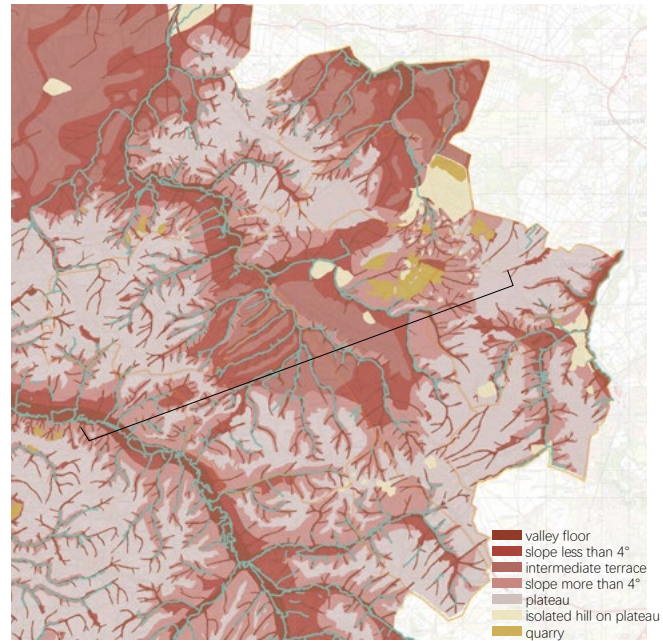
- Peat and nutty soils
- Stream- and riverbysoils
- Loess soils
- Marine soils
- Sand soils
- Marine soils
- Maasterres deposits
- Lime grassland



The topography is formed by water erosion and thus different landscape types such as plateau, asymmetric slopes and stream valley are formed. These three landscape types are the most striking ones, and has clearly defined the general characteristics of the South Limburg landscape.

In Parkstad, the plateau is mainly cut by the valleys of Geleenbeek and Caumerbeek. These two valleys form a small basin where most urban development took place. The plateau is a relatively flat area that is bordered by steep slopes. Not all plateaus are of the same shape, this is determined by the degree of erosion and incision. The valley forms the branched natural drainage system of the landscape. Water-bearing valleys have a flat valley, whereas mon-aquatic valleys, or dry valleys, only occasionally drain water. The slope forms the transition between the high plateau and the low valley. In the slope type there is a distinction between steep ($> 8^\circ$) and gentle slopes ($1^\circ - 4^\circ$). Steep slopes are mainly found on

the plateau edge, while gentle slopes often lie on the border of the valley. Asymmetric slopes on opposite sides of a given valley are also the effect of erosion, ground movement together with other environmental or climate factors.



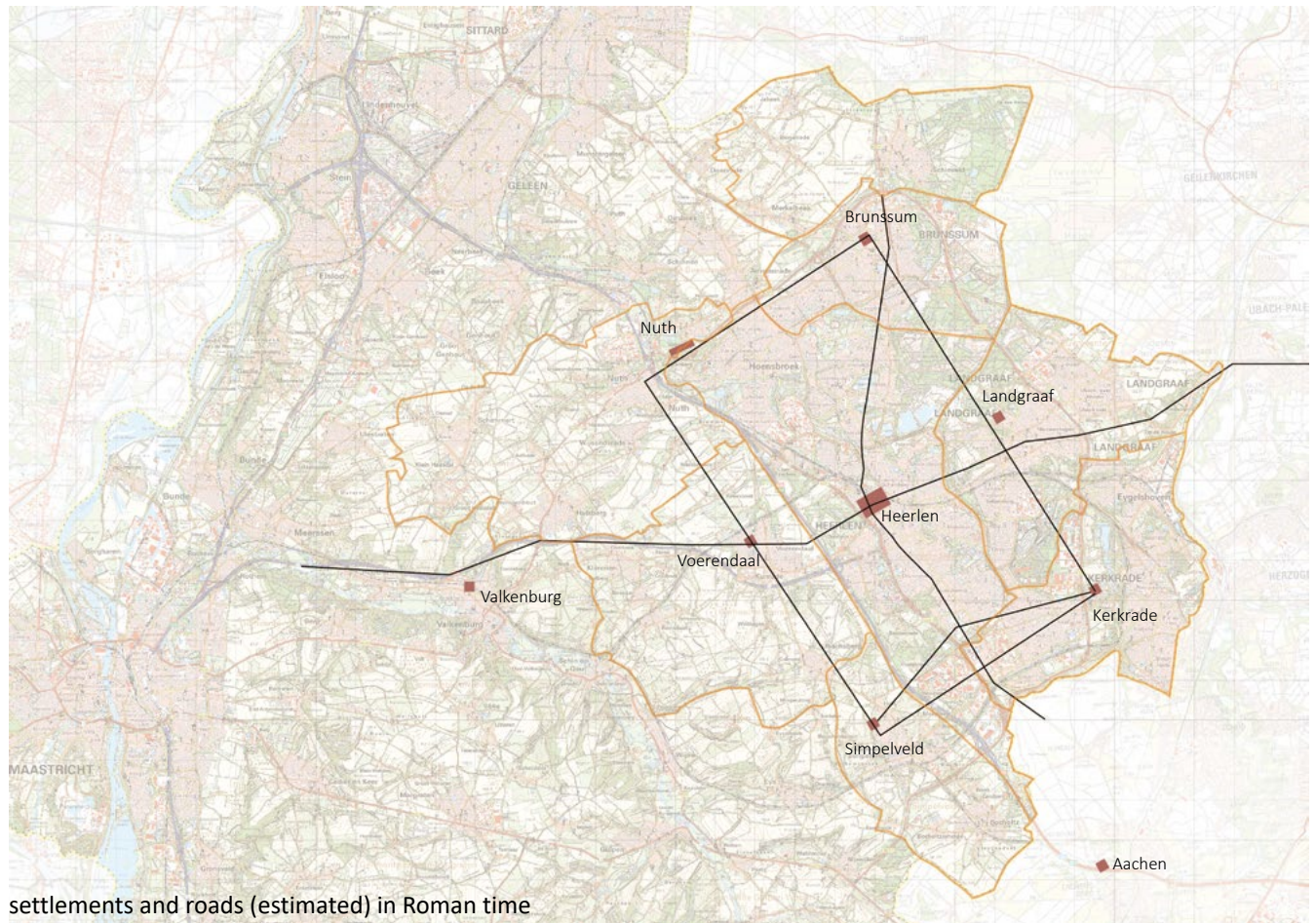
cultivated landscape

The valley forms the basis of the settlement history of South Limburg. The proximity of water for hay land and fertile arable land at the bottom of the slope was an ideal location. Road and settlement patterns were created parallel to the watercourse.

Because of its soil type and water condition, the land in Parkstad is good for agriculture, which attracted Roman people. Heerlen, known as Coriovallum in Roman time, was an important stopping station along Via Belgica which went from Rome to coastline in today's France. Coriovallem was the largest city in this region then. There are still many important Roman remains in this region, including a well-preserved Roman bath. Now it's made into a museum revealing ancestors' wisdom about water flow long time ago. However, because of the urbanization in recent centuries, many Roman villas are diminished.



towns and roads (estimated) in Germania Inferior
source: wikipedia

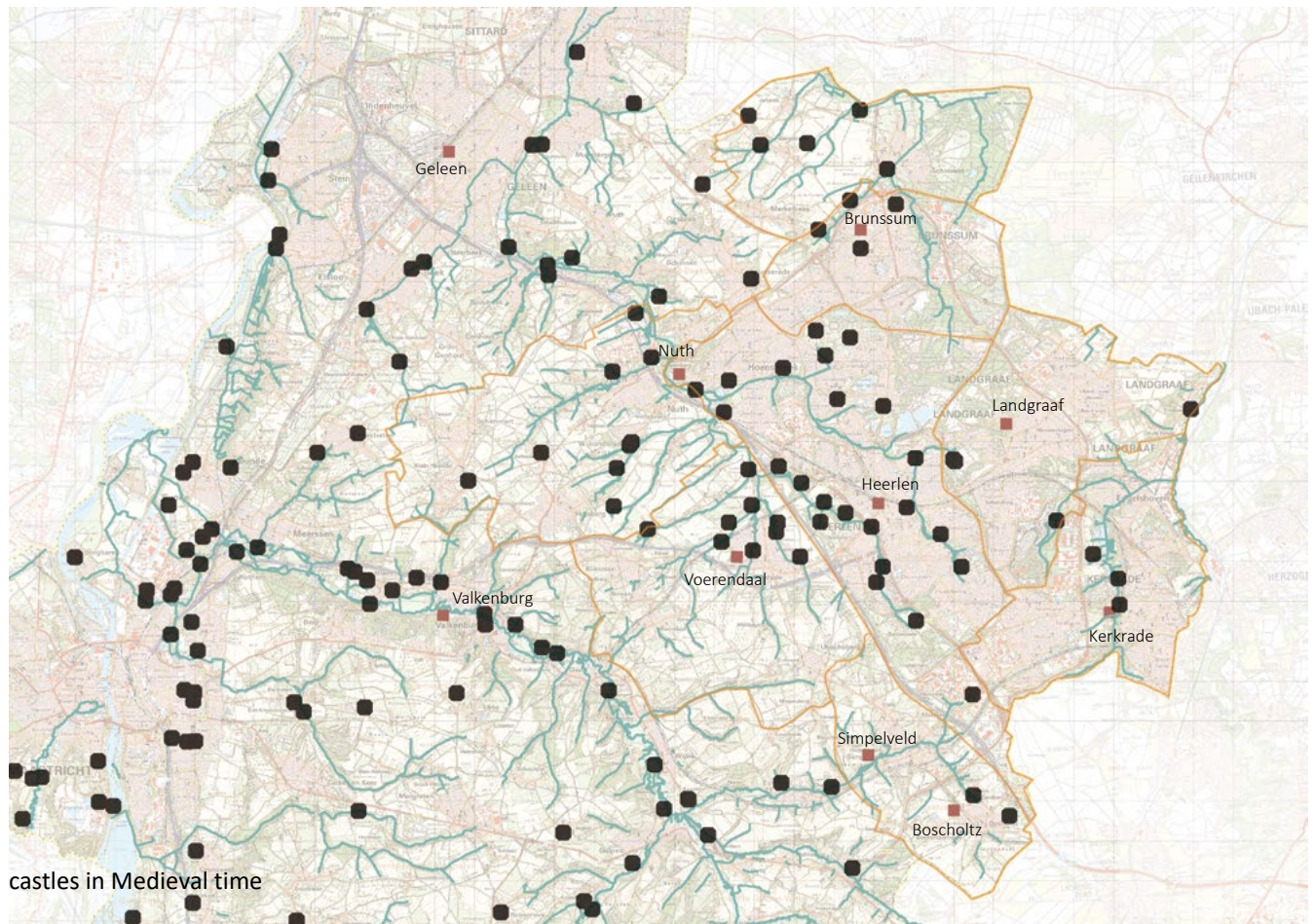
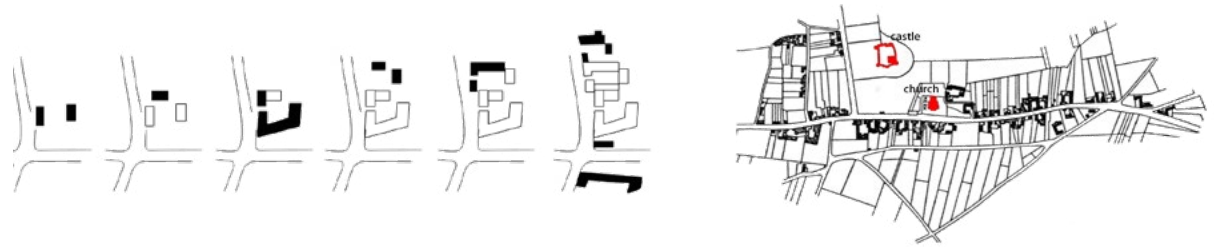


settlements and roads (estimated) in Roman time

In medieval time, it's clearly shown how the castles were located along the watercourse. The castles were the living place for the landlords as well as the administrative center of the glory and a strategic stronghold to defend the area. Taking the castles as the focal point, village or hamlet were settled. Before the industry boom and the urban expansion, the distribution of ancient villages and towns had a strong relation with the topography and water. Many old villages in rural area are still in good condition of street pattern, thus leaving many historical monuments such as castles, monasteries, churches and mills.

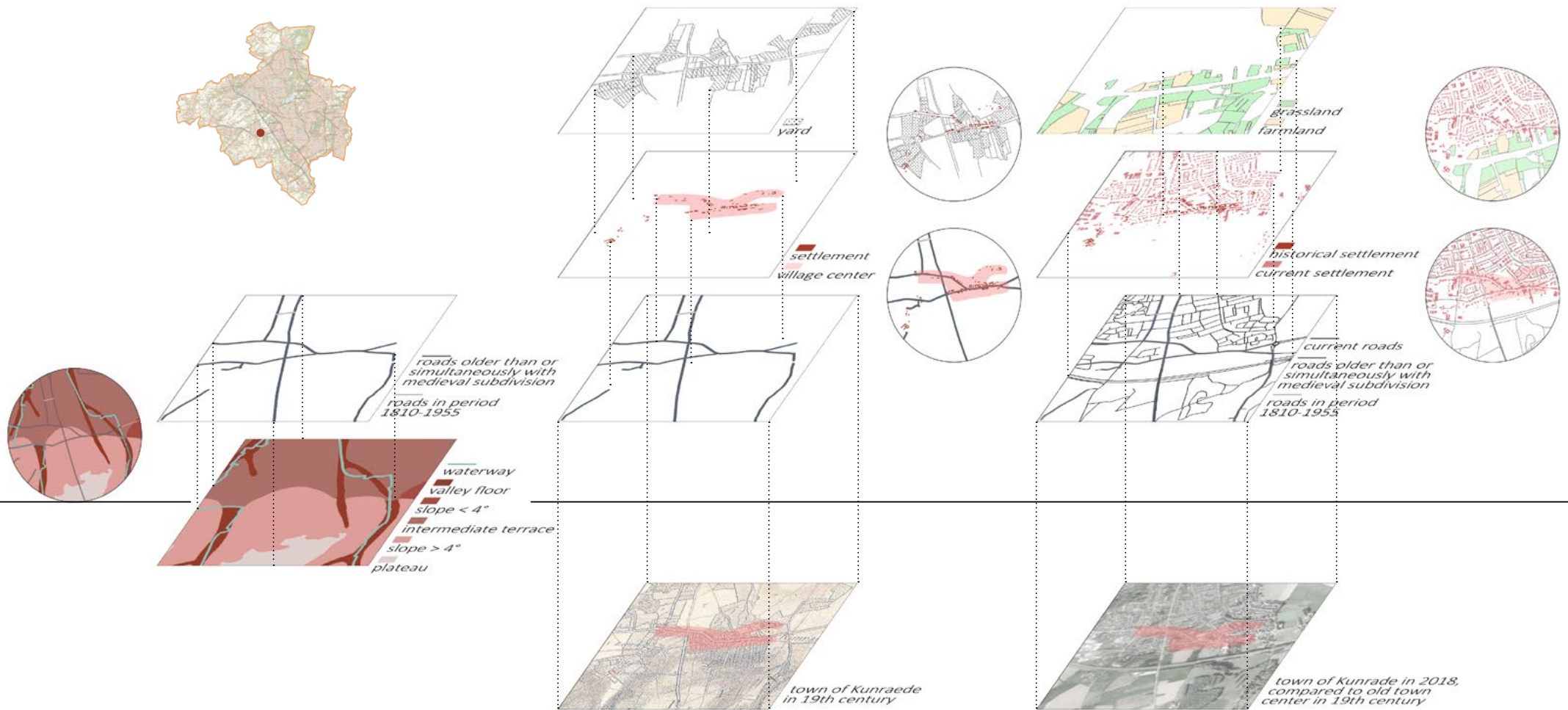
The linear-form settlement is based on the differences in height in the terrain: the oldest parts of the villages are formed by a single row of houses on one side of the road on the border of the high fields and the lower grasslands. This border location was prompted by land use, which in turn was related to the differences in height in the terrain.

Street village became very common in South Limburg in the period of 16th century to 19th century. This ribbon development was realized by compacting the buildings from the initially small & loosely built-up settlements. Sometimes a denser pattern of extension was created by splitting large farmland. By this splitting up and constructing, a hamlet or village grew up based on a single farm.



castles in Medieval time

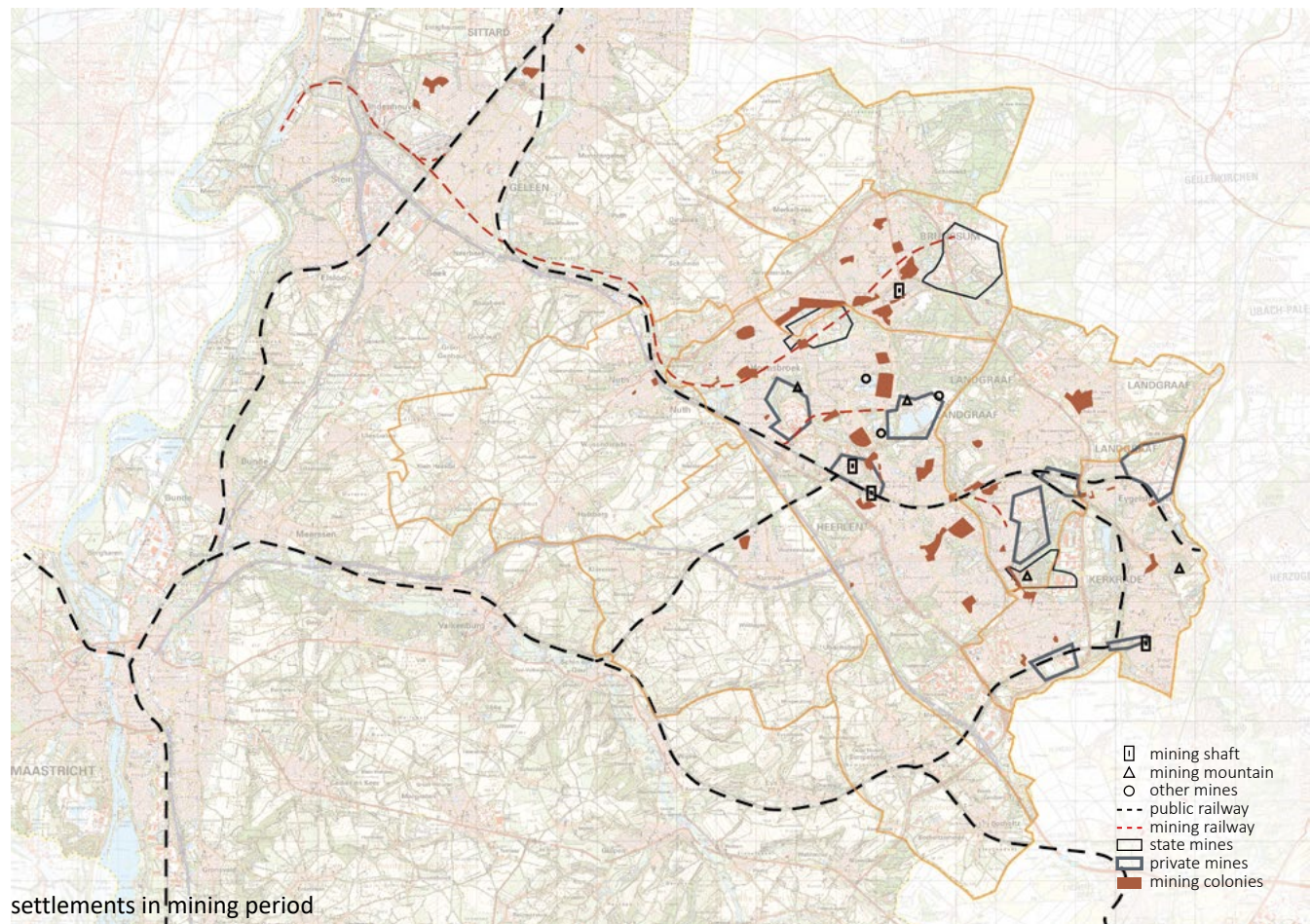
In rural areas of Parkstad, many villages remain the ribbon typology as they were in 19th century. It's still clear how streets are following the contour and how settlements are spreading on both sides of the streets. Here is one example of village Kunrade.



Although coal has been found many centuries ago, it was not until the beginning of 20th century that coal mining became a large industry that has brought prosperity and rapid urbanization to Parkstad. Working force poured into this region even from some distant foreign countries, mining colonies were built for the workers.

Coal mining also greatly changed the landscape which was dominated by agriculture all the time. Mining sites and the colonies were concentrated in the Caumerbeek valley, which is the east half of Parkstad. As these communities expanded, they cleared out what was originally farmland or nature forest and gradually merged with each other.

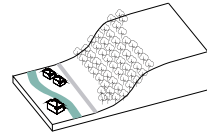
After closure of this pillar industry, almost all factories, shafts and other facilities were torn down. The government started the plan 'From Black to Green' aiming to deal with post-mining environmental as well as economic problems. Now, only two shafts can be visited in Heerlen and Kerkrade. Mining colonies are still serving as residential houses, but the once lively community scene can hardly be seen again.



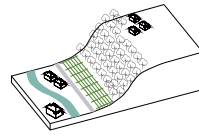
settlements in mining period



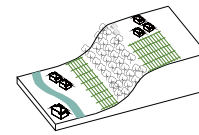
In the last Ice Age, this plateau landscape with valley was covered with large amount of loess and vast deciduous forest grew on it. Around 4,400 BC when agriculture activities being introduced thanks to the fertile loess, the forest along the edge of stream valleys was the first to clear and that was where the earliest settlement happened. Then in the Roman time, settlement and mining work started on the plateau. At early Medieval time, from 11th to 14th century, the forest was again being massively cut off to make space for agriculture. In modern time, plateaus and terraces were used more intensively by agriculture: cattle breeding on the slopes, farming fields on plateaus and less steep slopes. Industrialization and rapid urbanization has changed the geological condition and landscape greatly, farmlands were replaced by mine fields and related colonies. Many landscape elements disappeared then.



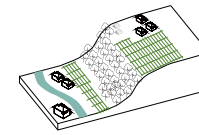
-settlement along the water, roads parallel to the water
-exploitation of forest starting from valley



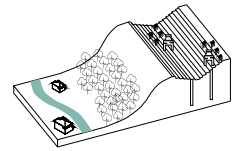
-satellite settlement on plateau
-gentle slope suitable for agriculture



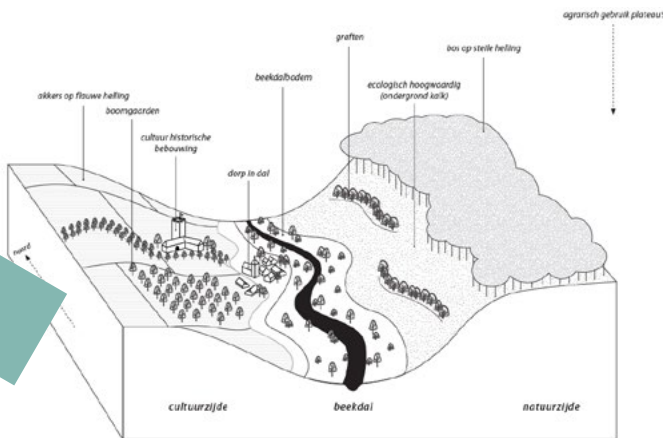
-soil on plateau is suitable for arable farming
-steep slope for storage of timber



-farmland on plateau is expanded
-farmland in valley is returned to forestry

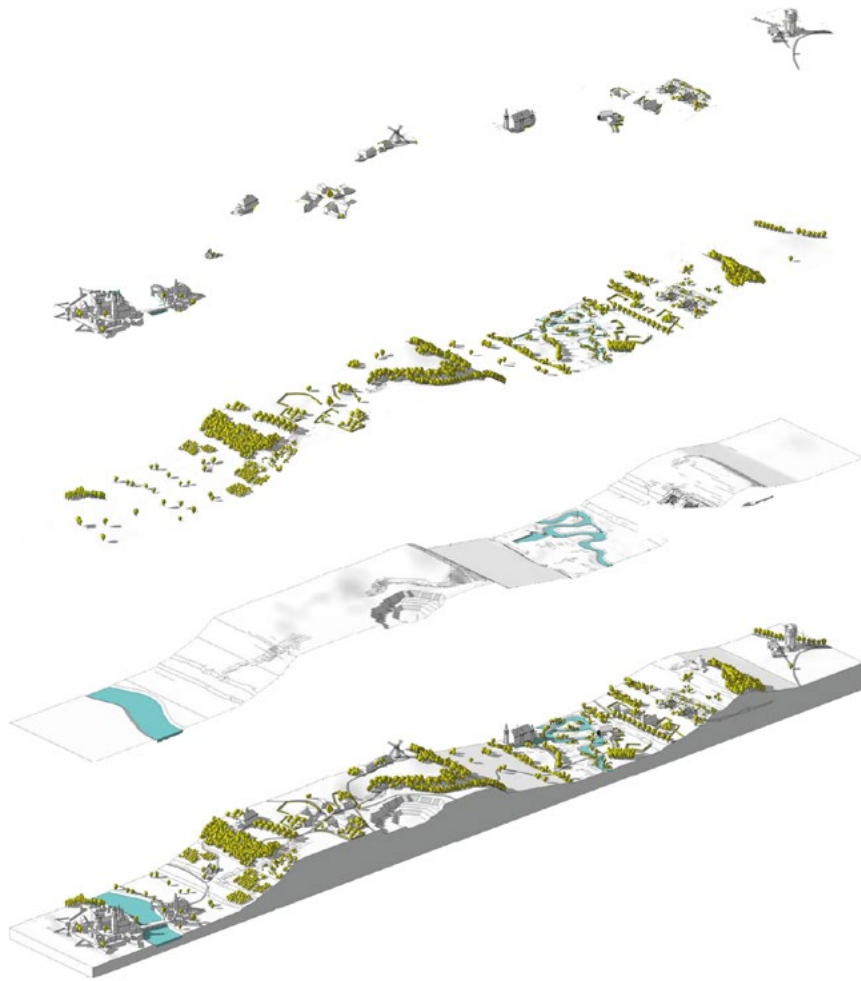


-greatly altered plateau due to extraction



landscape quality

Various elements, whether made by human force or natural force, are tangible reminders of different historic phases of the hilly landscape. The quality of the current appearance of the picturesque landscape can be concluded into 4 categories: relics, green character, openness and enclosure, heritage. These landscape qualities shape unique landscape character of South Limburg. Under the natural preconditions forementioned, Parkstad, especially the rural area, provides a very delicate, pleasant, healthy and attractive living environment for residents as well as tourists to enjoy.



source: <http://www.handvatnationaallandschap.nl/>



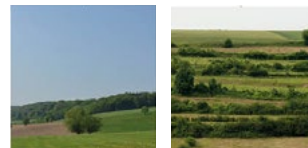
relics

The geographical diversity of surface of the earth which human, plant, and animal live on and closely linked to. This diversity arose initially through the lines carved into the land by the numerous watercourses.



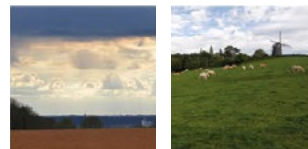
green character

Human force and natural force has made various green character in South Limburg, such as spring forests, sloping woods, limestone grasslands, heather grasslands, marshes, and wet scrub grasslands in flood zones, springs with calcium-rich flow, and fields. These different habitats are homes of diverse flora and fauna.



open and private

A characteristic landscape value is the contradiction of openness on the plateaus and closed character in the valleys. This visual and spatial variety increases the diversity and attraction of the area.



heritage

Continuous and rich history has given South Limburg ancient and cultural-historical heritage object and elements, both ecological natural heritage and construction heritage.



1.3 fascination



Personally, I'm fascinated by something that interprets time. I really enjoy positioning myself in a historical building or in a historical environment; the story that they tell makes me imagine what our ancients' life was like, think about their cultural meanings, contemporary functionalities and even their guiding role for the future. Landscape is the repository of intangible values and human meanings that nurture the existence of people (Taylor 2008, 4). Historical heritage represents our identity, cultural background and intrinsic values.

What we learn and inherit from the historic heritage can be the reference and guidance for future development. In conclusion, heritage is where we come from, what we cherish and indicates where we're going to.

The continuous and prosperous history of Parkstad has left us rich heritage in agricultural production and industrial production. This heritage is what I'm interested in and is the starting point of my research and design project.

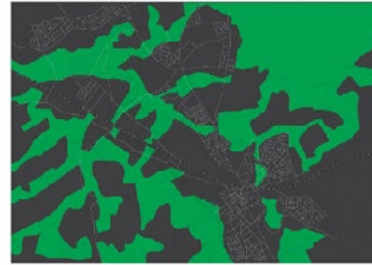
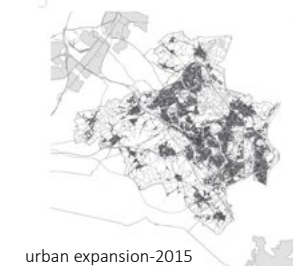
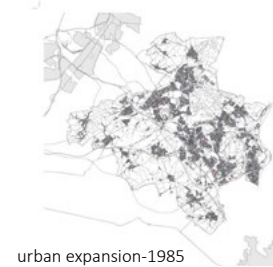
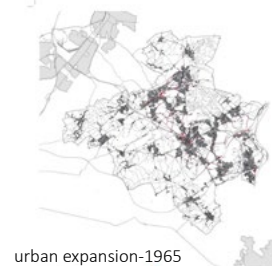
1.4 problem statement

spatial fragmentation

From the historical development mentioned before, we can see that before Industrial Revolution, the development in Parkstad was based on natural precondition and agricultural land use till 19th, but rapid urbanization followed the industrial production and neglected original settlement pattern. Even after the mining industry was shut down, the expansion of mining colony continued. Under the influence of the construction of new roads and other industries along the infrastructural main arteries, the poly-centrism of the region continued to grow.

In medieval times, urbanization of a village took the castle or the church as the center; mining colonies in 20th century also had centrality towards the mine. This centrality was lost as soon as the mine shafts and factories were demolished and then the urban fabric started sprawling randomly. As one result of irregular expansion, regional green space was cut and interrupted by urbanization that was once continuous, and each piece of urban fabric or community developed its own green space within, leading to another problem of green fragmentation in Parkstad.

Scale increase caused by explosive expansion of solitary houses and villages also contributed to the mottled landscape in especially in rural area. As a consequence, the difference between urban texture and rural texture is more and more obvious while an efficient infrastructural connection and transition is missing.



ecological problems

Although Parkstad has a natural green condition in good quality, there are still some strict ecological problems concerning biodiversity and sustainable development. The populations of a number of plant and animal species are showing a decline, both in size and spread due to habitat loss. Contemporary constructions are intruding into wild animals' habitat and disappearance of landscape elements are isolating animal population.

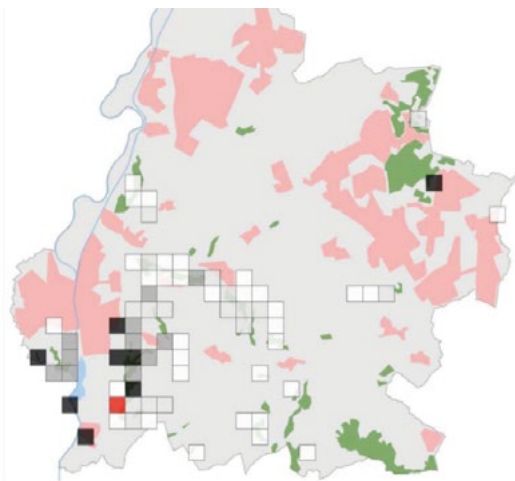
The acorn mouse is a rare mammal from the

dormouse family. In the Netherlands, the species only occurs in South Limburg. In recent years it has become clear that the species is very vulnerable and even threatens to become extinct in Limburg.

Not only mammals, the numbers of insects are also declining such as wild bees. All kinds of wild pollinators, including wild bees, are important in fruit cultivation. But unfortunately, more than 350 Dutch species of wild bees are endangered. To help wild bees, the cross-border European

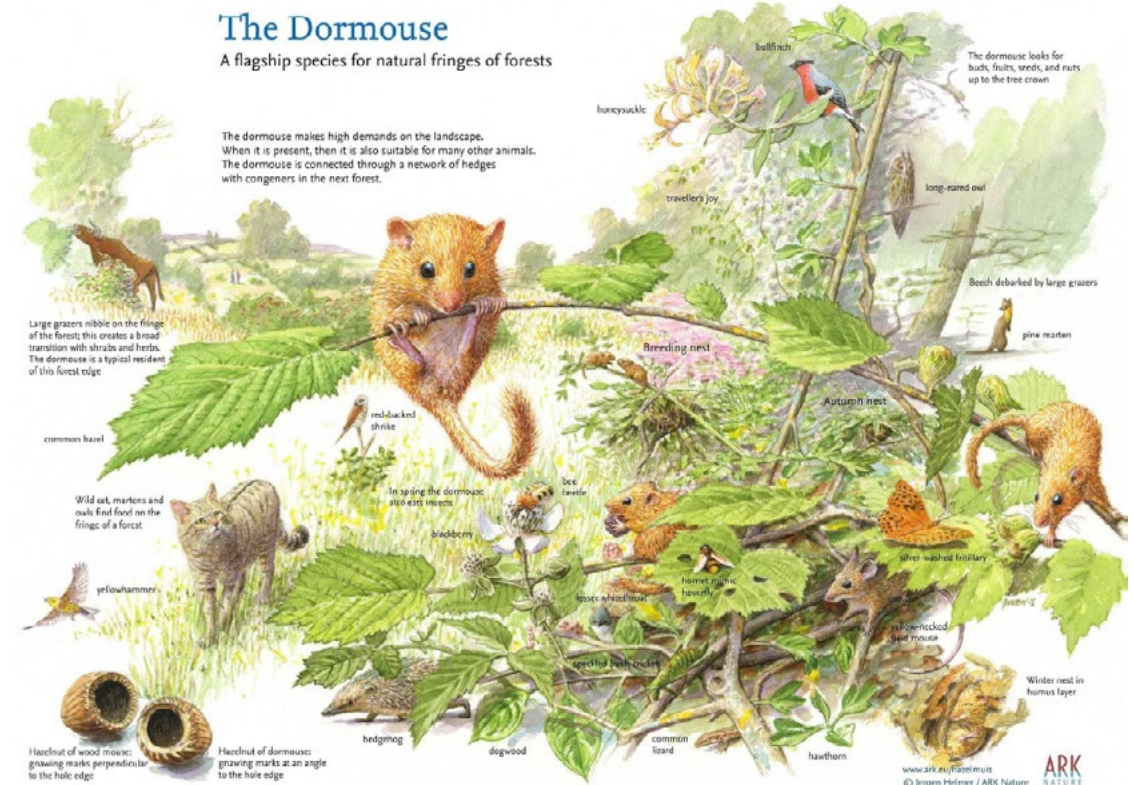
project More Nature for Spicy Fruit has been launched. in Netherlands & Belgium, fruit growers are taking measures to improve the conditions for wild bees.

Other ecological problems including ground water pollution, unsustainable farming which exhausting water and soil and threat of flooding especially in urban area. An increase in rainwater buffers and infiltration in fields and in nature reserve is preferred. This also contributes to groundwater supply and soil fertility.



Acorn mouse sightings in Limburg in the period 1900-2014. In 2014, the acorn mouse only occurs in the Savelsbos with certainty (the red square).

Source: Bekker & La Haye (2015)



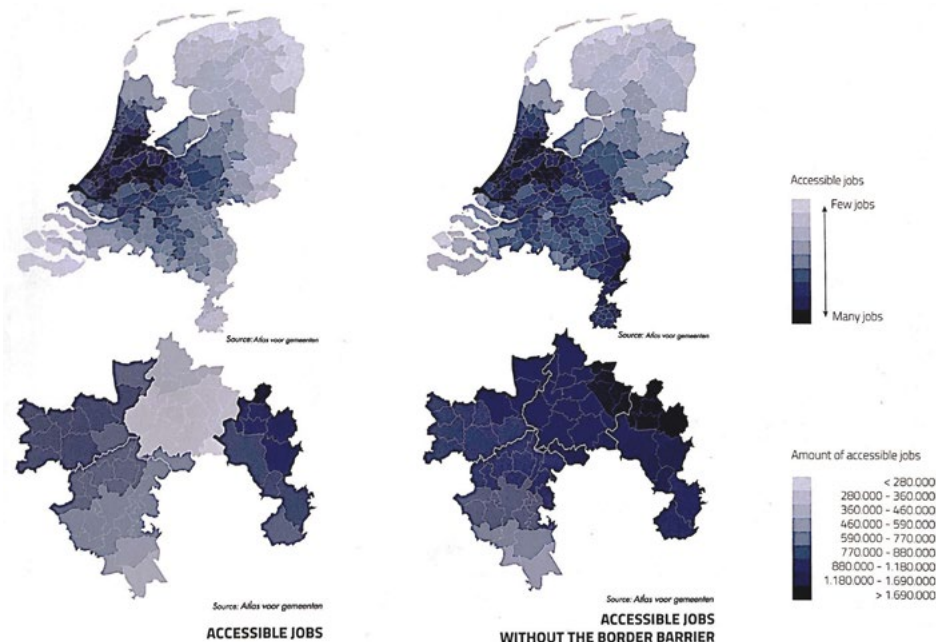
source: <https://webwinkel.ark.eu/>

social problems

Although the natural condition is attractive for tourists, economic attractiveness and social vitality is dropping in Parkstad. Lack of pillar economy and lack of working force together formed a vicious circle. A large number of working force head toward north to metropolitics like Rotterdam, Amsterdam and the Hague for employment and more opportunities. Meanwhile, although Parkstad is in the center of Euregion Maas-Rhine, it's

still hard to retain people because of the invisible yet powerful nation borders. For Parkstad, the formation of agglomeration in the Euregion is based on 'daily urban system'. For the labor market as well as for cooperation and knowledge exchange, the region of Aachen offers the most opportunities. Different municipalities related to this cross-border prosperity are working on the projects that stimulate collaboration and interaction over the border.

Another aspect of loss of social vitality is house vacancy, not only the vacancy of residential and retail houses, but also agricultural farmhouses. The report 'Released Agricultural Construction in the Rural Area (Vrijkomende agrarische bebouwing in het landelijk gebied)' (Innovatienetwer, March 2014) forecast vacancy of agricultural buildings in the southern municipalities up to 2030 at generally less than 50,000m². At the end of 2015, 8.3% of agricultural industrial buildings are vacant; in 2030 this will be no less than 24%. Only a very limited part of this vacant development will be repurposed with a focus on monumental heritage. It's worried that the problem of vacancy is not getting enough attention because vacancy is often not easily visible from the outside. The house is still inhabited, but the barn makes no profit for maintenance. Impoverishment means less heirs, and quality of living environment is under pressure, leading to less attractiveness to tourists as a result.



comparison of job accessibility in NL and in the inter-national region with or without border

source: manual IBA Parkstad Limburg



There's no doubt that Parkstad has a long and prosperous history, and local residents are very proud of it and cherish historical heritage. They once strongly opposed moving a slag heap for more profitable silver sand buried under it. But people's daily life has little to do with those heritage, whether architectural or landscape. Mining quarries are secured by fences and thus become enclaves in urban fabric; castles are renovated into museums, only telling historical stories to the visitors; traditional farmhouses were mostly renovated into restaurants and hostels, scattered over

the region and isolated from the neighborhoods.

Currently, many heritage monument buildings are renovated and most of them become hotels, restaurants and holiday homes for tourism, museums, art centers and bookstores for art and culture, parks for recreation, apartments and offices for private use. There are also some possible usages such as community center and green space for social services, campfarms for agritainment.

In the aspect of landscape heritage, agriculture landscape is also losing identity. The economic development of agriculture and horticulture has led to the increasing scale of commercial farming. In order to ensure production, it has shifted to intensive farming, which then leads to generalized agricultural form. Intensive agriculture and horticulture is not compatible with the scale of National Landscape in South Limburg particularly in the valleys and on the slopes. The space for development sometimes is not coordinated with what natural landscape can support, and together with the decreasing importance of many landscape elements in farming, agriculture production is losing its recognizable identity.

For now, the challenge that these landscape heritage are facing with is how to preserve or revive their cultural significance while generating economic benefits from new functionalities, to reflect the local cultural identity, to serve as a spiritual pillar of the local community, to inspire people and bring people aesthetic enjoyment.



Hoenshuis - golf club



Castle Terworm - hotel, restaurant



slag heap - staircase



historic site of a Roman villa, now a green space



fenced quarry



fenced ruin of farmhouse

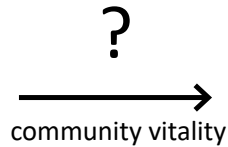


1.5 research question

Driven by personal fascination, after knowing about the opportunities and challenges of development in Parkstad, I start wondering what change landscape heritage especially agricultural heritage can bring to improve local residents' living quality, especially the elderly as aging society is one of the most urgent problems in Parkstad? How landscape heritage can vitalize society and get preservation from regional development in return? Hereby I form my research question as follow:



old buildings



old people



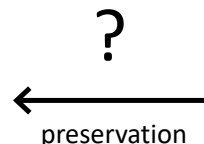
community



tourism



old buildings



society

How can agricultural landscape heritage in Parkstad improve local people's living quality and get benefit from this improvement?

In order to help clarify the task, several sub-questions are listed:

HOW DOES IT WORK

What is the typology of traditional farm?

How are the traditional agricultural elements related to landscape?

WHAT CAN WE DO

What kind of adaptive reuse can a monumental farmhouse offer?

What is the need of targeted group of people?

HOW TO APPLY

How can the new usage of the farmhouse create suitable living quality for the targeted group and how can it be extrapolated to other future users?

How can the new usage of the farmhouse influence landscape, in the aspects of spatial and ecological way?

WHAT CAN BE LEARNT

How to achieve symbiosis of heritage and possible new development?

How does the community help to preserve heritage?

What's the possibility of application in other regions?

1.6 goal

The exploration of the topics raised by research questions will be discussed through theoretical and narrative frameworks. By digging into agricultural landscape heritage, the intention is to discover **how reintroduction of agricultural landscape elements and sustainable revival of vernacular architectural monument can improve living environment and at the same time interpret and preserve landscape heritage**. To uncover the synergies among various scopes in shrinking area and use refined principles and strategies to give possibilities of adaptive reuse of landscape heritage. **These new adaptive functionalities will ultimately accelerate economic circulation, invigorate social vitality and raise awareness and appreciation for the value of landscape heritage.**

- In order to reflect the resilience and sustainability of the design strategy, the design should incorporate diversity of change and temporal dimension.
- Composition of landscape can be conceived as an active process of preexisting natural layer, cultivated layer and architectural layer (B Leupen 1997, P.153), but the distinction and borders among them should be weakened. Under their synergies, it's ideal to perform ecological, economic and cultural functions simultaneously.
- Cultural identities should be a key component of the design exploration. The emphasis is to rebuild or strengthen genius loci in landscape.

For heritage: through enhancing the aesthetic and functional relationship between heritage monuments and landscape, to build regional landscape with local characteristic and comprehensive value and to drive dynamic preservation for landscape heritage.

For old people and other inhabitants: through adding functions and ecosystem services of landscape heritage elements, to create a healthy, idyllic and ecological rural living environment with cultural spirit.

For tourists: through providing local countryside tourism with unique cycling experience and cultural heritage branding, to promote leisure economy.



1.7 relevance

Cultural landscape heritage often reflect the specific technic of sustainable land-use. Protection of landscape heritage can contribute to modern technics in sustainable landuse, maintain or enhance natural value and support biological diversity. Nature and landscape, including cultural-historical heritage, form important quality basis for economic structural reinforcement. All these significant and potentials of landscape heritage are also the opportunities and challenges that Parkstad is facing with.

The heritage also serves as landmarks in the region. This is due to the historic location along streams, roads and central locations. In Parkstad, the richness and significance of cultural heritage is cherished; heritage preservation and development is one of the focuses of regional planning of Parkstad. Good policy over a longer period can restore much of Parkstad's heritage, give it a new meaning and thus give a sustainable future. Social and economic potential of heritage is well awared of among policy makers; currently the ambition is focused on maintaining and strengthening the

small-scale and the quality in historical ribbons. This research project can help to further explore the value and development potential of agricultural landscape heritage and provide more functional possibilities.

Moreover, the typical problems like shrinkage, aging society, and rich agricultural landscape are

shared within the Netherlands and even can be seen in many other regions worldwide. This project aims to, taking Parkstad as an example, study the contributions of landscape heritage on local population's quality of life and contributions of future development. This can be an attempt and way of thinking to deal with population structure problem in shrinking area

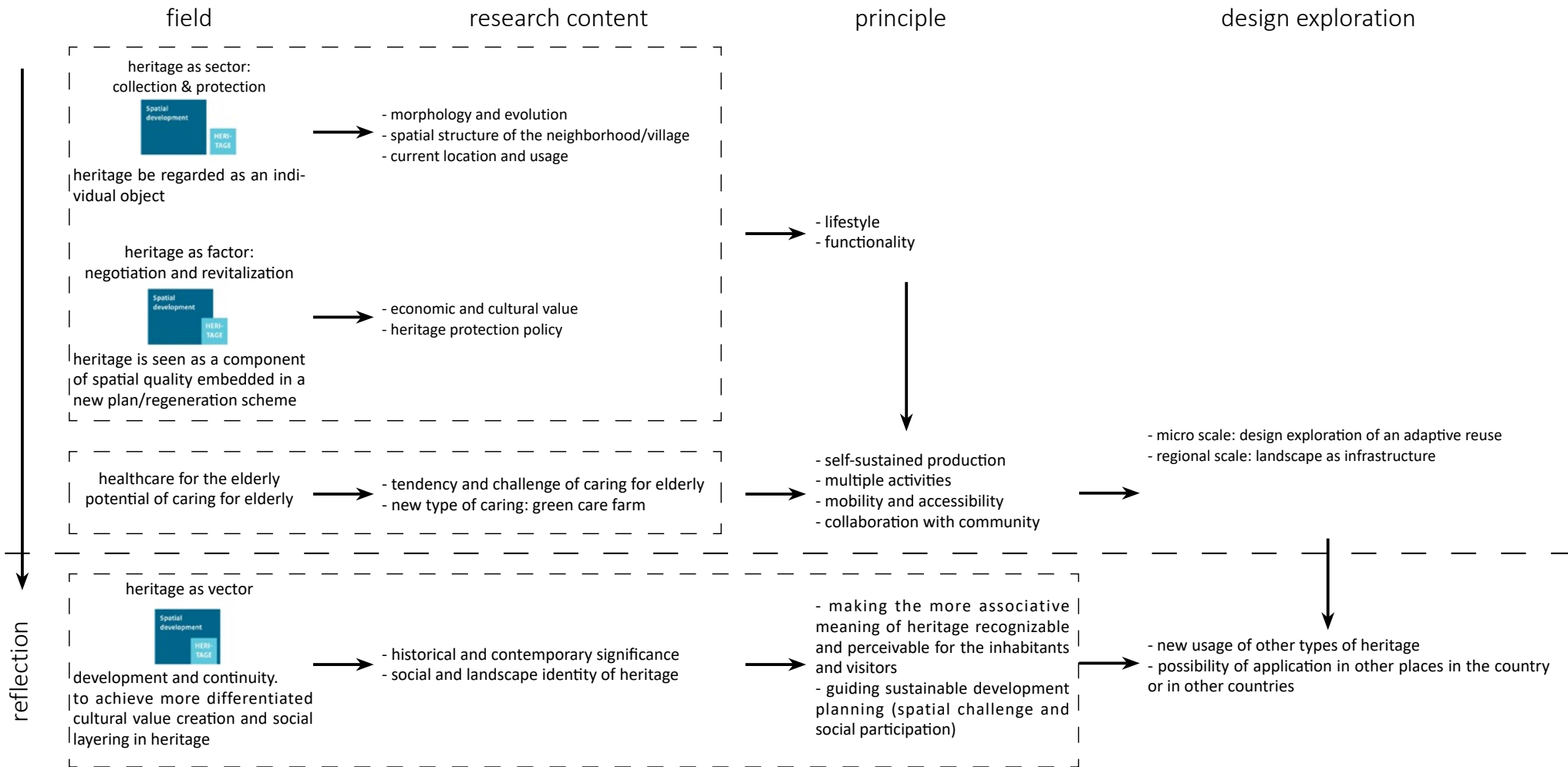


2 methodology

This chapter will present theoretical framework that guide this project and introduce some main research methodologiess and approaches that has been used.



2.1 theoretical framework



2.2 methodology

Rural design

Rural design brings the disciplines of design to rural issues. It's fundamentally different from urban design in that it tries to understand and embody the unique characteristics of open landscape and ecosystems where buildings and towns are components of the landscape rather than defining infrastructure and public space as in urban design (Dewey, 2013). When heritage is linked with rural future, the process of rural design can create synergy by finding opportunity to shape the rural landscape and its character to improve quality of life.

Landscape as process

Landscape with strong sense of locality is a reflection of the relationship between human and nature, agriculture, climate, geography, etc. These landscapes evolve over time. It's important to look back into the history and learn from the value and principles. It's a dynamic way of thinking to consider landscape as a process. In order to reflect the flexibility and sustainability of the design strategy, the design should include the diversity of changes and temporal development.

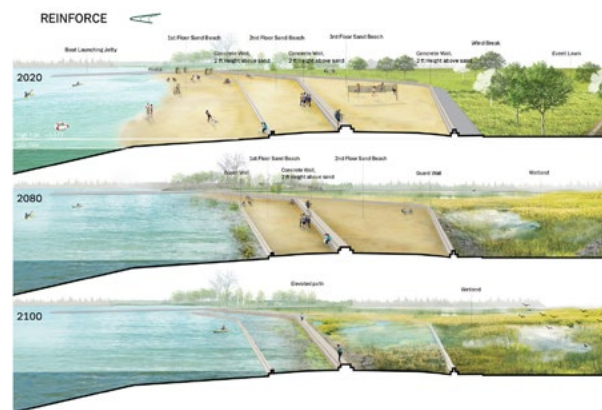
Research through design

It regards designing (e.g. design processes, activities, methods, techniques, tools) and design results (e.g. plans, products) as a way of scientific study, including building vision, scenario, or giving prototype for future, thus testing a novel integration of various subject matters to address a specific problem or situation.

Research methods include desk analysis and thematic exploration, literature review and policy reading, site visiting, interview, case study, mapping, scenario drawing, etc.



a new production model of farmlands and neighborhood towards new paradigm Ananas New Community, Silang, Philippines



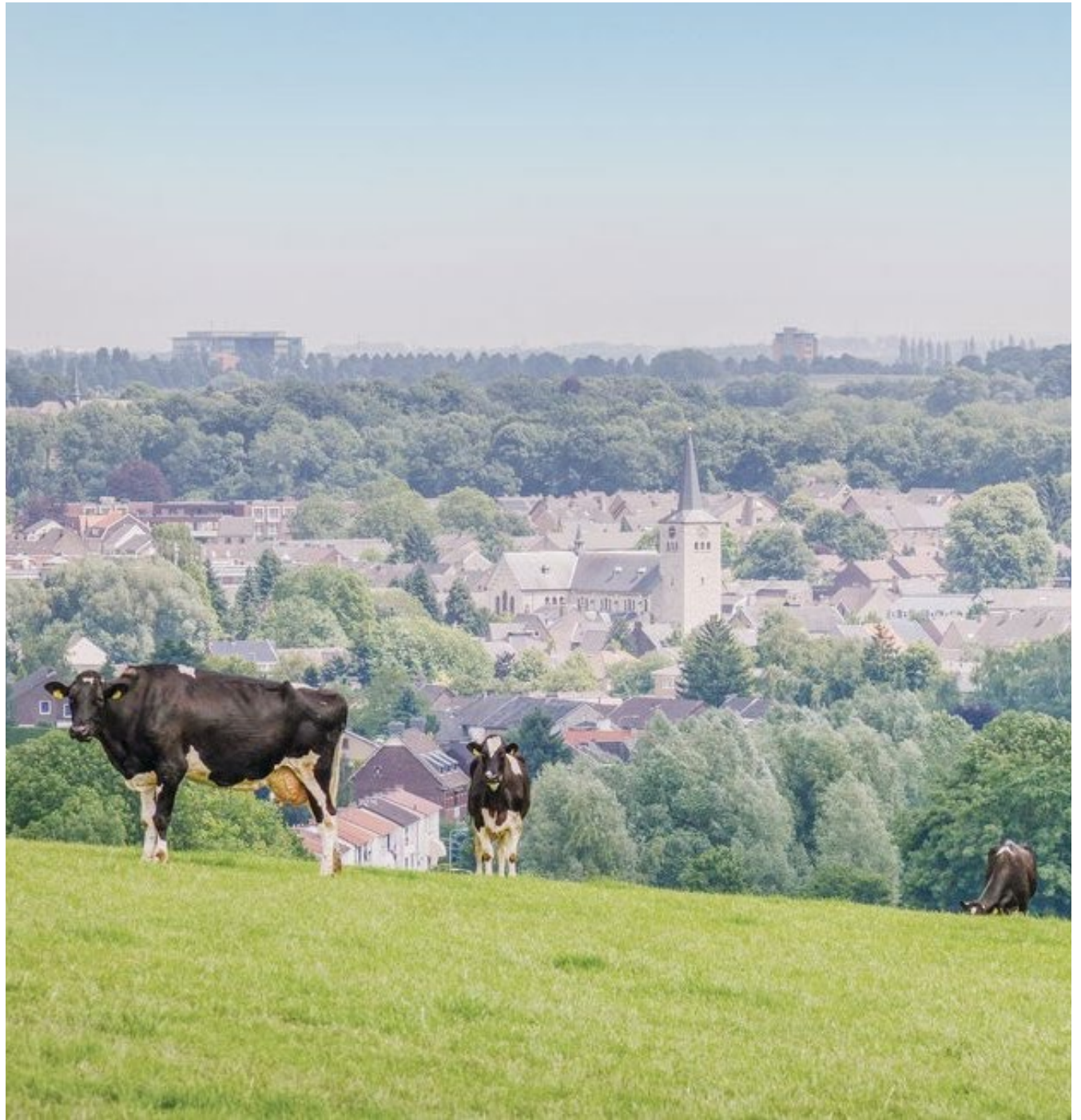
reinforcement strategy of a terraced beach that change the landscape in time Weaving the Waterfront, 2017 ASLA Student Awards



accessible waterfronts with multiple functions for recreation, water safety, habitat The Copenhagen Cloudburst Formula, 2016 ASLA Professional Awards

3 analysis

This design project takes landscape heritage as pointcut and involves many other scopes. This chapter will analyse these scopes and discuss their interrelationship in this project. Then design principles are given based on the analysis and understanding of the landscape. The third part is the analysis on landscape typology, and brief spatial strategies are presented.



3.1 scopes

agricultural heritage landscape

The term ‘agricultural heritage landscapes’ is used to describe farming landscapes that are created and sustained by communities and have natural and cultural heritage values. In late 1990s, there was a shift from focus on ecological main structure to agricultural landscape. Attractive agricultural landscape is the basis for new economic development in countryside. Besides milk, egg, honey, etc., nature and landscape is also valuable agricultural products.

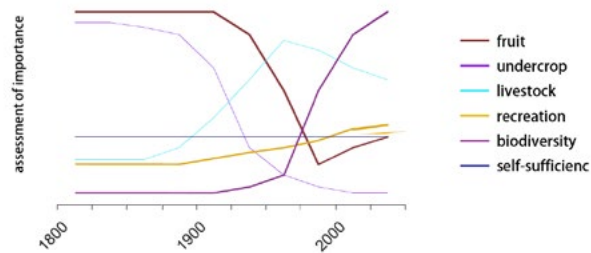
South Limburg has a continuous farming history started from Roman time. In Roman villa culture, farms focused mainly on the production of grain of which the amount exceeded the own need. Around the Middle Ages, many farms had a small

orchard for trade on the market or for their own use. In the context of a general effort to intensify agriculture, the fields around farms were converted into pastures. In order to guarantee the profit of the land, fruit trees were planted on it. Livestock such as cattle were introduced to high-stem orchards. They also became habitat for birds and insects. Soon, a portion of the proceeds were deposited in nearby cities like Aachen and Liege and even could reach England. These high-stem orchards were a living archive of genetic material of fruit culture. But in 20th century, more and more farmers turned to low orchards as they were more productive, leading to sharp decline of high-stem orchards.

Characteristics of agricultural landscape here in

Parkstad can be depicted as small-scale and more private nature of agriculture around villages, on slopes or in valleys contrasting with the openness of his plateau; cows are walking in the meadow with flowering fruit orchards and hedges. Three main sections of agriculture in Parkstad are arable farming, fruit growing and cattle. The challenge is to operate economically profitable with respect for the environment within the vulnerable small-scale landscape with a variation of built-in landscape elements, cultivated land and forests and nature. So in the following design research, direct economic profit function of traditional high-stem orchard is weakened. Economy can be promoted from another angle such as increasing tourism value by adding to diversified and idyllic scenery to South Limburg landscape.

functions of high-stem orchard



Subject	1940	1950	1960	1970	1980	1990	2000	2010	2015	2016	2017	2018*
Crops / land use												
Fruit open ground												
Apples	100 ha	406	356	262	172	163	128	87	76	75	70	66
Cherries and Sour Cherries	100 ha	52	34	19	10	.	.	4	3	3	3	2
Small fruit	100 ha	50	47	12	5	5	10	15	16	16	17	19
Pears	100 ha	145	108	84	57	51	60	80	92	95	97	100
Plums	100 ha	54	24	14	8	.	.	3	3	3	3	3
Grassland												
Grassland total	1 000 ha	1 517	1 327	1 534	1 198	1 096	1 010	951	956	956	928	907

agriculture from 1851 in the sections of fruit and grassland
source: CBS



blooming high-stem orchards with sheep underneath

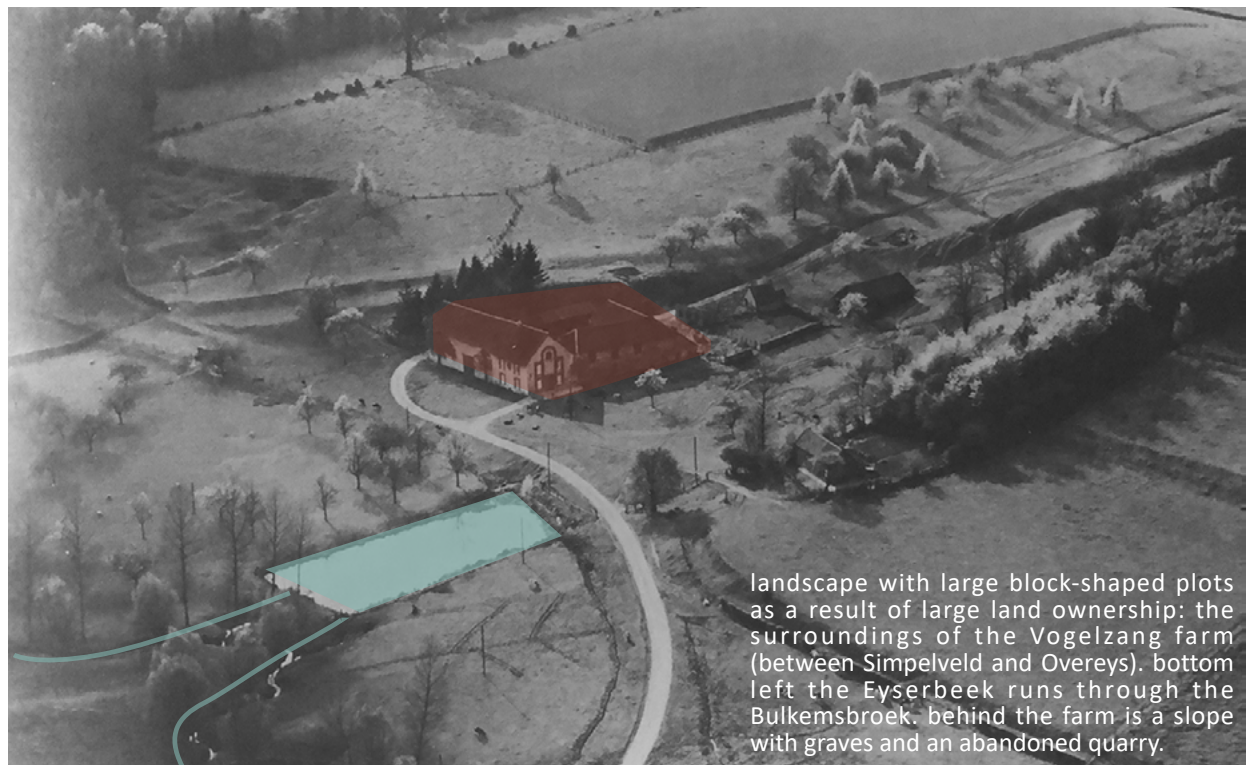


low-stem orchards

Besides high-stem orchard, closed farmhouse, known as hoeve in Dutch, is another typical agricultural element in South Limburg. They are the foundation of villages in rural areas of Parkstad as is said in the previous chapter. In 16th century, a separate house with the entrance in the long facade together with one or more additional buildings were very common. Then the buildings were connected to the same roof to form an L-shape or U-shape farm, and gradually developed into a closed farm. The development of the closed farm fell into a period of major construction activity in the rural area, so from mid-17th century to mid-18th century, many farms

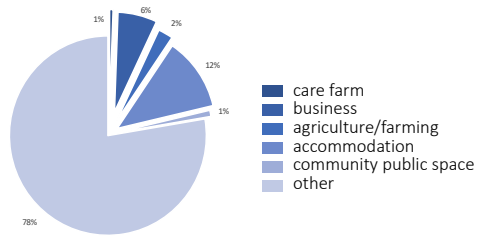
and villages were replaced by new construction. Though the buildings on the farm have been renovated and reconstructed, the form of farm hasn't changed a lot.

In order to expand farming production, South Limburg gradually changed to intensive production, becoming the same farming landscape as the rest of the country. And as the result of intensive farming, less farmers are needed, less farming buildings are used, those vacant buildings are less maintained, becoming less attractive for tourists.



landscape with large block-shaped plots as a result of large land ownership: the surroundings of the Vogelzang farm (between Simpelveld and Overeys). bottom left the Eyserbeek runs through the Bulkemsbroek, behind the farm is a slope with graves and an abandoned quarry.

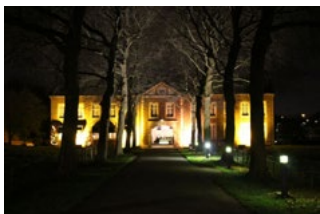
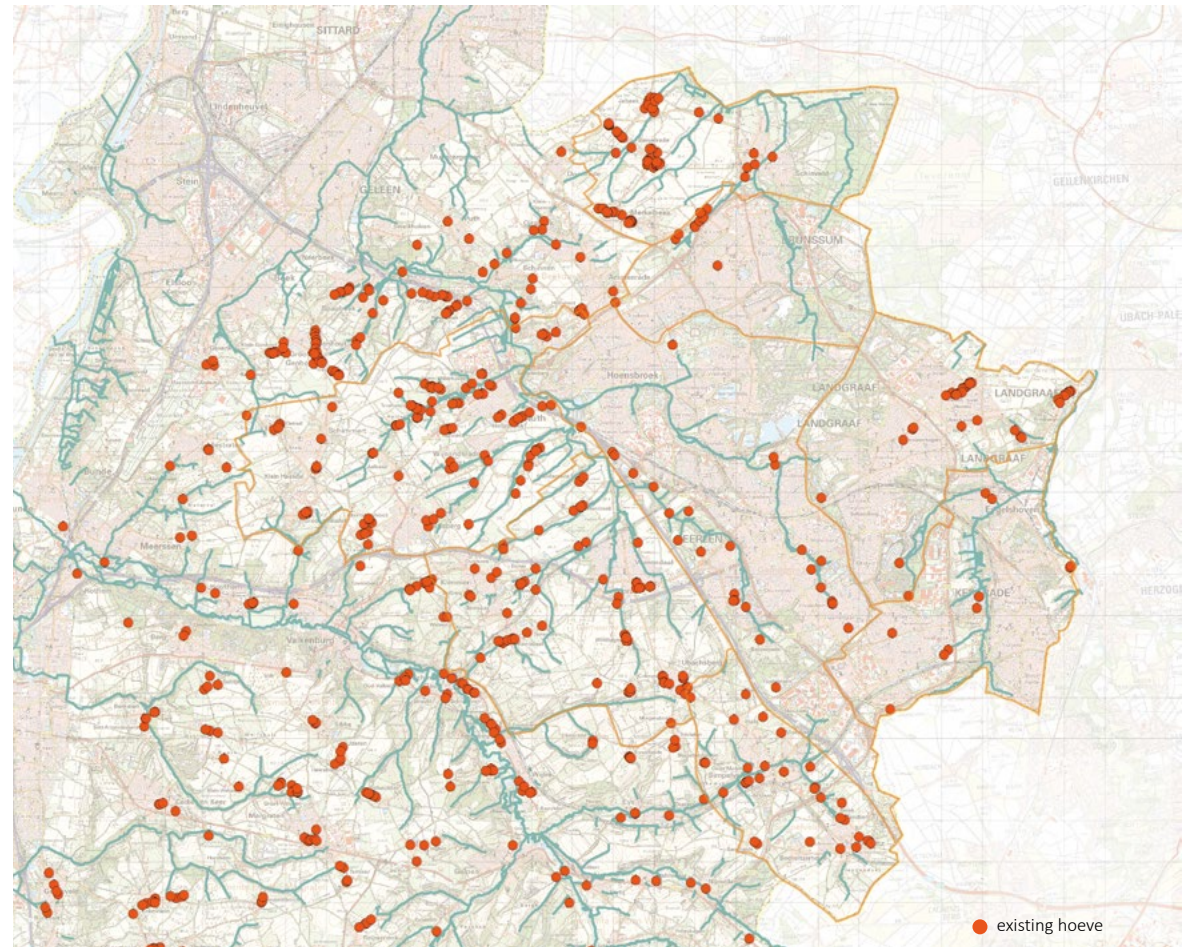
Most of the hoeven in Parkstad and National Landscape Area are privately owned; among those with new economic functions for commerce and business, accommodation takes up the largest proportion, meaning that a large number of hoeven are functioning as hostels or bed&breakfast for tourists.



current usage of hoeve in Parkstad & National Landscape Area

National Monument has registered a lot of hoeven as closed-shape farmhouses as well as other agricultural buildings with many other forms. Because of the reason that most hoeven are private properties, the government would give subsidy to these hoeven on the list to encourage the public to protect these monuments. Although now the range of definition of heritage protection has been extended from the architectural

heritage itself to its physical ecological environment, this kind of subsidy is still mainly for the renovation of the build-up construction; there's a lack in systematic specification for the protection and repair of the environment. It also seems that hoeven don't have a very complete systematic protection policy and long-term development planning.



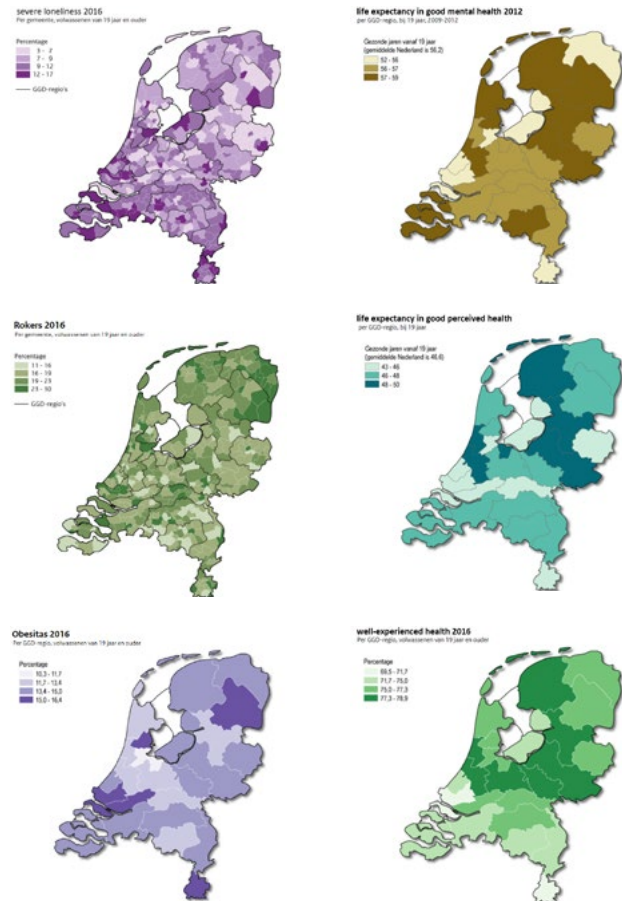
Characteristic of South Limburg is the presence of a land-based agricultural and horticultural sector, mainly arable farming, dairy farming and fruit growing, but also the production of regional products such as wine, syrup, cheese, fruit, beer and meat. Agriculture is not only the founder of the historical and current landscape in rural area of Parkstad, but also an important factor in the current image and the quality of the landscape.

Cultural landscapes provide a setting and a sense of occasion for people to pass on and receive cultural meaning, memories and knowledge, even if the place does not serve as the usual domain of the people who associate with the site (Smith, 2006). The landscape can serve as an embodiment of a larger shared memory, a place of remembering and of performance to connect with a unique sense of local spirit.



Aging society and healthcare

In general, South Limburg is the most unhealthy region in the country, physically and mentally. The inhabitants of South Limburg have a shorter life expectancy, live fewer years in good health, are least positive about their health, and have high percentage of loneliness. Chronic conditions such as obesity and psychological problems is above the national average.

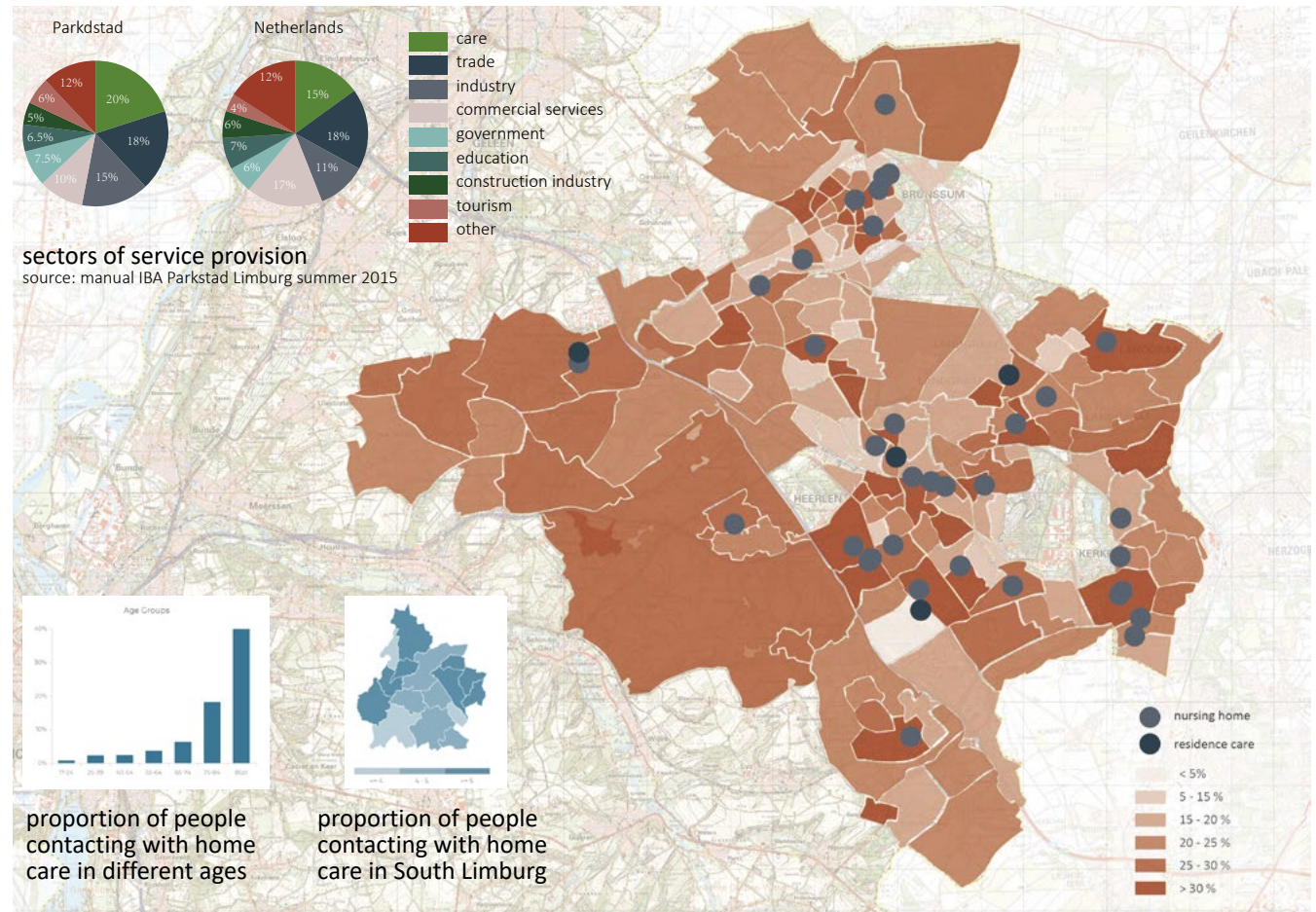


source: www.volksgezondheidenzorg.info

It's estimated that the number of households in the Netherlands will increase by nearly one million to 8.8 million in 2060, largely due to single-person households. Due to the aging population, the number of older single people in particular is increasing sharply. Housing market suffers due to elders' longer stay at too large houses.

Healthcare is one the focus of Parkstad development. It takes up the largest proportion among

the service provision. In the past two years, old people on the waiting list for the nursing home increased 92% nationwide (8745 in 2017, 16711 in 2019). If nothing changes, 140,000 extra places in nursing homes will be needed by 2040, which would add financial burden for the government. What's worse, population of healthcare practitioners are dropping in Parkstad. Shortage of caregivers in institutional nursing homes is another problem in healthcare.



proportion of people contacting with home care in different ages

proportion of people contacting with home care in South Limburg

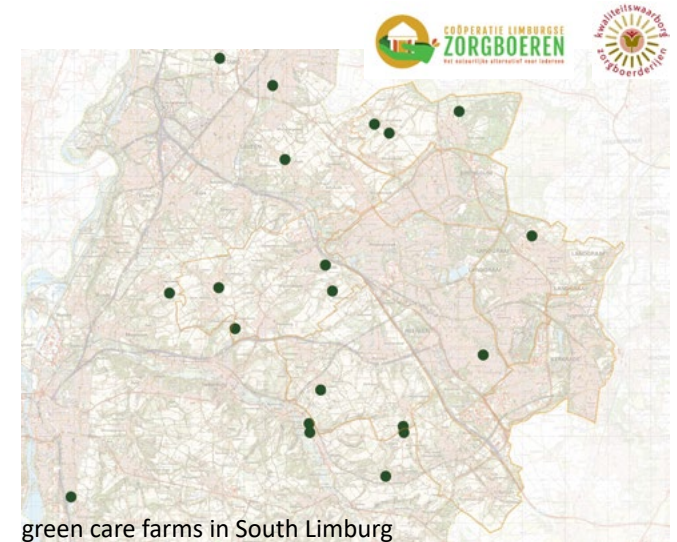
There is a trend in Europe that more and more old people prefer staying at home than going to a nursing home. Worldwidely, there will be less nursing homes and more smaller care centers spreading in the community based on local community or in rural places with nice scenery.

Because of the constantly rising cost of institutional care, the government of the Netherlands has been encouraging the elderly to receive care at home. Currently, Dutch healthcare policy is shifting towards home care provision and health precaution; the main idea is decent aging. The main idea of communal care for old people is to focus on engaging residents in activities, giving them feelings of meaning in life and allowing them to express themselves and interact with other people, and providing a more psychosocial care in person-centered, homelike care environments. So, apart from professional practitioners, volunteers in the community are also very helpful in taking care of the old people.

In recent years, an idea of green care farm is gaining welcome. It's a small-scale, homelike caring facility based on an original farm. They welcome people who need physical or mental care to the farm and provide residence and care, not only old people, but also those with dementia. The residents are free to do any indoor and outdoor activities on the farm. Residents in traditional nursing homes spend a substantial part of their days doing little or nothing while remaining in a lying or sitting position, without social interaction, and they are rarely engaged in meaningful activities. In comparison, residents in the care farm have more outdoor farming activities especially those involving interaction with people and stimulation from the environment, helping them to stay actively involved in the neighborhood and regain the sense of social participation.

As the population of aging people who need daily care grows, variety of forms of care also increase, so that the corporations or institutions need to

improve their service to compete with each other to attract clients as well as the health practitioners. In this case, healthcare industry is operating in a virtuous circle.



green care farms in South Limburg



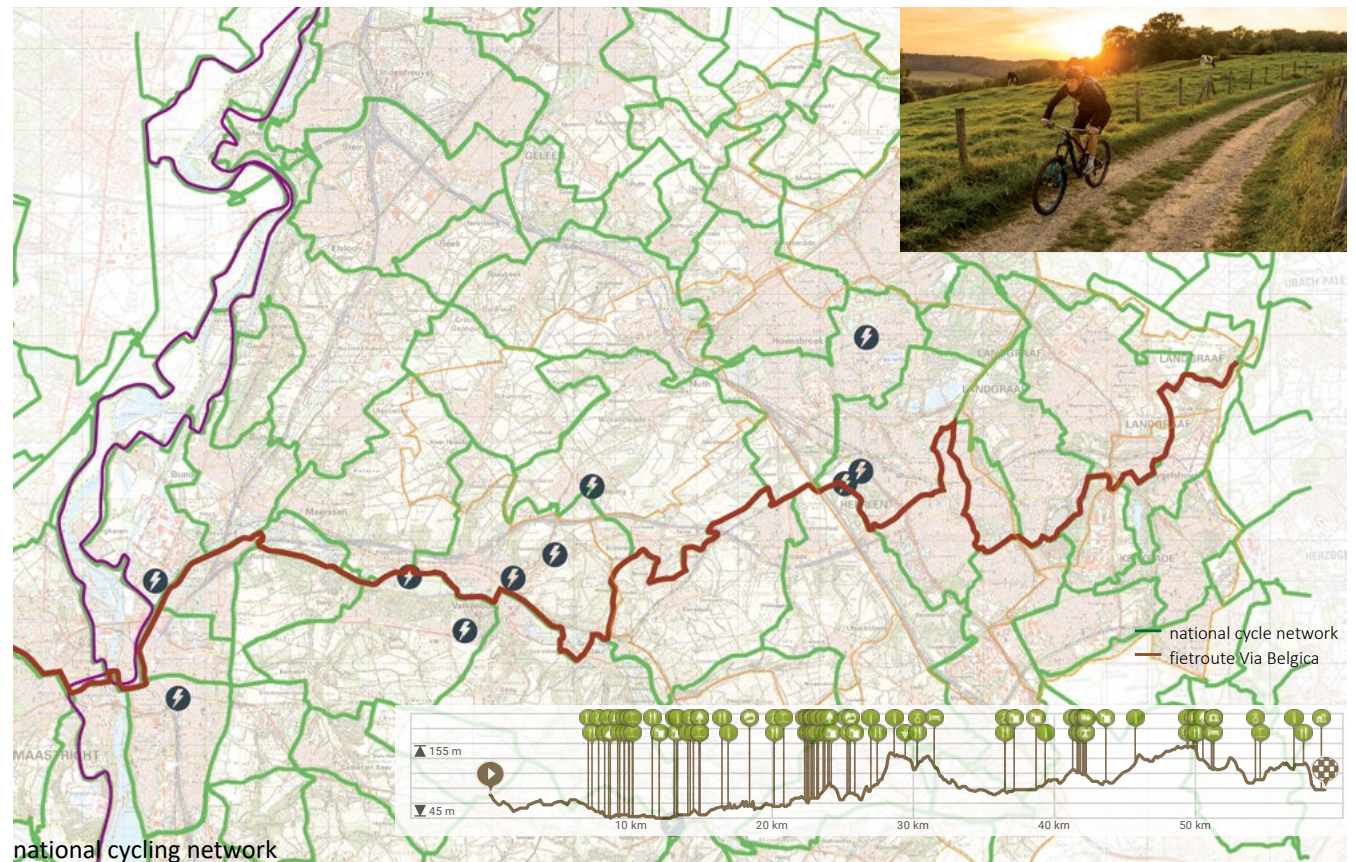
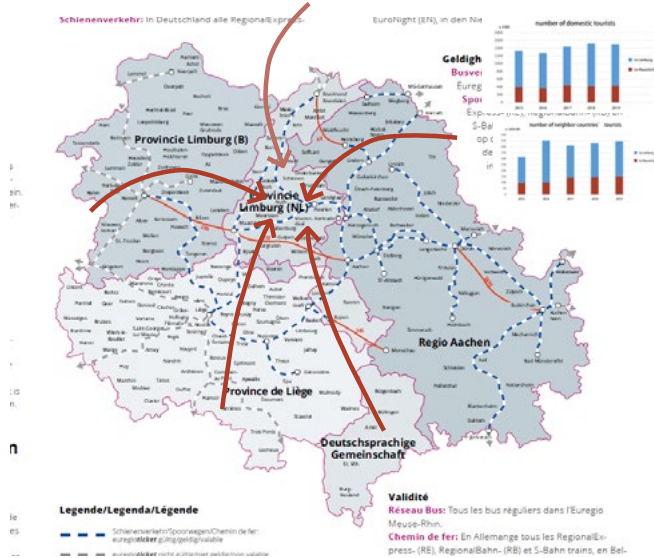
tourism and mobility

In the post-mining era, it was urgent to make economic restructuring and strengthening. Under the guiding regional program 'Towards a sustainable vital region', Parkstad shifted to leisure and tourism to be the focus of main economic development. Tourism generates an annual turnover of 1.2 billion euros and more than 20,000 jobs. South Limburg welcomes tourists from both domestic and abroad, and is the most popular destination among Dutch people. Parkstad even won the Tourism for Tomorrow Award in the category of Best Travel Destination in the World in 2016.

Parkstad is naturally and culturally attractive for the visitors. The hilly landscape features old sunken lanes, open plateaus and idyllic woodlands.

Along the way, picturesque villages and authentic towns alternate. In the region, a number of different national and international cultures occupy a relatively small space, each maintaining their own authentic customs and traditions alongside each other. The rural area, namely National Landscape, is an old and non-urbanized cultural landscape in the middle of a highly urbanized metropolitan ring. For tourists, residents, and visitors, the variety between natural, cultural-historical, and rural qualities is extremely attractive and interesting. Accessibility of the area via water, rail, air,

road, public transport, bicycle, and walking over farmlands is excellent. The Euregion is covered by crossborder railways; low speed infrastructure like cycling network is suitable for e-bikes to go across the contours. Unique is the presence of complimentary facilities within short distances, such as shopping, museum visits, city trips, and large-scale overnight and day recreational facilities, as well as peaceful getaways, hiking, cycling, leisure, adventure, digital experience, and small-scale overnight recreation and day recreation in the countryside.



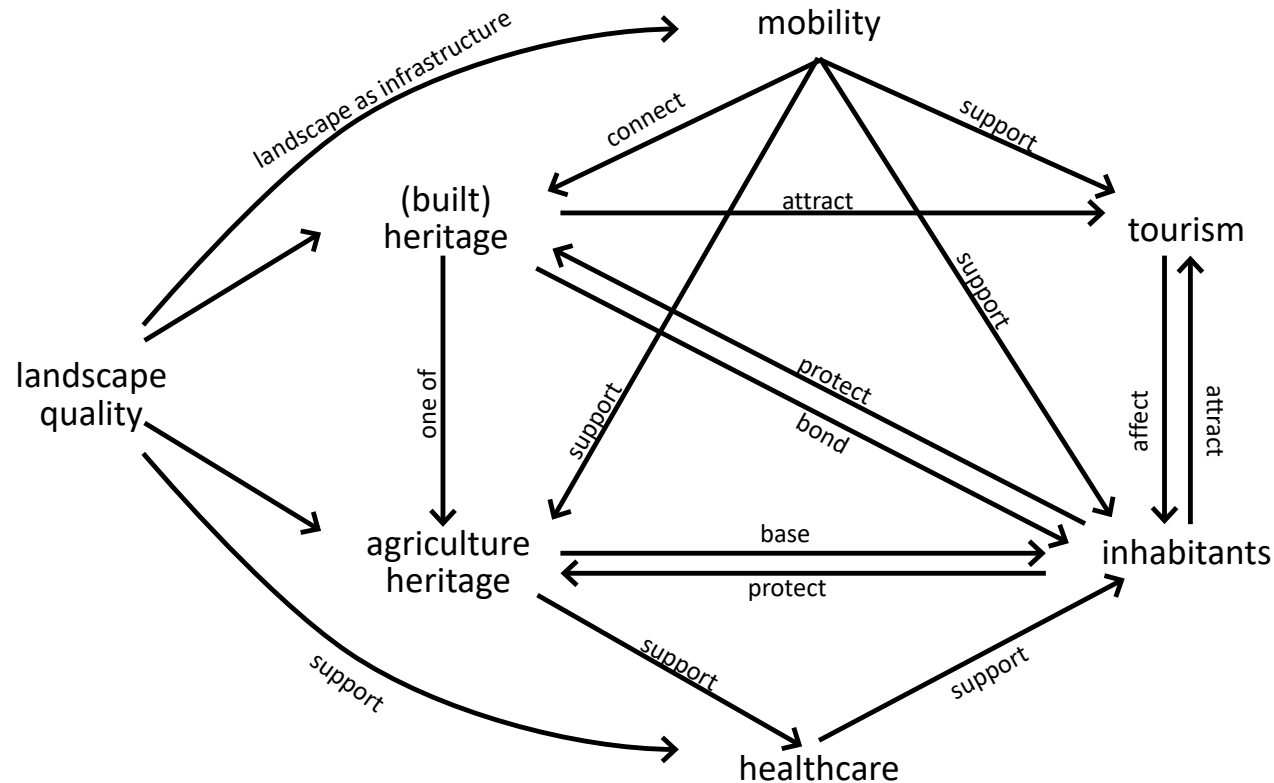
Corelations among the scopes

Traditional agricultural landscapes support biocultural diversity and ecotourism. The cultural landscape is an important part of the total land use of great importance for the landscape and thus for the South Limburg flora and fauna, but also for the economy, especially tourism economy. Domestic tourists are more than willing to enjoy an agricultural landscape that is different from polder landscape which is spread in most rural areas in the Netherlands and experience a rolling cycling tour, namely the natural and cultivated landscape as well as the cultural factors behind

it. The agricultural businesses in South Limburg tend more towards expansion, which means side activities in nature and landscape management start to occur such as leisure, recreation and other semi- or non-agricultural activities. This compound economy can help agricultural businesses to continue to exist and manage their lands.

As is stated in 2018 European Year of Cultural Heritage, the combination of cultural heritage and cultural tourism can be a powerful economic driver, but only if managed in a way that benefits communities. Not only can tourism boost

economic activities in Parkstad; more importantly, management of landscape can also help improve living quality of indigenous inhabitants through provisioning, regulating and supporting ecosystem services. Health is seen in a much more wider scope by many and is 'about life'. A positive health includes body functions, mental well-being, meaning, quality of life, social participation and daily functioning. Based on existing landscape quality, the environment will have maintaining and stimulating support for particularly outdoor activities, for now and the future.



3.2 principles



long-term management

development phases instead of blueprint



interactive landscape

stimulating and engaging activities for elderly;
public open space for the community and the tourists



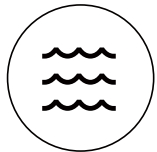
mobility

easy access to all kinds of facilities and being free to move around;
effective combination of fast-speed and low-speed transportation



edge clearance & transition

strengthen the green edge of settlement and topography;
clarify the transition between urban and rural area



water resilience

more space for flooding;
use natural succession for a more dynamic water cycle



interpretation

better definition of landscape and people's understanding of it to create a
stronger shared sense of place



collaboration

joint force among all related parties

3.3 typologies

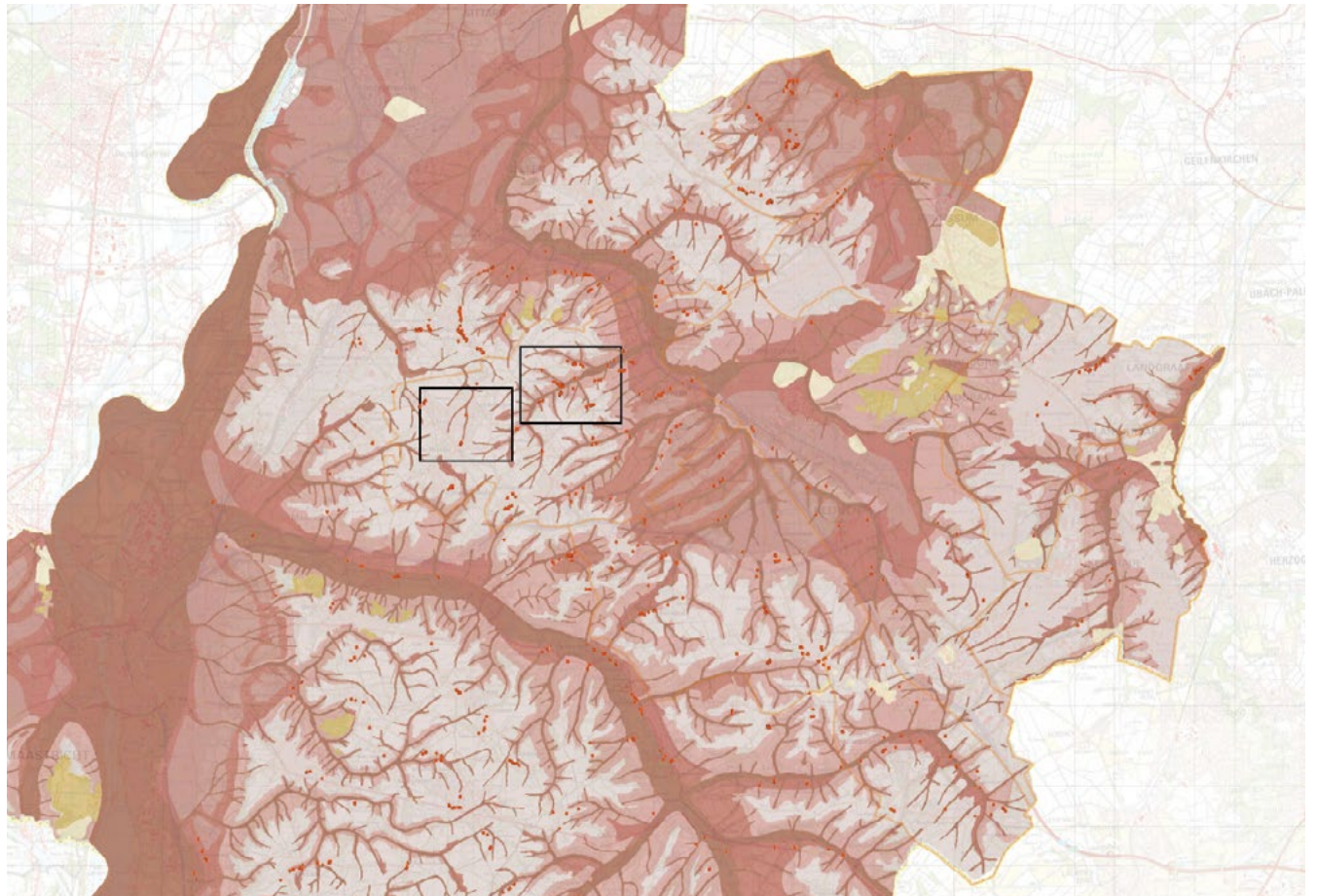
both scale increase and fragmentation, which was caused by the explosive expansion of solitary houses and villages, are the major reason for tarnished landscape character in Parkstad. (Manual IBA Parkstad Limburg summer 2015). thus, a strengthening of the spatial identity by promoting the contrast between the open plateaus and secluded valleys is a good attempt to deal with the problem.



plateau

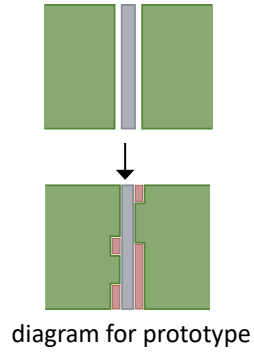


valley

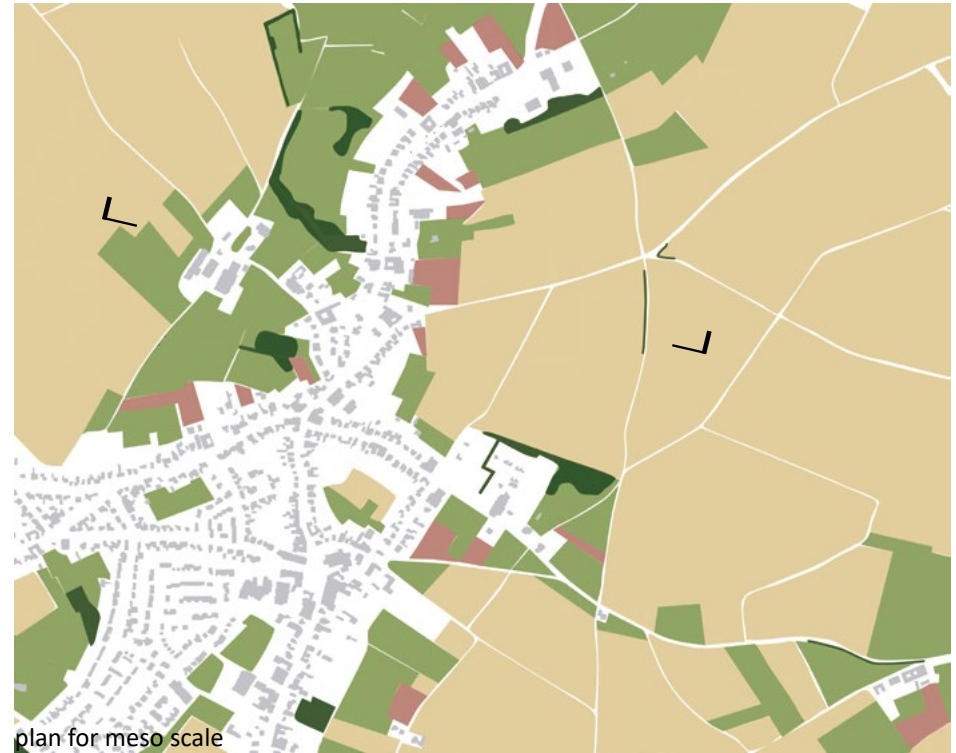


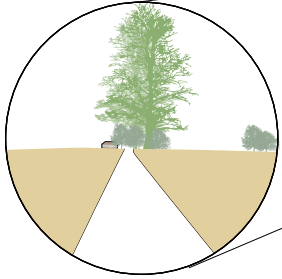
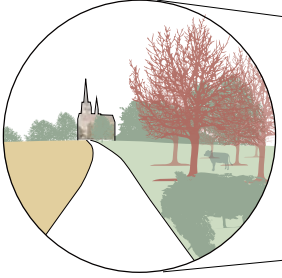
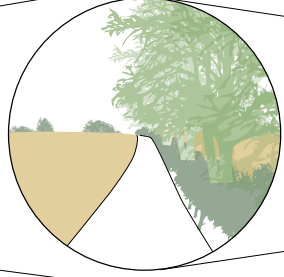
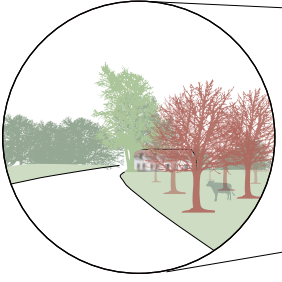
plateau

For plateau, the main idea is to keep the quality of openness. High stem orchards are added to some farms and some backyards of the houses. There is not much wooded trees, only very few linear trees serving as the visual guideline for the routes that cut through the large clusters of arable land which extend from plateau down to the slope.



- settlement
- high stem orchard farm
- arable land
- grassland
- wooded forest





valley

As for the valley, the main idea is to keep the private and enclosed spatial quality contradictory to the plateau. The main road is the spine, the existing forest and newly introduced high orchard strengthen the framing and background of the village. Then grass land works as the transition to arable land.

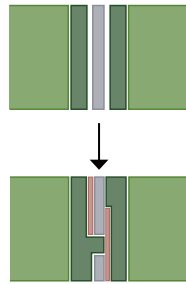
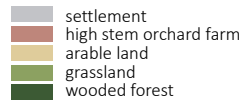
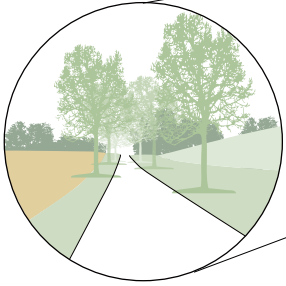
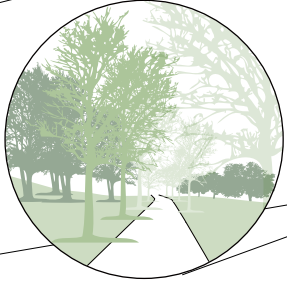
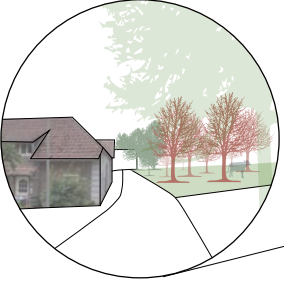
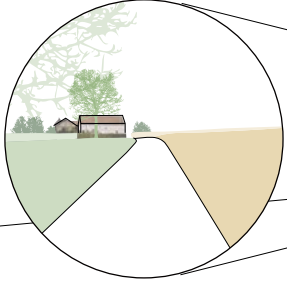


diagram for prototype



section II-II

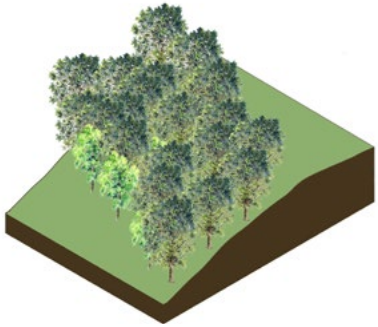


4 design exploration

Residential houses and neighborhood are meant to serve as functional frames for modern way of life. This chapter will explore through design in different scales how adaptive reuse of a hoeve can build a new rural lifestyle.

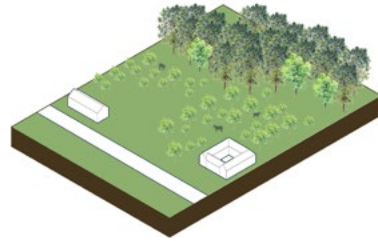


4.1 strategies



wooded steep slope

- protect against erosion and flood
- create habitat & ecological connection
- strengthen the contrast between open plateau and valley



high stem orchard as transfer

- create habitat & ecological connection
- revive traditional agricultural landscape



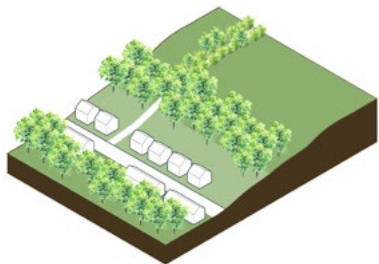
cycling routes cutting contour

- enrich the experience of hilly cycling



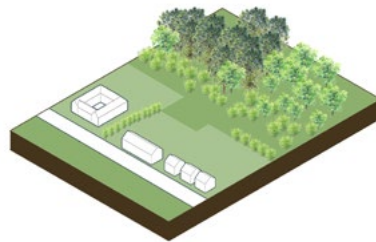
waterfront path

- invite people to take a walk near the brook, enjoy scenery, and even raise awareness about climate change and environmental protection



greenery on the edge

- emphasize the framing of the village
- emphasize the typical hollow roads
- serve as green chain connecting settlement and rural nature



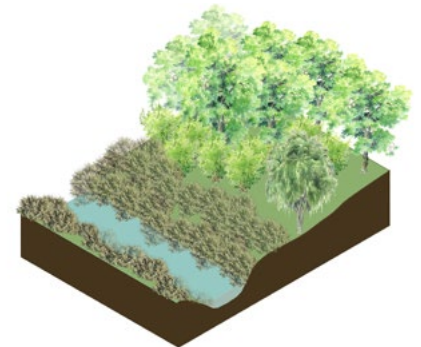
ragged plot as transfer

- create habitat & ecological connection between settlement and forest



green cycling routes

- easy access from settlement to rural nature
- enrich the experience among different greenery



brook in woods

- maintain the wild natural habitat for biodiversity
- enhance the enclosed and dense spatial quality

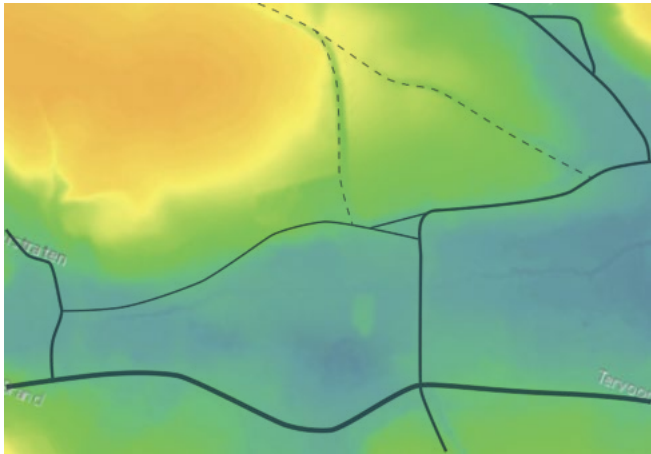
4.2 micro scale exploration

Site for micro scale design is chosen in the typology of valley, considering the trend of people moving towards rural area. It was a dairy farm with the National Monument Hoeve Den Driesch. The hoeve was built in 17th century with marl stone, timber framing and brick and with a half-timbered barn. This hoeve with traditional South Limburg facade, the road in front of it and the brook to which the road parallel, all remain as they were in late Middle Age. across the forest is a neighborhood with historical ribbon structure. Behind the hoeve is large patch of grassland. The east-west road connects Terstraten, one of the two protected villages in municipality Nuth. In the history, farmhouses in ribbon-structured Terstraten were surrounded by farms and fruit meadows, which is its historical value; now, the backyards of the farmhouses are no longer used for agriculture. In comparison, Hoeve Den Driesch still functions as a farm and keeps cows and cattle as in old days.

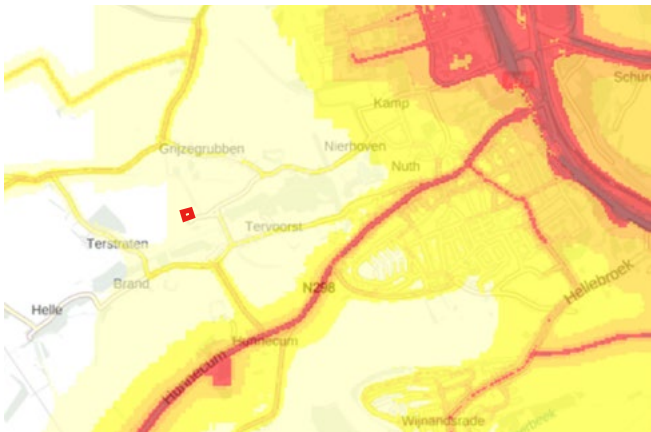
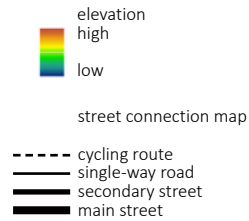


- built before 1850
- built 1850- 1900
- built 1900- 1970
- built after 1970
- brook Platsbeek
- protected town/village view
- historical ribbon
- valuable rural landscape
- valuable rural nature/Natura 2000

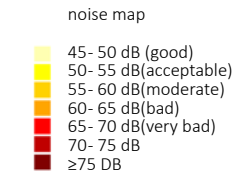




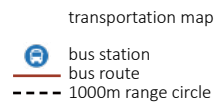
Ancient roads follow the topography and goes parallel to the valley. Narrow dry valleys are ideal for a walk or cycling into the nature.








The site is in a quiet area that is away from the motorway and main street, being ideal for those who want to enjoy the quiet life in rural nature.



The site is within 1000m's range of bus station but out of 400m's distance which is about five minutes' walk for elderly over 70.



- 1 hoeve (closed farmhouse)
- 2 farming patch
- 3 high stem orchard
- 4 biomeiler
- 5 community center
- 6 market plaza
- 7 sports center
- 8 graften
- 9 hollow road
- 10 flooding plein

-  grassland
-  farmland
-  hedge
-  wooden path
-  brook





yellow wagtail



Alnus glutinosa
black alder



Malus pumila
apple



Prunus padus
bird cherry



Crataegus monogyna
common hawthorn



Eurasian eagle owl



vole



Eurasian water shrew



Tilia cordata
linden



grey heron



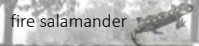
Salix aurita
eared willow



white-throated dipper



Quercus petraea
oak



fire salamander

brook lamprey



common minnow

stimulating activities

open outdoor space with interactive elements and activities like stables, gardens, animals, to stimulate elderlys being physically and sensory active



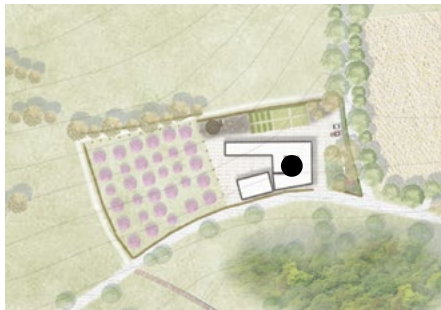
interactive landscape



mobility



collaboration



stimulating activities

open outdoor space with interactive elements and activities like stables, gardens, animals, to stimulate elderlys being physically and sensory active



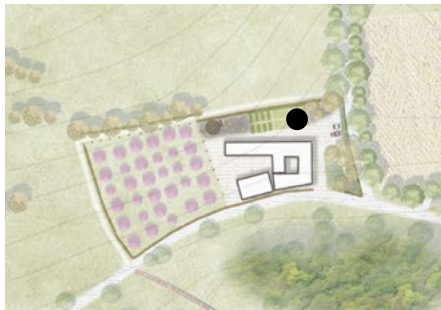
interactive landscape



mobility



collaboration



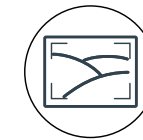
self-sustainability

Orchard is not just an outdoor field for the residents in care farm to engage in farming activities and a typical representative of traditional

agriculture in a landscape and cultural sense. Self-sustainability means self-producing for the care farm and a lively self-cycling ecological system for the orchard itself.



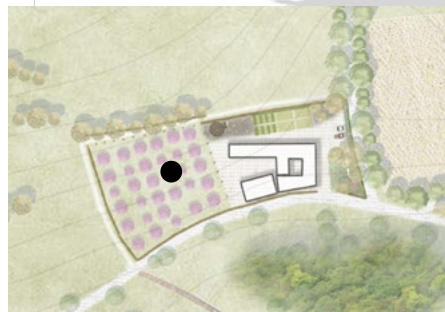
interactive landscape



interpretation



long-term management



A traditional high-stemmed orchard in Limburg keeps livestock apart from the fruit trees, such as sheep and cows. They pasture in the orchard to maintain the ground floor grass, and their waste is organic fertilizer directly for the fruit trees.



Bird houses welcome small birds and fowls which can help deal with pests on the trees to replace pesticides and to reduce chemical residue.

robin

pests

beehives

bird house

Little owls feed on voles that often destroy fruit trees roots.

vole

Honey is harvested from the beehives built for bees. They help trees and other plants on the farm to pollinate. Beehives even can help increase the number of wild bees which are experiencing sharp depopulation in recent years.

self-sustainability

A biomeiler can be self-installed on the farm. Using sheep manure, wood chips and some water, it can provide heat and energy for the hoeve and harvest compost, achieving a closed energy flow on the farm.



interactive landscape



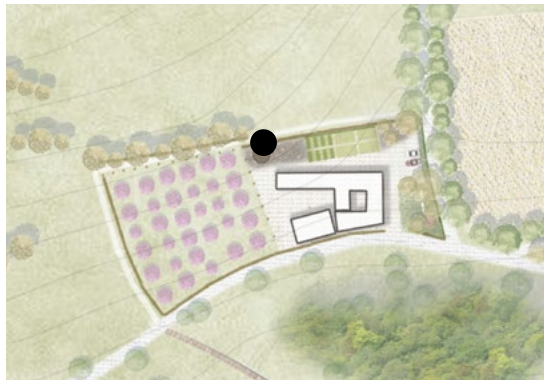
mobility



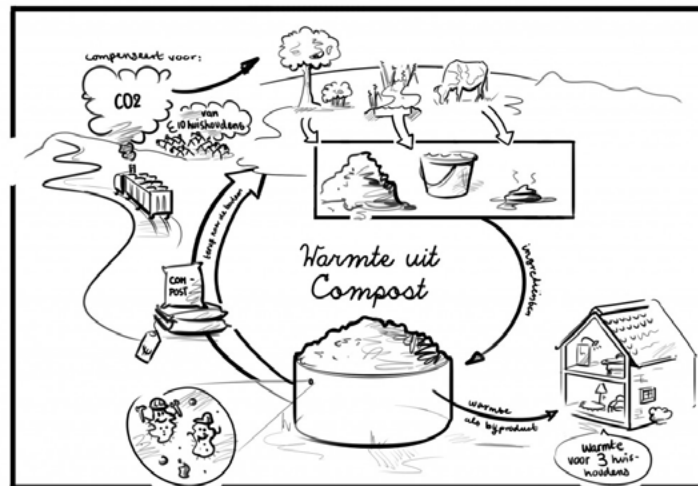
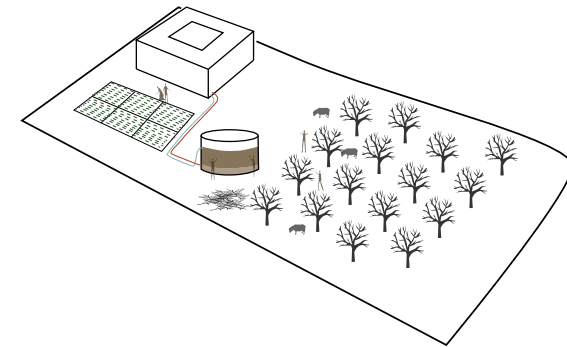
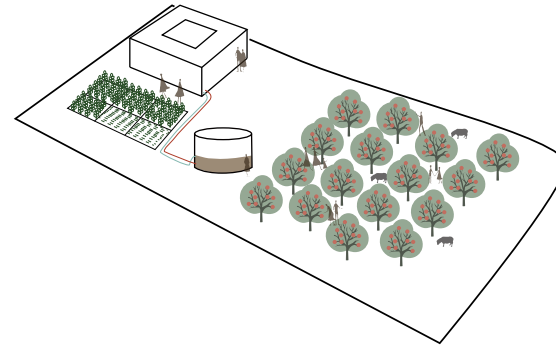
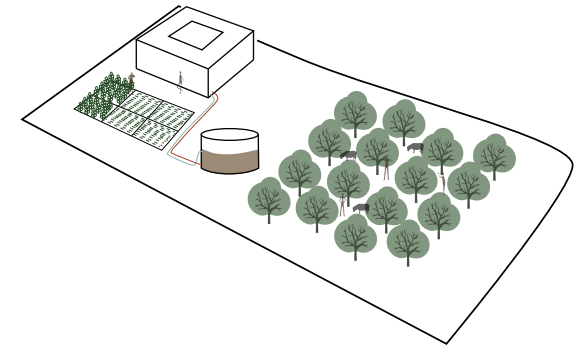
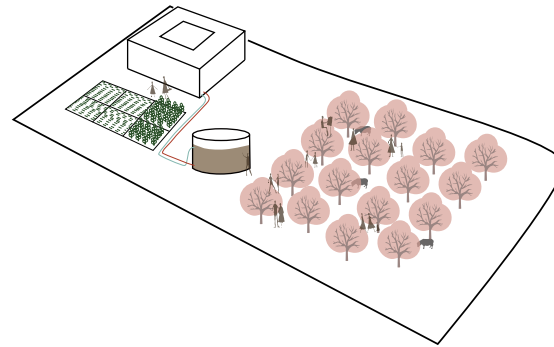
collaboration



long-term management



Biomeiler is added next to the orchard. Using green materials easily accessible on the farm, which are manure from the livestock, some water and wood chips cut from the fruit trees in winter, a biomeiler can produce sufficient heat for daily use in the hoeve. With the help from biomeiler company, it's also simple to make one by the residents themselves in just one day. Besides saving energy, a biomeiler also produces high-quality wood compost after each producing cycle, which can thus be used to improve farming soil.



convenient mobility

by creating different biotopes, historical dirt roads can provide diversified environmental experiences as well as guarantee convenient mobility



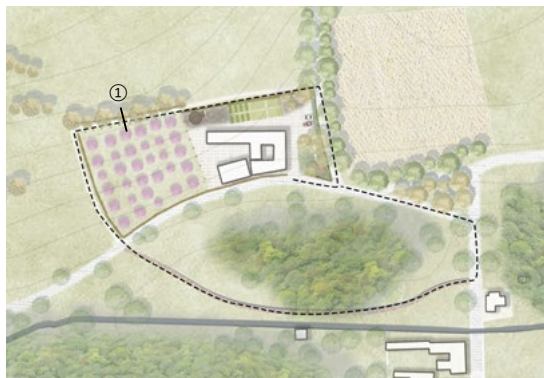
interactive landscape



mobility



long-term management



convenient mobility

by creating different biotopes, historical dirt roads can provide diversified environmental experiences as well as guarantee convenient mobility



interactive landscape



mobility



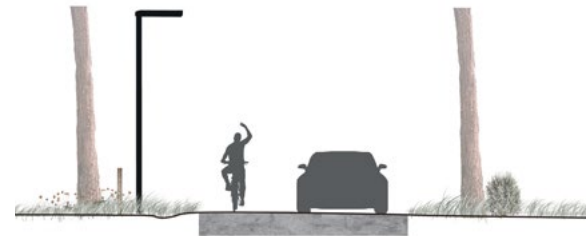
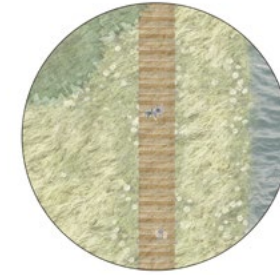
long-term management



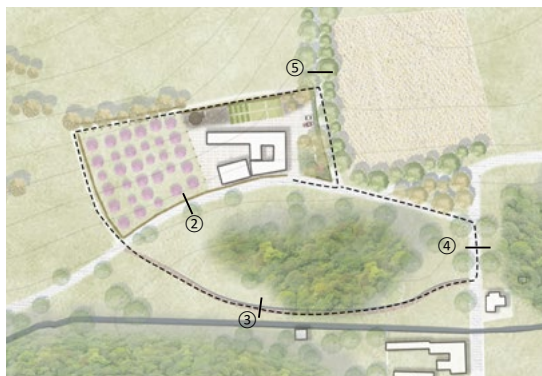
②



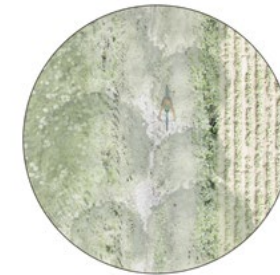
③



④

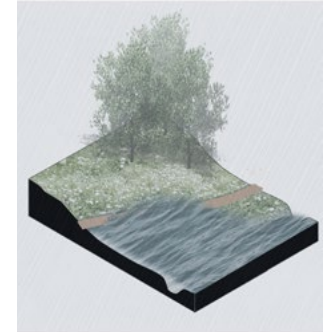
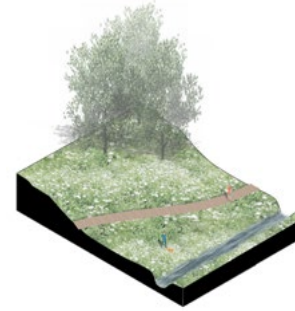


⑤



convenient mobility

easy access to all facilities and being free to move around within the green care farm; safe pedestrian routes within the neighborhood



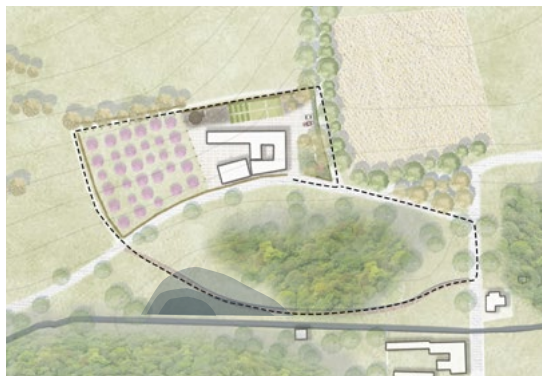
interactive landscape

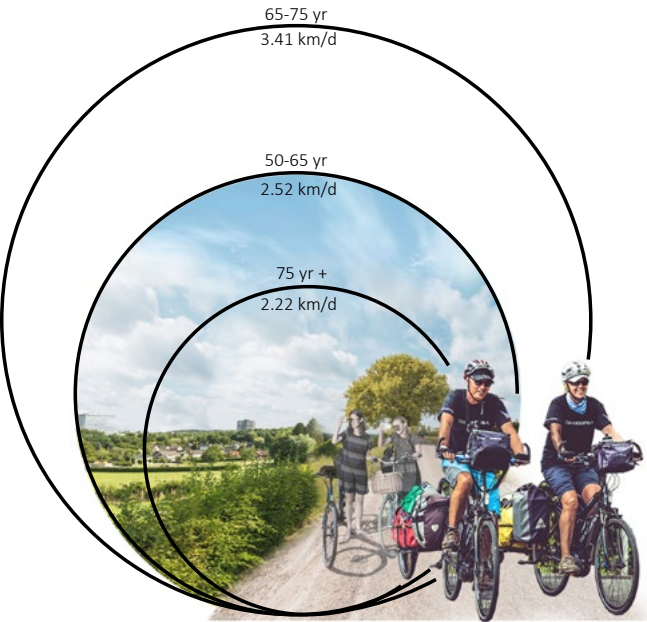


mobility



long-term management

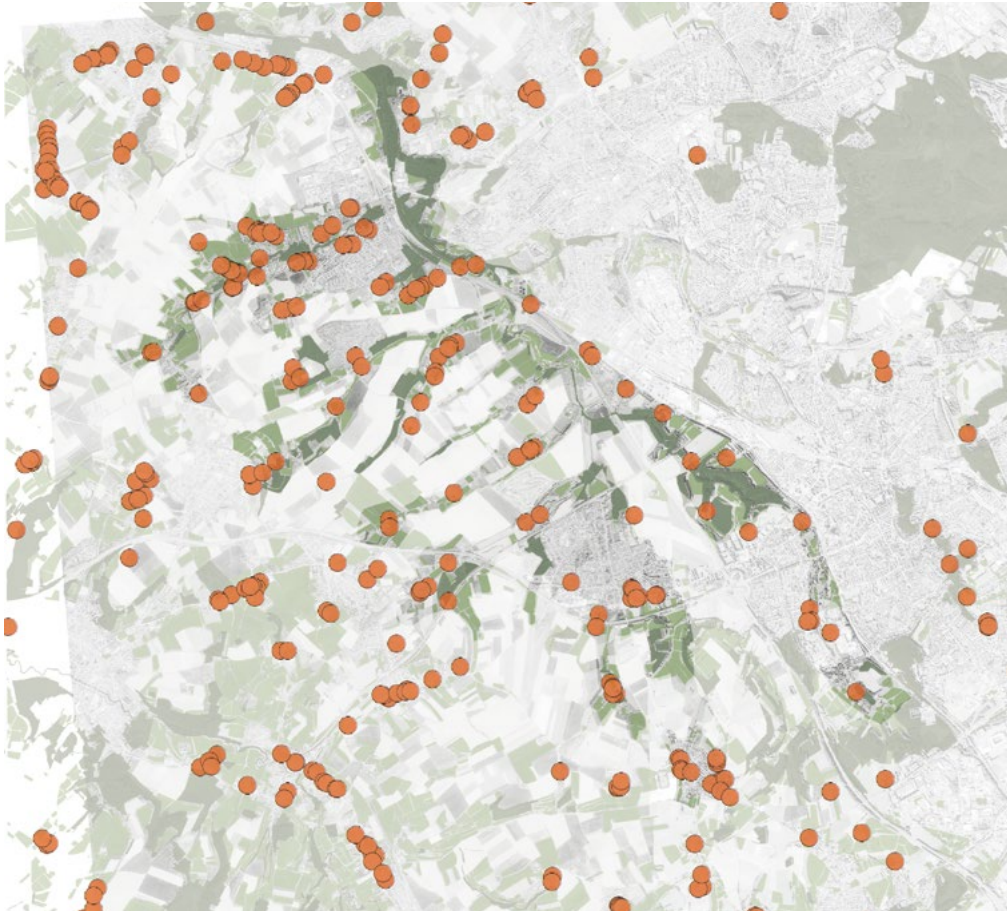






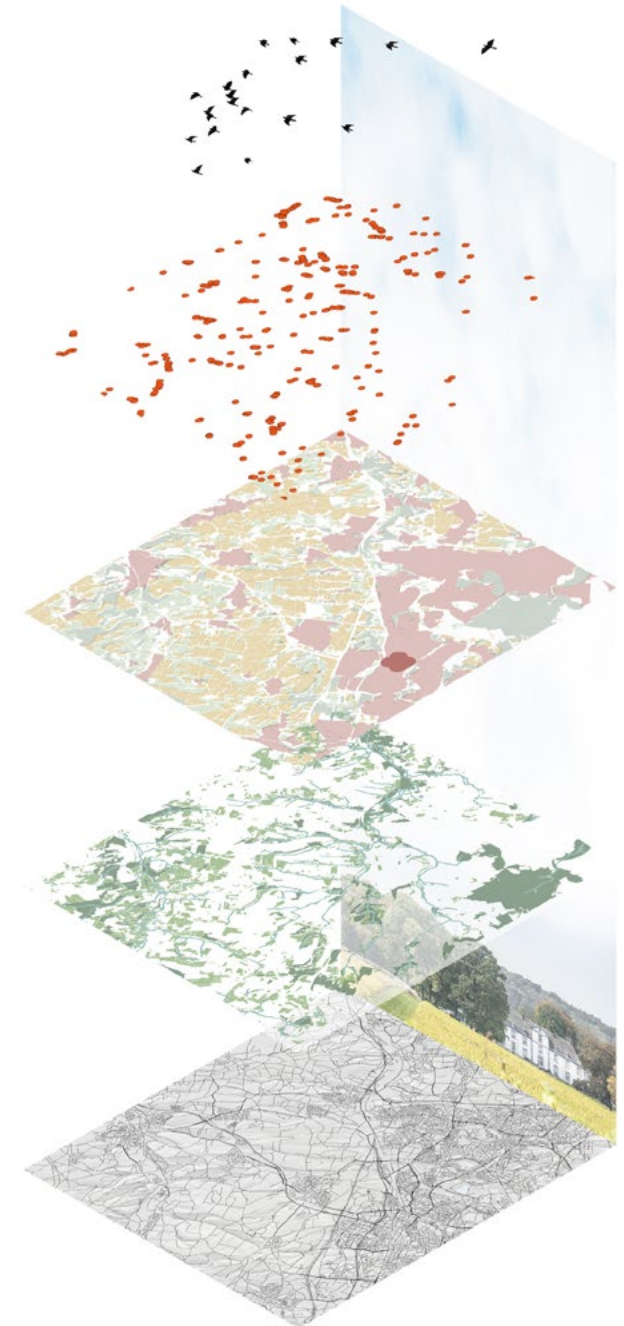


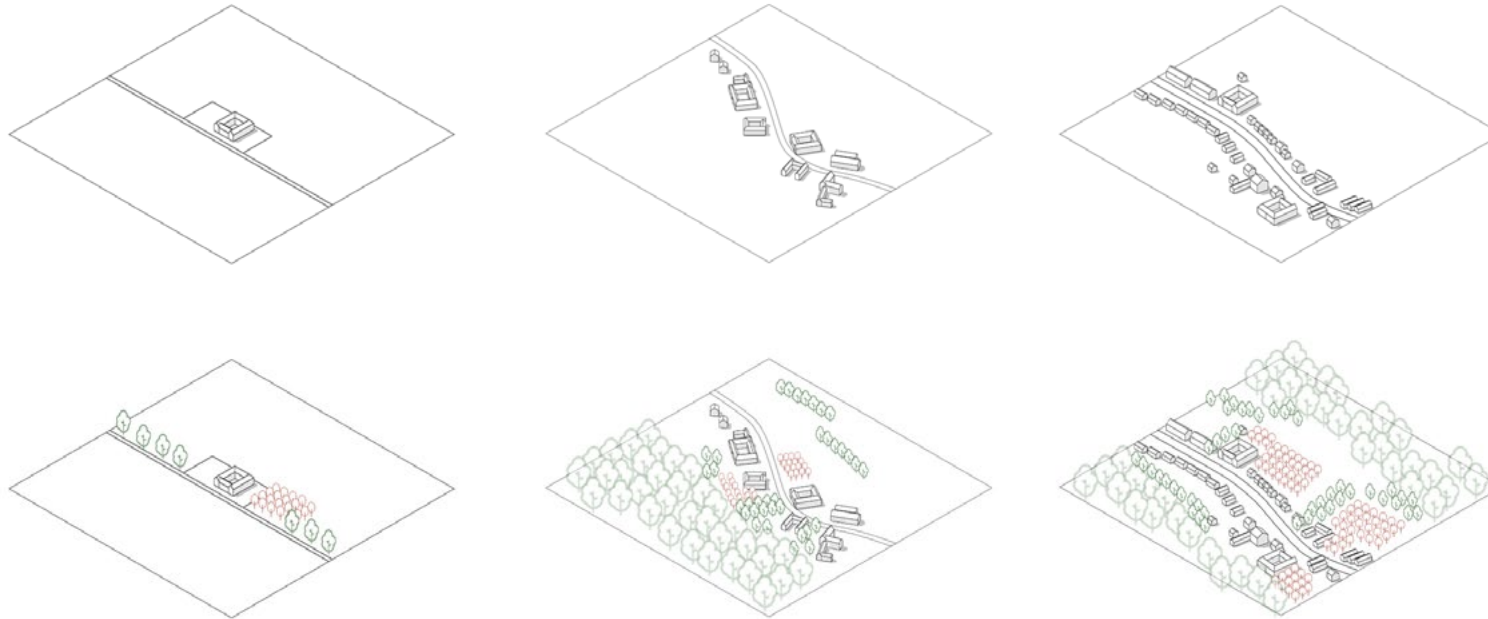
4.3 regional design



In northern part of Parkstad, namely west half of the municipality Nuth, the green and blue frame of ecology is rather clear; it's because of the less interruption and destruction of urbanization in rural area. Historically speaking, hoeven are situated not far from the water, and existing hoeven or farmsteads have the similar spatial distribution.

Rural areas are attracting more and more people to live and stay. What they search for is peace and quiet in nature with yet still easily accessible modern life in urban. For these reasons, test results in the micro scale is then extrapolated for regional exploration, the tributary region of Geleenbeek which is in the north of Parkstad, to study how hoeve and agricultural heritage can improve local people's life and make it attractive for tourists.





Besides bed&breakfast, restaurant, office/company or other direct business functions, by reintroducing farming and agriculture function, these hoeven can also help achieve certain goals such as enhancing spatial structure, improving ecological connection, emphasizing landscape characteristic of different typology and providing public open space in the community.

Solitary hoeve has great potential in connecting and activating landscape continuity. Hoeve in the village can strengthen spatial structure with plantation and vegetation in its backyard. The open space in between the hoeven also have potential in integrating landscape features in the village.

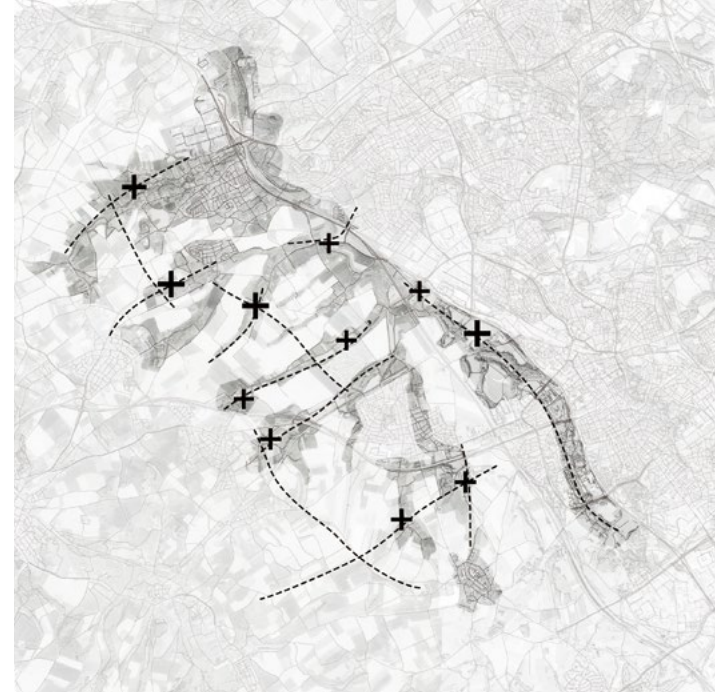
Three morphologies of hoeve and its relationship with other settlement and farmland in the region can be concluded:

- solitary hoeve. A road passes in the front; the hoeve sits in the middle of large open area of farmland, being far away from other settlement;
- a group of hoeven forming linear shape of settlement. The hoeven are close to and face towards the road. There is some space in between two hoeven, and pasture behind the hoeven. These villages are mostly historical ribbon village being protected, such as Terstraten in Nuth and Winthagen in Ubachsberg.
- hoeven in relatively modern neighborhood. Old buildings are replaced by younger and modern detached houses. The morphology is much denser. The large pasture is divided into backyards for each house.

strategies



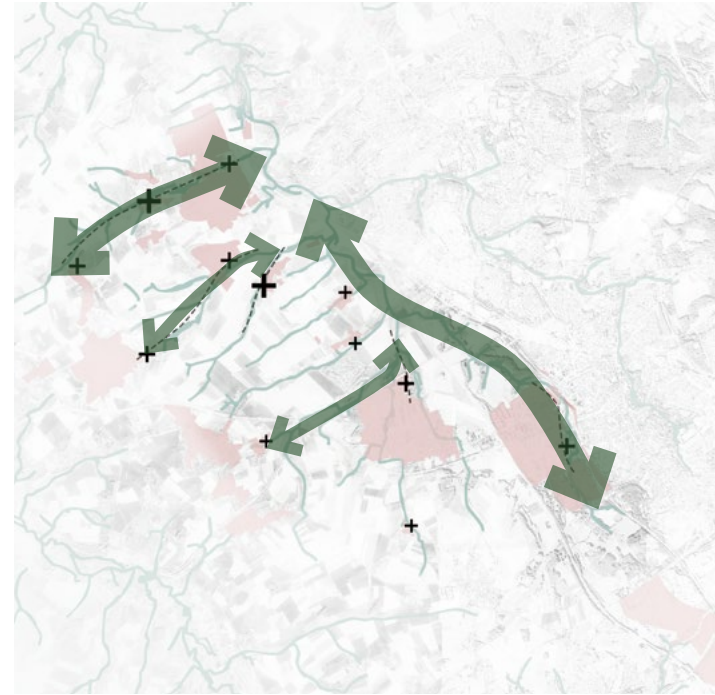
400 meters range of bus station
Bus transportation mostly covers rural agglomerations, while small and separate villages are not easily accessible by bus.



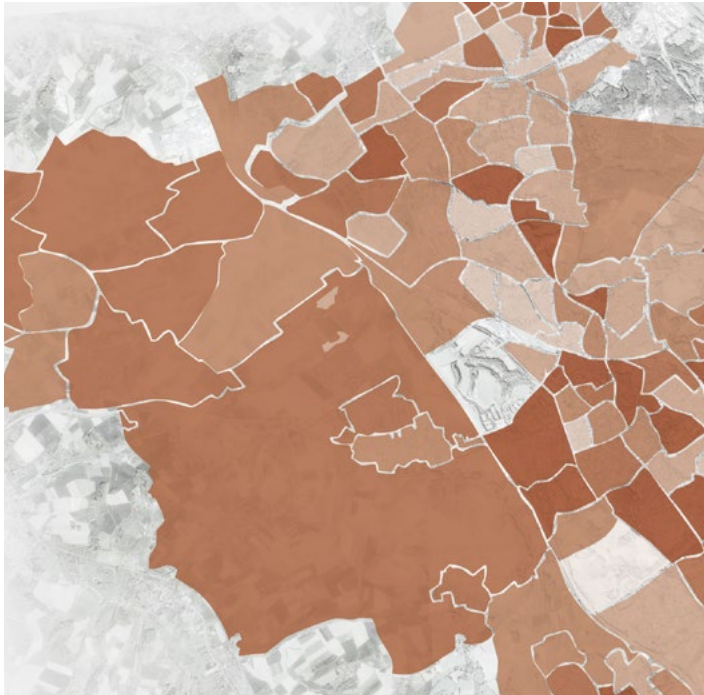
Adding parking spots and charging spots for e-bikes at road nodes to improve multi-speed transportation systems for a better mobility and accessibility in the region.



Desiccation sensitivity
well developed vegetation area and poorly developed
are mixed. The less developed areas can be improved
with help of well developed ones.



Focusing on the green edge, particularly the edge
with historical ribbon villages; and strengthening land-
scape character and spatial structure.



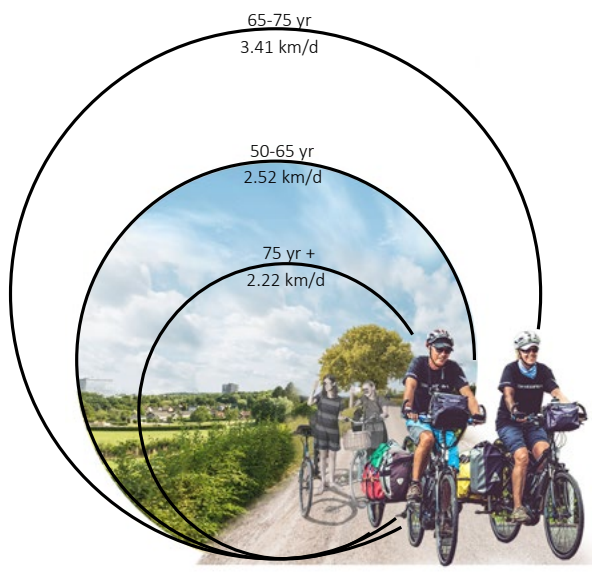
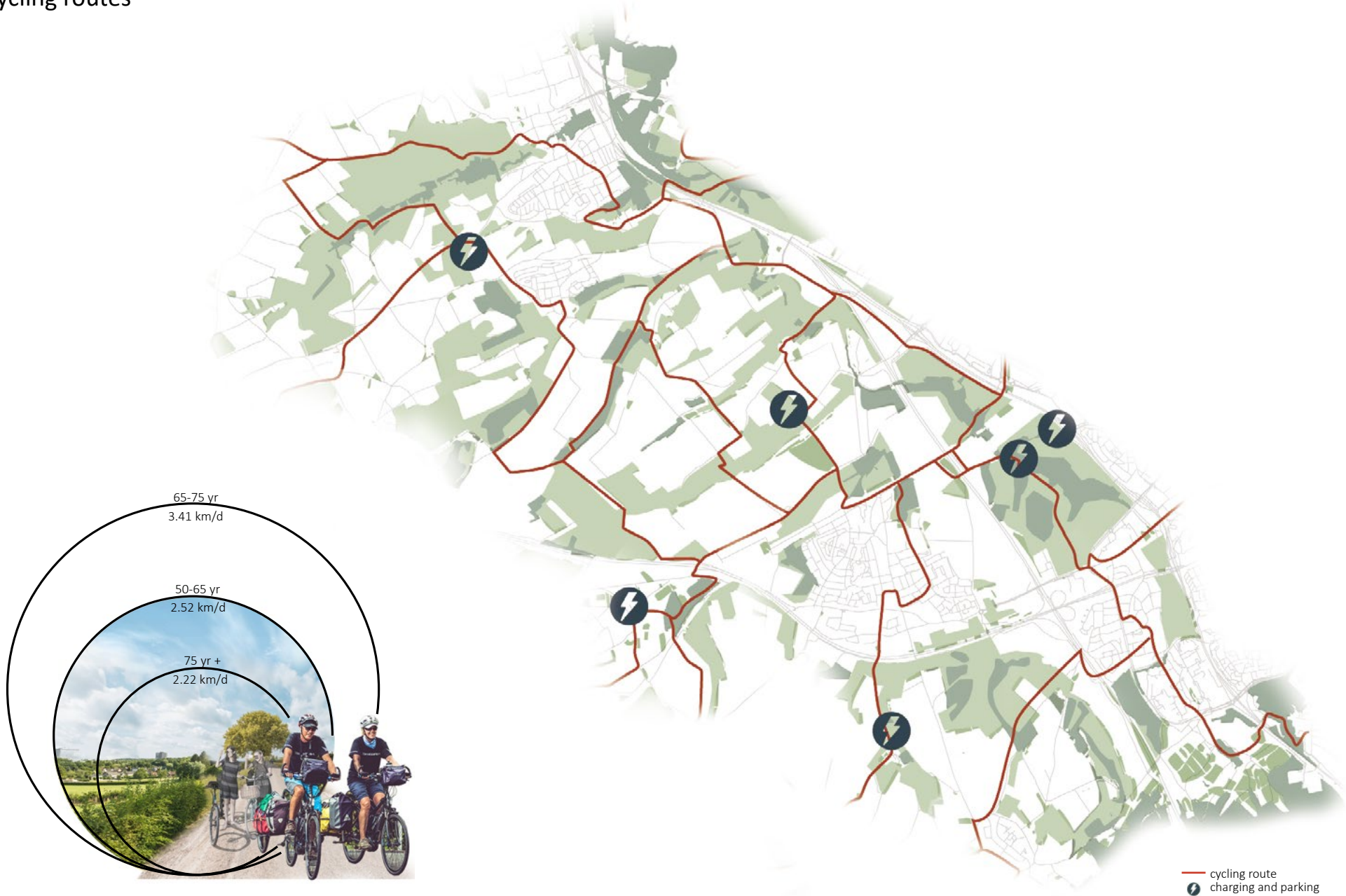
High accumulation of elderly people is mainly in urban area. The percentage difference among different communities is smaller in rural than in urban.



Looking for potential outdoor public space in a community, not only for the elderly, but for the expanding neighborhood in the future as well.

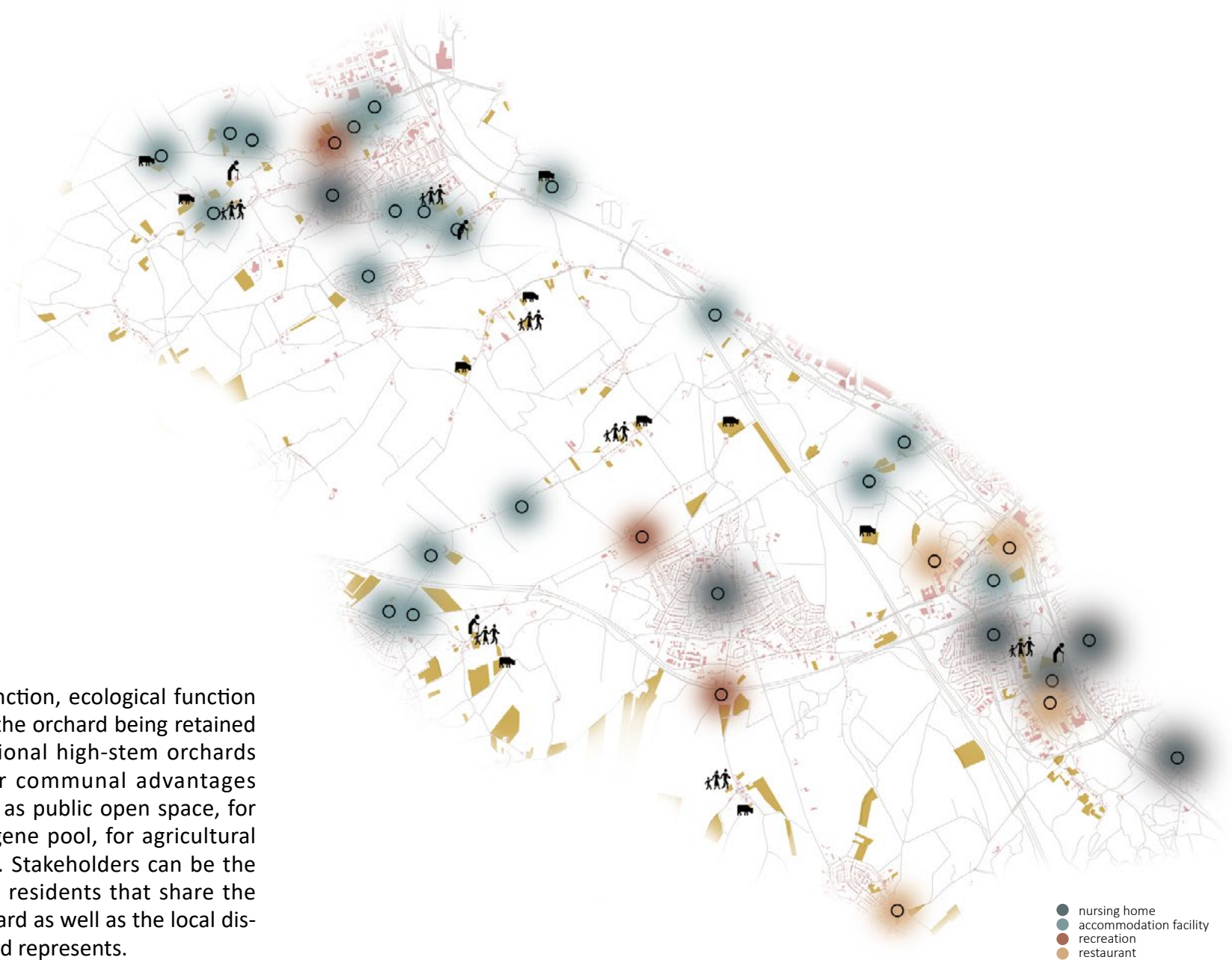


cycling routes



communal function

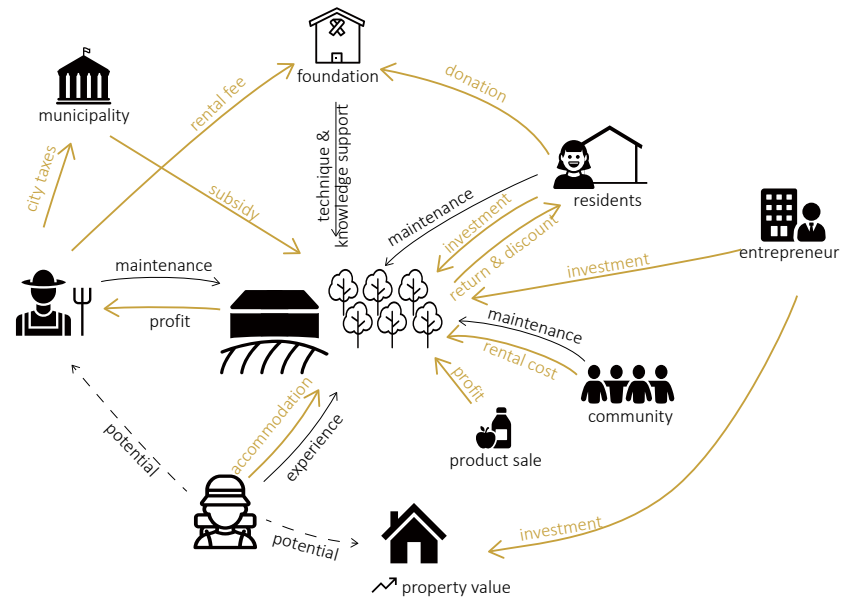
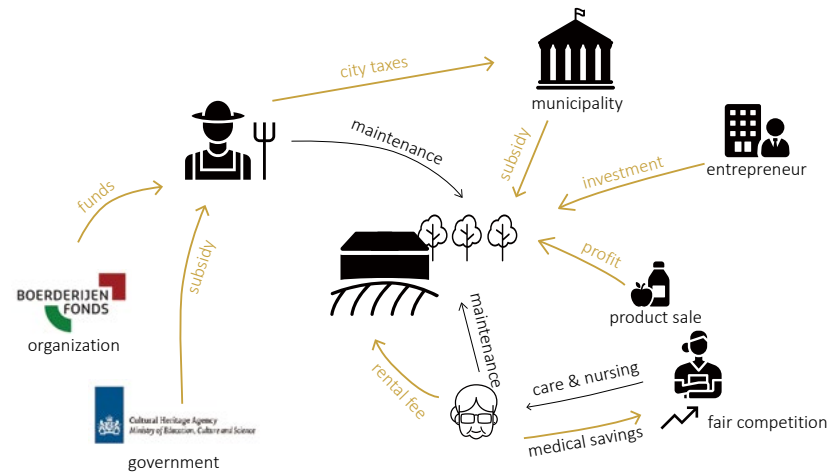
Besides agricultural function, ecological function and caring function of the orchard being retained on a care farm, traditional high-stem orchards also have many other communal advantages for gathering activities as public open space, for scientific research as gene pool, for agricultural education as test field. Stakeholders can be the owner/manager, or all residents that share the access to the orchard yard as well as the local distinctiveness that orchard represents.



The revival of traditional agricultural landscape element has new function and social value in contemporary time. The standard orchard is neither main source of income for the farmers nor private property any more. Community orchard is a public space which can hold various activities. People of all ages and from all walks of life are welcome; even tourists can come and experience agricultural activities or participate in community gathering. In this way, revitalized agricultural heritage becomes the new focal point in the community, showing social centrality and creating spatial divergence. New settlement is extended from existing neighborhood, strengthening the idyllic landscape of rural life.



To operate a care farm, cooperation among various related parties is needed. Governments like city and village municipalities, Cultural Heritage Agency from Ministry of Education, Culture and Science, organizations like Farm Funding, Limburg Farm Foundation, Dutch Cultural Landscape Association, entrepreneurs like healthcare corporations and companies for insurance and infrastructure, and the residents themselves, are all closely linked in this collaboration. Active participation and commitment of all parties is of great importance.



development process



phase 1



phase 2



phase 3

5 reflection

This chapter is a reflection on the graduation project for the preliminary results of the research and design. The first part is a conclusion of this project, trying to give answer to the research question. The second part is a discussion about extending and extrapolating design approach in a broader context. The end part is a personal review on the whole project: how the research question is proposed, how the research and the design exploration is processed.



5.1 conclusion

The purpose of this design project is to explore the opportunity and possibility of adaptive reuse of agricultural heritage for economic development and social vitality while gaining preservation for itself. Through small scale design, I tested how rebuilding of landscape heritage (landscape elements and vernacular buildings) can create an elderly-friendly neighborhood. Agricultural functions of farming and living is restored on the care farm and a countryside lifestyle is established, while at the same time the care farm has easy access to basic living infrastructure in the village, so it's an ideal option for retired life. Meanwhile, agro-ecological functions of the landscape elements are enhanced and at the same time tangible and visible, showing an extra educational function of agricultural production.

If the idea of elderly neighborhood is pushed forward to all neighborhoods, since different age groups have different definitions and pursue living quality, the functions and services of landscape elements, or in this project standard orchard, are thus varied. An ideal community should benefit residents of all ages and all needs. The construction of community orchards is one of the methods to restore the elements of agricultural heritage, which proves its social, ecological and economic value in the community. In a regional scale, methods like building community orchards can make landscape heritage as a tangible local character to reinforce local spirits and specialize tourism brands, developing regional

tourism economy, and to form large-scale, systematic, local and dynamic landscape heritage preservation methods, preventing fragmented management.

The strengthening and disclosing of historical entities can serve as a catalyst and ensure that the villages and settlements in rural areas will be unique once more, and that an intriguing symbiosis will be created through past, present and future. New initiatives and adaptive reuse such as green care farms are essential and should not only have a supportive or additional function, but most of all be an innovative inspiration for the future.

Under the methodologies of landscape as process and landscape as infrastructure, I tried to understand how flows of material, energy, organisms shape landscape through motion, and in turn flows of landscape shape material and energy through boundary, pattern and territory. These processes are accumulation of time. Another important core methodology is research by design. Although design might seem to be anticipation with uncertainty and idealized, this prediction and vision is based on fact research and reasonable extrapolation. As far as this project is concerned, I think I've done quite much desk analyses and research, and there's never an end in doing research. When certain background knowledge is obtained, design should begin as another way of researching.

5.2 discussion

From the perspective of agriculture heritage, this project only discussed the possibility of small scale agriculture, not focusing on massive production. Currently Limburg Province is having a movement towards nature-inclusive agriculture; practicality and economic adaptability are two vital prerequisites. Traditional orchards cannot serve as the primary source of income for the agricultural economy. Strategies proposed in this project are mainly aimed at small-scale spatial structure in rural areas. But one possibility of extrapolating the idea of adaptive reuse of traditional farmhouses can be developing farming community in the future. With 17 million inhabitants of the Netherlands all connected in some way to the farming, distance between people's daily life and food production can be shortened and agricultural tradition can be transformed into one that makes a positive contribution to humanity and natural ecosystem.

Appropriate use can preserve and emphasize cultural significance of the heritage, especially rebuilding its original use which can reduce the impact on the heritage as little as possible. Despite the transforming concept of heritage protection from historical monuments towards historical context together with the monuments' physical and cultural environment, strategies and measures about landscape heritage are still on the way of improving. In this project, the monument and its surrounding are studied as a whole and discussed in the background of contemporary

society and culture. As tangible heritage, landscape elements will form an intangible social bond among inhabitants. Social links create a positive sense of identity which can influence the atmosphere and productivity of a whole city. The task for landscape architects, to put it in a simple way, is to suggest solutions to the problems and to help make this world into a better place. By understanding the history of the site, we can connect what is here and now with what is still lacking in order to meet people's needs and wants, now and in the future, and to rebuild or strengthen human-environment relations (Matthias, 2014). In this case, history is not just for the sake of history, but with an eye to the present and future, it's the authentic, recognizable, beautiful and rich landscape around us that, in ecological and social aspects, has specific functions.

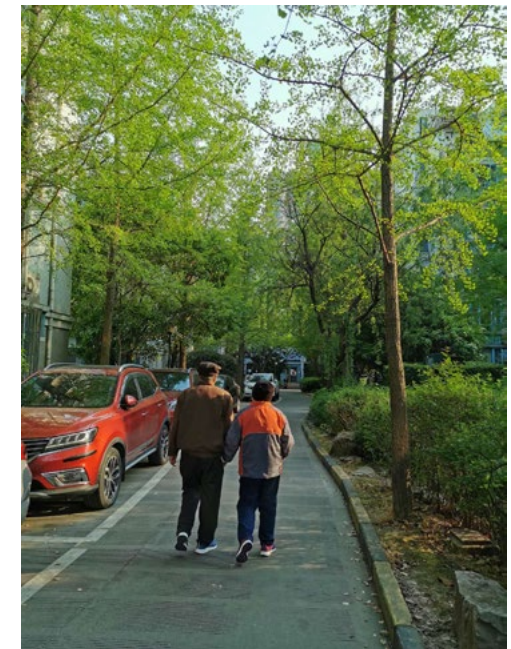
In a shrinking area that is seeking for new economic chances in post-industrial era, preservation and reuse of heritage should take local landscape capacity and economic capacity into account. Are private owners willing to keep the historical buildings and go back to historical agricultural form? The main reason for rapid decrease in high-stemmed orchards in 1950s was that these standard orchards were less profitable than low-stemmed ones. Development of traditional landscape heritage can indeed attract tourists and investment and boost healthy economic circulation, but there's also a concern of over-tourism. With the progressing technology, impact

of agriculture activities and social activities in rural area, including constructing and destructing impact, on surrounding natural space is increasing rapidly, and so is the counterforce from nature. Before 19th century, both eastern and western cities and villages were founded based on agricultural civilization. On one hand, the relationship between human and nature was mainly reflected in the simple ecological concept formed under the instinct of adhering to nature and primitive worship of nature; on the other, human had limited power to change nature. Yet since 19th century, the industrial revolution has made a qualitative leap in the social productive forces, greatly improved the ability of human making use of nature and fundamentally changed our attitude towards nature (Shan, 2009). Agricultural heritage focuses on the survival of human as well as the future of human. However, human-oriented design concept is not to emphasize the intrinsic value of human but to recognize our status in the natural world. In Parkstad that is studied in Harvest lab, people are more and more fully aware of the importance of respecting nature and the urgent problems of ecological environment and social economy. Harvest doesn't mean how much resource we can get from natural environment that seems to be sufficient, but rather a harmony of symbiosis of human and nature.

At the beginning of this graduate project, I wanted to focus on the problem of aging society in Parkstad for the reasons that, to a larger extent, aging society is a global problem and to a smaller extent, I was thinking what I can do as a landscape architect for my aging grandparents and about-to-retire parents. This January, I went back home for the Spring Festival but only stayed for one week before I returned to the Netherlands. The biggest reason was the wide-spread COVID-19; it was even worse when my grandma was in hospital for an early sign of dementia and my mother had to take care of her. Indeed, the year of 2020 is so special because of the virus. It began to spread in the Netherlands in more or less March. From the news it's such a sorrow to learn that nursing homes have been suffering greatly from the attack which then provoked thoughts about home care and precautionary care of old people and 'ironically' made my topic be more fitted into the

contemporary social context, thinking about how to improve a healthy lifestyle together with the natural ecosystem.

This outbreak of virus is somehow epochal. For every single person, we've got a chance to slow down our living pace and think about what should be cherished in our lives; we've got more time for family and friends in the quarantine; we're again putting emphasis on future living quality, rethinking about the relationship of human and nature. For landscape architects, fieldtrips and site visits are restricted, all conversation has to be taken place online, all work should be done on our own, which put higher requirement for our personal comprehensive ability. It's really a unique experience, and all efforts from the government and the university are sincerely appreciated to keep the system functioning on the basis of everyone's wellness.



6 reference

papers and books

- Albert, M. T., Richon, M., Viñals, M. J., & Witcomb, A. (2012). Community development through world heritage.
- Altieri, M. A., & Koohafkan, P. (2008). Enduring farms: climate change, smallholders and traditional farming communities (Vol. 6). Penang: Third World Network (TWN).
- Baas, H., Groenewoudt, B., & Raap, E. (2011). The dutch approach. In *The European Landscape Convention* (pp. 45-66). Springer, Dordrecht.
- Bailoni, M., Edelblutte, S., & Tchékémian, A. (2012). Agricultural landscape, heritage and identity in peri-urban areas in Western Europe. *European Countryside*, 4(2), 147-161.
- de Boer, B., Hamers, J. P., Zwakhalen, S. M., Tan, F. E., Beerens, H. C., & Verbeek, H. (2017). Green care farms as innovative nursing homes, promoting activities and social interaction for people with dementia. *Journal of the American Medical Directors Association*, 18(1), 40-46.
- de Boer, B. S. (2017). Living at a green care farm: an innovative alternative for regular care in nursing homes for people with dementia. *Datawyse/Universitaire Pers Maastricht*.
- Bohannon, R. W. (1997). Comfortable and maximum walking speed of adults aged 20—79 years: reference values and determinants. *Age and ageing*, 26(1), 15-19.
- Bontje, M., & Musterd, S. (2012). Understanding shrinkage in European regions. *Alexandrine Press*.
- Boukhari, S. (1996). Beyond the monuments: A living heritage. *UNESCO sources*, (80), 6-7.
- Burkhard, B., Petrosillo, I., & Costanza, R. (2010). Ecosystem services—bridging ecology, economy and social sciences. *Ecological complexity*, 7(3), 257.
- Curvers, N., Pavlova, M., Hajema, K., Groot, W., & Angeli, F. (2018). Social participation among older adults (55+): Results of a survey in the region of South Limburg in the Netherlands. *Health & social care in the community*, 26(1), e85-e93.
- Davis, C. M., & Meurk, C. D. (2001). Protecting and restoring our natural heritage: a practical guide. Department of Conservation.
- Demestihias, C., Plénet, D., Génard, M., Raynal, C., & Lescourret, F. (2017). Ecosystem services in orchards. A review. *Agronomy for Sustainable Development*, 37(2), 12.
- Elzerman, K., & Bontje, M. (2015). Urban shrinkage in parkstad limburg. *European Planning Studies*, 23(1), 87-103.
- Gies, T. J. A., Nieuwenhuizen, W., & Smidt, R. A. (2014). Vrijkomende agrarische bebouwing in het landelijk gebied (No. 14.2. 325). *InnovatieNetwerk*.
- Hermey, M., & De Blust, G. (1997). Punten en lijnen in het landschap.
- JIN, Y., & YAN, G. T. (2015). Sustainable Development of Cultural Landscape Heritage Based on Community Participation. *Chinese Landscape Architecture*, 3.
- Jixiang, S. (2009). The Raising of Cultural Landscaping Heritages and International Common Opinion 2 [J]. *Architectural Creation*, 7.
- Kuipers, M. C., & de JONGE, W. (2017). Designing from heritage: Strategies for conservation and conversion.
- Martinez-Fernandez, C., Audirac, I., Fol, S., & Cunningham-Sabot, E. (2012). Shrinking cities: Urban challenges of globalization. *International journal of urban and regional research*, 36(2), 213-225.
- Meurs, P. (2016). Heritage-based design. *TU Delft*.
- Pallagst, K., Wiechmann, T., & Martinez-Fernandez, C. (Eds.). (2013). *Shrinking cities: international perspectives and policy implications*. Routledge.
- Patricia J. Braaksma, Maarten H. Jacobs & André N. van der Zande (2016) *The Production of Local Landscape Heritage: A Case Study in The Netherlands*, *Landscape Research*, 41:1, 64-78
- Renes, J., de Graaf, A., Hospers, G. J., Péro, M., Stegmeijer, E., Strolenberg, F., & Witsen, P. P. (2014). Attract and connect; population decline and [the] heritage in Europe, with practical examples from Germany, the UK, France and the Netherlands.
- Ročak, M., Hospers, G. J., & Reverda, N. (2016). Searching for social sustainability: The case of the shrinking city of Heerlen, The Netherlands. *Sustainability*, 8(4), 382.
- Ruth, M., & Franklin, R. S. (2014). Livability for all? Conceptual limits and practical implications. *Applied Geography*, 49, 18-23.
- Sandhu, H., Porter, J., & Wratten, S. (2013). Experimental assessment of ecosystem services in agriculture. *Ecosystem Services in Agricultural and Urban Landscapes*. Oxford, UK: Wiley-Blackwell, 122-136.
- Shank, K. S. H., & Cutchin, M. P. (2016). Processes of developing 'community livability' in older age. *Journal of Aging studies*, 39, 66-72.
- Schulz, F., & Wiegand, G. (2000). Development options of natural habitats in a post-mining landscape. *Land Degradation & Development*, 11(2), 99-110.
- Sugiyama, T., & Thompson, C. W. (2007). Outdoor environments, activity and the well-being of older people: conceptualising environmental support. *Environment and Planning A*, 39(8), 1943-1960.
- Taylor, K. (2008). *Landscape and Memory: cultural landscapes, intangible values and some thoughts on Asia*.
- Thorbeck, D. (2013). *Rural design: a new design discipline*. Routledge.
- Verbeek, H., Zwakhalen, S. M., Schols, J. M., & Hamers, J. P. (2013). Keys to successfully embedding scientific research in nursing homes: a win-win perspective. *Journal of the American Medical Directors Association*, 14(12), 855-857.
- Zhang, Y., Xie, Y. S., & Hao, M. D. (2011). Study on characteristics of apple orchard soil moisture in gully region of Loess Plateau. *Soils*, 43(2), 293-298.

documents

Heritage Act 2016

Intergemeentelijke Structuurvisie Parkstad Limburg “ruimte voor park & stad”

manual IBA Parkstad Limburg summer 2015

Parkstad Limburg Energietransitie (PALET) PALET 3.0

programma_nationaal_landschap_zuid-limburg_2018-2021

Provinciaal Omgevingsplan Limburg (POL) 2014

Staatsbosbeheer 2020 Passion and pragmatism

Structuurvisie Heerlen 2035

verkenning stad-landzones

websites

<https://boerderijenfonds.nl/>

https://europa.eu/investeu/projects/green-care-farms-elderly_en

<https://natura2000.eea.europa.eu/>

<https://opendata.cbs.nl/>

<https://parallel.co.uk/netherlands/>

<https://parkstad-limburg.buurtmonitor.nl/>

<https://portal.prvlimburg.nl/>

<https://rce.webgispublisher.nl/>

<https://rijksmonumenten.nl/>

<https://www.academischewerkplaatsouderenzorg.nl/living-lab-ageing-long-term-care>

<https://www.agrarischerfgoed.nl/>

<https://www.anwb.nl/>

<https://www.cultureelerfgoed.nl/>

<https://www.demijnen.nl/>

<https://www.fietsnetwerk.nl/>

<https://www.gezondheidsatlaszl.nl/>

<http://www.handvatnationaallandschap.nl/handvatviewer/start>

<https://www.ikl-limburg.nl/>

<https://www.jaap.nl/>

<https://www.limburgsezorgboeren.nl/>

<https://www.natuurparkenlimburg.nl/>

<https://www.routeyou.com/>

<https://www.statista.com/>

<https://www.viabelgica.nl/>

<https://www.visit Zuid Limburg.nl/>

