Walkscapes

Redefining the path network in Emscher Landscape Park

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I had interest in building activities since I was very young. When I was a little child, I made every effort to build my own ‘house’ with wasted cardboards in my home. When there was no cardboard, I built it with my arms, legs, blankets and a little bit of imagination. I wished I could study Architecture in college, but I started Landscape Architecture studies accidentally. I found that a garden can be more fascinating than a building, since plants never stop growing while bricks just crack. This finding made me settle down in the School of Landscape Architecture. However, my interest in human scale constructions never fade.

I had an impressive trip to Ruhr area, Germany in the summer of 2015. Famous for industry, Ruhr is rich with giant installations dedicated to massive production. On the one hand, I enjoyed the visit to the parks and museums based on previous factories. On the other hand, I struggled a lot while I was trying to approach the parks. I realized that the contradictory situation is reasonable, because most of the area was made for wheels instead of feet at the beginning. The parks were transformed for slow traffic, but they are still obstructed by space for wheels. Such a tension triggered my curiosity.

Talking about walkers’ paradise, what came to people’s mind are often Florence, Rome, La Rambla... or any other historical sites full of dense, skinny and often meandering streets. Those places are favored by walkers because they are made before wheels came into being. Ruhr might never appear on such a list, which doesn’t mean that Ruhr won’t become one. You can imagine what you might encounter in Florence: fancy old buildings, streets with stones, folk artists. They are nice, but they are predictable. Can you imagine walking in the world of machines? Is that sounds sounds like a science fiction? The charm of Ruhr is unparalleled and irreplaceable. According to the existing practice, it’s completely doable to position tiny human in a giant size space, decently.

Such a wish is not my own random daydream. It’s also a part of the official master plan of Ruhr area. Emscher Landscape Park Master Plan was firstly proposed during International Building Exhibition (IBA) 1989, which is “designed to make the Emscher region’s landscape more attractive and give it a more comprehensive urban planning system.” (IBA Emscher Park Project catalogue 1999). However, Rome is not built in one day. In many parts of the region, the urban landscape is still highly fragmented at the eye level. I see the objective urge to strengthen the link between segregated park lands.

Therefore, I decided to work on the space for walking, in an area which is not established for walkers. I’d like to redefine the leisure path network in Emscher Landscape Park, so that people do not only enjoy the their designated destinations, but also enjoy the way leading there. Last but not least, all these experiences are based on the unique setting in Ruhr. This journey, starts here.
Abstract 5

1 Introduction: the restrained feet ................................................................. 6
  1.1 Background .............................................................................................. 7
    1.1.1 Fascination ....................................................................................... 7
    1.1.2 Ruhrgebiet ......................................................................................... 9
    1.1.3 Emscher Landscape Park vs. fragmented landscape ......................... 10
  1.2 Problem statement ................................................................................... 12
  1.3 Aim & Focus ........................................................................................... 13
    1.3.1 Aim ................................................................................................... 13
    1.3.2 Focus ............................................................................................... 13
  1.4 Research Questions .................................................................................. 14
    1.4.1 Main research question ..................................................................... 14
    1.4.2 Sub research questions ..................................................................... 14
  1.5 Methodology Framework ......................................................................... 15
    1.5.1 Methods ........................................................................................... 15
    1.5.2 Process ............................................................................................. 15
  1.6 Relevance ................................................................................................. 17
    1.6.1 Social relevance ................................................................................ 17
    1.6.2 Academic relevance .......................................................................... 18
  1.7 Outline of project ..................................................................................... 19

2 Theoritical framework: step into the garden ........................................... 20

  2.1 Why do we walk ....................................................................................... 21
    2.1.1 Leisure walk in retrospective ............................................................ 21
    2.1.2 Tactile scale vs. visual scale ............................................................. 23
  2.2 The experience of walking ....................................................................... 24
    2.2.1 Different aspects of experience ......................................................... 24
    2.2.2 Notating the experience: precedent works ........................................ 24
    2.2.3 Notating the experience: new scores for walking ............................. 28
  2.3 The space for walking .............................................................................. 29
    2.3.1 Formal space vs. perceptual space ................................................. 29
    2.3.2 A comparison between two trails ..................................................... 29
    2.3.3 Characteristics of a favored trail ..................................................... 32
Paths as framework in built environment
(Source: Hans Dieter Schaal, 1978)
This thesis investigates the significance of leisure walking and the spatial dimensions of pleasant walking space, in the context of fragmented urban landscape. Pleasant walking experience is intended to improve the living experience of citizens, and the space for walking is seen as a tool to reduce the fragmentation. Ruhrgebiet in Germany was selected as the testing site, since the fragmented landscape there is representative and unique. Basic characteristics of pleasant leisure walking space was concluded through comparison between positive and negative cases. Uniqueness of fragmentation in Ruhr was concluded analyzed through mapping and case studies. Based on these inputs, design proposals were made to illustrate how can we create pleasant walking experience and use it as a tool to reduce the urban fragmentation. Last but not least, conclusions and limitations of the attempts were discussed; and future recommendations were provided.

Keywords

Ruhrgebiet; Park system; Path network; Walking experience
1

Introduction: The restrained feet
1.1 Background

1.1.1 Fascination

My story started with a journey to Ruhrgebiet. At that time, I visited several renowned parks and museums there, which fascinated me deeply. However, I was disappointed by the ways leading to the attractions, the dull grey roads in the city. There were so many highways and railways to cross. As a pedestrian, I had to take detours now and then. That was frustrating. The impression was so strong that it came back to my mind constantly, which triggered my further thoughts.

Why did I still walk even it was ‘suffering’? Why didn’t I just take a bus? Because the desire to explore through experience roots deeply in my genes. Through walking, first human beings recognized their territories. (Careri, 2003) Human had already walked for more than 10000 years. It was only in recent decades that people are able to travel with rapid speeds. Though slow and inefficient, walking is simply irreplaceable.

The habitat for human has been radically reshaped since industrial revolution. We are prone to build our cities for vehicles. Compared to feet, wheels requires completely different conditions. When cities are established for wheels, the feet get restrained. For instance, from the pedestrian perspective, crossing an 8 lane motorway is not only frustrating, but also dangerous. In the case of Ruhrgebiet, the most disturbing thing in walking experience is the lack of coherency.

Fig_1. A line made by walking.
(Source: https://richardlong.org)
Fig_2-10. Typical views of Ruhrgebiet.
1.1.2 Ruhrgebiet

Ruhrgebiet is located in the west of Germany, state of North Rhine-Westphalia. Rhine flows through its west side. Three small rivers, Ruhr, Emscher and Lippe run through its hinterland from east to west and end up in Rhine. The topography is relatively flat here, with typical lowland features.

Industry plays a key role in the history of Ruhr. Before Industrial revolutions, there were only a few towns in Ruhr, and there was nothing more than trading and agriculture. The boom of Ruhr started from 1800s, with the development of mining technologies and transportation infrastructure. (Keil & Wetterau, 2012) Tons of ores were discovered, extracted, manufactured, shipped, and sold. After one century’s prosperity, the heavy industry finally reached its limit. By that time, the whole region was filled up with industrial installations and unemployed workers. In order to revitalize the area, structural changes were made based on the industrial legacies. Basic facilities, such as housing and transits, were renovated. Numerous parks were made on ever contaminated industrial sites, which inherit the spirit of the past times.

Nowadays, Ruhr is not in the state of decay anymore, it’s not yet an extremely well-functioning area neither. It can be interesting for visiting, but not overwhelmingly attractive for working and living. In terms of the life there, it doesn’t provide as many cultural activities as other metropolises do. In terms of physical space, the urban landscape is strongly fragmented.
At first glance, the satellite map of Ruhrgebiet looks very confusing. It’s hard to recognize controlling structures among the finely divided patches. There’s no doubt that the landscape here is fragmented.

Fragmentation can be problematic. Flora and fauna hurt first. Due to massive human occupation, they lost both their habitats and the opportunities to migrate. (Ahern, 2013) For human, fragmentation is often caused by construction of new infrastructures and districts, or radical reconstruction works, which do not necessarily contribute to more pleasant daily commuting or strolling experience. Moreover, fragmentation often goes along with juxtaposition of different land uses, which makes it difficult for people to cognize their environment. According to Lynch, legibility is the premise of most positive urban developments. (Lynch, 1960) All the initiatives come from the understanding of existing situation.

The fragmentation is Ruhrgebiet is mainly caused by the cutting effect of infrastructures. Since 1900s, dense railway networks had been built for freight. Years passed by, built-up areas all grew with railways. Starting from 1960s, private cars became popular. Motorway networks followed soon, and divided the land into small plots. Land for transportation takes up 7% of the whole area in total. (Keil & Wetterau, 2012) Infrastructures do enhance connection on large scale. Paradoxically, they create isolation on smaller scale. An access for drivers might be a fence for pedestrians. In Ruhrgebiet, this phenomena is extremely obvious.

Emscher Landscape Park (ELP) can be seen as the ‘remedy’ for Ruhrgebiet. As a system, it’s supposed to stitch the fragmented patchworks. The Master Plan of Emscher Landscape Park was proposed in 2006, marking a new era in Ruhrgebiet. (Uttke, 2008) This time, planners gave priority to all types of connections. As a concept (Fig_18), the whole ‘park’ was colored with light green. Within the ‘park’, theme trails were planned to connect cultural landmarks. Interestingly, though being dominant, all railways and motorways were omitted in this map.

However, the connection in the plan is rather a concept. Just zoom in a random spot (fig_16): multiple land uses can be found within the conceptual green, and the boundaries are often defined by infrastructures. The green space acts as filler instead of framework. A framework confronting fragmentation, is still rather vague.
Fig_16. Landuse of ELP in Duisburg Hafen  
(Source: Metropolis Ruhr, 2012)

Fig_17. Perception of fragmentation  
(Source: Designing greenways, 2006)

Fig_18. Master Plan of ELP  
(Source: http://emscherlandschaftspark-blog.de)
1.2 Problem statement

As a park system, Emscher Landscape Park is crucial to reduce the fragmentation in Ruhrgebiet. Meanwhile, it can increase the attractiveness of the area. What is missing in this system is the comprehensive framework from pedestrian perspective. To be specific, the pedestrian path network in ELP should be strengthened.

Why do we need a park system instead of parks? A park system is more than the sum of the parks; the main added value of a system is its coherence. As it is mentioned in previous sections, fragmentation in Ruhrgebiet is problematic, especially from pedestrian perspective. People need to understand their surroundings. (Lynch, 1960) A coherent system provides clues for understanding, thus it is the tool for defragmentation.

Why it is necessary to strengthen the links? A park system consist of parks and the green passages linking the parks. In Emscher Landscape Park, there’s no doubt that the individual parks have been successful already. But the links can be rather vague in many parts.

Why pedestrian perspective is crucial? Because a park system is mainly experienced in two ways: cycling and walking. In the context of ELP, the walkers call for more attention. Since the roughness of existing path network is acceptable with the speed of 15km/h, but unbearable with the speed of 5km/h. Walkers needs more finery details.

Fig_19. Missing links in ELP
1.3 Aim & Focus

1.3.1 Aim

As mentioned in previous sections, a park system can glue the fragmented urban patches together. Inside the park system, the path network glue the park patches together. The quality of paths can only be judged by the users, namely the cyclists and pedestrians. Compared to cycling experience, the walking experience is less satisfactory.

Therefore, my hypothesis is that making the path(s) in Emscher Landscape Park more walkable could contribute to a better park system, as well as better living experience for the citizens. And there are two aims of the project. Firstly, I’d like to explore how can I design from the experience perspective in general. Secondly, I’d like to apply the principles to deal with the disturbing walking experience caused by fragmentation.

1.3.2 Focus

The main focus of this project is the walking experience. Nowadays the amount of pedestrian is considerable, but not all of them are favored by pedestrians. Therefore I’d like to investigate on the spatial dimensions of pleasant walking experience.

To project my concerns on concrete situations, the specificity of Emscher Landscape Park will also be stressed.
1.4 Research Questions

1.4.1 Main research question

How can we design paths through pedestrian perspective?

1.4.2 Sub research questions

1. Why leisure walking is important for urban dwellers?

In order to provide better walking experience to people, it’s necessary to understand what’s the meaning of leisure walking for them. That may varies. In this project, the focus is the people who lives in cities: the people who face the fragmentation every day.

2. What are the components of pleasant walking experience?

Though walking is a simple action, it involves the whole body and all the sensory channels. To design explicitly, it’s necessary to deconstruct the walking experience.

3. What kind of space contribute to pleasant walking experience?

All pedestrian paths are intended for pedestrians but not all of them are favored by pedestrians. If the secrets of successful paths can be recovered, they can be constructive to future designs.
1.5 Methodology Framework

1.5.1 Methods

The research methods consist of two parts: common research methods and research methods specially developed for this project.

Common research methods includes observation, literature review, mapping, case studies, and design experiments. Observation is used in collecting information and examine hypotheses, especially observing the behavior of people in already established situations. Literature review helps to define the scope and focus of the project, as well as provides reference for further innovations. Mapping is useful to extract certain set of information and find the hidden relationships among different layers of geographical information. Case studies were used to gain experience from past practices, and the selection of cases were closely related with the research and design questions. Last but not least, design experiments would be used to explore possible proposals.

The uncommon method I applied in this project is notation, which is specially developed to understand the experience of walking. Walking experience is comparable to symphony, for the fact that they both change with time and involve multiple ‘tracks’. If music can be scored with specific scores, then walking experience is also possible to be scored and understood. Precedent works showed using the scoring technique to notate the experience in motion in general is feasible. Based on that I developed a new set of scores specially for the walking experience. Detailed description of the development and application of this method can be found in the following chapter.

1.5.2 Process

The whole project is divided into 3 phases. Firstly, in the orientation stage, based on on-site experience and precedent researches, the framework of the project is established. Secondly, in the research stage, case studies and site analysis run parallel, all cases chosen are related specific issues on site. The research questions are mainly answered with literature reviews and studies. The design questions are defined according to the mapping and comparison. Last but not least, in the design stage, the design is made with the conclusions in stage 2 as reference.
Fig. 24 Methodology framework
1.6 Relevance

1.6.1 Social relevance

Attractiveness increase the regional competitiveness

Nowadays, people are less and less bounded with land, and they have unprecedented freedom to choose a place to work and live. Globalization endows people with more mobility. In creative industries, one can establish his or her own business completely online. In manufacturing industries, it’s possible to build factories where there’s neither resources nor customers, as far as there’s affordable logistics.

In such a context, whether a place is interesting and attractive become the dominant concern when people select the place to live. Recreational opportunities, cultural events, and mature service industries become significant for more and more people. Statistics shows that there is positive relevance between ‘interestingness’ and economy growth. (Speck, 2013)

Ruhr has an advantageous traffic location. If living in Ruhr become something attractive, the future of Ruhr is predictably prosperous. In Germany, according to Gerhard Bosch, more and more people turn to live in cities like Munich, because these cities are more interesting. (Scheck, 2013) Though Ruhr is not an area like Munich, it is unique. It is famous for its industrial past as well as the ambitious transformations in post-industrial area. It is time to imagine the next era of Ruhr.

In this project, refining the path networks in Emscher Landscape Park will add a whole new layer to the ever successful project. Thus better recreational opportunities are created. To a certain degree, it’s supposed to attract more people to visit, even live here. According to the experience of other cities, the attracted people is the starting point of all the other exciting developments.

Frank Goosen says: ‘On mild summer evenings I enjoy the view of my city while standing on the railway bridge at Lohring in Bochum. I can see the Mercedes tower at the station, the Fiege brewery, the new high-rise tower of the municipal services (which looks a bit like the monolith from “2001”), the steepies of the Propstei and Christus churches, and to the far right I can even see the pit shaft tower of the mining museum. And then I say to myself: Well, it’s not a beauty, is it’.

Fig_25. Quotation from Frank Goosen, author and cabaret artist, assistant chairman of the supervisory board of VfL Bochum. (Source: Emscher 3.0, 2013)
1.6.2 Academic relevance

Bridge the gap between formal space and perceived spaces

For spatial designers, the way of working has been changing with the development of technologies all the time. Spatial designers in old times might not have large scale projects as we do today. And they could only gain information by visiting the site physically. Furthermore, all their observations are made at eye level. Today, armed with advanced techniques, designers have the opportunities to deal with extra-large projects, for example, imagine the future of Europe. Since the transmission of information is so convenient, one can realize a design without visiting the site at all. Numerous information can be found on multiple medias, one can know a place from either helicopter views or the bottom of the crust.

Meanwhile, the way we experienced space, haven’t changed a lot. We can only experience the space by moving through it.(Gibson, 1954) How we experience a garden today is same as the first time when garden came into being: we walk, we see, we hear, we smell. Experience matters. Be it a regional planning or a mini patio, once a spatial design is down to the earth, it’s meant to be experienced physically.

Nowadays, it’s not surprising that a beautiful idea on paper doesn’t work at eye level. There’s a gap between the world imagined by the designers and the actual situation perceived by the users. (Nijhuis, 2015) Because it’s just too easy to ignore the experience today.

To produce the spatial designs which really work in space, designers have to understand how the space is perceived and used by the users. In this project, detailed analysis of walking experience was made, which acts as a brick to bridge the gap.
1.7 Outline of project

The project work can be divided into three phases: research, analysis and design. These subjects are introduced respectively in following chapters.

Chapter 2 “Step into the garden” shows all the investigations of walking. The significance of walking was concluded from a review of the history of walking and precedent discussions on experience. To understand the experience explicitly, notation techniques were developed based on previous works. With this approach, 2 trails were analyzed thoroughly, and characteristics of quality walking space were summarized from the analysis.

Chapter 3 “Wandering in Ruhr” takes you from generic phenomena to a specific site: Ruhrgebiet. Firstly, the mechanisms of urban development in Ruhrgebiet were discovered by tracing back to the history. A site, the city of Oberhausen, which contains all the mechanisms was selected for further investigation. Three issues here are park system as a whole; path network within the park system; and experience of the paths. Parallel analysis on these issues were done for reference cases and experiment site. Through comparison, diagnosis on existing sites were concluded.

Chapter 4 “A new walking paradise” introduces design proposals for problems mentioned in Chap 3. Firstly, Paths were categorized into 3 types, design principles for the strategic types were defined. Secondly, based on these principles, paths on the sampled area were reorganized, with detailed highlights.

Last but not least, Chapter 5, “Looking back to the labyrinth”, reviews the whole project. Conclusions were drawn according to the results; reflection of the relevance between hypothesis and results was discussed.
2

Theoretical framework: step into the garden
In this project, the scope of research is leisure walk, which is different from commuting. It’s not utilitarian. It’s simply a way of pastime.

2.1.1 Leisure walk in retrospective

Surprisingly, walking for recreational purposes is not a human instinct. Instead, it’s mainly shaped by our culture. And it only gained popularity in modern times.

In Western culture, leisure walks were rare until the end of 18th century, in contrast, walking on public roads aimlessly used to be seen as being insane. (Solnit, 2000) The revolution of walking appeared in gardens. At that time, the world became safer than previous times, and the nobles didn’t have to engage in military activities often. More time was spared for leisure purposes. (Solnit, 2000)

Strolling gardens were made by the people who had no bodily work anymore. Very early examples mainly existed in royal estates. Since Renaissance era, they became popular among upper classes. Stourhead Garden is a typical example. Here, visitors are encouraged by elaborately manipulated vistas and artefacts, so that they can move forward intuitively.

Industrialization liberate human from endless food production. For the first time, leisure is not the privilege of upper class. Consequently, public parks came into being. At that time, the industrialized cities were dirty. Parks were seen as remedy to
messy urban life. Central Park is one of the most representative example of that time. The boundary between park and city is sharp. And the park was shaped as a green world in contrast to the city, where spacious ways for pedestrian were made. The nature is the primary amenity in the park, especially in the early stages.

In recent decades, more and more people looked for the hybrid of city and nature. Therefore, besides green, the open space turned to contain more elements. The notion of greenway came on the stage in early 1990s. Greenway was first defined as a linear recreational route associated with rivers, forest and other scenic resources. [Little, 1990] Later, Greenways as linear public open space in dense downtowns were also made. The boundary between recreational space and non-recreational space became vague. Leisure walk found its place beyond the park.

People are never satisfied with their territory. Traditionally, recreational activities were linked with scenic places. However, it’s becoming more and more common that recreational activities are found in ever contaminated lands. So that the territory of leisure walk is expanded as well. Abandoned rails, landfills may also be favorable places for leisure walks. Famous examples are High Line and Freshkill Park in New York. Many parks in Ruhr also belong to this type.

Through retrospect of the history, it’s evident that the leisure walk was created by culture, and can be reshaped by culture. It’s even gaining more and more significance. On the one hand, technologies can expand the reaches of human. On the other hand, human may also get isolated from the physical world because of technologies. A walk, may help people rebuild the link with their surroundings.
2.1.2 Tactile scale vs. visual scale

When the distance between the observer and the objects observed changes, the perception of the observer changes as a consequence. According to Bernard Lassus, there are mainly two kinds of experience: tactile and visual. (Lassus, 1998) Imagine you are standing in front of a blossom tree. You can feel the tenderness of the petals without touching them. This is tactile. When this tree appears as a vague figure on the distant horizon, you may recognize it no more than a blossom tree. This is visual.

Tactile experience is can only be found when the distance between the observer and the object is close, and the relative speed between them is rather slow. It helps people relate themselves to the tangible world, with numerous authentic, concrete details. Walking provides tactile experience and visual experience at the same time, particularly tactile experience.

There are numerous reasons to take a walk. It can be done for the sake of health. Certain amount of walking is proved to have positive relevance with many health indexes. (5 surprising benefits of walking, 2015) Walking is also related to mental health. Leisure walk, especially in a natural setting, has restorative effects towards fatigue minds. Walking might also be endowed with many cultural meanings. However, in my perspective, the most important reason to take a walk is to gain the tactile experience of one’s surroundings. Since only in this case, the action of walking is irreplaceable.
2.2 The experience of walking

2.2.1 Different aspects of experience

What do we actually gain while we walk? A lot. While we walk, our bodies are moving constantly, so that we gain kinesthetic sense. It includes ascends and descends, turns, physical fatigue, etc. While moving, all of our sensorial channels are activated. We see, we hear, we smell, we touch. There are also synthesized perceptions. For instance, our perception of space. We don’t only see the physical proportions, but also feel the oppression or isolation from our bodies. Therefore, the experience of walking is a synergy of all the information from all sensorial channels.

Among these senses, the kinesthetic sense and the vision are the most important two. For most people, the visual information takes up 80% of the total information inputs. And vision and motion are interdependent. [Gibson, 1954] One can’t moving forward without seeing it, and can’t see anything more without moving forward.

2.2.2 Notating the experience: precedent works

How can we understand walking, such a sophisticated experience? The scores of music might be referred. To a large extent, walking is similar to music. They are both in motion, where time stream is integral. And they are both multithreading. Taking this analogy, we can develop a set of score to record the experience of walking.

Though there is not yet a well-defined score for walking, there were numerous attempts to notate the experience in motion. These precedent examples are valuable cornerstones for a new language.

Lawrence Halprin is one of the first people who use notation in landscape designs. In Cities, he clearly proposed that the visual language to describe movement was in need. ‘Since we have no technique for describing the activity that occurs within spaces, we cannot adequately plan for it...We need a system to program movement carefully and analyze it, a system which will allows us to schedule it on a quantitative as well as qualitative basis.’ He used notation to describe both objective movement and subjective experience of movement. The diagrams like function curves were to describe the run of a fountain, while the time line was an evaluation of walking experience in two areas. His notions and attempts were groundbreaking, however, his notation was too abstract to be understood easily. Logically, it was not widely adopted.

Another systematic attempt is done by Appleyard, Lynch and Myer. In View from the road, they indicated that the visual sequences for observer in
Fig. 34. Sensories involved in walking

Fig. 35. Motion of fountain. Laurence Halprin. 1963. (Source: Cities)

Fig. 36. Perception along a route. Laurence Halprin. 1963. (Source: Cities)
motion was an important design issue in general. As an illustration, the driving experience on highways is analyzed. They picked a highway route in Boston and showed various aspects of the experience through several linear drawings.

The first drawing shows the objective aspects of the journey: the motion itself and the space it crossed. In which the motion of the vehicle, the motion of moving objects in visual field, the spatial characters, the proportion and scale of spaces, and light were all included. The second drawing (Fig_39) shows the subjective aspects of the journey: the sense of orientation. Here the perceived elements were categorized according to Lynch’s previous theory: the 5 elements in The image of the city. This is based on the physical reality, but only generated by and exists in perceiver’s mind. It can be seen as the interpretation of the route. Photos and iconic drawings were also added to help readers understand the environment visually. Finally, the rhythm of the route is roughly gained through marking the major perceived objects along the way.

Their approach is holistic. It covers all major aspects of driving experience and provides a detailed depiction of each aspect. However, limitations are inevitable. Firstly, it only suits for analyzing the driving experience. All the transitions on drawings happened within seconds. If it is strictly applied in walking routes, many important details, for example, the sound, will be missing. Secondly, the cognitive value of routes was over emphasized. The objects in vision were categorized into 5 ‘image’ elements. Though the importance of legibility and cognition can’t be denied, nobody perceive the environment as concepts. They see buildings and roads, instead of landmarks and edges. In terms of experience, the second diagram might be over abstracted, and the intuitive aspect-emotional response was neglected.

In recent works, more types of sensory experience and more advanced techniques were applied. While depicting the route from town centre to a garden, Saskia de Wit used 4 axis to show the rise and ascend, turns, pavement textures and sounds along the trip. She used length, instead of time, as the unit of the axis. Compared time, length has a closer relationship with space. Therefore her drawing is easier to understand than Halprin’s ones. Although the time is not noted on paper, the reader can only read the axis from one side to another, thus the time sequence is reproduced automatically while reading.

With the help of digital models of Stourhead landscape garden, Steffen Nijhuis showed the transition of light conditions and heights along the main walking routes in the garden in different periods (Fig_41). Through his drawings, we can clearly see the changes from time to time, as well as some co-relation between location and experience (light and dark). This drawing provides us with objective and explicit clues of walking experience. But it’s only possible to accomplish such high quality works when there’re sufficient data and well trained specialists.

All these works are great in terms of being innovative and perspective. However, none of them can be immediately applied in studying the experience of walking. Some of them only focus on limited aspects of experience (visual only or tactile only), some of them are too abstract to be understood, some of them are too comprehensive

Fig_40. Notation of sensory experience by S. de Wit. 2014 [Source: Hidden Landscapes]

Fig_41. Route in Stourhead by S. Nijhuis. 2015 [Source: GIS based landscape design research]
to be conducted easily, some of them is not suitable to describe low speed movements, some of them are not often feasible due to requirements of reliable data.

A designer doesn’t have to comprehend all details about walking thoroughly, instead, he or she only needs a simple tool to get a grip on the reality quickly, thus he or she will obtain sufficient clues for future design decisions. Therefore, a concise, feasible, and comprehensive approach is in need.

### 2.2.3 Notating the experience: new scores for walking

Based on precedent works, I developed a new set of scores to record the walking experience. The View from the road was taken as a main reference, while Hidden Landscapes is also a source of inspiration. The main purpose of these scores is to provide a quick but relatively explicit understanding of walking experience on certain routes.

Three essential aspects of the experience are taken into account: the kinesthetic experience, the visual experience and the auditory experience. These 3 aspects are recorded with 5 linear diagrams. The first one is series of visions seen on the way. The second one is the motion. The curvy route is simplified into a straight line, while the turns are indicated with arrows. Ascending and descending are marked with darkening and lightening of color. A road crossing is showed with a ‘x’, the following number is the amount of turns the walker can choose from. Scale and proportion of the space in which one cross is showed with iconic sections. The sounds on the way are illustrated by curves with different colors. Last but not least, the feeling is marked on a line. To be simple, emotions were categorized into 5 basic ones: joy; sadness; anger; disgust; fear.

In application, the researcher should firstly just walk along the selected route as a normal stroller, and try to avoid interruptions on the way. As soon as the walk is finished, the researcher should record his or her emotional changes immediately. To record the object surroundings, several same journeys can be taken afterwards.

Except the emotion, the others should be scored as precise as possible, though errors are inevitable. Emotion is indeed subjective, however, many feelings are common among human beings. For example, speedy vehicles are regarded to be dangerous by most of the pedestrians. Therefore individual’s emotional experience provides enough clues for investigating specific physical conditions for certain feelings. In following chapters, this set of scores is used to analyze the experience of walking.

Fig. 42. Scores for walking experience
2.3 The space for walking

2.3.1 Formal space vs. perceptual space

Sometimes, the space intended for leisure walks may not be favored by walkers. Why some parks are always crowded, while some others are ignored? There is a gap between the formal space and the perceptual space. A design is often made from helicopter view, in a static way, while the space is actually seen from eye level, during constant movement. Some ideas could be beautiful on posters, but they might not be perceived and understood by users at all.

2.3.2 A comparison between two trails

In order to understand how trails are actually perceived by users, I took 2 trails for further investigation, with the score as a tool.

Length and popularity are the criteria for selecting routes. According to popular strolling routes in tourist guides, I assume that 1km~3km is a suitable distance for a leisure walk. In Google rates, many people suggested that the Vondel Park in Amsterdam is 'a perfect place for a walk'. Besides, the park is exactly 2 km long on East-West direction. Therefore I took the walk on E-W direction in Vondel Park as a positive example to analyze. The relatively negative example came from my site: Emscher Landscape Park. This piece is not in a 'park', but it’s supposed to serve pedestrians. As you can imagine, is not highly appreciated by users.

Due to its excellent accessibility and decently designed space, Vondel park is widely used by both local people and tourists since it was born. I started my journey there at the east entrance. Every time a crossing came, I followed the way where most pedestrian appeared at that moment. In most cases, this route coincided with the major paths-the wide paved lanes. In a few cases, I entered tranquil alleys. New views appeared constantly all the way, but repetition was easy to be found. The space was never cramped, loose vegetation and open lawns enabled me to see the city beyond the park all the time. Birds' songs and people's relaxed talks were heard constantly. Generally, I felt peaceful and happy along the journey, except a few moments that vans came to me on a narrow lane.

The Emscher Landscape Park is a regional initiative to regenerate the ever contaminated industrial land, and the paths there were designed as connector among all types of urban fragments. The lane I took could be seen as an epitome of the whole region, for the complexity of its context. I took a relatively straight line, since there were no many choices on the way. Different subjects were introduced one after another, and complicated feelings were experienced in many occasions.

If we look at the same aspects of different routes
Fig_43. Route in Vondel Park
Fig. 44. Route in Emscher Landscape Park
separately, the table below shows the difference:

<table>
<thead>
<tr>
<th></th>
<th>Route 1</th>
<th>Route 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion</td>
<td>Slight turns all the time</td>
<td>Sharp turns and monotonous parts appear occasionally</td>
</tr>
<tr>
<td>Amount of choices on road junctions</td>
<td>Plenty of choices; Choices are distributed evenly; Choices are simple</td>
<td>Plenty of choices; Choices concentrate on certain parts; Some choices are difficult</td>
</tr>
<tr>
<td>Scale &amp; proportion of space</td>
<td>Soft boundaries; Considerable depth of view; Repetitive elements</td>
<td>Sharp boundaries; 'Floating' parts appear occasionally; Few repetitive elements</td>
</tr>
<tr>
<td>Sound</td>
<td>Pleasant sounds with smooth transitions</td>
<td>Few pleasant sounds with rapid transitions</td>
</tr>
<tr>
<td>Emotion</td>
<td>Mainly peaceful &amp; happy</td>
<td>Mixed emotion</td>
</tr>
</tbody>
</table>

In terms of a whole sequence, route 1 provides peaceful walking experience, which is supported by the repetition of visual elements, gentle turns, natural setting in recognizable urban context, etc. While route 2 can be exciting and disturbing at the same time, because of the overload information all the way.

If we look at the diagram horizontally and compare different aspects of a certain moment, we can find some common physical conditions of specific feelings. For instance, whenever there is something beautiful, it exerts joyful feelings. The figure below shows some common conditions of ‘happy’ moments. Similarly, there are common conditions of fear, sad, etc.

### 2.3.3 Characteristics of a favored trail

Through the comparison, some general characteristics of favorable trails can be concluded.

A ‘nice’ trail is always a balance between repetition and variation.

Repetition enables users recognize a route as one thing, and it also gives a sense of security. Typical repetitive elements are mainly the characteristics of the road itself and the closely adjacent features. Typical features include width, pavements, roadside trees, waterways, proportion of the streets, continuity of the route. Rhythms also count, such as crossings which appear on every 50 meters.
Fig. 45 Examples of repetitions/variations
Variations bring fascinations, so that the users don’t get bored. Variation can be the changes of the road itself, such as turns, ascending and descending, sudden openings and enclosures. More often, variations coexist with adjacent features. Typical ones include concentration of certain uses and activities, special buildings and landmarks. For instance, in the first route, the different waterbodies act as variations.

Positive variations should be stressed so that they become attractive hints. Hints are often ‘teaser’ views, for instance, a spectacular hill top can be indicated by ramps up. Hints can also be sounds or smells. Sounds of water might indicate a cascade; while aroma can lead to blossom woods.

Negative variations should be hidden or bypassed so that they don’t ruin the experience. For instance, noises of motorways can be absorbed by artificial hills; steep slopes can be reached with zig zag routes.

However, a trail contains above features may not necessarily become a popular trail. Other factors also contribute. Firstly, the accessibility of a trail has a big impact on the popularity. A poorly accessed trail is often underestimated. Secondly, the reputation of the surroundings is also crucial, though a well-established trail may improve the reputation of a certain place. Moreover, the difference between a certain trail and other trails close by also affect the perception. On the one hand, if one trail is not unique at all, it might be neglected; on the other hand, if one trail stands out awkwardly, it becomes alien. Different trails should be made differently so that people can recognize where they are; but the level of variation should be controlled.
Site analysis: wandering in Ruhr
3.1 Sampling Ruhr

Ruhr is big. The whole area is 50 km long from east to west. For practical reasons, it’s necessary to select a representative sample of Ruhr to have further investigation.

Sharing common resources and opportunities, the towns in Ruhr have highly similar development paths. This is particularly obvious in the hinterland of Ruhr area: Emscher valley. As a result, the landscape in Emscher valley became homogeneous. Therefore, if a place contains all the most typical development patterns in Ruhr, it could be an ideal sample.

3.1.1 Driving forces in the development

Tracing back the history of Ruhr(Fig_47), 3 driving forces of development can be found.

Coal & steel production

Coal & steel production had served as the powerful engine of economy in Ruhr.[(Keil & Wetterau, 2012)] The development of coal & steel was mainly resource-oriented. Essen, Bochum and Dortmund became the heart of production due to the concentration of ores. In the historical photographs of Ruhr, the skyline completely consisted of huge chimneys. Although most of the collieries and furnaces were shut down today, many traces still exist. For instance, renowned parks such as Duisburg North Landscape Park was transformed from old factories.

Transportation Infrastructures

Transportation infrastructure enabled the freight. Consequently, sharp increase of coal and steel production appeared after the construction of significant transportation infrastructures. For instance, the first turning point in production curve was 1850. By that moment, the Cologne-Minden railway was newly completed.[(Keil & Wetterau, 2012) The Rhine-Herne Canal was built between 1906 and 1914, after that the main industrial sectors were all distributed along the canal.

Transportation infrastructure also bear the flows of people. Massive motorway network had been made since 1960s (Keil & Wetterau, 2012), when the cars became popular gradually. Due to its geological location, the motorways in Ruhr is not only important for local inhabitants, but also favored by other domestic users and international users.

Planning and management

When the spontaneous development of industry reached its limit, the regulations came to the stage. Since 1989, many innovative projects were initiated, and some of them gained reputation worldwide. (Uttke, 2008) The design of Duisburg North Landscape Park almost defined the typical style of brownfield parks. The projects concerning economy and education developments, brought evident vitality to the society.
Fig_47. Timeline of Ruhr (Source of data: Metropolis Ruhr, 2012. Visualized by the author)

Fig_48. Historical photo of furnaces (Source: http://en.landschaftspark.de/the-park/evolution)

Fig_49 Map of Colonge-Minden Railway (Source: https://en.wikipedia.org/wiki/Cologne-Minden_trunk_line)

Fig_50. Current situation of furnace in fig_48. (Source: http://en.landschaftspark.de/the-park/evolution)
3.1.2 Changing ideas on Emscher

Among the 3 driving forces, the last one is particular interesting. Because the first two had met their missions already, while the planning is still in service. Moreover, it’s potential is far from being exhausted. Three plans marked the transitions in planning and management practice, namely Regional Development Plan in 1966, International Building Exhibition (IBA) 1989, and Emscher Landscape Park Master Plan 2010.

The plan in 1966 was in response to the crises of coal, iron and steel. The crises were regarded as temporal instead of structural. The northward movement of mining activities, from Hellweg zone to Emscher zone, were considered to be continued to Lippe zone. The Emscher valley was dedicated to further industry development. Open spaces between concentrated built-up areas were kept to improve the recreational situation. (The Changing Ruhr, 2013) However, due to the wrong prediction on the crises, the plan couldn’t match the situation afterwards. The estimated further industry developments didn’t happen, and more open space were eaten by built-up areas.

Since the structural changes of industry turned to be inevitable, the curators of IBA chose to confront the crises. The IBA was aimed to promote the economic change by developing new concepts and strategies for the urban, cultural and, most of all, ecological redevelopment of the Emscher zone. During 10 years of IBA, large amount of local projects were realized, including the greening of the mining tips, cleaning of water system, improvement of housing areas, ecological restoration of derelict industrial sites, construction of recreational sites, etc.

The key notions of IBA was inherited by the Emscher Landscape Park Master Plan 2010. This time, the emphasis is the connection among segregated parklands. Emscher valley was proposed as the regional green back bone. Linking lines, such as Industrial Heritage Trail, intertwined with scattered points.

If we overlay the plans from different periods, some spots along the river Emscher became problematic. (Fig_58) They used to be developed for industry, but land slots with contrasting uses appeared later, at the end, they were proposed as parts of the ‘green corridor’. Due to the constant changes of aims and methods, these slots turned to be a bit messy. Juxtaposition of old and new, green and grey, results in confusing urban landscape. The city of Oberhausen is particular representative among these spots, since it was a city that completely developed from the industry.
1969: Regional development plan

1989: International Building Exhibition IBA

2006: Emscher Landscape Park Master Plan
3.1.3 Oberhausen as an epitome of Ruhr

The history of Oberhausen started with Cologne-Minden Railway. A railway station was established within the current boundary of Oberhausen, and named after an existing old castle. From then on, dense railway tracks were built. Collieries and metallurgical works were developed near railways. Towns and housing areas were constructed, facing the stations and factories.

The rapid changes in past decades can be seen from satellite photos of Osterfeld. (Fig 61-66) It was a district of Oberhausen, which lies on the junction of railway tracks and canals. The railways came into being firstly, followed by the factories. Agricultural lands in between railways and factories were soon replaced by more factory buildings. When the factory was shut down, the buildings were removed soon. Parks, shopping malls and entertainment facilities were developed on the former industrial land.

The changes in Osterfeld are extremely typical in Ruhr. Although details vary from one place to another, the mechanisms behind are similar. Therefore, I selected Oberhausen for further investigation, in particular, Osterfeld. I believe that dealing with common phenomena could provide reference to the rest of the region.
Fig_61-66 Aerial photos of Osterfeld, Oberhausen. [Source: Municipality of Oberhausen]
3.2 The park system

3.2.1 Lessons learned from existing park systems

A park system is seen as one of the remedies for fragmentation, since it provides continuity. A park system is a series of parks, with connection among each other, spatially and programmatically. How to create continuity? What is the relationship between the city and the park system? These questions are investigated through reviewing existing representative projects: Emerald Necklace in Boston, Nidda valley in Frankfurt, Green rings in Cologne.

From these cases, firstly we can conclude that the land of a park system has a unified identity. In these cases, they are all green space with recreational use. The boundary between the park and the city is relatively sharp, but easily recognizable. Besides, in all the cases, green and blue are integrated. Uninterrupted water body suggests the continuity as well.

In terms of the relationship between park systems and other structures in landscape, in all cases, parks systems were planned together with other structures. Emerald Necklace was clearly bounded by motorways; muddy rivers plays a role in flood control. The green rings in Cologne was planned according to the locations of previous city walls and forts. In Nidda valley, allotment gardens take up a large proportion of land, thus there’s always active participation in the so called park areas.

Fig_ 67-72. Analysis of park systems
According to these three projects, two factors for a ‘successful’ park system can be concluded: the unified identity of the park land provides continuity; the integration between park systems and other structures (traffic, cultural heritages, water systems, etc) strengthens the coherency.

3.2.2 Emscher Landscape Park in Oberhausen

Since ELP was intended for multiple functions, various land uses can be found within the boundary of the park.[Fig_73] The park land does overlap with most of the green areas, but the concept of ELP is blurry. Usually, parks are associated with green areas with recreational functions. The mixture in ELP causes a confusing situation. There’s no doubt that other land uses, namely industry, commerce and residence, are important. However, they can be named after the what they are, not necessarily ‘park’. In my perspective, the green space with recreational value should become the body of ELP. Other land uses should be integrated but not included. Thus, the image of ELP will become clear.

The green space with recreational value in Oberhausen has a fragmented outline. Current ‘green’ space in Oberhausen mainly include forest, agricultural fields, parks and sports fields. (Fig_74) Among these, the forest and parks contain the highest ecological and recreational value at the same time. If we merge these two into one map, we can find that the structure of these green spaces is vague.[Fig_75] It is relatively coherent on the east side of the city. This is the remains of plan in 1960s: the green belts between towns. Water is partly cooperated with green space.
Since most of the city is densely built up, it’s not realistic to connect the green spaces physically by expanding them. Therefore, a framework to create continuity is in need. Such a framework might be based on other relative structures, such as transportation infrastructure, etc.

As for the relationship between the recreational green and traffic, the green is either bounded by intensive infrastructure networks, or left neglected from the main structures. In both cases, the green space is not prioritized. When green spaces act as the fillings between infrastructures, they get disappeared easily, which can be seen from the historical aerial images in 3.1.3. When they are far away from the main structures, they get ignored easily.

As for cultural landmarks, the green space do cover most of the cultural landmarks, but the culture landmarks in Oberhausen don’t distribute along specific spatial patterns. So that they can’t become the clue of the park systems.

In general, paths are the vessels of built environment. In a park system, leisure paths are significant. According to the Master plan of Oberhausen(Fig_79), recreational routes are mainly based on existing roads in cities, instead of being lied on green space. If the routes are integrated with green space, firstly, the quality of routes would be upgraded. Secondly, the green space can be accessed and appreciated. Bringing the green forward is not only beneficial for people, but also significant for flora and fauna. Though the paths do not increase the quality of habitats, they prevent the decrease of habitats caused by disordered occupation.

Therefore, paths could be the operational tool to define framework of ELP, and they should be based on the forests and parks. As the structural elements in the landscape, water systems, could be integrated as well.

Fig_76-79. Green+water; green+traffic; green+cultural landmarks; green+planned recreational trails
3.3 The path network

3.3.1 How does path network became the framework of park system

One important mission of path network in ELP is to provide legible clues in complex urban landscape. To achieve this, the paths must get along with juxtaposition of all kinds of programs. Interestingly, this is similar to what happened in an EXPO. Since all the pavilions in the EXPO parks try to stand out, the roads’ structure should be as simple as possible so that nobody gets lost easily. In Milano EXPO Park, the structure of roads is like the skeleton of fish. One strong axis run through the whole site, and all the activities were planned around it. In a park system, the road structure may not be as extreme as this, but the principle is similar. Take the example of Emerald Necklace again, the parkway acts as the connector of all the trails. Besides, the main path here follows the water courses.

Therefore, from a top down view, the geometrical configuration within the system should be clear. Routes with higher hierarchy have simpler shape, as well as better accessibility. Once such a structure is given, programs and activities concentrate on the main axis spontaneously. In a park system, such a structure is also illustrated by structural elements in landscape, such as water systems.

Interestingly, these conclusions comply with the ‘repetition and variation’ principle mentioned in
2.3.3. In Emerald Necklace, the continuous water courses, the recurring strollers and cyclists, are the repetitive elements from pedestrian perspective. The path doesn’t run parallel to the water course all the time, the changes between openness and enclosure, distance to the water, act as the ‘variations’. Hence a path system in combination with structures in landscape turns to be valid.

3.3.2 Existing path network in Emscher Landscape Park

From a regional scale, currently, there are a few theme trails in Emscher Landscape Park, namely Industrial Cultural Trail, Industrial Natura Trail, Emscher Island Tour, Emscher Way. They are all ideas for the whole Emscher valley, covering attractions with different themes respectively. However, if we take the pedestrian perspective, none of them is made with spatial design. In many occasions, they are just existing roads named after ‘trail’. The so called trail doesn’t have a special identity on its own. As a tourist, one can only orient him or herself with a map and some signposts.

If we zoom in at the sampled area in Oberhausen, all the regional theme trails overlap along the canal, becoming a straight line. [Fig_87] In terms of spatial quality, owing water features in view, this part is acceptable. But one may get bored easily, because of the endless straightness. Besides that, more capillaries can be seen. There are trails within certain parks, and trails in between theme trails and parks. Trails in parks are clear: they just belong to a certain patch, containing a certain atmosphere. The in between trails have a rather ambiguous identity. They are shortcuts between different patches. Though they are only dedicated for pedestrians, but the
experience of recurring interruptive fences and boundaries is not necessarily nice.

From pedestrian perspective, these 3 types of routes provide 3 types of experience. Within parks, people just stroll around, immersing themselves into the surroundings. Usually these trips are aimless. Along the canal, there are people who walk for pleasure, as well as people who aim for specific destinations. Owing excellent connectivity, these routes have inherit transportation functions. On those shortcuts, all the people become passers-by. These routes are simply not suitable for aimless rambling.

These 3 types of routes/experience can also be found in mature park systems. Take the Emerald Necklace again, there are routes connecting all the segments(Fig_82), enabling smooth and pleasant movement. And tiny trails within a small patch, providing specific, intimate experience. Last but not least, there are connecting routes bridging the gaps.

In conclusion, path network in Emscher Landscape Park has existed already, but they are still at a preliminary stage. To refine these routes, the 3 types of experience could be taken as criteria.

Fig_87. Existing routes in sampled area

Fig_88. Sampled area in Oberhausen

Fig_89. Three types of experience
4

Design: a new walking paradise
4.1 Typology of routes

4.1.1 Three types of routes

According to the analysis in previous chapter, we can outline the ideal path network from two perspectives. From a top down view, the paths should be based on parks and forests, organized with clear geometrical configuration. Structural elements in landscape, such as water, could be used as clues for organization. From a bottom up perspective, there are three types of walking experience: destination oriented, process oriented and hybrid.

Based on these conclusions, I came up with the 3 types of routes in the context of fragmented Emscher Landscape Park.

Firstly, there are backbone routes framing the structure of the park system. These are mainly made for enjoyable walking and cycling, and they are combined with multiple types of recreational activities. They follow the water courses all the time. Water systems has a clear structure inherently, and it also please the eyes.

Secondly, there are destination routes in parks. These routes are very site-specific, enabling people experience a certain atmosphere of a specific area.

Thirdly, there are connector routes which make the other two types accessible. These routes are often based upon existing roads, they are not
necessarily beautiful, but they are supposed to give clear guidance to users.

These set of routes accept the fragmented landscape as it is, but they provide another way to read it. Fragments defined by infrastructures are like chambers with different themes, the destination routes highlight the identities of these chambers respectively. Following the structure of the landscape, backbone routes act as the corridors connecting the chambers. Last but not least, connector routes, open up the gates between chambers and corridors, and the gates between the whole 'building'-the park system—to the vast surroundings.

In the case of Emscher Landscape Park, individual parks had been established already in past decades, but they are not well connected. Therefore, the design task is to define the backbone routes and connector routes, in order to connect all those existing destination routes.
4.1.2 Design principles of backbone routes

As mentioned above, backbone routes follow the water courses. In Emscher valley, there’s no doubt that the artery is river Emscher. And it has many branches. Besides natural water system, Rhein-Herne Canal runs parallel to the Emscher. Coincidently, these water systems can cover all the main features in Emscher Landscape Park. Hence these blue lines form an ideal basis for the path networks.

As for existing paths, Emscher Island Tour is planned on the long stretch of land between Emscher and Rhein-Herne Canal. The positioning of the line is carefully considered, what’s missing is unified, recognizable spatial quality. It’s can be developed into the main axis of the whole Emscher Landscape Park. About the branches, most of them are canalized, meanwhile, regeneration projects are under construction. Currently there are not many established trails along the branches, but they have the potential to become secondary backbones.

A path is firstly a continuous paved line, which might be companied with trees and street furniture. As a recreational path, this line is supposed to react to the underlying landscape. For instance, it might points out special views, or the sections get wider or narrower according to the surroundings. From pedestrian perspective, one recognize a path as a unity from continuous pavements, recurring tree lines and facilities. Moreover, changes of the proportion of the enclosures, attached lookoutes and openings, break the monotone. Hence I firstly defined a standard segment of the path, next to that I provided some recommended patterns for variations.

Fig_92.
Water systems in Emscher valley
A standard segment of the backbone route consists of a cyclist lane and a pedestrian lane (Fig. 94), and these two run along with waterfronts. Since walkers have a lower speed than cyclists, they need more subtle changes. Thus the pedestrian lane can wave around the cyclist lane. Dimensions, materials, and facilities are chosen from common settings in that area.

Variations firstly happen with sections. For instance, when there’s a big height difference, the two lanes can be placed at different levels. Or there’s no space for completely individual routes, it can be integrated with existing roads, and the walking lane is placed at the more pleasant side of the road.

Variations also happen with ‘attachments’ of the main route, such as belvederes. In different contexts, different ‘attachments’ can be applied. The table in following pages (‘Patterns for typical features in Ruhr area’) listed all major landscape features in Emscher valley, as well as all landscape architecture ‘vocabularies’ that might be used in these conditions. In detailed designs, designers can take this list as a reference. (The elements are adapted from Tussen Haard & Horizon, van der Zwart. J., 2004)

For these variations, to keep a unified identity, typical materials and species are recommended. When it comes to specific forms, that depends on designer’s site specific interpretations.

Fig. 93.
Emscher Island Tour
Standard segment of the backbone route

Cyclist lane
Pedestrian lane

Paved lanes
- Cycling lane
  - Width: 3–4m
  - Asphalt with signs
- Walking lane
  - Width: 2–3m
  - Macadam

Facilities
- Seating object
  - White concrete
- Bike racks
  - Steel
- Light post
- Trash bin

Signage
- Sign posts
- Maps & story boards

Trees
- Alnus
- Carya cordiformis
- Fraxinus excelsior
- Carpinus betulus

separate lanes

Lanes on different heights

Combine with streets

Fig_94.
Standard composition of the backbone route

Fig_95-97.
Variations on sections
Patterns for typical features in Ruhr area

The table in following pages showed recommended patterns to add variations on paths according to the surroundings.

Through days of walking and observing on site, I concluded 11 typical features that people may encounter if they walk along the water courses in Ruhrgebiet. (See the first column on left side) These features suggest different atmospheres, and they are suitable for different activities. For instance, a factory could be eye catching for its hugeness. That make people want take photos, but after that people will leave soon. Nobody want to have picnic next to chimneys.

How can we enable these potential needs? To some degree, all landscape architectural projects could be broken down into compositional elements, including hard construction and certain ways of planting. In *Tussen Haard en Horizon*, Johan listed almost all the possible compositional elements. Which can be used as a tool box. (See the first row of the table)

To provide reference for designers who may take the path making task, I made a match between the common features and possible elements to be implemented. For each features, I explained the identity below. For the usage of each compositional elements, there’s a short description next to each icon. Last but not least, these are just recommendations, not rules.

Sports fields: open; energetic; restricted access for certain group of people; can be matched with events and active recreational activities

Emscher: artificial form because of canalization; power of nature seen from pop up vegetation & water fluctuation; mysterious

Rhein-Herne Canal: the previous transportation artery of industry; open; strong industrial characteristics seen from straight lines and massively produced materials

Art installations: memories of frequent art festivals; really interesting to have a look

Neighborhoods: belong to certain group of people; limited publicness; quiet; access should be limited

Bridges: eye catching; entering/leaving points; a pause in the rhythm; a place where people gather

Parks: open; in line with the backbone routes; should be connected to backbone routes physically and visually

Open fields: survivors from urbanization; heritage value; scenic view; private land, entering is not welcomed

Factories: the core of Ruhr landscape; characteristic but not necessarily beautiful

Forest: derelict brownfields taken over by trees; informal; dense; adventurous

Slag hill: hills made by industrial waste; often with landmark on top; hill shape parks
<table>
<thead>
<tr>
<th>Sports fields</th>
<th>Plateau</th>
<th>Ravine</th>
<th>Terrace</th>
<th>Stairs</th>
<th>Extra path</th>
<th>Beveldere</th>
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</thead>
<tbody>
<tr>
<td>Amphitheatre</td>
<td>For events</td>
<td>Provides an overview</td>
<td>Limit the access</td>
<td>Point out a beautiful view</td>
<td>Leads to features on different heights</td>
<td>Alternatives for nearby features</td>
</tr>
<tr>
<td>Emscher</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>R-H Canal</td>
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<tr>
<td>Art Installation</td>
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<td>Neighborhoods</td>
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<td>Slag hill</td>
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Fig_98-1. Recommend elements in different context
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<th>Pavilion</th>
<th>Bridge</th>
<th>Gate</th>
<th>Sculpture</th>
<th>Playful wall</th>
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<td><img src="image" alt="Gate" /></td>
<td><img src="image" alt="Sculpture" /></td>
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<td><img src="image" alt="Emscher" /></td>
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<td><img src="image" alt="R-H Canal" /></td>
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Fig_98-2. Recommend elements in different context.
<table>
<thead>
<tr>
<th>Element</th>
<th>Lawn: Event fields/self-defined activities</th>
<th>Flower meadow: Beautify the view</th>
<th>Clear: Creates enclosures</th>
<th>Clumps: A soft separation</th>
<th>Alley: Define a linear space</th>
<th>Solitary tree: A naturalistic foci</th>
<th>Notch: A shelter</th>
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Fig_98-3. Recommend elements in different contexts.
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<td><strong>Fountain</strong></td>
<td><strong>Cascade</strong></td>
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<tr>
<td>Beautify boundaries</td>
<td>A shelter</td>
<td>A foci/ for air exchange in water</td>
<td>For interchange of water courses</td>
<td>For events</td>
<td>A staying place with a view</td>
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</table>

Fig_98-4. Recommend elements in different context.
Fig_99. 
Recommended species & materials

- Quercus robur
- Prunus padus
- Cornus
- Salix
- Robinia pseudoacacia
- Crataegus monogyna
- Pyrus
- Betula
- Steel grids
- Cordon steel
- Asphalt
- White concrete
- Gabion
- Cement bricks
4.1.2 Design principles for connector routes

Connectors are supposed to build connections between cities and backbone routes or parks and backbone routes. Through overviewing existing connectors and the spots where a connector might occur, an abstract model of a connector can be summarized.

It is firstly a line between backbone routes and parks/cities. Access points appear at junctions. In the context of Ruhrgebiet, such a line is often interrupted by dense railways and highways. To cross these boundaries, tunnels, bridges and detours occur.

The line itself has to be clear. To make it clear, standard size, materials, and facilities are
defined. (Fig_102) These materials and facilities are commonly used in Ruhrgebiet already. They just have to be made more continuously. In order to let people orient themselves smoothly, the signposts are also crucial. Existing signage system is useful but not attractive. In order to highlight the recreational aspects, the signs can be integrated in line with the visual identification system of the Emscher Landscape Park. For instance, the logos of each parks can be printed on signs, so that these signs can stand out as park indicators. (Fig_103)

To attract people and indicate transitions, access points should be highlighted. Fig_104 listed 3 typical tricks to highlight an access point. (Inspired by Opening spaces, Loidl&Bernard) If we project these tricks on site, ‘narrowing’ could be a sudden enclosure made by shrubs in contrast with the openness; ‘widening’ could be expansion in contrast with the standard width; ‘marking’ could be a sculpture or some other installations—just like an exclamation. These junctions are also places for people to gather or wait, hence opportunities to stay—maps and benches could be also added.

The problem with tunnel is that the darkness often exerts the sense of insecurity. (van Dorst, 2015) Widening the tunnel, adding extra lightings, or paint them can all reduce the darkness. (Fig_105.)

Bridges are eye-catching so that they are often well designed as an object. The problem with bridge is not the bridge itself, but the way leading to the bridges. To link different heights, awkward detours are quite common. To reduce the fatigue, soft curves can replace the sharp angles, or focal points can be placed halfway. (Fig_106.)

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**Facilities**

- Paved lanes
- Shared lane for cyclists and pedestrians
- Width: 3–4m
- Asphalt

**Signage**

- Sign posts

**Standard segment of the connector route**

---

**Standard composition of a connector route**

---

**VI of Emshcer Landscape Park**
Access points
Narrowing
Opening
Marking

Tunnel
Widdening
Lighting
Art

Detour
Softening
Foci

Fig. 104-106.
Design tricks to work with connector routes
4.2 Positioning the paths

In order to illustrate how to apply the principles I defined, I picked up the sampled area again and project my principles there.

Firstly, I figured out the major water lines there, as the basis of the backbone routes. Secondly, I picked up the existing attractions and the trails within those attractions. They are the destination routes. Furthermore, where do people start their journeys? Local people start from surrounded neighborhoods, tourists start from large transits or parking lots. Retailing centers also attract lots of people, and they could be taken into consideration as well. Existing recreational routes, though incomplete, can be good basis to work with. Last but not least, actual accesses to cross physical boundaries were marked.

Based upon these conditions, I positioned backbone routes and connector routes on this area. As it can be seen from the map, the backbone routes act as the arteries, parks are attached to them by connector routes. In each parks, destination routes are like capillaries for strolling and rambling.

Fig_107.
Factors influencing the positioning of the trails
Fig_108.
Map of three types of routes

- Backbone route
- Connector route
- Destination route
- Railways/highways
- Water
- Parks
4.3 Detailing the paths

Within the proposed network, I selected a junction containing different types of routes to spatialize my principles.

This stripe of land is surrounded by different parks, residential areas, and a big commercial complex. Emscher and Rhein-Herne Canal run through the middle of the site from east to west. In neighboring parks, there are quite a few popular destinations, including a tourist center and eye-catching installations.

According to my scheme, I’ll enrich the existing route along the north side of the canal. And I’ll highlight the transition points between the two types of routes. To achieve that, I chose several patterns in my recommendation list.
Fig. 110. Site plan.
For the backbone route, the previously straight macadam path is expanded into a spacious promenade accompanied with deciduous trees, where the pedestrian lane waves around the cyclist lane. Terraces were added in where there’s a view. To take advantage of the Emscher as well, an additional trail were placed, with stairs going down. A café with outdoor platforms is placed at the branching point. For the connector routes, in my case, all the lanes are established already. What I did is mainly emphasizing the transition points. To create contrast, I made enclosed ‘entrances’ at open spots, as well as openings within enclosures.
Fig_112 Detail 1: plan

Fig_113. Index of detail 1 on site plan

Fig_114. Section of detail 1. (see page right)
**Detail 1**

*When ‘connector’ meets ‘backbone’*

This is where people entering the ‘backbone’ from the ‘connector’. It’s supposed to be a spot where people get attracted from the bridge. In order to achieve that, I attempted to create contrast.

The existing bridge is shared by cars and pedestrians, and the pedestrian lane is very wide and safe. On the bridge, one have a far view to the horizon, looking at boats and cars passing by quickly. To make contrast to the speed and openness on the bridge and suggest the relaxing atmosphere of the backbone route, the byroad to the riverside is covered with spreading hawthorns. When someone pass the crossing point, he or she will notice the cozy space under the canopy inadvertently. Two gate like structures are placed symmetrically on two side, thus people can recognize them as a unity. The byroad is slightly lower than the height of the bridge, thus when people stand under the canopies, the enclosure is further exaggerated. Maps are provided, explaining the layout and stories of the parks. Benches are made for people to rest and wait. People could follow the main trail to the waterside, stairs are also made as shortcuts.
Fig_115. Detail 2: plan

Fig_116. Index of detail 2 on site plan
**Detail 2**  
**Highlight on ‘backbone’**

When people come down from the bridge, they arrive at this spot where 3 trails come together. It owns a nice view and relatively large amount of people. It’s supposed to be a place where people can gather, therefore I’d create reasons to gather.

To take advantages of the view and the junction, a café is made with wide outdoor platforms. People can go to the café, or just have a break at the stairs facing the water. The backbone route is not only a line for movement, but rather a linear park. There are opportunities for staying. In my case, I made benches, swings, and platforms. To set off the significance of the backbone route, other trails were treated with angles and narrow profiles.
Fig_118. Plan of detail 3

Fig_119. Index of detail 3
**Detail 3**

**Varied 'backbone'**

This is a byroad for people to get close to Emscher, an once canalized river reclaimed by nature again.

Although the Emscher is still ditch like at this moment, regeneration project is under construction. In future, it’s supposed to become a clean river filled up with rain water. Once the purification project is finished, diverse riparian vegetation should pop up. Because of the history of canalization, it has a deep, rigid profile. Since the fluctuation of water level is supposed to be extreme, it’s not really feasible to let people get close to the water, which is a pity. I made a wadi at the bottom of the dike. Firstly, it can retard the run off from the top of the dike. Secondly, it provides shallow water habitats. Last but not least, people have different forms of water to appreciate. On the slope, a stairway is laid for the Emscher. On top of the dike, a trail is laid for strolling. Terraces and byroads are attached to the trail, pointing out art installations on the other side of the river.

![Fig_120. Section of detail 3](image-url)
4.4 Path from pedestrian perspectives

Speaking of pedestrians, firstly we have to know: who are they? In my case, they can be divided into two groups in general: tourists and local people. Most tourists head for must-see. For instance, heritage sites, spectacular views, unforgettable constructions. And many of them have little knowledge about what is where. Therefore, for tourists, straightforward indications are crucial. As for local, they can find their ways without maps, and the eye catching spots are too familiar to be attractive. What they need in most time is just somewhere they can empty their minds, walk with their families, lease their dogs. It doesn’t have to be fantastic, but it has to be stable. They may also get bored, but they are sensitive to subtle changes. For example, daylight and seasons.

Both groups can get satisfied in designed site. In stories below, you can take their shoes and experience the changes through their eyes.

Fig_121.
Views from different user groups
Mr. L lives in Oberhausen. He has a 5 year old daughter. In general, they are happy with their town, however, sometimes they found that taking a walk can be boring. For instance, if they walk along the canal, the view is almost same for several kilometers.

After the park upgrade project is finished, Mr. L and his daughter found more fun. Some previously inaccessible areas, for instance, Emscher, can be accessed now, and it was pretty interesting to just observe what’s happening with the nature. Besides simply walking, there’s much more to do. The views change with time and seasons. They discovered the hidden charm which they never noticed before.
Mr. T loves travelling. He had been to Oberhausen several years ago. He can recall some interesting spots, but the city in general was not very satisfactory. The crazy railways and highways looked chaotic. He just got lost all the time.

For some reason he comes back again, surprisingly, it’s completely different now. At certain points, he sees inviting openings, and he can clearly recognize something is happening.

The ever plain, straight, desperately long trail was enriched with details. It’s really enjoyable to take a walk on the riverside promenade now. And he finds that no matter where he wants to go, he can just go for the waterfront promenade, since that connects all the attractions. On his way back, he thought that he would definitely recommend this area to his friends.

Fig_123. A journey of a tourist.
5

Looking back to the labyrinth
5.1 Conclusions

5.1.1 Design as a response to site-specific problems

The whole project started from intuitive experience on site. With systematic exploration, I attributed the faint impression to the issue of fragmentation, which is a generic phenomenon in Ruhrgebiet.

In my design, I accept the fragmented situation as it is, and I provide a coherent framework to organize it, namely the path network. To realize such a network, I categorized the components and came up with design principles for different components respectively. These principles are based on summary and abstraction of various existing conditions, thus they are valid for the whole Emscher valley. To illustrate how these principles can be applied, I also made a detail design as an experiment.

Such a framework can improve the problematic situations caused by fragmentation. What people seek in fragmentation is continuity and structure. A path network based on water systems frames the structure of the landscape. By moving through it smoothly, people can recognize such a structure tangibly. Besides providing clear recognition, the paths also add a lot of fun. All these improve the general impression of the whole area, which is advantageous for regional development.

For flora and fauna, it’s also beneficial. Since it’s densely built-up all over, practically, it’s simply not possible to connect the separated habitats literally. Although paths do not necessarily increase the quality and quantity of habitats, they bring the ever insignificant lands forward, and make them appreciated by the people. Historical photos show an obvious trend: compared to accessed green space, derelict green space is more fragile to construction activities. Therefore, increasing the importance can at least prevent further loss of habitats. Moreover, most paths are accompanied with vegetation, which provides a little more opportunities for migration.

5.1.2 Design by research, research by design

The research is dedicated for the question that ‘how can we provide better walking experience?’ The research is intended for investigating the principles behind pleasant walking in general. From literature review and analysis experiments, I came to the conclusion that a pleasant walk is a balance between repetition and variation. The repetition and variation should be found in spatial compositions, which can be experienced as the sense of security and the joy of discovery.

I took this conclusion as a tool to investigate what’s actually ‘wrong’ with the site, as well as
the guiding principle for improvements. I found that the fragmentation can cause juxtaposition of irrelevant scenes, which means overload 'variations'. Besides that, in some segments, the rough details bring monotone, which means overload 'repetitions'. In my design, I tried to provide mild repetition through standardized compositions, as well as subtle variations in response to sites.

Such a conclusion is not only valid for my site, but also valid for path making in general. So that other landscape architects may also get inspired. Moreover, though the principles are concluded at human scales, it turned out that they are also helpful at regional scales. A top down plan often exclude pedestrian perspective. But if we can generalize the experience, it can help us land our ideas from the users' perspective.

5.1.3 Limitations of the results

The conclusions of research are not very precise. They are rather inspirations than criteria. For instance, I may have intuitive impressions on the 'nice' or 'disappointing' trails, with this conclusion, I may find that 'repetition' lacks in the 'disappointing' trails. But that's only a relative answer instead of a precise diagnosis. I couldn't describe how disappointing are they, and how much variation should I add in what way. Plus, the intuitive experience is very subjective. It can't be taken for guaranteed.

Therefore I think the future research in the field of experience studies should involve more objective data. Although 'experience' is a subjective issue all the time, the assembly of individuals' data might suggest principles in common. Besides, inexplicit feelings could relate to explicit physiological reactions. So that the aesthetic preference might be measured through sensors.

I hope, as spatial designers, we could be more precisely user-oriented in future.
I did learnt a lot through graduation projects, not only lessons on landscape architecture, but also lessons in life.

5.2.1 Working through scales

Personally, I’m really interested in how can I realize my ideas physically. In another word, what a pocket park means to the whole city, doesn’t really matter for me. However, in TU Delft, ‘working through scales’ is one of the most frequently used ‘brain wash’ concept. For instance, if I decide to do a pocket park, I must demonstrate why it is meaningful to do that, how does this pocket park talks to the city, what is the essence of such kind of public space... before I make the spatial composition.

Fortunately, I gradually understood why I should working through scales. Because people accept your ideas primarily for the reason you do it. By working through scales, I can position my little ideas in a solid context. It also works the other way around. For instance, though a regional plan may only consist of several abstract lines, these lines might be concluded from problems at a lower scale. Hence, working through scales is really a useful tool for landscape architect, who often jump through scales.

However, if I take a step further, I might also question: Is that a must for landscape architects to work through scales? Does a tiny building has to speak with the city? There’s a joke in America: lively streetscape has 3 enemies, parking lots, drugstores and star architects. A extremely special landmark building may causes a lot of problems, but they are so special that they might become a piece of art.

I think working through scales is a generic method which may help us avoid some generic mistakes, therefore it could be a must. But that’s just a starting point, rather than a guarantee for a nice project. Moreover, the emphasis on different scales could be different according to the projects.

5.2.2 ‘Research by design, design by research’

This is another ‘brain wash’ concept in this graduation studio. And I found this is pretty useful. The graduation project forced me to read books and questioning myself endlessly. It was suffering at the beginning, however, the further I went, the more connections I discovered among the things seem to be irrelevant. Now I started to believe that common essence does exist behind individual phenomena.

Initially, I did the research only for my project.
However, I found that the discoveries in my project also changed my perceptions on my daily environment. I jogged in Delftsehout once in a while. Interestingly, I always had some new understanding on the composition of the park in company with my research progress. This really encouraged me to take research as a tool in general.

### 5.2.3 Living with uncertainty

I still remembered when I just started my project, Frits asked me how it went. I told him I had a little bit progress now and then, but more often I got lost and went back and forth. He told me that the detours might be the best way to go.

I always wished to have a through plan and execute that. However, I found that Frits was right...The plan seldom worked as planned. It’s simply because that the expectation is never equal to the reality, especially for young, inexperienced people. It takes a lot of time for trial and error. Sometimes settling down too early is even worse than wandering around, since that limits possibilities.

Now I realized that a bit of uncertainty is very normal, even necessary. Sitting back and thinking is of course necessary, but the best way to move forward is just trying over and over.

I questioned myself, are you happy with your project? Well, this is not what I really expect at the beginning, but I kept trying all the time, and I did step into some unfamiliar territories. It’s definitely not perfect. But it’s it.
6

Appendix
6.1 Acknowledgements

Although graduation studio is completely an individual project, it’s not possible to finish it without others’ support.

Firstly I would like to express my great gratitude to my main mentor, Saskia. The way she taught was really inspiring. She seldom told me what to do straightforwardly, instead, she just kept asking and asking. Interestingly, the moment I can answering these tough questions, was also when I can convince myself. She left plenty of freedom for me to explore on my own, but she was always available whenever I got lost. Thanks to her, after one year, I became more independent on thinking.

Of course my second mentor is also extremely supportive. I’m afraid that I even had more appointments with than some students who had him as first mentor. Thanks a lot to his patience. He inspired me with vivid stories. I was often prone to view my project from a distance, but these emotional stories made my project become tangible.

Thanks to all the staff from Chair of Landscape Architecture as well. Whenever I turned to them for help, they never hesitate.

I also appreciated my colleague Landscape Architecture students. They were enthusiastic and curious. They were willing to listen to my ideas and trying to find solutions for my problems. I’m proud that I belong to such an amazing group.

I must be very grateful to my friends as well. They stood by me when I felt frustrated, lost, disappointed. They shared my joy when I got little progress. I couldn’t imagine how can I get through the whole year if I was on my own.

Last but not least, though my families are far away, they are crucial to me. We couldn’t manage to have close contact because of distance and time difference. But I knew that no matter what stupid mistakes I made, there’s always a place to retreat. That’s home.

Boya Zhang
June 2016, Delft
6.2 Reference

Walking experience

The significance of walking


Notation of experience in motion


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research


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Ruhr Area


