CONNECTION TO NATURE EXPLORING OPPORTUNITIES BY THE RIVERSIDE GLERÁ IN AKUREYRI, ICELAND

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I was taught as a child that rivers were dangerous, which they are. Good parenting also taught me to appreciate their beauty, once I had the maturity to respect them. /LF

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ABSTRACT

In this thesis I have decided to take a closer look into my own "backyard". A river that runs through my hometown, Akureyri, has been a thorn in some people's side. Glerá river has taken lives but it has also given the town possibilities to develop. Firstly by creating a seaport allowing it to be settled and secondly by giving power to harness electricity. The third gift is its beauty, which needs to be more appreciated.

By reviewing administrative and public opinions, I have noticed a common interest to turn this riverside into an outdoor recreation area. Its centralized location makes it accessible for inhabitants, allowing for the increased involvement of this open space in their daily lives. My approach is to create feasible places for the residents to enjoy recreation within nature. The structure of paths should serve for effective transportation as well as recreation.

The title "Connection to nature" is two-fold and refers to the close relationship which can be gained by experiencing this site between nature and residents. The river stretches from the wilderness through the town to the shore and connects thereby the urban life to the nature of the wilderness.

KEYWORDS

Riverside, Canyon, Green structure, Outdoor recreation, Open spaces

SAMMANFATTNING

I det här examensarbetet har jag tagit en närmare titt på "bakgården" i min uppväxtstad Akureyri. Älven, Glerá, som rinner igenom Akureyri är omstridd, den har tagit flera liv men är även en viktig del i stadens utveckling. Den har skapat möjlighet att bygga en hamn samt gett staden elektricitet. Den tillför också staden sin charm men behöver bli mer uppskattad.

När jag undersökte Administrativa och publika önskemål visar sig att det är en allmän önskan att göra flodbanken till ett friluftsområde. Den centrala lokaliseringen gör den lätt tillgänglig i vardagslivet. De föreslagna gång- och cykelstigarna skall betjäna rekreationsområdet och fungera som effektiva kommunikationsleder.

Titeln "koppling till naturen" refererar till den nära relationen mellan naturen och stadens invånare. Älven sträcker sig från fjäll landskapet igenom staden, ner till stranden och kopplar därigenom urbant liv med vild natur.

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- Residents of Akureyri for being enthusiastic bringing the Glerá Riverside into discussion

INTRODUCTION

This thesis is a Planning and a Design project focusing on a major feature of a green structure in a small town in northern Iceland. The town, called Akureyri, has about 17,000 inhabitants and is located in a deep fjord called Eyjafjörður. A river winds through the town in canyons from its sources in a valley, Glerárdalur, located above the town. The river, whose name translates to "Glass River", is one of the town's major features. The riverbank both unites and divides the town. It connects the urban landscape to the undeveloped wilderness landscape in Glerárdalur. Only small sections of the Glerá riverside are easily accessible, creating a significant barrier for its increased use. This is the main problem. I know that the Riverside can be something other than a barrier so I ask myself what opportunities are there so it may play different role in the town's green structure? To answer this question I will base my thesis on the exploration of opportunities and propose a new role for the Riverside based on existing cultural and natural values. This work is directed to the local government and anyone interested in the development of green structures.



Figure 1. Iceland's location in the North Atlantic ocean



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Figure 2. Eyjafjörður's location in Iceland



Figure 3. Akureyri's location in Eyjafjörður



Figure 4. Glerá Riverside's location in Akureyri

SHORT INTRODUCTION TO AKUREYRI

Akureyri is known for its greenery and is surrounded by several major landscape features. One of them is the river Glerá. Others are the mountains Súlur and Hlíðarfjall, the mudflats at the bottom of the fjord and the seafront, known as Pollurinn or the "Puddle".

The location of Iceland creates the biome called tundra. It means that tree growth is hindered by low temperature and a short growing season ("Tundra," 2009). The weather in Iceland changes rapidly as it is located in a low-pressure belt, bringing rain and wind. The deep fjord, in which Akureyri is located, creates special climate factors as well. The wind mostly blows from the north with cold sea winds, or from the south, with warmer offshore winds (Óskarsson, s.a.). The weather is very influential in people's daily lives and it affects people's outdoor behavior.

The topography of the town is multiform, with heights ranging from 0 m to100 m above sea level. Because of unpredictable weather and steep slopes, use of personal cars is high compared to other European cities. To encourage increased use of more sustainable transportation, bicycle- and foot paths have been under construction in recent years.



Figure 5. Fly-over map of Akureyri and Glerá riverside

Akureyri's green structure offers a variety of activities and experiences. Open spaces for special use are spread around the town in smaller scale. Activities like motor sport and golfing that require more space are located outside of the town. The town's nature and recreation areas vary and include a small recreational forest, Kjarnaskógur, with paths and playgrounds which are very popular among people of every age; the mudflats, a nature reserve in the bottom of the fjord which contains walking and riding paths; and several rock and cliff areas with the swamps, ponds or heather that support the area's diverse bird populations (see figure 6).





Figure 6. Open spaces in Akureyri. Nature reserves and special use. Scale 1:20,000

METHOD

My main task with this project is to survey and develop plans for the Riverside as a feasible place for outdoor recreation. The process is based on number of steps that together form the structure of this work.

CHAPTERS	BASED ON:
• HISTORICAL INFORMATION	BOOKS AND CONVERSATIONS
• Existing situation	
o Land use	Valid Master plan
o Activities	My observations
O Administrative status	REPORTS, E.G. FROM A RESIDENTIAL
	MEETING AND AGENDA 21
o Visual qualities	My excursions and visual analysis
O SECTIONS	Existing situation
O PROBLEMS	My discoveries
• Future needs	
O OPEN SPACES	Valid Master plan
O CONNECTING SPACES	My observation
• Analysis	
O LANDSCAPE CHARACTERS	Zone analysis
O QUALITY ASSESSMENT	QUALITY AND SWOT ANALYSES
O FUNCTION	Space analysis
• Proposals	
o Reflections on the proposal	Self critique and reconsideration

TYPES OF LANDSCAPE ANALYSIS

Landscape analysis is a great tool for Landscape Architects to work with in the Planning and Design process. It is a process in which features are picked out from each other and gathered again, forming some kind of conclusion (Stahlschmidt, 2001). Different types of analysis may suit different tasks during different time points in the process. In this chapter I will review the chief points in several well known forms of analysis and how I approached my task with help of some of them.



Historical analysis

A historical analysis looks at an area's development over a period of time. It may be done e.g. with a series of topographical or theme maps. Historical analysis can bring out information about elements that might be worth preserving and it can be helpful to find genius loci, the spirit of a place (Stahlschmidt, 2001).

I find historical recaps usually helpful to get to know places and capture their spirit. In this project I reviewed the town's history and highlighted several events related to the Riverside and influential the town's development.



Space analysis

With space analysis, aspects of the landscape's physical structure are examined. Kevin Lynch is known for his space analysis in his book Image of the City from 1960. He bases the analysis on five elements: paths, edges, districts, nodes and landmarks. These symbols can be used to navigate and understand the construction of the landscape both in urban and rural context (Stahlschmidt, 2001).

Lynch's approach is an effective methodology in a complicated landscape.

By simplifying the landscape and emphasizing certain elements, spaces can

become more obvious and easily understood. I used this method to better

understand the physical structure of several areas where activities were being considered.

Visual analysis

Visual analysis is closely related to space analysis. It deals with how a landscape is seen while space analysis deals with how a landscape is constructed. Some examples of visual analysis are the one point visual analysis, where elements seen from only one point are mapped. Another method is known by Gordon Cullen, from his book Townscape from 1961, where he makes series of pictures along a route in a landscape. Then he explains the spaces he entered during the journey (Stahlschmidt, 2001).

While one point visual analysis provides an overall view, Cullen's method explores spaces and entries. In my excursions, Cullen's method provides the basis of my observations on the Riversides spaces.

Zone analysis

Zone analysis, or zoning, is used to create an overview of a landscape by dividing it into smaller areas or units. The units are categorized by a specifically chosen theme; e.g. a terrain which might contain water, vegetation, or fields. The complexity of every unit can then be examined and how the units connect within each other can be explored (Stahlschmidt, 2001). h

Zoning simplifies landscape like some other analyses do and may be helpful in some circumstances. In this project, simplification is needed because of the area's size. Therefore I decided to divide the Riverside into different zones according to different characters, e.g. vegetation or the physical structure of the landscape.

Quality analysis

Quality analysis is a systematic evaluation of which elements may be worth preserving and which cause problems. Several varieties are based on different types of evaluation, e.g. by giving points on a certain scale or simply by giving positive/negative value (Stahlschmidt, 2001).

In my opinion, existing qualities should always be considered in Design and

Planning projects. It preserves and highlights the planned area's pre-existing

character, like people who find their talent and let it shine. I chose to work

with positive/negative evaluation in this project with simple grading, but still

emphasizing factors which may be important for further design.

Location analysis

A location analysis is a systematic method used when choosing from a selection of possible locations. Different qualities in the landscape are the factors on which the evaluation is made. These factors can either make up plausible or implausible locations. Ian McHarg used an over-lay technique in his book Design with Nature, from 1969, to choose locations. That method is based on different layers, each representing a specific factor or theme that demarcates a possible location. When the layers are put together an empty space should appear representing the possible locations (Stahlschmidt, 2001).

The over-lay technique is a fascinating way to simplify and create a whole image focusing on relevant factors. However, this method does not suit me in this project as the task is not to choose locations in a big landscape with many possibilities.



Consequence analysis

With consequence analysis the proposal is reconsidered with different methods. One approach is introduced by Lars Emmelin in his article Landscape Impact Analysis: A systematic approach to landscape impact of policy from 1996. It is based on scenarios where possible consequences are visualized with picture series. Similar variations are well known, like before/after photos and plans, or drawings fitted onto aerial photos (Stahlschmidt, 2001).

I find illustrations and these kinds of methods always helpful while designing, both in introducing to others and visualizing for myself. People may have difficulties reading elevation lines and imagining what a place can look like. I decided to use the before and after method to visualize my ideas and designs.



SWOT

SWOT analysis is a strategic planning method used to evaluate strengths, weaknesses, opportunities and threats in a project. This method is not limited to any special subject and is used to highlight systematically what may be

important (SWOT, 2009).

The many possibilities to use SWOT make it a useful method in approaching

helpful and harmful factors. In this project it is used to analyze some of the area's most critical features.

AKUREYRI'S HISTORY

Eyjafjörður was settled around 900 AD by Helgi 'the Lean' Eyvindarson. He did not settle exactly where the town is now located but near a good natural seaport sheltered by a sandbank called Oddeyri. The sandbank is created by the alluvium from Glerá, north of Oddeyri (Hjaltason, 1994a). People lived on agriculture in the surrounding countryside until the year 1778 when the first house was built in Akureyri. Eight years later, the inhabitants had become 12 and the town started to grow slowly (Hjaltason, s.a.). By then, Danish traders had a monopoly over Iceland. Three months a year, during the summertime, traders sailed to the town with all kinds of exotic goods. They landed south of Oddeyri in Innbær (see figure 7), where the first inhabitants had built their houses.



Figure 7. The town's development and different districts

In 1862 the town received entitlement as a Market Town and started to grow. Opinions on which direction the town should grow varied. A slope north of the small gravel bank was the first barrier in its development. An optimist started to build houses on Oddeyri where flatland was plenty. Some arguments against this development were based on the fact that the sea hits land from north and that Glerá river has seasonal floods that could be dangerous. These arguments did not affect the development and Oddeyri became the focal point in further development (see figure 8) (Hjaltason, 1994a).

Oddeyri grew fast, with housing, hayfields and service sprouting by 1890. During a time of prosperity a bridge was built across Glerá so people from the immediate countryside could get to the merchant for his grocery and other service (Hjaltason, 1994b).

The town kept on growing up the hills and the community expanded. Around 1900, a factory was established on Oddeyri, producing clothing and processing wool. The factory had been granted water rights from Glerá to wash wool and drive the engines (Arnórsson, 2007). After the wool had been washed and dyed the water was returned to Glerá. The river's colourful appearance in red, yellow, green or blue drew quite a bit of attention (Ingólfsson, 2009). This factory, and others, had a large impact on the community. Its special impact on Glerá makes it even more memorable.

Because the coal and oil that had provided the town with power had caused many fires, the people had started to demand electricity. A large waterfall in Glerá lower canyon had been sacrificed for a dam and hydropower plant in 1922. The town grew and stately houses of concrete started to be more common in the 1930s in Brekka (see figure 7). At the same time, poorer people built smallholdings on the north side of the river in the area called Porp. Fishermen also built themselves smallholdings by the shore, at Glerár's delta (Hjaltason, 1994c). These districts grew with time and around 1965, houses began to rise in Syðri-Brekka. It wasn't until 1990 that Giljahverfi started to rise and just

Figure 8. The town's first districts. Drawing since 1851. /BJ

recently, in 2002, houses in Naustahverfi were built (see figure 7) (Þorsteinsson, 2009).

By reading through the town's history the factors that caused the divided town are clear. The town has developed on both sides of the river since then but has through the years gradually become a whole town. Glerá has had its impact on the town through its development. It will keep on playing an important role for the town in the nearest future.

DESCRIPTION OF THE EXISTING SITUATION

My planning area is formed partly by a border of a reserved area and partly by built structures, i.e. houses and streets (see figure 9). It is not mentioned to be a strict planning border and surrounding landscape is taken into account.

LAND USE, FUNCTIONS AND ACTIVITIES

Different land use districts along the Riverside make up the town's composition. On the following map (see figure 9), several categories of land use are marked:

- INDUSTRY AND SERVICE: shopping mall, stores, ship industry, marina etc.
- <u>RESIDENTIAL AREAS</u>: Oddeyri, Innbær, Þorp, Brekka, Syðri-Brekka, Giljahverfi and Naustahverfi
- ELEMENTARY SCHOOLS AND STADIUM: football, basketball and gymnastics
- OPEN SPACES FOR SPECIAL USE: golf course, stables, recreational forest, rifle range and future motor sport area which is currently a mine
- NATURE RESERVES: rocky hills, mudflats and Glerá canyon

Single features:

- THE UNIVERSITY OF AKUREYRI: with 665 daytime students (Harðardóttir, 2009)
- <u>KOTÁRBORGIR</u>: an open space for special use, a skate park and sheepback¹ formation since ice age, a future development area for the University
- FORMER ASPHALT FACTORY: a flat area with concrete remains, it is located within the nature reserve
- <u>CURRENT STUDENT HOUSING</u>: two block buildings laying close to the main streets along the University campus
- FUTURE STUDENT HOUSING: may increase number of inhabitants living close to the

¹(Sheepback: a rounded knoll of rock resembling the back of a sheep. Produced by glacial action. Called also roche moutonnée (Porter, 2009)).

area

12

• CONCRETE FACTORY: buildings and a silo, will be removed according to future

plans by 2012 (Bragadóttir, 2009)

• ASPHALT FACTORY: construction and premises located on the edge of the nature

reserve and will be fenced to prevent public access

• <u>REFUSE DUMP</u>: a dump for the municipality and has been located there for years, will be closed in nearest future and the land will be formed and cultivated





Figure 10. Current network of paths along the Riverside

Currently there is a network of paths within the Riverside area (see figure 10). The paths connect different functions and activities (see figure 11) in the urban area, but might be made more effective both in an urban and rural context.



Figure 11. Current activities along the Riverside

ADMINISTRATIVE STATUS

Akureyri's master plan is valid for 2005-2018. While it was under review in 2004, a residential meeting was held. The meeting gave the town council opportunity to determine the inhabitants' points of view. The public recommendations, largely focused on outdoor and environmental issues as well as emphasizing on the town's center development, were used in the masterplan. The council's vision is to offer the inhabitants of Akureyri and its guests a healthy natural environment. The intention is to protect valuable landscape for flora and fauna as well as for recreation. Current open spaces should be well maintained and people should have access to multiform leisure, recreation and education about the values (Akureyrarbær, 2006a).

The Riverside's canyon is a listed nature reserve, because of its setting with vegetation, clusters of trees, multiform river erosions, waterfalls, potholes² and small caves. Any built structures are forbidden within the preserved area ("Friðlýst svæði", 2009).

²(Pothole: a circular hole formed in the rocky bed of a river by the grinding action of stones or gravel whirled round by the water ("Potholes," 2009))

On the border of the planning area is the University of Akureyri. The campus can be seen as an island-like district, as it is surrounded by open space on three sides. Its development is meant to be interwoven within the open space and well connected to the green structure with walking and biking paths (Akureyrarbær, 2006a).

Agenda 21 is a program run by the United Nations, related to sustainable development and was revealed at the UN Conference on Environment and Development in Rio de Janeiro in 1992 ("Agenda 21", 2009). It is a blueprint for every local government to follow according to their conditions in order to reach the goal of a sustainable development in the 21st century (Staðardagskrá 21, 2009). The government of Akureyri approved the 1st edition of Agenda 21 in

2001. It involves several different chapters and parts of the two chapters Lifestyle

and Biodiversity will be discussed here. The two most relevant categories to

this type of study.

LIFESTYLE: To minimize the release of greenhouse gases and the formation of haze they suggest that more bicycle lanes will be added and improved so as to connect the districts of the town better.

<u>BIODIVERSITY:</u> To increase the biodiversity and to protect geological phenomena within the urban area, a protection schedule is suggested. As an example, they mention the sheepback formation in Kotárborgir as worth protecting. To improve public knowledge on the town's nature they suggest a creation of a database (Akureyrarbær, 2006b).

VISUAL QUALITIES

I made excursions to the Riverside as I was starting to work with the planning area in order to experience it first hand. Because of its size and shape, I divided it into two parts. The winter days in Iceland have only few hours of daylight which offered only the chance for short excursions. Through simple text and photos I will try to give the readers a better visual sense for the current situation. Most of the information that appears here to the side is a description from Helgi Hallgrímsson, a natural scientist, who researched the canyon 27 years ago. Many of the mentioned features are invisible for one who does not know about them.

EXPERIENCING THE RIVERSIDE - PART ONE

On figure 13 my route is described through selected viewpoints, followed by pictures and a short personal description of each. The excursion starts at viewpoint 1, the refuse dump, and leads north towards the University.

It was a still and cold day. A thin layer of down-like snow had covered the ground. The beauty of the riverside was emphasized with obvious contrasts of rocks and hills standing out of the snow cover.

Starting by the refuse dump in the mouth of the valley the mountains were majestic and appeared closer than ever. The upper canyon starts in between the moraines which characterize the valley. Pathway markers leading into the valley and on top of Mt. Súlur are the only manmade signs. I decided to follow the indefinite edge of the canyon downwards ahead to the sea.



The upper canyon is very deep at the top where the river runs from the mouth of the valley, probably around 70-80 m deep. To further illustrate the canyon's depth, it reaches around 120 m where it is deepest.

Around 1950, an unfortunate development occurred at the canyon. The refuse dumps were located on the east side of the river in one

of the dells by the riverbank. The winds blew refuse down the valley and into the canyon. A very polluted stream runs from there down to the river causing quite insentient environment(Hallgrímsson, 1982b). The refuse dumps continue to pollute the water.

Figure 12. View into Glerárdalur



Figure 13. Viewpoints during the excursion, starting at no. 1 in the mouth of Glerárdalur, scale 1:10,000

A small cape coming down to the canyon is called Laugarhóll which means "hot spring hill" where some warm springs around 30°C run out. This water was once piped to the town's first swimming pool around 1930 and the pipe still lays there and can be seen.

A couple of small waterfalls are located there as well but can hardly been seen because of the narrowness of the canyon. A bit further up is the first waterfall in the canyon which is around 10 meters high.

On the north side of the river is an open mine which covers a large area. It used to be the site of unique gravel beds called Glerárhólar or "Glass river hills", which were hills and ridges with curved hollows in between resembling a maze. These formations have almost all been wiped out and used as construction materials for the town's buildings and roads (Hallgrímsson, 1982b).

Figure 14. The warm water pipe /JIC

I followed a road where snow and tussocks made it difficult to walk. I turned to the canyon to attempt to view it better from a cape. I noticed a pipe down in the canyon sticking out of the steep edge. It made me curious why this damage to the nature had been done in this inaccessible place.



Figure 15. The warm water pipe looks like some scrap in the canyon



Figure 16. The asphalt factory

I kept on following the road downwards until I came to an asphalt factory with an unattractive environment. I decided to pass through the area and see how it meets the Riverside.



Figure 17. There are steep slopes into the canyon

After passing hills of gravel I stood on the canyons edge. It didn't feel as deep as it was above but the edge inhibited straight view into the river. I noticed

vegetation growing along the edges, which softened the otherwise black and

rocky picture I had before me.



Figure 18. The end of the upper canyon is curved

I was almost at the end of the upper canyon when I followed a riding path which crosses the river. The canyon is low and winding in this part and made me feel safer than I did around the deep part of the canyon.



Figure 19. The upper canyon's edges are distinct

I used the opportunity to cross the river on a bridge and view it from the other

side. Birches scattered in the sliding edges demonstrate that this is a viable

place for vegetation.



Wide and overgrown dells can be seen on the north side of the river. The canyon becomes more shallow but tight again and some great potholes can be found in the size of a barrel (Hallgrímsson, 1982b). **Figure 20.** Overview over the dells and the concrete factory Between the upper and lower canyons is a flatland with a couple of dells. A concrete factory is located on the river's edge. Piles of sand and gravel slide into the river causing it to be muddier than elsewhere. This factory is expected to move as it does not suit its surroundings and causes pollution.

One of the most beautiful places in the canyon is Hesthvammur or "Horse Dell" where the river takes a sharp turn and a small fall. This dell is rich in beautiful vegetation. Below this dell is another dell quite wide and

swerved called Réttarhvammur or "Folds Dell". The name is taken from the folds which once stood there, a fenced enclosure for the classification of domestic sheep, since sheep used to walk freely in the valley in the summer and needed to be returned



Figure 21. Folds in Réttarhvammur /HE



to their rightful owners in the fall. This dell has mostly been filled up with gravel today (Hallgrímsson, 1982b).

Figure 22. The lower canyon's steep slopes

The lower canyon is as complex and beautiful as the upper one. It is not as

deep, but more visible as it is within an urban district. Clusters of trees have

been planted; increasing the sense of the human scale.



Figure 23. Signs of the former asphalt factory beneath exploded rocks

As I came to a paved path I felt more familiar with the environment as I had walked that path many times before. I decided to approach my subject with a first time visitor's eyes and stopped several times to look around. Across the river are still signs of the former asphalt factory beneath exploded rocks. Birch grows in the field beside me and brings out contrast to the snow cover.



Figure 24. A paved path lies within a forested area

I walked the path which is commonly visited and thought to be attractive. It

leads into a grove of trees where you gain shelter from the wind and can see

the birds. I also knew that cars were on my left side and the river on the right;

but neither could be seen.



A wooden platform rest area was built on an old concrete frame that looked like some ruins from a building. It made me curious about what had been there before, but I was unable to find information on the site's past use.

This first excursion took us from the wilderness of Glerárdalur, past land consuming industries, dells and bridges, down to the rural landscape with paved and planned surroundings.

EXPERIENCING THE RIVERSIDE - PART TWO

In this second excursion I started in Kotárborgir and followed a paved path nearly all the way to the shore.





Figure 27. Sheepbacks in Kotárborgir

I walked down a beautifully curved path in Kotárborgir between sheepbacks and open fields. The cold autumn air pricked my nose and the grayish sky flattened the colors surrounding me.

The reservoir now covers what was once a wide and sheltered dell. Below the dam the canyon turns east. At first it is tight and winding with grassy hills and large potholes on both sides. It opens suddenly into a much wider canyon where the motor generator is located. On the north side, two large potholes and a small cave can be found (Hallgrímsson, 1982a).



Figure 28. The bridge over the dam

A wide artery of cars was suddenly in front of me, as I stood by one of the town's

main streets. The path led me through an underpass into another space. A red

bridge and a dam were the first elements I noticed.



Figure 29. View from the bridge into the lower canyon

While I crossed the bridge I sensed the mirror like water in the reservoir and on the other hand I saw the deep and almost dry canyon standing wide open. There used to be a waterfall but now the water is led through pipes into a hydropower plant. When the river overflows, the waterfall reappears.



The powerhouse in the canyon Figure 30.

After crossing the bridge I came to stairs which lead down to the powerhouse.

It was rebuilt in 2004 and is now a known feature of the town. Close by is an

information sign that gives the pedestrians its history.

Stories have been written of the hidden people, or elves that are a significant part of Icelandic folklore. One of them describes the beautiful housing of the hidden people in the canyon: "The chandeliers and wall lights are especially beautiful, but the deep lounge chairs, carpeting on the floors and paintings on the walls are also notable." She mentions as well that their hydropower plant stands a bit above our old plant; as they started to use electricity before we did (Lárusson, s.a.).



Figure 31. View into the canyon, the powerhouse glints

The powerhouse is nestled beautifully in the canyon and stands out like a temple. Here, the shape of the canyon provides opportunity to walk on the canyon floor, offering a completely different experience.



The old bridge has a rusty and historical character. It marks the end of the lower canyon.

Figure 32. The old bridge



Figure 33. A view into the canyon, an eyot at the end of the lower canyon

The view from the bridge is excellent: from one side, a view into the canyon, and out to more open space on the other. Multiform elements create a complex and attractive landscape.



Figure 34. A view out to more open space, into a dell at the riverbank


Figure 35. Curving banks of the river formed by revetments

Built areas constrict the Riverside which is now formed by revetments on its gravel banks, built to prevent erosion and floods. Despite efforts to preserve the land the river has formed eyots along otherwise straight bank.



The end of a paved path by one of the town's main streets Figure 36.

2

The paved pathway ends in front of one of the town's main streets. I kept on

following the riverside to the shore through a non-welcoming industrial area.



Figure 37. Inaccessible area within an industrial site



Figure 38. Rusty things on the edge of the riverbank

This area is not accessible at all. Rusty things are scattered all over and I felt like an intruder.



Figure 39. View to the mouth of the river

When I had crossed another street I finally noticed the shore when I smelled the salty breeze from the sea.



Figure 40. View out the fjord

The view north the fjord was great and bunches of lyme grass (Leymus arenarius) stood out between the rocks of the seawall giving life to an otherwise gray

environment.



Figure 41.The environment around an industrial siteStill, the scattered junk was all over creating an unattractive scene.





A rocky seawall borders the whole seaboard so sandy beach was not to be expected. Therefore I became delighted when I noticed a small sandy ramp to the side. Sand beaches give an opportunity to approach the sea safely.

This second day took us from a large open space in middle of the town, past a dam and an old bridge, along the controlled Riverside to an end at the shore.

During my excursions I kept all my senses open and tried to discover as much

as possible. Both pleasant and unpleasant feelings awoke and the greatness of the canyon enchanted me. Curiosity and sense of my smallness were on top in my mind when I tried to take a closer look in the canyon. The multiform characters and spaces I entered during these excursions awoke my interest. My will to finish the route to the sea made me realize how unwelcoming it is when passing through spaces that do not seem to recognize the existence of pedestrians. Surely the end of the route brings a new experience where the sea opens up as a wide open space and your senses are filled with a new smell. This is what is called final station; at least for the river.

Sections

To understand the natural sizes and shapes of the Riverside area I have created sections. With them, real height and width is put in human scale to emphasize the area's size.



Figure 43. The sections' locations



Figure 44. Section A-A' scale 1:500



Figure 45. Section B-B' scale 1:500







Figure 51. Section H-H' scale 1:500







PROBLEMS

Some problems became clear at the very beginning of my excursions when I tried to access the edge of the upper canyon. It is difficult to walk both in the rural part and along the industrial area. Walking conditions were acceptable along the existing paths with lighting and snow removal during the winter. Benches, tables and trash cans were not widely located. Other negative manmade factors have a big impact on the environment and the ecological system. Refuse dump, mines and industrial activities bring problems that need to be addressed.

After comparing my experience to the written report from Hallgrimsson, it was obvious that I had missed many things on my way. His descriptions of potholes and waterfalls were not discovered until I made special attempts to search for them later. It seems like many things are hidden within the Riverside and may be brought to light in order to be enjoyed.

NEEDS AND FUTURE ACTIVITIES

The need for a recreation area is based on the fact that we all want to be physically and mentally healthy. Motion is good for the body and mental health. Recreational activities should therefore be an essential option for people. People have described open spaces as relaxing, comfortable, peaceful and calm, relating directly to people's state of mind. Relaxing places are needed also as places to socialize. Both overt and covert socializing should be available in open spaces, bringing people the opportunity to get together with other people or just watch the world go by (Marcus & Francis, 1998).

OPEN SPACES

An open space is the space that is left over when building sites have been cut out. In an urban context, some open spaces may be for special use, i.e. golf, football, recreation etc. Often the designed recreational places are called parks and are open to the public while some open spaces for special use may only be open to special groups of people. Other open spaces may provide habitat for wild flora and fauna.

Some outdoor activities are best performed in a certain kind of environment. When people are going to do a special activity they look for the right type of environment. These types have been characterized by Patrik Grahn, in his book "Om parkers betydelse", in eight different categories which he calls park characters. I prefer to call them open space characters according to my

definition of open spaces.

Open space character	TYPE OF ACTIVITY
1. Wilderness	1. Scouting, hiking and wilderness life Nature excursion
2. RICH VARIETY OF SPECIES	2. Nature studies and species studies Collecting objects
3. Forest	3. Physical culture and cross-country running
4. Play inspiring	4. Apparatus play Activities with animals Building, growing
5. Sports oriented	5. Arena sports Games for fun
6. Peaceful	6. GARDEN STUDIES MOVEMENT PLAY GAMES FOR FUN
7. Festive	7. Socializing Social excursions to surroundings, for pleasure and togetherness
8. Square	8. Architecture studies and cultural studies Garden studies
01)	

(Grahn, 1991)

These different spaces are all pursued by different target groups and are a necessary mixture for open spaces in towns and cities. Akureyri has a well balanced mixture of these characters and those provided by the Riverside area are: 1. Wilderness, 2. Rich variety of species, 3. Forest, 4. Play inspiring and 5. Sports oriented. The Riverside can however be improved so the characters will become more obvious within the proposal. The proposal may entail more characters as well, in order to give the area even wider range of activities.

CONNECTING SPACES

The open spaces of Akureyri are spread over the town. Together they form the so called green system which is a network of open spaces. The open spaces should be connected for non-motorized traffic either with paths, sidewalks or

greenways, which are oblong shaped open spaces.

The arrows on figure 54 represent possible and existing connections between open spaces leading from the Riverside. Within the urban part sidewalks and walking paths are common but they do not imply that they are a part of the green structure and lead to another open space. The rural part has bigger and fewer barriers that may affect the Riversides connection to adjacent open spaces. Possibilities for future connections within the rural part are therefore

more.



Protected area

wilderness

Figure 54. Possible and existing connections between open spaces

500

400

300

Kjarnaskógur recreation forest

100

ANALYSIS

The Riverside is one feature within a large landscape. It is unique and has distinct characteristics. When we look at landscape, it is combined by separated features that is viewed by the spectator as a whole and represents one landscape setting. In the book "Byen i landskapet rommene i byen", Lorange describes landscape as an interaction between small spaces and refers to Chinese boxes where one big box, which represents the landscape, contains many small ones, which represent different features.



Figure 55. Chinese boxes; redrawn from Lorange





The riverside is a mix of many different landscape features. Some features dominate in certain sites so I decided to characterize the riverside with that in mind. Nine classes of landscape characters are the results of my examination:



LANDSCAPE ASSESSMENT

By the Riverside, different factors may have an impact on the environment and the spectator's experience. Before decisions are made, it might be relevant to estimate what factors cause problems and what is worth preserving.

As the Riverside has been divided into landscape characters that represent the landscape in different zones, I decided to assess the qualities in each one. The objective categories I decided to evaluate are based on instructions for environmental impact assessment from the Icelandic National Planning Agency or Skipulagsstofnun. The subjective categories are based on qualities which I experienced during my excursions. Visual qualities may be difficult to assess but I decided to support my opinions on Merriam Webster's definition of beauty: "the quality or aggregate of qualities in a person or thing that gives pleasure to the senses or pleasurably exalts the mind or spirit" (Merriam-Webster, 2009).



characters

de	Objective		+/-
asi	Sociological	a lively marina community	+
Se	Habitat	seabirds	+
-		beautiful view line out the fjord	+
	Subjective		
	Senses	unattractive scrap	-
		relaxing sound and motion of waves gathered with salty smell of the sea	+

ea	Objective		+/-
ar	Sociological	important for employment	+
rial	Planning	clear division in land use	+
JSt	Subjective		
ndl	Senses	unattractive scrap	-
2.		all natural feeling of the riverside has been wiped out	-

Objective		+/-
Transport	the old bridge creates accessibility for walking and biking	+
Planning	existing paths	+
Subjective		
Senses	formed and unnatural river banks	-
	views at car parking and industry is unattractive	-
	Objective Transport Planning Subjective Senses	ObjectiveTransportthe old bridge creates accessibility for walking and bikingPlanningexisting pathsSubjectiveImage: Comparison of the section of

uo	Objective		+/-
cany	Constructions	the hydro has historical and electricity manufacture values	+
e	Geological	potholes	+
t t	Action	play inspiring – open space character	+
Ö	Subjective		
Enc	Senses	geological forms and vegetation create beautiful setting	+
4		accessibility in the bottom of the canyon creates experience of new space and views	+
		multiple vegetation brings seasonal colors and smells	+



Ecologicalaccumulation of mud and creation of a lake has
changed the ecology system-Geologicaldestruction of a natural waterfall and a dell-

Sociological electricity brought positive development to the + society

Subjective

S

Senses attractive mirror effect on the lake +

extreme changes when the river overflows and + creates bursting waterfall

ea	Objective		+/-
ed ar	Ecological	changes in the ecology system due to vegetation development	+/-
ste	Planning	existing paths	+
-ore	Geological	potholes by the riverside that are not noticeable today	+
<u> </u>	Habitat	birds e.g. redwings, insects	+
9	Action	forest and rich variety of species - open space characters	+
	Subjective		
	Senses	singing birds create relaxing atmosphere	+
		trees shelter from wind	+
		multiple vegetation brings seasonal colors and smells	+

ks	Objective		+/-
pbac	Ecological	some tree planting has made changes on the ecology system, creating multiplicity	+/-
ee	Geological	formation of sheepbacks since ice age	+
Sh		potholes by the riverside	+
7.	Planning	future development area for the University	+/-
		existing paths	+
	Historical	muins of farm construction	+

Constructions the former asphalt factory resulted destruction - on the cliffs

Action sport oriented and play inspiring open space + character

Subjective

Senses great view from the top of the sheepbacks + multiple vegetation brings seasonal colors and +

smells

+

Rumbling stories of hidden people

Objective		+/-
Ecological	diverse plant species	+
Constructions	industrial sites lie close by	-
Transport	bridges create accessibility for walking and biking	+
Action	rich variety of species - open space character	+
Subjective		
Senses	multiple vegetation brings multiple colors and smells	+
	industrial sites are unattractive	-
	Objective Ecological Constructions Transport Action Subjective Senses	ObjectiveEcologicaldiverse plant speciesConstructionsindustrial sites lie close byTransportbridges create accessibility for walking and bikingActionrich variety of species - open space characterSubjectiveSensesmultiple vegetation brings multiple colors and smellsindustrial sites are unattractive



Figure 67. characters Map of the landscape

uo	Objective		+/-
any	Geological	deep and winding canyon	+
C C	Air quality	asphalt factory creates dust and pollutes the air	-
ding		open mines decrease air quality when earth is blown with the wind	-
vin	Water quality	polluted water runs from the refuse dump	-
v pu	Transport	lack of bridges make it impossible to cross the river in long distances	_
t al		a road south of the riverside creates accessibility	+
Fight	Discomfort	loud noise from future motor sport area is a possibility	-
		smell from refuse dump	-
6		dust from both asphalt factory and open mines	-
	Action	wilderness - open space character	+
	Subjective		
	Senses	sound of spluttering river	+
		beautiful multiform landscape features	+
		view into the valley Glerárdalur	+
		view over the town and out the fjord	+

REQUIREMENTS AND OPPORTUNITIES

In a residential meeting held in 2004, people requested improvements along the Riverside. They asked for better connections between open spaces, as well as an increased number of rest areas and maps (Alta ehf, 2004). The residents pointed out that facilities are required to create a successful recreation area. Kaplan has suggested several issues that should be kept in mind when designing recreation areas:

- Understanding surrounding helps visitors feel more secure. Gateways, maps, landmarks and coherent areas help people orientate themselves.
- Signs of human activity, like paths and bridges etc., are usually comforting.
- The sense of enclosure feels comforting and small spaces are very much appreciated. Therefore large areas may become more attractive to visitors if divided into smaller sections.
- The visitor can be guided to areas of visual beauty and points of interest through bending paths and gateways, creating mystery and a sense of discovery, and emphasizing areas he or she may not have noticed otherwise.

(Kaplan, Kaplan, & Ryan, 1998)

With those key notes in mind I will search for opportunities that might improve my proposal for accommodation in the area.

SWOT

A SWOT analysis evaluates the strengths, weaknesses, opportunities and threats involved with a project. It can help clarify what effect chosen features may have on the design process, allowing for the emphasis of strong features while removing some of the weaker ones. Opportunities can be found in some features which might bring positive development and make the features stronger. Some features can be a threat as well, weakening the site. I chose all possible features I could find within my former examinations to assess.

Features	rengths	eaknesses	oportunities	Ireats	Discussions
	St	3	Ō	È	
Historical	C			T	The existing bridges by the Diverside are eight. Some are old and have
1. Druges	2			1	history behind them while others are more modern and some the main
					instory benind them while others are more modern and serve the main
					streets. Most of them can handle more pedestrian traffic and should be
2 Dom				T	involved when designing the paths.
2. Dam				T	the stream convert les disc into the techines is descented. Orest series
					the strong current leading into the turbines is dangerous. Great care
2 Folde			0		needs to be taken near the dam.
5. FOIDS					Rettarnvanniur and the place where the concrete factory stands today
					once performed the function of folds. Its history might be stressed
4 Davies			0		somehow so people become more aware of the town's history.
4. Kums					there are runns in Kotarborgir which awake curiosity and maybe worth
5 Warm water nine			\cap		Stressing. The warm water pipe is a rempant of cultural heritage. This feature
o. warm water pipe					could be emphasized with a rest area and information sign allowing
					could be emphasized with a rest area and information sign, anowing
					people to sense the naturally warm water and learn about the pipe's
6 Debuilt bydro	C		0		history. Rebuilding the budronower plant had a positive impact. The old budro
6. Rebuilt flydro	3				Rebuilding the hydropower plant had a positive impact. The old hydro
					marked a big step forward in the development of the town. Renewing the
					old remains brought an aesthetic improvement to the surroundings. An
					opportunity exists involving the hydropower plant to power light posts
					along the Riverside.
Natural 7 Waterfalle	C		0		Weterfalle can be pointe of interest. Sounds from meterfalls can amelian
7. watemans	S				waterians can be points of interest. Sounds from waterians can awaken
					curiosity from a distance. The most accessible waterfall in the river was
					sacrificed when the river was dammed. However, opportunity exists to
					make other waterfalls more accessible.

Features	Strengths	Weaknesses	Opportunities	Threats	Discussions
8. Multiform vegetation	S		1		There is multiform vegetation in the dells and the forested area. The
					smell, texture and colors stimulate the senses. Creates much of the
					biodiversity within the area.
9. Potholes	S		0		The potholes are geological phenomena that represent incredible power
					of the river. Its location and formation can be brought out as points of
					interest.
10. Seaside	S		0		The seaside awakens the senses with its smell, sounds and views. It
					should be a point of interest.
Other					
11. The hidden people	S		0		Stories of hidden people are an important part of Icelandic heritage
					although modern Icelanders speak less and less of them. Storyboards
					by the canyon can be installed in order to inform people.
12. University of Akureyri	S		0	Т	The University's future development poses both a threat and an
					opportunity. Poor planning is a great threat, as it would negatively
					affect public use of the open space. Good planning with its positive
					development, on the other hand could provide incentive for people to
					explore and dwell in the area surrounding the University.
13. Multiform landscape	S		0		The landscape characters by the riverside can have a different impact
characters					on people , much like the open space characters. With a wide range of
					different attractions the area can attract a wide range of people.
14. Kotárborgir	S		0		Kotárborgir increases the opportunities for activities along the Riverside
					with its size and location.
15. Former asphalt factory		W	0		The old asphalt factory remains are within the preserved area in the
					lower canyon. Parts of the cliffs have been blown out and the ground
					leveled, and may suit some types of construction.
16. Concrete factory		W	0		Current plans call for the relocation of the concrete factory leaving
					space that will need to be reconstructed or restored.
17. Asphalt factory		W		Т	The asphalt factory is located on the edge of the canyon, polluting the
					air with dust. Its future operation may threaten the ecological system
					and be unpleasant to people.
18. Mine – future motor		W	0	Т	There is no vegetation cover where the mine was opened, releasing the
sport area					suspended particles in the air which cause haze. The current plans call
					for this area to be used for motor sport. This is a positive opportunity
					for people interested in motor sport but may repel others and be an
					overall threat to the recreation area.
19. Refuse dumps		W	0	Т	The approach to Glerárdalur is by the refuse dump. Pollution, land
					destruction and the associated odor are negative factors. The opportunity
					lies in successful rendition.
20 Glerárdalur - wilderness	Q				Glerárdalur is a well known outdoor recreation area for those who enjoy

and snowmobiling are most common. With better access its usage increase.			outdoor leisure. Different activities such as hiking, cross country skiing and snowmobiling are most common. With better access its usage can
--	--	--	--

Figure 68. SWOT table

FUNCTION

With multiform characters, the riverside can offer range of different experiences. People with different interests should therefore be able to find attractive and suitable open spaces within the Riverside area. I divided the Riverside area roughly into three target zones:



Figure 69. **Division of target zones**

The urban area contains 7 of 9 landscape characters and should be suitable for most people as a walkthrough or for day-to-day recreation.

Kotárborgir is a large, open space and is suitable for people of every age. Activities aimed for children and families should suit this area because of the distance from the river, its open fields ideal for games and its closeness to a residential area.

The rural part contains the tight and winding canyon and the dells. Currently this area is most inaccessible. Great views and steeper paths would provide an ideal area for those seeking more

challenging recreation.

Size

The total length of the area is 5.8 km, with the shortest path proposed on the map being 7.1 km; stretching from sea level to 280 m above sea level.



Distance

The location of open spaces is important. The closer the area is located, the more likely people are to use it. The part within the urban area will mostly likely be used more than the rural part. An open space needs to be 8-10 minutes away so people





Figure 71. Average distance different target groups; redrawn from Nyhuus

Map showing a 400 m. buffer zone within the town Figure 72. along the riverside

Current situation



Figure 73. Existing path system

Proposal

The Riverside can have many kinds of functions. First and foremost, I see it as a hiking, promenading and walkthrough area where its oblong shape connects the town's districts as well as connecting the town to the wilderness. I therefore propose an improved path system. The main paths within the urban area, zone 1, are lit up, paved and shoveled during winter so it may be used for walkthrough. In the rural area, zone 3, the paths are covered with condensed gravel and lit up.



Existing attractions and activities

Currently the Riverside has several functions and provides areas for several activities. People gather there in their daily life for work/school or for hobbies.

After my excursions, several areas presented themselves as possible places for new activities. I investigated them with the support of Lynch's space analysis so as to understand their physical structure before I decided what part they should play. This analysis is helpful when it comes to the phase of design where the landscapes structure often controls where lines are drawn. Landscape is divided into edges, paths, districts, nodes and landmarks.



Figure 75. Existing activities





Figure 77. Sketch of a space analysis of the seaside; scale 1:5,000



Space analysis

In these cases, edges are the riverbank, steep slopes or rocks. Paths are formed with roads, walking paths or the river, and they may cut the districts into parts. The districts are the plains that are, in this case, my possible spaces for some kind of function and activities.





Districts enclosed plains









Edges



Figure 81. scale 1:5,000 Sketch of a space analysis of a part within the tight and winding canyon;

Proposed attractions and activities

I chose several ideas of activities that, according to my knowledge of the community as a native, would be well appreciated. I also wanted the area to encourage people to participate in healthy outdoor living.



Figure 82. Proposed attractions and activities

My proposed functions and activities are:

- Picnic and recreation: maintained lawns, rest areas, playgrounds, observation platforms and information boards.
- a) A lively marina community exists by which can be interesting to stop and watch.
- b) In a dell below the canyon, there is a sheltered space seen from the paths. It can be experienced like a special "room" which no one enters because there is no attraction. I would like to add something that awakens the visitor's curiosity.
- c) Between the sheepbacks in Kotárborgir, there are currently old hayfields with ditches and bogs. These fields could be leveled and drained. Maintained lawns offer more opportunities to play and the water can be used to form a pond. A playground with unconventional equipment would create a unique site.
- d) When the asphalt factory is moved the damaged site will need to be rendered. I propose a rest area with benches, tables, restrooms and information boards.
- An Ice climbing wall is proposed where the former asphalt factory was located, to be built on a university building. The site is already damaged and contains a road connection. The area is a future development for the University.
- A BMX biking course may be formed when the asphalt factory is moved. The proximity to residential areas may encourage teenagers to use it as a gathering place.
- A motor sport course is already planned by the municipality. It provides opportunity to restore the destructed mine land.
- A starting point for hikers may be improved with better facilities. A new starting point is proposed where the

track to a scout cabin begins. Facilities may be formed in a destructed land next to warm water holes.

In some of these cases I have suggested functions that have come instead of other land use. I find it relevant to

adjust the new activities according to the existing landscape which has been destroyed and is no longer natural looking.

Activity distribution

Work hours

The future distribution of activities is based on my own observations. The rural part may be used as a walkthrough for people going to and from work or school. During off hours people can use this area to enjoy hobbies and recreation.







Meeting points



I propose five main meeting points with facilities. They contain restrooms and information boards with maps. Four of them provide parking areas. The points' location is chosen in order serve some of the main activities area; such as the playground, BMX course and hiking.

Figure 85. Proposed meeting points

PROPOSAL

With this proposal I want the Riverside to become a multiform, lively recreational artery which will improve the town's image and people's quality of life. The Riverside provides multiple opportunities to more closely connect the town's districts and its inhabitants. This connection can be strengthened through people's common interests and needs, with a wide range of activities and functions which invite people of every age with different interests to come together. The Riverside may become the link that gives Akureyri the reputation of "an outdoor recreational paradise" with accessible nature both inside and surrounding the town.

The areas marked on the following map represent the proposed changes, along with increased planting, which I would like made to the area. The planting will create spaces, shelter and environmental diversity. Proposed paths are marked on the map, corresponding to the existing paths. Some changes already proposed by the town council which I took into account in my design process.

The proposed changes will be introduced on the following map (see figure 86) starting by the seaside and traveling up the river's bank toward the refuse dump.


VISION 2020

Imagine that the year is 2020 and the Glerá Riverside is now one of four main recreational areas in Akureyri. Its design provides a series of characters interwoven with activities that attract people. It is an area where nature is enjoyed. The Riverside is now called "the town's zipper" as it connects all of the town's districts with a path system which people use in their everyday lives.

I will introduce several changed areas by the Riverside (see figure 86), their impression how they looked before.

65



Figure 92.

66

Proposal for the seaside, scale 1:5,000

Existing situation



INSPIRATION

Figure 95.



Figure 101. Proposal for the industrial area, scale 1:5,000



Figure 102. Existing situation

Figure 90.

Figure 91.





The quality assessment helped me to sift through the elements that might improve the area.

- + a lively marina community
- + seabirds
- + beautiful view line out the fjord
- unattractive scrap
- Why this solution? Review: + relaxing sound and motion of waves gathered with salty smell of the sea



Figure 94. Vision of the seaside The seaside will offer a great view out onto the fjord from a deck where wind and the smell of ocean play leading roles. The river runs to the sea on one side and waves hit the sandy beach on the other.

There is a meeting point at the seaside with a parking lot. There is a shelter with restrooms, tables and benches, and information signs regarding industrial and marina life in order to inform visitors about the town's development. Information on the local seabirds, vegetation and other sea life is provided on signs as well.



Why this solution? Review:

The quality assessment helped me to sift through the elements that might improve the area.

- + important for employment
- + clear division in land use
- unattractive scrap
 - all natural feeling of the riverside has been wiped out

Riverside is well Here, the maintained with an attractive sidewalk flanked by rows of trees, lights and lyme grass. The area is characterized by a colorful wall that barricades the industrial area, providing reference to the colorful industrial constructions and the historical incidence when the river got colored by the waste from the wool factory. East of the river graffiti artwork can be enjoyed, giving youth opportunity to show their talent.



Figure 103. Vision of the industrial area



Figure 107. Existing situation



INSPIRATION







Figure 114. Existing situation

Figure 105.



Why this solution? Review:

The quality assessment helped me to sift through the elements that might improve the area.

+ existing paths

- formed and unnatural river banks

- views at car parking and industry is unattractive



Figure 108. Vision of the gravel bank

The area's character is made up of the sculptured riverbank and a curved path. It is easily accessed from the adjacent residential area and with space-creating vegetation and benches it has become more attractive for residents and pedestrians. The vegetation closes unattractive lines of sight and creates a smaller and more intimate space by the river.





Figure 111.

Figure 112.

Yhy the quality assessment helped me to sift through the elements that might improve the area. + the old bridge creates accessibility for walking and biking



Figure 115. Vision of the dell by the gravel bank

The sight of the dell located southeast of the river opens up for pedestrians. Now it is the scene of land art, created in cooperation with the town's art school. Displays change every year and people can approach it by crossing the old bridge.



Figure 118. Proposal for the end of the canyon, scale 1:5,000



Figure 119. Existing situation

Figure 121.

INSPIRATION



Figure 123. Existing situation

The quality assessment helped me to sift through the elements that might improve the area.

- + the hydro has historical and electricity manufacture values
- + potholes
- + play inspiring open space character
- + geological forms and vegetation create beautiful setting
- Review: + accessibility in the bottom of the canyon creates experience of new space and views
 - + multiple vegetation brings seasonal colors and smells



Why this solution?

Figure 120. Vision of the path at the end of the canyon

Why this solution?

The end of the canyon can be approached from below by following the paths at the bottom of the canyon, revealing a whole new setting. Minimalist safety rails and a consolidated gravel path leads people along the bottom of the canyon to the hydropower plant where stairs lead them up the canyon. A small cave, vegetation and rocks create a play-inspiring environment and the proximity to the elementary school encourages children to explore the site.

Information boards about the geological phenomena, potholes, will explain their creation and point out their location.

The quality assessment helped me to sift through the elements that might improve the area.

- + the bridge creates accessibility for walking and biking
- accumulation of mud and creation of a lake has changed the ecology system
- destruction of a natural waterfall and a dell
- + electricity brought positive development to the society
- + attractive mirror effect on the lake
- Review: + extreme changes when the river overflows and creates bursting waterfall



The manmade dam is peaceful with the attractive *mirror effect of the reservoir. The red bridge stands* out in the green-gray landscape and emphasizes the effect man can have on his landscape. A red "ribbon" stretches out from the bridge along the path, creating both a barrier along the dam as well as seating for visitors.

Figure 124. Vision of the dam

DAM



Figure 128. Proposal of a connection between the dam area and the sheepback area, scale 1:5,000

Figure 125.

INSPIRATION







Figure 129. Existing situation



Figure 131. INSPIRATION





Figure 136. Proposal for the sheepback area, scale 1:5,000



Figure 137. Existing situation

FORESTED AREA

Why this solution? Review: The quality assessment helped me to sift through the elements that might improve the area.

+ the bridge creates accessibility for walking and biking

A walkway under beneath a bridge along the river now provides the opportunity to fully follow the riverbanks edges.



Figure 130. Vision of the connecting bridge

The quality assessment helped me to sift through the elements that might improve the area.

- +/- changes in the ecology system due to vegetation development
- + existing paths
- + potholes by the riverside that are not noticeable today
- + birds e.g. redwings, insects
- + forest and rich variety of species open space + characters
- + singing birds create relaxing atmosphere
- + trees shelter from wind
- + multiple vegetation brings seasonal colors and smells

Although people seemed satisfied with the forested area before, several paths and rest areas have been added. A unique experience is provided by the possibility to sit within glades and sense the birds, shadows, smells and other attributes brought by the trees.

This setting encourages people to walk and enjoy other cross-country activities year round. Information boards offer visitors insights on the area's flora and fauna.

Figure 132.

Figure 133.

Figure 134.

Figure 135.

Why this solution? Review The quality assessment helped me to sift through the elements that might improve the area.

- +/- some tree planting has made changes on the ecology system, creating multiplicity
- + formation of sheepbacks since ice age
- +/-future development area for the University
- + existing paths
- + sport oriented and play inspiring open space character

Kotárborgir area has become a very popular jogging and walking area. Multiple paths, both paved and graveled, curve along the sheepbacks. A walking bridge offers a new connection to the University from the residential area in the West. The University

+ great view from the top of the sheepbacks

+ multiple vegetation brings seasonal colors and smells



has expanded with more departments and buildings, creating a more dynamic campus community.

Kotárborgir has three main activity districts which are connected. The ground has been leveled and covered with maintained grass. One district is mixed with the skate park, a platform used as a small stage, and a pond created from the area's bogs and marshes were drained. The open green area is now used for ball games and other activities.

Figure 138. Vision of the sheepback area



scale 1:5,000





Figure 151. Proposal for university buildings and an 74 ice climbing wall in the sheepback area, scale 1:5,000

Figure 152. Existing situation



The quality assessment helped me to sift through the elements that might improve the area.

- +/- some tree planting has made changes on the ecology system, creating multiplicity
 - + formation of sheepbacks since ice age
- +/- future development area for the University
- + existing paths

Figure 149.

- + ruins of farm construction
- Why this solution? Review: + play inspiring open space character
- + great view from the top of the sheepbacks
- + multiple vegetation brings seasonal colors and smells



Figure 147. Vision of a playground in the sheepback area

Figure 150.

Another district provides for more specific activity where a play ground of natural material has been constructed. The proximity to the residential area allows younger children to go there by themselves safely. Children's dens can be found spread in the vegetated sites, where they have created their secret places.

Stories of hidden people are spread along the canyon with reflecting illustration boards as well as information boards about the areas geology are located by the paths. A viewpoint which points out different categories, e.g. mountains, constructed landmarks in the town etc. gives visitors more familiarity to their surrounding landscape.

The quality assessment helped me to sift through the elements that might improve the area.

- +/- some tree planting has made changes on the ecology system, creating multiplicity
- + potholes by the riverside
- +/- future development area for the University
- the former asphalt factory resulted destruction on the cliffs
- + multiple vegetation brings seasonal colors and smells

The third district contains an observation platform to view into the lower canyon. Rest areas are located in sunny and sheltered spots. Some refer to the Old Icelandic building tradition, while more modern rest areas can be found close to the University buildings. Restrooms are located in the center where



the three districts meet.

Two buildings for the University are located south of the three districts. One is located where the former asphalt factory stood, hosting a program for outdoor adventure guides. The building is incorporated into the cliffs that are turned into an ice wall during winter. The house has a special wall of nets as well, which turns into an ice surface for practicing ice climbing both for students and amateurs.

Dells

Figure 154.



Figure 159. Proposal for the dells, scale 1:5,000

Figure 160. Existing situation

TIGHT AND WINDING CANYON



Figure 162. Proposal of a motor sport are, hills and a bridge at the tight and winding canyon, scale 1:5,000

Figure 155.

Figure 156.







A wide path for bikers and pedestrians of well condensed gravel is located in the dells crossing small streams on bridges.

This path is lit up which encourages people to enjoy their walks during darker hours. These small spaces within the dells create peaceful sites allowing people to become aware of the different species they have read about on the information boards by the path.

The former concrete factory, which was once a dell, now contains a BMX course. It is a popular meeting point for elder children and teenagers to enjoy physical activities and socialize. South of the BMX course is a meeting point and a parking lot. Maps and information are located in a sheltered area with restrooms, benches and tables. This meeting point is mostly used by groups that run, hike or bike together. The place that once was used to gather sheep is now a gathering point for two different target groups.

The unique view from this place has dells to the West and the upper canyon to the South. A path leads south on top of a water pipe that is buried in the ground. The pipe's effect on the landscape was thereby hidden with the path.

The quality assessment helped me to sift through the elements that might improve the area.

- industrial sites lie close by
- + bridges create accessibility for walking and biking
- + rich variety of species open space character
- + multiple vegetation brings multiple colors and smells
- Why this solution? Review: - industrial sites are unattractive



Figure 161. Vision of the BMX course and a meeting point



The quality assessment helped me to sift through the elements that might improve the area. Why this solution? Review:

- + deep and winding canyon
- asphalt factory creates dust and pollutes the air
- open mines decrease air quality when earth is blown with the wind
- lack of bridges make it impossible to cross the river in long distances
- + a road south of the riverside creates accessibility
- loud noise from future motor sport area is a possibility
- dust from both asphalt factory and open mines
- + sound of spluttering river
- + beautiful multiform landscape features
- + view into the valley Glerárdalur
- + view over the town and out the fjord

A motor sport site has been created in the former mine and a path leads amongst hills and sound barriers, mimicking the landscape that once was. Paths lead further out of the Riverside area to scouting huts and other recreation areas.



Figure 169. Proposal for the meeting point at the tight and winding canyon area, scale 1:5,000

Figure 170. Existing situation



Figure 164.

Figure 165.

Figure 166.

Figure 167.

Figure 168.



The quality assessment helped me to sift through the elements that might improve the area.

- + deep and winding canyon
- asphalt factory creates dust and pollutes the air
- polluted water runs from the refuse dump
- lack of bridges make it impossible to cross the river in long distances
- + a road south of the riverside creates accessibility
- loud noise from future motor sport area is a possibility
- smell from refuse dump



Figure 171. Vision of a bridge in the tight and winding canyon

- dust from both asphalt factory and open mines
- + wilderness open space character
- + sound of spluttering river
- + beautiful multiform landscape features
- + view into the valley Glerárdalur
- + view over the town and out the fjord

The canyon has become accessible with bridges and paths. An observation platform allows visitors to experience the canyon closer, and bridges allow people to stand directly above the canyon. By the meeting point, there is a geothermal wading pool which can be enjoyed after a good hike. The wading pool reminds the visitors of the town's first swimming pool which utilized the naturally warmed water.

Why this solution? Review:

the elements that might improve the area.

- polluted water runs from the refuse dump
- smell from refuse dump
- + wilderness open space character
- + sound of spluttering river
- + beautiful multiform landscape features
- + view into the valley Glerárdalur
- + view over the town and out the fjord

The refuse dump has been closed and rendered. Above the former dump, a parking lot and a facilities area with restrooms and information boards bring visitors both convenience and information before they take off for a hike to Mt. Súlur or Glerárdalur.

REFLECTIONS ON THE PROPOSAL

When I started examining the Riverside area, I noticed that this barrier which the river had historically been could become an attractive recreation area, located almost in people's backyards. When I considered people's wishes and asked inhabitants personally what they thought about this area they were full of ideas. This enthusiastic interest made me realize that people's longing to recognize one of its town's major landscape features is prominent. My aim was then obvious. I wanted to bring new perspectives of the area to the inhabitants. They should be able to provide themselves knowledge and experience which would improve their sense of understanding and belonging to the town.

My project places emphasis on the character analysis. Surprisingly the area is composed of many different attributes that bring it its variety. I decided that characterized greenways with effective and attractive path system would give the area great value, both to offer promenades in multiform landscape and to serve as a transport artery.

In my opinion bridges are more than the ability to cross a barrier. It is a structure that allows people to cross the limits of their own ability and observe new points of view, e.g. the bird's eye view achieved by hovering above a river in a middle of a canyon. For this reason, I proposed several new bridges. This also gives the path system more variety.

The possibility of regaining some of the wetlands within Kotárborgir was considered, in order to stretch the biodiversity. The current situation is that ditches drain water from an old marshy field and the area is difficult to use for any kinds of activities. If the wetland would be regained, the area would

have needed platforms allowing for people to pass. I therefore proposed an area with more utility value for activities and a pond to create room for increased biodiversity and more play opportunities. I think that the value of gaining land for activities is in this instance a strong enough argument against the regaining of wetlands. Also, three different nature reserves near the town contain wetlands.

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The speed and size of the University's expansion will have a big impact on the number of people visiting the site. I proposed an expansion that would not affect the centralized landscape of Kotárborgir, but would bring more active people into the area. An academic program for mountain guides could create a dynamic interplay between public and students interacting in the landscape.

When I was brainstorming about suitable activities I decided that this open space should belong to everyone. Its centralized location and its characteristics gave the impact that activities and attractions should suit as wide range of target groups as the town contains. None of the other open spaces suit as many target groups, as well as being a greenway link to serve the adjacent specialized activities.

This proposal is not what I think is the only solution, rather one idea of hundreds. Through a sketch process, I arranged and rearranged the possibilities and ended up with what I think is a logical and suitable proposal for Akureyri.

In current societal circumstances, companies and municipalities need to limit expenses and unemployment is increasing. People become more aware of the need for a healthy and trustworthy society. The residents, and their mental and physical health, are what make the community and the town. I see the open landscape as a source to activate people into leading healthy lifestyles. I would rate the town higher if the green system was more successful. I believe it would make it a more a feasible choice to raise my family. Others may agree with me.

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CONCLUSION

Several types of studies were used in this proposal. The initial literature review gave me insight into different aspects of the town's background; everything from data about rivers in the fjord to Icelandic philosophy about nature. I made excursions early in the process to get my first impression of the Riverside without being affected by external information.

My imagination started to confuse me with an outpouring of ideas and I gathered all information I could find about the Riverside that could possibly matter. I then realized that all this information was difficult to handle without a method, much like starting a puzzle without arranging the edge pieces first. Finding a method was the key to a logical working process and I then felt like the project was under control. I developed a method based on several types of analysis chosen according to the situation and what I wanted to get out of the project, i.e. exploring the opportunities. The analytical frameworks allowed for me to categorize the puzzle pieces so I could more easily find a way to create my "image"/the proposal. These puzzle pieces can be rearranged and formed into many different images depending on the player's aim.

I could have presented completely different solutions for the Riverside, but my analysis led me this way. People may argue about the quality of the proposal, which would make me glad because it is still just ideas on paper. Further discussions would confirm that people have strong opinions about their surroundings.

During this project I started to wonder about people's awareness of nature and how different groups always seem to have had different opinions, i.e. the

conservationists vs. the opportunitists. Profit always seems to be a controlling factor and may be why the factories and the refuse dumps were placed along the Riverside. Polluted water could simply be sent into the river and because one industry was already there, why not building the rest there as well? Now the town has grown, heading up along the Riverside. It has now become people's "backyard". Would the people of Akureyri not profit if constructions were made for them and not more industries? Maybe I should have proposed a Riverside free of industry? Or maybe we can live in a settlement with a little bit of both?

REFERENCES

LF; book title translated by Lilja Filippusdóttir

- Agenda 21. (2009a, 20. January 2009). Wikipedia. from http://en.wikipedia. org/wiki/Agenda_21 Access: 29.01.2009
- Akureyrarbær. (2006a). Aðalskipulag Akureyrar 2005-2018 (Overview plan for Akureyri 2005-2018; LF). Akureyri. (Akureyrarbær o. Document Number)
- Akureyrarbær. (2006b). Staðardagskrá 21 (Agenda 21; LF). from http://www. akureyri.is/stadardagskra/hlidarflokkur/nr/6939 Access: 05.01.2009
- Akureyri í öndvegi (Akureyri in place of honour; LF). (2004). Akureyri: Alta ehf, John Thompson & Partners. (J. T. P. Alta ehf o. Document Number)
- Arnórsson, o. (2007). 110 ár síða/n/ Tóvélar Eyjafjarðar hófu starfsemi sína (110 years since Tóvélar in Eyjafjörður started operating; LF). from http://idnadarsafnid.is/news/110_ar_sida_tovelar_eyjafjardar_hofu_ starfsemi_sina./ Access: 23.03.2009
- Beauty. (2009). Merriam-Webster Online Dictionary. from http://www. merriam-webster.com/dictionary/beauty Access: 31.01.2009
- Flokkun umhverfisþátta (Classification on environment factors; LF). (2005). Skipulagsstofnun. from http://www.skipulag.is/focal/webguard.nsf/ key2/leidbeiningar_um_mat_a_umhverfisahrifum Access: 05.03.2009
- Friðlýst svæði (Nature reserves; LF). (2009). Umhverfisstofnun. from http://www.ust.is/Natturuvernd/Natturuminjaskra/nr/299 Access: 30.01.2009
- Grahn, P. (1991). Om parkers betydelse. Alnarp: MOVIUM.
- Hallgrímsson, H. (1982a). Glerárgil landslag, gróður, dýralíf, nýting (Glerárgil - landscape, vegetation, wildlife, utilization; LF). from http://www. akureyri.is/stadardagskra/nr/451 Access: 05.01.2009
- Hallgrímsson, H. (1982b). Glerárgil efra (Glerárcanyon the upper; LF). from http://www.akureyri.is/stadardagskra/nr/4108 Access: 05.01.2009
- Harðardóttir, S. (2009). Akureyri: Háskólinn á Akureyri. Access: 05.03.2009
- Hjaltason, J. (1994a). Saga Akureyrar. Í landi Eyaralands og Nausta: 890-1862 (Akureyri's history 890-1862; LF) (Vol. 1). Akureyri: Akureyrarbær.

Hjaltason, J. (1994b). Saga Akureyrar. Kaupstaðurinn við Pollinn: 1863-1905 (Akureyri's history 1863-1905; LF) (Vol. 2). Akureyri: Akureyrarbær.

Hjaltason, J. (1994c). Saga Akureyrar. Vályndir tímar: 1919-1940 (Akureyri's history 1919-1940; LF) (Vol. 4). Akureyri: Akureyrarbær.

Hjaltason, J. (s.a.). Ágrip af sögu Akureyrar (Recap of Akureyri's history; LF). from http://www.akureyri.is/lifsins-gaedi/saga/ Access: 02.05.2009

Ingólfsson, S. (2009). Akureyri. Access: 03.02.2009

Kaplan, R., Kaplan, S., & Ryan, R. L. (1998). With People in Mind - Design and Management of Everyday Nature. Washington D.C.: Island Press.

- Lárusson, G. G. a. F. H. (s.a.). *Kjarnaskógur.* from http://www.nat.is/ travelguide/ahugav_st_kjarnaskogur.htm Access: 06.01.2009
- Lorange, E. (1984). *Byen i landskapet rommene i byen.* Oslo: Universitetsforlaget.
- Marcus, C. C., & Francis, C. (1998). *People places: design guidelines for urban open space*. New York: John Wiley & Sons, Inc.
- Nyhuus, A.-K. H. T. S. (1994). *Planlegging av grønnstruktur i byer og tettsteder*. Trondheim: Direktoratet for naturforvaltning.
- Óskarsson, Ö. (s.a.). Sólfarsvindar hafgola og landgola (Sea breeze and land breeze; LF). from http://www.fsu.is/~ornosk/vedur/vindur/solfarsv. html Access: 05.03.2009
- Porter, N. (2009). *Sheepback.* Retrieved May 2., 2009, from http://www. answers.com/topic/sheepback Access: 02.05.2009
- Potholes. (2009). from http://www.merriam-webster.com/dictionary/pothole Access: 03.05.2009
- Staðardagskrá 21, s. í. s. (2009, 25. January 2007). *Hvað er staðardagskrá* 21? (What is Agenda 21?; LF). from http://www.samband.is/dagskra21/ template1.asp?Id=746 Access: 25.01.2009
- Stahlschmidt, P. (2001). *Metoder til landskabsanalyse: kortlægning af stedets karakter og potentiale - Methods for landscape analyze.* Copenhagen: Forlaget Grønt Miljø.
- SWOT analysis. (2009b).Wikipedia. from http://en.wikipedia.org/wiki/ SWOT_analysis Access: 23.04.2009
- *Tundra.* (2009). from http://en.wikipedia.org/wiki/Tundra Access: 02.05.2009

Þorsteinsson, L. (2009). Akureyri. Access: 04.05.2009



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Figure 104. Wikimedia. (2009). from http://upload.wikimedia.org/wikipedia/ commons/3/3a/Hippophae_rhamnoides-01_(xndr).JPG

Figure 111. http://3.bp.blogspot.com/_Ymx9e66vrGc/SSEKRAsf_FI/ AAAAAAAAGLE/JbXJ2cgWQkE/s1600-h/eden-installation-bymunro-2.jpg

Figure 112. Les pages de Nezumi. (2009). from http://nezumi.dumousseau. free.fr/japon/j2/japarhayama.jpg

Figure 116. Blikksmiðjan Grettir. (2009). from http://www.grettirblikk.is/ vorur.htm

Figure 117. JSÓ. (2009). from http://www.jso.is/gler_handrid/A_gler_ handrid_3.htm

- Figure 121. Turenscape. (2007). from http://www.turenscape.com/English/ projects/p_view.asp?id=336
- Figure 126. JSÓ. (2009). from http://www.jso.is/gler_handrid/A_gler_ handrid_3.htm
- Figure 127. Blikksmiðjan Grettir. (2009). from http://www.grettirblikk.is/ vorur.htm
- Figure 131. http://photos2.meetupstatic.com/photos/event/b/a/3/0/ highres_1607664.jpeg
- Figure 132. Camp Jubilee. (2009). from http://www.campjubilee.ca/ Whats+New/Photo+Gallery/default.htm
- Figure 133. Oslopuls. (2009). from http://oslopuls.aftenposten.no/ multimedia/archive/00024/_A62krokket0906_jpg_24497d.jpg
- Figure 134. Neath Port Talbot. (2009). from http://www.neath-porttalbot.gov. uk/~%5C..%5Cimages%5Cpressreleases%5C1867_TY_MAEN_ AMPHITHEATRE_JUN_05_002good.JPG
- Figure 135. Smackdab.us. (2009). from http://smackdab.us/wp-content/ uploads/2008/02/heron-haven-wetlands.jpg
- Figure 148. http://farm3.static.flickr.com/2092/2228165630_9e5ff6dd9e. jpg
- Figure 150. Medeba. (2009). from http://www.medeba.com/Ice%20Wall%20 Photos/Bean%20climbing%20large.jpg
- Figure 158. National Assembly for Wales. (2009). from http://www. assemblywales.org/meetingplace_cr-as72nb_portrait_lg-2.jpg
- Figure 164. Jaunted. (2009). from http://www.jaunted.com/files/admin/ skywalkviewers.jpg
- Figure 165. Superstock. (2009). from http://wwwdelivery.superstock.com/ WI/223/1804/PreviewComp/SuperStock_1804R-8264.jpg
- Figure 168. ASK arkitektar. (2009). from http://www.ask.is/is/projects/ project/fristundahus_gotu_hrunamannahreppi?img=690