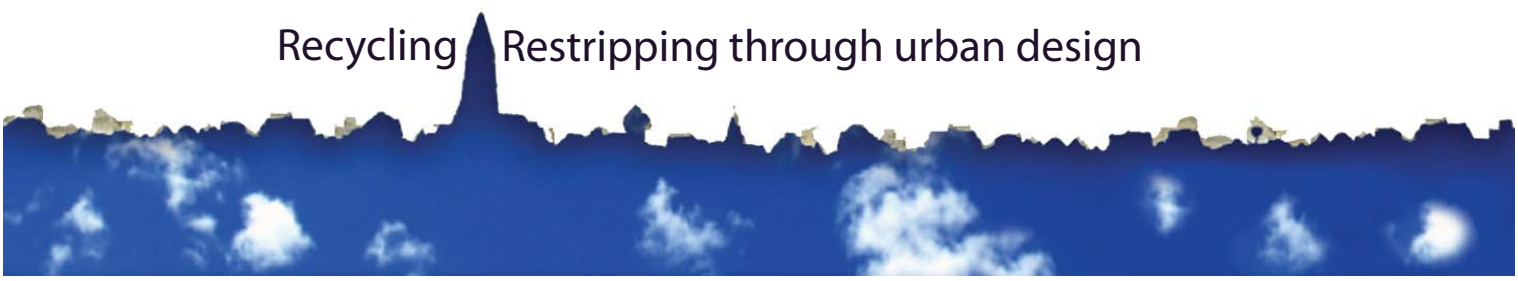
Masters thesis by Pálmi Freyr Randverson

RESTRIP CYCLE REYKJAVIK

Recycling Restripping through urban design



Recycling Reykjavik
- restripping the city through urban design

Final thesis - 10. semester
Aalborg University
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abstract

Recent trends in favor of automobility have resulted in uninteresting and unhealthy cities where clever commuting options have not been given the same opportunities as the private car. This affects people in various ways and the need for innovative solutions to solve the problem with mobility can't be ignored. In cities like Reykjavik where car dependency is abnormal there is work to be done to promote other possibilities. Where bicycling has mostly been regarded for recreational purposes but was in the past used more as a mode of transportation cycling could have it's renaissance if conditions were improved by the city authorities. This report suggest solutions for a city which seems to have overlooked the possibility to consider bicycling as a realistic way to solve it's transportation problems. Simultaneously the solutions presented enhance urban spaces in the city and create better surroundings for the citizens. Specific design solutions are presented which could hopefully get more people to change their ways and promotional campaigns are mentioned as supplements to the physical improvements.

The question is: Can a car dominated city be gradually turned into a livable people's city with mixed transport modes and brand new urban qualities just by turning the focus more towards bicycling?

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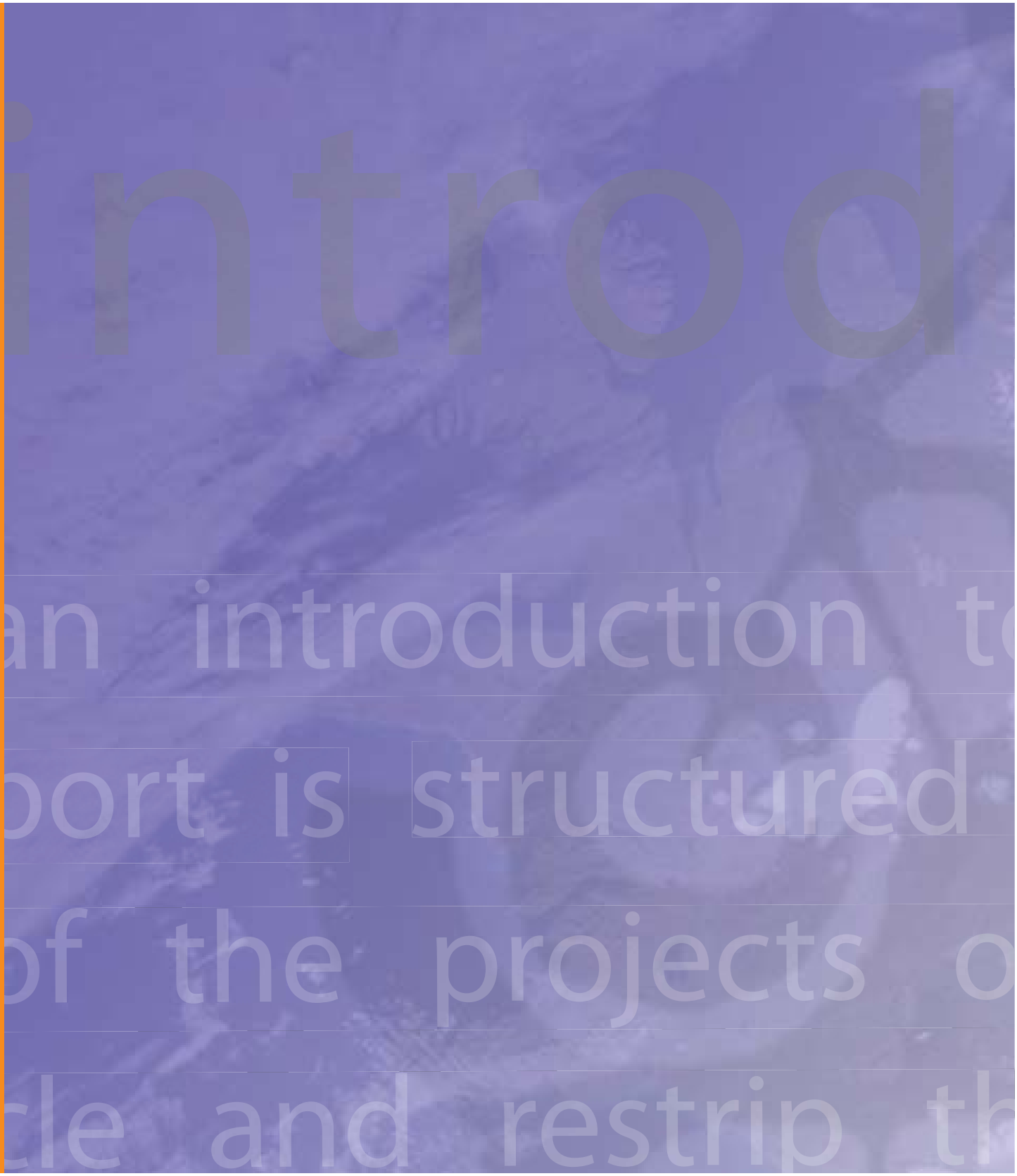


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pretext

This project is the result of a final thesis in urban design at Aalborg University´s, Architecture & Design. It focuses on sustainable mobility with the bicycle as a key element to improve urban conditions in Reykjavik. Voices in the city are getting louder, debating general matters of transportation, congestion, pollution and other aspects related to car traffic but also concerning the role of transportation in a large city and the possible beneficial factors related to softer transport modes. Urban development in Reykjavik has been hugely affected by the overwhelming presence of the private car and this must be dealt with as soon as possible.

The project is related to my work at The City of Reykjaviks Department of Environment and Transport. It is built on my experiences from Aalborg University, working with urban design, mobility and city planning but not less on my stay in Denmark for several years. Studying abroad gives the possibility to bring home experiences from the foreign society as well as academic learnings. The Danish overall mentality, prioritisation concerning urban issues and general social behaviour is just as important to learn from and valuable for an urban designer to bring back to Reykjavik, Iceland.
I would like to thank my supervisor Victor for his first-class guidance and Stig and Britta for their amazing hospitality. My father for everything and Biggi for the long phone calls. Last but not least I would like to thank Gudjorg and the boys for bearing with me for the past 4 months and giving me this opportunity.

text

The objective is to

ReCycle

the city of Reykjavik by

ReStripping urban areas

in favor of soft modes

and thereby

promote sustainable mobility in the city

and ...

improve

living conditions

idea and focus

This project is about recycling and restripping the city of Reykjavik. The idea is to rethink the city´s roads, paths and urban areas in favor of soft transport modes. By transforming infrastructural systems to enhance alternative transport and looking at already assigned public spaces with fresh eyes the intention is to exploit the city's existing possibilities while at the same time offer new ways of utilizing the city. The project derived from a discussion about implanting bicycle paths in Reykjavik, a city where cycling is barely existent, and has evolved towards the possibility to generate urban areas by redesigning streets and open areas in favor of pedestrians and cyclists. An underlying tone in the project is to enhance public spaces in the city which can often be achieved by providing new transportation possibilities thus improving living conditions and hopefully changing travel behaviour.

reading

Introduction

References

Case Study

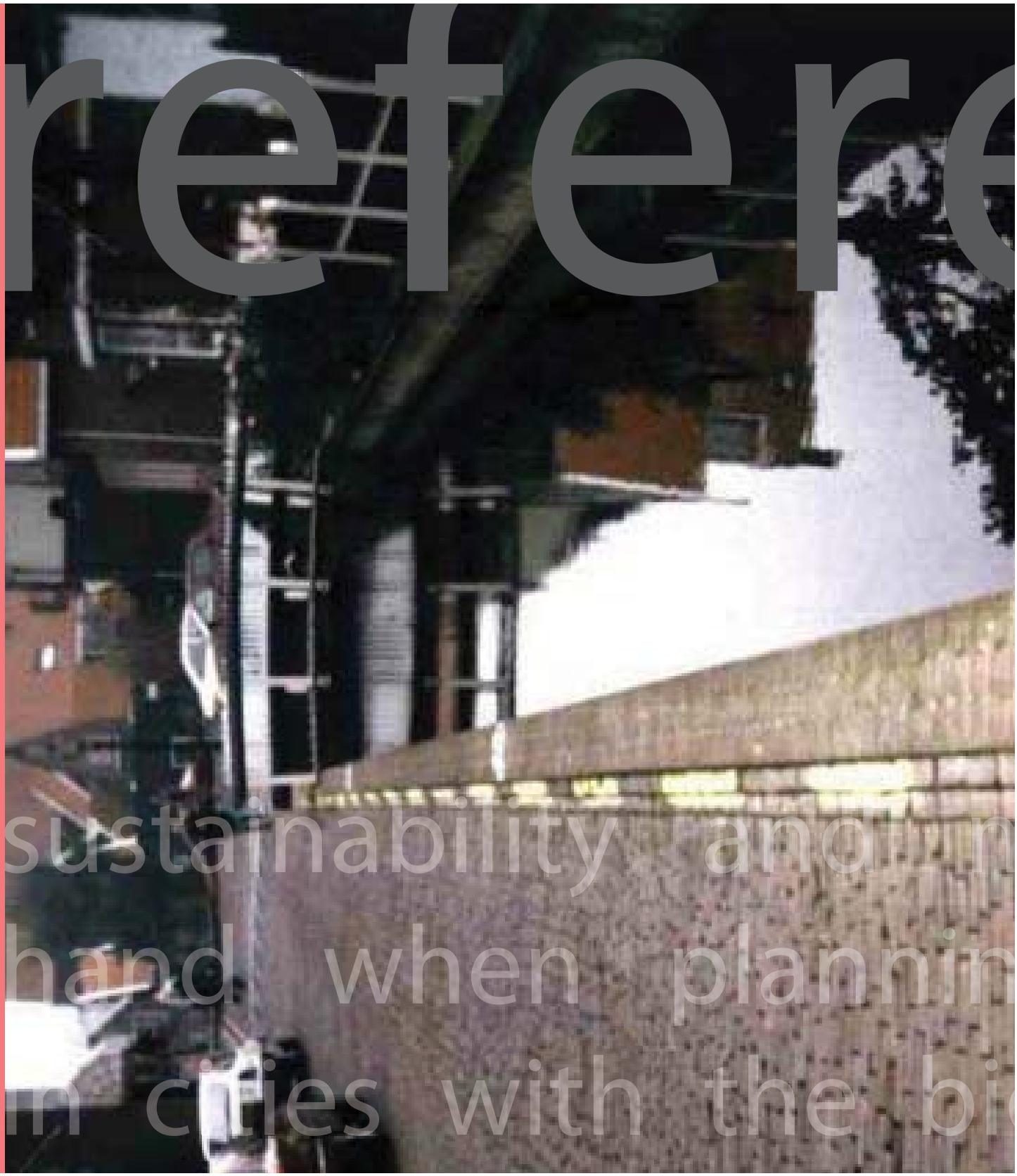
Discussion

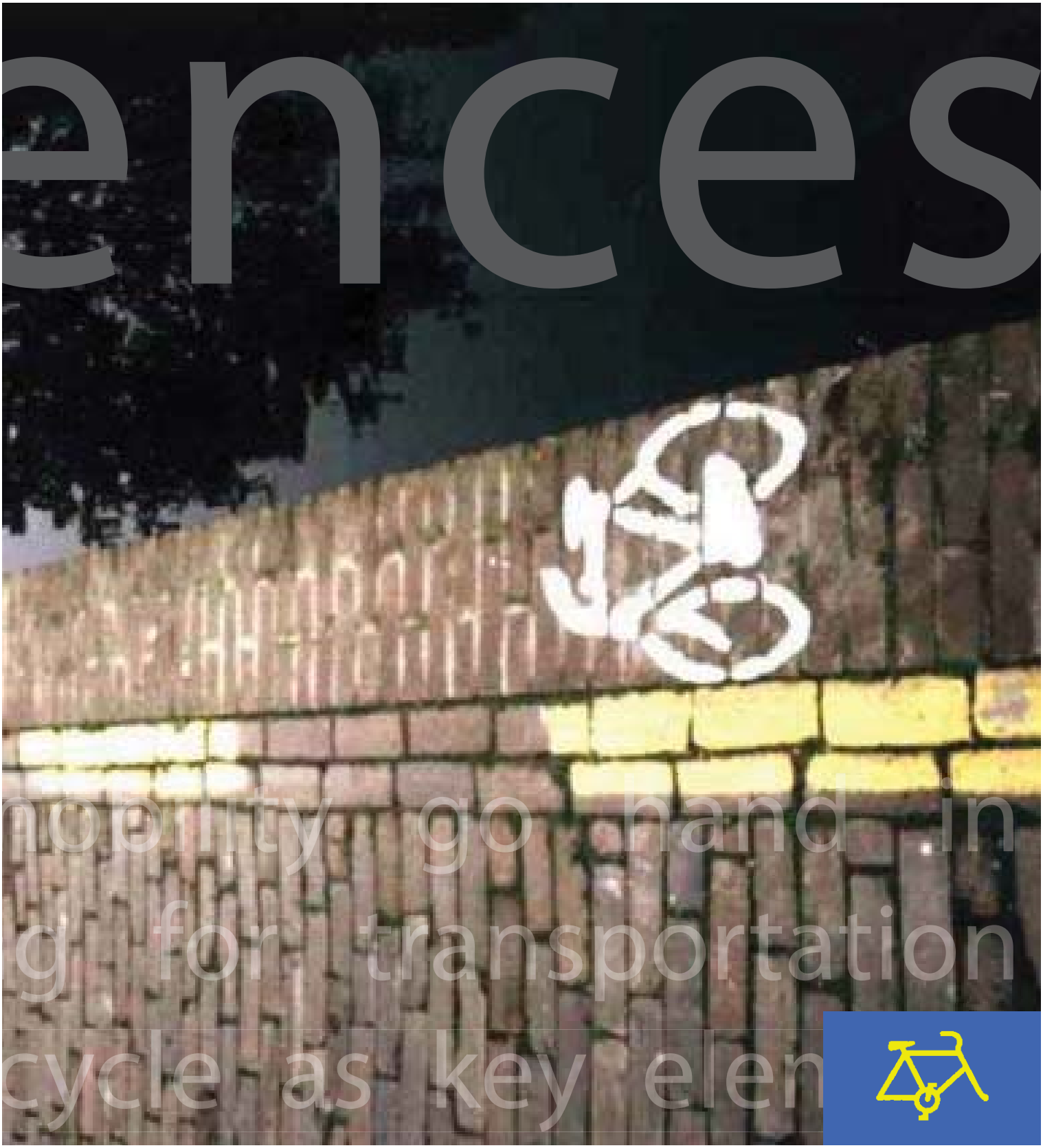
Design

Perspective

The first part of the project forms a basis for a discussion about the projects main theme which is sustainable mobility. The theoretical discussion focuses on the importance of a multimodal transport society with bicycling as key element. Some foreign examples are introduced to get a sense of the global trends and the history of Reykjavik and its present situation is drawn up. The city is compared with other cities to get a proportional idea about the current situation.
The second part of the project focuses represents the design solution. Design guidelines are presented which could be useful in any city and specific design solution for a bicycle network and focus areas are presented in detailed design. Finally a perspective to reflect on the projects general observations and an analysis of my own work on the project as a conclusion.

guidance





mobility

As an extremely important element of the industrial revolution, the private car replaced the horse as the primary mode of transport and provided unimaginable mobility and comfort for people travelling longer distances. The horse was starting to be a nuisance in cities and dirt and the smell related to the animal was not suitable. The car was cleaner and less polluting and provided great flexibility and new opportunities in travel. The car has often been looked upon as a status symbol and by not possessing a car and using other means of transport people have been categorized as second grade citizens or out of the ordinary.

The car is considered as one of the major breakthroughs of modern history. It was meant to fulfil requirements of accessibility for citizens of every town. The Ford T-model was introduced one hundred years ago and represented the first mass-produced automobile and. The year 1908 was the year when the the car started to come into popular usage..Since the general public got the chance to own a car of their own, millions of hours have been spent in traffic jams and an enormous amount of land has been used for infrastructural purposes. In USA parking was becoming a problem as early as 1918 and the parking meter was first introduced in Oklahoma in 1935 as a sort of congestion charging to try and regulate the traffic which was becoming unsuitable for the inner city. So in many cities the car had become a victim of its own success and the mobility it was intended to provide resulted in standstill.

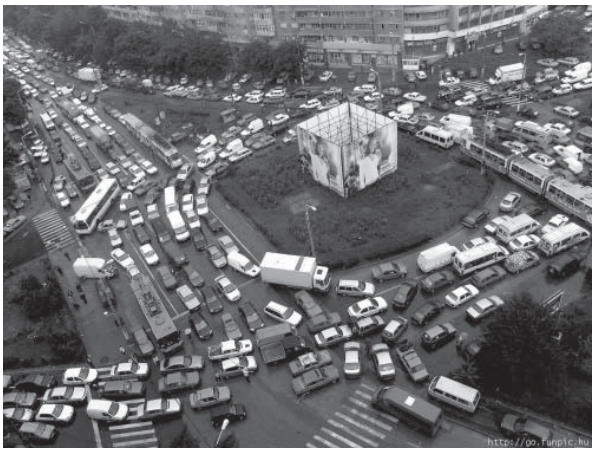
Towns and cities today have to make some serious decisions about whether to continue to provide land for traffic infrastructure or if the development should be turned into other directions for more city friendly transport modes.

The mobility associated with the car revolution has also resulted in city planning in favor of car use. Areas with possibilities for recreational use for citizens or further residential development are occupied by parking spaces and other transport related functions because of urban sprawl and high car ownership. So the cost of automobile dependence is high. Not only in building infrastructure, oil prizes etc. but also in loss of areas that could be serving other purposes. James Howard Kunstler, author of The *Geography of Nowhere* and other books on contemporary urban conditions refers to urban sprawl and car depenency as the "the greatest misallocation of resources in the history of the world". Mobility should be approached with new means and even the whole concept of mobility and it´s necessity revalued.

Parking, Omaha, USA 1938

Car culture, Hringbraut, Reykjavik

"Automobile slum," Betlehem, USA



Traffic, Bucharest, Romania

Suburban sprawl, Baltimore, USA

Motorways, Medford USA

sustainability

The "Brundtland report" of the world commission on environment and development mentions the concept "Sustainable development" for the first time in 1983. The concept implies "meeting the needs of the present without compromising the ability of future generations to meet their own needs". The report recognizes that major environmental problems on a global scale are of common interest for all nations which should set out policies towards an environmentally sound and sustainable development. Following, the Agenda 21, or The Rio Declaration on Environment and development, was adopted by 179 governments in June 1992. The agenda has the goal to establish new global partnerships to work towards the protection of the integrity of the global environmental and developmental system - "Recognizing the integral and interdependent nature of the Earth" (www.un.org).

The sustainability concept is new but the general idea about making use of our natural resources in a sensible way dates back ages. Sustainability in cities is one of the biggest challenges we are faced with today. Various examples of cities striving towards being sustainable or "ecocities" exist all over the world. Curitiba in Brazil is often mentioned in this context mostly because of a planned transportation system favoring public transport and softer transport modes and above all strict controls on urban sprawl. Further emphasis on sanitation and green areas in the city make Curitiba one of the best examples of a sustainable city. The Curitiba Master Plan which has lead to this prosperous development in the city was adopted in 1968 in contrast to f.x. Dongtan in China which is a new ecocity that was presented at the United Nations World Urban Forum in 2006 with an estimated population of 50.000 by the year 2010 and 500.000 in 2040. Dongtan is to be self-sufficient in water and energy. Transportation in the city is to be "zero-greenhouse-emission". The sustainability movement in these cities has forced economists and environmentalists to find solutions that are mutually beneficial.

Sustainable development takes into account three distinct development processes at the local level - economic development, community development and ecological development.

An imperative element in the sustainability discussion in cities can be measured by residents ecological footprints which demonstrate the way we use the planets resources. Ecological footprints are measured by peoples travel patterns, both on land and in the air, by the way we manage our energy use at home and by our general consumption both in food and appliances. By calculating ecological footprints it is possible to see how many planets would be needed to support us if every citizen of the earth had the same standard of living. The World Wildlife Fund, claims that to be theoretically sustainable on a global scale citizens must not have a larger ecological footprint than 1.9 hectares. This means that approximately 1.9 ha of biologically productive area pr. capita exists on our planet. Today the average UK score is approximately 5.6 ha and the US over 9.5!

Sustainability thus does not only cover environmental issues. The principles of global sustainability, derived from the Brundtland report are to eliminate poverty, reduce consumption and production of waste, enhance global cooperation as well as community based approaches. On a more community based level, Local agenda 21 takes into account local cultures and focuses on sustainable development in a smaller context. LA 21 is first and foremost a welfare plan which every municipality is supposed to exercise in consistency with the Rio declaration to promote sustainability in cities and ensure prosperity for future generations.

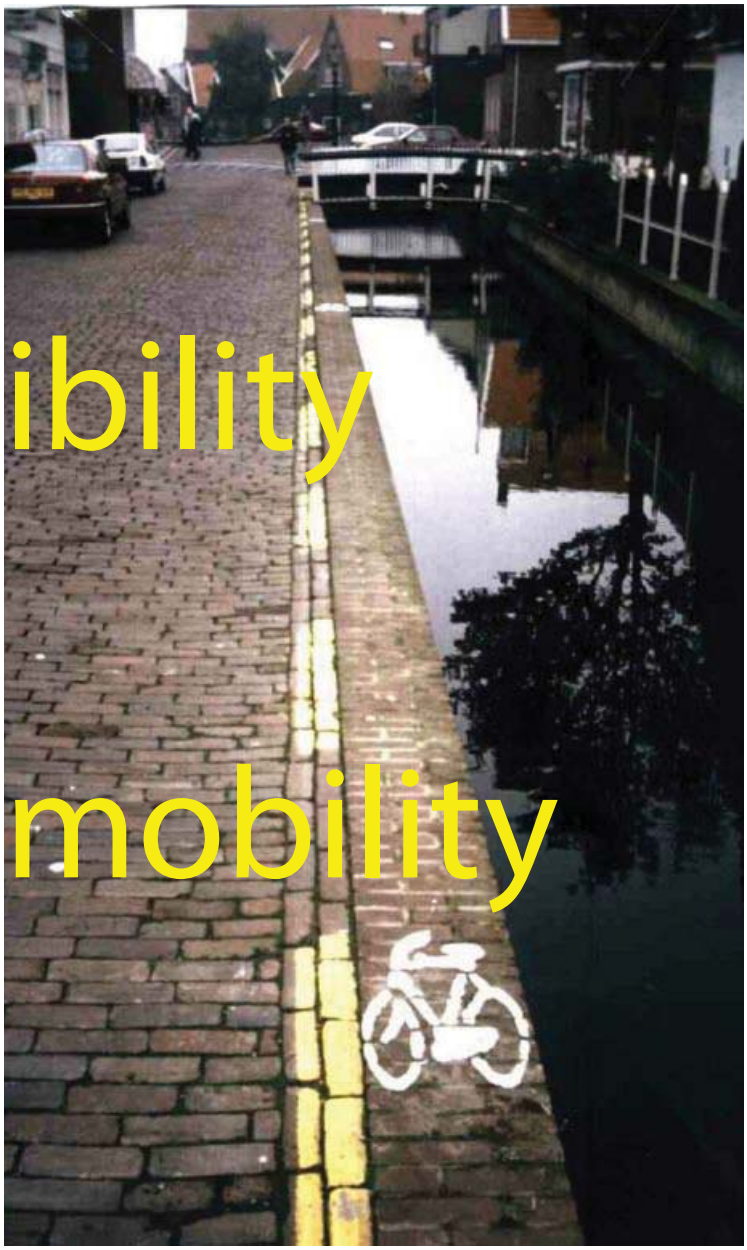
sustainable mobility

Transportation is apparently a hot topic within the sustainability debate. Since the private car became the main mode of transportation in western countries, it has also received status as one of the biggest challenges in cities. This is both because of environmental impacts related to use of fossil fuels as well as local pollution like particulate matters, NO_x and other pollutants. Also mobility as the ability to travel fast within cities is of great importance especially in an economic context. Traffic safety, social seclusion and other issues are also related to the overuse of the private car. Of course the introduction of the car has lead to great economic progress all over the world and made it possible for people to travel further more comfortably than before. Nevertheless other modes must gain share for various reasons. Sustainable mobility is reprented by transport that minimizes fuel consumption, greenhouse gas emissions and pollution. Car sharing, public transport, bicycling and walking are examples which are considered sustainable transport compared with todays trend which is often only one person pr. car. More technological solutions like hybrid or electric vehicles are another approach to try and move towards more sustainable mobility in cities. "Better Place" is a project that works to build a network with technology available today to support energy for electric cars. It's goals are to promote sustainable transportation, global energy independence

and freedom from oil. “Filling stations” are strategically situated near places of work, living and commercial areas. These are though not filling stations in the traditional sense of the word but battery exchange portals where batteries with at least 100 miles driving capacity can always be obtained by participants in the project. A great idea indeed which decreases environmental impacts by the private car but still demands the same amount of infrastructure and service. Also the possible health benefits obtained by walking or cycling are not related to this solution. But striving towards sustainable mobility must nevertheless include all possibilities to bring the current situation into a different path and reduce the effect on the environment. Also land-use strategies that discourage urban sprawl and focus development around public transport are decisive when changing travel behavior.

Sustainability in cities is often strongly related to mobility. Huge steps can be taken towards a more eco-friendly community by really putting an effort into altering transport habits while at the same time benefitting from the change in various other ways. The benificieries from this are both the citizens themselves and the municipality. Promoting bicycling and walking is a natural element in this work and public transport can often use a boost to be considered more eligible and to be able to compete with the private car in practicality. Infrastructure must be provided, campaigns carried out and all measures used for these different solutions to fulfil their tasks on a mutual level. Equality is keyword in todays transport planning where all modes work together on the same level towards the same goals.

accessibility versus mobility

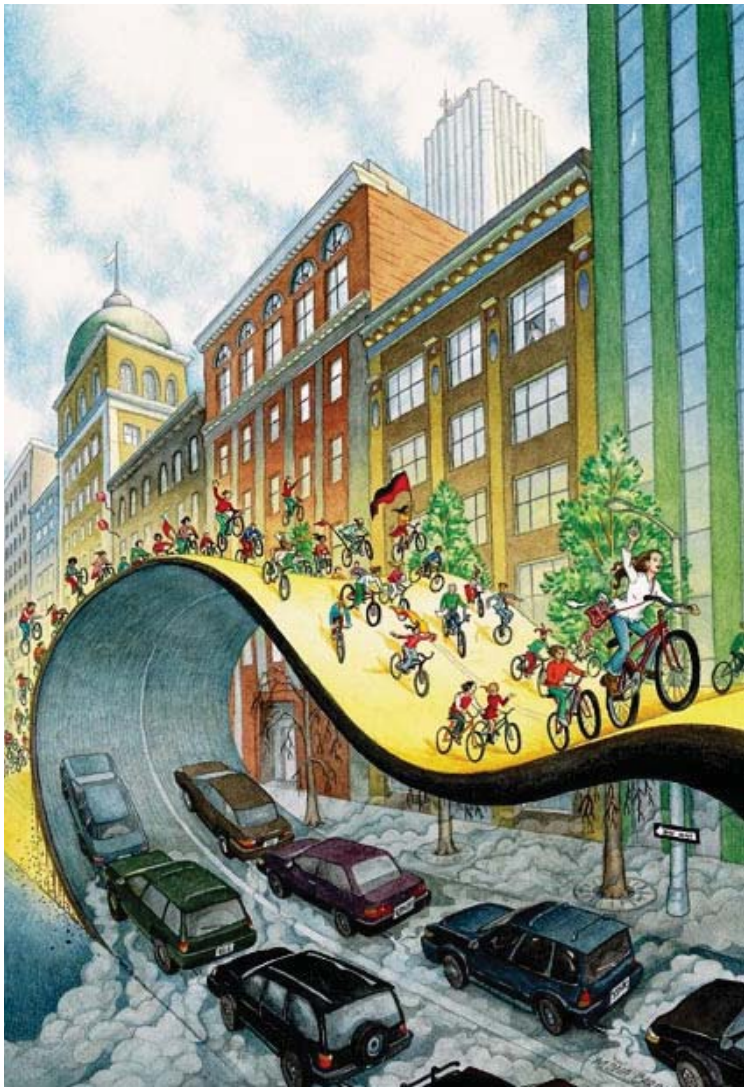


Mobility is often associated with the impression of a well-functioning city. The ability to travel swiftly through a city and be able to accomplish as much as possible has weighed highly in international cities' overall comparisons. But nevertheless the dominance of cars, and car infrastructure as well as facilities devoted to the private car has resulted in the decline of mobility where people have gotten used to spending abundance of time every day waiting in line to get to work or to other destinations. For many, this has become an accepted part of their everyday lifes and as a result the demand for more traffic infrastructures and better servicing for the private car gets heavier. John Urry describes the term automobility to comprise six components that combined produce the "specific character of domination". These six components are:

- The manufactured object - the car itself as an object
- The individual consumption where the car is, after housing, our primary status symbol
- The complex of industries revolving around the car world
- The mobility that influences greatly how people live their lives
- The culture concerning the private car and its role in everyday life
- The environmentally influential transport option

The effect the car has on our daily lives is enormous and although it provides us with the freedom to travel further, its domination should be confronted.

Mobility management is a tool often used by local governments to regulate traffic in cities by alternating transport behaviour and improving traffic flow. An element of mobility management is for example to introduce flex time to businesses. By offering flex time employees are encouraged to travel to and from work outside peak traffic hours thus not spending too much time in traffic themselves. Hence the business can gain social status by not contributing to the perhaps already cloaked traffic system. This approach can



improve mobility in cities and can even have a positive effect on the environment. Flex time can though also encourage more people to drive because of the sudden optimization of flow in the traffic network and therefore work against the gained environmental benefits.

Mobility is about movement but accessibility is about opportunities. Improving mobility may not reduce accessibility (if no modes are slower and no destinations further), but improving accessibility for some can reduce mobility for others. F.x. when softer modes are favorized over cars. Mobility, or automobility, has been placed at the top in transportation planning which can have negative impact on accessibility where softer modes are neglected and often affected by f.x. new infrastructures. Also the constant improvements to the road network for cars close down on possibilities for alternative modes and encourage car use instead of f.x. bike or bus. Promoting ccessibility may be a better approach to the whole sustainable transport debate. Accessibility for all could mean being able to travel without discomfort in what ever mode of transportation you chose. This though represents an oxymoron because by making cities more accessible for f.x. public transport often requires street narrowing for cars which limits that specific mode. To enhance mobility in cities on the other hand can mean that people are able to travel faster through the city, be more mobile, thus being able to manage more things in the same amount of time. Mobility has always been considered a crucial element in an economic progress. The further people are able to travel the greater the economic activity. Being able to travel longer distances does not have to refer to travelling far but also to make more shorter journeys. Cities that offer great mobility for cars thus risk people making more and more journeys which has an even greater effect on the environment. So increased mobility can have negative consequences unless it is seen as benificial or as the key aim of a city transportation policy. When looked upon in that sense it shifts the attention towards more efficient ways of moving people around and puts a high priority on f.x. collective transport and bicycling.

The accessibility angle focuses on the goal to access or reach opportunities that also are benificial. This could mean to reduce traffic or reduce the need to travel in urban areas. So mobility and traffic are means to reach the goal of accessibility. City planning can also serve as a mean to reach this goal. It is important to understand the distinction between mobility and accessibility when focusing on a sustainable transport policy. In this report mobility and transportation are key words and function as methods for the city to become more accessible for all.

bicycling

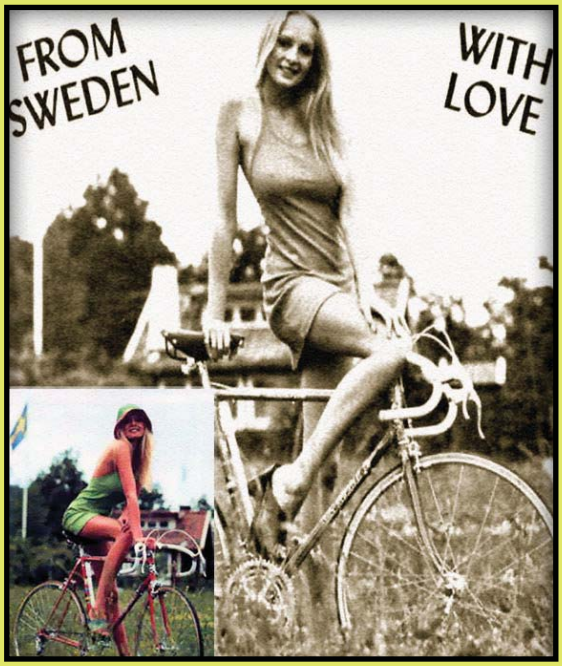
Why to encourage bicycling?

Bicycling is a viable commuting choice and can be the most efficient mode of travel within cities. Often, by bike, one travels faster than by car or public transport while at the same time exercising and not affecting the environment. The noise level from bike traffic is practically not existent and the level of pollution breathed in inside a car is similar to the air pollution level in the open air in cities (Cycling: the way ahead fo towns and cities). Bicycles take up less space than private cars and where cycling is most popular less accidents occur related to the acknowledged presence of cyclists in the traffic picture or 'safety in masses'. Considering the fact that usually there is only one traveller pr. car, or the same as on a bike, the space and energy saved by encouraging bicycling is inevitable.
For municipalities the benefits of promoting bicycling can include a direct reduction of car traffic and traffic hold-ups, better traffic flow, an improvement of the quality of life in the city and healthier citizens. Bicyclists are healthier employees who spend fever days on sick leave and companies with green transport plans including bicycling as a choice represent socially aware businesses with a green image.

Changing from automobile transport to bicycling benefits in various ways. The overall traffic system needs less maintenance and development seeing less cars on the streets. Cycling rather than driving reduces air pollution and global warming where replacing shorter trips is more potentially successful and has

even greater environmental benefits. The economic benefits are related to the ownership of a private car as well as incorporating physical activity into ones daily life. Less investments in infrasturcture, oil import and oil dependency are also economic factors related to car culture. Bike trails can also have positive effects on value of nearby properties. Cyclists and pedestrians are an important element in creating a livable community which attracts and keeps businesses situated in the area. Last but not least the health benefits related to bicycle travel are eminent. According to the World health organization heart diseases, diabetes and cancer can to some extent be avoided with a half hour exercise every day. This can easily be accomplished by many through a bike ride to and from work. Psychological problems, obesity and overweight are also conditions that can be evaded in some cases via regular exercise such as bicycling. Cycling and walking finally offers more opportunities to socialize than driving alone in a car.

In those western countries where bicycling has not been promoted significantly and bicycle paths and facilities are not common, people tend to imply that they would definitely cycle more if the conditions were better. This is often a question about the chicken or the egg, that is which should come first, the cyclists or the facilities. Local governments should nevertheless consider bicycling as a possibility when planning for transport and especially when programming traffic models. Bicycling has only positive effects on a community and should be placed higher in the transport hierarchy than it is now in most cities.



best practices

The city of Reykjavik actually had a decent share of bicyclists before the second world war. Bicycles, cars and horses were the preferred transport modes for travelling medium and long distances. By that time car ownership was becoming more and more common and driving was gradually becoming the peoples' primary mode of transport.

"*As regards the road network for Reykjavik, the private car and its future role is completely decisive. It should here be remarked that Reykjavik to an unusual degree has accepted the car as a means of transport. A traffic survey carried out in December 1960 by the City Engineer's Office and the Directorate of Roads, described in the report 'Traffic in Reykjavik' January 1962, clearly showed that traffic is voluminous in relation to the size of the town and the number of cars, that the big volumes of traffic occur many times in the course of the day, and that business traffic forms a larger part of total traffic than is normal*" (Reykjavik City Master Plan, 1962. p85).

Obviously city planning was to be centred around the dominating presence of the private car and a decision was actually taken on behalf of the citizens of Reykjavik to be devoted to the car as a mode of transport. The car of course came with the possibility to travel further, more conveniently and quicker so that provided the possibility to plan for residential areas further away from places of employment as well as to allow for huge spatial misuse. The city became less dense year by year, distances longer and the basis for "alternative" transport less probable.

Many cities around the world have been focusing on bicycling for long periods of time as a part of the total transportation in the city. Others have recently started to consider the bike as an element in the modal split and are implementing faciliities and working with changing public behaviour. This chapter looks at various cities around Europe which have gotten far with planning for bicycle transport and are examples that planners for The city of Reykjavik should try to learn from and make use of their good practices.

Pictures taken in Reykjavik 1930-1950

copenhagen

Copenhagen has a goal of becoming the world's top cycling city. In 2015 it is expected that at least 50% will cycle to work compared with todays' 36%. To achieve this goal more cycle tracks, more cycle routes and cycle parking will be installed in the city. Another important feature in the Copenhagen approach is to make cyclists feel safer in traffic. Also cyclist behavior in traffic both regarding other cyclists as well as motorists and pedestrians should be upgraded. In Copenhagen and Denmark in general the cyclists' feeling of comfort is very important and can even be prioritized over actual traffic safety. Nevertheless the city has been highly successful in reducing accidents amongst cyclists.

Another element in Copenhagen's success is the cool perception of being a cyclist. Elsewhere cycling often meets prejudice. The idea that cyclists can't afford a car or are geeky wearing their spandex clothes and helmet is common. Copenhagen has developed a cycle chic culture where businessmen in suits ride old-fashioned bikes with their leather cases fastenede on the back to get to work and Danish women wear high heels and dresses and skirts in all weather conditions as a fashion statement. This has made cycling even more appealing in Copenhagen and collaborates with the fact that bike trails and other facilities are among the best in the world. Bicycling in Copenhagen doubled between the years 1997 and 2007.

p a r i s

Paris has until recently not been familiarized with bicycling. Not until the introduction of the Vélib´ system in July 2007. Vélib´ (bicycle freedom) is a bike rental system with more than 20.000 bicycles and over 1.450 rental stations – 300 m apart in the city. The first half hours rental is free but the second half hour costs 1 euro, the third 3 euros and subsequent half hours 4 euros. Subscription depends on its length - 1 euro pr. day, 5 euros pr. week or 29 euros for a whole year. A maintenance and repair service guarantees that for every trip cyclists get a bike in perfect safety condition.

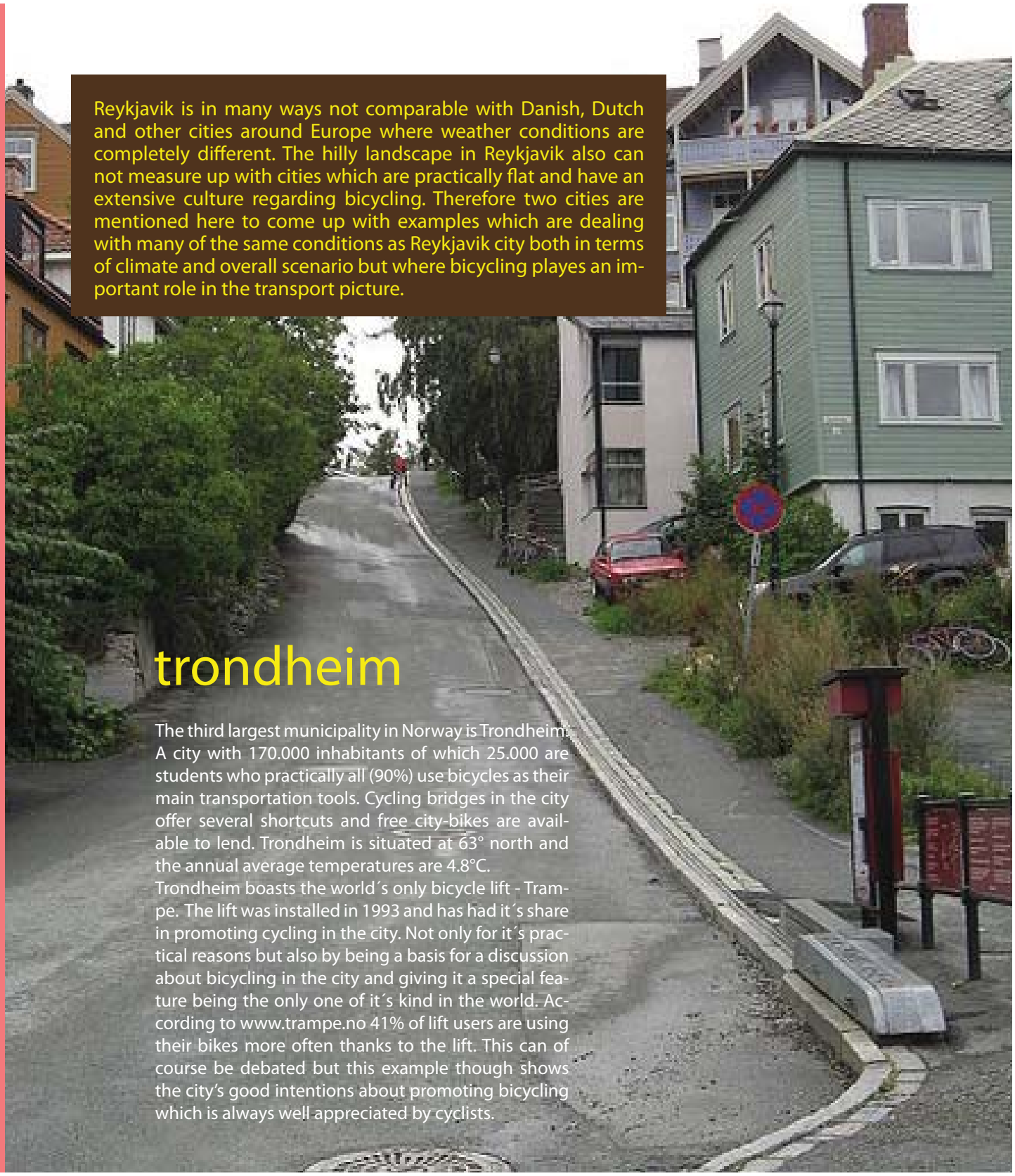
The initiative has been a great success for the city which has seen a serious boost in cycling. In the first year, one-day subscribers were almost 3.7 million and all in all there were 4 million subscriptions to the Vélib´ system in Paris. All together Parisians rented the bikes 26 million times and made an average trip of 18 minutes. The downside of the scheme has been vandalism where more bikes have been stolen than expected and maintenance can hardly keep up with the bikes that get damaged.

groningen

Groningen is the city in Holland with most active cyclists - 57% travel by bike. The spatial policy in Groningen is focused on a compact city which helps keep distances short or within cycling coverage. In the seventies it was decided to build up a low-scale mixed-use inner city favoring pedestrians, cyclists and public transport. Parking areas for cars are close by the city centre and passing car traffic is led outside the inner city. Parking regulations in Groningen are strict and parking with time restrictions is in a broad radius around the inner city.

Groningen is a historic city and has limited possibilities to extend its car infrastructure. So cycling is actually a necessity in the city and the infrastructure devoted to the private car is given the right to exist merely because of an economic perspective. The cities cycle policy was introduced in 1977 where the focus was shifted away from the cars and more towards bicycles. Today, the inner city of Groningen represents a pleasant living area and the city has been voted the worlds number one bicycle city.

Reykjavik is in many ways not comparable with Danish, Dutch and other cities around Europe where weather conditions are completely different. The hilly landscape in Reykjavik also can not measure up with cities which are practically flat and have an extensive culture regarding bicycling. Therefore two cities are mentioned here to come up with examples which are dealing with many of the same conditions as Reykjavik city both in terms of climate and overall scenario but where bicycling playes an important role in the transport picture.



trondheim

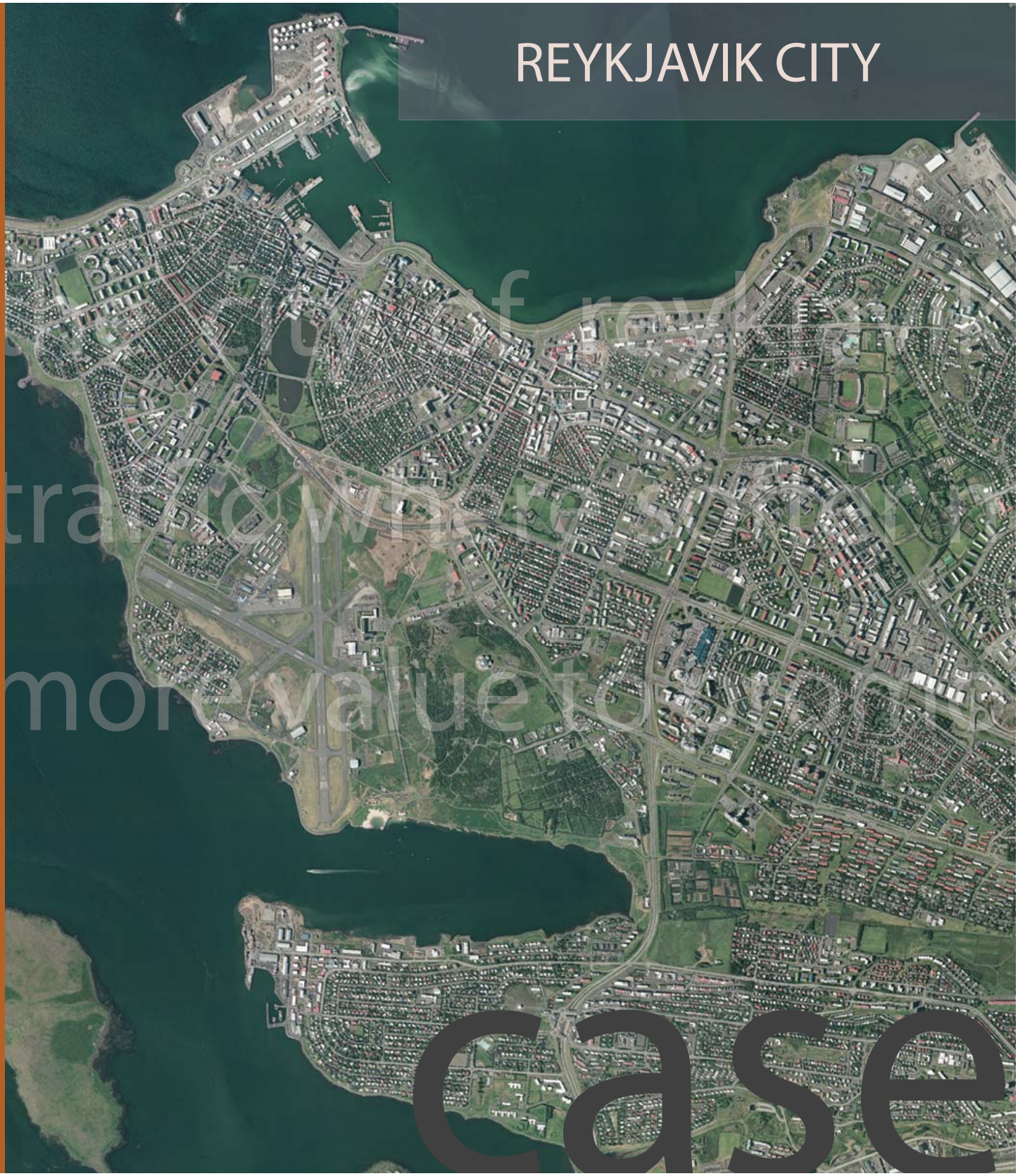
The third largest municipality in Norway is Trondheim. A city with 170.000 inhabitants of which 25.000 are students who practically all (90%) use bicycles as their main transportation tools. Cycling bridges in the city offer several shortcuts and free city-bikes are available to lend. Trondheim is situated at 63° north and the annual average temperatures are 4.8°C.

Trondheim boasts the world´s only bicycle lift - Trampe. The lift was installed in 1993 and has had it´s share in promoting cycling in the city. Not only for it´s practical reasons but also by being a basis for a discussion about bicycling in the city and giving it a special feature being the only one of it´s kind in the world. According to www.trampe.no 41% of lift users are using their bikes more often thanks to the lift. This can of course be debated but this example though shows the city's good intentions about promoting bicycling which is always well appreciated by cyclists.

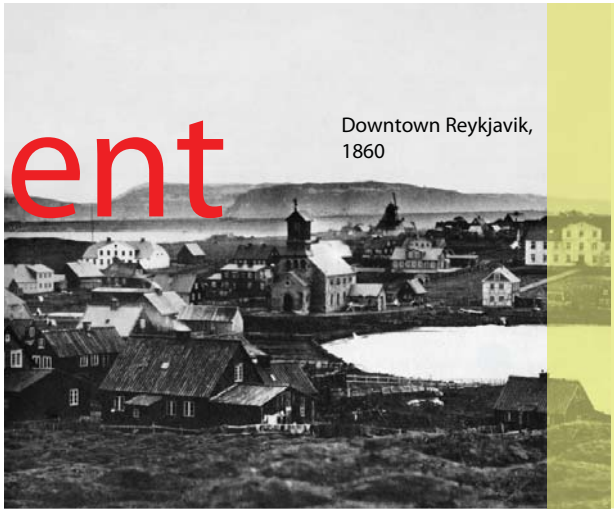
Situated at 65° north the city of Oulu in Finland is a great example of a cycling city where the weather conditions can be diminishing. The 500 km of bike tracks are well lit and kept clean of snow during winter. App. 130.000 people live in Oulu which makes it the country's 6th largest city and the largest and most important city in Northern Finland. Bicycling is the most popular mean of transport for students in Oulu all year round. The annual average temperature in the city is 2.4° and it is often rather windy.

One of the main objectives of transportation planning in Oulu is the separation of motorized and non-motorized traffic with 5-10 km of bicycle and pedestrian paths being added each year to the path network. The city's bicycle traffic development programme focuses on improving conditions for cyclists and to promote bicycling culture. This is to be obtained through information campaigns, improvements in bike parking facilities, traffic calming, cooperation between cycling and public transport and other measures.

REYKJAVIK CITY



urban development in reykjavik

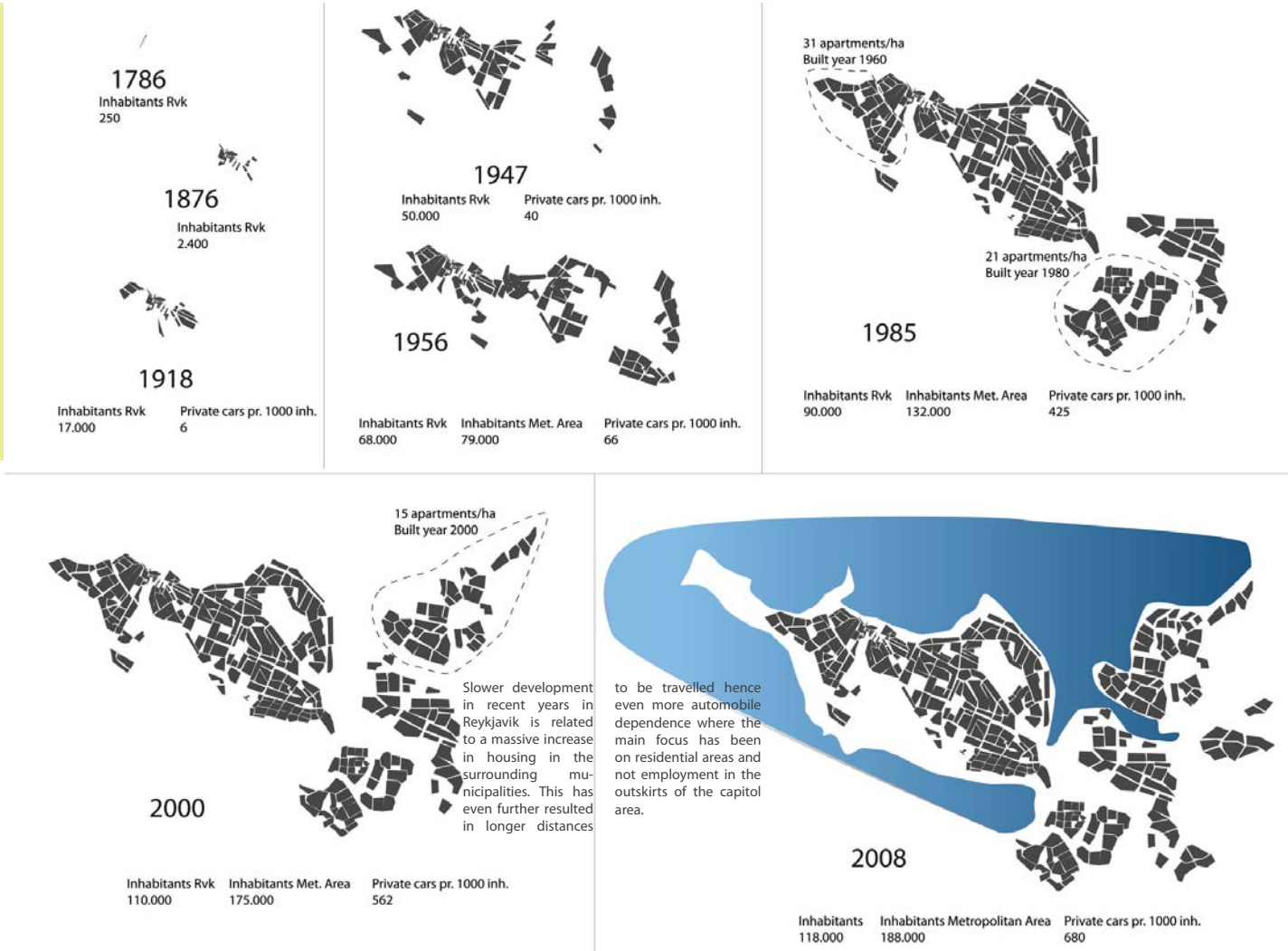


Downtown Reykjavik, 1860

Reykjavik is the capitol of Iceland and by far the largest city in terms of population. App.120.000 people live in Reykjavik and around 200.000 in the capitol area - 60% of the Icelandic nation. Three waves of planning ideology have had a great impact on the development of Reykjavik in the 19th century. Reykjavik as a garden city was introduced in the 1910s. The first textbook on urban planning was published in 1916 and the first planning law in 1921 introduced. The first town plan for Reykjavik is from 1927. The second wave was the systematic transportation idealogy. The first master plan for Reykjavik was published in 1966 based on the impact of car transport. The environmental issue being the third wave was taken into account with the master plan of 1996 with the main goal to reduce car traffic (Reynarsson, B. The planning of Reykjavik, Iceland: three ideological waves - a historical overview). The first known local plan draft from Reykjavik is dated in Copenhagen in 1904. It shows the area around the statue of Ingólfur Arnarson at Arnarhóll in downtown Reykjavik. The plan consists of a simple street map where streets are laid out parallel and crossing through . The plan for this area was rejected by the city council but one road was carried through, namely the one over Arnarhóll, which later became Hverfisgata. This type of city planning was nevertheless dominant in Reykjavik until the second world war and can best be described by the Hagar and Melar area in the west part of the city. The grid plan has of course later on become recognized as a really successful way of planning cities. Fewer road miles are needed to serve the same population, pedestrians are better connected with other neighbourhoods and the grid network encourages lower traffic speeds resulting in fewer accidents. Reykjavik districts built in this era are still the most popular in the city.

Things really started to happen in Reykjavik in the 1960´s. Since WW2 the city had resembled a large village and with increasing car ownership was free to develop into the east, away from the city centre. This is of course the beginning of suburban sprawl in Reykjavik and perhaps an inevitable development considering the hour-glass shaped profile of the Reykjavik area. Downtown Reykjavik today is by far the most dense area in the city with approximately 77 inhabitants pr. ha. Other parts of the city range from 35 to 50 inhabitants pr. ha but taking into account the whole capitol area the average gets lower. In recent years highrises have been developing in the city centre with residential areas and businesses representing the city's attempt to densify the already established area.

Hofdatorg is one of the highrise projects taking place in the city centre



Slower development in recent years in Reykjavik is related to a massive increase in housing in the surrounding municipalities. This has even further resulted in longer distances to be travelled hence even more automobile dependence where the main focus has been on residential areas and not employment in the outskirts of the capitol area.

Adalstræti was the first and only built road in Reykjavik in the beginning of the 18th century. Around 1820-1840 new roads started to emerge and a heavily debated, very expensive bridge was built in 1828 across the river that in those days ran through the city centre of Reykjavik.

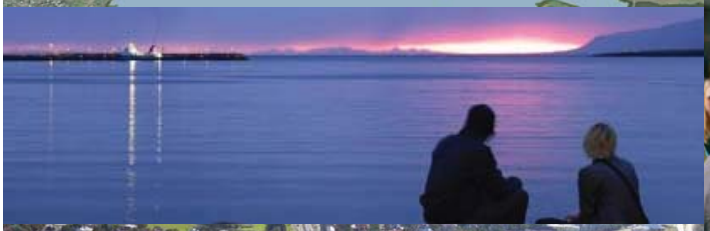
The challenges presented in the Master Plan for Reykjavik 1962-1983 concerning traffic had to do with an increase in car ownership. It was accepted that citizens of Reykjavik had chosen the car as their primary mean of transport and this was recognized as a necessary development for a city in growth. Car ownership was estimated to triple over the next 20 years and this increase in demand should be met. The traffic system was considered essential to the functioning of a town as a town and as a part of the towns mechanism. Public transport was intended for old people and children, or in other words, people who were prevented from driving cars. Eventually every adult would have a car of his/her own. The mayor of Reykjavik at that time suggested that planning should be done in cooperation with the surrounding municipalities and that the growing car traffic was to be met with wider streets, more complicated junctions and increased parking.

This history of predicting and providing has led us to where we are today. Today transportation infrastructure occupies 50% of used land in Reykjavik. Reykjavik, and actually Iceland in itself, possesses one of the worlds largest car fleets. Approximately 700 cars pr. 1000 inhabitants are numbers commonly seen in car based cities in America and then again, in Reykjavik. The majority of trips is made by car, regardless of distances and automobile dependence is forceful in the city.

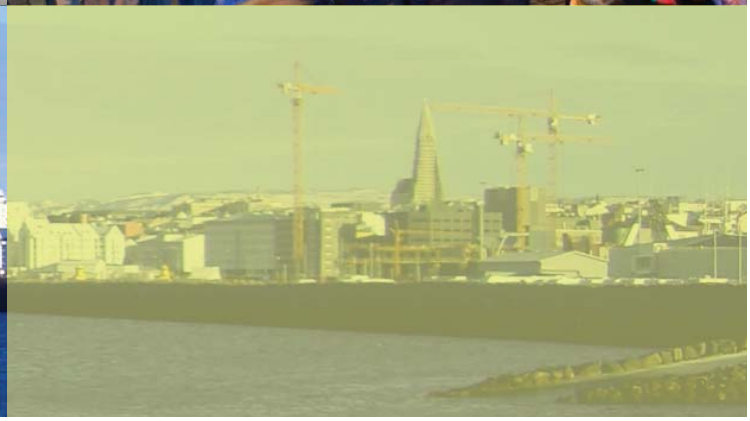
reykjavik today

Reykjavik is located at 64° north with annual average temperatures at about 5.1° C.
This chapter describes the current situation in Reykjavik concerning transportation. Some statistics from the city are mentioned and the situation compared with foreign cities to get a sense of how things are really going for Reykjavik. The city´s policies concerning transportation are mentioned and finally bicycling conditions in the city are described.



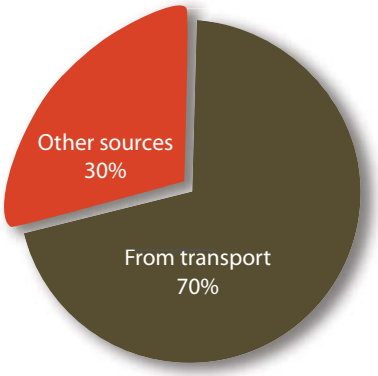





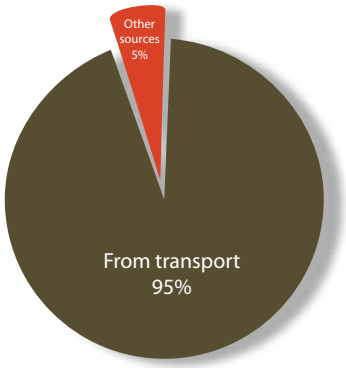


reykjavik statistics

environmental effects

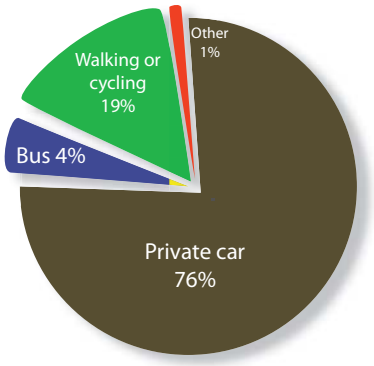


air pollution

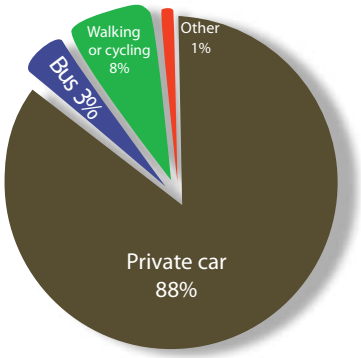


greenhouse gas emissions

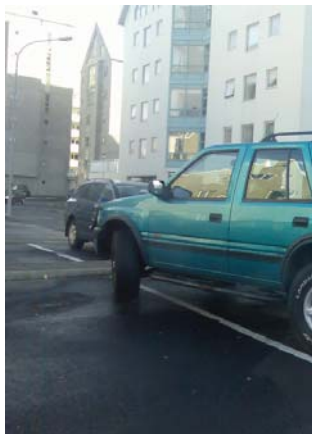
modal split - capital area



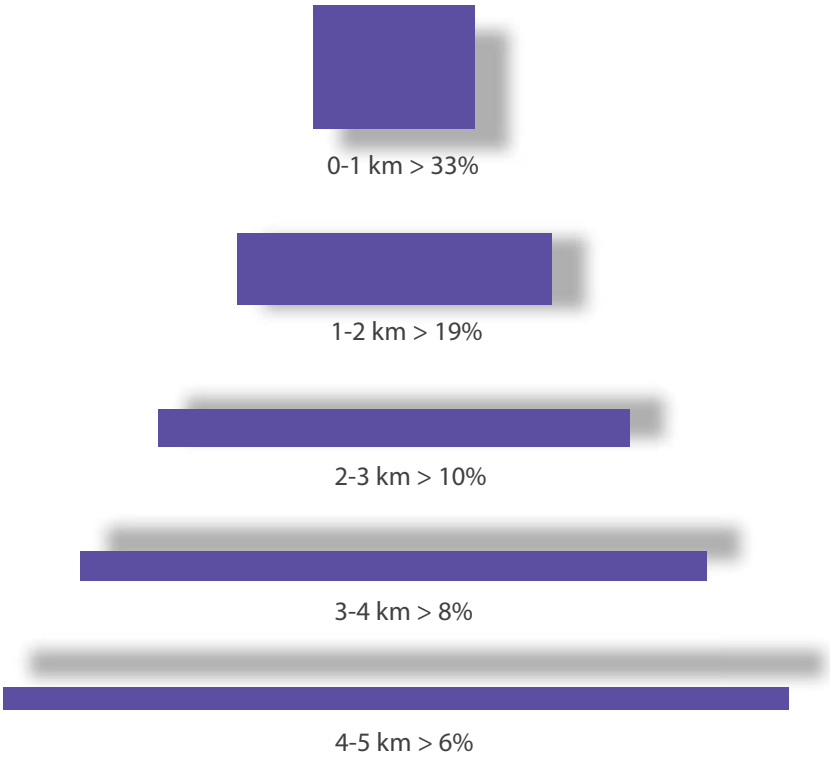
all trips



trips to work

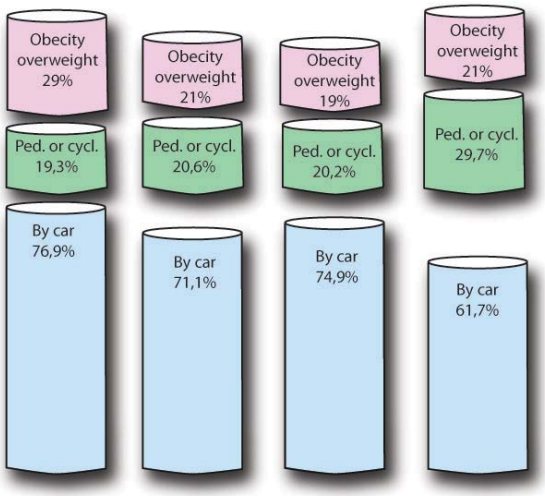


distances travelled



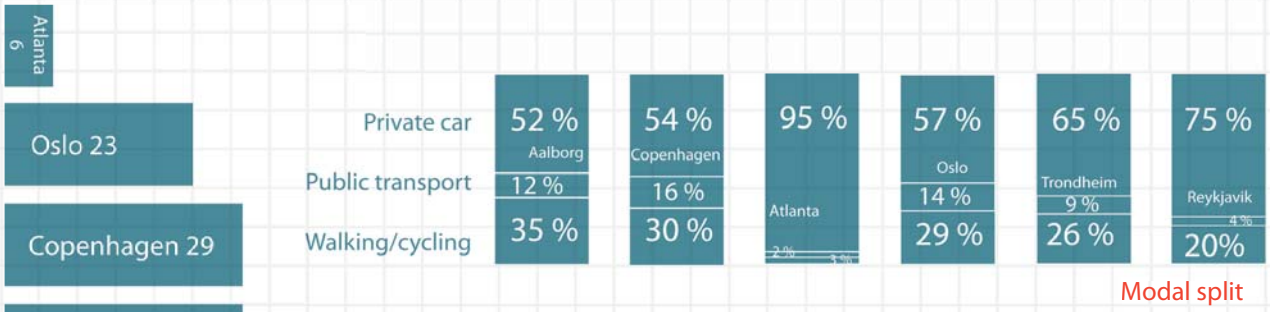
Proportion of all trips made, related to distances. The average trip made in Reykjavik is 3.2 km and more than half of all trips are under 2 km.

transport vs. health



Levels of obese and overweight schoolchildren in relation with travel mode choice. Based on residential districts in Reykjavik city.

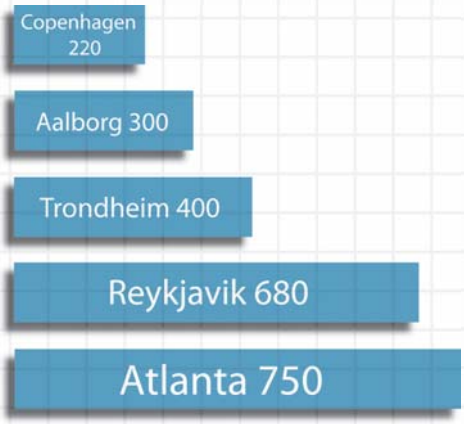
The least amount of driving occurs in downtown Reykjavik but still obesity and overweight is high. Higher income areas are less exposed to these health related challenges and lower income areas are highly affected by car dependency and therefore these threats.



Modal split

City density - inhabitants pr. ha

Parking spaces pr 1000 jobs in business district



Car ownership pr. 1000 inhabitants

Average distances - all trips

comparisons statistics

The statistics show that city density in Reykjavik is not different from f.x. Copenhagen. Parking spaces in the city are best compared with the American cities and car ownership is way past the European standards. Average distances in Reykjavik are short and the modal split shows driving with 75% of the share and bicycling barely existing. According to the statistics there is a potentiality in Reykjavik to promote bicycling where many of the excuses residents come up with are not reliable. Parking spaces in downtown Reykjavik are way too many especially bearing in mind the managing effect parking can have when it comes to choice of transportation.

comparisons

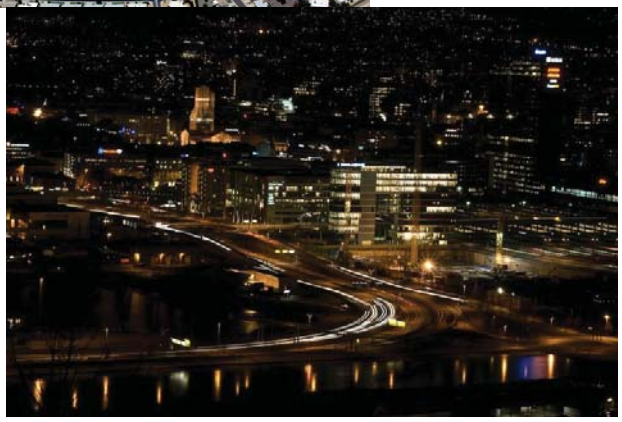
Reykjavik

Copenhagen

moods

Atlanta

Phoenix



Oslo

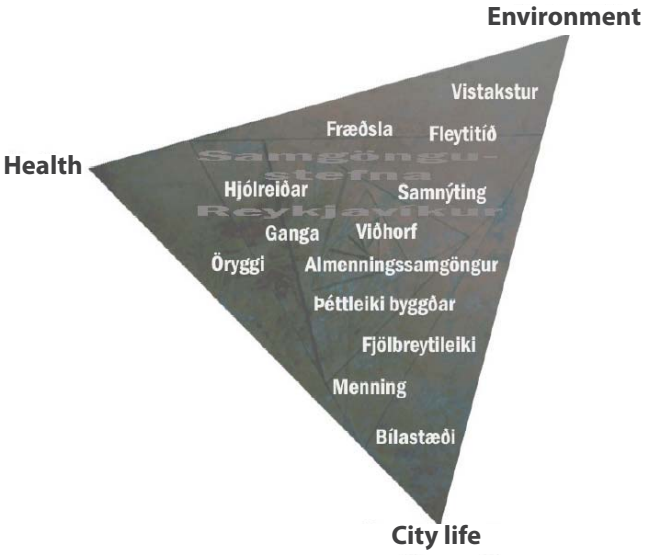
reykjavik city policies

The city of Reykjavik has recently been undergoing a change in attitude towards transportation where emphasis on the private car is getting less apparent and alternative modes are gaining interest. The change can in some extent be related to the city's policy papers which are briefly mentioned here.
As this report mostly focuses on transportation the policy papers chosen to look at all have to do with that issue in one way or another. The project also works with the enhancement of public spaces so this is also looked at in the policy papers to see what the citys' intentions are with that matter.

The city also works according to a traffic safety policy and a city centre development plan which in relation to transport primarily focuses on parking policies. These will not be described here in particular but are also important for the future development of transportation in the city.

transport policy

The Reykjavik City Transport Policy was accepted by the city government in 2006. The policy focuses on three main elements that are affected by transportation in cities - environment, health and city life. The future vision is that Reykjavik will become a city which ensures even traffic flow and safe traffic for everyone. Transportation that furthermore improves peoples health and the environment and enhances city life. The policy's responsibility is to ensure a well functioning traffic system without affecting these three elements. To fulfil the citizens transportation needs on an equal basis and to make use of the city´s existing transportation network.



The transportation triangle describes the relations between the three aspects mainly influenced by transportation in cities and the issues concerning

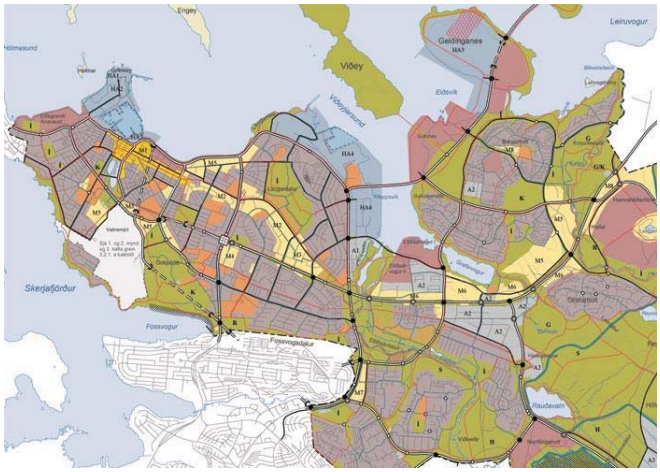
CASE STUDY

local agenda 21

The Local Agenda 21 for Reykjavik went through a name change to better appeal to the general public and is now referred to as Shaping Reykjavik. It was accepted by the city government in May 2006. The policy states 9 main policy aims of which most can apply to the reduction of car traffic. The aim towards a clean city where Reykjavik intends to set an example relating to environmental quality must propose that pollution from car traffic is reduced. Also the aim towards a healthier city and healthier people which f.x. proposes more outdoor activity by ensuring good access to recreational areas all year round can be related to peoples transport patterns. One of the main aims of Shaping Reykjavik is to provide safe and easy travel without polluting the environment. Transport is of course a major factor in fulfilling this goal.

master plan

There are 3 main objectives that the Reykjavik City Master Plan 2001-2024 strives towards: capitol city, international city and sustainable city. A special chapter is devoted to transportation where the goals are to develop a safe and efficient road network, to reduce the negative impact car traffic has on the environment and to enhance sustainable transport.
Of course the master plan also looks at the future housing development and city planning which again are crucial factors in the sustainable transportation debate. The aim is f.x. to shorten distances between employment and residential areas, increase city density and to put limitations on urban sprawl. The plan aims to coordinate decision making concerning land use and traffic planning.



According to the Master Plan car parking in the city centre should increasingly be located in parking houses giving the possibility to reduce parking spaces on the surface making the city centre a more liveable area.

reykjavik by bike

The main purpose of this project is to provide an infrastructure for bicycle traffic in. The idea is to work with bicycling as a method of transport in a society that has mainly been focusing on providing infrastructure for car traffic. A culture where 2-3 cars per household is common and the attitude towards public transport and bicycling is basically negative where people tend to rather walk or drive their own cars than taking the bus or riding a bike. Designing a decent traffic network for bicycles by creating shortcuts, connecting the citys' sweet spots and taking the Icelandic extreme conditions into consideration when laying out specific design solutions are some of this projects main confrontations. Numerous aspects concerning the actuality of a design solution for a bicycle network in Iceland can influence the implementation of the bike network where f.x. snow ploughing, visibility and lighting all are significant challenges an urban designer is bound to face. Junctions where an interaction between bicyclist and motorist takes place are points that are of high interest as well as design solutions concerning the physical attributes of the path, i.e. its coating, its placement, its general construction and specific solutions involving climatic conditions and the placement on the path network. The Icelandic conditions of course play a huge role when it comes to choosing a mode of transport in Reykjavik. Urban density is a factor that has to be taken into consideration. As are the weather conditions, the topography, culture, history etc. People are familiar with the benefits of bicycling such as the cleaner environment, less expensive transportation, less congestion, better health and so on. But nevertheless most Icelanders do not consider bicycling as an opportunity in the traffic system.

Children are those worst affected by precarious traffic conditions. Safe bicycle paths are required for children to be able to travel by bike to and from their places of education and recreation. Merely 3% of Icelandic children cycle to school. It is hard to say which has bigger impact on people's choice of transportation; the present-day situation consisting of primarily car-related infrastructures or the Icelandic people's culture and point of view regarding bicycling and public transport where the bike is first and foremost considered a recreational toy and barely used for transport.

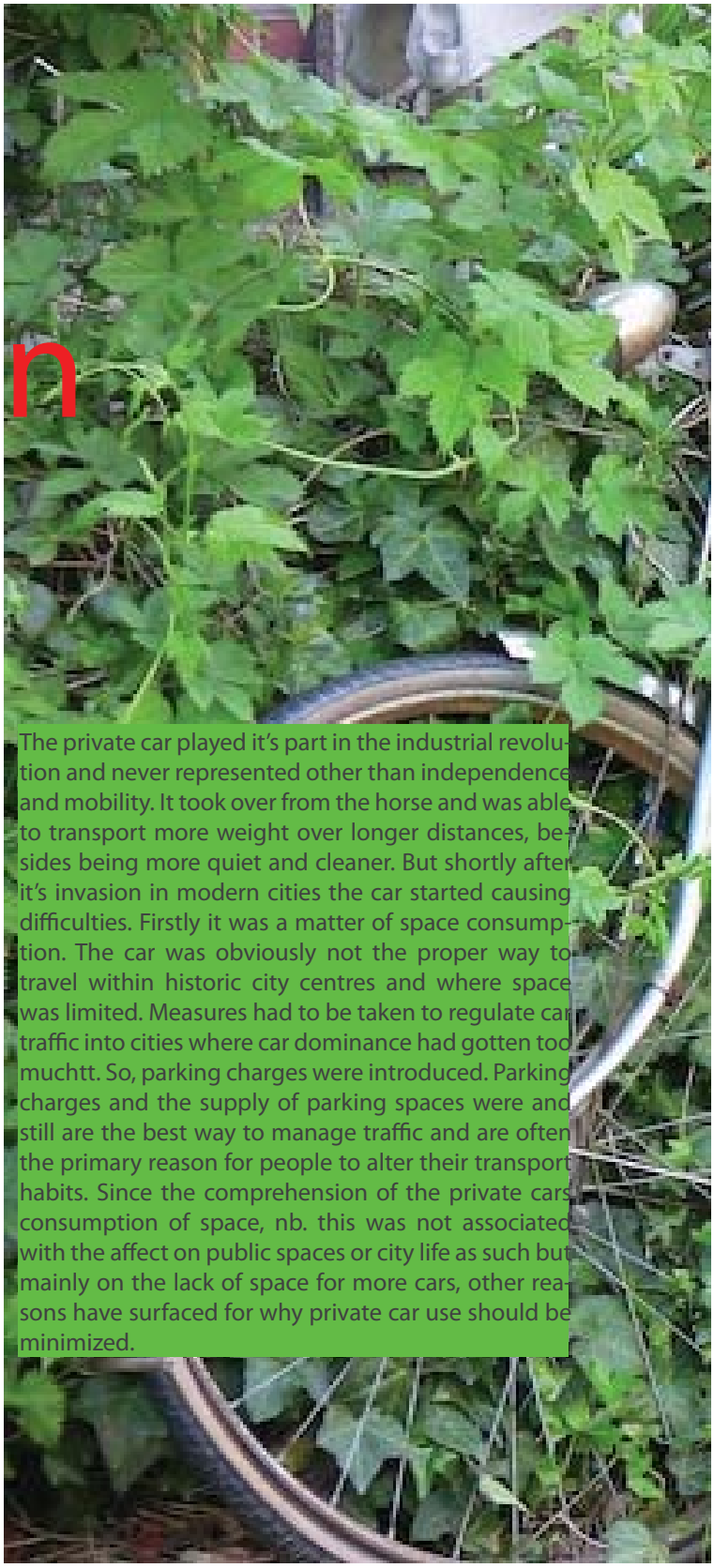
The conditions for cyclists involved in the Icelandic traffic can often be quite discouraging. The bike has yet recently been gaining status as a mean of transportation in the city of Reykjavik but investments involve for most parts infrastructures for car traffic. Optimistic bike riders are sometimes forced to the edge of highly occupied main roads or to travel through urban areas making their journeys longer than necessary. Health related issues are too of interest. Safe bicycle traffic produces healthier road users and has a definite positive influence on people's physical and mental condition. The World Health Organization recommends 30 minutes of exercise each day for an adult. This can be achieved by a 15 minute bike ride to and from work which is a possibility for surprisingly many in Reykjavik regarding places of employment and habitation.

When implementing bicycle paths into a traffic system, predominantly in favor of the motorist, various problems will occur. The roads width may not call for adding a lane in each direction and with limited bicycle usage, currently, one might question the veracity of constructing separate paths when laying new design proposals. The cost factor must be taken into consideration where cheaper solutions might enhance the possibility of realizing the project. Nevertheless this will not be the projects primary concern
A network of bicycle paths will be projected over the city of Reykjavik and a detailed design at particular locations in the city will be realized.

discussion

The human dimension in cities is under more and more scrutiny by professionals, academics and more than ever the users of the cities themselves. Globalization has shown people what cities can offer and that cities that appeal to more various groups serve better for the general public. Mobility has been a synonym with well functioning traffic systems in cities in recent years. But is mobility what we aim to achieve or are there other aspects of approaching transportation that might be better suited for life in cities? Time or rather peoples perception of time can be determent for choice of travel modes and how the perception of time varies in relations with our activities and experiences.

People have been taking unrestricted mobility as an absolute right. When travelling within cities we demand to be able to get from a to b in a relatively short amount of time. This is our right and if traffic problems occur it is the city government's to solve them. The solutions may vary but it must not affect the choices people make concerning transport modes. People must not be forced, against their wills to adapt new transport habits merely because the city is badly planned or the traffic infrastructure isn't efficient. This is the general attitude and the problem today's city officials, urban planners and designers are faced with. Problems start to occur when practically everyone chooses to use the car for every simple journey.



The private car played it's part in the industrial revolution and never represented other than independence and mobility. It took over from the horse and was able to transport more weight over longer distances, besides being more quiet and cleaner. But shortly after it's invasion in modern cities the car started causing difficulties. Firstly it was a matter of space consumption. The car was obviously not the proper way to travel within historic city centres and where space was limited. Measures had to be taken to regulate car traffic into cities where car dominance had gotten too muchtt. So, parking charges were introduced. Parking charges and the supply of parking spaces were and still are the best way to manage traffic and are often the primary reason for people to alter their transport habits. Since the comprehension of the private cars consumption of space, nb. this was not associated with the affect on public spaces or city life as such but mainly on the lack of space for more cars, other reasons have surfaced for why private car use should be minimized.

The environmental affect of car use in cities became a common fact when ecology and sustainability in cities was related to global challenges like climate change. Problems with local pollution in cities are mostly car related and the need to reduce car traffic in cities is inevitable. Recent years the health related factor has become more and more related to the whole automobility culture. Evidences introduced that relate excessive car use with obesity, mental health disorders and general matters concerning peoples well being. Of course local pollution has an impact on public health but not less the eminent relation between exercise and car use is striking. Car ownership is related to amounts of overweight people and the fact that people get less exercise from work and transport is associated with mental health problems.

Still what is even more interesting is the role that the private car is beginning to play in modern societies. The private car is no longer the fastest way to get around. It often serves as a status symbol and a convenient, but very inappropriate, shelter from bad weather and it's importance should indeed be reconsidered in order to reclaim cities and focus on quality of life for the people. These are after all the focal point for city planning when all is put together.


sign
plementing bicycle
another urban ele
ance urban spaces
ptimize traffic

design guidelines

The design guidelines are supposed to reduce barriers for cycling, support road safety and increase levels of cycling in Reykjavik city. The guidelines are general and can be taken advantage of anywhere but with considerations for local circumstances.

By following these guidelines cities´ cycle networks should be fast, safe and comfortable.
Improvements in conditions for bicyclists will additionally contribute to better access for people with disabilities.

Cycling will always take place, no matter the circumstances and authorities have a statutory role to let this happen safely.

The design guidelines propose three key requirements:

To provide uninterrupted routes without additional stops or extra distances.

Good maintenance, i.e. good riding surfaces and general maintenance all year round.

Good cycle facilities such as bicycle parking, bike on bus schemes etc.

The design guidelines consist of various projects that all have to be taken on for the scheme to be successful and applicable.

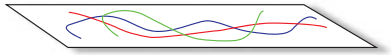
The projects are:

Links
Junctions
Construction
Parking
Signage
Maintenance
Additional improvements

On the opposite page an activity diagram is presented which shows an ideal sequence when implementing these design guidelines into the Reykjavik City bike network.

Links represent the connections in the city. They are divided into 5 different classes which provide direct cycle routes and a coherent cycle network in the city. In the L-scale solution the implementation of classes into the Reykjavik city cycle network is mapped and in S-scale various classes are described in detail. Links are defined to provide direct connections through the city avoiding barriers and unnecessarily long distances. A suiting class is then implemented to the particular link and design solutions presented for the situation.

Some solutions for bicycles at traffic junctions are then presented following a variety of examples of do's and dont's in bicycle planning from around the world.

Route selection 

Definition of class A B C D E

Detail design 

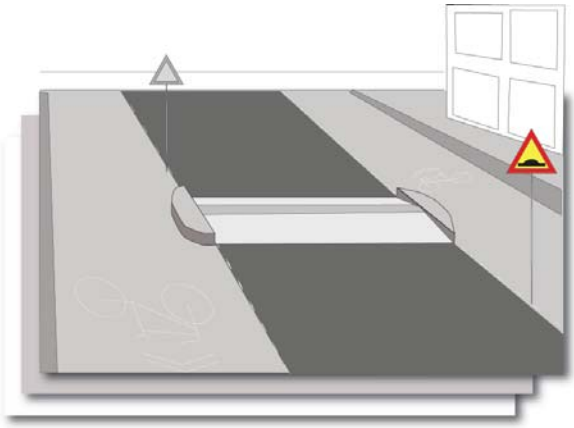
Construction 

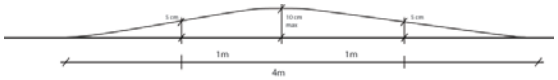
Opening 

Maintenance 

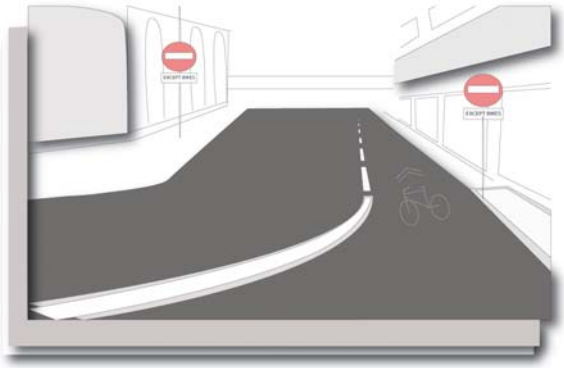
Acticity diagram for successful implementation of bicycle paths

links

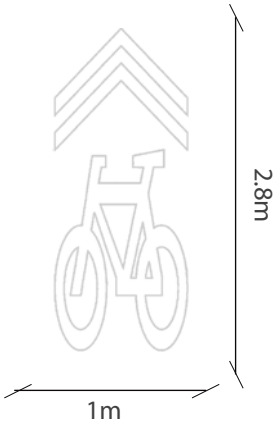




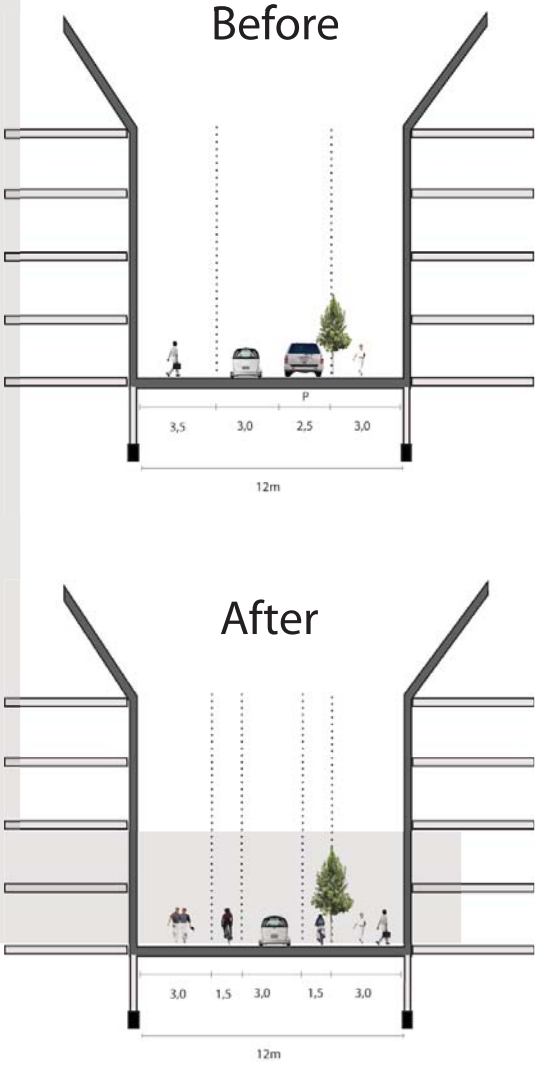
Speed reduction for cars does not always have to apply for bikes. Where necessary, sinusoidal speed bumps can be designed which give cyclists the least amount of discomfort. The cyclists can also be assigned a special lane to bypass the bumps.



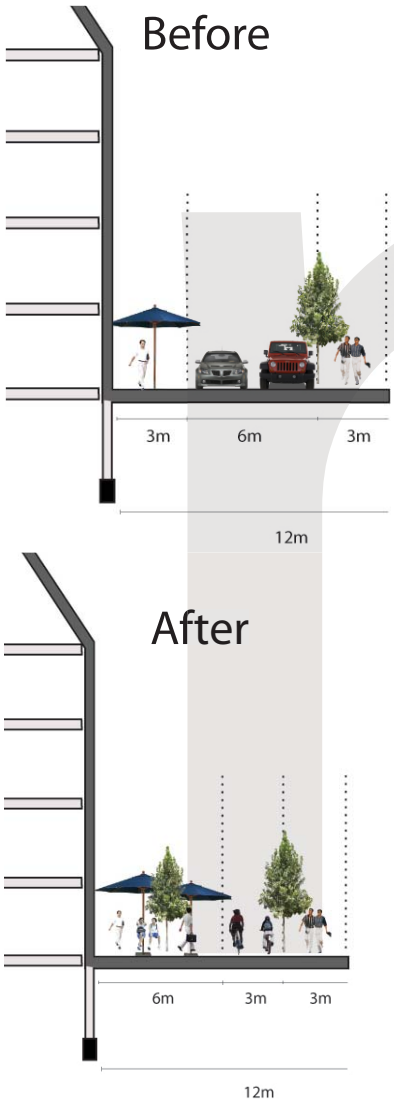
More cycle routes enhance the coherence of the cycle network, as cyclists have more possibilities of adapting their trips to the network. Where there are one-way streets for cars or other banned motorized movement cyclist-exemptions are perfect solutions. It is often possible to allow contra flow for bicycles even though car traffic must be overturned. Besides being important when creating shortcuts for bikes this can give cyclists a sense of significance as being a priviliged part of the traffic system hence encouraging more cycling.



Bike lanes can be applied by adding coloured asphalt in one side of the road. "Bike and chevron" markings are another possibility. These are shared lane markings and can have a positive influence both on cyclist and motorist behaviour and safety. Bike and chevron markings can be implied by themselves or mixed with the coloured asphalt solution where the bicycle logo can be painted into the new colour.

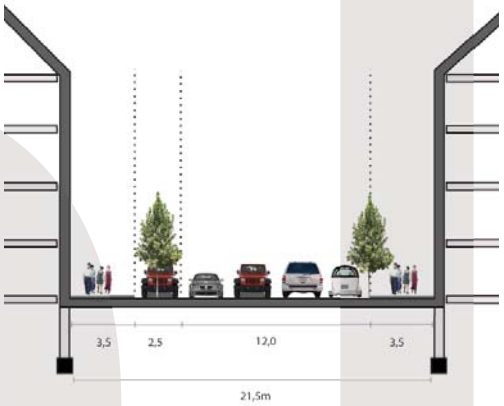


The removal of parking spaces in one side of the street usually provides enough space to implement two way bike lanes.

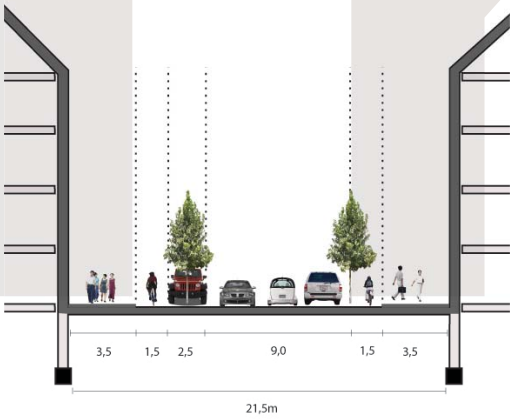


Some streets can easily be pedestrianized by reconsidering the need for car traffic and focusing on other possibilities.

Before

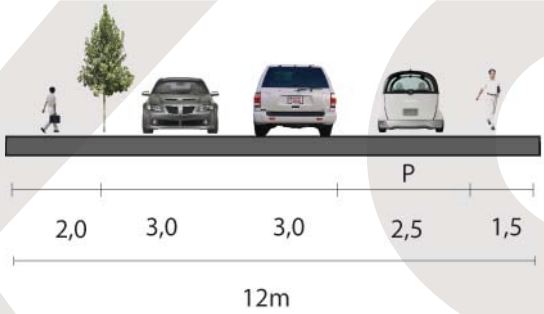


After

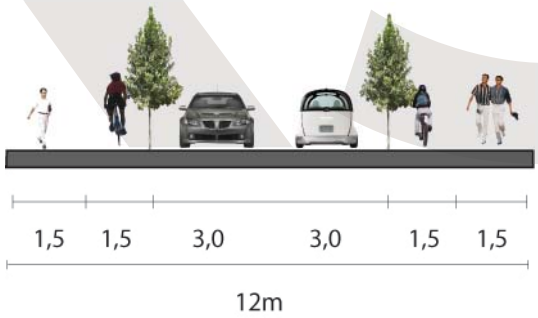


Removing a car lane can give access for bikes. Further removal is not always necessary but can make the street more interesting.

Before



After



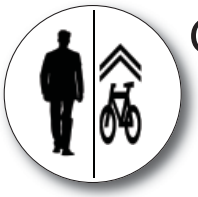
A street is meant to move people, not to store stationary vehicles. Parking should be minimized above ground to enhance city life.

Class A

Shared use path. Slow traffic, walking and cycling, roller skates, wheelcairs, etc. Wide paths with mixed soft traffic and low speeds.

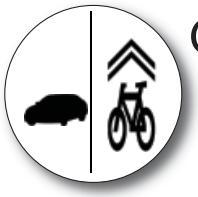
Class B

On street unmarked bike lanes. Car and bicycle traffic flow together. Low speeds and volumes, residential streets. 30 km/h max speed for car traffic.



Class C

Bike lane (seperated bike lanes, away from pedestrian and motorized traffic) often accompanied by a separate walking path. Recreational paths, part of the green cycle route but still an important part of the bike network.



Class D

On street marked bike lanes (Bike and Chevron) Higher volumes and speeds up to 50km/h, bicycling slows down car traffic by narrowing the street and demonstrating the presence of bicycles in the traffic picture.

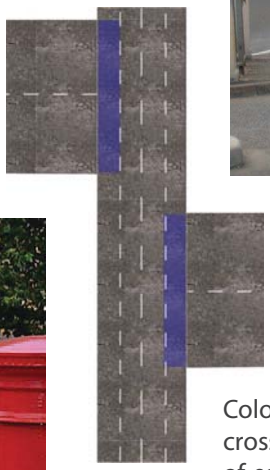
Class E

Bike lanes away from car traffic on separate lanes or as paved shoulders (min 1.2 m). Along high speed highways and higher traffic volumes. Completely separated bike or the shoulder solution rather than no facility at all.

Large roundabouts are in general not fitting for bicycle traffic and can instigate insecurity amongst cyclists. Traffic lights should be preferred but when necessary various solutions can be applied with seperate bike lanes or simply signage that encourages cyclists to ride infront of the cars.

Smaller roundabouts are mostly satisfactory and signal controlled crossings at large roundabouts can be a possibility.

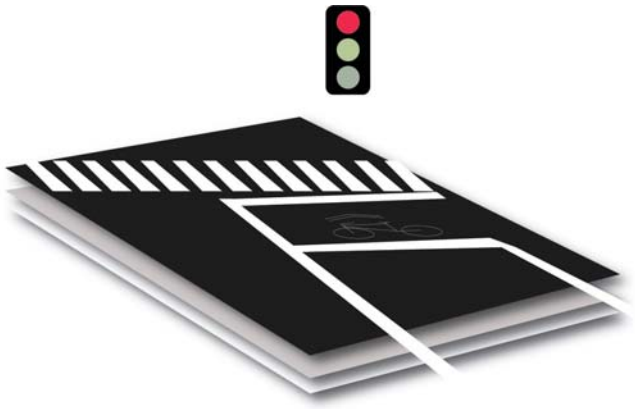
junctions



Coloured asphalt can be used at crossings both for cyclists sense of security and as a reminder to motorists.

"Bike boxes" send cyclists to the front of the line. These allow cyclists approaching the intersection to position themselves at the front of the line of vehicles when the traffic light is red making bikes travel faster.

Signal controlled cycle crossings with minimal dealy for cyclists and cycle detection where feasible. Crossings for cyclists should be direct without unnecessary bends or turns.



do´s

Roofed bike parking can provide shelter for both cyclist and bike.

Heating can be used in colder climates to melt snow from bike paths.

Coloured asphalt is a good solution for cycle paths when crossing roads.

Bicycle traffic should have free access through speed bumps which are after all usually made for cars.

Accessibility can be optimized by various minor improvements. Such improvements do not only benefit cyclists but all soft modes.

Gates and bicycle speed bumps can be used on junctions to avoid collisions between cyclists, pedestrians and motorists.

Maintenance must not be lacking when it comes to bicycle and walking paths especially during winter.

Surfaces must be maintained and exchanged when conditions have gotten unsatisfactory.

dont´s

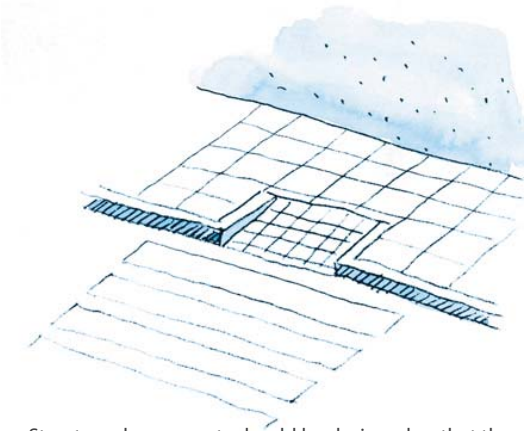
Shortcuts and temporary routes should be thoughtfully implemented and in level with the surrounding paths.

Bollards, light poles etc. should naturally never be placed directly in the line of bicycle traffic.

Gates and other hindrances for bike traffic should be strategically placed and not overused.

Gratings can be hazardous for cyclists and should be designed bearing that in mind.

Well designed bridges both aesthetically and functionally are important elements in the path network.



Streets and pavements should be designed so that they are accessible for all travellers.

Signage is important for both cyclists and motorists who become more aware of other traffic modes.

Well functioning bicycle parking can be implemented with simple measures f.x. at bus stations.

Trees can be planted alongside paths to provide shelter from wind as well as to create nice surroundings for cyclists.

Stairs with ramps for bikes are a simple and good solution.

Path maintenance is very important all year round.

Connections for cyclists should be direct and comfort should not be comprimized for safety.

dont´s

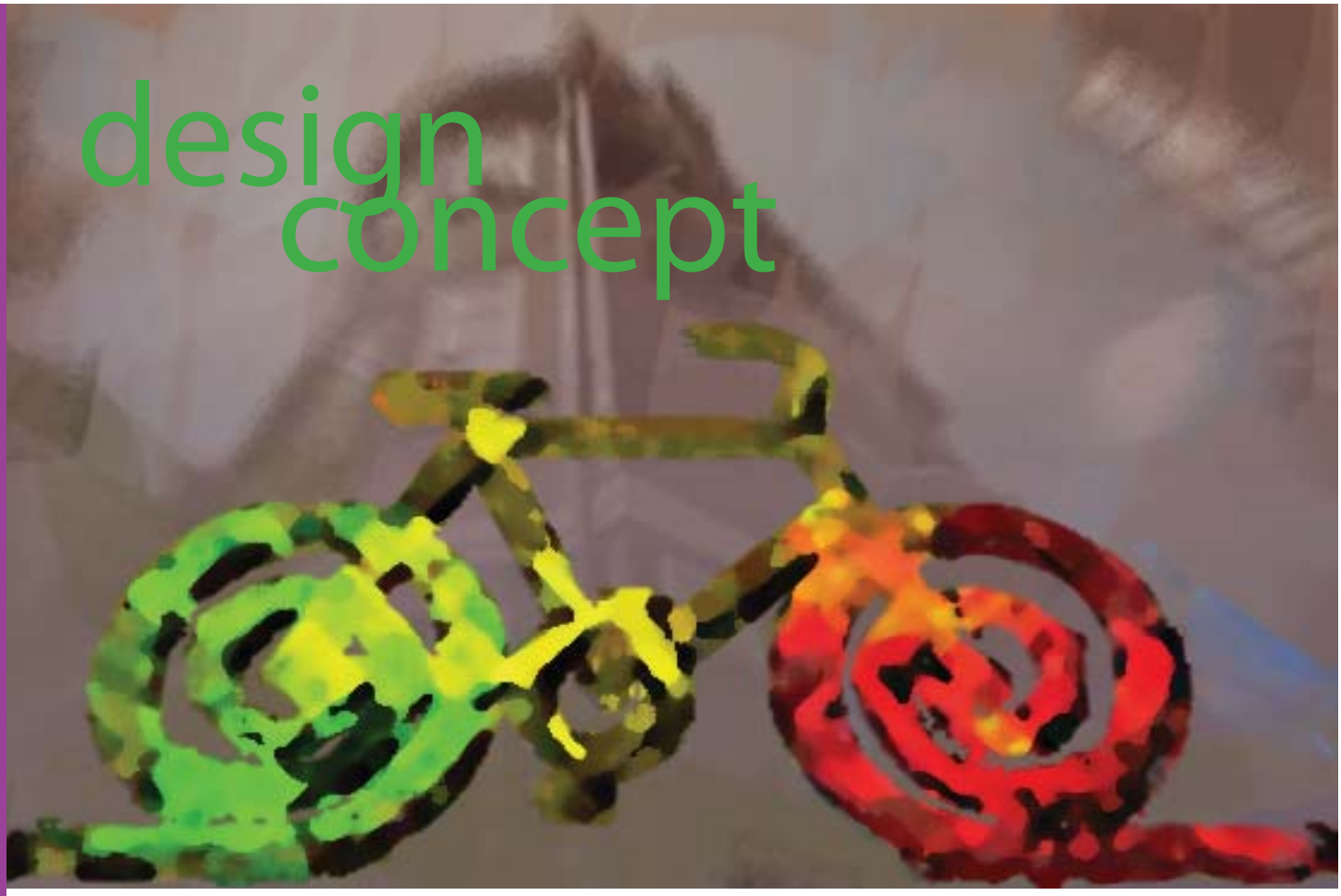
Paths should be repaired immediately just like roads for cars when they are damaged.

Cyclists will find the most suitable way so the best idea is to acknowledge that and make them appealing.

Stairs should be designed accessibility for all in mind.

Confusing path markings are worse than no markings at all.

design concept



In the beginning of the 19th century the bicycle was a really practical way to get around in Reykjavik city. Around the 1930´s and 40´s, bicycles were a big part of the traffic picturein, used both for work and leisure. At that time infrastructure for cars hadn´t had the huge impact on the city as it has today and bicyclists could easier get by and were a more suitable mode of transport than the private cars.

The design concept revolves around the notion to promote sustainable mobility by implementing facilities for bicycles into the traffic picture. What will happen if we reclaime some of the space absorbed by the private car and use it for other purposes? These purposes can be transport oriented or just ways to improve public outdoor space. Can it be profitable in a car based society to remove facilities that make automobility so appealing? Can it be profitable for citizens and for merchants in downtown Reykjavik to reuse the urban areas and reclaime the public space?.

The idea is to

recycle and restrip

To restrip the city, by altering road layouts in favour of soft traffic modes. By restripping, which refers to the actual road transformation, or redesigning the strip/street, the bike will be reintroduced to the city and given it´s proper share in the traffic network. Hence the city will be recycled. The reintroduction of the bicycle by restripping the city is meant to remind people of the possibility of using a bike instead of a car for transportation and to improve living conditions in Reykjavik city.

scales

XL

XL-scale looks at the connections in the whole capitol area. The main business district is in downtown Reykjavik to which many people have to travel each morning and home at the end of the day. This scale is important to point out intermodal solutions for the capitol area with the bicycle as a part of that solution.

L

In L-scale the design is about a complete network of bicycle paths for Reykjavik city. A detailed map of Reykjavik is presented identifying beneficial bicycle path implementations. The map is to be employed by city officials in the purpose of establishing a bicycle network for the city. In L-scale, maps for campaigning purposes are also introduced as a vital part of promoting bicycling in Reykjavik.

M

M-scale looks the downtown area as a whole to locate interesting settings to improve the urban surroundings. A solution is demonstrated that takes into account the areas that are connected by the selected route and a general design for the whole street is laid out.

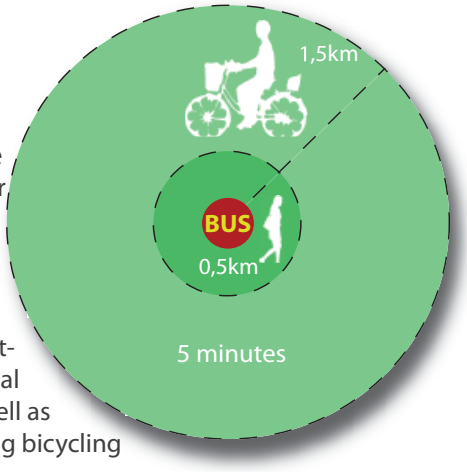
S

On a smaller scale, specific areas are selected and a design solution for these is presented. The purpose of this scale is to visualize how the selected urban spaces could function and appear considering the criteria concerning soft transport modes and public social spaces as dominant elements in the city. S-scale looks at solutions for the different classes up close and proposes examples of lighting, street furniture, surfaces etc.

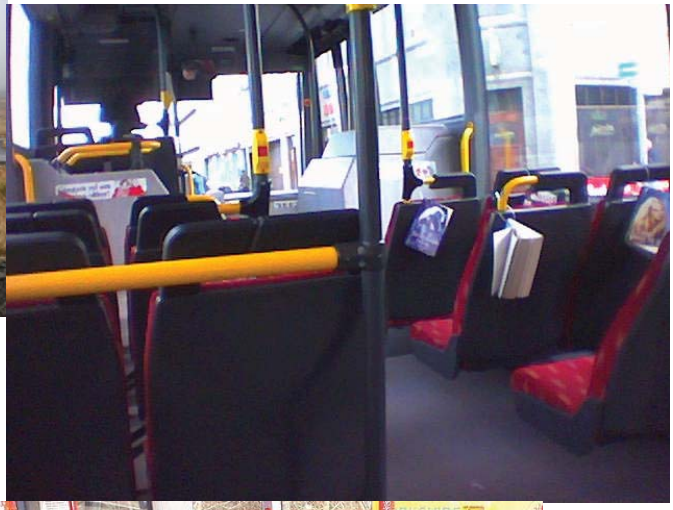
bike and bus

XL-scale is about trying to provide a bicycling solution for the whole capitol area. Here it is necessary to consider integrating transportation systems to minimize distances and enhance travel comfort. Public transportation in the capitol area is served by the bus company Strætó bs. and has a share in the transport modal split at app. 4%. The busses are often vacant so at the moment it is allowed to bring a bike on the bus if there is enough space. This can boost both cycling and encourage bus usage if the possibility is introduced to the public. The map shows distances which an average cyclist and pedestrian covers in 5 minutes which is the, by rule of thumb, maximum distance to a bus stop.

Of course there are many other smaller bus stops which could easily serve even more clients. This campaigning tool could be effective both for the local bus company as well as for those promoting bicycling in the capitol area.



Radius around bus stations in relation to 5 minute travel distances by foot or by bike



Even though, in recent years, bus usage in Reykjavik has been gaining interest, coaches are often empty or half empty which has allowed for passengers to bring their bikes on the busses.

Pictures from Reykjavik city.

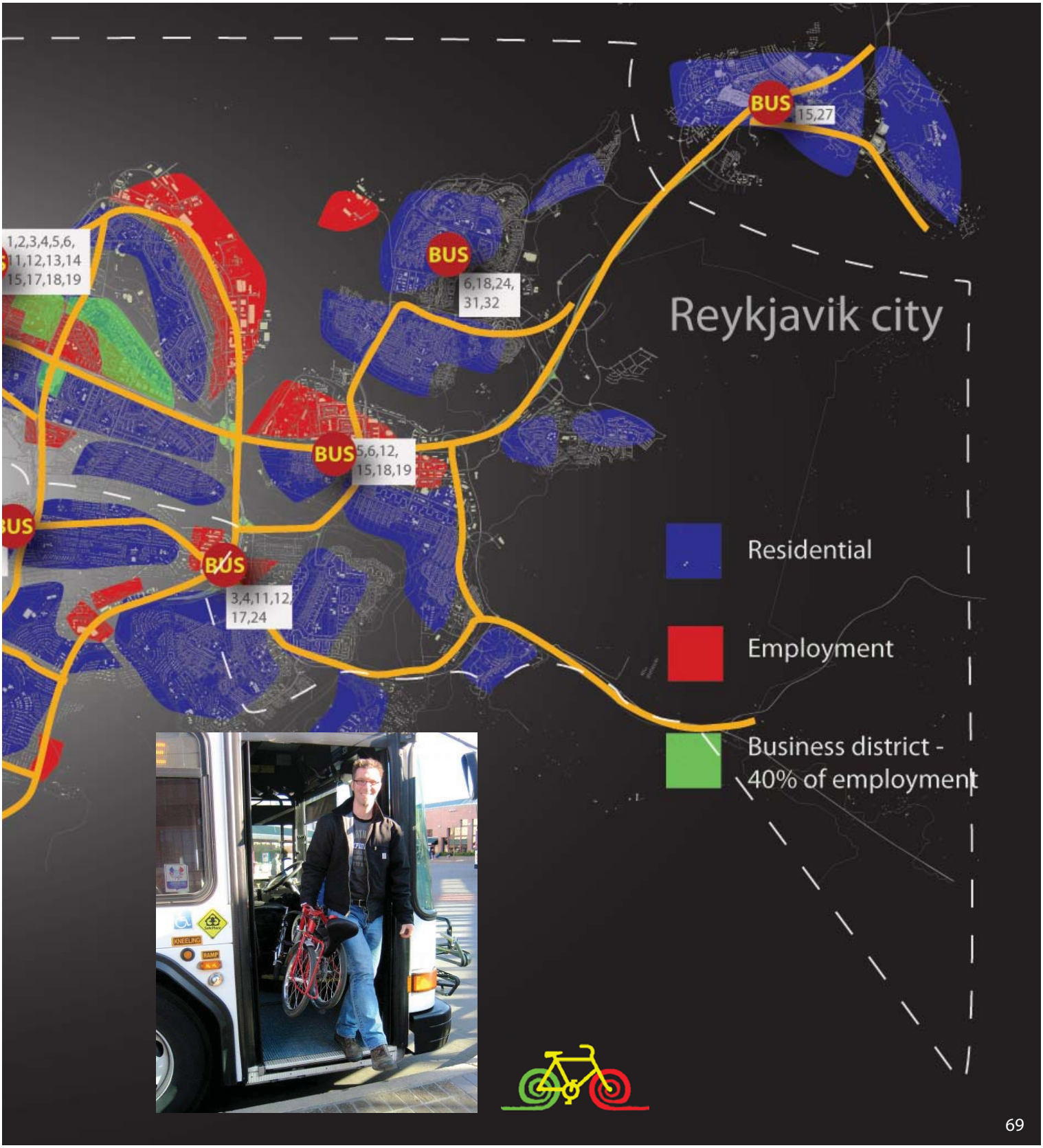
Bicycle parking at bus stops is very important when promoting integrated transport systems. This solution is from New Jersey, USA.

The picture shows the space required to transport the same amount of people by bus car or bike. City of Muenster 2001

metropolitan area

In the XL-scale it is possible to see the whole metropolitan area with bus stops and major highway connections. Cycle tracks covering the areas around the bus stops would benefit residents in the surrounding minicipalities as well as those from Reykjavik commuting out of the city. This scale is important to understand the distances and realize the urban density in the whole capitol area. Residents here are as mentioned earlier about 200.000 and the urban density estimates 29 residents pr ha. The bus routes are noted on the map as well as the main road network.

The capitol areas bus company allows bikes on busses which is a great possibility, especially for those living in the neighbouring communities. Park and ride is also a possibility for car owners in the capitol area although distances are fairly short and congestion low compared to international standards. A better prioritized bus route network would definitely increase bus usage if it would mean that by taking the bus one would travel faster than by car.



current situation

The L-scale design looks at the City of Reykjavik as a whole where the idea is to project a network of bicycle paths strategically over the city. A decent system of mixed bike and pedestrian paths and secondary routes, where cyclists ride alongside car traffic and occasional proper bike paths currently exists in the city. These can be used both for transport and leisure but there is a need for a consistent net of bicycle connections. In 2005 the city´s first bike path was implemented and a year later another short path was opened where car parking spaces had been removed, much to the areas car owners disliking. Since then not much has been done. Not until the summer of 2008 where three streets got marked with "Bike and chevron" markings. This is a new approach by the city of Reykjavik where simpler, less costly measures are to be used to make the city more bicycle-friendly.

A grid system was used to understand distances between existing paths in the city. The grid is built up with 1 km squares and shows critical areas where new connections must be implemented to improve the overall system. Major bus stops are also illustrated on the map as well as secondary bike paths which do not possess specific features but are directional to show optimal routes for cyclists travelling in the city.

situation

The map represents a new system of bike paths in Reykjavik city. The various classes have been implemented into the path network and major bus stops and bicycle rental stations are presented as well. The bicycle rental stations are strategically located nearby swimming pools, universities, by bus stops as well as in the business district. This map can be directly utilized by Reykjavik officials to make bicycling more appealing in the city. The Class D solutions are most simple and least expensive so these should be of first priority. A separation between bicyclists and pedestrians is the next step followed by strategic implementation of other solutions.

Class A - Mixed use, pedestrian and bike paths

Class B - Existing secondary paths, mixed use bike and car traffic

Class C - Green cycle routes, separated pedestrian and bike paths

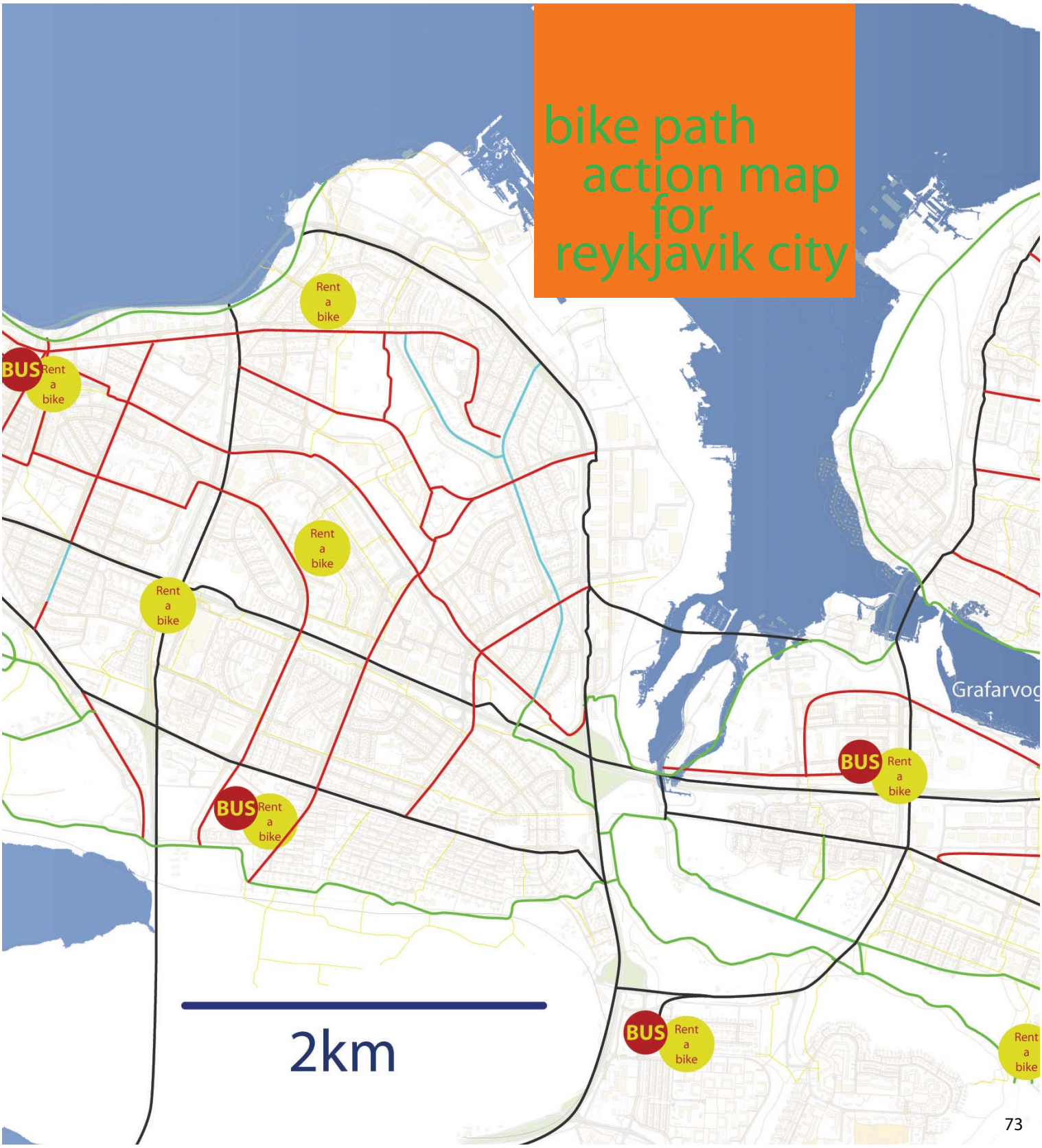
Class D - Existing primary paths, mixed bike and car traffic, with surface markings and separate paths

Class D - Mixed bike and car traffic with surface markings

Class E - Bike separated from car traffic with specific bike lanes

BUS Major bus stop

Rent a bike Bike rental station



Pictures from the making of the 15 minute map

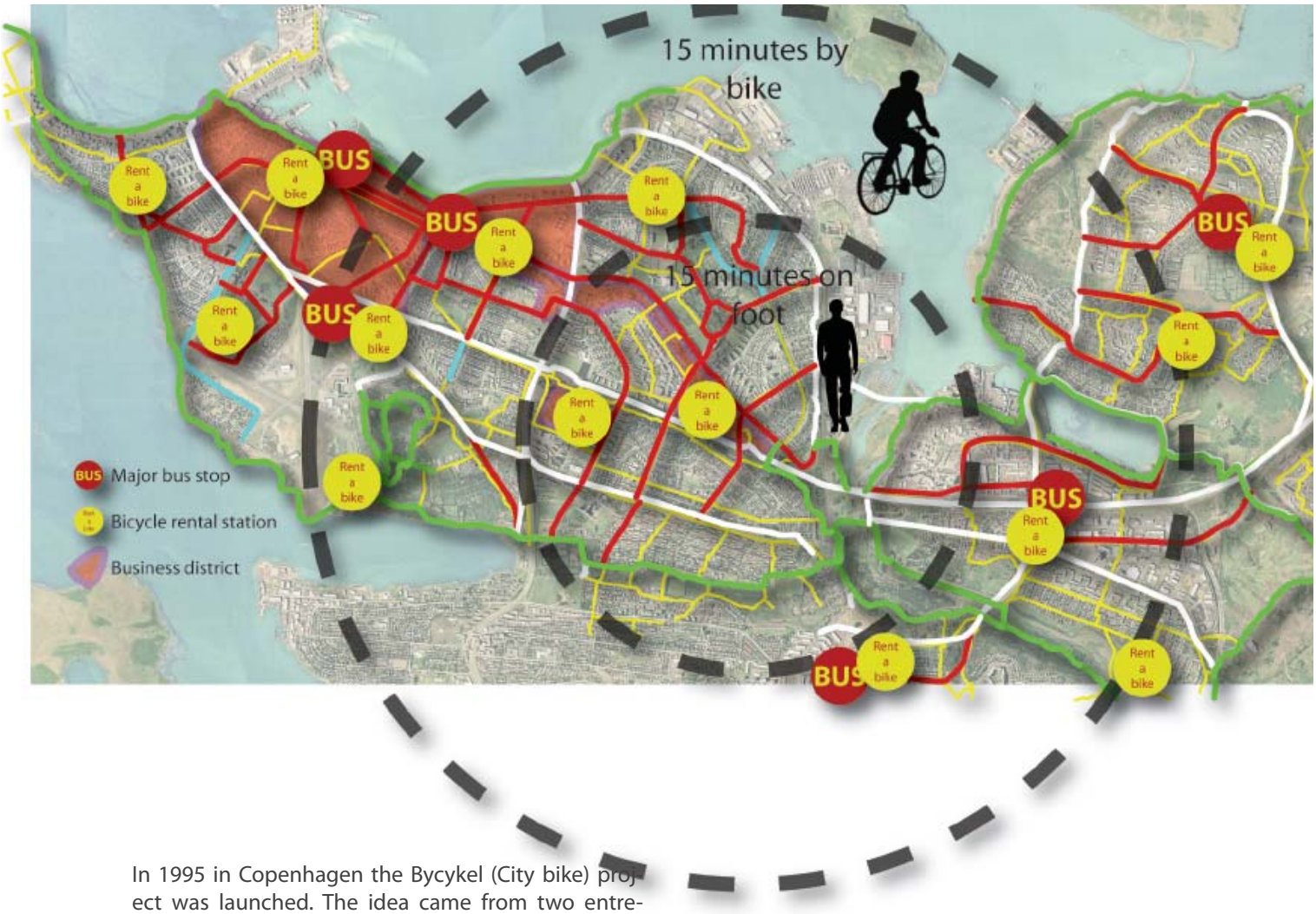
15 minute map and other campaigns

One thing is to provide the infrastructure for bicycling in a city. Another important element when promoting alternative transport is campaigning and presenting alternative solutions for citizens that are far from the very idea of using a bike for transport.

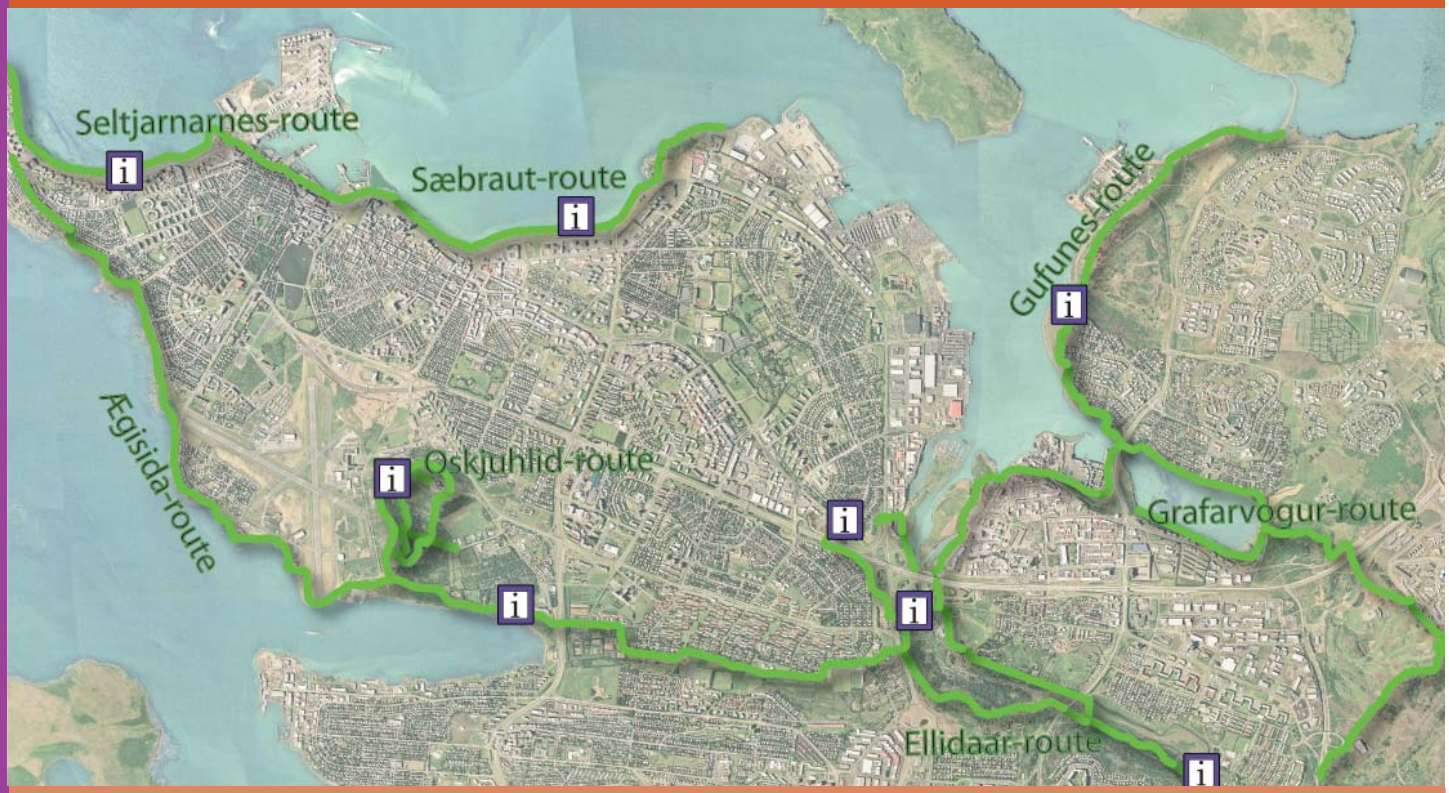
There are various methods for endorsing bicycling. Firstly there is the sustainability approach which fortunately has been gaining interest in recent years. The sustainability approach mostly appeals to the environmentally aware public which also performs other eco-friendly measures like garbage recycling etc. There has been an awakening concerning environmental issues in Reykjavik like elsewhere in the world and bicycling has supposedly gained from this. Secondly there is the cost related approach promoting bicycling as a cheap and effective solution where one can save money by altering his or hers transport habits. This approach has not been effective in the Icelandic scenario related to high income and high car ownership. Perhaps following the financial crisis the Icelandic public will start considering different modes of transport and bicycling will be one of them. Thirdly there is the health related factor which has proven to be an effective approach in recent years especially when promoting bicycling. In Reykjavik f.x. bicycling has always been a popular hobby where people have gone on sunday bike rides just like taking sunday walks. The bicycle network in Reykjavik somehow recounts for this public interest and bicycle and walking paths are often implemented where the surroundings are nice rather than to focus on connecting areas in the city conveniently for those who want to use the bike for transport. Nevertheless the bike paths in the city at the moment serve their purpose very well and play an important role in the city's bike transport infrastructure but new routes must be applied to support this new trend.

Campaigns like "We Cycle to Work" and The European Mobility Week have improved the general discussion about alternative transport modes. The We Cycle to Work campaign primarily focuses on the healthy lifestyle associated with bicycling. In May each year over 7.000 cyclists in Iceland participate in the campaign. Most only cycle for the designated 3 weeks of the campaign but some experience it as an eye-opener and continue to use their bikes every day or at least on a more regular basis. This sort of campaigning is important to remind people of the possibility of riding a bike to work and to raise the dialogue about the different mobility possibilities to a higher level.

There are several urban myths that diminish peoples perception of the mere possibility of riding a bike in Reykjavik. In Sustainability and Cities – Overcoming automobile dependence, Newman and Kenworthy challenge 10 myths related to choices of transport modes. They present cases from 10 cities that defy these myths and thereby illustrate the similarities between the problems cities are dealing with when it comes to changing travel behaviour. Most citizens of Reykjavik proclaim that urban sprawl, poor weather conditions, high living standards, time shortage and other aspects make it impossible to promote cycling in the city. The map on the opposite page illustrates how far an average cyclist can travel in 15 minutes in Reykjavik on the city's main bike paths. It illustrates very well how short distances really are in the city and challenges that myth to make cycling a more eligible possibility. According to the world health organisation 30 minutes pr. day of exercise is recommended for every adult. A 15 minute bike ride to and from work can cover this need and improve peoples health dramatically.



In 1995 in Copenhagen the Bycykel (City bike) project was launched. The idea came from two entrepreneurs who had their bikes stolen and wondered how much it must cost for the insurance companies to compensate for the 27.000 bikes that were stolen each year in Copenhagen alone. They teamed up with the insurance companies and other major businesses and launched a simple "Rent a Bike"-program in the city which became a huge success. In 2005 CycloCity was launched in Lyon and two years later the Vélib´ scheme in Paris, France. JC Decaux, the owners of the Lyon and Paris system, refer to it as a sustainable transport option which is "a viable alternative to private vehicles and complementary to public transport". Barcelona also recently introduced a bike rental system but only for it's inhabitants. The OyBike program in the UK has been highly successful and other cities like Washington, Denver and Minneapolis are launching their own programs. A bike rental scheme in Reykjavik would take into considerations the experiences by these other cities. Of course bike rental is most prosperable in dense areas. In smaller, less dense cities a reasonable, comprehensive net of docking stations must be laid out and a fair amount of bicycles offered. The locations for the docking stations must be strategically selected and the whole program evaluated when it has received some experience. On the map, spots have been selected by their closeness to bus stops, car parks, shopping malls, universities, hospitals, swimming pools, cafés and shopping areas. Also the system is meant to serve Reykjavik city's main area of employment by placing docking stations regularly in that area. In this project a particular bike scheme is not selected but bicycles that suit Icelandic conditions would be a criteria as well as docking stations that protect the bicycles from extreme weather.



green cycle routes

Approximately 35 km of bike paths represent Reykjavik´s existing Green cycle routes. Citizens of Reykjavik often use the mixed pedestrian and cycle paths for recreational purposes when the weather is suitable for a bike ride. By introducing to citizens the possibility to ride their bikes in nice surroundings and point out suitable routes with resting areas with benches and drinking water, information boards and so forth more people could be tempted to use their bikes on a more regular basis. Maps should be placed regularly on the paths and specific routes given names for users to be able to relate to the area and picture the route they took.

Although this campaign looks like it mostly appeals to recreational cycling it is also a tool to get people to open up their eyes for bicycling as a mean of transport. The green cycle paths are a vital part of the overall route network where people who get familiar with the paths might get extra confidence to f.x. take the bike to work. ´The routes are also paths that cyclists can chose if they want to completely avoid coming in conflict with car traffic. The paths cross roads in a different level by tunnels or bridges and never make it necessary to ride through traffic lights or alongside car traffic.

M scale

M-scale consists largely of shops, restaurants and cafés. Foreign experiences have shown that shopkeepers and restaurateurs tend to oppose strongly to proposals that involve the removal of parking spaces. Particularly in colder climates, the thought of taking away the possibility to park close by the shopkeepers stores intimidates them as they become afraid of losing their largest groups of customers. Surely cultures and weather conditions are influential when it comes to deciding choice of transport mode for going downtown but other factors can provide qualities that outweigh the parking issue. In Copenhagen in the 1960´s local merchants were furious about the absurd idea to close down the city centre for car traffic. Car drivers were a large share of their customers and the awful weather in Denmark was not comparable with f.x. Italy where café guests would sit outside and enjoy the atmosphere and nice weather. Where shop keepers could place their goods in front of their stores and pedestrians had the streets in the inner city for themselves. Jan Gehl and Lars Gemzøe, local, Danish architects, participated in the resurrection of Copenhagen's public spaces. Gehl and Gemsøe refer to Nyhavn in Copenhagen as a parking lot for 96 cars which in 1980 was turned into a "peoples"-street. In downtown Copenhagen 18 parking lots have in recent years been transformed into squares as a part of Copenhagens resurrection. Of course, Strøget, and the surrounding pedestrian areas in the city centre are also major success stories and nobody would propose to allow car traffic through these streets again. As a matter of fact city centres in most larger cities in Denmark have been redesigned within the last few decades to serve pedestrian traffic better in one way or another. Pedestrian streets are common and conditions for bicyclists have been improved. A part of the solution is namely to provide traffic infrastructure in the whole city for the modes coveted in the city centres. Barcelona is another good example of a reconquered city. In under 10 years hundreds of parks were implemented in the city in areas where buildings in decay and factories were torn down. Traffic has been regulated for pedestrians and existing squares renovated. Barcelona is today one of the worlds most attractive tourist destinations. Following are interviews taken with shop keepers at the selected M-scale area. In general their attitude towards making it harder for motorists to access their stores was negative. They were nevertheless keen on the idea to make room for cyclists and pedestrians but not on the expense of the private car.

A picture of Iceland´s first designated bicycle path, in Laugavegur opened in 2005

Very much against the removal of parking spaces and says that the street functions very well as it is. The street provides shelter from wind and you can get the feeling to be promenading in Italy when walking around Reykjavik city centre. Said that you should not underestimate the culture in Iceland and that he cruising about the city centre helps to promote the smaller stores.

interviews

Þorlákur Einarsson - Store: Wooster

The city centre needs more parkings spaces. The customers drive around looking for spaces most of the time. The weather in Iceland is different from f.x. Denmark and we won´t be getting the Icelandic people to use a bike for transport. It would though be fun if it could work. Maybe it is a good idea to put a roof over the street.

Gilbert Guðjónsson - Store: Gilbert Úrsmiður

There is plenty of parking in the city centre but people always want a space right in front of the store. There should be more parking in parking houses and the street should be turned into a pedestrian street. Sesseljas friends and relatives all agree that this should be done.

Sesselja Sveinbjörnsdóttir - Store: Blue Lagoon

? - Store: Stella

Did not want to answer any questions but guaranteed that the street would die if the parking spaces were removed. Was certain that the Icelandic customers would never walk.

Bryndís Gísladóttir - Store: Vínberið

Laughed at the idea to remove the parking spaces. The customers will leave if the parking is taken away. Some of the customers even call us before they leave their homes to hear if there is a free space right in front of the store.
The tourist comes walking to the historic city centre and not to the mall and the Icelandic customers do not mind driving around looking for parking.

Axel Gomez - Store: Sævar Karl

Foreign customers come walking but the Icelanders by car. It would have a terrible effect to remove the streets parking spaces but perhaps bike paths could accomodate for some of the loss. It would though be a positive thing for tourism.

pósthússtræti - lækjargata - bankastræti - laugaveg

The call for well functioning urban areas is unanimous. Nevertheless the dominance of the private car in the Reykjavik scenario and the acceptance of car dependency causes merchants to fear losing facilities for cars even though foreign examples show an increase in business as a result of pedestrianization. Iceland is under great influence from the US, and particularly in Reykjavik the planning focus has been on the private car. Still, in recent years more and more urban spaces have been opening up to the public and people are taking advantage of those possibilities in the city. Not yet has the next step been taken to make use of existing infrastructure in new ways like f.x. Copenhagen have been doing with their public squares and parking spaces and neither are the existing urban areas fully exploited. It is a fact that the urban development in Reykjavik has had a great influence on city life. Suburban sprawl and immense automobile dependence has struck the city hard and this is noticeable in the local environment through pollution, noise, car dominance and so forth but also by land use in the city. Around 50% of occupied land is for traffic infrastructure which is comparable with cities like L.A. and other American car based cities. The already established urban myths concerning weather conditions, distances and other discouraging factors for bicycling also play a large role both relating to the consent of merchants and the transport habits of the citizens.

Alternatives attract alternatives and add to the value of cities. Cities brand themselves by their irregularities, possibilities, beauty and other advantages. Copenhagen is not only known as the city for bicyclists it is also the home of Christiania, recognised by many. Curitiba's Rua 24 Horas (24 hour street) and specific urban design solutions in the city have attracted attention from specialists in urbanism from all over the world. Paris, London and Barcelona all have their explicit atmosphere and each city has several interesting features that people associate with that particular city. Reykjavik also possesses numerous qualities. It is surrounded by all natural elements, high mountains and the Atlantic ocean. The unreliable weather conditions and extreme landscape always provide an alternative experience and the inner city offers most of what an inner city should offer. But there is a lacking in open outdoor areas for citizens to unfold and socialize. Facilities for soft traffic modes in the city centre are deficient and the car dominance too heavy.

pósthússtræti - lækjargata - bankastræti - laugavegur

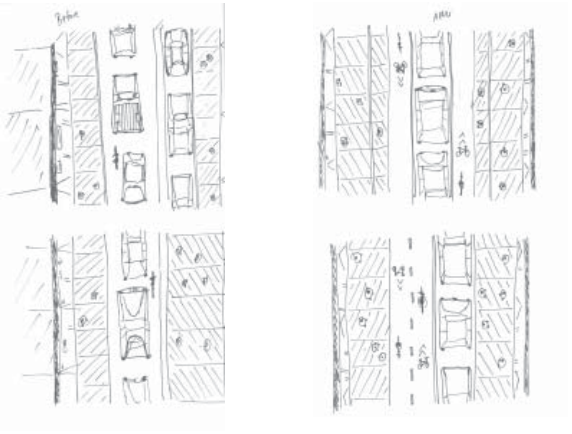
Every year through Mercer's Quality of Living and The Economist's World's Most Liveable Cities Surveys, cities are graded in regards with their overall living conditions. Crime threat, stability, good public transport and other features can influence cities' standard of liveability. The list is used by internationally operating companies to determine where they should locate new offices. Air quality, traffic congestion and recreational and cultural activities' are also used to define the quality of living and this is of course on the agenda for every city. Until recently traffic congestion was non existent in Reykjavik city. The cultural scene in Reykjavik is of decent calibre but areas that invite to recreation and social interactions are scarce. Proposing that the Mercer and The Economist lists are pretty descriptive on how a liveable city should function, the city of Reykjavik is doing satisfactory. But there is always room to improve and even though the city is not trying to compete internationally in attracting businesses, the City of Reykjavik still wants to offer the best living standards for it's citizens and with tourism becoming a major source of income, measures must be made to create optimal surroundings in the city centre.


Strøget before


Strøget after

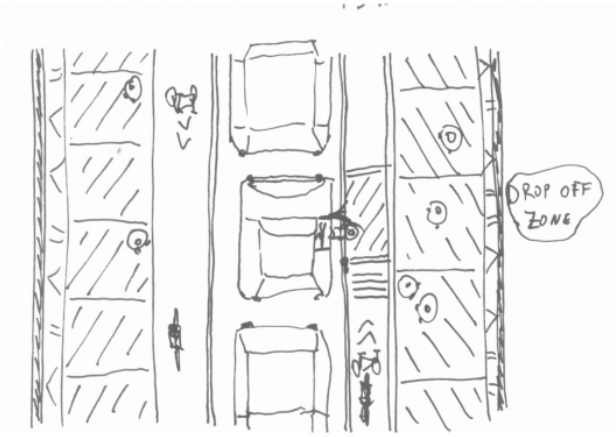
recycling and restripping

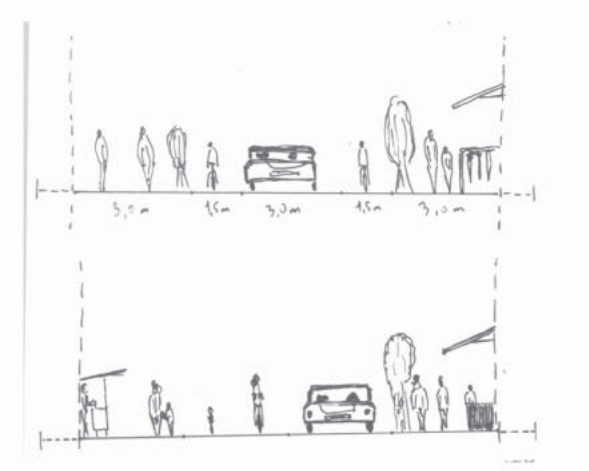
The merchants at Laugavegur all agreed that an increase in pedestrian and bicycle traffic would have a positive impact on their businesses. Nevertheless most totally disagreed with the idea to remove the parking spaces though a few were open to the possibility. This is of course the same situation as occured in Copenhagen in the 60´s but should of course be put into an Icelandic perspective. The conditions in Reykjavik are different from Copenhagen with the weather being usually worse in Iceland than in Denmark. The car culture as one interviewer mentioned correctly is definitely also a major issue in Iceland and peoples affection when it comes to their cars is eminent. The car and the circulating in the city can even result in more business. Nevertheless though the situations can not be compared completely it is obvious in Reykjavik like elsewhere that when outdoor pedestrian areas are established people tend to gather and make use of them. Recent years the winter has been getting shorter and peoples affections with foreign cultures scream for an intervention in the grey car dominant streetscape in the city centre.



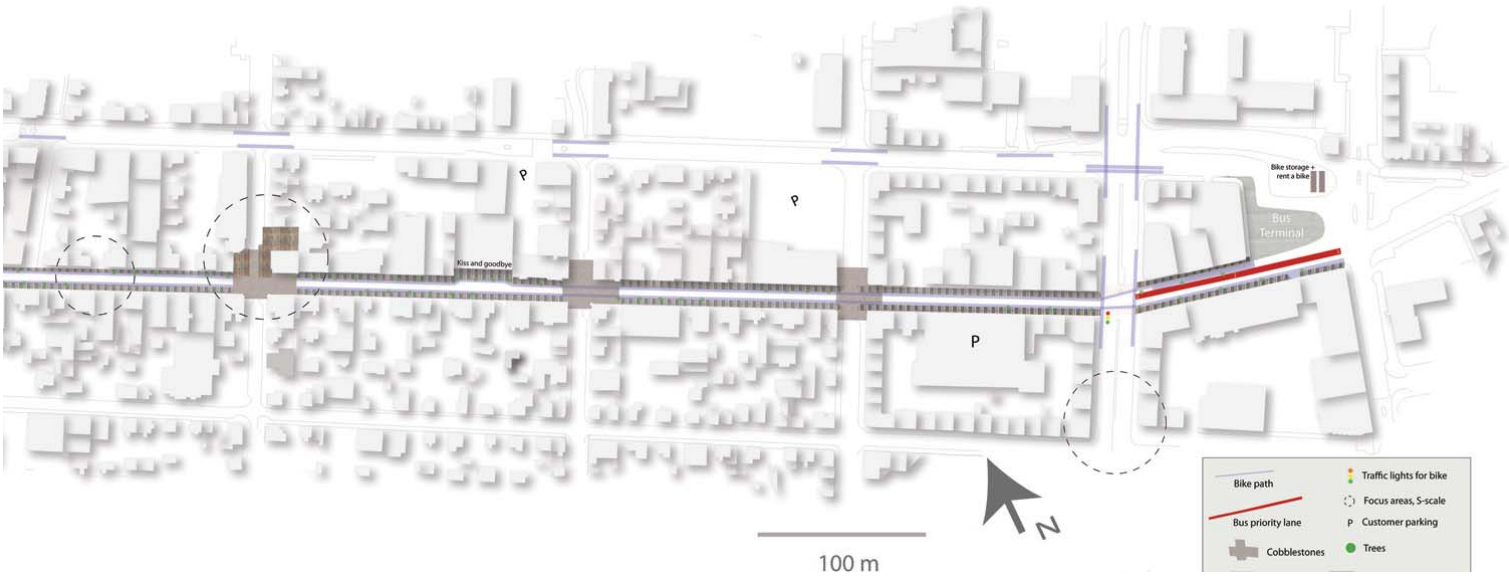
As a first step towards pedestrianization the ground parking spaces at the main commercial streets will be removed and bicycle lanes implemented instead. The street is simply too valuable to be used for the storage of cars for longer time periods. The original idea was to completely pedestrianize the area but experiences show that this should rather be done in small steps and perhaps especially in the case of Reykjavik because of the role of the private car in the transport culture. The M-scale solution exemplifyies a solutions for a street that can be projected elsewhere in the city. The bike lane also provides a link from Reykjavik´s main transit hub towards the café-district through the main shopping street.

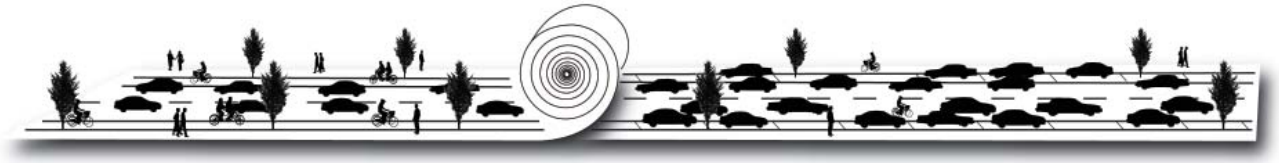
The M-scale map is also presented as an appendix in scale 1:750





On the next two pages elements are introduced that are useful when a street is undergoing a restripping proces. The design of the area takes the human scale environment into consideration and the interaction gained by elements that provide comfort and detail to the experience. The urban furniture, as well as the surfaces and the general street layout are all revised under the restripping proces. In the case of Laugavegur, Bankastræti, Lækjargata and Pósthússtræti the parking spaces have been completely removed and bicycle lanes implemented in their place. On a regular basis squares are designed that attract visitors to make use of the areas.

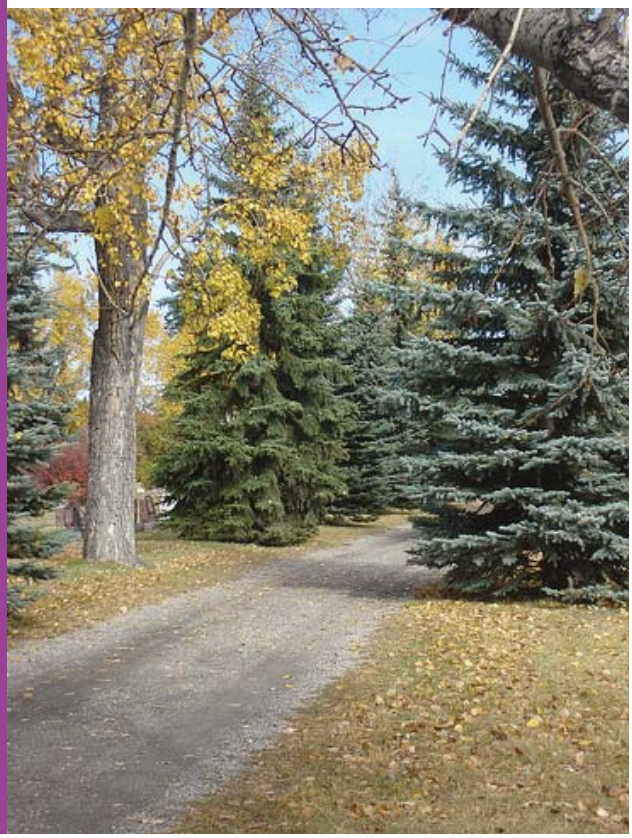




restripping elements

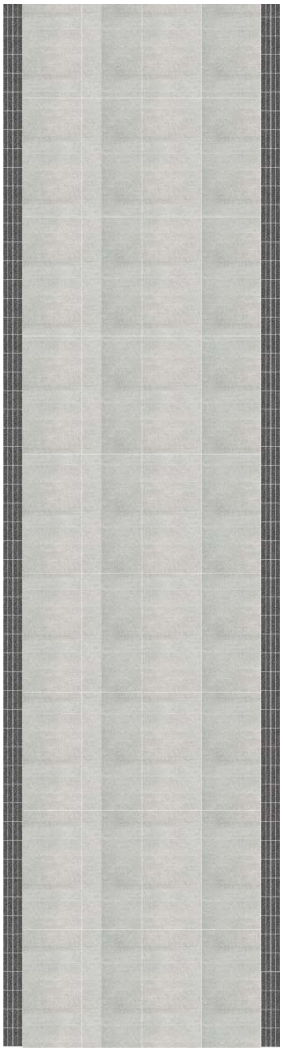
Bicycling comfort can be enhanced by using windbreaking elements such as trees and hedges. Canopies, trees etc, can alaso be used as shelters from short and intensive showers. In this project the trees used to provide shelter should take the Icelandic climate into consideration. Winds can get quite hard so an evergreen and tough tree sort would be optimal. The spruce tree can provide good shelter and holds its characteristics all year round. Where leaf trees are prefereed rowans and aspens have proven their existence in Iceland.

The elements and equipments used take into consideration which context they are being implemented in. In more rural areas, classical, romantic furniture is used and in an urban atmosphere more contemporary elements are put in. The elements reinforce the identity of each area but are also chosen depending on ergonomics and functionality. All lighting is implemented in coherence with Reykjavik Energy´s lighting plans for the city and takes into account light pollution and safety issues.



Ground lighting is implemented in certain areas in the city centre as well as flood lighting to enhance the sites atmosphere and provide a sense of space.

In the Icelandic climate, roofed, strategically placed bike parking is necessary. Awnings can also be a possibility, either on the bike paths themselves or in pedestrian areas.



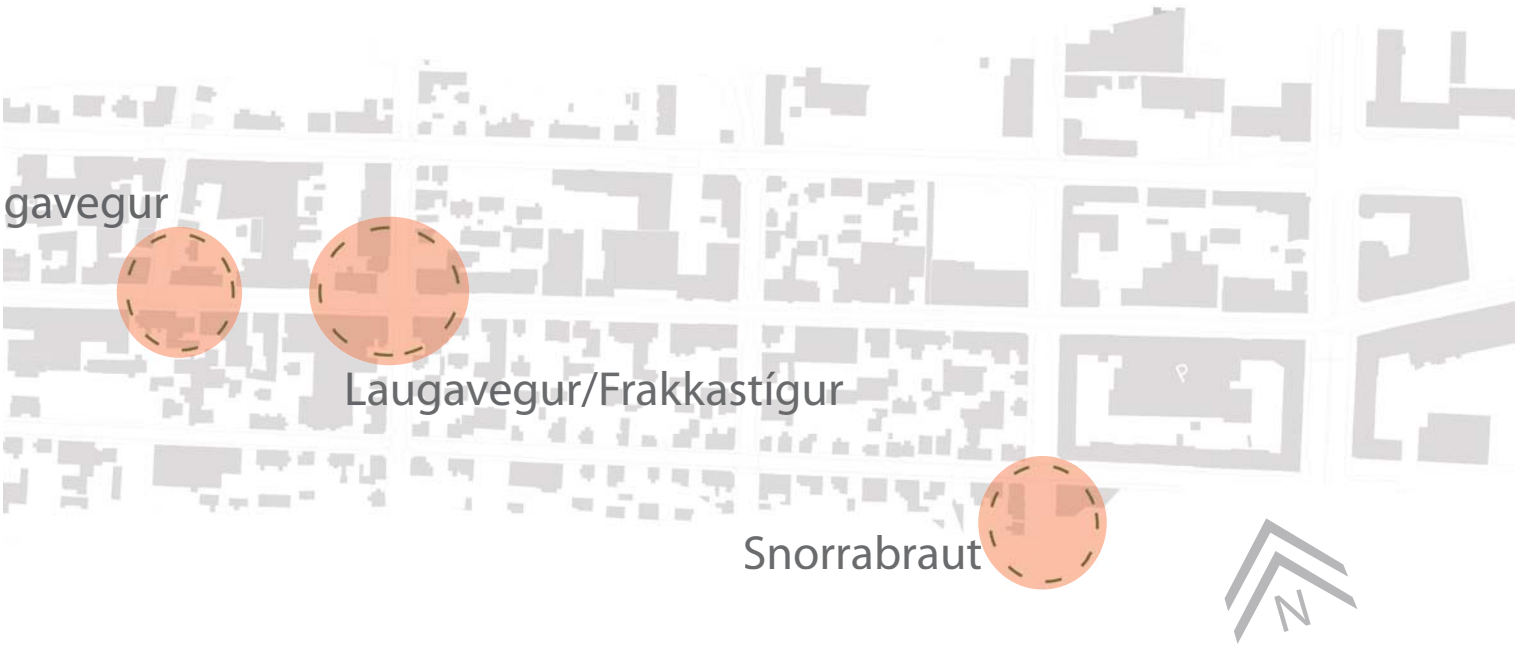
Pedestrian priority streets will be paved from wall to wall with nice pavement. Large, light coloured stones can serve well for both pedestrians and cyclists. The stone is simple and easy to maintain it gives a nice feeling to the area and is a nice surface to either ride a bike or walk on. As a cultural element cobble stone-pavements with forms of the Icelandic, woolen sweater are added to approprioate circumstances. F.x. in the city's historic centre this adds a homey, natural element to the urban character.

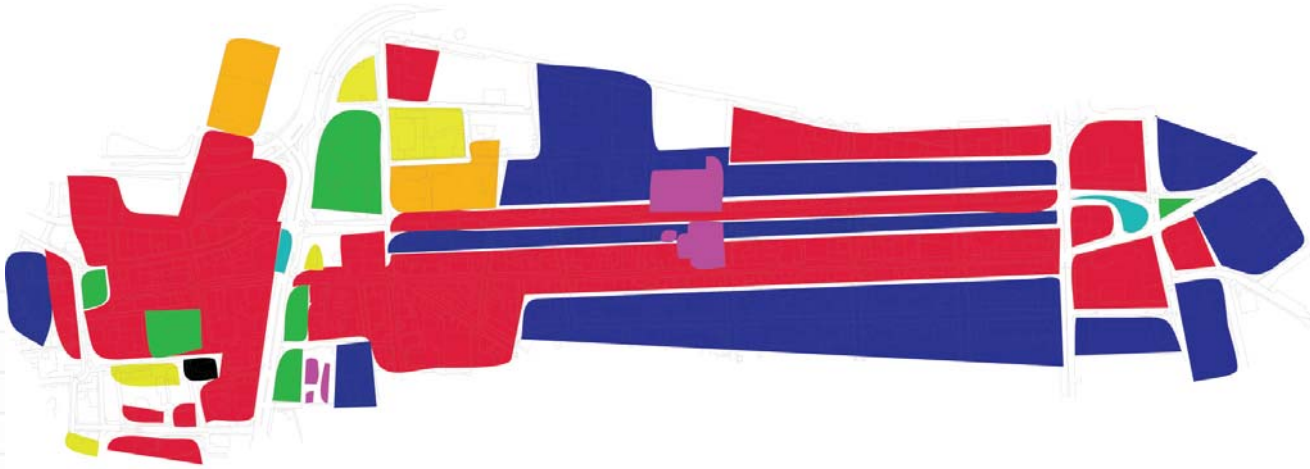
S scale

In the small scale solutions, further details are described and the value of each transformation illustrated graphically. The design solutions are chosen from areas within the M-scale. They represent four of the different classes of cycle path implementations. Existing elements are used where appropriate to avoid the changes being too costly but nevertheless some new elements are shown for each solution. A class type for bike planning is also described on each occasion as well as street surfaces.

The map above shows the M-scale area and marks the S-scale zoom-ins which are described in this chapter. Each spot is shown as before pictures and after it's restripping. Maps demonstrate how the areas will look after the transformations. Elements that are used for each and every restripping are introduced and illustrated on the collages. Also the specific bicycle path class is shown for each design solution.

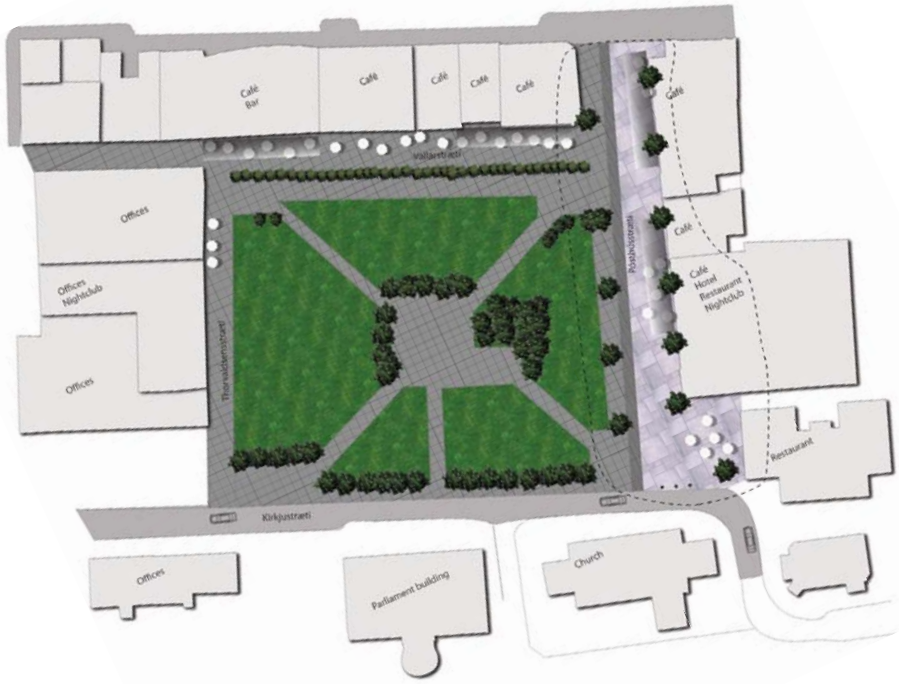
The map on the right shows the typologies for the reader to get the impression of what sort of activities take place in the area. As discussed the district is mainly commercial but also the home of the city's cultural scene with theaters, museums and the historic centre.





Governmental institutions
Residential housing
Commercial and business
Educational
Recreational
Religious
Transit hub
Theaters and concert hall

pósthússtræti

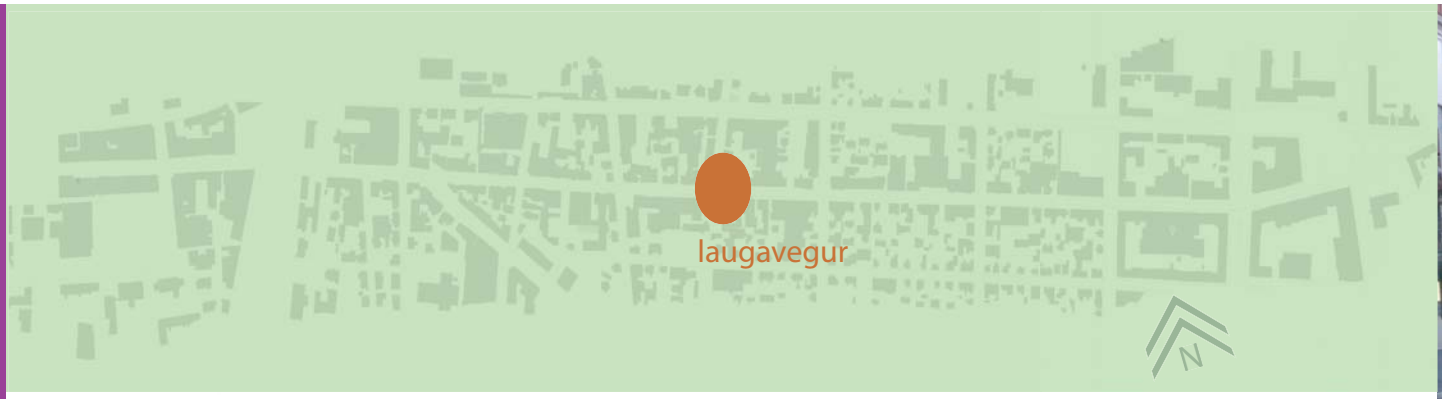


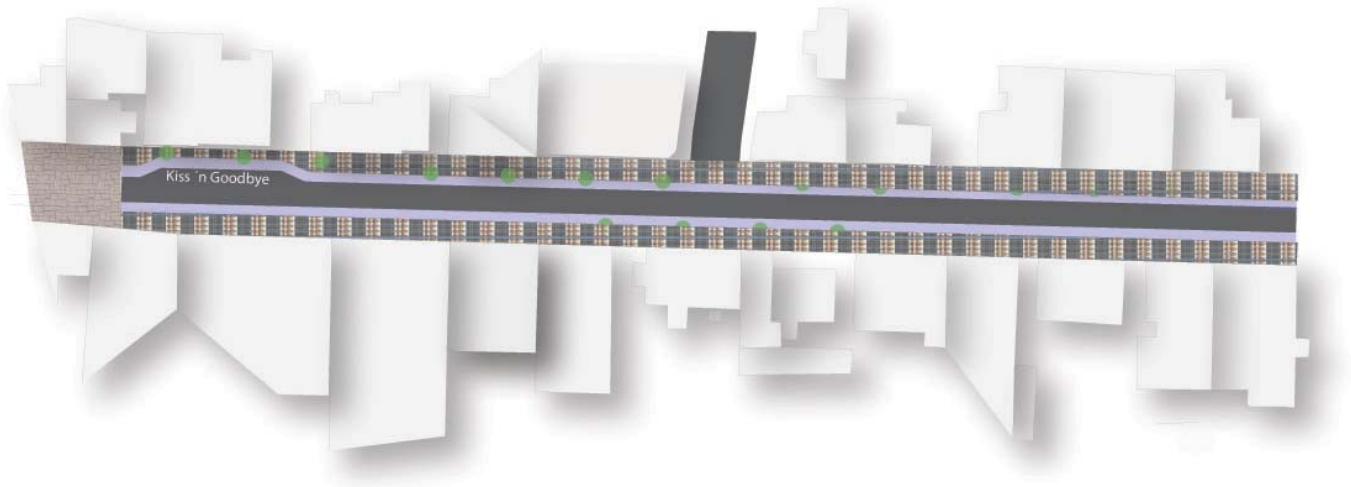
restripping elements

pósthússtræti

The illustration shows a transformation of a street from a car dominated urban area into a pedestrian and cycling street or Class A. The café now has more room to put out chairs for it's guests to sit outside and the movement in the area and interaction is on a more human level. Pedestrian and bicycle traffic is mixed and by not implying designated bike paths, cyclists automatically slow down when riding through the street.

A new surface has been added which is comfortable to ride a bike on as well as being bright and giving light to the area. More trees provide shelter from wind in the café area and bring a cosy atmosphere to the whole street. Urban style benches and trash bins can be used in similar examples but have not been used in this case.

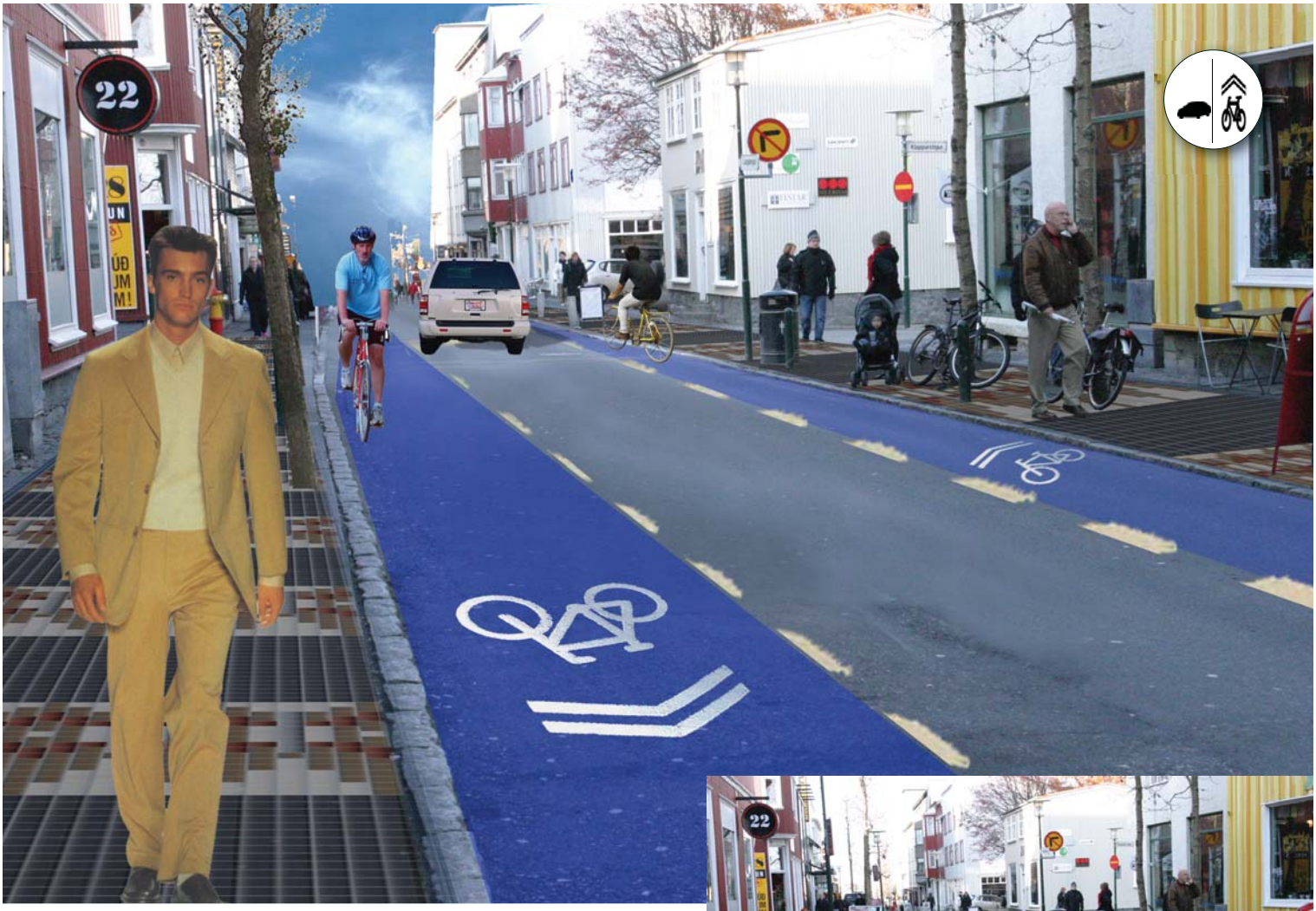




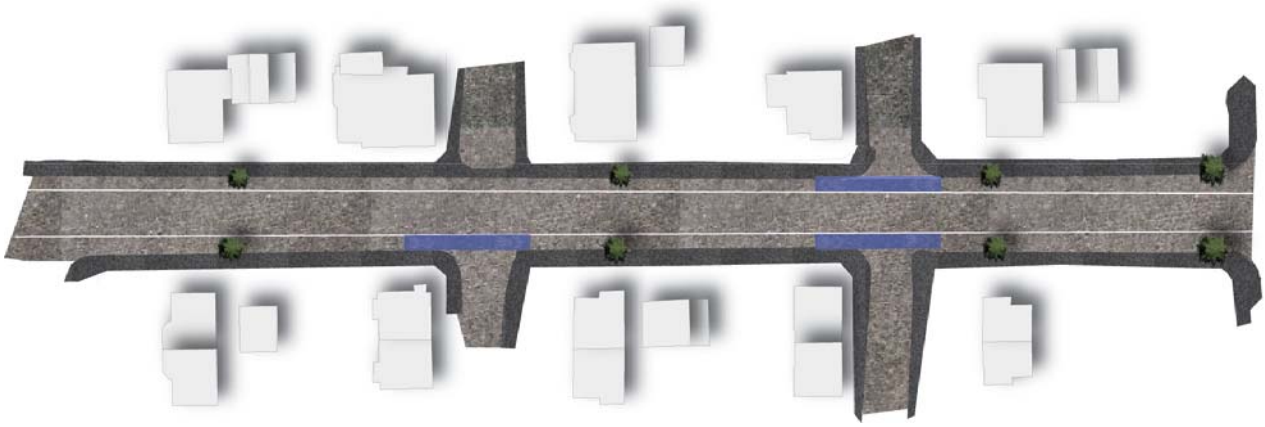
restripping elements

laugavegur

Class D is in this case represented by blue asphalt, bike and chevron markings and a dotted line separating bike and car traffic. The pavement has had a make-over where the form of the Icelandic woolen sweater has inspired the form of the cobble stones. Other urban elements, such as light poles, garbage bins etc. taket the urban atmosphere in the city centre into account. Additional urban elements in this solution are nevertheless kept minimal. A "Kiss and Goodbye" zone has been implemented for shoppers coming by car wanting to be able to jump out of the car to shop whilst the driver circulates the area.



The bicycle solution provides a connection for cyclists through the city centre. Parking spaces for cars have been removed and bike lanes implemented instead. The cyclist is provided with the fastest and most appealing connection through town which is important for promoting bike use.

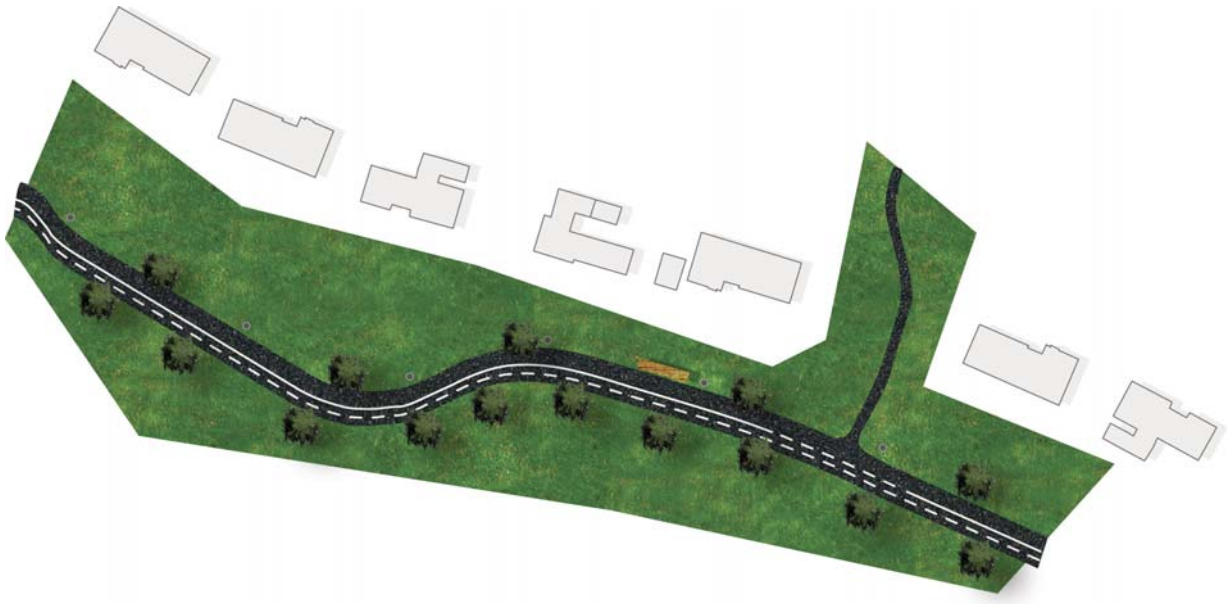


restripping elements

snorrabraut

The elements used in this particular example are also minimal to avoid high expenses and encourage fast implementation. The side of the road has received blue coloured asphalt at junctions and bike and chevron markings on a regular basis. The bike lane is also separated from car traffic by a white dotted line. Trees have been added to the street to clarify the separation between cyclists and pedestrians as well as to create more appealing circumstances for all trafficants. By this sort of low cost road restripping the city can seriously optimize it´s bicycling conditions. This could happen over a short period of time and where bicycling would most definitely become more appealing by "minor" improvements.

The illustration shows a Class D solution where bike and chevron markings have been implied into Snorrabraut. The street's width is plentyful and by narrowing it in this way hopefully car speeds will drop. The street is an important part of the Reykjavik city cycle network and the simple solution shows how well improvements can happen without being too costly or timely.



restripping elements

arnarhóll

The path through Arnarhóll is a part of the green cycle route in Reykjavik Additional lighting is assigned to the area with suitable light poles and the existing classical benches are kept as they are. Trees provide shelter from winds and bike and chevron markings and painted lines show the traffic directions.

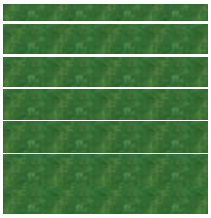
The illustration shows a Class C solution where the bicyclist has been separated from pedestrians hence improving traffic safety and providing a sense of security for all trafficants. Two way, well marked bike paths allow both direction cyclists to travel safely and unconfusedly on the path.

laugavegur/frakkastígur

restripping elements

In the case of Laugavegur/Frakkastígur examples for night and day are presented. This is done to illustrate the extra special lighting in the area and simply to particularize and show the atmosphere at different scenarios. Ground and flood lighting provide a sense of entering a different atmosphere so cars travel slower through this junction and trees are planted to create shelter from winds. Awnings and parasols are mostly used to keep visitors dry when it rains. More contemporary benches are used in these urban surroundings and bike and chevron markings are painted into the blue asphalt.



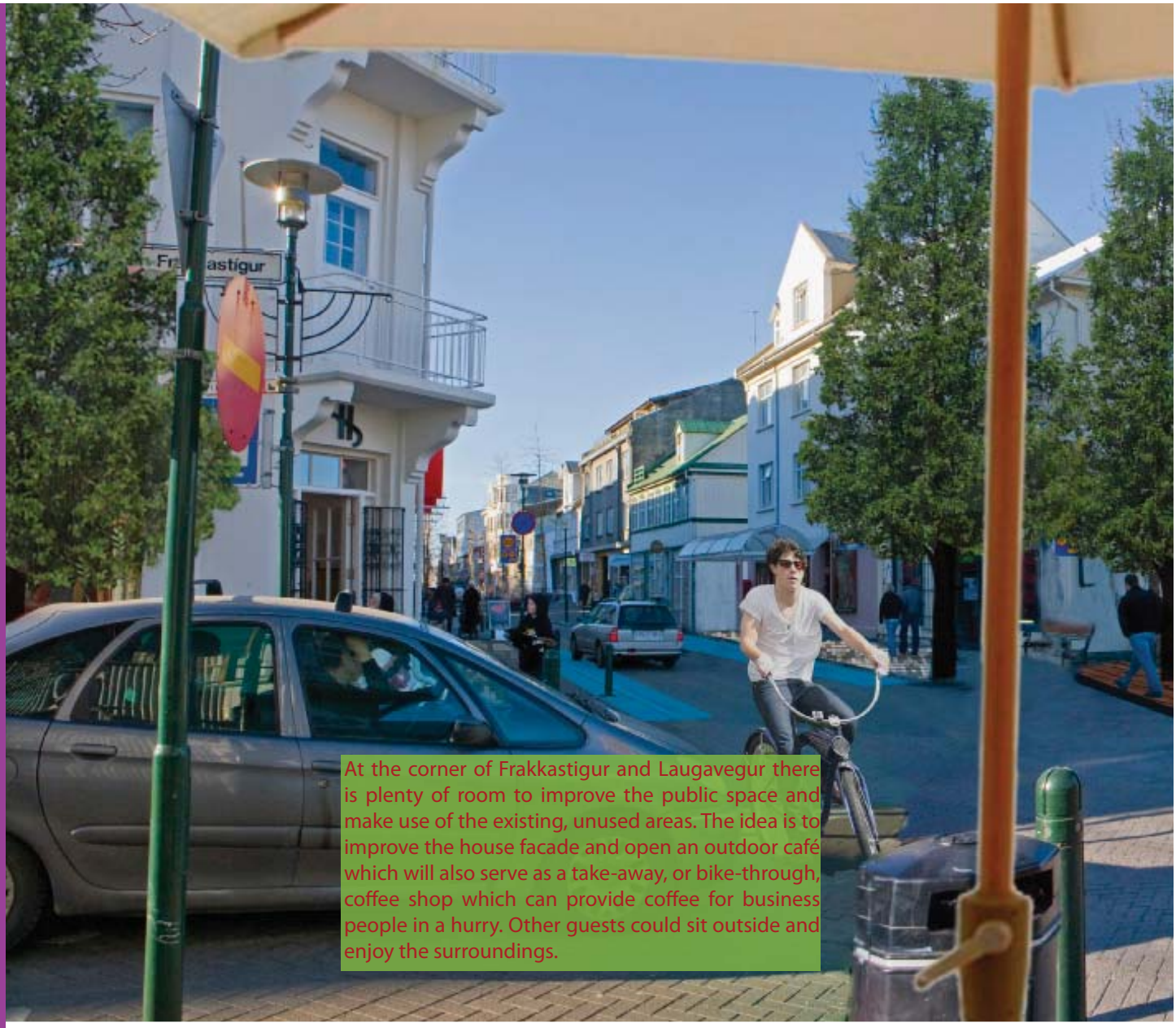








Farmers
market
Trade tables
Bike
parking
Café
Flood lighting
Herrahúsið
Bike - through
coffee stand
Bench
Bike - through
coffee stand
Gullsmiðja Hansínu
Diza
FRAKKA
by day



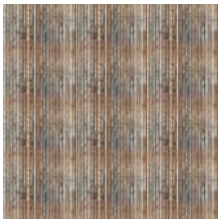
At the corner of Frakkastigur and Laugavegur there is plenty of room to improve the public space and make use of the existing, unused areas. The idea is to improve the house facade and open an outdoor café which will also serve as a take-away, or bike-through, coffee shop which can provide coffee for business people in a hurry. Other guests could sit outside and enjoy the surroundings.

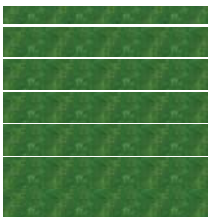
As a completely new element in the area a Farmers Market has been opened behind the fashion store across the street from the café. Recently local merchants and the general public have been increasingly selling second hand goods either in basements or residential apartments in this area. The Farmers Market is a recognized concept from f.x. Seattle where locals can rent a booth inexpensively and sell their own design, used merchandize or anything of value. The market attracts people to the area and gives an added value to this upper side of Laugavegur. Wooden surfaces, benches, trees and grass relate to farming and provide an alternative outdoor seating area to the café.

laugavegur/frakkastígur

restripping elements

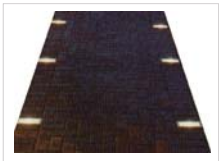
Surfaces used in this design are the blue asphalt for the bike path. Grass mats cover the area before the Farmers market and cobblestones give the feeling that you are entering a different surrounding both for motorist, cyclist and pedestrian. The woolen sweater pavement goes all the way down Laugavegur but is broken up at junctions where a new design scheme is implemented. Wooden surfaces are used at the café as well as at the market place and sitting area.
Metal bollards gently separate car and bicycle traffic.











Farmers
market
Bike
parking
Café
Bike - through
coffee stand
Bench
Bike - through
coffee stand
by night

At night the ground and flood lighting embrace the area, giving it a very special atmosphere. The light bulbs can be switched out for more colorful ones turning the whole square into a stage for citizens of Reykjavik to make use of in whatever way they chose.

This solution is a prototype for other possible squares in the Reykjaivk downtown area. Other junctions can be transformed similarly but local conditions for each resstripping must be taken into account.
The illustration shows a Class B bicycle solution. Bicycle traffic mixes with car traffic where lighting as well as a change in surfaces helps make motorists aware of the new scenario. Existing street surfaces and street furniture are used where possible to make the urban transformation not too expensive. This corner of Laugavegur/Frakkastígur is a proposed area for the placement of the icelandic University of Arts. Until that project is realized this solution could serve as a temporary facelift for this part of Laugavegur and a new element to be introduced in the city centre.

conclusion

This report has looked at possible solutions to enhance city life in Reykjavik by providing ways out of the transportation dilemma the city is faced with. The storyline has to do with bicycling and the implementation of bicycle facilities in a car based society. The project has taken into account local circumstances as well as global trends and the overall current conditions involving f.x. economics and culture.
The 2008 financial crisis has struck Iceland brutally. Unemployment has until recently been barely existent, public financial potency has been strong and the general attitude towards consumption simply distressing. Bulky four-wheel drivers are common property and 3-4 cars per household quite ordinary. Practically every drivers license in Reykjavik has had access to a private car which of course reduces the motivation to use other transport modes unless environmental or health related convictions can affect the decision making. The fact that people are now forced to reconsider their transport habits can have positive consequences for the city's traffic picture. Car sharing and public transport could be keywords in the future transport debate and would undoubtedly relieve the traffic system of some pressure. In a society where environmental affects are almost entirely related to car transport such improvements could be very successful.
Bicycling can also represent a moderate share of Reykjavik citizens' travel mode choices and should be reintroduced in the city with decent bicycle networks, aware raising campaigns and other measures. Attitudes are changing in the society and firm actions to promote what today is referred to as alternative travel should be taken. This report comes up with straightforward measures which the city could imply without being too costly or time consuming. The Icelandic people, despite dealing with past prejudice towards cycling and basically all other transport modes than driving, are to some extent changing their ways and the opportunity is now for the city to take actions.

Academic freedom is a word associated with the writing of this report. Having received some experience dealing with citizens, city officials, politicians and others interested in transportation in Reykjavik on a rather diplomatic level, this work has given me the liberty to approach the issue of mobility/accessibility in my own way. The acquired knowledge and familiarity an Icelandic urban design student collects from a Danish context must affect the way he takes on Icelandic challenges. Transportation and overall urban qualities are in Denmark like nowhere else. To picture the Reykjavik scenario with respectable bike paths and facilities for bikes and pedestrians is intriguing. With these groups of travelers giving life to the urban environment and at the same time improving air quality in the city is a vision that is worth working for. The question what comes first, the chicken or the egg is in that sense irrelevant. It is the city's role to provide the system and hope that people will take advantage of it. Campaigning, education and endorsement are tools to make this more likely but the decision must come from the general public and can be related to various reasons. Hopefully in the future we can look back and see that the improvements made supported the new trend and that the city can be satisfied with it's contribution to the upgrading of the Icelandic transport culture.

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