MASTER

Inhabiting the space between necessity and burden
architecture and infrastructure intertwined

Merks, L.H.A.

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STUDENT
Leroy Merks (0723588)
l.h.a.merks@student.tue.nl
www.MerksArchitectuur.nl

SUPERVISORS
prof.dr.ir. Bauke de Vries (Design Systems)
ir. Maarten Willems (Architectural Engineering)
ir. Jan Schevers (Architectural Engineering)

COMMISSIONED BY
Eindhoven University of Technology
Faculty of Architecture
Post-box 513, 5600 MB Eindhoven
tel.: 31(0)40-247 3960
secretariaat.b@bwk.tue.nl

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FRONT PAGE IMAGE
Capturing Motion, (Leroy Merks)
ACKNOWLEDGEMENTS

One year ago, I subscribed to the graduate studio ‘information architecture’, a project presenting itself with keywords like: communication, social domain, experimenting, and prototyping. I am grateful to the primary committee members Bauke de Vries and Maarten Willems for the opportunity to research a recent theme that intrigues me by its complexity; residing near high speed movement. Together with the secondary committee member Jan Schevers, the commission played a significant role in the entire process and I would like to thank them for their guidance and critical attitude during the design process. In particular Jan Schevers, because of his participation at a late stage in the design process.

Not forget, great appreciation goes out to my fellow graduate students that helped me from time to time with enlightening conversations and discussions during, and about the project. I would also like to thank my friends, especially my girlfriend for her unconditionally support, during the turbulent and time-consuming occupation called; graduation.

Nobody has been more important to me in the pursuit of my ambition to become an architect than the members of my family. I would like to thank my parents, whose love and guidance are with me in whatever I pursue.

reading guide
This report is divided into two parts, each with its own table of contents. The first part consists of a written exploration through the interflow of architecture, infrastructure and landscape. It constitutes the theoretical background and partially answers the research questions based upon existing literature and personal experience.

The second part can be seen as a graphical elaboration of the main research question and leading sub question that leads toward the inhabitation of an existing sound barrier. This part clarifies some starting points for my design and its significance in the urban context. The individual parts of the residential design, public space, and the highway, together with their relation to each other, are described as well. Concluding with impressions of the overall design made by both virtual and physical models. Furthermore, a photo essay of the project’s context, as found in the summer of 2011 runs throughout this document.

Leroy Merks
16 March 2012
.01 THEORETICAL COMPOSITION
A written exploration through the interflow of architecture, infrastructure and landscape.

answer to the first three sub questions

.02 DESIGN
The (in)habitable sound barrier.
Swalmen, Limburg.
The Netherlands.

a graphic elaboration of the main research question and leading sub questions
THEORETICAL COMPOSITION

TABLE OF CONTENTS
A written exploration through the interflow of architecture, infrastructure and landscape.
INTRODUCTION

A BRIEF HISTORY IN MOTION

ARCHITECTURE OF PROTECTION:
THE FUNCTIONAL QUESTION
*Can a (in)habitable space endure an open and mutual alliance with the infrastructure in terms of sound and air pollution, or is introverted architecture inevitable?*

SECTIONS
- health issues along the highway
- controversial or center to life

SHAPING ENVIRONMENT:
A QUESTION ABOUT LANDSCAPE
*How can the architectural object blend into its surroundings, so it does not form an obstacle or distracts the passer-by, yet starts a dialog?*

SECTIONS
- deconcentration of the urban space praxis
- breaking typology

DEVELOPING MUTUAL CONDITIONS:
AN EMPIRICAL QUESTION
*In what form could the infrastructural rhythm of motion be applied within an architectural object to a degree that it benefits the inhabitant and the passer-by?*

SECTIONS
- the progressive possibilities of waste places
- movement within the architectural object
- intertwine the dweller with the moving information flow

CONCLUSION

BIBLIOGRAPHY
DEAD END

a rhetorical traffic sign of the audio visual disconnection between a city and its natural greenery.
How can a (in)habitable space be constructed on a site that has yet to exist or exists in a marginalised space, literally in the margins of high-speed movement?

Main research question
As one of the primary built edifices, a house has evolved throughout history to become a structure in which we move, live, work, sleep, rest, consume, recreate, and so forth. This dynamic flow of activities is a result of the ever changing demands of the inhabitants; a space that is in a constant flux. Due to the rapid development and changing demands of information technology the house as a building type needs to be re-evaluated. It is no longer simply an accommodation for the inhabitant; the house must actively interact and participate in the process of information exchange. Reconfiguration is necessary to provide a comfortable climate in which people can dwell.

When constructing (in)habitable spaces near high-speed movement, and thus combining rather private functions with the public realm, a high potential for social dialogues and public communications arises. Thereby, this research contributes to social experiences that explore both the fast and the slower pace of communication. In order to let this experience occur naturally, such spaces need to be liberated from predetermined guidelines and restrains. Scientifically this means that the topographic framed terrain must evolve into an independent mediator between motion, living and tranquillity. It will provide new insights in form, space and the principles that guide their ordination, along with the repositioning of the aspect of time and movement in another perspective.
A BRIEF HISTORY IN MOTION

In a research that explores the edges of physical boundaries in architecture with especial regard to mobility, comprehending the concept of being in motion is essential. To be in motion is frequently used as a self-evident expression. Although, the expression is better defined as a plural notion whereat, depending on the context it is being used, definitions can be assigned. The primary essence of the expression does not change, but the function and the way it is being applied even more. It is therefore important to briefly set out the development of the concept of being in motion. Motion is generally associated with terms like velocity, acceleration, and time. The human perception of these conditions within movement are only perceived and evaluated relative to a frame of reference. As there is no absolute frame of reference, absolute motion cannot be determined; emphasised by the term relative motion. According to this term it is impossible for an object to be motionless. It can be motionless in relation to a certain reference frame, but it is still in motion compared to infinitely other frames. The ‘historical avant-garde’ envisioned this continuation of movement as a progress that is advancing forward and is inextricably connected with the concept of changeability, dynamism and speed. The diagonal as well as the dynamic lines in the works of Giacomo Balla and Gino Severini expressed movement onto a two dimensional surface by which they insisted that the power of the arts is the most immediate and fastest way to social, political, and economic reform.

This reformation eventually led to a confused and insecure society, according to the philosophy of the contemporary style; deconstructivism. Architects who were associated with this style tried to visualise this determent form of random motion. These three dimensional visualisations were often literal translations of Jacques Derrida’s and Gilles Deleuze’s contemplations. This resulted in a shift from the conventional floor and wall configuration of a building to a more continuous surfaced architecture in which Deleuze’s metaphor of a crease is being translated in plicated floors and walls. The most recent development of being in motion conceals a fourth dimension, namely the virtual one, by which the user displaces himself without actually changing its velocity. This electronic motion (e-motion) diminishes time and space into a split second displacement of information. E-motion is the only type of motion that involves no physical displacement and is not affected by any forces as described by Newton’s first law. The fact that it is possible to relocate every place to be at one place implies a paradox within the concept of being in motion. It is in this paradoxical effect in which the term motion signifies a temporal change in a physical or virtual environment. In other words, one can talk about being in motion, like a crease, a quantum particle or the Germanic word; ‘vágr’ while simultaneously excluding the concept of place as a physical entity.

01 Lars Wählin, The Deadbeat Universe; Gravitation, Time, Relativity and Quantum Physics, Colutron Research Corporation, 1997
THE FUNCTIONAL QUESTION

Can a (in)habitable space endure an open and mutual alliance with the infrastructure in terms of sound and air pollution, or is introverted architecture inevitable?

There are numerous ways to displace ourselves in space and time. Mobility can even foster one's mental wellness; a thirty minute walk or bicycle ride halves the risk of becoming overweight, on cardiovascular disease and diabetes (Vuori and Oja, 1998). If the distance between point of departure and point of arrival increases, the method of transportation also enlarges in terms of space consumption, relatively speaking; a moped, motorcycle, car, train, boat or plane. This form of mobility also influences the mental wellness in a positive way, in particular elderly people who could get socially isolated without proper (public) transport. The downside, of especially, motorised mobility at this moment is not only expressed in terms of traffic casualties, but also in health effects caused by sound and air pollution. Due to the increased prosperity, the growth in use of this motorised transportation has increased significantly. Bridging (long) distances still is a vital need in order to operate in modern society. Even though advanced communication techniques provide the possibility to work at home, most people still commute on a daily basis, not to mention a trip to the (local) grocery, family, friends and recreational destinations. The desire of living near to this possibility to displace seems like a logical urge. However, there is more to it than just the question about demand and supply.
two windows tell a story of the vistas they once provided to its inhabitants.
HEALTH ISSUES ALONG THE HIGHWAY

Architects can begin to redirect their own imaginative and technical efforts toward the questions of infrastructure. A toolbox of new and existing procedures can be expanded by reference to architecture's traditional alliance with territorial organisation and functionality.03

This toolbox as described by Stan Allen must at least contain environmental aspects on safety, sound and air pollution in order to create a (in)habitable space nearby the direct breathing space of infrastructure. When living near the highway, the exposure to sound contributes to health problems and disturbs the experience in hearing sounds of natural environments, conversations and music. Even the disruption of rest and sleep can be ascribed to traffic noise. Without integrating any form of noise reducing measures within the architectural object, excessive sound exposure accompanied by a lack of sleep can indirectly lead to stress, concentration problems and even cause high blood pressure or heart failure.04

Besides the sound production, road traffic is also a source of air pollution. A substance in the air that can cause harm to human life and the environment is known as an air pollutant. In the past decade the quantity of some substances in the air is decreased to a level that no direct adverse effect of these substances is to be expected.05 The concentration lead for example was of such high level that exposure to this substance could seriously affect the development of the human brain in a pre-mature state. Since the mid 1990’s lead is replaced with a less environmental unfriendly component with unleaded gasoline as a result. Furthermore, the concentration of benzene, benzoprene and Carbon monoxide are also been successfully reduced to a lower level. Developments in technology, like the introduction of catalytic converters and new diesel engines have been very effective in reducing concentrations of air pollutants. Unfortunately not all the outdoor concentrations of air pollutants are reduced; nitrogen dioxide, particulate matter and ozone are still present in numerous quantities and form a threat to our health. Although the progress of developing environmental friendly vehicles advances quickly, the daily praxis along the highway will not be clean nor quiet for a while. This does not mean that inhabiting the space around fast movement can be out ruled from the discussion. The progress in environmental friendly technology continues to grow exponentially, not only for vehicles but also for the built environment. To make this technology affordable for the consumer the government provides assistance in terms of grants.
CONTROVERSIAL OR CENTRAL TO LIFE

From a technical point of view inhabiting the space around the highway is certainly not impossible. Covering a certain part of the highway provides a new layer on which can be built. This approach of multiple land use could lead to pleasant park-like areas with a dispersed settlement of dwellings. Dispersed because of the fact that the direct borders of this cover are unsuitable for extensive use as a result of environmental and sound issues.06

Another more unusual possibility of multiple land use is to build homes directly above or near traffic lanes. Such residential buildings save space in the existing urban fabric, and provide the inhabitant with the advantage of easy accessibility to the national network (if adequate parking facilities are realised) and its vivacity. Although one could say: living at the centre of movement equals living central to life, inhabitants must settle for a home without an outdoor space. A balcony above the highway of course is possible, but the question is whether it is possible to converse above loud moving traffic, not to mention the smell of exhaust fumes and the poor air quality one’s inhaling. A closed ventilation system and capsulated sound and air tight balconies could provide a solution, but would be at the expense of living comfort. A conditioned capsule as consequence of the desire to live in motion. Combining the advantages of the overvaulted highway (clean air and less sound pollution) with the benefits of living at the centre of movement (accessibility) has the potential to evolve from a controversial site that entails its own issues concerning health qualities of human life, to a new opportunity to enrich our way of living. An environment that equals our way of living, always in motion, and certainly not without risks.

04 Gezondheidsraad, Geluid en gezondheid; publication. A93/02, Den Haag, Gezondheidsraad, 1993
05 Arden Pope, Michael Thun, et al., Particulate air pollution as a predictor of mortality in a prospective study of U.S. adults, 1995
06 Frank van der Hoeven, RingRing; ondergronds bouwen voor meer voudig ruimtegebruik boven en langs de RING in Rotterdam en Amsterdam, Delft: TU Delft, 2001
A QUESTION ABOUT LANDSCAPE

How can the architectural object blend into its surroundings, so it does not form an obstacle or distracts the passer-by, yet starts a dialog?

An abundance of noise, smell and moving tinplate on wheels, most people would not even think about living near such place. However, during the period of the International style—early 1900s—where architects strived to improve residential buildings and the level of living comfort by means of functionality, living aside a mayor driveway was a sign of wealth and sophistication. Traces of that time are still perceptible in major cities like; Amsterdam, Rotterdam, The Hague, and actually every Dutch city, where solemn buildings dominate the streetscape along important roads. Although the method and quantity of transportation of that time are incomparable with today’s controlled anarchy on the road, Paris managed to maintain this ideology of living near the possibility to displace ourselves, on what is now one of the most expensive streets of whole France; de Avenue des Champs Élysées. An ideology that includes accessibility, dynamics, to see and been seen, and is based on the genesis of cities; building on the intersection of transport and supply routes, the precedent of modern highways. A highway that is now part of a city’s physical boundary rather than being part of its vivacity. A necessity designed as a corridor, a straight roofless tunnel that functions as your personal guidance until the ‘entrance opening’ of the next city.
OLD CONNECTION

a desolated signpost of a street that is demoted from roadway to trackway.
HAWINKEL
DECONCENTRATION OF THE URBAN SPACE PRAXIS

A linear city is one that is formed—and grows—along a line. This line is usually its artery of transport for people, for goods, and for services: roads, rails, pipes, and wires. A city of this sort can grow freely—infinity—in increments that are repetitive in character. Its internal circulatory system is planned for the utmost efficiency: all its parts are, presumably, of easy accessibility to each other and share the same urban amenities. Since the extensions of the growing city are narrow in width, all its points are in close confrontation with natural landscape, and the countryside in turn partakes of the advantages of modern city life, brought to it by the linear corridor.

The linear corridor is defined by the development along infrastructural lines in the urban tissue and its presumed efficiency, flexibility and accessibility. According to NEI, Dutch employers organisations promoted this development in 1994 as the concept ‘transport-corridor’. The addition of the word transport defines the corridor as an object with a singular purpose; provide service to transport. This unidirectional approach led to the bundling of infrastructure and related commercial activities in the transportation sector, followed by offices, research and development, and production sites. The linear corridor as infrastructural axis becomes a corridor for economic development. Urban commerce shifts to these new locations due to the need for space and accessibility. This form of deconcentration could undermine the economic position of the existing city centre. Moreover the gradual infiltration of the commercial industry levels out the articulation of the landscape and thereby adding to the impoverishment of the driver’s experience and the corridor as a whole. Therefore the corridor must be seen as an extension of existing cities, a complementary part within the urban tissue, not in competition with its centre. But the competitive struggle continues as the Dutch Ministry of Transport, Public Works and Water Management sees the economic growth at the periphery as an opportunity to increase the support for public transport. In which the corridor acts like a primary axis for a fluent, environmentally and efficient transportation of cargo and people. The rising interest in accessibility as well as mobility provokes the radial configured city to turn around; the periphery becomes the face of a particular city. Buildings evolve into large billboards and turn parts of the highway into a biased environment full of commercial statements, leaving no room for the strong and romantic image of the ‘centralised city’ surrounded by a green countryside. Zonneveld and Verwest (2005) call the concept of a corridor
an unfortunate chosen metaphor, where it presumes a kind of ribbon development that is an outdated principle of the traditional spatial policy and forms a threat for existing cities and public space. The proposed and implemented successor is based upon a network structure. The aim is to achieve a well-connected, but a clear distinction between the several urban centres. Settlements could only expand within boundaries formed by green contours of protected nature and countryside.

BREAKING TYPOLOGY

Although the concept of corridor development, as described is now declared as an outdated principle, the segregational effect within the built environment is still actual and presents itself as an inevitable spatial phenomenon. It concerns particularly autonomic structures on, alongside, or above the highway, excluding the road, using only the architecture itself as the basis for design. This current ‘highway terminology’ needs to be revaluated with more contemporary notions like; integration and transformation. Transformation of the highway, with the ambition of accommodating diverse elements of living, working, leisure and mobility within a new framework. Integration of the motorway into an urban fabric or into the landscape, by elevating (a part of) the highway or literally absorbing it into more multi-purpose structures or landscapes. Resulting in a fusion of urban and recreational corridor, in which the corridor does not serve only as a static barrier from the elements or a definitive boundary between one and another. But performs as a point of interface, an opening for exchange which acknowledges and permits variation in the human and natural environment. A built form that was once a defined boundary is increasingly blurred in both spatial and temporal terms. Allowing ‘active’ corridors to personalise public space, changing the scale of a space temporarily for individuals and even allowing a space to take on multiple scales simultaneously. Inhabiting a corridor creates the ability to interact in real time with the constant change that surrounds it. Here a new urbanity emerges, dominated by mobility, accessibility, and interaction fundamentally made possible by the highway.

08 NEI was established in 1929 with the objective to carry out (applied) economic research.
09 René Boomkens, Alez votre corridor, Groene Amsterdammer, 1999
10 The Fifth National Policy Document on Spatial Planning, VROM, 2001
AN EMPIRICAL QUESTION

In what form could the infrastructural rhythm of motion be applied within an architectural object to a degree that it benefits the inhabitant and the passer-by?

Actually building an inhabitable place in the public domain of movement requires a greater continuity between public and private, indoor and outdoor spaces, from which new typologies arise, and lead to more dynamic urban spaces with a better relationship between cities and their inhabitants. Fluidity uses the characteristics of a membrane to respond to these needs, creating urban elements characterised by a double skin, in other words with an outer side, composed of elements that decontaminate the air, and an inner side consisting of motion accompanied by change. This redefinition of edges implies some kind of continuity by which the road, habitable territory and environment have no strict boundaries anymore. Vagueness not only present in the untapped spaces, but also emerges in the architectural object. An ambiguous object that is able to allow certain actions and creates opportunities but does not determine them. The corresponding attitude to this approach rests on the individual experience of space, time and scale and is literally defined within the margins of high-speed movement.
NATURAL FLOW

A natural stream of water in the landscape resembles the original intention of building the first motorways.
THE PROGRESSIVE POSSIBILITIES OF WASTE PLACES

Where is the answer to the troubling space problems of our cities and their citizens to be found?
It is being found ... above, below, and around the urban highways we are building today ... and those we must plan for tomorrow ... in the farsighted, imaginative use of what was once called 'wastelands' in our cities ... in the willingness and ability of urban planners, highway builders, community leaders and private talents to cooperate in the wise development of multiple uses for the untapped urban space potential. American highway developers and urban planners call these answers 'Joint Development'... the planned use of land and space for more than one purpose.11

The French came up with another expression that translates and defines both the present vacancy of a space as well as the prospect to envision its potential possibilities; Terrain Vague.12 The difference between the French and the American approach lies in the suggestive value of the word 'vague' which derives from both the Latin and German language. The Latin word 'vaccus' can be translated into empty and unoccupied, but also free and available, together with the word 'vagus', meaning indeterminate, imprecise, and blurred are combined to form the term vague. The Germanic term 'vágr' refers to a sea swell suggesting movement, oscillation, instability and fluctuation. The homogeneity between the different meanings does not seem to correlate, but it is in this context that the two mutually relate (Sola-Morales Rubio, 1995). Following these attitudes, considering the space around the highway as potential habitable spaces between the urban body and large-scale infrastructures seems adequate. Envision them as possible sites of exchange and a starting point to rethink the conflicting relation between cities and infrastructure.

MOVEMENT WITHIN THE ARCHITECTURAL OBJECT

Architecture itself can and must be placed in an ambiguous perspective as well. To exclusively distinct a building in lines, edges, contours, surfaces and geometry is just inadequate and limited. Movement and fluctuations during the day are as important as the assembly of mere forms. The movement of sunlight accentuates certain contours depending on the
the position of the spectator that decides what parts are being perceived. This position is not at any time permanent, certainly not when driving a car. So as we move around, the building seemingly will move in turn, while we enjoy all kinds of combinations of its parts. As they vary, the columns turn, depths recede, galleries glide: a thousand visions escape. Understanding of this principle—movement—is necessary to make it aesthetic. This visualisation of movement within the architectural discourse should be possible to experience. This encounter should not be on a two dimensional surface, when taking in account the ability to make a decision based upon experience is deficient without submerging ourselves into the created atmosphere.

**INTERTWINE THE DWELLER WITH THE MOVING INFORMATION FLOW**

The visual and physical experience during slow movement is difficult to compare with high speed movement. While moving ourselves through time and space, information is interpreted, processed, reinterpreted and reused. During this alteration in time, space and information, the rate of motion is a fundamental aspect. In order to acquire new information a particular space is to be discovered. The means of transport to explore this space is of importance to mobility and the aesthetic experience. If we use any other means of transport besides travelling on foot, these instruments of transport become an extension of the human body. During this aided journey the surroundings and its architecture will be segregated from our tactile perception. Although the experience still can be parallactic, it becomes mere information that enters our mind as a plane image. Combining the advantage of living near the possibility to displace, exchange and express ideas and information together with the psychological benefits of green scenery, makes interconnecting the motorway back with its environment and the environment with its new user and his architecture an ideal place for living. At which point the dweller becomes a producer of experience for himself and the information flow. While this flow provides him of a continuous changing environment. A dynamic dialogue between architecture, user and passer-by emerges.

12 Ignasi de Sola-Morales Rubio, Terrain Vague, Anyplace 1995
14 Parallax is the visual phenomenon of an apparent movement, along with the viewer, of the surrounding in relation to each other and to the space between them; parallax occurs when the viewer changes position while observing.
Researching the architectural and programmatic potential of the corridor situated on leftover spaces between a city and a highway cutting through its urban fabric, has the potential to evolve into a site of exchange and a starting point to rethink their conflicting relationship. Leftover spaces and the standard vocabulary of the motorway becomes a necessity that ensures the re-evaluation of the peripheral environment and turns the motorway into a connector instead of an obstacle. Transforming the two dimensional corridor into an inhabitable extension of the city, a complementary part within the urban tissue, in which the corridor does not serve as a static barrier from the elements or a definitive boundary between one and another. A place with high potential for social dialogues and public communications arises. Moreover, it is essential to abstrain any contribution to this barrier development through large social housing along the highway. A place where only individuals live who cannot afford to move to an assumed healthier place, designed as a blind wall behind which one is supposed to dwell. One with a low socioeconomic status already has a limited choice concerning the way he dwells. These individuals, who depend on cheap and affordable rental and private housing, could not afford the measures that have to be taken in order to create an open and mutual relationship between a healthy domestic place and a place that is in constant -motorised- movement. This would advocate that, taking in account the objections about physical and mental wellness close to or above the highway, only private sector housing would be socially responsible to implement within the design. The idea behind this is that one who can afford an expensive house has an unrestrained residential choice, and will only reside at this sustainable urban infill because he wants to.
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02

DESIGN

TABLE OF CONTENTS

The (in)habitable sound barrier.
Swalmen, Limburg.
The Netherlands.
DESIGN AIM

LOCATION
versatile similarities
analysing the A73
the A73 through Swalmen; backbone or hernia?

PRESENT CONDITION
the essential need to do something for recreation
interests of cyclists and pedestrian movement
coming and going

SITE RESPONSE
utilising necessity in favour of habitability
revaluation of roadside tourism
unconfined recreation as extension of your backyard

DESIGN DECISIONS
infrastructure <> landscape
from conceptual models towards a first impression

SPATIAL CONDITIONS
site plan
inhabiting the barrier
floor plan
affording events
cross section
affording events
detailing

THE (IN)HABITABLE SOUND BARRIER
When designing the first motorway in the Netherlands, the intention was to create a road in a landscape, over the years this changed rapidly into the landscape of the road; an almost autonomous world. In this erratic place the only communication with the world on the other side of the sound barrier is through radio and visual advertisement. The proposed design challenge: to break through this barrier, requires a certain vagueness that reconsiders the use of waste places, predetermined events, and the physical boundaries of architecture thereby redefining the interrelationship between public and private space. A vagueness that is introduced by the location on which will be build; Terrain Vague. This term where Sola-Morales Rubio combined the word ‘vágr’ with the concept of place, in which the ‘vágr’ refers to movement and fluctuation, while place is related to an enclosed, defined space. The mutual result conceals a potential energy, generated by the contrast of the two different semantic fields. This energy must then be used to create a (in)habitable, architectural solution that has more to offer than the dense unilaterally urban core. A place where an individual wants to be, instead of a place one needs to be.
The A73 highway is the most Eastern situated motorway of Southern Netherlands. The highway lies West of the Meuse, between Nijmegen and Maasbracht. The 114km long road has a long history which starts in the most Northern part of the highway. The first instalment is about 72km in length and runs from intersection Ewijk at Nijmegen till the intersection Zaanderheiken near Venlo and took about nineteen years in total to construct. The Southern part of the A73 highway from Venlo to Maasbracht led to many prolonged political discussions. This part of the highway would be constructed through or very close near existing built environment and protected nature areas. Although several environmental organisations like Das en Boom (Badger and Tree) and Stichting Natuur en Milieu (Nature and Environment Foundation) were against the construction of the Southern part as built today, the 42km long road has been completed in 2008. Besides the Meuse and the A73 highway, the steep edge of the state’s border (a geological monument), the railroad Venlo–Roermond–Sittard and the old national road N273 are North–South oriented structures. The fact that this highway is fragmented in several time periods and therefore responds to existing urban fabric and slightly relates with environments that are built afterwards, designates this part of the national network into a part that could offer a diverse range of so called waste places.
ANALYSING THE A73

The info graphic represents an iconic summary of a 114 km long filmed survey of the complete A73. Driving along and through villages like; Beuningen, Cuijk, Venray, Venlo, Swalmen, Roermond all the way to the intersection with the A2. Resulting in more than two hours of footage and about 100 pictures. The objective was to create a video catalogue, which would capture the raw aesthetics of the A73 highway and the universal language that is spoken above 90km per hour. Moreover, to segregate and visualize the multi-layered characteristics of high-speed movement. The info graphic is composed of a series of horizontal lanes, and distinguishes the characteristics of the space above, near and under the highway. This way the A73 can roughly be divided into three parts; the North part (left) which due to the absence of sound barriers contains a lot of open areas. Probably because this is the first constructed part of the A73 it is being built according the principle of a road in a natural landscape; most of the space around it is reserved for a natural environment. Secondly, the middle part which due to the connection with the A67 (Antwerp–Eindhoven–Dortmund) focusses on international traffic and commercial activities. The last 25km, also the most recent developed part, cuts through many villages along its way. Though it perceives to be the greenest part of the highway, its appearance is deceptive where the green parts are superficial; sound barriers in disguise, a space trapped between the clustered world in which we live and the linear world in which we move from one cluster to another. The most remarkable place seems not to exist when passing by; a completely obsolete and disconnected village. Swalmen has no exits or junctions, only one small infrastructural crossing. When driving along this seemingly empty space, it is like driving through a natural area; an ideal and tranquil place to inhabit; like it was before the arrival of the A73.
THE A73 THROUGH SWALMEN; BACKBONE OR HERNIA?

Who opened the newspaper ‘De Limburger’ in February 2008, could not avoid it; the construction of the A73 highway nears completion. The government and Rijkswaterstaat (Ministry of Infrastructure and the environment) promotes this part of the infrastructural network, connecting North with South Limburg as a little piece of heaven on earth with ‘the backbone of Limburg’ as working title. Creating promotional clips in which a driver starts his journey on the southern part of the A73, seeing comfortable, pitch black asphalt with tight white lines, a few vehicles and wide lanes. No oncoming traffic and overtaking trucks, because the traffic lanes are separated and trucks are only allowed on the right side. Then a tunnel approaches near Swalmen, a tube with comfortable lights, fire extinguishers, emergency phones and exits widely spread. Unfortunately this spectacle is over after just 400 meters. Fortunately, the next delightful sensation slowly becomes visible after the eyes are adjusted to the bright light of the sun. The highway is completely submerged in an Arcadian landscape, slightly aided by humans. Sound barriers and wildlife passages; eleven thousand oaks, and linden trees isolate the passer-by from the traffic antagonistic residential area. A residential area thinned out with nineteen family houses, a sculpted natural environment hidden behind an inhuman sound barrier, villa’s cut off from their natural surroundings and inhabitants tired of fighting for their natural scenery. Now hoping that the investment of several millions in environmental compositions restrain the advent of the commercial industry.
Nature matters to people. Big trees and small trees, meandering creeks, solid stones, colourful leaves and flowers, singing birds, a fresh breeze of air, all supposed to be valuable ingredients in a good life. Providing vistas onto this natural scenery deprives people of tranquility and spiritual substance (Rachel Kaplan, 1983). Despite the known advantages of providing vistas onto such natural scenery, it is not always possible to create these types of scenery within a volume. For instance, in The Hague and Haarlem. Two cities with the highest density of the Netherlands, people are used to look out onto the built environment or having no windows at all. The difference with Swalmen could not be bigger, where this city is surrounded and imbued with nature; a tranquil and remote city between Venlo and Roermond. Purposely secluded from the national infrastructure network in order to maintain its enchanted character. The denial of this high speed movement is tangible throughout the whole city; a tunnel has been constructed, existing roads are cut off, and sound barriers rise up to eight meters above the ground surface. Although these barriers consist of earth and grass, it does not even comes close to natural scenery. The green slope obstructs views onto the vast open fields and natural scenery at the opposite side of the highway and prevents any regular expansion of the habitable environment.
BRIDGING THE GAP

A singular infrastructural crossing for slow movement is the only connection with the natural surroundings of Swalmen.
.01 AUDIOVISUAL BARRIER
this linear contour separates the city's built environment from its natural surroundings.

.02 THE FORGOTTEN
a high valued archaeological part of Swalmen, thereby often left undisturbed, ended up between two infrastructural lines of high-speed movement.

.03 ENVIRONMENTAL NUISANCE
odour and sound emissions prevent the saturation between the malt plant and the archaeological part.

.04 A CHAOTIC MIXTURE
the industrial park is both morphologically as well as functional fragmented; combining industrial, agricultural, and living
THE ESSENTIAL NEED TO DO SOMETHING FOR RECREATION

The city of Swalmen seems in a constant movement that is traversed by two mayor infrastructural lines, both crossing from North to South. Dividing the urban fabric into three elongated fragments, of which the outer two (East and West) contain large green zones. Green zones interconnected by the meandering Swalm (a small river) through the city centre. In the upper North part of Swalmen this connection to the green scenery is being nullified by the A73 highway. Through the predominance of industrial activity and two infrastructural lines in the north, the recreational value of this area is depressed, to a level of great insignificancy. This while recreation is an essential part of human life and finds many different forms which are shaped naturally by individual interests but also by the surrounding social construction. 03 This social construction is still intact by means of the many cycle and pedestrian routes throughout the natural environment along the A73 highway. Unfortunately many points of recreation are shifted outside the village’s borders. An interference that connects the city back to its natural environment and offers an opportunity for recreation would literally bring new life to the North part of Swalmen.

INTERESTS OF CYCLISTS AND PEDESTRIAN MOVEMENT

Several years ago a cycling network across the province of Limburg is signposted. This network of nodes is meshed with a mesh size of about three to four kilometres. These routes make connections between the Meuse and the nature of the German border. The cyclist network is connected with bridges and ferries to the cyclist network to the West of the Meuse (Peel and Flanders) and to the German network; Niederhein. The outer region of the city Swalmen contains a reasonably flat and varied landscape. This area is widely used for recreational cycling by the inhabitant and tourists. An entire zone of 15 kilometres around the city’s centre is important for cycle day trips. In addition, many recreational cyclists from relatively large villages in the region use cycle routes crossing Swalmen. This also includes the villages on the west bank of the Meuse, thanks to the relatively good crossing ability of the Meuse (ferry services). This area is not only a popular region for recreational cycling but also for tourists. The long distance cycle paths LF33 (Kessel–Germany), the signposted LF5 (Brugge,Germany), and LF36 (Roermond–Sibbe) lead through or near the direct area of Swalmen as well as the long distance footpaths; Pieterpad and the Maas–Schwalm–Nettepad. And of course the numerous local hiking trails. The construction of the A73 highway led to a large number of intersections in the direct region of Swalmen. The existing mesh is more than doubled in its size. Remarkable is the limited ability of crossing the A73, which cuts through four former connections within the 2.7 kilometres long part adjacent to Swalmen. Only one new connection is made, not exactly on the same place as one of the old connections, but the cyclists and pedestrians are being redirected to this crossing. This results in an illogical detoured route. The only other east–west connection remains at the north side of the train station. Overall the construction of the A73 disrupts the logic of traffic-calmed roads and many cycle and footpaths are only accessible by crossing a busy road. Moreover, the highway deteriorates the recreational appeal of the built environment by forming a physical barrier between the several cycling and walking opportunities.

03 Basiskaart Netwerk LF–routes, Buijten en Schipperheijn B.V. drukkerij, 2011
COMING AND GOING

The A73 highway dominates with its central position between the large numbers of recreational -slow- movement, and is experienced as a negative disrupting element in the urban fabric. However, it is its central position that could fulfil as a starting, ending, or as a meeting point for all connecting routes; a mediator between all kinds of traffic. Providing a multi layered solution, with a better connectivity between the existing Eastern and Western routes.
Basically architecture and landscape can interact in two different ways between itself and the built environment; it can immerse within its surroundings or form a contrast. The selected site mediates between both. Designing in-between these extremities unfolds an even more interesting option by which the (landscape) architecture can be modest at one place and prominent at another. By creating an autonomous structure that follows the ‘natural’ curvature of the city’s edge instead of the existing medial curve, a playful game of insertion and extraction arises. An event about modesty and prominence, by which the alteration of the landscape creates certain opportunities but does not determine them. It should not form a physical boundary anymore, but still protects the city from sound pollution. Direction and repetition are essential elements in this seemingly endless structure. An oscillating configuration that conceals a type of motion, with reference to direction and recurrence (amplitude), along with direction and change (wave length). This change is a direct result of the heterogeneous morphology of the city. A morphology that becomes tangible for the passers-by, the recreationists, and the inhabitants.
INVERSED SPECTACLE

an attempt to make use of the inaccessible sound barrier which blocks the former view onto a green scenery.
UTILISING NECESSITY IN FAVOUR OF HABITABILITY

The site is, as most noise highway barriers are, a vast -1.9 kilometre- strip of land, directly adjacent to a large residential area and void of any desirable function. The barrier forms a two story high physical and visual obstacle for the inhabitants of the city Swalmem. Physical and visual, while its main function is only to absorb sound; a necessity to make the area behind it habitable.

The proposed interference will take advantage of the site’s artificial ‘hill’ landscape, integrating a series of new experiences for local citizens and tourists, including walking and climbing paths along its full length. The former abrupt ending of the built environment becomes a vivid location combining both its well-known typology as a noise barrier as well as a new form of combined infrastructural lines that move along the highway, creating an ever changing spectacle for the passer-by and the recreationist. A barrier that can be used all year, and that is centred around and integrated into the city’s larger path systems and activity zones.

EXISTING SITUATION

a strong and abrupt obstacle Disconnects the inhabitants both physically and visually from its former surroundings.

ACCESSIBILITY

by changing the degree of the slope it becomes accessible and thereby partially reconnects the visual connection.

FOLLOWING THE CITY’S FLUX

repositioning of the barrier along the actual contours of the built environment allows recreational activities to occur.

INCREASE CONNECTION

by including both sides of the barrier, the visual connection is increased and it also creates a potential of dynamic events.
REVALUATION OF ROADSIDE TOURISM

In the 1950's a rather unusual form of leisure developed; roadside tourism. Families, couples and friends, packed some food and drinks together with a plaid to settle somewhere along the highway. The highways became more than just a connection between popular leisure resorts; they evolved into tourist attraction itself. Picnicking on the side of the road, watching vehicles speeding by—at a pace similar to today's traffic—was a popular leisure activity. It did not have much to do with the admiration for the technical marvel of the car, which one was accustomed by now. But to be part of a large group of people who could afford a car, watching the wide diversity of brands, and colours of the cars. And of course look at the person who is driving the car, which was the joy of roadside tourism. It was a sign of a new life style that was associated with the increasing urbanisation and the formation of new recreational opportunities by the increased auto mobility. Experimenting with recreational edges along the A73 highway, could give shape to a modern alternative of roadside tourism. Do not be misled by its name. Roadside tourism is not only sitting along the roadside watching cars, it conceals any type of tourism where people watch people and allow themselves to be seen. A cautious start is already made by diverting a highway through the Utrecht Hill Ridge and the Betuweroute. Both possibilities are being used, precisely because the fact they are connected to the highway.
UNCONFINED RECREATION AS EXTENSION OF YOUR BACKYARD

Decreasing the slope’s angle enables a variety of facilities to ‘naturally’ occur for non-motorised users that can independently move around and are not necessarily associated with parallel roadways. This type of shared use is intended to accommodate a variety of users, including walkers, bicyclists, joggers, people with disabilities, skaters, pets and even equestrians. In the winter, snow will not be removed to allow use for cross-country skiing. Users can use this new accessible public space for a variety of purposes including recreation, local travel, and as meeting point. Although predetermined conditions, like paths and trails, are typically expected by the public they will not be present in large quantities. Trails and pathways that serve varying levels of accessibility are sporadically provided. Some parts are slightly angled and serve as accessible routes of travel, while other fragments have steeper gradients and facilitate a more recreational purpose. Individuals can choose a path or trail that provides the recreation experience and degree of challenge they desire. The adjoining dead-end streets, as a result of the A73 highway, form opportunities for several connections with the city making the sound barrier an integral part of the city’s centre instead of an abrupt edge. A part that conceals movement, recreation and residing.
Taking advantage of the existing sound barrier along the highway, proposes an occupation of a transition zone between the high speed movement of the A73 highway and the relatively low velocity of the local grid. This zone takes the form of a singular linear structure that incorporates a multitude of infrastructural systems, uses, and places previously isolated. A hybrid structure combining public vehicular, cycle, and pedestrian flows with the private flows peculiar to residing that together will re-evaluate the activity of the corridor. A state of being active on a recreational level; to move about without a definite destination or purpose, but in search of pleasure and amusement. The concept of gallivant and commuting intertwined with residing as mediator. An interplay of ‘to see’, ‘be seen’ and ‘public versus private’, in which rethinking the physical boundaries of architecture is imperative. This redefinition of edges implies some kind of continuity by which the road, habitable territory and environment have no strict boundaries anymore. All interconnected with the existing context. A context that is not a neutral base upon which buildings and flows are superimposed, but the source of the many flows and large-scale forces that influence and shape the project itself.
WEATHERWORN

remnants of an old barn, indicating the state of desertion along the green barrier.
The highway is by virtue of its scale, ubiquity and inability to be hidden, an essential visual component in its surrounding. Yet the responsibility for designing these infrastructural lines into the landscape seems to be dispersed into numerous disciplines, making one integral solution almost impossible. Whereas the potential of these infrastructure systems for preforming an additional function of shaping landscape and architectural form could transfuse its vivacity onto the adjacent environment, while simultaneously increasing the parallactic experience of motorised traffic. This symbiotic effect would also benefit the safety of traveling on the highway. Alternating the already outdated concept of somnolent straight highways into a more ‘natural’ curved road that slightly enhances the transient’s level of awareness.
TWO INDIVIDUALS
the highway does not correlate or interacts with the shape of the rimmed landscape that follows the city’s existing morphology.

CREATE A FOCUS POINT
in order to connect both lanes to the urban tissue a conversion is necessary, creating a partially covered highway that marks its centre of gravity.

FULL ADAPTATION
connecting exits with the existing infrastructural lines while leaving room in between the two lanes for habitation.
AN ABSTRACTED FLUX
early model of adapted landscape following the built environment, while increasing the accessibility by adding steps.

A PULSATING FLUX
the adapted landscape follows the 'natural' movement of motorized traffic, and simultaneously widens the steps creating space for inactivity.

A THREE DIMENSIONAL FLUX
generate apertures allowing the highway to intertwine with the landscape and develop room for habitation and recreation.
FROM CONCEPTUAL MODELS TOWARDS A FIRST IMPRESSION

By means of physical modelling a third dimension is introduced within the dynamic play of insertion and extraction. By integrating the already present difference in height within this third and vertical direction, interesting upright connections emerges. A manifold of views and positions unfolds when the upper and lower part of the structure are continuously connected with the linear structure and each other. A view that is constantly changing according to its position is at least as spectacular as a panoramic view on top of the landscaped structure. Although the created prototypes are relative to the built environment these models carry a certain scalelessness; where stairlike steps are easily being transformed into infrastructural lines. The inhabitable area, concentrated at the centre of the landscaped structure, should be an integrated and rather undefined element as well, in order to maintain this type of scalelessness. The possibility of interpreting the scale of the structure in different ways is important because of the variety in speed of its users and passers-by. One will pass by on foot, by bike, by car and anything in between. Its appearance should therefore be attractive to perceive for an irregular period in time. Not only the inhabitants but also the passer by will utilise the structure by moving on, under, and through it. The infrastructural lines continuously form a part of the inhabitable area as well as the other way around where the inhabitable part is a component of the infrastructural configuration.
How does one live along, near, between and above a highway? A place for living that is enclosed by vehicular, cyclists, and pedestrian movement. An unique longitudinally oriented way of dwelling near an ever changing environment. The residence does not have to be luxuriously materialised or be provided with high-tech gadgets. The gratification lies in the fact that one has the opportunity to reside at that place. A place that gradually allows the inhabitant to get acquainted with the surrounding landscape and a world in motion. Public and private movement that discloses and passes the residence. The building should not preclude the linear movement of the passer-by in any way. On the contrary, the passer-by will also discover the landscape in a peculiar way. The landscape is framed, it offers little more visibility, or the view is slightly deprived. This way the residential part can add something to those who not reside.

The mutual relationship between the individual and the mass is elementary. A select group of people can and wants to reside in this place. For them, the landscaped structure conceals a significant function. The landscape is viewed from within. For the passers-by, the transient mass, the structure is more an accompanying object in the landscape. Through the three dimensional curvature of the structure and continuous motion of the highway each step offers a different view, which makes it interesting for a wide variety of users, accidentally or intentionally.
only from above the present boundary seems to merge into its environment.
SITE PLAN

The project can be conceived as a huge junction. The already present earth slope is sculpted with interwoven ramps providing all the necessary road connections, and at the same time constitutes a space with topological qualities, adapted according the city’s existing grid. Former cut off roads become points of departure, and points of arrival; an interflow of movement allowing various and unexpected uses to take place.
INHABITING THE BARRIER

The architectural solution conceals a sustainable urban infill that fluidly intervenes between both the fast and the slower pace of interaction. Five longitudinal oriented intermediate zones that blend into their surroundings, in terms of materialization and shape. The large open space enclosed between the actual living space and the exit for residential traffic provides the inhabitants of their own private piece of nature.
Each inhabitable domain is accessible from two directions; entering by car from the East, and from the North mainly by foot or bicycle. An elevated part of the floor connects these two entrances, allowing the interchange of desired transport. This ‘catwalk’ is the artery of the residence like the highway is for cities. It affords certain types of movement connecting functional places along its way. The area along this curved pathway is like a verge, a breathing space in favour of stagnation which puts the inhabitant in the position of the spectator.
introverted configuration
the inhabitant visually disconnects himself from its surroundings; an example of an evening/night situation.

transit configuration
when all screens are closed one could drive on a designated part of the residence while the ventilation capacity will increase automatically.
AFFORDING EVENTS

Inhabiting a corridor creates the ability to interact in real time with the constant change that surrounds it. The floor and the internal walls are flexible, forming waves that move in synergy with the various layers of practice. Walls, ceiling and floor interact with each other. The realisation of this fluid space is better described by what moves within rather than its physical characteristics.

basic configuration
a completely open configuration allows numerous events to occur, only the cleansing areas are foreclosed from this mutual experience between the public and private realm.
The green wall is not only beautiful to look at, but also has a beneficial effect on the quality of the environment and therefore on the wellbeing of its inhabitants. Substrate and sedum plants—natural product—need little water supply and contribute to the degradation of airborne particles, converting CO₂ into oxygen and absorbing sound.
The functionality of the elevated pathway increases by gradually decreasing its height at its centre. Creating a smooth and natural transition between the lower part—verge—and the pathway itself. Moreover, this inclination contributes to the spatial perception of the external environment. An ambiance that is constantly changing according to time of day, week, month and year. Nature that is influenced by the four seasons and the concentration and speed of the passers-by affected both by nature and rhythm of daily life. All visual events, perceptible through a panoramic glass facade stretching over the entire length of the residence. To make this experience more tangible, parts of the facade can be opened, creating an audio visual extension of the private domain. The skylight above the more private functions focuses the eye onto an infinite view, in order to mentally isolate the inhabitant from all movement.
movement
the inhabitant as center point of motion.

abeyance
the inhabitant secluded the direct presence of movement.
AFFORDING EVENTS

The habitable area is enclosed at both the East and West side by the A73 highway, in which the Eastern lanes are not only physically connected to this area, but also fulfil a role in the optical perception of its presence. The private part (including the lane for destination traffic) is physically separated from the A73 by means of a barcoded (opaque–transparent) glass facade. Creating a blurred view for the high speed movement, while simultaneously producing a clear view for the inhabitant. Adding old glass bottles into the concrete roof of the tunnel affords a public view into the tunnel and decreases the amount of electrical lightning needed. At night these bottles light up, and together with the coloured PV panels of the residences they will provide a diffuse play of light, pulsating at the pace of motion. The Western lanes blend in to a multitude of experiences enhanced by the internal and external pathway and controlled by the flexible interior walls and movable information/privacy screen. Experience in which dynamic dialogues between architecture, user and passer-by emerges.
1. wooden secondary structure
2. Steel girder IPE300
3. 19mm underlayment panel
4. kingspan K8 thermal insulation
5. roof cultivation substrate
6. intensive roof vegetation
7. stainless steel threaded rod
8. grey frosted roof trim
9. angled black sandwich panel 16mm/m²
10. light grey clay plaster, rough
11. 20mm knauf pcm smartboard
12. EPDM foil sealant
13. 120mm glass wool insulation
14. white clay plaster, high polish
15. structural glazing system
16. prosol energy modules
17. hufcor frameless glass wall system
18. 46mm constructive glass
19. spatial lattice framework
20. isofloc insulation
21. laminated floor panels
22. 200mm concrete floor slab
23. pressure resistant insulation
24. screen tracks with integrated lighting
25. foundation girders IPE800
26. composed steel girder
27. composite section stainless steel
28. ventilation system
The mutual relationship between the two pathways is carried through on a constructive level, by which the girders of the cantilevered pathway form the base of the residential structure that in turn is the counterweight for the overhang. In addition to steel, local earth is the main building material used in the entire project. The residential domain is framed by rammed earth walls at the cross ends. The method of construction provides these walls with a layered direction, introducing a concrete interval perpendicular to the elongated movement within, emphasised by a transverse swimming pool. One of the significant benefits of rammed earth is its capacity to moderate daily temperature variations and it reduces the need for air conditioning and heating. Building a rammed-earth wall involves compressing a moist mixture of earth that contains natural products like; sand, gravel and clay. Another earth material; loam is used for plastering the floor and ceiling. Besides the aesthetic value of clay plaster, this finish is known for its ability to regulate humidity and its breathability. Another natural material that contributes to a healthier indoor climate is the vegetation that grows on top of the noise barrier situated along the highway. These grasses will filter most of the airborne particles before arriving at the inhabited part. The noise barrier itself is constructed of excavated soil from the inhabitable area and the already present soil of the existing sound barrier.
It was an ambitious plan to reconnect a by infrastructure subtracted and supposedly lost site back with its previous environment. The method used in order to achieve this ambition with a concept that implies large scale architecture seems to contradict with its goal. However, the landscaped design fades out the scars of the city and presents new opportunities that afford certain unique events. Furthermore the design shows that it is possible for a city to expand within its own boundaries, without the expense of public spaces. When individual elements such as infrastructure and dwellings are no longer being seen as separate concepts, but as one intertwined whole, it becomes possible to realise a (linear) complex that conceals an extraordinary quality of life. By the application of double, and even triple ground use, a building typology arises that does not form an obstacle in its environment, but expands and connects the urban tissue with natural scenery. Architecture and infrastructure turned out to be a good combination, by which the transformation of a discarded place into a habitable place evolved into a vital part of the city.
"THE TEAM IS THE STAR."

RSL TEAM MOTTO

"The team that we are getting simply cannot be put into words. It's more
enchanting to be the best. I've never
expected from our local town but the
entire MLS has been everything but we will
gladly represent MLS to the fullest."

Arvis Williams

RSL GOALS PER SEASON

THE SECRET WEAPON

"THE FORTRESS"

RSL at Home: 27 rounds 13-14-4

Infographic provided by www.150ish.com/rsl-concacaf-champions
FIVE IN A ROW MODEL
EARTH SLOPE MODEL
"As new and greater road-systems are added year by year they are more splendidly built. I foresee that roads will soon be architecture too...... great architecture."

Frank Lloyd Wright