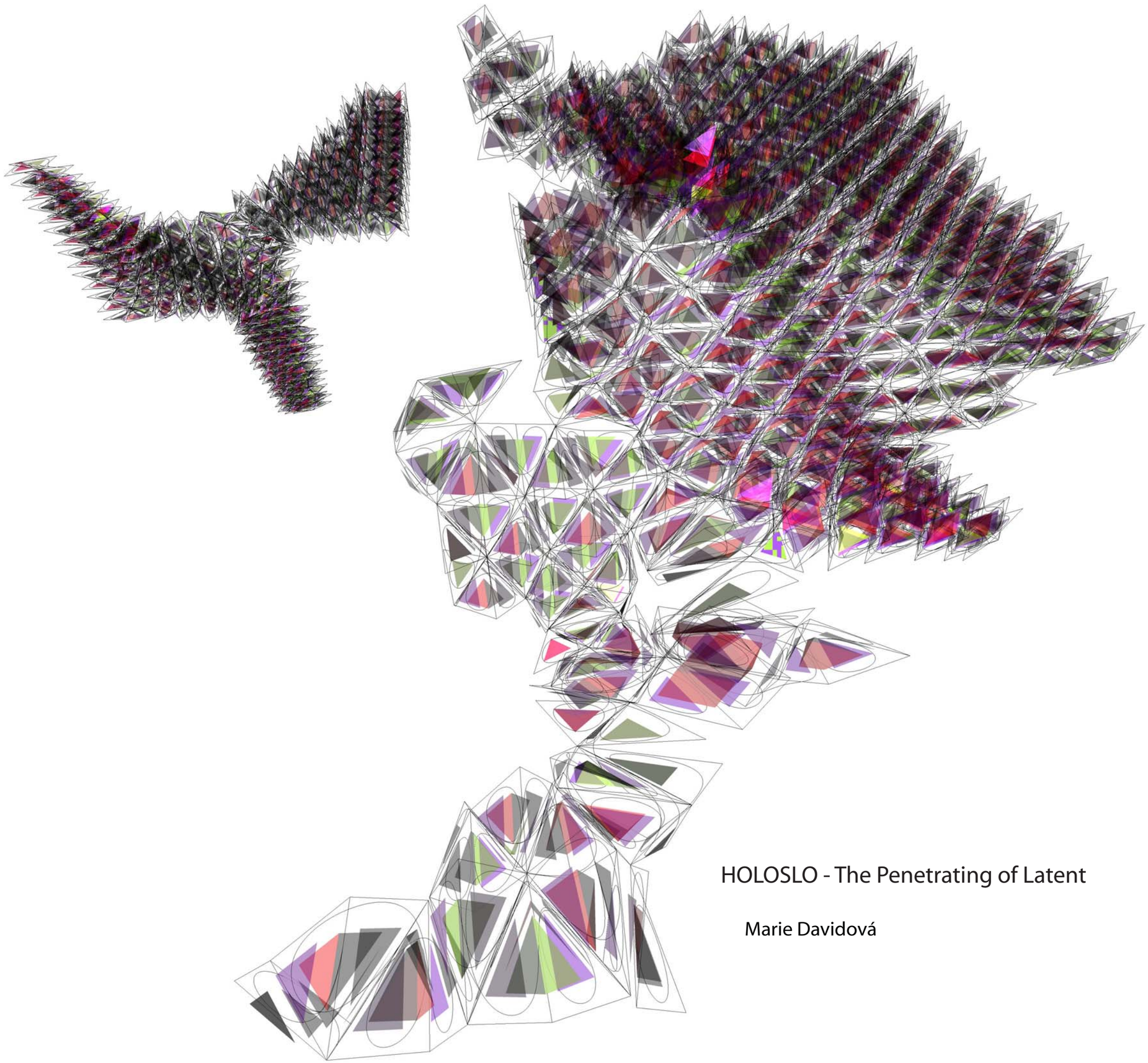


HOLOSLO - The Penetrating of Latent

Marie Davidová

HOLOSLO - CONTENTS

000/preword

I think that my attitude is more to do things for themselves, not directly for the viewer. This does not mean that I don't think the viewer should enjoy it, s/he should enjoy it as it is and find and travel in it on her/his own, imagining what has happened, create her/his stories about it, or even not realizing it at all and just experience without any consciousness (feeling of pleasure, importance, melancholy, etc.).

I.e., you have to be at least a little bit informed to run your imagination on how the creation of a fjord had actually happen. This creation is important for the existence of the fjord itself, not necessarily for you experiencing it. Even though, I believe that some people can imagine this creation without any knowledge (but not everyone, and even this is not generally accepted, ...). So, for me to read this is not the necessary point....

That's why I so often like to cite Maturana and Varela from the book The Tree of Knowledge*:
"It is interesting to note that the operational closure of the nervous system tells us that it does not operate according to either of the two extremes: it is neither representational nor solipsistic."

This statement very much explains my work.

Putting aside all the theoretical reasons from my scientific sources, as well as my own personal for why I follow this way, it is on a general level actually a very old method for painters who use the same colour from the object for the background, just in other way. Architects do so i.e. with materials or in general implementing elements from surroundings into their new design, they do so for both to fit together, the new and the existing .....

It is not meant to be obvious, but kind of in "harmony".

Those relations are usually thin with huge information density and i.e. if one is not skilled in painting technics s/he may not find out that there are the same colours in background and object. The painting is just whole, object and background. As is the new architecture (in this case the object) informed by its site, environment, etc. (the background).

This project has its history of the creation generated from its environment in certain time; and it is writing its history over time by eurhythmical interaction with its environment.

(edited and completed e-mail replies to Birger Sevaldson)

Marie Davidová

*(Maturana, Varela;The Tree of Knowledge; p.169)

HOLOSLO – The Penetrating of Latent

what:

The project is a reflection of the city environment problematic.
Holoslo is an environmental project where the main concept is to collect, process and manipulate explicit and subliminal sensory impulses (visual information, sound) and non sensory signals (like radio waves) gathered from the urban environment fabric.
This project has political dimensions. It consists of several layers that include a spectrum from reality to utopia.

where:

Oslo–large

how:

1. use of technological devices for registering within chosen observation areas as well as personal observations by my own senses
2. use of both previous results from the earlier pilot study for information processing, relations mapping and generating new possible relations
3. use of previous for generating the final design for "protoscapes"

why:

The project is my reflection on the city environment problematic. It is an experimental approach to the stimuli sources within the city.
Most of the projects referring to this topic are to my opinion not sufficiently responding to the problematic.
It is mainly either direct translation that is oriented towards the people's awareness that the "problem" exists at all (i.e. Usman Hague). Or it is local body based devices that should decrease annoyance of one's personal experience (i.e. Ambient Addition, a Walkman with binaural microphones, developed by Noah Vawter, MIT).
The thing which is common to both is that they clearly communicate the criticality of the city environment but they are environmental unfriendly them selves.

On the other side, the environmental friendly, interactive architecture based on material systems and so on, is mainly not focusing on this problematic.

It is neither my aim to deal with environmental stimuli in the directly informative way (i.e. interaction design, visualizing data, ...) nor it is my aim to create a device just for experience improvement.

My aim is to explore the potentials of positive ecological environmental changes within the city in reference to human perception.

HOLOSLO - Explicitly

Sound, radio and visual pollution has become a serious problem of our cities. The problem of this kind of pollution is not so much based in its amount or intensity, but in its "quality".

"Yes, in fact, it's interesting. I don't find the sound of the waterfall annoying, but this ventilator I do. It is exactly the opposite approach to what Karlheinz Stockhausen did in his project "Sound Swallower". That project could not work because of the impossibility of precision (within the open environment)."*
(from the discussion with Petr Svarovsky about my concept, Oslo, January 2007)

People would never call the sound of the waterfall a "sound pollution", but with the sound of a motorway, a copy machine, etc. they do, no matter what is more intense.....

The difference is in the simplicity or complexity of the sources.

The distribution of sources (density, composition,...): abundance, richness, pattern, size and scale, spatial variation... as well as their relations and combinations, matters.

Those factors have a huge impact not only on our body and psychical condition, but also on the environment as a whole.

Undesirable signals can cause depressions, diseases, death (proved by nazi doctors) and unwanted environmental changes.

HOLOSLO is a project that generates a distortion of simple constant or repetitive input within the environment while using physical tools for doing so.

** "Sound Swallower" was an utopian project of Karlheinz Stockhausen, who worked with the idea that one could "delete" the input sound wave by generating its negation in real time within the urban environment. (This technology works today in local scale with ear goggles and i.e.. special seats with sound systems used e.g. in diesel locomotives in Norway. - comment by Birger Sevaldson)*

HOLOSLO – Implicitly

“Imagine an infinite sea of energy filling empty space, with waves moving around in there, occasionally coming together and producing an intense pulse. Let's say one particular pulse comes together and expands, creating our universe of space-time and matter. But there could well be other such pulses. To us, that pulse looks like a big bang; In a greater context, it's a little ripple. Everything emerges by unfoldment from the holomovement*, then enfolds back into the implicate order. I call the enfolding process "implicating", and the unfolding "explicating." The implicate and explicate together are a flowing, undivided wholeness. Every part of the universe is related to every other part but in different degrees.”

David Bohm, The Interview published in Omni, 1987, http://www.fdavidpeat.com/interviews/bohm.htm

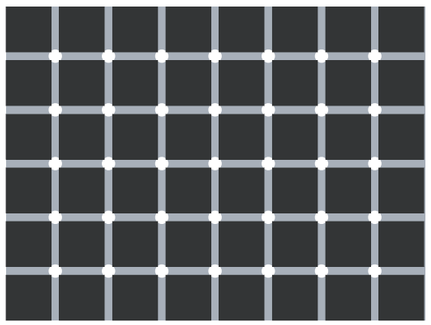
HOLOSLO is a project that generates a distortion of a simple constant or repetitive input within the environment.

It does not do so in the form of translation, which is in fact one set of criteria based change of input. Thanks to the more complex relationing,** the distortion is not linear. It is endlessly “enfolding” and “unfolding”, always in different manner.

This project is about what it performs in real time.
The real subject is the performance, not just the tool (the object) developed for performing it.

My working process is the fusion of the scientific as well as of my own very personal and free approach and interpretations. I am freely or interpretatively, but in a way very precisely, applying scientific theories and tools in my concept of the working process.

‘In the intersections of horizontal and vertical lines are white circles – in addition, it seems that there are sometimes appearing small black dots in some of them. Are they there or not?
Rather not, you will say, or else it should be possible to count them. Any way, I can see them there and you probably as well.”.....



“If we look at the means of the structures manifestation, we can separate two structures, one on top of each other.
There is one fixed and stable structure of the graticule, and the one distinctively subjective and transient structure of those mysterious dots.
Even though every one can see them, each of us see them in other way as well as in the other way in different moment – if it is possible to state that someway at all. So, the viewer has to anact this transistent structure continuously and frequently.”

Ivan M. Havel, O strukturách (On Structures), Vesmir (6), Praha, 2003; http://www.vesmir.cz/soubory/2003_V303.pdf

* holomovement is the term, Bohm use for the movement of matter i.r.f. to enfoldment and unfoldment

** I use the word relationing for creating interpretative relations. Those relations can also be personal, intuitive, speculative or theoretical based.

HOLOSLO - Implicate

01/what:

HOLOSLO is an experimental environmental project where the new design emerges from the studies of environmental conditions.

The study establishes a field of different relationing* and relations mapping.

The study is based on different registration tools used in different spatial directions.

My registration method is using the registration tools mapping technologies to develop something that is “un-plugged”.

The recordings of sound-, radio signal- and light colour-scapes as well as visual conditions, will create abstract layers all over the city (02_02/a), as well as in the local scale (02_02/b). They register change, abundance and range.

The studies are based on merging time moments and directions into one image to interpret the ambiguity, layering and complexity of the site. (use of different registered input into one media)

On the large scale they interpolate in an interpretative way the relations (diagramming of diagrams).

The project itself covers two scales, one all over the city to create the “platform” and the local scales as attachments to that. Those attachments are distributed into and within the large scale and vice versa.

The project is generated from those studies and embedded into the environment as its ingredient.

In a way, it could be seen as a prototypical landscape intervention, where the prototype is “generated by the site itself”.

The “prototype” is the purely abstract result of the studies and interferes with the existing environment in time and space, so the response is dynamic.

The project itself is oscillating through the boundaries of awareness.
By crossing them back and forth the latent penetrates from its hidden state.

While doing so, it enriches the diversity of the environment and attracts the subliminal perception, memories, etc. (i.e. the feeling you know from somewhere, the sound you have heard before or just feeling pleasure while not knowing why, ...)

* I use the word relationing for creating interpretative relations. Those relations can also be personal, intuitive, speculative or theoretical based.

02/how:

HOLOSLO is the contextual project for the city of Oslo.

The working process consists of three parts:

1.registering, 2.processing, 3.developing

1. registering:
For registering I am using the opportunity of new technologies as well as my personal observations of phenomena, talking to people, etc.

I am using several ways of sound and radio recording, video and photography to register several specific scapes within chosen environments (02_02/b).

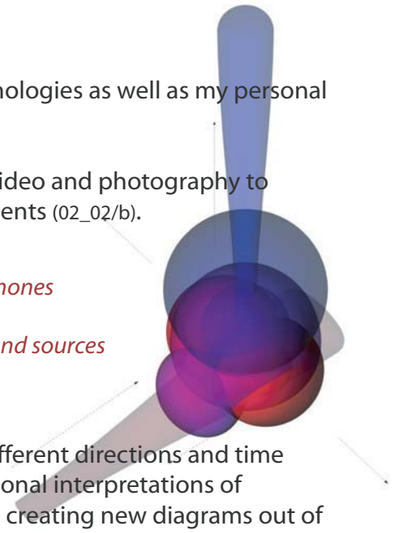


diagram of recording sound-scapes (02_02/b):*
the sound-scapes are recorded with various types of microphones oriented in different directions.
The directions are modified according to the site specific sound sources

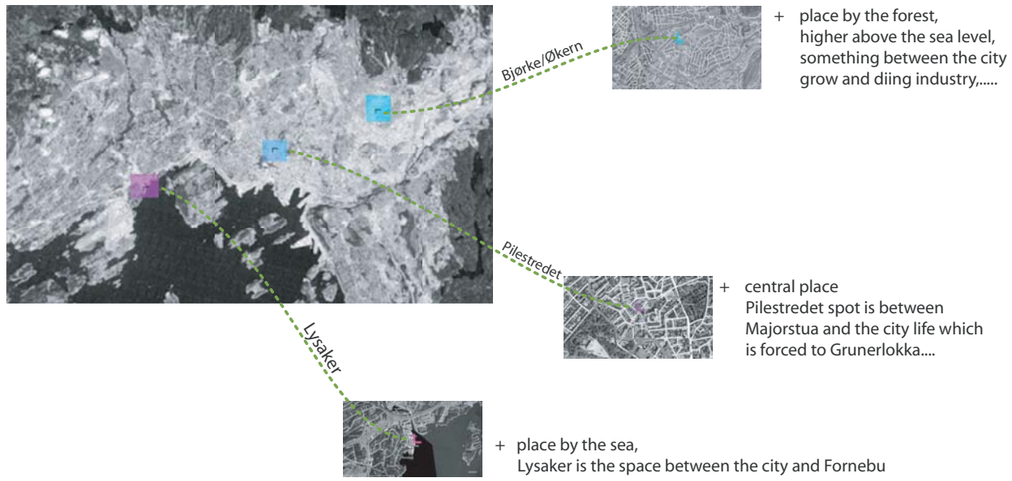
2. processing:
Generating sound and radio-scape studies, fusion of different directions and time based image studies from video as well as my own personal interpretations of collected data are the diagrams for making relations, so creating new diagrams out of them, while both will be developed into design.

The merging, layering, injections, different levels of bringing different channels together are translated into common media which is represented in Cartesian geometry, while it represents non-Euclidean spaces (i.r.t. diverse time moments and directions as well as merging, layering, injections, different levels of bringing different channels together).

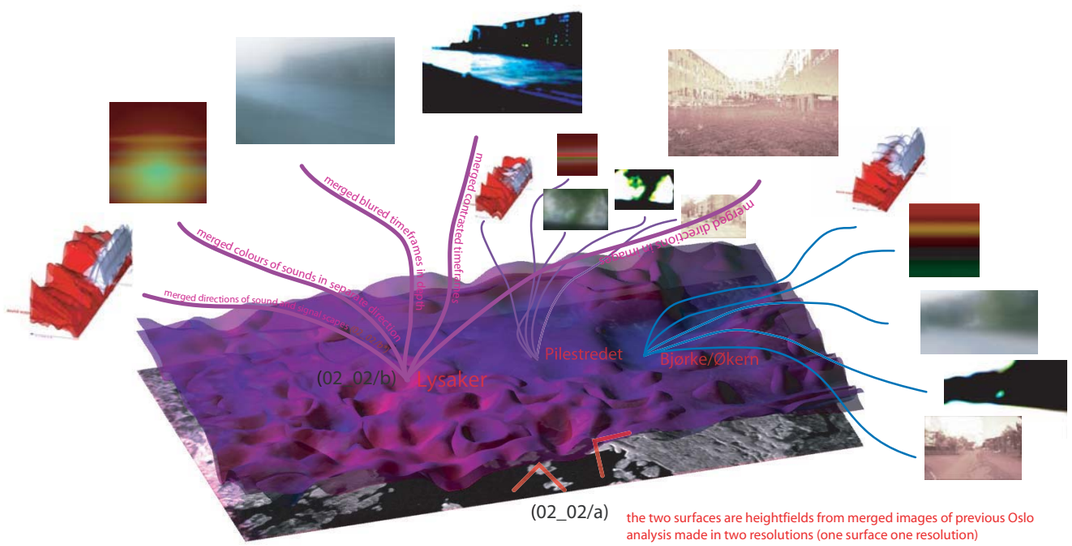
3. developing:
In this stage I am using the digital tools in combination with the physical prototypes.
The design consists of one large and several smaller already complex scapes that are dynamic and fully part of the environment.
They change, grow, develop or die according to the surrounding conditions as they are "powered" by them.
The large complex scape over the city is created by the distribution of the smaller ones.

Like a sound reflective wall that makes a new sound which is created by the source sound, the mirror that reflects the sun and may burn the forest or just highlight or create some phenomena, those "protoscapes " are responsive in real time within the dependency of its environment.

02_01: Oslo, selected places for analysis:
++ the places should somehow represent diferent kind of social structure



02_02/Oslo, diagram of two scales studies:
(serves as an illustration, is not complete and will be fully decided later)



the two surfaces are heightfields from merged images of previous Oslo analysis made in two resolutions (one surface one resolution)

03/why:

"I believe that art is a practice through which vital aspects of society and life may be examined, challenged, and renegotiated. Cultural practices such as art are not driven by capitalistic values, but operate through ideas and reflections about the values that define sociality, about how experience and ethics are intertwined, and ultimately how subjectivity is defined. My interest in architecture, space, time, and art thus comes from fundamental interest in human beings and in our potential to reevaluate the conditions that determine or influence our sense of subjectivity. Our ability to reevaluate existing structures and systems, such as the still prevalent Modernistic ideas about space and their value systems, requires a critical engagement with the world.
The spatial language of dimensionality I have chosen to explore is clearly also a construction, but when waves and frequencies are understood as spatial principles, they become elements of this dimensional conception, which in its critical perspective function as possible model for the understanding and renegotiation of space. And it is the renegotiation of the homogenous values of Modernist spaces that is relevant to the times we live in.
Therefore what we must do is challenge the ways in which we engage with our surroundings, and here I believe, art has a great potential; it is not only encourages critical engagement, but also introduces a sense of responsibility in our engagement that has political as well as social and ethical consequences."
(Olafur Eliasson, Your Engagement has Consequences, p.9)

It seems that our cities still haven't developed the attitude towards its own contemporary environment. While within the society modernism and postmodern is over, the city architecture preferably does not reflect it and ignores the needs of its citizens which are mainly replaced by commercial strategies.
The biggest problem with such strategies is that they are not oriented towards the public but to the market.

My aim is to develop non-market based strategies to the described problematic.

Neither the public awareness nor over layering by another new digital devices is enough any more (if ever was).

I wish to explore the potentials of positive ecological environmental changes within the city environment in reference to the human perception and use this gained background for my future work.

While one of the original purposes of the city used to be protection, today its environment is damaging human physical as well as psychological condition. The late trend of occupying surrounding land by carpets of garden suburbs made the situation even worse. The utopia of cyber space didn't bring any solution either..... Most of the aims of increasing awareness brought just vilification and apathy within the society. The plaster (distance) based concepts of new "smart" digital devices makes the situation even worse again.....

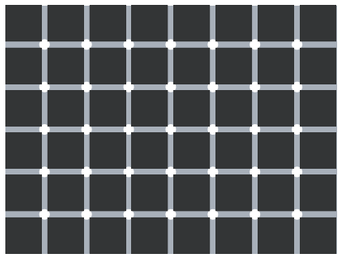
I believe that there is a need for looking for new ways, concepts, strategies, etc. and neither pure scientific nor purely intuitive approach is bringing it.

002/structure, material systems, responsive architecture

01/on structures

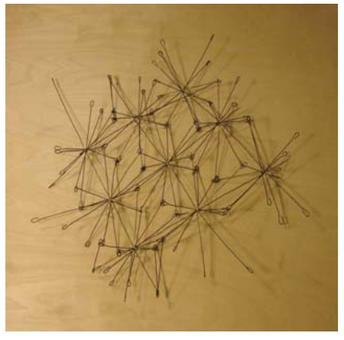
The world structure has its origin in the latin world "struere" = to fold, to compose, to build, to arrange.
"It express the way of folding, internal organisation of some object, especially if it embodies some regularities and patterns.
It is a summary of relations between elements of some assembly.
Very often it is also understood as a purposeful organisation of elements, parts or components of some whole according to a unifying principle or plan."
(Petr Glivický, http://cs.wikipedia.org/wiki/Struktura)

Comming back to Ivan Havel's "magick frame" structure. Ivan Havel is actually separating the his "magick frame" into two separate structures by the means of their manifestation:



"If we look at the means of the structures manifestation, we can separate two structures, one on top of each other.
There is one fixed and stable structure of the graticule, and the one distinctively subjective and transient structure of those mysterious dots. ....."

I would like to try to define this in a little bit other way: There is one structure that manifests it's performace.



The structure is bringing new meaning by the organisation of elements.

This structure can move because of it's organisation, the motion is limited by it's organisation in order to perform what it is supposed to.

More complex structures may generate more complex performances.

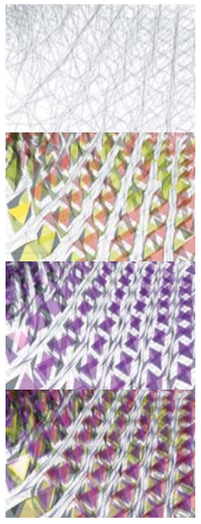
Those performances are dependent on their environments and/or contexts. They manifests only in specific scales in relation to environmental "stimuli" (in a very open meaning).

The "magick frame" does not perform the black dots while many more times extended, how ever, they are generated in the mind of the viewer.....
More explicitly, for instance the "mooving structure" above wouldn't move without externaly caused tension, in a very much greater scale, it would collaps as same as i.e. in a 300° C temperature, but this is already the next chapter.

02/on material systems

material, from Latin materia = matter
system, from the Latin (systēma), and this from the Greek (sustēma),
from sunistanai, to combine : sun-, syn- + histanai = set up, establish
"System is an assemblage of entity/objects, real or abstract, comprising a whole with each and every component/element interacting or related to another one. Any object which has no relationship with any other element of the system is not a component of that system. ....
Every division or aggregation of real objects/entities into systems is arbitrary, therefore it is a subjective abstract concept." (Wikipedia, http://en.wikipedia.org/wiki/System)

"The starting point for the development of the material system is form finding, a design metod that deploys the self organisational capacities of materials in relation to extrinsic forces induced for example through the construction process, different loading scenarios or context-specific environmental conditions. At various critical stages the behaviour of of the material system undergoes an essential change in responce to the increasing size and differentiation of the system across various hierachical levels of assemblies. At the same time the articulation of the system is informed by an expanding range of performance criteria. The focal point in such a design process is what we define as material systems. These are material assemblies that, in their articulation, embody a geometric and topological logick, which is informed by the self-organisational tendencies of material elements, established through form-finding and an inherent logic of manufacturing and assembly, as well as their environmental modulation capacities. In order to become architecture, these material systems must be further informed by context-specific conditions, by strategies of spatial organisation and synthesised structural and environmental performance, and by speculations about emergent social formation and programmatic opportunities."
(Michael Hensel, Morpho-Ecologies, p.63, Architectural Association, London, 2006)



There is the "folded moving structure" from the picture on the model on previous page. To this system is anchored a system of shape momory alloys which operates the motion of the first one.
The system of moving structure operates inner and facet structures of reflective acrylic surfaces that are attached to it.
The inner system of surfaces are parabolicly shaped, so the input source (sound and light) is distorted and extended.
Both the systems of the reflective acrylic surfaces communicate to each other via reflections and transitions.
The facet reflective acrylic surfaces are flat.
The acrylic surfaces extend the heath to operate the shape memory alloys that operates the "folded moving structure".
Thanks to the compexity, this material systems based structure, in fact based on simple feedback loops, is dynamic.

002/structure, material systems, responsive architecture

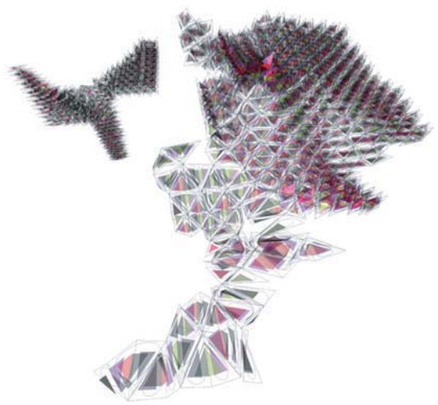
03/on responsive architecture

"... responsive, sometimes called adaptable, or reactive, means the environment is taking an active role, initiating to a greater or lesser degree changes as a result and function of complex or simple computations. ..."
Nicholas Negroponte, Soft Architecture Machines, The MIT Press, Cambridge and London, 1975

In it's starting stage, and still largely is, the responsive architecture was asociated as being digitaly driven.
How ever this application is the most common one, the nowadays definitions begun to omit this:
"Responsive architecture is commonly defined as a type of architecture that has the ability to alter its form in response to changing conditions."
Tristan d'Estrée Sterk, Building Upon Negroponte: A Hybridized Model of Control Suitable for Responsive Architecture, Digital Design, Graz, 2003

Due to the increased problematics of environmental changes as well as the new possibilities of using new "smart materials" that are already entering the market, the responsive architecture starts to orient it self thowards the use of material systems instead of digital devices povered by electricity.
Thanks to the system's different material properties, the structure can respond to the environment, can be responsive.

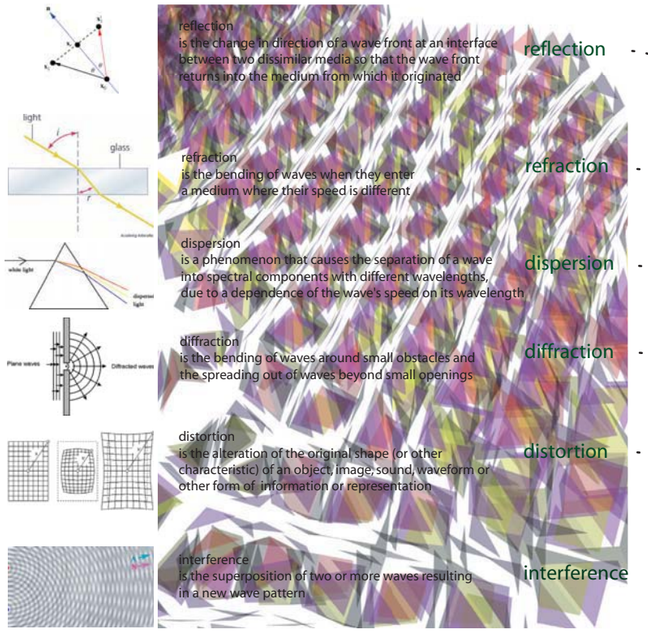
My structure is based on more interrelated material systems, that are interdependent. That means that they operate each other within different functional hiearchies. The material systems are applied site specificaly according to the environmental input. I.e. the size of the reflective acrylic surfaces is designed according to the localy registered frequencies (En trekant med kortside 0.5 meter og langsider på 1 meter vil ha teoretisk grensefrekvens f = 343/L = 343/0.5 = 700 Hz for et kvarat på 0.5 meter. Trekanten derimot vil vel en grensefrekvens på ca 1000 Hz; Jens Jørgen Dammerud, University of Bath, Dept. of Architecture & Civil Eng.).



The structure is applied to the forms that were generated in a large scale in order to provide a complex impact.
(on the left; example of applied structure)

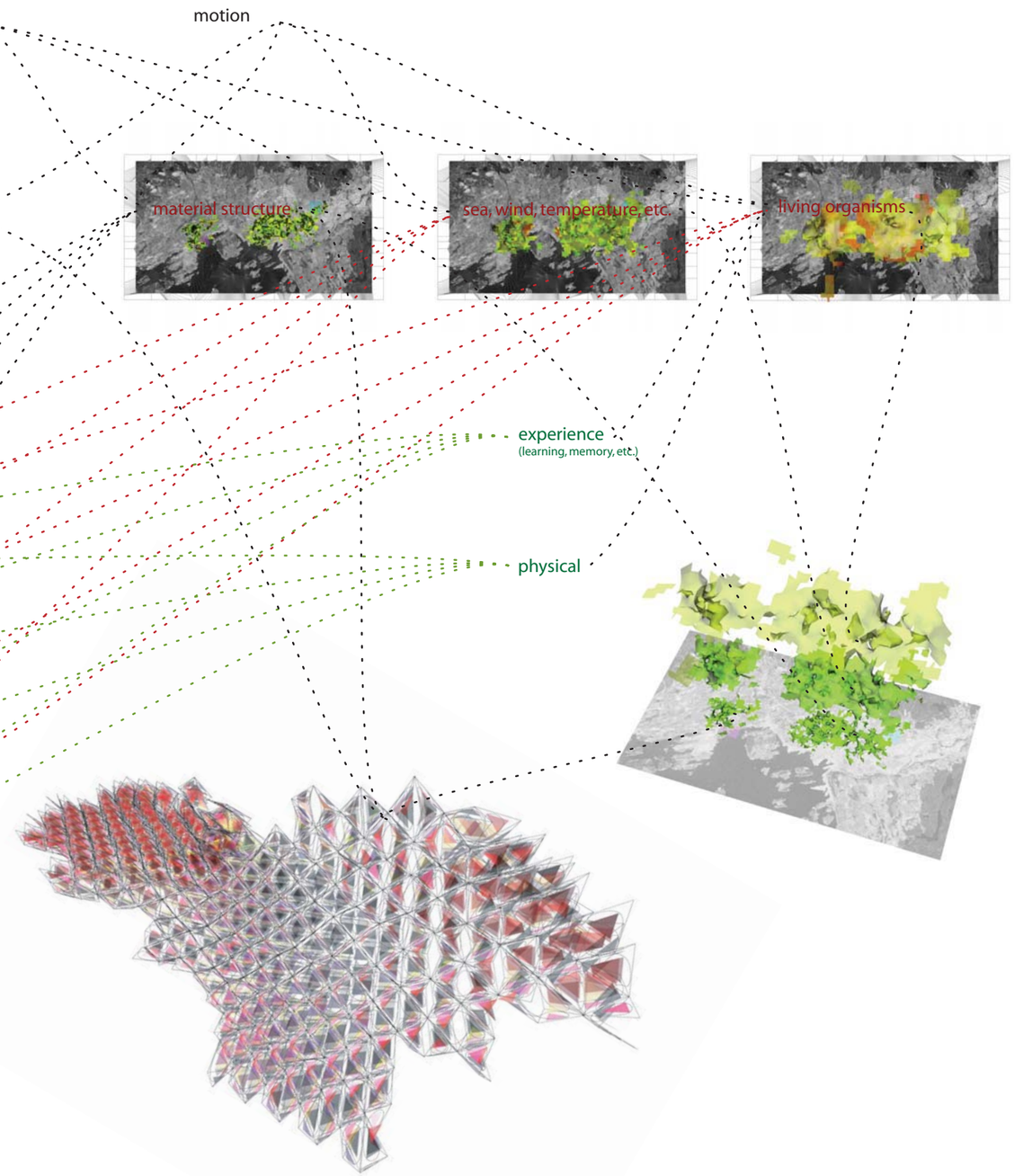
003/conceptual diagram of distribution strategy

01/small scale

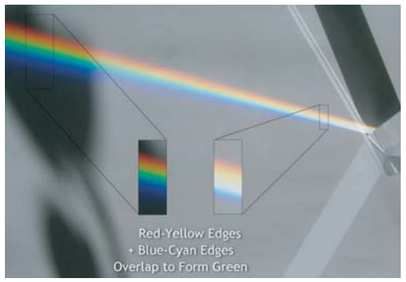


003/conceptual diagram of distribution strategy

02/large scale



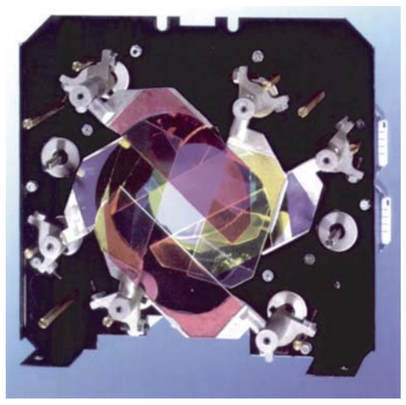
"When the eye sees a colour it is immediately excited, and it is its nature, spontaneously and of necessity, at once to produce another, which with the original colour comprehends the whole chromatic scale.
A single colour excites, by a specific sensation, the tendency to universality. In this resides the fundamental law of all harmony of colours..."



(photo by John Penner, illustrating Goethe's Theory of Colours)

(J.W. Goethe, Theory of Colours, p.317, trans. C.L.Eastlake, The M.I.T. Press, Cambridge, 1982)

Colour of an object depends on its surface properties and environment, as well as on the perception of an observer. It appears when the light beam meets the surface of the object and can be mediated via light beam to the surface of another object.

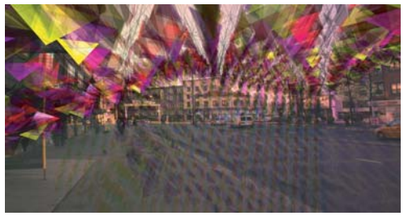


Thanks to that, it is possible to do colour mixing of more transparet objects which manifests it self on target surface.

prototype of one cell of the system

left, subtractive colour filtration of light in Scanner (Scanner is a type of theather light)

Use of light passing through several different filters serves as a media of scale and/or visual variosity implementation into an exsisting environment.



In my project I am using coloured, flat and parabolicly shaped acrylic surfaces, attached to the dynamic structure. Thanks to the motion of the structure and different directions of day light within time (or change into the atificial light when it's dark), the environment is enriched by dynamic texture which is smoothening the visual quality of urban environment.

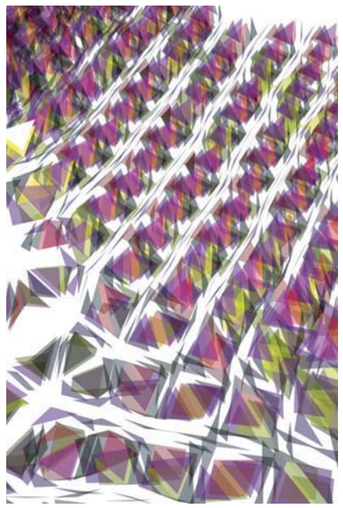
"Now I will do nothing but listen ....
I hear all sounds running together, combined fused or following,
Sounds of the city and sounds out of the city, sounds of the day and night ....."
(Walt Whitman, Song of Myself, from the introduction to the publication by R. Murray Schafer, Our Sonic Environment and The Soundscape, The Tuning of The World)

Sound is a wave based motion that can propagate via media such as: air, water or solids like ground or wall, etc. It's propagation is dependent on the properties of the media. Which meens that in out door environment when it propagates through air, it is also weather dipendent (tenperature, humidity). When it is passing through the environment, it is several times reflected, distorted, dispersed, diffracted, refracted by objects located in its way, and interfered with the other sounds. Those are the environmental interactions with the other materials and/or waves.
Those inputs and interactions generates complex multi-dimensional and multi-scale soundscape where different inputs and interactions reach their maximums and minimums over time.

Daily pattern of sound levels and sound sources based on a 24-hour recording in the countryside on summer solstice, 1974 (from *Handbook for Acoustic Ecology*, B. Truax, ed.,Vancouver, British Columbia, A.R.C. Publications, 1978).

Due to the different interactions, the sounds propagates different in differnt environments. As same as light, it manifests it self different in the forest, open landscape or the urban environment.
In the city, it interacts several large scale flat horizontal hard surfaces. The sounds are reflected over the streats in not very various in but very intensive manner. The city sounds it self have very often the same properties. The machine based sounds became allready a discussed problem since the time of industrial revolution. The adaptability of the citisens is confronted the with lose of ability to listen.

In my project, I am setting up more complex and dynamic interactions for the urban environment. The coplex structure, made by combination of flat and parabolic surfaces is designed with size changes according to most problematic registered frequencies.



"It is 0.88*343/D for a square and 343/D for circle, where D is side dimension of square and diameter of circle. So a 1 x 1 metre square will have a limiting frequency of 302 Hz, while a circle will have a limiting frequency of 343 Hz. For a triangle you could find the largest circle that can fit into the triangle and use the limiting frequency of that circle. That should not overestimate the frequency.
Take the resulting limiting frequency for a square and divide by 0.88 to get the limiting frequency for a circle with the same D." (from the e-mails with Jens Jørgen)

Thanks to that, that the structure moves, more sizes and shapes, the interactions changes over time which generates complex soundscape out of the simple non-dynamic input.

005/sound, soundscape

"... Installasjonen skal reflektere lyder fra byen, f.eks. lyden fra trikk og andre maskinelle gjenstander. Transformasjonene skal gjøre lydene mindre ensformige i bybildet. En kan tenke seg at man går forbi installasjonen og hører en reflektert lyd der innefra som er en transformert utgave av lyden i gaten bak. Det er vel aktuelt både at lyden går igjennom fra andre siden, eller er reflektert fra samme side som man står på. Konstruksjonen skal altså bestå av kun passive elementer, ingen elektronikk.

Hennes motivasjon er fra vandringer rundt i bybildet hvor hun har hørt hvordan lyden fra miljøet reflekteres og filtreres via hus, flater og trær, og hvordan dette endrer seg etter-som man går. Lignende opplevelser ønsker hun å oppnå gjennom å utforme en akustisk konstruksjon, gjennom refleksjoner i installasjonen. Måten lyden blir transformert (klangkvaliteten) er tenkt å variere ved at installasjonen skal bevege seg i bindeleddene.

I første omgang kan vi tenke oss at installasjonen står stille, for å gjøre det enklere å forstå konstruksjonen. Konstruksjonen består av en mengde like celler i et stort nettverk

Hver celle reflekterer lyden ved at sideveggene er harde, og lyden kommer også inn i cellen fordi platen ikke dekker hele veggen i cellen. Det kan også være plater inne i cellen. Såvidt jeg skjønner skal en plate være rundt en halv meter bred. Det er vel tilrådelig å stable celler i både høyden, bredden og dybden.

Ikke alle sideveggene i hver celle skal ha en plate, dermed er det mulig å danne rom inne i konstruksjonen. Krumme flater (paraboler) kan også gjøre det mulig å reflektere lyden mer fokusert. Jo større konstruksjonen er, desto mer muligheter har man i forhold til transformasjoner og ekko.

Hun ser for seg mulige alternative størrelser på installasjonen, fra en bredde/høyde på et par meter som en demo-installasjon, til 20 meter som en større reell installasjon, til en flere kilometer stor installasjon over en by som en konseptuell tanke. I det siste tilfellet tenker hun at lyden kan reflekteres over større avstander, gjerne ved bruk av parabol-reflektorer. Dersom veggene i mange av cellene er parabol-reflektorer , vil alltids noen paraboler i en del av konstruksjonen treffe paraboler i andre deler, og man kan lage lange ekko. Dette mest som et konsept altså, kanskje noe man kunne simulere i et program.

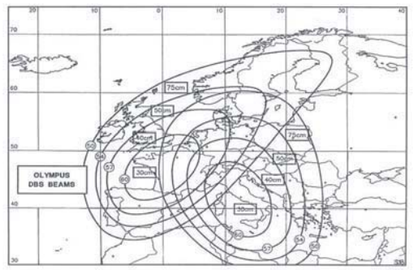
Jeg har forklart henne at i en liten installasjon vil det mest være snakk om filtrerings-effekter ala det man opplever når man går langs stier/forbi hus etc, men i den større konseptuelle modellen kan det bli snakk om ekko og mer avanserte transformasjoner. ..."
(Henrik Sundt, on my concept)

006/radio, radioscape

“Radio is the wireless transmission of signals, by modulation of electromagnetic waves with frequencies below those of visible light.
Electromagnetic radiation travels by means of oscillating electromagnetic fields that pass through the air and the vacuum of space. It does not require a medium of transport. Information is carried by systematically changing (modulating) some property of the radiated waves, such as their amplitude or their frequency.”

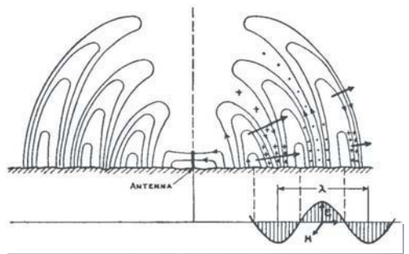
(Enders Double, http://en.wikipedia.org/wiki/RADIO)

While the problematic of mechanical sounds within an urban environment is discussed since the industrial revolution, the problematics of the radio scapes has being discussed only inly few last decades with the boom of wireless communication.



“Computer generated models showing radio propagation in relation to urban environments, and maps the field strength and “footprint” of television and radio transmissions in relation to the surface of the earth, reveal that the hertzian space is not isotropic but has an “electroclimate” defined by wavelenght, frequency, and field strenght arising from interaction with the natural and artificial landscape”
(A.Dune, Hetzian Tales, MIT Press, Cambridge, 2006)

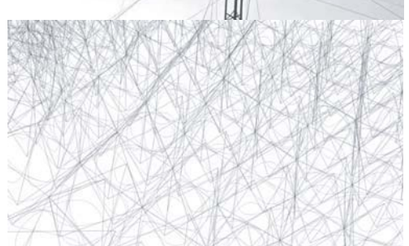
Radio waves are transmited or received by antenas (puting aside cosmic interactions).



“Diagram of the electric (E) and magnetic (H) fields of Radio Waves emanating from a radio transmitting antenna (small dark vertical line in the center). The E and H fields are perpendicular as implied by the phase diagram in the lower right.
(from wikipedia)

The antena receives or transmits from the all directions, accept the direction of its own orientation. The size of received/transmited waves is dependent od the size of antena.

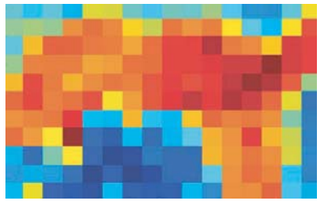
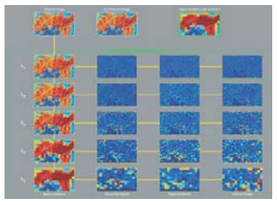
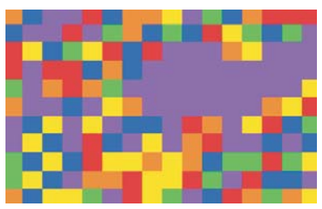
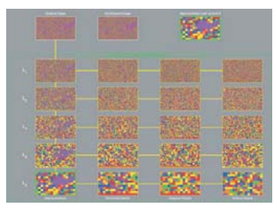
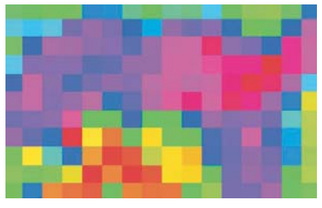
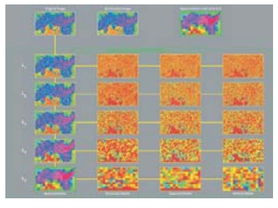
The top of a tower supporting a yagi and several wire antennas. (from wikipedia)

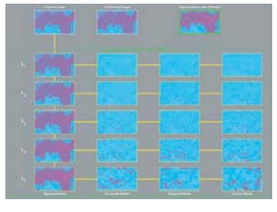
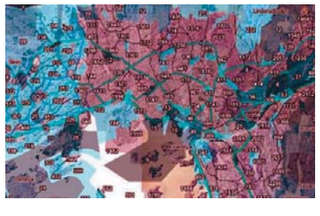


“In antenas, there is a current induction, which means that it subdue external electromagnatic field.” (Pavel Žikovský)
In my project, I am using a complex antena, consistiong of different directions, sizes and shapes (Shape Memory Alloys SMA). As the structure mooves and SMA changes it’s shape, the electro magnetic field is affected in dynamic manner.

01/large scale study of Oslo



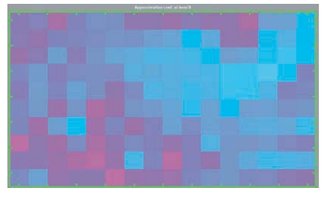
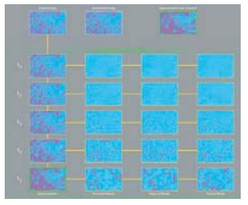
The first studies were done in very abstract manner mainly from the ortophoto. In this case, the ortophoto is not just two dimensional image. The colours and structural informations are expressing the morphology and relations within the city. There is a clear relation between greenery, weter, build up environment, ... The hihgts of the the buildings are partly expressed by shadows... These wavelet analysis analyse the visual information from four directions (vertical, horizontal and both diagonal). The first analysis was done in two resolutions to express relations in two scales. The differen types of settings for the visual organisation of the analysis were used to grasp the most of the different informations, such as colour, scale changes, morphology, structural organisation, etc., in the large scale city environment.

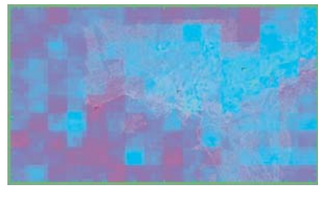
All of those analysis plus the map of the density of inhabitants tuned into appropriate colour moode were merged into one image to represent one abstract but complex approximation of various criteria, and to be processed further. (The map of density of inhabitants does not just represent the amount of the people living in certain place. In fact it also represents the socio-economical structure, the relations between build up environment, amount of space per person and/or hights of the buinldings.)

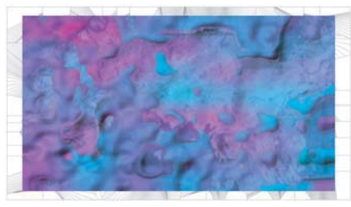
007/working process and final design

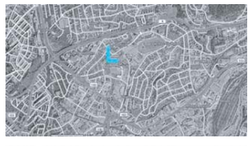
01/large scale study of Oslo








The layers are placed one on top of each other and the abstract complex approximation is generated in two resolutions. This serves for both, for the choice of places to register local scapes, and for later large scale studies to generate new scapes.

For the local places, the two resolutions are again placed on top of each other, to point out the extremes and together with the build up structure map and use of simle setted preferences, this fearly abstract complex study serves as a perfect tool to find representants of different criterias within the city.

I used the choosen places for several registering, such as a sound, radio and video recording, taking photography, interviewing, etc. (viz. next chapture: 02/local scale)

These registered informations are processed separately and take their place in the large scale study later on, to generate the large scale scapes for the structure.

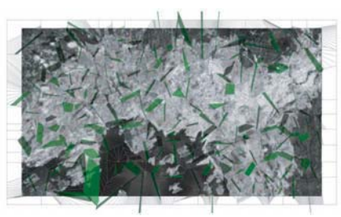
(the marks in the map - left, are places, next to that, the plans of choosen places)

For continuing in large scale study, the two resolution maps are used to create higtfield surfaces. Their intersections represent the borderline areas within the city.

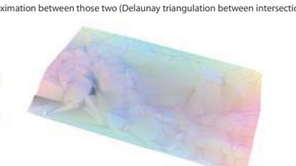
01/large scale study of Oslo

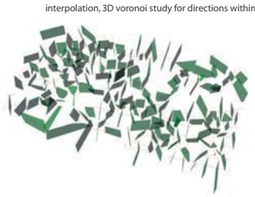
intersection of previous Oslo analysis in two resolutions

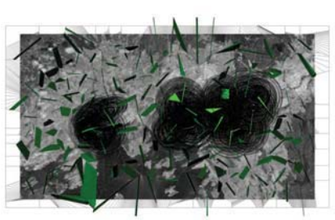
approximation between those two (Delaunay triangulation between intersection)



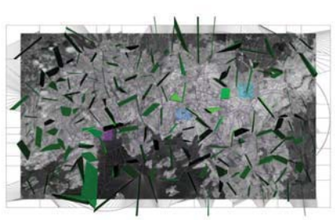
interpolation, 3D voronoi study for directions within the city



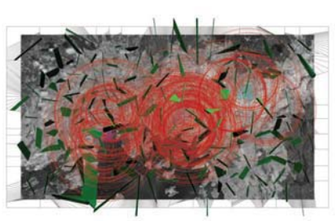




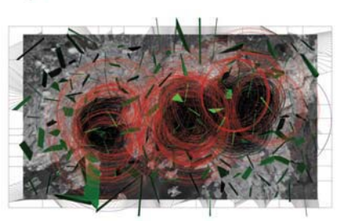
sound + radio



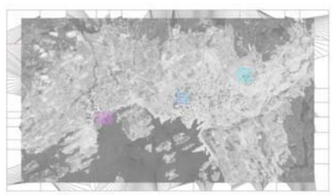
colour



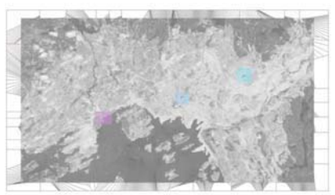
soundcolour



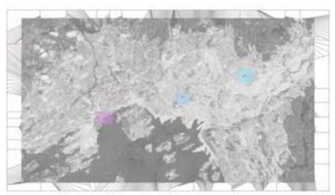
all together



sound + radio



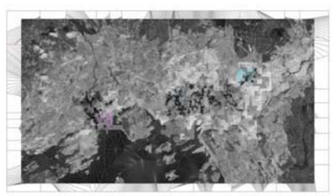
colour



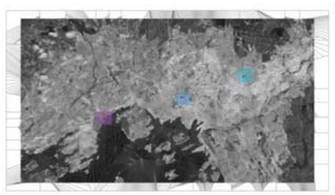
soundcolour

from all together

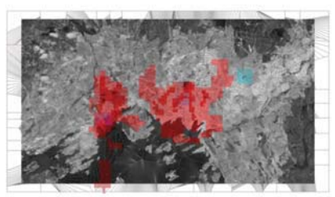
all together



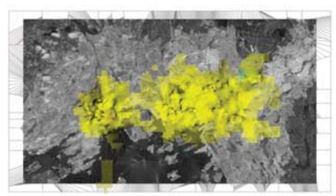
sound + radio



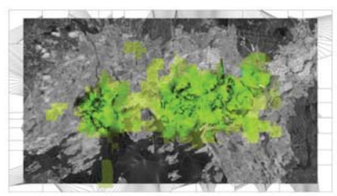
colour



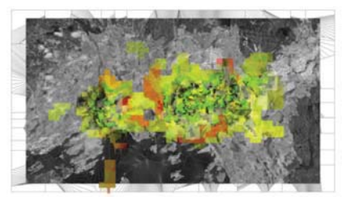
soundcolour



from all together



all together 2



all together

007/working process and final design

01/large scale study of Oslo

For continuing in large scale study, the two resolution maps are used to create higtfield surfaces. Their intersections represent the borderline areas within the city. The intersection curves are used to set the relational directions in the city.
For setting up the directions there was applied biological/mathematical, self-organisational structure of voronoi, based on the Delaunay triangulation (the intersections of the triangulation are karyons of the cell (the voronoi).

These generated directions were used for the directions of placing waves intersections from local studies.

These curves of intersected waves form "time moments (to be explained later) were intersected with the other "time moments" ("the points of time waves interference")

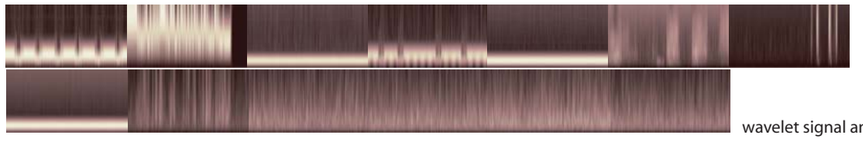
These intersection points were used to generate meshes of the scapes for structure application.

02/local scale studies

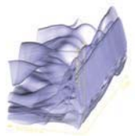
between Bjørke and Økern

sound processing

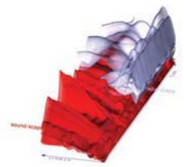
radio processing



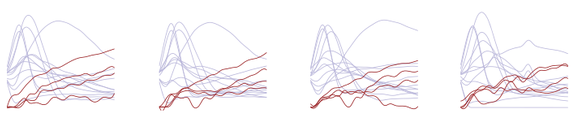
wavelet signal analysis



wavelet signal analysis highlighted into space

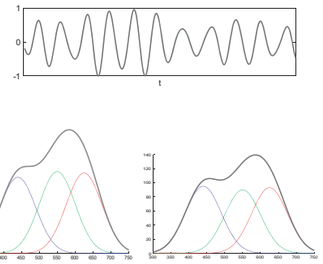


audiable sound and radio signal together

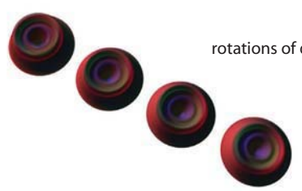


sections in time moments

rotation of sections in time moments
"time wave"



decompositions of gausian blur of the images

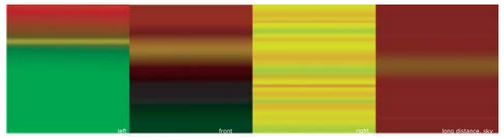


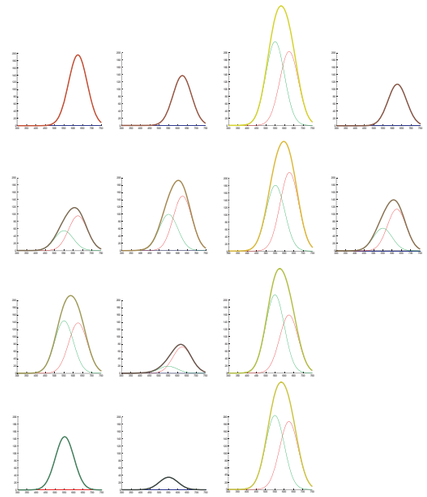
rotations of decompositions of gausian blur of the images

gausian blur of an image

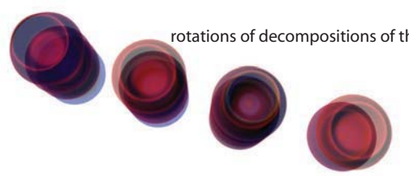
image colour processing

soundcolour - visual aspect of sound





decompositions of the visual aspect of sound



rotations of decompositions of the visual aspect of sound

On the selected places, I was recording sound with four types of microphones in different directions in the same time (viz. introduction). Thanks to that, I registered more complex soundscape. As obvious from the above diagrams, the recordings varie.
For the radio recording I was using radioscanner, there were many more registered radio signals in the suburbs tan in the city centre.

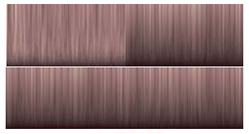
I used my synesthesia abilities to visualise the recorded sounds and used it as an equal sound-vizual information for further analysis.
(synesthesia; from Greek roots syn, meaning "together", and aisthesis, or "perception"; is a condition in which people experience the blending of two or more senses.; Vilayanur S. Ramachandran and Edward M. Hubbard, Hearing Colors, Tasting Shapes; Secrets of the Senses, Scientific American, volume 16, number 3, New York, 2006)

007/working process and final design

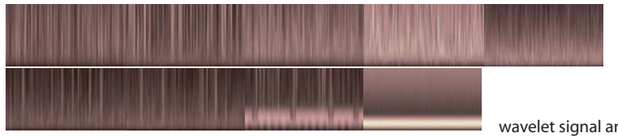
02/local scale studies

Pilestredet

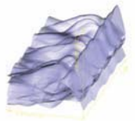
sound processing



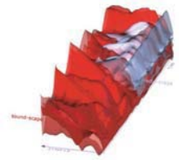
radio processing



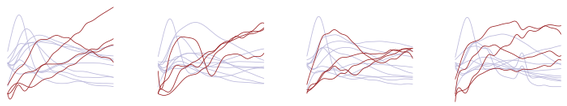
wavelet signal analysis



wavelet signal analysis highlighted into space

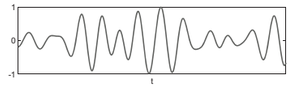


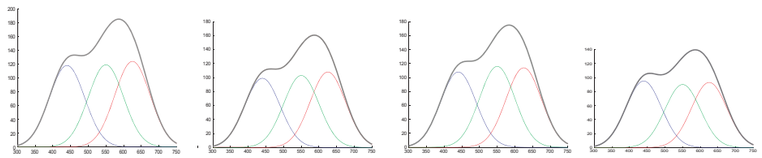
audiable sound and radio signal together



sections in time moments

rotation of sections in time moments
“time wave”





decompositions of gausian blur of the images

rotations of decompositions of gausian blur of the images

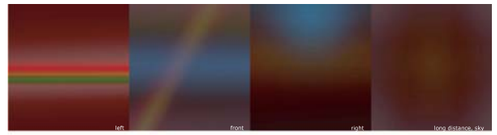
007/working process

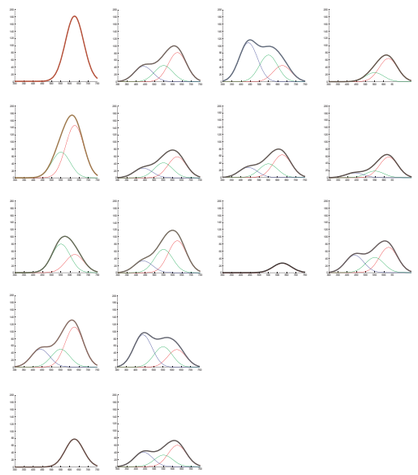
02/local scale studies

image colour processing

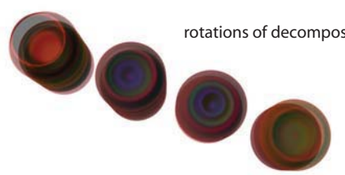
gausian blur of an image

soundcolour - visual aspect of sound





decompositions of the visual aspect of sound



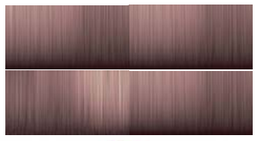
rotations of decompositions of the visual aspect of sound

007/working process

02/local scale studies

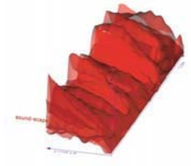
Lysaker

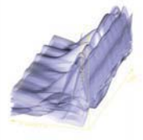
sound processing



radio processing

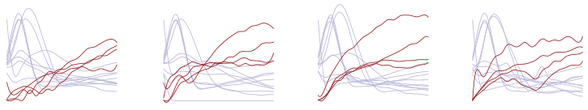
wavelet signal analysis





wavelet signal analysis highlighted into space

audiable sound and radio signal together

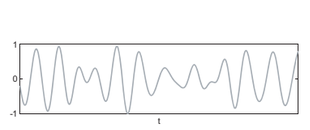


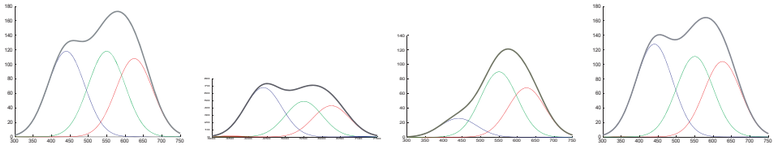
sections in time moments

rotation of sections in time moments
“time wave”

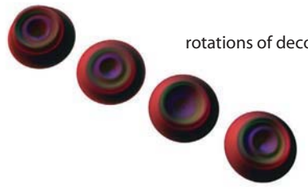
image colour processing

gausian blur of an image



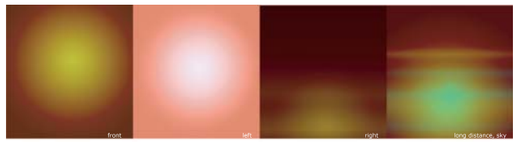


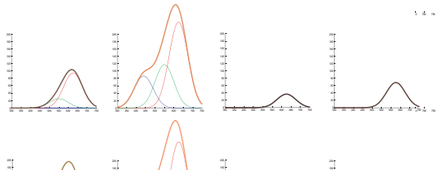
decompositions of gausian blur of the images

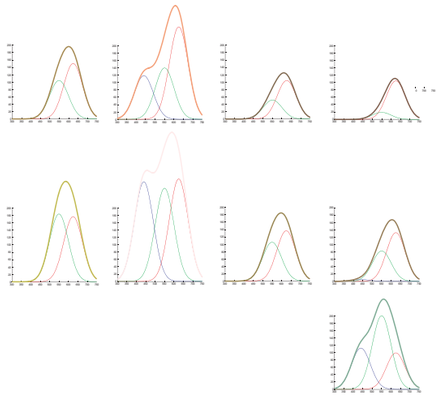


rotations of decompositions of gausian blur of the images

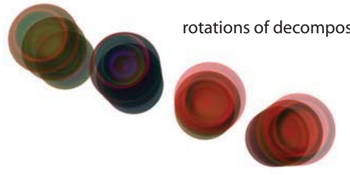
soundcolour - visual aspect of sound





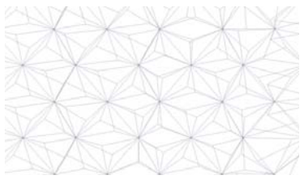


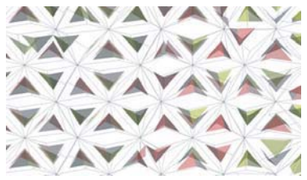
decompositions of the visual aspect of sound

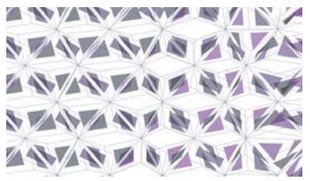


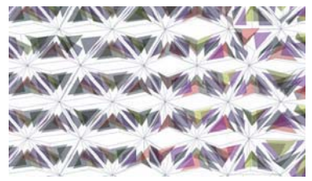
rotations of decompositions of the visual aspect of sound

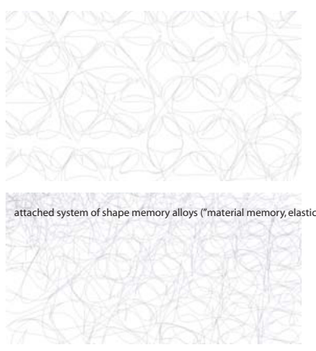
03/structural development

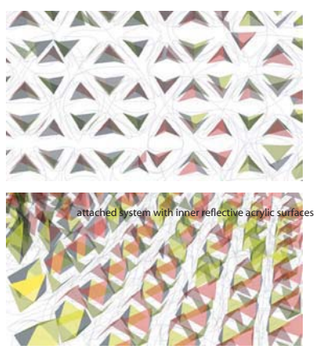


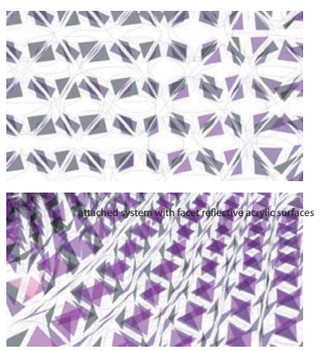


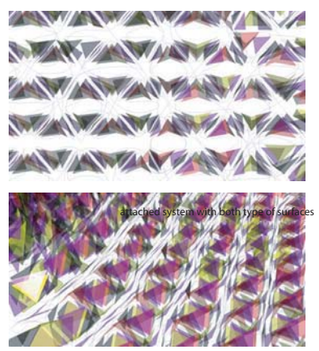


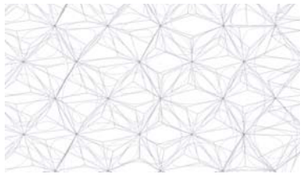


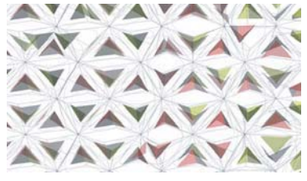


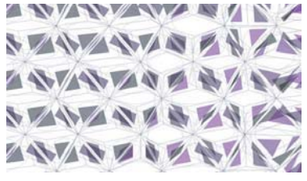


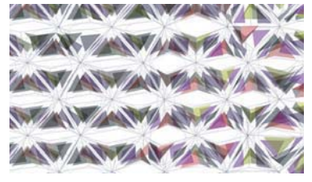


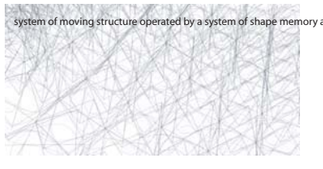


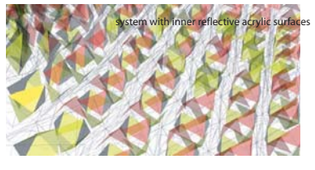


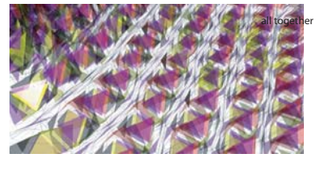












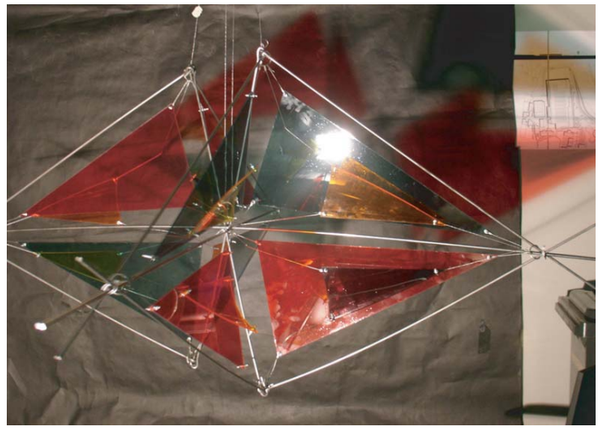
007/working process

03/structural development

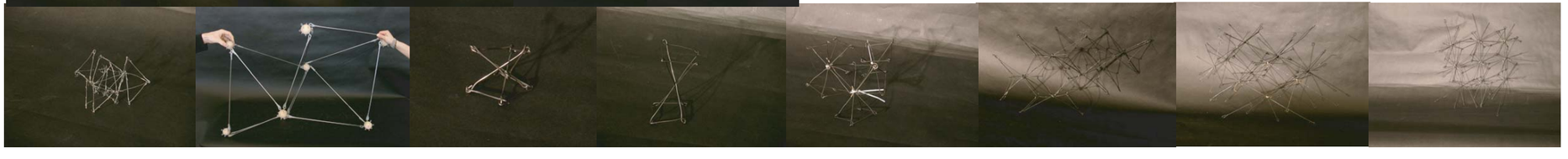
Structure was developed both ways. It is a theoretical abstract computer generated pattern of several layers which was explored by physical working models to higher complexity of the motion and relations.
The computer generated layers have its base in one common structure as its geometrical variations. This base is esntial for their structural relations.

By different ways of physical folding and relationig the structure was developed further.

Paper folding structure helps as an abstract level of structural development and understanding.
It supports a reading of possibilities for rod structure application.
In fact, and not fully consciously, all the principles from the paper folding developement line are applied in final metal rods structure.
The moving system developed from uncontrolable structure



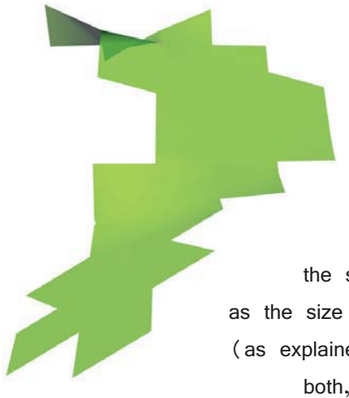
with eight rods in one joit, through self regulating one cell dominance based structure (the communication between separate cells was dificult), to the system, where separate cell is more understood as a spatial rather than structural term. In fact, each cell is basicly created by eight surroundings cells.



The above model was developed for interaction.

04/application of the structure

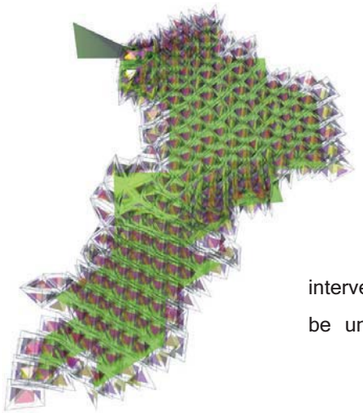
The structure is applyed to the meshes generated from the large scale studies.



Each interrelated system within pattern is applied to suitable mesh (i.e. sound related system is applied to sound related mesh, etc.).

The general structure is applied to the mesh which was generated for all.

The fact, that the presence of different layers within the structure is operated by slightly different settings, as well as the size of the components is operated by direct local registers (as explained in the chapture on sound), defines the diversity of both, of the urban environment as well as of the structure it self.



The structure unify the city as well as proove the local specificity and/or identity while bringing new dynamic and interest to that.

This is a structural approach to so called “landscape prototypical interventions”. The intervention is smooth, stimuli based and abstract and may be unconscicious. It is not only social critic, but also an improvement.

City people got adapted to social critics as same as to impropriate environmental conditions.....

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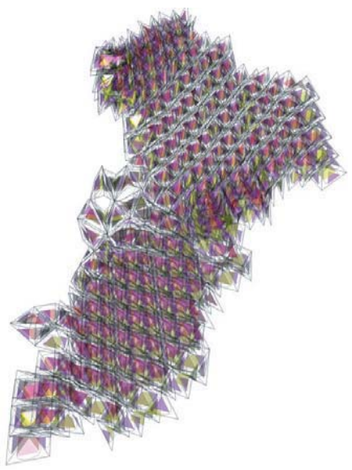


05/vizualisations of “protoscapes”

The structures are applied according to the large scale studies all over the city while having a local settings, they parazites on the existing infrastructure, fasades of the buildings, etc.

in a suburbia, the structure has strong role in integration and/or identification with the city
there was registered very strong radio waves activity, while the sound condition has more detail character (leafs, grass, wind, etc.) with the only exception of ubiquitous back-ground sound of the motorway
on the other hand the vizual stimuli is oriented to the long distance view of surrounding nature and city landscape, the quality of detail and urban scale is lacking


autumn afternoon


late summer afternoon


late summer afternoon


summer night


summer evening

this sample is from Bjørke, the area is build up by carpets of uniform small familly houses and large size buildings, motorway, etc.
the scale inbetween is lacking
how ever Bjørke is not one of the most critical/extreme example of this type of suburbia,
it is indentical for being the border line and/or diffusion between an idealistic idea of living in the “nature” and slum


summer noon


autumn noon

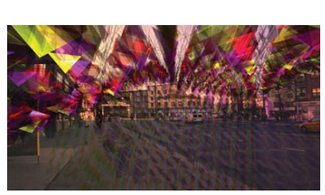

late autumn noon

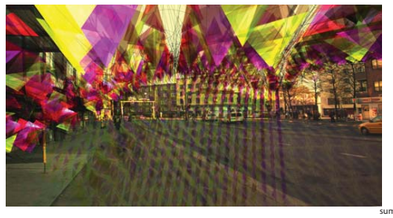

spring morning


spring afternoon

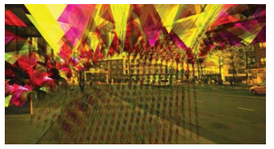
this is a crossing on the way to Bjørke from the city,
it is a border line of the city and periphery and serves as a crossing of public city transport for both of those two
while the housing is developed in urban character, the traffic building already reminds suburbia


summer early morning


autumn afternoon

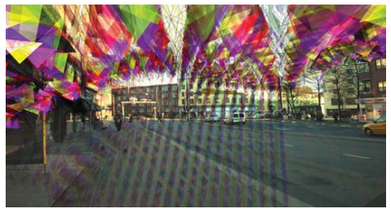

summer evening


late summer afternoon


late summer evening


late autumn noon


autumn noon

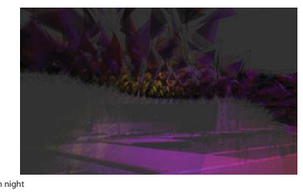

spring noon

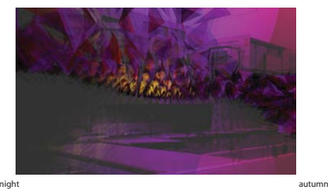

summer noon

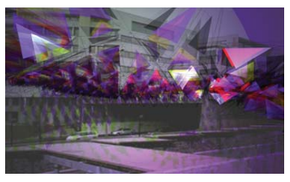

summer late evening

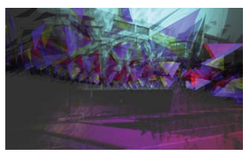

autumn evening


autumn night


autumn night


autumn night


autumn night


autumn early morning

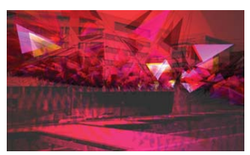
this is an entrance to the tunnel at Lysaker,
the area has mainly dwelling character, there is strong contrast between the previous familly houses character and the new yuppie build up environment that is a result of its position between the city and Fornebu
this place is overloaded by large administration buildings and traffic

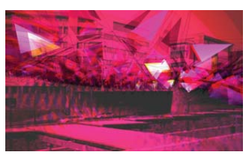

summer noon


summer noon


summer afternoon


summer afternoon


summer evening


summer evening

007/working process and final design

09/references:

xxxxxx : fundamental
xxxxxx : mean importance
xxxxxx : supportive

the science theory that is crucial to the concept of my working process as well as to the result expectations, it penetrates through whole my project:

David Bohm, Thought as a System, Routledge: Taylor & Francis Group, Oxon, New York, 1994
David Bohm, F. David Peat: Science, Order and Creativity, The Guernesey Press Co Ltd, Guernesey, Cannel Islands, 1987
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