HOLOSLO - The Penetrating of Latent

Marie Davidová
HOLOSLO - CONTENTS

000/ preword

001/ summary description - project program

HOLOSLO - The Penetrating of Latent
HOLOSLO - Explicitly
HOLOSLO - Implicitly
HOLOSLO - Implicate

01/ what
02/ how
03/ why

002/ structure, material systems, responsive architecture

01/ on structure
02/ on material systems
03/ on responsive architecture

003/ conceptual diagram of distribution strategy

01/ small scale
02/ large scale

004/ colour, light, lightscape

005/ sound, soundscape

006/ radio, radioscape

007/ working process and final design

01/ large scale study of Oslo
02/ local scale studies
03/ structural development
04/ application of the structure

009/ references

010/ thanks
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 eurhythmic 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 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."


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 on 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 very precise way, applying scientific theories and tools in my concept of the working process.

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

**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-scape 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.
HOLOSLO - Implicate

**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.e. 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.
HOLOSLO - Implicate

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.”


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, however, 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 method 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 the material system undergoes an essential change in response to the increasing size and differentiation of the system across various hierarchical 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 logic, 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)

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. ..."


In its starting stage, and still largely is, the responsive architecture was associated as being digitally 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’Estree 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 itself towards the use of material systems instead of digital devices powered 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 hierarchies. The material systems are applied site specifically according to the environmental input. I.e. the size of the reflective acrylic surfaces is designed according to the locally 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 kvadrat 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)
diffraction is the bending of waves around small obstacles and the spreading out of waves beyond small openings.

reflection is the change in direction of a wave front at an interface between two dissimilar media so that the wave front returns into the medium from which it originated.

distortion is the alteration of the original shape (or other characteristic) of an object, image, sound, waveform or other form of information or representation.

interference is the superposition of two or more waves resulting in a new wave pattern.

refraction is the bending of waves when they enter a medium where their speed is different.

dispersion is a phenomenon that causes the separation of a wave into spectral components with different wavelengths, due to a dependence of the wave's speed on its wavelength.

motion dynamics

material structure

expansivity

material memory, elasticity

folding

desintegration

dystransformation (weathering)

experience (learning, memory, etc.)

physical

sea, wind, temperature, etc.

living organisms

01/small scale

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)


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 transparent objects which manifests itself on target surface.

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

In my project I am using coloured, flat and parabolic 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 artificial 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 means that in an outdoor environment when it propagates through air, it is also weather dependent (temperature, 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.

Due to the different interactions, the sounds propagate differently in different environments. As same as light, it manifests itself 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 streets in not very various but very intensive manner. The city sounds itself have very often the same properties. The machine based sounds became already a discussed problem since the time of industrial revolution. The adaptability of the citizens 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 complex structure, made by combination of flat and parabolic surfaces is designed with size changes according to most problematic registered frequencies.

"It is $0.88\times343/D$ 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.


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 tilladelig 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, kanske noe man kunne simulere i et program.

Jeg har forklart henne at i en liten installasjon vil det mest være snakk om filterings-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)
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.


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 propaga
tion 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 wavelength, frequency, and field strength arising from interaction with the natural and artificial landscape”


Radio waves are transmitted or received by antennas (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 antenna 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 antennas, there is a current induction, which means that it subdue external electromagnatic field.”

(Pavel Žkovský)

In my project, I am using a complex antena, consistiong of different directions, sizes and shapes (Shape Memory Alloys SMA). As the structure moves and SMA changes its’s shape, the electromagnatic field is affected in dynamic manner.
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, water, build up environment, …

The heights of 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 different 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 mood 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 heights of the buildings.)
For continuing in large scale study, the two resolution maps are used to create highfield 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.
I used my synesthesia abilities to visualise the recorded sounds and used it as an equal sound–visual 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)

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.
local scale studies

Pilestredet

radio processing

wavelet signal analysis

sound processing radio processing image colour processing

audible sound and radio signal together

wavelet signal analysis highlighted into space

decompositions of gaussian blur of the images

decompositions of the visual aspect of sound

rotation of sections in time moments "time wave"
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 essential for their structural relations.

By different ways of physical folding and relating 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 development line are applied in final metal rods structure.

The moving system developed from uncontrollable structure with eight rods in one joint, through self-regulating one cell dominance based structure (the communication between separate cells was difficult), to the system, where separate cell is more understood as a spatial rather than structural term. In fact, each cell is basically created by eight surroundings cells.

The above model was developed for interaction.
007/working process and final design

04/application of the structure

The structure is applied 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 chapter on sound), defines the diversity of both, of the urban environment as well as of the structure itself.

The structure unify the city as well as prove 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 unconscious. It is not only social critic, but also an improvement.

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

................................

........

..........................
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, facades of the buildings, etc.
Ivan M. Havel, Causal Domains and Emergent Rationality, In: Rationality and Irrationality. Proceedings of the 23rd Interna-
tional Wittgenstein Symposium, Kirchberg am Wechsel (Austria) 2000 (Edited by Barry Smith and Bert Brogaard),

the science theory that is particular referential to my project:

Humberto R. Maturana, Francisco J. Varela: The Tree of Knowledge, translated by Robert Paoluci, Shambala, Boston, 1992

the applied sound ecological theory that is referential to my project:


the applied ecological theory that is referential to my project:


Olafur Eliasson, Your Engagement has Consequences, Lars Muller Publishers, Malmo, Rotterdam, Tokio, 2005
Juhani Pallasmaa, The Eyes of the Skin, Wiley Academy, West Sussex, 2005
Bjørn Sevaldson, Developing Digital Design Techniques: Investigation on Creative Computing, AHO, Oslo, 2005
AD, Collective Intelligence in Design, editor Helen Castle, Willey Academy, London, September-October 2006

the theory (or even beletry) that is inspirational to my imagination on my project:

Ivan M. Havel, Causal Domains and Emergent Rationality. In: Rationality and Irrationality. Proceedings of the 23rd Interna-
tional Wittgenstein Symposium, Kirchberg am Wechsel (Austria) 2000 (Edited by Barry Smith and Bert Brogaard),

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, Wholeness and Implicate Order, Taylor & Francis Group, London, Boston, 1980
The Interview with David Bohm, conducted by F. David Peat and John Briggs, published in Omni, January 1987,
http://www.fdavidpeat.com/interviews/bohm.htm
Michael Talbot, Mysticism and New Physics, Urvin Brothers, UK, 1991
Karl H. Pribram, Languages of Brain:Experimental Paradoxes and Principles in Neuropsychology, Standford University,
Prentice Hall, Englewood Cliffs, New Jersey, 1971
Stanslav Grof, The Holotropic Mind: The Three Levels of Human Consciousness and How They Shape Our Mind,HarperCollins
Publishers, paperback, New York, 1993
Stanslav Grof, The Adventure of Self-Discovery: Dimensions of Consciousness and New Perspectives in Psychotherapy and
Inner Exploration, State University of New York Press, New York, 1993
Lyall Watson, Supernature, Hodder & Soughton Limited, Kent, 1973

the theory (or even beletry)  that is inspirational to my imagination on my project:

Zigmund Bauman, Tekuta Modernost (”The Liquid Modernity”), Mlada Fronta, Praha, 2002
Michal Ajayz, Světelný prales. Úsvěty o vidění (Luminorous Forest: Essays on Visual Perception), ORKHYMENX, Praha, 2003
Michal Ajayz, Drzce Mesto (The Second City), Petrov, Praha, 2005

links to related authors or projects:

Interspecies, http://www.interspecies.com/
Dale Clifford, http://architecture.arizona.edu/people.asp?topic=faculty&peopletid=4
The Very Many, http://www.verymany.net/
Olafur Eliasson, http://www.olafureliasson.net/
Reconstructivism, http://www.reconstructivism.net/
Anthony Dunne and Fiona Raby, Herzian Tales, http://www.dunneandraby.co.uk/
CHORA, http://www.chora.org/chora%20biennale
The world Soundscape Project, http://www.sfu.ca/~tmux/wsp.html
etc.
Body Space Data, www.bodyspacedata.net
Usman Haque, http://www.haque.co.uk/
etc.

information exchange:

Nyx, www.nyx.cz (nyx is a closed system of discussion forums for the people engaged in science and art to cooperate,
discuss and develop their projects)

encyclopedia and dictionaries:

Slovinck czich slov,http://slovnik-czich-slov.slovakz
Web Dictionary of Cybernetics and Systems, htt://pcep<ct>1 sinking/ASC/indexASC.html
Multilingual Dictionary on http://www.seznam.cz
Multilingual Dictionary on http://webvolny.cz/najdito/slovin
Nanoword, http://www.nanoword.net/

technical, software and material sources:

http://theverymany.blogspot.com/,…etc.

etc.
010/thanks

Per Kartvedt (architect, AHO), Birger Sevaldson (interior architect, AHO), Christian Herman- sen (architect, AHO), Mirza Mujezinovic (urbanist, AHO), Steinar Killi (material technology, AHO), Carl Nilssen-Love (physical modeling, student AHO), Anne Mellbye (visual communicat-ion, AHO), Jaran Rudi (notam, Norsk nettverk for Teknologi, Akustikk og Musikk), Henrik Sundt (notam, Norsk nettverk for Teknologi, Akustikk og Musikk), Jens Jørgen Dammerud, (sound technology, Dept. of Architecture & Civil Eng, University of Bath), Petr Svárovský (new media artist, Oslo Art Academy), Mette Ramsgard Thomsen (architect experimenting with Shape Memory Alloys, Centre for Information Technology and Architecture, Royal Academy of Fine Arts, Copenhagen, School of Architecture), Pavel Žikovský (electrical ingeniering, DAMU, Theater Art Academy, Prague), Øyvind Andreassen (colour decomposition, Dept. of Physics, UiO)and many others!

Marie Davidová