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## The Sound Labyrinth Project: Catalyst For Creative Activity

By *Catharina Dyrssen, Anders Hultqvist, Staffan Mossenmark, Per Sjösten, Björn Hellström*

### Abstract

Two large sound installations, developed by transdisciplinary sound art and research group Urban Sound Institute, created a meeting place for one year of artistic and pedagogic activity in a Swedish regional museum. The project involved a historic sound archive, a string quartet, a local radio station, pedagogic workshops, several schools, children's groups and musical education programs. The installations created a complexity of interior spaces, and acted as huge musical instruments to be 'played' by professional musicians, dancers and visitors. Through advanced computer programming and careful composition, modeling and distribution of sounds as words, narratives, music, space, bodily experiences and memory, the Sound Labyrinth allowed for great variations, durability over time, and different forms of interaction. The article describes the project, and discusses the exhibition as a platform for collective, multiple interaction; as an expanded musical-architectonic composition; and as a contribution to artistic research methodologies relevant for sound spaces within so-called sound-making disciplines.

### Introduction

In artistic research, projective experiments and on-site modelling activities play an important role in the investigation of alternative possibilities, develop methods and raise topics for theoretical discussion (Dyrssen 2010). The Sound Labyrinth Project formed a full-scale, explorative and interactive sound-art experiment, conducted by Urban Sound Institute. It was part of the research programme *Into Noise. Art based musical, architectonic and acoustic investigations in contemporary urban space*, funded by the Swedish Research Council, Area of Artistic Research, 2008-10.

This article will discuss The Sound Labyrinth project from three different perspectives: 1. The sound exhibition as a platform for collective, *multiple interaction*, drawing upon sound as a cultural, inter-subjective, spatially conditioned, communicative, multiple and aesthetic activity; 2. The Sound Labyrinth as a *composition*, with reference to its musical-architectonic-bodily-spatial effects; 3. The combination of themes 1 and 2, which raises questions as to how full-scale artistic experiments can contribute to research *methods* relevant for sound studies and within so-called sound-making disciplines.

Urban Sound Institute, USIT, started in 2004. It is a Swedish interdisciplinary sound-art and research group for inquiry into urban sound qualities and sonic space, mainly performed through art and design projects, technical development and theoretical artistic research reflection. USIT combines academic and professional practice and consists of two architects/sound designers with musical backgrounds (Catharina Dyrssen, Björn Hellström), two composers/sound artists (Anders Hultqvist, Staffan Mossenmark), and one acoustician/sound designer/music producer (Per Sjösten).

USIT has conducted artistic research through several one-to-one sound art projects before, in Sweden as well as internationally, and had a number of sound design commissions. As part of continuous explorative work, we have created several heterogeneous, multi-focused and multi-layered fluctuating sonic spaces, both in open urban areas and in semi-enclosed conditions, for instance a large indoor-outdoor sound installation at the Swedish Cultural Centre in Paris and permanent sound design projects in the Gallerian shopping mall in central Stockholm and at Arlanda Airport. The team has worked together long enough to both trust each others competences and to risk stepping crosswise into our different knowledge domains, allowing us to confront and meet in

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### ISSUE 2 PHOTO CREDIT

Graham Gussin; *I Love It, In Space there Are No Limits, I Love It.*; 2001; Photo courtesy of the artist.

*A series of six wall drawings using sound as source material. Sound is put through a software program that translates it into image, producing a kind of audio map or territory, this is then projected onto a given wall and traced, the background for these pieces is an oil based blue ink. The sounds used are words spoken by participants in various pornographic films, the brief sentences becoming the title of the work.*

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creative processes. In terms of research, the design commissions raise questions on the effects and qualities of sound space and, not least, generate knowledge on relevant research methods related to sound space conditions and the sonic understanding of architectural and urban spaces (Dyrssen 2007a; Hellström 2009).

First perspective: multiple interaction

When the Murberget Regional Museum in Härnösand, Northern Sweden, invited USIT to do an artistic sound project with pedagogic possibilities, it was the largest venture ever for the museum. The project was co-funded by the Future Art Foundation (Framtidens Kultur), the Swedish Art Council (Kulturrådet) and the Regional Development Office of Västernorrland. For the museum the project presented a new way of working with exhibitions, with a focus on presenting activity rather than on displaying art objects. At this point there was only a general idea that the exhibition should deal with sound. For USIT, the project unfolded as a full scale modeling situation that contained both interesting artistic and research dimensions, with several challenges in terms of interaction with various users and events. The exhibition lasted one year, from January 2009-January 2010, and became a sound laboratory, The Sound Labyrinth, for both the museum and for USIT.

The museum has as one of its main ambitions the provision of an accessible arena for creative collaboration and learning, especially addressing children and young people, and aims to overcome discrimination against people with disabilities. The project was to allow for pedagogical work that could explore aesthetic processes as well as cultural heritage. As well as its pedagogic objectives, there were five main preconditions to be integrated into the project: 1. The use of the museum's extensive sound archive with old recordings of regional tales, music etc; 2. Collaboration with a highly qualified string quartet in residence, the *Weber Quartet*; 3. The provision of interactive access for schools: a school for children and young adults with hearing disabilities, a school for children with mental disability and several other schools on different levels; 4. Collaboration with the advanced level music and composition school *Kapellsberg* with its specialisation on folk music and electroacoustic music; 5. Interaction with the regional radio and a professional dance group, *Norrdans*.

The museum educators were highly experienced but had never really dealt with sound. Operating with very open minds and taking advantage of an efficient regional network, they started to explore the pedagogical potentials: Could the local radio be used to collect people's sound memories? Could the music education at Kapellsberg, with its electroacoustic studio, use the exhibition? How could summer outdoor activities be attached to the project? Could the aesthetic program of the secondary school expand their domain of visual art to include sound? How could the access programme of the museum make use of the project, e.g. in its inclusive work with people with disabilities?

From USIT's perspective, we were also especially interested in how, with the use of advanced processing, sound space can grow out of shifts between spoken language, music, noise, spatial resonance and the bodily sensation of sound.

The Museum provided two modern exhibition halls with wooden floors, white walls, high ceilings, and natural lighting from roof lanterns. The halls were interconnected by a large opening and were of large dimension (14x21 m and 14x11,5 m) such as to challenge us to construct architecture that could provide total bodily and sensual experiences in order to explore the transient qualities of sound. Responding to this challenge generated the ideas of the hanging labyrinth and the vibrating terrace, described further below.

As our thinking evolved we held a workshop with the museum staff, artists and educators from the region, students and teachers of the music school and other collaborators, to introduce artistic ideas around sound and basic techniques, as well as to play with the materialities of sound and sequences of sound spaces. The workshop had three interlinked exercise themes: 1. *On Hearing, Recording Techniques and Editing*, led by acoustician/sound designer Per Sjösten, whereby sound material was recorded from the environment, mixed, computer edited and burnt on CDs; 2. *Materiality and Performance*, where sound artist Staffan Mossenmark conducted the groups in creating collective sound art works, where physical objects found in the museum were tested for their sound qualities and composed into brief, spatially staged performances; 3. *Sound Spaces*, in which architect Catharina Dyrssen led the groups in restaging ideas from the two other exercises by means of spatial sound sequences throughout the museum, using their edited material in portable boosters and a choice of the physical objects from the previous performance.

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SOUND WORKSHOPS WITH MUSICIANS, PEDAGOGUES AND CHILDREN.

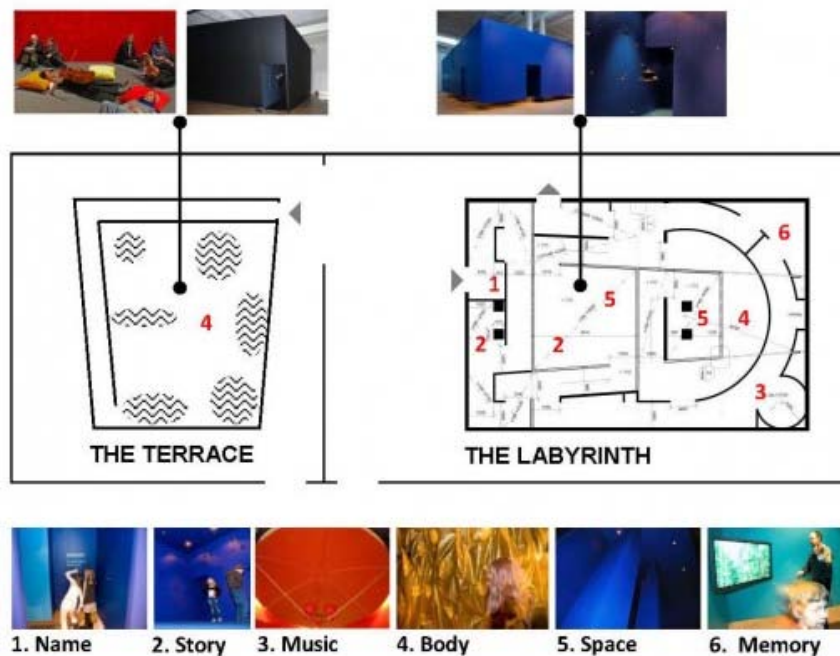
The workshop was playful and fast-moving, and the participants were relieved from any anxieties with respect to sound art and its possible challenges and difficulties. A platform for mutual understanding and trust was established, upon which the artistic qualities of the project could be further developed. The musical-architectural installation concept initiated by Urban Sound Institute had at first been met with some skepticism ("a giant, hanging box with sounds?!"), but it was now fully accepted by the groups involved, and USIT could take the ideas into realisation, with an enhanced awareness of the interaction potentials within the work.

This also meant that the project expanded from conventional practices of art installation as autonomous aesthetic object. Instead, the pedagogical perspectives opened towards a collective, explorative situation that naturally included collaborators for which the composition worked as a catalyst, a trigger, through its artistic frame and form. The Sound Labyrinth would simultaneously be sound space, sound art object, musical instrument and event space. (fig. 1)

Second perspective: musical-architectonic composition

In order to be an effective tool for pedagogic and interactive use, we argued that the installation must have its own artistic coherence and impact. It should not mimic an everyday environment, but stage a modelled space. Neither was it to be an 'experiment workshop' as found in some science museums as for example in the famous Cité de Sciences in Paris, where one can try out a range of devices. The installation, it was believed, should make clear to visitors that the exhibition was not a matter of displayed objects but a space filled with sounds, that could produce hidden interiors, sites of 'architecture' or 'fictional landscapes' to be explored through the aesthetic experience of sound. They should also signal expanded opportunities for interaction, where the user could add, change and affect the conditions of the work. It was our aspiration therefore, that the installation should seek to exceed 'normal' categories of the art object, transgressing borders between art and architecture and thereby make a drastic spatial intervention into the large halls.

In the larger of the two halls we constructed a 13x9x4 meter giant blue box, the *Labyrinth*, containing a maze which was suspended so that it seemed to be floating in space about 40 cm above the floor. In the other hall we built a 9x8x4 meter tilted black box, *The Terrace*, an enclosure with the floor vibrating in different frequencies and bass tones forming multi-rhythmic patterns. The overall idea was that *The Labyrinth* would be a transient sound space for visitors to be immersed in, but also a huge sound sculpture to listen to, and a musical instrument with which to play and interact. In contrast, *The Terrace* would mainly generate a bodily sensation of sound and provide a space for play and relaxing meditation. Each object was of a size such that they filled the exhibition halls, somewhat like the big green apple in the famous Magritte painting *La chambre d'écoute*, and they were calibrated to form one combined sonic-architectural composition.



THE TWO EXHIBITION SPACES: TO THE LEFT, *THE TERRACE* WITH ITS VIBRATING ZONES IN THE FLOOR. TO THE RIGHT, *THE LABYRINTH* WITH THE MAIN THEME LOCATIONS: NAME (1), STORY (2), MUSIC (3), BODY (4), SPACE (5), AND MEMORY (6).

### The labyrinth

For the sound and space composition, we chose six main themes: *Name*, *Story*, *Music*, *Body*, *Space* and *Memory*. These themes emerged from the idea of realising sounding material that ranged from the inaudible but physically tangible properties of vibration to the memory of a sonic event. Our conceptual trajectory passed from proto-sounds of the voice through language articulation and syntax and on to complex musical structures before reaching the further limit of silence and memory.

These themes were given different architectural localities in *The Labyrinth*, but were also distributed, mutated and blended in different constellations. For the exhibition opening Anders Hultqvist presented a composition for string quartet, based on the six themes, and dedicated to the Weber Quartet. The composition was presented as a regular concert performance but it was also presented around, within and together with *The Labyrinth*, using the installation in different ways: as an ensemble instrument; sometimes imitating *The Labyrinth's* own sounds; sometimes playing from scores; sometimes improvising, partly guiding the audience through the installation's different interior places.

At the entry to *The Labyrinth* was the *Name* station, where visitors said their name in a microphone. This started a sonic sequence through a series of loudspeakers where the sound was brought back in processed form, gradually diminishing and merging with other newcomers' names. Moving further inside there was an alcove with a telephone in which you could tell a *Story*.



THE ALCOVE WITH A TELEPHONE TO TELL A STORY WHICH WILL REAPPEAR IN THE WHISPERING CHAMBER.

Fragments of the story could be heard as you continued through the passage but also reappeared later in the 'Whispering Chamber' with its 40 hanging loudspeakers. Here the story was mixed with other stories and old tales from the museum's archive as well as with fragments of speech and vocal sounds that dissolved language and emphasised its musical qualities. A 'marinade' of environmental sounds produced from four larger loudspeakers in the upper corners of the chamber was added in order to soften the acoustic atmosphere and create an atmosphere of secretiveness. The story themes in the Whispering Chamber could be remodelled in workshops, e.g. in terms of content (through school workshops, old stories, themes of love, violence etc) or according to sound qualities (different language characteristics, recomposed musical material, close-up recordings of weak sound).



THE WHISPERING CHAMBER IN THE LABYRINTH, WITH FRAGMENTS OF STORIES, SPEECH AND MUSICAL SOUNDS.

We did not want to limit the use of the museum's archive material to a documentary mode employing the material as illustrations of a regional culture or what Rick Altman and James Lastra refer to within sound editing as representations of sounds, presenting an expanded but still causal relationship between "original" and "postproduction" (Altman 1992, p.40 Lastra 1992, p.70). Instead, we wished to enhance the musical qualities (intonations of dialects etc.), and give a special character to the spatial setting. Combining this with the stories, and encouraging other experiments by the users with language, sound and space.

Further on within the installation, name and story sounds gradually mutated into the Music theme. The core location for this was *The Music Rotunda*, a small red alcove for which we composed a mixture of musical sounds, fragments of the string quartet, some non-specific noise and other elements from *The Whispering Chamber* adapted for this listening space. By using some of the existing sounds from other locations in *The Labyrinth*, this spot could be used in a meta-compositional sense of 'stitching' the different soundscapes of *The Labyrinth* together. This turned out to be crucial when we wanted to calibrate the entire construction into becoming discernable as one sounding object.



THE MUSIC ROTUNDA WITH ITS PARABOLIC CEILING.

The *Body* theme was accentuated in a narrow passage where the visitor squeezed through curtains of golden textiles with a soft, brittle sound quality. This material could be alternated with other materials such as wooden sticks, metal chains, paper etc for different aural/bodily experiments.

The *Space* theme had its focus at the very heart of *The Labyrinth*, in a dark, small but six meters high enclosure, *The Cathedral*, which you reached through a narrow, acoustically dampened passage. This room had hardly any sonic connection with the rest of the installation, but was supplied with faint sounds suggestive of a large forest. The use of an artificial reverberation in this space generated a sense of expanded scale and provided an impression of distant echo to the user's voice.

Memory was introduced as a theme in a small corner space with a DVD screen that showed an almost silent film requiring the viewer's imagination to create the sounds that were otherwise only 'seen'. This screen was later also used for experiments with sound and image in an exploration of what different sounds look like. At one point of intersection in *The Labyrinth*, four speakers marked different directions, suggesting experiences of balance, but also creating a sonic connection to the soundscape of the adjacent terrace.



A GLIMPSE OF THE SPACE OF MEMORY WITH ITS IMAGE SCREEN.

In the conceptual stage, the abnormal size of the big blue box was recognised as a communicative device, although it was difficult to categorise this element as art work or architecture, as musical instrument or interactive arena. This triggered creative responses: How could it be used and experienced? What could be learnt? With the 40 cm gap between it and the floor, children could crawl under. Acoustically it allowed for sounds to leak between inside and outside as well as between different passages within *The Labyrinth*, adding to its maze-like and spatially distributed character. In order to achieve a richly blended sound throughout the work with smooth spatial transitions we had to work with many loudspeakers – some 80 speakers of different sizes, types and positions were installed. We also used the architectural shapes, like rounded walls, openings and closures, different surface structures, and diffusers to form the qualities of the sonic spaces, not as added devices but integrated into the architectural form. The processing was mastered through an advanced computer system. This mode of dealing with sound/noise qualities and the totality of the work was basically a form of musical-architecture. Anders Hultqvist, composer, described this as 'conducting three different symphony orchestras at the same time'.



SKETCH FOR SOUND LAYOUT AND THEMATIC CONNECTIONS IN THE LABYRINTH.





TRIANGULAR DIFFRACTORS ON WALLS, HELP SPREADING AND MERGING SOUNDS.

The fluctuation between solitary object and interactive arena was an artistic challenge in itself. All sounds and interactive mechanisms in *The Labyrinth* were carefully composed, calibrated and distributed to correspond with one another, with the architectural framing and the visitors' movements, in order to create at the same time diversity, transience and coherence, a random and changing whole, and a large, self-contained object generating sound or sometimes acting as a musical instrument and ensemble co-player to visiting improvisers.

This overall coherence, we argued, would generate resistance to entropy, avoiding resemblance to the unfocussed soundscape of an everyday outdoor urban environment and generating the works own identity and quality as art. The presence and actions of visitors could temporarily change the composition and influence the character of the installations. It was opened in this way for diverse individual interpretations, but retained its own coherent identity as a work and when left to its own *The Labyrinth* resumed its original, shifting and 'humming' form.

#### The vibrating terrace

*The Terrace* was located in the second exhibition space, a closed black box with one side leaning outwards, and a simple space inside that encouraged the user to play, experiment or simply to rest. It formed a contrasting co-player to *The Labyrinth*, emphasising the bodily aspects of acoustic vibration. *The Terrace* had no roof, but with its high walls and an entrance through a long, enclosed ramp, it was visually separated from the other elements of the installation. Inside, the leaning wall was covered by a red long-pile rug. The floor was constructed with a pattern of wooden plates organised according to the Fibonacci sequence. The plates were separated from one another and placed on rubber dampers to free them from the supporting construction beams, so that they could vibrate at different frequencies. Some additional base tones were needed to give the space a rounded and embedded character. A loudspeaker connected to the computer system of *The Labyrinth*, emitted occasional, discreet sounds: *The Labyrinth* sounding both at distance (through room acoustics) and, in fragments, more closely gave the effect of a shifting contact or dialogues with the other element in the installation. By choosing a place to sit or lie down one could experience polyrhythmic sensations, or execute different experiments such as using the bowls of water that were deployed so as to create

pattern phenomena. With the addition of pillows for sitting on the space was often used for story-telling, reading and music.



SECOND OPENING, WITH THE WEBER QUARTET PLAYING IN THE VIBRATING TERRACE.

*The Terrace* was the subject of a separate opening event some three months after the inauguration of *The Labyrinth*, which took place outdoors in front of the museum. The dance group Norrdans and the Weber Quartet performed as part of this, and Staffan Mossenmark composed a piece of sound art specifically for the occasion. The piece, entitled 'Good vibrations', was designed for soil compactors (Dynamac) and the museum staff acted as drivers for these, while the Weber Quartet played on specially constructed metal instruments with contact microphones. Most of the audience lay down on mats on the ground so that they could physically feel the vibrations and listen to what proved to be a very loud and noisy concert, conducted by the composer. After this the audience moved indoors to experience the vibrating floor inside *The Terrace*, a very different environment with soft and gentle vibrations.





SECOND OPENING, WITH DYNAPAC MACHINES CONCERT AND STEEL "STRING" INSTRUMENTS PLAYED BY THE WEBER QUARTET.

Third perspective: The model as an open research system: outcomes of perspectives 1 and 2

To be able to offer a state of sonic immersion, the installation needed considerable size and coherence. Often, when sound art is displayed at exhibitions, several different works are placed as objects in the same room, rivalling each other for the available acoustic space, as if curators have not considered their sonic interaction. Unfortunately, this is a common sign of a contemporary culture, impregnated by visual thinking, and often characterised by auditory ignorance (Levin 1993). We wished to enhance this immersion in the work as the construction of a collective space, an alternative to the highly individualised listening spaces that characterise much of contemporary music consumption.

During the year that the exhibition was running, we had regular contact with the museum staff, and also conducted follow up interviews. Both *The Labyrinth* and *The Terrace* were used consistently by visitors to the space and taken on with great affection and animated by a lot of user activity. Children quickly learnt tricks for taking advantage of the installation's structure and would often run quickly into *The Whispering Chamber* after they had contributed to the soundscape and so seek out their own additions to the work. This active affection for the work and the sometimes rough interaction by the users, meant that the 40 loudspeakers hanging from the ceiling in the chamber had to be repaired on several occasions.

A number of artists (Norrdans, The Weber Quartet, other dancers and musicians) used both *The Terrace* and *The Labyrinth* for performances, and *The Labyrinth* sounds were transformed completely for a period when the electroacoustic classes at the Kapellsberg school used it for their own compositions.

Over time, the museum educators invented more experiments for groups of younger and older children to promote interaction with the work. When interviewed, however, the museum educators said that they would have liked more training and interaction with us to enhance the workshop, and in order to set up a strong programme of activity from the very beginning of the show.



SOUND WORKSHOPS WITH MUSICIANS, PEDAGOGUES AND CHILDREN.

*The Terrace* was also much used by children, for rest, for experimentation sessions and for play. During one of our visits, some six- or seven-year-olds proudly demonstrated for us the various vibrating areas within the installation. In order to achieve the required bodily scale and adequate frequency range, and cope with the rather thick floor plates, we added a few vibrators, placed underneath. This was in some sense a form of cheating and a question of compromising with respect to the original idea of the work, but it also proved a pragmatic way to render an effect strong enough to give a bodily sensation, as evidenced by the children's engagement.

The exhibition, being both an installation and a laboratory, expanded beyond the museum location: New stories could be added to *The Whispering Chamber* and the museum's archive; additional sounding objects and materials could be added to the spaces; boosters could be used as new, mobile sound sources; experiments and games could be invented; and new images could be developed. The narrow space around *The Labyrinth* was used for children's drawings, projections etc, as close-up comments and reflections of activity. Every week there were several events connected to *The Labyrinth*, and it inspired a summer sound art exhibition at other locations in the museum surroundings.

The project also generated experiments and sound activities across the city. The local radio station had regular broadcasts of favourite sounds as identified by listeners. Films were made by students from the local art school and based upon drawings of sound made by the younger children. The school for electroacoustic music could make new works to try out in *The Labyrinth* and then realise these in other situations. Educators could make experiments together with the children groups' exercises that could then be taken out into the city's spaces or back into the schools. *The Labyrinth* and *The Terrace* became agents, active in making things happen, and communicating with their co-players (Latour 2005, p.46-55).

When the exhibition closed in January 2010, the loudspeakers were dismantled but *The Labyrinth* was kept for another half year – some new doorways were made, all blue wall surfaces were painted white, and so *The Labyrinth* became a special space for the regular spring art exhibition.

For us, as artists, the interactive aspect, for both children and other artists, was a great learning experience that also challenged our ability to work in a transdisciplinary mode with our strong focus on composition, as described above. In turn, this generated new insights into musical-architectonic qualities and aspects of sound space, insights that we could integrate with conclusions arrived at on the basis of other experimental projects.

On creating sound spaces

A key characteristic of sonic spaces is that they are multilayered, transient and highly dependent on sociocultural settings and conditions (e.g. see Amphoux 1993; Augoyard 2005; Thibaud 2003). A shopping mall sound environment may be constantly shifting but diffuse. A clothing store with rock music may use sound at such high levels that it becomes a form of expressive stage design. A hotel lobby might use sound at low levels but achieve extreme overall coherence, and in this way set a specific atmosphere, using sound as an element of interior design. However, an art work is more directly communicative at an intersubjective level than most acoustic design. The artwork's enveloping power can be much stronger, and, arguably, the potential of acoustic design for generating narrative and playful interaction can be more fully realised within an artwork.

If singular sound objects are underscored as independent art works, they may impede possibilities to create sonic space or to develop architectural, spatial qualities such as the capacity of sound space to expand and contract; to gradually change focus and directions; to modulate foreground and background (or figure-ground formations); to expose and mask different layers; and to demonstrate trajectories and sequences. This spatial approach not only challenges compositional thinking when working with musical-architectonic projects, but also reveals additional, fascinating aspects of architecture. The conventional understanding of aural architecture is, still, as built construction adapted for sound conditions (e.g. see Blesser and Salter 2007, Kleiner 2008).

What we wanted to explore in *The Sound Labyrinth* project was more in accordance with Brandon LaBelle's idea of "[a]ctivating space through implementing and inserting auditory features" (2008 p.167). We sought to realise a musical-architectonic composition as a multilayered formation, with different reference points and communicative qualities, constantly in flux, but stable. This was conceived of as being different from the diffuse qualities of shopping centres and outdoor streetscapes, where sounds may be constantly shifting but the impression is a more or less constant, or where the sounds come from an indeterminate everywhere (ubiquity effects) or from unspecified sources (acousmatic effects) (Amphoux 1993, Augoyard 2005, Hellström, 2003, 2009). Somewhat paradoxically, we found that in order to create heterogeneity within a limited space, a strong coherence and careful calibration of all elements was required in building this work of art.

The visual limitations of *The Labyrinth* interior could enhance qualities of sound space: when an individual's visual perspective is inhibited they may, for instance, become more conscious of sounds, and in particular acoustic space and directionality, attending more to how sonic objects can merge, leak, change, expand, and exceed physical borders. The conventional interplay between visual and auditory aspects of space (the visual as discriminating, the auditory as inclusive etc.) was challenged here so as to create more complex relations, and the visual became an important investigative tool in the composition of the musical-architectonic space.

As well as being an art/musical/architectural object, the installation was also a working model, constituting a sound laboratory situation as part of the exhibition. Even if *The Labyrinth* and *The Terrace* were formed from within an artistic perspective, certain features made them operational in the laboratory sense also. Firstly, as indicated above, the size of the work (exceeding the 'normal' relation between art object and its surrounding exhibition space) meant that the visitors could simply not get a controlling view of the objects on display. Secondly, the installation had an open, but composed musical form and this operated as the basis for its total acoustic space. Here the two interiors had different roles. While *The Labyrinth* was primarily an active musical instrument and sound art sculpture, *The Terrace* provided an architectural space, with bodily related sound qualities, that provided a context for other activities.

*The Sound Labyrinth* as a laboratory also enabled activities to be realised outside the museum, across the city and the wider region. Both the installations as such, and the extensions in the form of activities in the region, can be understood as exponents of *acoustic territoriality*, temporary appropriations of sound spaces or of spaces through the expressive aspects of sound, as discussed by Jacob Kreutzfeldt (2009, p.129-147). But it could also be seen as underscoring the *heterotopic* aspect of sound space, shifting both focus points and references, connecting the ascribed meanings of sounds to other places (Dyrsen 2007b). From the artists' perspective, this *heterotopic* effect was staged here as part of the project in its extended sense.

The modeling situation

The project at the Murberget museum originated from within the long experience of artistic practice and research activity by the USIT members, and was built upon the conclusions drawn from a series of earlier investigative sound art and audio design projects, as well as educational work. The Murberget project provided an opportunity to examine a much more diverse spectrum of interaction by different users (educators, collaborating artists, visitors etc.), and to consider this over a long duration with the project, lasting for a full year.

Through these earlier projects USIT had gradually developed a kind of open handbook for working with design in urban sound spaces, which identified six basic imperatives to be considered: 1. To *connect* added sound material to the surrounding sound environment; 2. To create a site specific *basis* of sound, as main sound characteristics or ambience/atmosphere; 3. To avoid an excess of coherence or inclusive ambience and allow for *heterogeneity* as part of contemporary urban conditions; 4. To establish a number of *reference points* or acoustic accents for orientation and articulation of space; 5. To carefully *balance* qualities of ambience/atmosphere with accents and narrative or reference aspects of sound; 6. To consider variations in *relationships* between time-space-actors-activities on site. This methodology was now challenged.

There are three criteria that can be considered as basic to the investigation of aural architectural contexts when involved in artistic research, or in design research training sessions with students: *key points, links and relationships*. These headings are useful both for constructing a mental map of a situation and as tools for experimental staging.

- *Key points* are focus locations but may also identify trigger points containing special qualities to investigate (What is important? Where is it located in the model situation?).
- *Links* discloses connections between key points or contextual conditions (what and where does this connect to?).
- *Relationships* is the heading under which we concentrate on the understanding of links as quality or activity (what does this connection mean, or do?).

To the triad of key points, links and relationships can be added actors/agents and choices of representation of mapping and modelling actions. The aim is to compose both a flexible working model and a route map for the research process with its aspects of discovery, staging, analysis, play and feedback (Dyrssen 2010).

As this mode of thinking-acting is fundamentally spatial, it is also applicable to forming sound space, especially in complex interactive practices like music-sound-architecture. The explorative process can be allowed to remain in constant tension between the opening up of the modelling situation towards the unknown, and the definition or 'locking down' of these situations into well-defined and clearly delimited configurations, conclusions and solutions. In *The Sound Labyrinth* process we took decisions step by step, and through our transdisciplinary experiments, reflection and discussions, we added with specific developments and enhancements to the work informed by each competence domain.

The six themes were given specific locations within the work as key points, not completely stable or completely defined ones, but locations that manifested open, fluctuating coherence and heterogeneity. In this way we could emphasise relationships between parts and underline links in the composition that might otherwise go unnoticed. While the material and bodily links were extended through labyrinthine movements, the musical-acoustic links were made more direct, through computer programming, loudspeaker placing, audio leakage and masking effects. If they appeared initially as too obvious or dominating, the links were calibrated to the desired relational quality. In this way there was a built-in tension between the spatial relations in their aural and their visual sense that was modulated and coordinated within the compositional process.

Whereas our earlier methodology for design projects was rather programmatic, *The Sound Labyrinth* project opened up a more questioning, inquiring and complex approach. This project has played an important role in the *Into Noise* research program in urban contexts. Rapid technological development, increased mobility, an immense use of music in society and projections of individual spaces into public places have developed new aesthetic frameworks for sound and space. The general 'open-your-ears' imperative of John Cage, Max Neuhaus and other artists from the modern era needs to be revised. Although the sound environment is often described as overloaded and ubiquitous, the contemporary culture of postproduction affects not only how we produce sounds but also how we can comprehend, and deal with the sonic complexities of the environment. Artistic approaches can generate more relevant answers and questions as to how sounds and sound design can operate in society today.

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Bio

Urban Sound Institute (USIT), started in 2004 and is a Swedish interdisciplinary sound-research group exploring urban sound qualities and sonic space through art and design projects, technical development, academic teaching and theory. Members: Catharina Dyrssen, (architect/urban designer and musicologist, PhD, professor at Chalmers University of Technology, Gothenburg); Björn Hellström (architect/sound designer, PhD, professor at the Royal College of Arts, Crafts and Design, Stockholm); Anders Hultqvist (composer and sound artist, associated professor at the Academy of Music and Drama, University of Gothenburg); Staffan Mossenmark (composer and performance sound artist, associate professor at the same Academy); Per Sjösten (acoustic/music producer/sound designer, PhD, Sound Processing AB). Research programs Transmission (2005-06) and Into Noise (2008-10), including the Sound Labyrinth project, were funded by the Swedish Research Council, Area of Artistic Research.

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