EUROPEAN ACOUSTIC HERITAGE

Editors Meri Kytö, Nicolas Remy & Heikki Uimonen

TAMK
TAMPERE UNIVERSITY
OF APPLIED SCIENCES

cresson

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Contents

1.

Introduction to the project

Since the early 1970s, alongside growing environmental consciousness, various academic disciplines have examined everyday sounds as a field of study. The quantitative noise measurements carried out by engineers; the doctors and neurophysiologists trying to comprehend how the ear and brain work together; the psychologists and sociologists who have explored the perception of noises and sounds; the anthropologists who have undertaken in-situ research to better understand how human beings behave in relation to sounds; the architects who have faced noise regulations in their work; and musicians and composers who have been interested in exploring and using environmental sounds as material in their compositions.

After 40 years of academic research, discoveries, technical advances, experimentation, and education programs, nobody will deny the fact that sounds are part of our everyday life. They are also deep expressions of our culture: the audible traces of our ways of thinking and living. This is something people working with sound in Europe realize every time they compare their works or their actions at this scale. Sounds are a part of our cultural heritage and deserve to be studied, according to UNESCO, even as "intangible cultural heritage". Sounds stand for practices, representations,

expressions, knowledge, skills – as well as the associated instruments, objects, artefacts and cultural spaces – that communities, groups and, in some cases, individuals recognize as parts of their cultural heritage. The process of globalization and social transformation favour the trend of change, integration and assimilation of intangible cultural heritage.

Within the intangible forms of culture, usually not preserved in tangible media, there is an audible culture. It is composed of the sounds that form our memories, remind us of the atmosphere of past moments and enable us to "travel" to innovative contemporary places. This enhances the value of an acoustic space and audible environment within the urban context. Paying attention to this aspect of urbanism helps in attaching new qualities to our living spaces. Defining the audible environment, or soundscape, as a part of cultural heritage, means, besides the sustainable quality being an important part of it, learning to listen better. Related to this objective, it is also important to educate future listeners by helping children be aware of soundscapes and to know the audible dimensions of their environment.

This is a book about European acoustic heritage. The authors and editors are presenting ways to define, describe, and create European acoustic heritage, as well as to preserve and appreciate it in the context of the different cultures of Europe, and during different times. The study at hand proposes suggestions and answers to the above mentioned task in the following ways:

• *In part 2:* An opportunity for us to share the main research and methodological results of previous projects carried out by each partner.

• *In part 3:* Discussion of the different aspects of acoustic heritage, both technical, archival and conceptual.

• *In part 4:* A full description of the online tools that have been developed with the aim to practically manage acoustic heritage in Europe.

• *In part 5:* A good practices guide for any interested user – institutions, individuals, collective – who are more than welcome to participate in this project.

This challenging task has been given to us by our project coordinator Axencia Galega das Industrias Culturais (AGADIC) and it will be elaborated on by the following European partners:

• The Isle of San Simón Foundation (Fundación Illa de San Simón), aiming to preserve and promote values and activities of cultural and environmental heritage, including education and cultural exhibitions (www.fundacionilladesansimon.org).

• Tampere University of Applied Sciences (Tampereen ammattikorkeakoulu, TAMK), with a wide and important knowledge on acoustic environments throughout Europe collected via several research projects (www.tamk.fi).

• The Centre for Research on Sonic Space & Urban Environment (Centre de Recherche sur l'Espace Sonore et l'environnement urbain - CRESSON) at the National Superior School of Architecture of Grenoble (ENSAG), with a long research background and publications about the audible dimension of architecture and urban space with multi-disciplinary methods (www.cresson.archi.fr)

• Phonogrammarchiv the Austrian Audiovisual Research Archive (Phonogrammarchiv, the Austrian Academy of Sciences, PHA-ÖAW), with a valuable sound recordings archive and extensive documentation on the topic, including conceptual work (www.phonogrammarchiv.at).

• The multidisciplinary collective Escoitar of sound artists, composers, sound recorders and computer scientists (www.escoitar.org).

This project aims to discover and bring forth the different sound events and sound objects that make up both the real and the imaginary world and personality of places and environments as parts of common European common heritage. Through such unity in diversity, this project promotes a common cultural heritage, respecting the cultural and linguistic diversities, as proposed by the European Cultural Agenda.

Preparing for an acoustic measurements set up under the Pyramide of Louvre, Paris.

Students and staff of Cresson interviewing for a survey.

1.2

Previous activities of the partners contributing to the project

1.2.1. Cresson: Centre for Research on Sonic Space & Urban Environment at the Graduate School of Architecture in Grenoble

The Centre for research on sonic space & urban environment is a research laboratory reporting to France's Architecture and Heritage Directorate (DAPA) located at the Graduate School of Architecture in Grenoble (Ensag). In 1998, in partnership with the Architectural Methodology Study Centre (Cerma) in Nantes, it started a mixed research unit (UMR), affiliated with France's National Research Centre (CNRS): UMR 1563, Architectural and urban atmospheres.

Research carried out at the laboratory focuses on the perceptible environment, as well as architectural and urban atmospheres. Cresson advocates a qualitative approach liable to help and perhaps influence design strategies and processes. After concentrating initially on the sound space, the laboratory extended the scope of its inquiries in the 1990s to include the many dimensions of in-situ sensory perception. Our research addresses phenomena related to light, heat, smell, touch and bodily movement. The research draws on original multidisciplinary methods, which exist at the meeting point between human and social sciences, between architecture and engineering science.

The sound space was the central theme in Cresson's early years. Beginning with a multidisciplinary approach, integrating social practice, built-up space and acoustics, the laboratory developed its basic methods and concepts, such as sound effects and acoustic proxemics.

Between 1984 and 1990, Cresson set out to introduce the part played by cultural and social factors into its research on noise. It also addressed non-verbal person-to-person communication in homes and workplaces, and in language teaching in public spaces. This research developed

a methodology for dealing with the built-up environment and led to a culture of the perceptible environment. Light-related phenomena began to be addressed in 1988, from the perspective of insecurity, the aesthetics of the architectural and urban landscape, and day and night-time visual experience.

During 1991-1996 the scope of Cresson's work gradually spread to encompass other senses (smell and touch). Growing interest in the usage of and conduct in public spaces opened the way for a comprehensive theme covering urban atmospheres. A new model of intelligibility, combining built-up forms, perceived forms and represented forms, provided a way of testing new horizontal or interdisciplinary methods: commented routes, recurrent observation, comparative metrology, and multidimensional analysis for design. This period also coincided with the launch of a postgraduate (DEA) course in Architectural and Urban Atmospheres, bringing the team's various themes to a new audience and securing their dynamic and renewal. This postgraduate course was replaced, in 2004, by a Master's degree in Architecture and sensory cultures of the environment.

In 1997, the start of the CNRS-affiliated mixed research unit 1563 officially linking Cerma and Cresson was a major step forward, in both institutional and scientific terms. While pursuing their specific concerns (instrumentation and characterisation at Cerma, perception and expression at Cresson), the two teams are jointly developing a structured horizontal approach to two themes: 1) Atmospheres and architectural projects: interdisciplinary theory and methods, and 2) Architectural and urban design observed from two perspectives: tools, players and doctrines at Cerma, atmospheric concerns in design at Cresson.

To sum up, the key missions of both institutions are as follows: to contribute to a theory of architectural and urban atmospheres centred on immersive simulation, as well as an in-situ approach and project assistance; to develop interdisciplinary methods for architectural research and for integrating results in architectural practice; to coordinate architectural and urban research in France, specializing in atmospheres and developing

On a commented listening walk.

links with similar work abroad; to participate in research-oriented training through the affiliation of the Cerma and Cresson teams to the doctoral schools for which they act as laboratories; and to develop a policy of dissemination and promotion through publications, research and applications contracts, technology transfer, and continuous training, designed, in particular, for professionals using information technology

1.2.2. Escoitar.org

Escoitar.org, the meaning of which in the Galician language is "listening", emerged in 2006 as a network project the main objective of which is to promote sound and active listening, claiming sound experience as a means of knowledge, and the study of society through its sound background in the context of Aural Studies. Consisting of anthropologists, musicologists, engineers, and artists, Escoitar.org is an interdisciplinary group that is committed to the preservation of sounds related to memory, the enhancement of intangible cultural heritage, the promotion of social participation in its construction, and the study, recording and contextualization of the Galician and Spanish soundscape.

The first way to organize and present this work was the creation of a website, www.escoitar.org, which includes a virtual map as a metaphor of the links between sound and place. This map is a participative geolocated soundscape archive where everyone interested can upload and share different meaningful sounds, thereby doing a reflexive exercise on their relationship with environmental sounds. Geolocating a sound on the map is not complicated, but it involves a thoughtful process of filling out a form including details of the physical location, and, more importantly, writing down your psychological and emotional "coordinates" (description of soundscapes, relevance, personal reasons, affection, etc). The site includes, furthermore, different sections with information about more specific projects, activities and articles related with soundscape issues.

During this time Escoitar.org has been working in different projects related to this idea of sound archive, such as *Fonotopías de Galicia*, a field

*Listening to the environment
together with eyes closed.*

On a NoTours walk.

Contact microphones ready for action.

recording project to document endangered sounds in Galicia, as well as other more specific case studies where sound plays an important role in social and cultural memory and history. In order to explore this topic, Escoitar.org has organized events like the international conference *Cartografías de la Escucha* (Hearing Cartographies) held in the Galician contemporary art centre (CGAC) in 2008 with the participation of Bill Fontana, Brandon LaBelle, Carmen Pardo, Jean-Paul Thibaud, John Levack Drever, Jose Luis Carles, Llorenç Barber and Peter Cusack.

Adopting an ironic and performative attitude, Escoitar.org has also offered its particular point of listening (as in point of view) on sound experience and its potential as symbolic, social or historical testimony. In a more artistic context, Escoitar.org has organized workshops in, for example, the Fine Art Schools of Pontevedra, Bilbao and Cuenca, and in several festivals in contemporary art institutions (see web). These workshops deal with issues such as the historical hegemony of view over listening, the use of sound technologies for social control (Sonic Weapons), sound as a physical phenomenon or aural cartography. Escoitar.org has exercised its own passionate, inquiring and funny "sound proselytism" to transform the way the public and, ultimately, society listens, as well as managing to spread sound maps and interest about sound. The collective has participated in international events, such as Encuentro Iberoamericano de Paisaje Sonoro, Madrid (2007 and 2008) and México (2010), Jornadas Vibra de arte sonoro y experimental, contemporary Centro de Cultura Contemporánea, Valencia, Spain, and the World Forum for Acoustic Ecology, México, to name a few.

During the last two years, Escoitar.org has been utilizing geo-locating media possibilities in order to create geolocated sound-walks. With this purpose in mind, a mobile platform application for Android, noTours, was developed. It uses GPS technology along with the Digital Compass of the phone, allowing the user to build interactive, site-specific sound-narratives. *NoTours* makes it possible to walk in spaces while experiencing an augmented acoustic reality. This project alters the perception of space by superimposing new sound layers onto a territory,

allowing the creation of parallel realities and connecting the real space with its past (the collective memory of its inhabitants). It enables the user to acoustically explore and experience the space via a mix of real sounds with binaural and ambisonic recordings that are controlled depending on the user's location and movement. *No Tours* does not constrain the sound walk to a particular path. While enjoying it you can move freely and build your own narratives as you decide your next steps. It is an immersive sound experience without limitations. (NoTours 2012.)

Escoitar.org is an example of a project entirely born on the Internet, as a result of the recent cultural transformations produced by the integration and assimilation of new technologies. It has been able to take advantage of some new key ways of producing culture that foreground immaterial labor, production of meaning, affection or knowledge, and pursuit of new ways to understand reality, compared to the mere production of objects. Its work goes beyond being an archive, as its purpose is not so much the preservation of certain sounds, which have a significant historical, acoustic or documental value, but rather to explore, understand and conserve different modes of individual and collective listening (historical, social, cultural, psychological, etc.), to demand the inclusion of the ear in epistemological questions and promote critical listening.

1.2.3. Phonogrammarchiv at Austrian Academy of Sciences

Founded in 1899, the Phonogrammarchiv (PHA-OAW) is Austria's archive for original audiovisual documents created for research purposes. The Phonogrammarchiv is conceived as a multidisciplinary research institute, its staff conducting original research characterized by the interaction of technical, methodological and content-related approaches applied to audiovisual source materials.

The archive ranks among the world's most innovative institutions in the field of digital audiovisual archiving, concentrating on affordable solutions for audio and video archiving which are both uncompromising, in terms of scientific exactness, and technically safe. These activities are

Storage system for original audio tapes in the Phonogrammarchiv.

Door of the building Liebiggasse 5 in Vienna, where the Phonogrammarchiv resides since 1927.

Surround sound recording for the EAH project at the Westbahnhof.

complemented by the intimate expertise in signal extraction of analogue data carriers, a knowledge fading elsewhere in an increasingly digitised environment.

In 2007, the Phonogrammarchiv was given special credit for its activities by being awarded UNESCO's Jikji Prize, the highest international distinction "in recognition for its outstanding contribution to the preservation and accessibility of documentary heritage as a common heritage of humanity". The archive and its staff were thus honoured alike for their work in archival science, their role in the development of digital audio and video archiving, the ongoing edition of *The Complete*

Historical Collections as well as their international commitment in archival politics.

The Phonogrammarchiv has a leading role in the re-recording of historical sound carriers, the restoration of audio and video materials and digital long-term storage, both nationally and internationally; it is one of the few multidisciplinary archives for audiovisual research documents without regional restrictions. Not least due to the untiring efforts of the Phonogrammarchiv has it been possible to ensure the preservation and accessibility of a great part of orally transmitted historical sources (also from other countries). The holdings of the Phonogrammarchiv in their entirety reflect over one hundred years of Austrian research activities carried out throughout the globe; the results of these scholarly achievements not only represent unique audiovisual documents, but also an important part of the world's cultural heritage. UNESCO has included the Historical Collections 1899–1950 as documents of universal significance in the World Register of its "Memory of the World" Programme.

Since the beginning, work in the archive has been characterized by a unique combination of features: the technical development of recording and storing audio and – recently – video materials; the creation of recording strategies and methods meeting the needs of Austrian field researchers; the archiving and annotation of the incoming material; the field research and analysis undertaken by staff members, focusing on aspects of (ethno-) musicology, ethnology, linguistics and other special topics. These projects frequently represent pioneering activities in their respective disciplines, exploring new and yet untouched contents and methodological aspects. If compared to similar archives abroad, the Phonogrammarchiv stands out thanks to its technical competence and its active involvement in further developing the methods and techniques of audiovisual archiving within a framework of international cooperation.

For the European Acoustic Heritage project, the Phonogrammarchiv has taken on three tasks: first, to digitize the earlier soundscape recordings preserved in its holdings; second, to conduct a re-study of those recordings;

and third, to devise a recording set-up and workflow for surround sound recordings under fieldwork conditions. It will also share its soundscape collections – old and new – with the project partners and provide technical solutions for a multimedia publication.

1.2.4. Tampere University of Applied Sciences with the Finnish Society for Acoustic Ecology

The Finnish partner for the European Acoustic Heritage project is TAMK (Tampere University of Applied Sciences). TAMK is an internationally oriented multidisciplinary higher education institution in the Pirkanmaa region of Finland, offering Bachelor and Master level studies for approximately 10 000 students in seven educational fields. The merger of TAMK University of Applied Sciences and PIRAMK University of Applied Sciences on the 1st of January 2010 expanded the institution to operate in four campuses, which are, in addition to the main campus in Tampere: Ikaalinen, Mänttä-Vilppula and Virrat.

The School of Art and Media of the Tampere campus offers four-year BA Degree Programmes in Media, Film and Television and Fine Arts, an MA Programme in Media Production, and an MA in Screenwriting jointly with Salford University (UK). From the 1990s onwards, the School of Art and Media has been involved in various soundscape projects, first working together with the University of Tampere, later in collaboration with the University of Turku and the University of Eastern Finland. The Finnish Society for Acoustic Ecology (FSAE), founded in 1999, has been a major collaborator in all projects, most importantly in *Sata suomalaista ääni-maisemaa* (One Hundred Finnish Soundscapes) and *Pirkanmaan ääni-maisemat* (Pirkanmaa Soundscapes). These projects are described in more detail later in this publication.

Internationally and scientifically significant research projects were carried out in collaboration with the aforementioned universities, the most notable of which were *Acoustic Environments in Change* and *Soundscapes and Cultural Sustainability* (2000 & 2009). The former was a continuation study

*Heikki Uimonen (left) and Ari Koivumäki preparing
a recording setup in Puolanka national park.
(Photo: Meri Kytö)*

Washing of rag carpets being recorded by Joonas Toivonen and Noora Vikman by the sea shore of Kaivopuisto park in Helsinki for the One Hundred Finnish Soundscapes archive. (Photo: Meri Kytö)

On a sound memory walk. Jouko Mikkonen, a participant and winner of the One Hundred Finnish Soundscapes competition, being interviewed by Helmi Järviluoma (left) and Ari Koivumäki. (Photo: Meri Kytö)

for *Five Village Soundscapes* executed by the Canadian World Soundscape Project in 1975, concentrating on the transformation of the soundscapes in five individual and diverse European villages. The publication *Acoustic Environment in Change* (Järviluoma et al. 2009) is the first long-term continuation study on soundscapes that included novel research methods developed by the Canadian and Finnish research teams. The ongoing *Soundscape and Cultural Sustainability* project concentrates on constructing local strategies for local action in order to improve the sustainable qualities of acoustic environments in different European localities.

Being a *World Forum of Acoustic Ecology* (WFAE) affiliate, the goal of the Finnish Society for Acoustic Ecology is to raise awareness concerning all sonic phenomena and promote the issues concerning cultural meanings connected to soundscapes. These include not only sounds considered pleasant or unpleasant, but also culturally and historically important sonic phenomena and environments. Special attention is paid to the uniqueness of soundscapes in natural, agricultural and urban settings.

The research on soundscape and acoustic communication concentrates on the relationships of individuals, environments, and communities constructed by sounds. From this point of view, every sound can be considered worth one's attention and research, and, conversely, no sound is considered good or bad per se. With this in mind, the Finnish Society for Acoustic Ecology has arranged several courses and seminars in order to deepen the understanding of the effects and meanings of sounds to humans, and how sounds can be listened to in different contexts.

With its roots in academia, the Finnish Society for Acoustic Ecology has actively promoted the cultural and participatory research on various soundscape related issues, advocated for domestic and international interdisciplinarity, and informed citizens on the aforementioned issues. These topics were brought to the spotlight in 2010, when the four-day international conference on acoustic ecology *Ideologies and Ethics in the Uses and Abuses of Sound*, was arranged in Koli, Finland (see Koli 2010 for the post-conference webpage).

Recently, and encouraged by the winning of the Aesthetic Act of the Year award (SES 2006), FSAE has concentrated on sound art, including its scientific contributions. The European Cultural Capital project *Turku kuuntelee* (Turku is Listening) in 2011 consisted of several projects, the intention of which was to raise the consciousness of the urban dwellers of their sonic environment with the help of sound art installations, large scale performances of the Aurajokisinfonia (*Aura River Symphony*) and sound maps (Turku kuuntelee 2011). This open Internet platform allows participation in recording and archiving everyday sonic environments in order to preserve and comment on everyday sonic environments, to be used as a tool for the inhabitants of Turku to monitor their acoustic environment and make the recordings available for future research.

In the project *European Acoustic Heritage*, TAMK's main responsibilities, with the aid of FSAE, are organizing a summer school on soundscape recording and composition, an autumn conference of international speakers and actions in the streets, coinciding with the project's travelling exhibition. TAMK is also the main publisher of this book together with Cresson.

2.

EUROPEAN ACOUSTIC HERITAGE: PREVIOUS RESEARCH

2.1
SOUNDSCAPE STUDIES

Soundscape was defined by professor and composer R. Murray Schafer in his seminal book *The Tuning of the World* (1977b) as follows: "The sonic environment. Technically any portion of the sonic environment regarded as a field of study. The term may refer to actual environments or to abstract constructions such as musical compositions and tape montages, particularly when considered as an environment". Schafer's colleague and his successor as the professor of Acoustic Communication, Barry Truax (2001), considers soundscape as the sonic environment with "emphasis on the way it is perceived and understood by the individual, or by a society". This notion is clearly indicated and further refined in his model for acoustic communication.

The mediating relationship of listener to environment through sound (Truax 2001, 12).
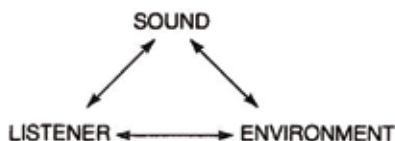
The model describes that sounds not only mediate and create relationships between listeners and environments. In also indicates that all three parameters are reciprocal: the individual listeners are not passively receiving information, but rather a part of a "dynamic system of information exchange", constructing soundscapes by their activities (Truax 2001, 11).

Schafer's and Truax's notions of soundscape were first applied to fieldwork in a larger extent when the study *Five Village Soundscapes* (Schafer 1977a) was conducted in European villages. Five villages were revisited and a sixth one added when the Acoustic Environments in Change (2009) research project studied the areas in 2000. During the research it became clear that the concept of soundscape and the model of acoustic communication relates closely to acoustemology, a term coined by the sound anthropologist Steven Feld (Järviluoma et al. 2009, 140). Acoustemology refers to the exploration of sonic sensibilities – how sound sensations, experiences and memories construct place. Where the model of acoustic communication includes the communal and personal relationships to soundscape, Feld adds another layer, and stresses that experience and memories are related to sounds and places. (Feld 1996, 97; Uimonen 2011.)

As Truax's communicational approach emphasizes, the study of soundscape should include the social and cultural context as well. This was clearly stated in the process of defining a European standard for soundscapes by the COST (2012) network, the Soundscape of European Cities and Landscape. The paradigm shift of research "involves not only physical measurements but also cooperation of human/social sciences (e.g. psychology, sociology, architecture, anthropology, medicine) to account for the diversity of soundscapes across countries and cultures". Most importantly, the environmental sounds are considered a resource instead of waste.

In terms of the European Acoustic Heritage project, two closely related concepts deserve be introduced. These are acoustic community and soundscape competence, the former referring to "any soundscape in which acoustic information plays a pervasive role in the lives of the inhabitants (no

matter how the commonality of such people is understood)" and the latter to the tacit knowledge people have of their acoustic environments (Truax 2001). In the context of *European Acoustic Heritage*, the soundscapes are interpreted, constructed and understood by individuals and communities. Accordingly, local knowledge about cultural and social meanings related to sounds should be taken into consideration in the project, especially while collecting data. In practice, this can be carried out by encouraging local people to listen to their environment, or the participating inhabitants of a certain area to evaluate and record soundscapes of their neighbourhood.

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2.2

European studies on sonic environment

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2.2.1. From 100 soundscapes to 100 soundscapes stories (TAMK)

Sata suomalaista äänimaisemaa (One Hundred Finnish Soundscapes), a three-year research programme for collecting soundscapes within the geographical borders of Finland, was carried out in 2004-2006. The research and collecting of soundscapes was planned and organized mainly by the Finnish Society for Acoustic Ecology, and modelled after *One Hundred Soundscapes of Japan*, a 1996 project led by professor Keiko Torigoe that emphasized the conservation of soundscapes. The Finnish plan was to increase the awareness of the meaningful and multifaceted soundscapes and the importance of soundscapes for the well-being of communities.

The soundscapes were collected via an open-to-all writing competition and carried out in collaboration with Suomalaisen Kirjallisuuden Seura (The Finnish Literature Society). The contributors were asked to describe personally or communally meaningful sonic environments. Nearly 800 diverse descriptions, memories, and short notes were submitted, covering the sounds of nature, human beings, and technology. The stories touched upon the conservation of soundscapes, sounds of particular places as well as singular sounds (a billiard ball on the pool table, summer birds, the harbour freight train, factory whistles, a Chinese restaurant, the sound of summer rain falling on a shingle roof etc). The descriptions were

received from young, middle-aged, and elderly writers of urban and rural backgrounds.

As project member Ari Koivumäki points out, the subjective and, in some cases, somewhat nostalgic sound experiences were challenging to document. The memory-related and currently non-existing sounds were to some extent covered by the Tehosto collection, which is the radio sound effect archive of *Yleisradio* (the Finnish Broadcasting Company). The *Yleisradio* tapes were played to the interviewees in order to elicit the comments on the sounds of the past.

Koivumäki further argues that, as one might expect, the archived sounds were not equal to the memories. The recollections were in many cases so personal that a few-minutes long condensed sound object could not be able to match the memory of the experienced sound event. Additionally there were some technical issues worth mentioning here, such as positioning the microphone. If it was too close to the sound source it did not sound right to the informant listening to the tape. This further underlines the fact that the representation of sound is not equivalent to sound itself, not to speak of the memory connected to a certain sonic event.

The communal and individual ways of experiencing soundscape were underlined in the project publication *Sata suomalaista äänimaisemaa* (*One Hundred Finnish Soundscapes*; Järviluoma, Koivumäki, Kytö & Uimonen 2006). Thus, another dimension in defining soundscape was added, according to which people hear and produce their environment not only through their actions, but also by speaking and writing about their experiences.

The project group took a conscious risk in using the category "Finnish" in the title. The term was considered somewhat problematic by its nature, but at the same time, it opened up possibilities for deconstructing and reconstructing it in new ways. The group ended up seeking new qualifiers for "Finnish soundscape" and, accordingly, developed two strategies. First, they formulated the parameters of the competition in

such a way that it would attract the most diverse range of people to participate in the collection process. Second, the group elaborated ways of activating non-Finnish speakers and people who were not born in Finland to enter the competition. The project was especially successful in attracting Swedish speakers (a five-percent minority in Finland) and a few submissions from immigrants and people living outside Finland were received as well.

Instead of seeking "the greatest," "the best," or "the purest" Finnish soundscape, the project members set out to identify a wide and varied range of descriptions about soundscapes. They also wanted to take the readers beyond a grandiloquent and uncritically romanticized view on the subject. As became evident, the Finnish soundscape can also be very disturbing, and very annoying.

The One Hundred Finnish Soundscapes publication includes one hundred selected soundscape suggestions and six articles which both analyse the collected material and describe the actual fieldwork and documentation work of the soundscapes. Scientific articles analysing the material submitted concentrate on discourses of silence, the aesthetics of experiencing urban soundscapes, Finnishness, memories, sounds liked and disliked and the documenting process of the sonic environments. It became clear that the suggestions were diverse, consisting of different parameters affecting the sonic experience. The soundscapes were often tied to a certain time and activity, with the descriptions being preoccupied with memory-based sound events. It seemed that sound perceptions experienced in connection with activities in a familiar environment leave deeper memory imprints than an unfamiliar soundscape.

However, instead of offering a unified listening position on the subject, the readers were recommended to make their own judgements on the basis of the texts. To make the text easily approachable, One Hundred Finnish Soundscapes was divided into six chapters: "Without looking I know it's seven o'clock" deals with signals and sound marks, in other words sounds that are important to certain communities (factory and steamboat

whistles, vesper trumpet played from the church bell tower etc.); "Listen! They are still threshing" presents mainly work-related sounds (e.g. pounding of the flail, rolling of logs, the 'massive symphony' of the machines in a printing house); the next two chapters, "The echo circled the stone houses" and "Tinkling from the buffet of the dance pavilion" include texts on the soundscapes of childhood and youth. The texts vary from trips to one's grandmother's place and motorcycle journeys to dances and school days, from celebratory events to ordinary carpet washing. "Marsh will melt before the crane dies" gathers stories about forest and summer cottages with an emphasis on nature experiences; of being inspired, refreshed and calmed by nature. "The time of the world is passing" presents the sounds of home and everyday life, including the sounds of the transitional moments of life, such as birth and death.

One Hundred Soundscapes was planned both as a guide and an inspiration for future actions. The editors sincerely hoped that the meaningful soundscapes described could also be heard in the future. To some extent, this was made possible by the accompanying CD with sounds selected from the suggestions sent to the competition. The recording work was coordinated by TAMK. When possible, the person who suggested a particular soundscape joined in the documentation process and was interviewed on the recording site. Samples of the soundscapes can be heard on the project website (One Hundred Finnish Soundscapes 2006).

After a few years One Hundred Finnish Soundscapes was continued by Pirkanmaan äänimaisemat (Pirkanmaa Soundscapes), a project with a similar objective: to gather descriptions of and observations on soundscapes, but this time from a smaller geographic area, the district of Pirkanmaa in Western Finland. In 2009–2010, the diverse soundscapes were documented by gathering information from the inhabitants about sounds connected to their everyday life and special occasions, work and leisure, different times of the year and of urban and rural areas. Approximately one hundred descriptions of sounds and soundscapes were collected and documented, often with the informants. (Kautonen & Koivumäki 2010.)

People from diverse backgrounds with an age range of 7 to 85 participated. The recordings were carried out in 14 different municipalities and over 60 diverse locations in the countryside, nature surroundings, villages and towns. All the proposals were documented, excluding those that were impossible to carry out because of the season or those overlapping with other proposals. (Kautonen & Koivumäki 2010.)

Instead of documenting a soundscape or a sound event per se, Pirkanmaa Soundscapes emphasized the interviewees' stories and their subjective ways of interpreting the sonic environment, with the actual soundscape left in the background. Furthermore, the interviewees were asked to listen to their sonic environment as well as to tell their sound-related memories. This was one of the project's goals: to find "ear witness archetypes": children, youngsters, adults, different professions, urban/rural people – to be able to hear their different discourses and attitudes to the soundscape. The suggestions were then displayed on the project website, which included a map showing the actual areas of documentation, linking the audio-visual material to the map. (Kautonen & Koivumäki 2010.)

One of the major outcomes of the project was the planning of soundwalk routes with their possible implications on environmental planning. One soundwalk, with a structured list of questions and recording equipment, was carried out in collaboration with different informants and the students of sound design from TAMK documenting the walk. Making soundscape routes with the locals on the web can be considered a strategy for citizens and planners to develop and guarantee soundscape comfort by utilizing the information of important soundscape phenomena gathered from the informants. (Kautonen & Koivumäki 2010.)

2.2.2. Environment, Milieu, Soundscape (Cresson)

Since the Cresson laboratory was founded, it has worked on the perception of sound phenomena in the urban space, offering various models of intelligibility of the sound world on the scale of habitat, but also the scale

of a neighbourhood or a city (Augoyard 1985; Chelkoff et al. 1988; Amphoux et al. 1997). A basic feature of these works is not to reduce the richness of the sound world to only problematic noise and nuisance: another point of view is highlighted by considering that the sound phenomena take shape in space and in relation to each other.

This position implies that not only the physical parameters of the signal are considered, but also physiological aspects of perception and cultural aspects related to social interactions. For example, the study of the sound qualities of a public space refers not only to the study of the physical parameters of sound phenomena in space, but also to the study of their interactions with the practices and social representations of the space. In other words, the sound qualities of a public space study need a combined analysis of acoustics, space and practices.

More fundamentally, the main research works of Cresson are formulating a critique of the stimulus response scheme that organizes the majority of studies in acoustics. We can criticize the experimental psychology of listening by saying that the signal is the reference to any assessment of perception. However, as Pierre Schaeffer says (Schaeffer 1966) "it is the sound object given by perception that designates the signal to be studied". The signal alone cannot explain the richness of perception.

In comparison with most studies on noise, a major epistemological reversal should be introduced. In the words of Jean-François Augoyard, "any psychological approach to sound perception should begin in the order of the sound experience." This is the experience of sound that holds the definition of a sensible quality. Thus, as suggested by Augoyard, "we can not always say that 'at the beginning, there was the signal' but rather, 'in the order of the time lived, at the beginning, there is the phenomenon listened to'" (Augoyard 1999, 103).

Consequently, this implies that the study of sound phenomena "is deployed in many fields of investigation as dimensions of the phenomenon of the listening situation" (Augoyard 1999, 106). If the situation is

the laboratory and the listening room, the sound experience is analysed along an axis that emphasizes the physical signal. The analysis cannot say more than what the situation already contains. If the situation is the urban space, what must then be the axis of analysis of the phenomenon? The signal physics course, but also the lived space, representations and social interactions, codes and standards. Thus, any sound phenomenon can be analysed along three dimensions (Augoyard 1978, 34): 1) the physical signal (acoustically measurable and quantifiable sound); 2) the lived sound (listened to and interpreted by perception); 3) the represented sound (in reference to cultural and collective codes). Sound qualities do not have an a priori obvious internal organization. We must replace the action and the perception of a listener in any sound perception evaluation.

Drawing on these main ideas, Pascal Amphoux clarified the issue when he wrote his methodology to describe the sonic identity of European cities (Amphoux 1993). This work is not limited to an evaluation of the correlation between sound levels and a degree of discomfort, but rather it takes architectural, social and cultural aspects into account. Moreover, this distinction is not only a theoretical evaluation grid of the sound world, but it also provides a practical framework for managers of space (architects, town planners, politicians ect).

With Pascal Amphoux's words, we have to make the hypothesis that one can think of the "sound world unity" as "facing a plural and different subject" (Amphoux 1992, 185–204). The author does not refer to the multiplicity of the subject, as sociological distinctions do, but refers to a single individual "as the unique combination of the multiplicity of subjects that he embodies, to varying degrees and with varying relative weights, different times or situations" (Amphoux 1992, 185). In other words, one can say, as a listener, that we face the sound world as one but we do not stop to adjust our listening attitude that makes us a unique combination of different listeners. Following this hypothesis, we do not try to describe the sound world by itself but rather the relationship we have with it.

Actually, we can distinguish three such attitudes, and to explain them we are going to use the original text quotations and Björn Hellström's English translation work that he prepared for his doctoral dissertation (Hellström 2003, 161–164). Thus, the three different ways to listen to the sound world are: 1) The environmental listening: it concerns the acoustic qualities of a space, i.e. a sonic order that is objective, assessable and controllable. Besides criteria such as reverberation, intensity, frequency and timbre, it also embraces spatial and temporal criteria. Thus the criteria of quality concerns an analytical discourse on the content of sound, described as a sonic environment, i.e. an objective order that is outside us but with which we support the *functional relations* concerning the emission and reception. 2) The milieu listening, concerning the sonic comfort, i.e. a sonic order that is amalgamated, natural and vivid, and which arises from the structure of a place and people's activity. This order is subjective in the sense that one valuates the sounds in relation to people's practices and habits. It concerns an analytical discourse on the form of sounds. It is described as a sonic milieu, which we are plunged into and with which we support the united relations right through our activities. 3) The landscape listening (soundscape) concerns the perceived quality of sound, i.e. a sonic dimension that evokes aesthetic and sensitive responses to sounds. It also deals with the expressiveness of sound, as well as the listener's reflection in its musical values. It is an intersubjective order described as a sonic landscape (a soundscape), simultaneously inside and outside ourselves, with which we support the perceptual relations right through our aesthetic experiences.

The great wealth of such a distinction is, first of all, to describe what is for each of us, as an expert or an amateur listener, our relation to ordinary sounds that surround us. For example, one can say that acousticians in charge of noise measurements in a building will use their "environmental listening" during their work to describe with a lot of objectivity the noises and the sounds that they have to measure. The same acousticians, during their work day, will also have lunch break, and choose a place where their listening will be switched onto the second attitude: the milieu listening – they will be part of the sound ambiance of the place and will not realize

what they are listening to. And, finally, the same acousticians might enjoy a soundscape at the end of the day, because, at home, sitting on the balcony, they will enjoy the sounds of the city in which they live and listen to them as a form of resting music. As we describe it at the beginning of this discussion, our listening is plural even though we are "one" as we face the sound world. When we want to perceive it, we configure it depending on what we need to listen to and on the context.

The second interesting factor of this distinction is that it offers the possibility of a framework for managers of space, such as architects, town planners, politicians, etc. (Amphoux 1993, 40–43; Hellström 2003, 166–167). Following the distinction between environment, milieu and soundscape, we have three action modes, described as follows: 1) *Diagnosis of the environment:* The first attitude is defensive and consists of protecting the sonic environment from acoustic pollution: to normalize, to regulate, to control, to build noise barriers, to divert cars streams, to reduce traffic. But it can act towards protecting certain acoustic qualities such as spatial and temporal configurations, as well as social and cultural significations that constitute the objective conditions of the identity of the sonic environment. 2) *Managing the milieu:* The second, inverse, attitude is offensive since it aims at consolidating the sonic milieu, i.e. strengthening the amalgamated and vivid dimension of a certain place, but also informing the inhabitants about sonic comfort. Such a program is extremely large since it concerns managing the declared micro-social conflicts. Managing the milieu is also directed at a political order responsible for the regulation of social interactions, for example dealing with noise complaints in the neighbourhood. 3) *Creation of the landscape* (soundscape): Finally, the third attitude is creative, in the sense that it consists of composing the land-soundscape. Urban sonic sound designers (similar to a lighting designer) can manage this task but it is necessary to promote such operations to stimulate consciousness of the acoustic space and to develop greater public awareness of urban sound recordings and of the richness of sound qualities. This new perspective affects the cultural and aesthetic dimensions of our hearing.

This discussion can be outlined as follows :

The "Sound world"			
	Environment	**Milieu**	**Soundscape**
Listening	*objective facts, measurable and controllable*	*fusional relationships, natural and vivid Social Practices*	*significant appreciation, aesthetic and always deferred – "impaired"*
	Protection	***Managing***	***Creation***
Plans of action	*defensive attitude Technitian Normative and Evaluative control Acoustic correction*	*Offensive attitude User - habitant Social interactions regulations*	*Creative attitude Designers Phonic Creation Evolution of Cultural and esthetical models*

Environment, Milieu, Soundscape distinction
(Amphoux 1997; Hellström 2003)

Following these theoretical issues, under Grégoire Chelkoff's (2008; 2012) direction, CRESSON has decided to create its own sound map. The *Cartophonies* website (Cartophonies 2012) explores the contemporary sound experience. Its aim is to contribute to the current knowledge of living environments. It offers sound fragments that have been situated, dated, commented, and classified by various researches on cities and existing architectural structures. It explores the diversity of hearing experiences as well as common sonic actions and productions. The website gives access to the

archive of site-specific recordings developed since 1979 by the CRESSON laboratory of Grenoble's School of Architecture. The French word *cartophonie* is similar to *cartographie* and can be translated in English as "sound map". Compared to other sound maps found on the web, this one differentiates itself in making the sounds heard while presenting the contextual analyses made in various researches and catalogues. These analyses address constructed forms, social practices, acoustic characteristics and sound effects (see Augoyard and Torgue 2005). (Chelkoff 2008; 2012.)

www.cartophonies.fr, Cresson 2012.

To summarize, we have tried to show that: 1) Sounds or noises cannot be studied without considering the context of their production and their listening (Schafer 1977b; Augoyard 1978); 2) It is essential to study the lived and experienced sound phenomena (Augoyard 1978; 1999); 3) We can use the categories of the Environment, the Milieu and the Soundscape to describe the three listening attitudes and ways to influence our Sound World (Amphoux 1993); and 4) Any project of soundscape valorisation might include a way for these categories to respect the richness of the world as it sounds to our ears.

2.2.3. Acoustic Heritage in the Phonogrammarchiv of the Austrian Academy of Sciences (PHA-OAW)

In the following we present an overview of the projects of the Phonogrammarchiv associated with European "acoustic heritage". We are holding considerable numbers of nature sounds, urban sounds, environmental sounds, etc. recorded in non-European countries. However, most of those recordings were not made in the course of "soundscape" projects, but instead they are the marginalia of scientific data acquisition projects for many different academic disciplines, such as linguistics, ethnomusicology, anthropology, religious studies and many more. These kinds of recordings are not discussed here as they do not match the subject frame of "European Acoustic Heritage".

The founding director of the Phonogrammarchiv, Sigmund Exner, made the earliest "noise" recordings preserved in the archive. According to the commentary to the CD edition, "Apparently prompted by his technical interest in new technologies, Exner made a total of 10 recordings (featuring two people) at St. Gilgen, his summer resort. The *Phonogramme* 104 (donkey's cries (CD1:8)) and 249 (shots fired from various handguns (CD1:9)), typical rustic ambient noises, harmoniously complement the folk music recordings. In those days, donkeys were frequently used as pack animals, while the gun shots could be viewed in connection with the sport shooters [...] who still carry out their traditional contests in many parts of the Salzkammergut. Sigmund Exner must have been the first to add environmental recordings to the holdings of a research sound archive" (Lechleitner 2004, 34).

The form that was used to document the metadata was, from the very beginning, split into three sections (see figure): first (top left) "Des Phonographierten" ("[data] of the person recorded"), second "Der Aufnahme" (mainly technical data), and third, blank space for the details of the recording. In the second part, three categories are distinguished (in bold face): "Sprache" (speech), "Musik" (music), and "Geräusche, Schreien, etc." ("noises, shouts, etc."). Thus already in the early days of recording,

"noises, shouts, etc." had their own category next to speech and music. Later in the course of anthropological, folkloristic, or musicological data acquisition, some Austrian researchers sporadically recorded "work shouts" (Ph 4265, B 5251), environmental sounds (bells: B 58, B 5945),

Original protocol
of Phonogramm 249

and nature sounds (B 14603-14608). From 1962 onwards, bio-acoustical recordings increased. This consists mostly of birds in their habitat and other "Tierlaute" (animal sounds), initially made by enthusiasts, later by zoologists in cooperation with the Phonogrammarchiv.

Engineer Otto Heinz Mallat, author of a handbook for filming (in sub-standard 8 mm format) and sound recording, "Filme richtig!" (Mallat 1968), left three recordings of the environmental sounds of Vienna in the Phonogrammarchiv in 1961 (B 5912, B 6015, B 6016): sounds of the Viennese "Wurstelprater" (amusement park), a ride in a tram, and traffic noise at the crossing in front of the Opera House. They are our oldest archival holdings that can be considered "Umweltgeräusche"

(environmental sounds), the category used in the Phonogrammarchiv for what is most widely known as "soundscape" today. Mallat worked on his own initiative with his own equipment, his recordings were not part of a project of the Phonogrammarchiv, thus we do not have any more information on his concepts and ideas for making them.

Another contributor was a concertmaster of the "Volksoper" in Vienna and hobby ornithologist Alfred Jilka. Fifty-one items of bird songs were recorded by him in Vienna, Burgenland and Lower Austria between 1966 and 1969, which were then archived in the Phonogrammarchiv (B 12307 – B 2323, B 13591 - B 13635). Recently, the Phonogrammarchiv has taken over around 41 hours of recordings from his estate, made between 1964 and 1987, for archiving. Jilka not only collected but also analysed his recordings with the sonograph available in the Phonogrammarchiv (by then the state-of-the-art method), and published in scientific journals about his recordings. Jilka conducted his recordings with parabolic reflector microphones, initially using home-made reflectors. A selection of his recordings is also held in the Museum of Natural History in Vienna. The Phonogrammarchiv categorizes his recordings as "Tierlaute" (animal sounds, or bio-acoustics) in its online catalogue, thus distinguishing them from the category "Umweltgeräusche" (environmental sounds) used for "man made" sounds, such as those recorded by Mallat and, later, by Werner Hensellek.

Alfred Jilka was connected to Hans Winkler of the Konrad Lorenz Institute of Ethology in Vienna, who also worked in cooperation with the Phonogrammarchiv. In 1975 Winkler performed the first multichannel recordings (three tracks) stored in the Phonogrammarchiv. At this time, the "surround" aspect of the recording was not the reason behind the multichannel recording but rather the possibility to horizontally locate the positions of water birds with the help of the delay of their sounds using three simultaneously recording microphones.

Between 1970 and 1971 Werner Hensellek, a model railway enthusiast, recorded six different steam locomotives in five different locations in Austria (B15715-B15726). Obviously, at a time when steam engines

were dying out, it became an issue to document their impressive sound. Although by then vinyl records with steam engine sounds were already available commercially, Hensellek, a classical philologist of the staff of the Austrian Academy of Sciences, took Dietrich Schüller, who would later become the director of the Phonogrammarchiv, to record some few steam engines still in service in different parts of Austria (Schüller 2012).

The project "Klangndokumente des Wiener Alltags", funded by the City of Vienna in 1980-1983, deserves to be introduced here in more detail. Kurt Blaukopf, Professor of Music Sociology at Vienna's Hochschule (now Universität) für Musik und darstellende Kunst and director of the UNESCO-affiliated institute Mediacult, who had an open mind towards unorthodox approaches and projects, was among the first to introduce R. Murray Schafer and his World Soundscape Project to Austria. This inspired the Phonogrammarchiv, which at that time closely cooperated with Mediacult in the field of music sociology, to embark on a similar project to record the acoustic environment of Vienna without necessarily intending to exactly copy the Canadian projects.

The leading idea was to capture the sounds of daily life, which generally are without any particular attraction or beauty, yet form our daily acoustic experience, changing over time mainly as technology and/or social habits further develop. The classical concept of museums and scholarly engagement embraces the important, the outstanding, objects of "high culture", whereas the collection of artefacts associated with daily life is, apart from classical anthropology, only a fairly recent development. However, visual traces of daily culture are inadvertently recorded in the background of most kinds of photographs, which permit some systematic study of phenomena and their configuration that have not been deliberately documented per se. The acoustic environment, or background, however, is deliberately omitted by choosing studios for indoor recording, and appropriate equipment – such as directional microphone and low-frequency filters – to suppress unwanted background noises for outdoor recording. Thus, in order to capture environmental sounds, recording must be organized systematically and deliberately.

The selection process in our project was guided by the question of which sounds of the past, vanished or changed, would interest us today, and, subsequently, which more or less trivial acoustic impressions of today will change very soon unless we record them in time. The first grant proposal to the City of Vienna was made in 1978, one year after Schafer's book *The Tuning of the World* was published.

At that time the modernisation of the Vienna tramway system had already been well underway for some time, but trains using the old cars from the 1930s were still in use. Normally, old trains consisted of a motor car with two wagons. After a halt at a stop, the signal for the driver was given by bells in the front of each car, operated manually by the respective conductors. The first signal was given by the last car, the last by the conductor of the motor car, after which the driver sounded his gong, which was lower in pitch: this sounded "ding, ding, ding, dang, dang", and then the train started to move. This system of dispatching trains was in use for decades, representing a typical acoustic triviality and daily experience for generations of Viennese – and it was this story that was used at that time to explain the aim of the project.

In the first instance, the recording plan embraced these sorts of public sound sources, mainly associated with traffic of all kinds, and public services, such as street cleaning, including snow and ice removal, partly still carried out manually in those days and forming a characteristic sound of urban winter days.

Beyond these environmental sounds in the narrower sense, the plan also embraced sounds of public places, e.g. the Prater (Vienna's traditional fun fair) and markets, which included human interactions. This consequently led to the systematic inclusion of trivial conversations, mainly in the course of shopping, in grocery stores, at tobacconists, but also in supermarkets and department stores. Recordings were made either by customers equipped with miniature high-quality equipment, or by placing recording equipment inside the shops and recording for usually 10–15 minutes. The recording was also expanded to coffee houses and restaurants, including, inter alia, typical conversations with waiters.

Picture taken during a recording in 1980-1983 at the square "Freyung".

Bernhard Graf during the surround test recordings at the square "Freyung" photographed in the same direction as figure 2, by Jürgen Schöpf.

Generally, the binaural recording methodology was applied, using the ORTF microphone array which had been the archive's standard for documentary recording from 1977 onward. Nagra 4.2 S recorders were used for the majority of the recordings, with digital SONY PCM F1 recorders employed for later amendments. For casual conversations, a Nagra SN recorder with a clip-on Lavalier microphone was used in order to minimize irritation by elaborate technical gadgetry. In general, recordings were made with the permission of the individuals recorded; the few recordings with anonymous persons have been checked for any possible infringement of the private sphere of the recorded individuals.

The project was carried out between 1980 and 1983, with occasional additions thereafter. Because of its unorthodox character, the evaluation of the grant proposal had taken some time; ironically, when the project eventually started, the old tramways, which had played a significant role in explaining the aim of the project, had already been taken out of service.

Walter Tilgner, born in 1934 in Olomouc (today a part of the Czech Republic), worked at the "Bodensee-Naturmuseum Konstanz", a museum of natural history in the south-western German town of Konstanz. He has recently offered a selection of his recordings to the Phonogrammarchiv for preservation. They mainly consist of dummy head recordings of bird and other nature sounds from the areas of two big central European lakes, Lake Constance (German: "Bodensee", in the border area of Austria, Germany and Switzerland), as well as the "Neusiedler See" (Lake Neusiedl) in the border area of Austria and Hungary. They encompass a time span from 1981-2012, covering all seasons and times of day. He arranged them according to the animal species recorded.

Tilgner, today an honorary member of the "Forum Klanglandschaft", the affiliate organization of World Forum for Acoustic Ecology, apparently started out like many ornithologists using lobe and parabolic microphones, but later on changed his concept and, consequently, his technology switched to the dummy head. This is rather unusual for

Tram 43/44, stop "Schottentor", 1980-1983.

Jürgen Schöpf during the surround test recordings at the same tram stop on September 23rd, 2011. (Photo: Berhard Graf)

Walter Tilgner recording with a dummy head.

ornithologists. However, Tilgner was interested in the sound environment as a whole, not in picking out certain sounds from the environment. This approach, independently developed, led to the idea of the Phonogrammarchiv to do all soundscape recordings for the EAH-project in surround sound.

The Viennese musician Werner Dafeldecker documented Antarctica's sound environment during an expedition carried out together with his Australian colleague Lawrence English in February 2010. Based on this work, the radio piece "The Cold Monolith" by Lawrence English and Werner Dafeldecker was produced by SWR2 (German public radio) and originally broadcast on February 1st 2011, 23:03. The Phonogrammarchiv has taken over Werner Dafeldecker's original recordings from this expedition to Antarctica for archiving (D 8461 - D 8484; V 3103 - V 3112). Their soundscape recordings are also featured in multimedia installations and live performances (cf. Dafeldecker 2011). Even though the

recordings were not made in Europe, we include them into this discussion because the project focused on environmental sound, a rare instance in the holdings of the Phonogrammarchiv.

As the variety of projects and activities undertaken within the Phonogrammarchiv of the Austrian Academy of Sciences shows, the soundscape work in Austria has been very diverse and, actually, still is. Public institutions (the Phonogrammarchiv itself, with committed individuals like S. Exner and D. Schüller, and public radio "Ö1"), publicly sponsored activities (Linz 09, Jazzatelier Ulrichsberg), individual researchers (A. Jilka, W. Tilgner), electronic composers (G. Proy, W. Dafeldecker) as well as specialists of certain areas (O. Mallat, W. Hensellek, K. Essl) all made their contributions according to their individual approaches. However, there have always been structures promoting such work, from the early post-war days of the "Tonjäger-Vereinigung" to the "Forum Klanglandschaft" that, interestingly, had nothing to do with each other, although the decline of the former and the rise of the latter both occurred during the 1990s. Apparently, soundscape work, using the term in the broadest possible sense, had to be re-invented by a new generation according to their own approaches, with several such approaches moving in parallel.

Interestingly, the major institutions that have already worked with soundscapes, such as Ö1 (part of ORF), the Phonogrammarchiv (part of the Austrian Academy of Sciences), and the Institut für Musiksoziologie (part of the Universität für Musik und darstellende Kunst) all had their own approaches within their individual projects, none of them having worked continuously in the field of environmental sound.

While the work of the individuals described above has been related to one or more of the aforementioned institutions over time, the individuals themselves appear to be more consistent and more continuous in their work with soundscapes than the institutions. Perhaps this is because continuous investment into soundscape research appears unjustifiable for publicly financed institutions, whereas on a project level, individual artists or researchers have less trouble to secure funding for project-related works.

In summary, we can say that the dominating concepts for the soundscape projects in Austria have been the documentation of everyday sounds (perhaps in connection with film production, in the case of Mallat; or anthropologically motivated, Schüller), the documentation of sounds about to vanish (Schüller, Hensellek) and nature recordings, especially by a strong number of bird enthusiasts and biologists (e.g. , Jilka, Tilgner). In recent years recordings of environmental sounds more and more become a resource for electronic composition (Proy, Ablinger [2009], Dafeldecker, Essl [2012], and others).

2.2.4. Hearing cartographies (Escoitar)

"That's another thing we've learned from your Nation", said Mein Herr, "Map-making. But we've carried it much further than you. What do you consider the largest map that would be really useful?"
"About six inches to the mile."
"Only six inches!" exclaims Mein Herr. "We very soon got to six yards to the mile. Then we tried a hundred yards to the mile. And then came the grandest idea of all! We actually made a map of the country, on the scale of a mile to the mile!"
"Have you used it much?" I enquired.
"It has never been spread out, yet," said Mein Herr: "the farmers objected: they said it would cover the whole country, and shut out the sunlight! So we now use the country itself, as its own map, and I assure you it does nearly as well"

(Carroll 2006/1889, 137–138)

Years after Lewis Carroll proposed this cartographic fiction, Jorge Luis Borges took up the idea in his well known one-paragraph short story *On Exactitude in Science*, in which he used the device of a literary forgery by the fictional Suárez de Miranda to give the description of a "Map of the Empire whose size was that of the Empire, and which coincided point for point with it" (Borges 2005, 119).

The design of this impracticably large map questions the meticulous desire to trap reality, revealing the futility of an exact map in which representation and the thing represented coincide exactly.

From its position on the boundary between art and science, between an "empirical self-confidence and cultural self-consciousness" (Bosteels 1996, 114), map design has surrounded itself with the illusion of encyclopaedic objectivity, almost always cloaked in visual premises and mathematical measurements. Nevertheless, it would not be long before this imago mundi would be subjected to postcolonial criticism as the result of the "internal erosion of the legitimacy principle of knowledge" (Lyotard 1987, 75), which would propose a reinterpretation of maps as a strategy that "can confirm the 'truth' of a culture's knowledge and thus 'naturalize' imperial attitudes" (Hickey 2001, 83).

Similarly, the revision of cartographic practices during the twentieth century was affected by the drastic change in the modern way of visualising things, being constantly exposed to the perpendicular perspective, through the use of aerial and satellite photography, and the increasingly rapid development in the topographic world of GIS (Geographic Information System) technologies. These technical advances enable space to be understood as a constructed 'flow' that is constantly being recreated, "stimulating new forms of cartographic representation, not only to express the liberating qualities of new spatial structures, but also the altered division and hierarchies they generate" (Cosgrove 1999, 5).

Every map is made for a purpose and obeys an interest. Each cartography is an accumulation that in turn permits the existence of infinite cartographies of the same space or the creation of multiple maps within the Map. It may perhaps be possible to design a non-map, a negative of a map that would contain the terrae nullis, all those blank spaces that have been consciously or unconsciously ignored, and which for many years have been fruitful ground for Western imagination or for artistic recreation. Whether it be in the fragmentary theories of urban psychogeography traced by the Situationist Dérive in order "to describe a previously lacking influential cartography" (Careri 2005, 102), or in the designs of Andrea Wollensak, Christo, Jorge Macchi, Jasper Johns, Joyce Kozloff, Layla Curtis, Nancy Graves, Richard Long and Simon Patterson, amongst others, or in sound works such as Akio Suzuki's Otodate, Hildegard Westerkamp's

Soundwalks, Annea Lockwood's river journeys or recent experiments in audio geolocation, the collective cartographic imagination has occupied, and continues to occupy, a prominent position amongst the mythologies used by the different discourses of modern art.

A map provides a new dimension for the space which we inhabit, makes it assumable, is a way of narrating that allows different stories to be told, but, as is the case in literature, also allows us to read between the lines. Brian Harley talks of "silences on maps" which should be regarded as "positive statements and not as merely passive gaps in the flow of language" (Harley 2005, 115).

A map is as much what it omits, as it is that which it describes. Silence thus becomes significant, vanishing to make itself "audible". It is nothing other than a threshold, the extinction of which has occupied, in a less metaphorical sense, the philosophy of sound during the twentieth century. It is "a change of mentality, a decisive turnaround" (Cage 1999, 39) converted into the undiscovered moment and charged with a density that Jonty Semper has been able to record – over a total of 59 years – in his solemn compilation of the two minutes of silence that blankets London in a hush on Armistice Day / Remembrance Sunday. *Kenotaphion2* reveals, as Jacques Attali would put it, institutional silence at the service of the "perenniality of a given power" (Attali 1977, 19; Kennedy 2001). Listening, therefore, becomes a necessary act, as much for the subversive nature of the sound event and its ability to seize us, as for the way in which it opens up new forms of knowing in which memory, time, and space come together.

This is where, as opposed to plans drawn for the eye, there appear those other oral/aural maps ignored by the ears of outsiders; a case in point would be the Walkabout of the Warlpiri in Australia, who preserve, in the itinerary of their elders, a map of the territory that takes shape when they sing "the rivers and mountain ranges, the salt pans and sand dunes" (Chatwin 2007, 87). The intonation of these stories gives meaning to the places concerned and creates a 'topomnemotechnic' design that is also to

be found in the Temiar dream songs used for "remembering place and remembering through place" (Brenneis 2003, 229), or in the compositions of the Kaluli, which can be seen as "poetic cartographies of rainforest trails" (Feld 2003, 227). It is even possible, if we think of cultural contexts that are closer to our own experience, to make a link between these 'invisible' maps and what the Spanish composer Llorenç Barber has called the "ability to transform everybody's real life" that the noise of bells possesses. As Alain Corbin has shown, the sound of bells ringing from the bell towers in nineteen French towns and villages reinforced geographic boundaries, and, with their notes, constructed a fence that gave the feeling of belonging to a given space and community:

"The emotional impact of a bell helped to create a territorial identity for individuals living in range of its sound. When they heard it ringing, villagers, townfolks, and those 'in the trades' in the centres of ancient towns experienced a sense of being rooted in space that the nascent urban proletariat lacked [...] The bell tower prescribed an auditory space that correspond to a particular notion of territoriality, one obsessed with mutual acquaintance". (Corbin 2003, 117.)

Sound can define a territory and confer value on a space, providing it with a significant nature, at times turning it into a place. Matthew W. Stirling, in his reconstruction of the myth cycle of Acoma (New Mexico), tells of the journey of the forebears of this Pueblo culture in search of a new place to settle, known as Haako, which according to Iatiku –one of the two sisters responsible for creating mankind– they should seek by listening carefully to each possible site, in the certainty that they would find it in the place "where the echo comes best". (Stirling 2008, 57.)

The presence of similar allusions to this acoustic phenomenon in other ancestral tales has encouraged numerous archaeologists to work on the hypothesis of possible relationships between the location of petroglyphs and sound, seeing the former more as markers indicating a place with acoustic relevance due to the presence of an echo – the only pre-phonographic way to hear a partially duplicated sound – than as works of art

or sculptures as such. This would lead us to think that "we must thus make sense of rock-art by exploring the multiplicity of the human senses" (Rainbird 2002, 101). If this premise is true, then we are faced with the urgent need to preserve not only the visual aspects of these rock carvings or paintings, but also, and especially so, the sound value of the places where they are to be found (Waller 2003).

This is only another example of the possibilities that open up to us regarding the reinterpretation or our surroundings, a revision from an aural standpoint that completes the silent cartographic representations and exercises a cross-disciplinary influence. In the twentieth century, a sensitivity that evolved towards other and presumably irrelevant sound forms went beyond sounds that conveyed meaning and were, in some form, organized. Although this aural expansion was first to show itself in the experimental premises of the Futurist avant-garde, seduced by those novel noises that made themselves heard not only "amid the clamour of the metropolis, but also in the countryside" (Russolo 1998, 8-9), it was soon to establish a line of action that would include listening to or the aesthetic recreation – psychological or technological – of sound events, as well as the systematic study of all the noises that constantly accompany us.

The pioneering work carried out for the most part in the city of Vancouver by the World Soundscape Project, or the proposals of the Cresson laboratory, focusing on the study of "sound space and the urban environment" are only some examples of this desire to understand and "not to judge particular sound as good or bad, but to see the pattern of how it functions" (Truax 2001, xx). The adoption of this flexible position is the only way to surpass the merely quantitative aspects that still prevail in noise maps, and to produce other qualitative and emotional cartographies.

Adopting this attitude as our starting point could take us to a new way of listening by helping us to extend our spectrum of analysis so as to thereby understand the relationships that exist "between the acoustic/auditory environment and the responses and behavioural characteristics of

people living within it" (Positive soundscapes 2012). It suffices to mention the proliferation of publications that have appeared in recent years as the result of this cross-fertilisation to realize that we have witnessed the beginning of a sea change caused by the inevitable move towards a sensitive epistemology, which produces, particularly in relation to sound, the need to "rethink a broad range of theoretical and methodological issues" (Erlman 2005, 2).

The very firmness with which Veit Erlman proposed the evolution of anthropology towards the "ethnographic ear", referred to by James Clifford, has aroused a similar desire in other disciplines, such as geography or sociology, eager to develop "new concepts of produced or social space [...] in opposition to the flat rationality of Cartesian Cartography" using "the resources of the ear to give density and dimension to its account of social space [...] The new geography attempts to achieve what is invisible to the cartographic eye. The sense of hearing is only occasionally heard of in such work, but it operates markedly upon it, not as an alternative kind of centring, but rather as the switchboard which allows for intrasensory communication and the mutual transformation of the senses" (Connor 2004, 65). Thus, space, whether it be modified socially, individually, culturally or historically, takes shape as the result of a multi-sensorial experience in which listening plays a decisive role, contributing to the creation of a sense of place.

According to geographer Yi-Fu Tuan, "Experience takes time. Sense of place is rarely acquired in passing. To know a place well requires long residence and deep involvement. It is possible to appreciate the visual qualities of place with one short visit, but not how it smells on a frosty morning, how city sounds reverberate across narrow streets to expire over the broad square, or how pavement burns through gymshoe soles and melts bicycle tires in August. To know a place is also to know the past". (Tuan 1975, 164.)

As a "space that is relational, historical and concerned with identity" (Augé 1995, 85), a place is the result of a balance between different processes of

sedimentation and construction, presence and memory. Its "boundaries are (analytically and phenomenologically) elastic [...] Without naming, identification, or representation by ordinary people, a place is not a place [...]". Places "are also interpreted, narrated, perceived, felt, understood, and imagined" (Gieryn 2000, 464-465).

In this context, sound cartographies are a geolocated archive, but they are, above all, a way to represent some sonic issues of a place, including qualitative and emotionally relevant aspects. Sound maps explain a specific relationship between the person who located the sounds and those places in a precise moment in time. However, they are only a possibility of explaining something because of their limitations. But as any other map, these, too, have the intention of moving us through the territory. Their main value is to promote active listening beyond the computer screen and home speakers, going to real places to learn and to enjoy the sounds around us.

3.

Towards European acoustic heritage

In the following we contemplate how European Acoustic Heritage project members, their contributions, and previous projects on environmental sounds could be put to use in defining European acoustic heritage.

3.1.
Importance of metadata

First of all, all partners agreed that it is a theoretically impossible task to determine a "good" or a "bad" sound or soundscape. Considering the prospect of this project, an aesthetic or moral judgement may also be, if not irrelevant, at least restrictive. To follow the Schaferian concept of hi-fi, indicating the clarity of signal and wideness of the acoustic horizon, is helpful in considering the qualities of soundscapes, but this is not enough, as soundscapes are full of cultural and subjective qualities. The meaning of the soundscape depends on the context in which it can be heard and experienced spatially, temporally and socially. Soundscapes are, after all, sonic environments of the listener, without whom they do not exist. It is the relationship of the sound and the listener and/or community that counts, not "good" or "bad" sounds per se.

René Magritte painted his famous painting of a pipe, titled "Ceci n'est pas une pipe" ("This is not a pipe"). What he presumably wanted to show, was that in reality it was not a pipe, it was a picture or painting of a pipe. Accordingly, a recording of a soundscape is a recording and someone's representation of a sonic environment, and thus cannot be considered a soundscape. To some extent this holds true with noise maps as well, as Horacio Diéquez González pointed out in chapter 2.2.4.

Drawing on this, we need to make clear that when discussing soundscape heritage we need to make a distinction between living heritage and archived heritage, i.e. recordings that represent soundscape, or those connected to experiences on soundscapes. Shifting the focus from the living, accessible and interactive environment to artefacts, there is a need to contextualize and classify the recordings. Any classification of soundscape, or any definition of European acoustic heritage, also needs to define the meta-categories of the sound. This is something our partner Phonogrammarchiv has understood since its creation: the metadata make the archive possible. Without it, there is no archival process and actually, sometimes, the context might even be more important than the recorded sound itself. Because of this, the project proposes in the "good practices guide" of chapter 5, a minimal framework for the collection of sound and its metadata.

3.2.
Categories and classifications

We know now that we have to describe not only the sounds but also the context of its production and listening. We know that beginning with the first works of R. M. Schafer, and still today, several others categories to describe these issues, even when sounds do not have all the characteristics of a soundscape. Sounds can act as witnesses of social life and express a sonic milieu, and they can be also sound signals that belong to the category of environmental listening.

All these categories and types of descriptions are part of our acoustic heritage. They do not compete amongst themselves, on the contrary: they

are complementary and indispensable to each other. Otherwise, the term soundscape has to be defined and used as a generic term, which is not limited to its original definition, but open to the multiple meanings given by the sets of individuals, institutions and research groups who used it and who are using it today.

It should be noted, though, that an interdisciplinary research network of different institutions and researchers are currently defining the concept in the Soundscape of European Cities and Landscapes project (COST 2012). The starting point is to consider environmental sounds a resource rather than a form of waste. In addition to physical measurements also the contribution of human and social sciences, such as psychology, sociology, architecture and anthropology, will be taken into consideration when defining the concept of soundscape and finally to have it approved by ISO.

3.3.
Cultural heritage in the use of words describing sounds

Although audio recordings constitute valuable acoustic archives for future generations, recordings alone are insufficient in communicating the meanings that crisscross the listening and recording experience. Writing up metadata and coming up with analytic categories reminds us of a fact that cannot be ignored when archiving the sensory environment: communicating to others what one hears is often done in writing, and writing means using a specific language.

Linguistists Masjid and Levinson remind us that language: "plays a fundamental intermediary role between the subjective, individual nature of sensation and the cultural world that constructs the perceptual field. The cultural world provides the sensory environment – the smells, the tastes, the colors, the shapes, the spaces, the sounds that we perceive. Biology provides the individual's sense organs and the cortical processing of sensations that process the sensory information. But without language our sharing of perceptual experience would be confined to shared environments

and shared biology: a mechanical sharing without intersubjectivity. What language adds is the projection outwards from the individual psyche of private sensations now clothed in public representations, and conversely, the introjection of public representations into private psychology". (Masjid & Levinson 2011, 9- 10.)

Sonic description is in itself an arduous task, not to mention the translation of which to other languages. Something is always lost in translation. For example, sounds that are described in English as "high" are in Turkish "thin" (*ince*), whereas "low" sounds are "thick" (*kalın*). Also, some words can indicate a change of relative pitch with a change in vowels, e.g. *clink-clank-clonk* in English or *kilinä-kalina-kolina* in Finnish. Giving an example of the Malesian *semai* language's various possibilities of describing waterfall sounds, linguist Sylvia Tufvesson notes that in words like these, so-called sound expressives, vowel alternation encodes not only differences in perceived pitch but also in loudness. "By encoding such differences, sound expressives provide acoustic knowledge which allows speakers to calibrate spatial distance and navigate surrounding environment". (Tufvesson 2012, 91-92.)

This is also the reason we decided to carry out the Soundscape TV interviews (see part 4.2.) with the language of choice of the interviewees themselves, and add truncated English subtitles to share and communicate with a bigger group of people. We wanted to maintain the richness of the different languages used by the interviewees with all their onomatopoetics, metaphors, but also repetitions, imprecisions and hesitations as marks of how people communicate their listening experiences.

As also seen in the writings of the One Hundred Finnish Soundscapes project, soundscape description can expand to far more than mere lists of sound sources and a chain of actions. The detail in which a soundscape can be heard and described can measure up to the analysis itself. Nevertheless, it is a cultural competence that needs nurturing. A meagre cultural vocabulary can be a restraint in sonic description, and translation into other languages can blur the meaning even more. Keeping up with

a wide and multifaceted vocabulary of sonic expressives and verbs add to acoustic heritage.

3.4.
Questions of scale and territory

It is somewhat challenging, if not impossible altogether, to define common acoustic heritage in European context. There are several reasons for this. First of all, fundamentally, we notice that heritage forms at a very small territorial scale. Partners in Galicia realized that some people living in a small village on the ocean coast are actually changing their way of speaking (the accentuation) depending on wind direction. In other words, the same people do not talk exactly alike depending on the intensity and direction of the wind. For us, this is a perfect example of our "European acoustic heritage". We see that it takes place at a very small territorial scale (a few kilometres); the sounds itself are very important, but even more than that, all the metadata that explains these behaviours are also fundamentally important for the collection of our acoustic heritage.

So, actually, our definition of European acoustic heritage will not be a closed list of "good" sounds but it will consist of different online tools that offer anyone the chance to deposit one's own heritage. We create the conditions in which others can catch our acoustic heritage. We do not begin by deciding what could be our heritage, we welcome sounds and experiences and offer, through online tools, the capabilities to find equivalent situations all around Europe (cf. 4.1. European soundscape map). Our tools are designed to promote intercultural approaches and intercultural comparisons. We intend to provide one example with a thematic map concentrating on water. With the help of the map we will gather information from different angles on the subject and seek to chart the sonic expressions of water in Europe. It goes without saying that different forms of water are definitely part of our acoustic heritage as well: rainstorms, seas, oceans, rivers, fountains in towns, to name just a few. Historically, civilizations were built close to water, and water sounds defined

acoustic communities, as pointed out in the first large scale study *Five Village Soundscapes* carried out in 1975 in Europe (*Five Village Soundscapes* 1977/2009).

3.5.
The temporal aspect of acoustic heritage

Of course, once one raises the question of heritage, time and conservation issues become prominent: what are the sounds of the past and the present we should consider parts of our heritage, what should be the means of implementing safeguards for their protection, and how to transmit them to the next generations. Each partner has already come face to face with this difficult question. For example, the Phonogrammarchiv restored soundscapes that had been a reality in the beginning of the 1980s in different spots of the city of Vienna. They also performed them again with brand new technical equipment. After 30 years, the city has changed, and, for several reasons, some situations cannot be recorded as they were: circulation lines have been modified, street cars have disappeared, some train station have closed, human activities are no longer localized at the same spots. This is also happening to Cresson researchers, who worked on the underground spaces at Les Halles, in Paris, a place that is being rebuilt right now and will never again sound the same. Similarly, a Finnish team faced the issues of ever-changing soundscapes during the Acoustic Environments in Change field trip to six Europan villages in 2000. However, they were able to restore a sound that had already disappeared from the village of Dollar, Scotland. The 1975 Canadian research team had recorded local signals, including the fire siren with an exceptionally long decay which they archived to the World Soundscape Project Tape Library at Simon Fraser University, Vancouver. From there, it was easily returned to the collections of the Dollar Museum.

We have to consider the question of time as being of utmost importance. Our approach is two-fold: with the exception of the Phonogrammarchiv, our institutions are not charged with rescuing our sound culture. We are not archivists, and we do not want to decide what needs to be archived.

Several institutions, all around Europe and all around the world, already exist for this kind of archival work. Each of them have their own character, and they complement each other. So, our contribution to this issue is to provide, through the online tools that we are developing, a list of the sound archive institutions in Europe. In this way, any individual or institution that wants to archive a sound collection will find the right place to do it.

More fundamentally, we believe that our work is a small part of our heritage. It will focus more on the hidden acoustic heritage that each of us is carrying in one's personal life, which might be shared with others. We believe that acoustic heritage is being built every day through individual experiences all around the different communities of Europe. Acoustic heritage cannot be described as a closed definition, because of its dynamic character: cities are changing quite fast, our world has already changed a lot and it is impossible to define today what has to be preserved for tomorrow. The time scale is humanly impossible to handle by any group of researchers. What we can do is to offer a framework and a platform, in which any individual or community can deposit its own suggestions. Web 2.0 Internet tools, and, in general, the advances of communication technologicy, is a great opportunity to deal with such a scale of time. The European Acoustic Heritage project group's contribution to helping to define acoustic heritage is to catch and communicate these events on a large European scale by offering two online tools: the soundscape map, and the soundscape TV.

3.6.
EUROPEAN ACOUSTIC HERITAGE OR ACOUSTIC HERITAGE IN EUROPE?

The words "European" and "heritage" deserve a more profound elaboration because they can be problematical because of their political contents. Littler & Naindoo track down the "heritage of heritage" in the introduction to their edition *The politics of heritage - The legacies of 'race'*, stating that "in medieval times heritage was used in religious discourse to mark the elect, the 'people chosen by God'. Later, through industrial modernity

and capitalism, through imperialism and nation-state, its particular association with blood, land, property and old, 'high' culture was formed. Heritage proclaimed the 'lineage' of particular groups - their worth and power - at the expense of others." (2005, 2-3.) After the 1980s, discourse on heritage changed its meanings in two ways. On the one hand, there was a rise in the proliferation of alternative histories (Urry 1990, 121), and, on the other, forms of reactionary conservatism. The end result was that heritage was able to mould itself to discourses with both working and upper classes, with popular and high culture, and so forth. "The complex legacies of heritage, a living term, are such that there are some very different paradigms in circulation within disciplines, and some quite separate conversations and understandings of what constitutes 'legitimate' discussion around it, for example, in cultural studies, archaeology, history and business studies" (Littler & Naindoo 2005, 5).

What does this mean to a project of European acoustic heritage and soundscapes? As we have stated elsewhere, there is no need to list or select sound environments to represent national cultures of each partner. Rather, we should work towards forming heritages that in practice and process will work with a number of different spheres of society. Harmonizing with the suggestion of Littler and Nandoo, we should think of heritage not as an immutable entity, but as a discursive practice, shaped by specific circumstances, through histories, interests, patterns, collisions and politics (2005, 1).

In this respect, we could also ponder upon the question of soundscape being intangible cultural heritage, as UNESCO has defined it. Quoting from an UNESCO e-leaflet about 'safeguarding' intangible cultural heritage:

"Safeguarding intangible cultural heritage is about the transferring of knowledge, skills and meaning. It focuses on the processes involved in transmitting, or communicating it from generation to generation, rather than on the production of its concrete manifestations, such as dance performances, songs, music instruments or crafts. The communities which bear and practise intangible cultural heritage are the people best placed to

identify and safeguard it. However, outsiders can help with safeguarding. For instance, they can support communities in collecting and recording information on elements of their intangible cultural heritage, or transmit knowledge about the intangible cultural heritage through more formal channels such as education in schools, colleges and universities." (UN-ESCO S/A, Questions and Answers, 3.)

When talking about intangible cultural heritage, we should bear in mind that it is a concept and legislative tool for political intervention in cultural forms, with roots in the cultural property rights legislation after the Second World War (Belder 2011) and in the interests of the Council of Europe, together with UNESCO, to promote cultural diversity in the face of the homogenizing effects of US-led globalization (Khan 2005, 139). It is a government-led endeavour, an agreement concluded between states in written form and governed by international law for those nation-states that sign the treaty of the 2003 UNESCO Convention. One of the partner countries, Finland, for example, has not ratified the intangible cultural heritage treaty and thus was not able to partake in suggesting anything to to be ratified to the intangible cultural heritage list.

Institutionalizing living sound environments does not have only positive effects. An example of this can be found in Japan. After the 100 Japanese Soundscapes project, a particular place by the sea was soon transformed completely when it became a tourist attraction. UNESCO acknowledges the problem and cautions that "there is also a danger of freezing heritage through a 'folklorisation' process or the quest for 'authenticity', or of the disregard of customs that govern access to secret or sacred information. Indeed, this could lead to a 'market value' being placed on the intangible cultural heritage instead of its cultural value, leaving it open to inappropriate commercial exploitation." (UNESCO S/A, Questions and answers, 7.)

This danger became self-evident when the Finnish government wanted to promote something they called branding silence within the tourist

industry, while simultaneously proposing snowmobile safaris for the transportation of foreign tourists (TH 2011).

A more acute question in institutionalizing culture is the possibility "that the heritage views of national cultures so frequently promoted under its banner tend to be conservative and traditional, and not to take in the diverse mix that now makes up all Western nations. It also tends to isolate and to ignore the dynamic relationships being forged across cultures internationally, sometimes from the basis of diasporic thinking". (Khan 2005, 139.) This also points to some political interest in defining "European" culture as being exclusive instead of inclusive.

What, then, are the challenges facing European acoustic heritage in conceptual and practical terms? It could be noted that soundscapes themselves do not suffice as intangible heritage as such (see UNESCO S/A, What is Intangible Cultural Heritage?, 15). In light of this project, this is not a hindrance, as we lack legislative or political interests, besides contributing tools to the growing mass of soundscape archives and recording databases, and the rising awareness of soundscape competence and the sonic environment.

3.7.
Conclusion

As described above, the partners agreed to say that acoustic heritage in Europe is any sounds that form a testimony of a sonic situation. There is no restrictive definition of our heritage, because, actually, it forms itself in everyday human practices. Acoustic heritage is born of the encounter of a community with sound phenomena, within a spatial territory. Because we want to respect its richness of expression across Europe, we will not develop this project as a reference list of soundscapes. Sound heritage is defined constantly, at every moment, and we prefer to build the conditions in which it is possible to catch all of its expressions. For this, we have developed Internet tools that capture these expressions of heritage and which also allow comparisons between different regions in Europe.

What is circumscribed as 'heritage' is historically specific, culturally contingent and philosophically debatable (Littler & Naindoo 2005, 2.). An example: what is Finnish soundscape, and how could it contribute to the European Acoustic Heritage project, and, more specifically, to defining the terminology applied in the project? As in the One Hundred Finnish Soundscape project, the definition of "Finnish" was basically geographical, although not strictly restricted to mere geography. Frankly, the project group is not convinced of the need to try to define "European Acoustic Heritage" with very strict criteria. Definition by political or ethnical standards might lead us to ideas of what "European" in this context might or might not be. Seeking "the greatest," "the best," or "purest" representations or representatives of European Acoustic Heritage does not get us very far, either, since the diverse European soundscape can be disturbing and very annoying, but still be a part of Europe. Perhaps the project could be carried out more easily, if, instead of talking about European acoustic heritage, we should contextualize our work as acoustic heritage in Europe. In this respect, the name of the project could just as well be *Acoustic Heritage in Europe*.

One way of tackling the concepts is to think that heritage lies in the way we listen to sounds. There is always variance within listening experiences, even if the time and place where one listens to the sonic environment itself were the same. Listenings have dispositions depending on whether we are young, old, inhabitants, tourists, or visually impaired. Our attention shifts between sound events within various dynamics. We adopt different listening modes (Tuuri & Eerola 2012) in order to make sense of our reactions, of the connotations, of the causalities, of the functions and the semantics; we even empathetically feel out the intentions of the sources. Simultaneously, we are engaging in the cognitive process of imagining past sounds while casually listening to ongoing ones, and making aesthetic judgements on the whole concoction. These modes of listening combined with language and communication make up cultures of listening and making sound that are a culturally relevant expression that would be in need of safeguarding, to use the UNESCO term.

We should also stress that sound archives, though a key part of the EAH project, are making the change of the soundscapes audible, but actual soundscape heritage is not only recordings and archives but also listening and making sounds. While the individual sounds and soundscapes change, the way they are being listened to and interpreted change and, in some cases, disappear, too. Equally meaningful is to realize how current environments are being socially constructed and listened to in different geographical places and in different times, and to document and archive these phenomena to the future generations.

4.

*T*OOLS IN CONSTRUCTION *– THE E*AH *P*ORTAL

As described in the previous section, we cannot limit our definition of acoustic heritage to a closed list of good, representative examples. The notion of acoustic heritage is constantly being redefined. It is embodied on such spatial, cultural and temporal scales that writing such a list would be not only impossible, but perhaps somewhat futile as well. In this context, the partners wondered how they could describe such a concept. We needed a way to capture all expressions of our acoustic heritage: we needed to be able to grasp, in our daily practices, at the scale of a neighbourhood, of a street, of a house, all the sounds of our heritage, and at the same time, it was essential to provide the opportunity to compare these expressions at the scale of a nation, or across Europe. Our goal was, therefore, to create the conditions for capturing all these expressions of cultural heritage, and to provide a way to share them. We consider new information and communications technologies, and the tools offered by the Web 2.0 phenomenon, a great opportunity for us to implement solutions that face this difficulty in defining acoustic heritage. We have created a portal on which users can connect and use three online tools, a *European Soundscape Map*, *SoundscapeTV*, and *The European Water Map*, as a case study. All of these tools are open to the public, and one objective of the EAH project is to enable soundscape databases and maps to connect with the *European Soundscape Map*. Detailed information on how to include more databases

and individual sound files with metadata to the map are in sections 5.3. and 5.4. of the book, in the "Good practices guide".

We created a web site portal named *europeanacousticheritage* with the country code top-level domain (ccTLD) .eu to emphasize its European identity. The exact URL of the portal is, therefore, http://europeanacousticheritage.eu/. It is fully accessible with all browsers available on the market. It can be also used on mobile devices, like smartphones and tablets.

On this portal visitors have an overview of the subject. In the centre of the home page, there is a dynamic field showing the latest news (picture plus text). On top of that, the user can select one of three tabs:

• The project. It describes the project and how it is realized by all the partners. In this section of the portal, the user can also read more detailed documents on line (such as this report) and download general information surrounding it.

• The partners. In this section the partners introduce themselves and provide the readers with a brief description of their historical fields of competence. Further information for each the partner can be found on their own websites.

• The news. This area presents, in three different categories (activities, fieldwork, news), all the actions with which the partners are dealing within the project.

All these tabs are private in the sense that only the partners have the right to modify and update them. They have been created with the aim of gathering our activities into a single website that can be also used as a showcase for the others. There will be more tabs created during the project, as more resources of European soundscape activities are gathered.

Beside that, in the upper right corner of the home screen, the European Acoustic Heritage portal also provides three online tools that represent the heart of our project proposal: the European Soundscape Map, Soundscape TV and the Water Map.

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4.1.

European soundscape map

</div>

Our soundscape map has been developed by Escoitar with the aim of gathering already existing sound maps and also to give the user the opportunity to add new sounds. When you enter the site, the European Soundscape Map is displayed using the free mapping tool from Google Maps. The Escoitar group added a new layer that shows up with tags, offering the exact localization of sound recordings originating from several already existing sound maps. These sound recordings are also classified in six categories inspired by the classifications of R.M. Schafer, which reflect our theoretical work that we described in the first part of this report: acoustical signals, mechanical sounds, social sounds, sounds of nature, urban sounds, other sounds. These categories are large enough to welcome any kind of expressions for acoustic heritage.

Using the Google Maps web tool, users have the opportunity to zoom in or out the map, select the map or the satellite view, and even use the street mode if it is available. When they select a specific spot, users are

Screen copies of the European Soundscape Map

Screen copy of the European Soundscape Map, Mashup Mode

reconnected to the original sound maps and they can listen to the soundscape and read general information about it.

It is also possible to utilize the full-screen mode to better enjoy the geographical exploration of soundscapes. In this mode it is also possible to edit the mashup mode, which lets the users to link to the soundscape map to which the soundscapes belong.

By choosing a map as our tool of representation, we have decided on using a visual mode of entry on the topic of sound heritage. This is a deliberate choice because we fundamentally believe that sounds are deeply linked to their places of production. They do not exist without space propagation and without actors to produce them and to listen to them. By choosing to locate them on a map, we have chosen to reproduce them in their context of existence.

4.2.
Soundscape TV

All the partners, from the beginning of the project, insisted on the necessity to maintain as much as possible of the usage of interviewees' mother tongue when describing acoustic heritage. Many interviews that the partners have realized during their research or events has shown how deeply language, sound perception, and memory are linked. When we want to describe such phenomena, we truly need our native language to express what is natural, personal, and intimate.

Because of this fact, we also wanted very much that our web platform will be able to attract and welcome all individuals, the small stories that deeply describe our link to soundscapes. This is why we created a "soundscape TV" where anyone who wants to describe their own acoustic heritage can do it. It is similar to a social network, with small icons representing the people interviewed.

To launch the network, we realized interviews in several countries. With this tool, we want to give the capacity to users to listen to someone's story,

Screen copy of the European Soundscape TV

to connect it with the sound localized on the map and also, by using the research tool, to connect it with other interviews in Europe that deal with the same subject. We can say that it is a way to pinpoint, on a very small scale, acoustic heritage to better compare it with others countries or regions in Europe. For example, we started with interviews realized in the school of Architecture at Grenoble, in France. There, some people described the acoustic heritage of the place by describing all the sounds of a city surrounded by mountains. The interview is by itself very interesting, but, with the SoundscapeTV, we wish to connect this expression of heritage with other expressions that are, somewhere else, similar. This the purpose of Soundscape TV.

4.3.
THE WATER MAP (CASE STUDY)

The Water Map is a map that has been created from the European Soundscape Map and the European Soundscape TV databases, gathering any elements that are linked with water (sounds, events, interviews, pictures, etc.). In one screen, it shows all database contents that deal with the theme of water. Historically, civilizations were built close to water, and water sounds defined acoustic communities, as pointed out in the first large scale study on European soundscapes (Schafer 1977). Water can be audible in whichever form, as rain, rivers, fountains, harbours, as ice, freezing or melting, or as steam. Or as sewers, a cup of tea or a swimming pool, etc. All of these are expressions of water, from the North of Finland to the South of Portugal, from the West cost of Spain to the East of Greece.

Screen copy of the European Water Soundmap

With the first two online tools – the European Soundscape Map and the Soundscape TV – we created a database of databases that can truly be used on an unprecedented scale. These tools have been designed to deal with a local scale to gather heritage expressions in the infinity of European territories. At the same time, the online tools used also make it possible to "zoom out", offering the user a global overview on the specific subject. For example, on the European Acoustic Heritage portal, user have access to the tab "Water Map".

More generally, we imagine that this part of the portal can provide case studies around any key words that are used to describe soundscapes or interviews. The possibilities are unlimited, and the results might be very interesting from a transcultural perspective. The richness in languages can be seen as an advantage for the description of soundscapes, but it is also an obstacle for developers to implement appropriate research tools. It is also the reason why only one thematic map is available at this time.

In connection with the Water Map, the EAH project organizes a Water Soundscape Composition Contest, inviting composers and sound artists to submit soundscape compositions up to a maximum of 10 minutes to be included in the touring European Acoustic Heritage exhibition and the accompanying multimedia book. Alongside the themed Water Map of the project, the competitors are encouraged to reflect on soundscapes involving water in Europe and are encouraged to share their sonic knowledge of cultures and contexts of water, as well as to imagine acoustic heritage in Europe, invoking different listenings of soundscapes. Entries are open to professional or amateur composers and sound artists. The winning three and the winner of the audience vote will be installed in and played at the EAH travelling exhibition starting from Tampere, Finland, and proceeding to France, Belgium and, finally, Spain during 2012-2013.

5.

GOOD PRACTICES GUIDE

To conclude the EAH book and to elaborate on the earlier discussions, we will now present some advice or some good practices dealing with the subject of soundscape recording and archiving. These practices are collated from various projects of the partners during several years of elaboration, and represent methods useful for both larger and smaller scale recording projects.

5.1.
ETHICAL AND LEGAL ISSUES

Before starting to use the online tools that we've developed, users might want to read a few remarks about the ethical and legal issues linked to recording, publishing and/or listening to sounds that might belong to the private domain. The digitalization of sound and its dissemination through the Internet has revolutionized the way we are looking for information and the way we listen to sounds, or the way we buy or rent documents. Basic ethical and legal issues have not changed in any way. When you publish something, you should have all the authorizations and be sure that your publication will not offend anyone.

Every country represented by the partners involved in this project are still looking for the right ways to properly organize the online publication of sound. However, there is no consensus on the methodology. For example, in France, Cresson faced this problem when the research group decided to publish an online catalogue of the sounds that had been realized during several researches since the beginning of the 1980s. They follow the good practice guide of Véronique Ginouvès and Jean-Christophe Peyssard from the *phonothèque* of the "Maison Méditerranéenne des Sciences de l'Homme", in Aix-en-Provence. That is what they recommend for archiving surveys in ethnology:

For each deposit, points of law and ethics are treated on a case-by-case basis. It is always necessary to 1) to contextualize the various corpus; 2) to identify the various actors and their functions; 3) for all the recordings to detect the possible confidential information; 4) to sign a contract of use and diffusion with the researcher or, if necessary, its having rights; (copyrights); 5) discuss with the researcher or with specialists or the field and provide them the sound samples that were problematic; 6) suggest an archive for communication, keep the original in its entirety; 7) stay tuned to investigators, informants, and assigns to their demands. (Phonotheque 2012, translated by the authors.)

There is a contract for the researcher who submits the survey and a contract for the person who testified, and one for the person who shall consult library materials. They try as much as possible to differentiate the actors and have a contract for each. Our situation, where we want to record and diffuse nature soundscapes or urban soundscapes where nobody is identifiable, might be easier, but we thought that every future users of the platform should still be aware of this issue. This is why, pragmatically, for the interviews we realized for the Soundscape TV, we created the following document to protect both parties. This document is largely inspired by the *phonotèque* in Aix-en-Provence, free, and it can be re-used.

Assignment of Copyright testimony

I the undersigned, …. <insert Assignor's name> ….. testimony's author realised on the ………….<insert date> ………………… at <insert name of the place > in the frame of the **European Acoustic Heritage (2011-2013) project, European program of culture 2007-2013,** allows Cresson and Escoitar to:

☐ record the testimony with audio-visual equipment

During the promotion of the **European Acoustic Heritage projet (2011-2013), European program of Culture 2007-2013,** assignor allows Cresson and Escoitar to:

☐ use any part of the testimony

Audio-visual recordings will be used to promote **European Acoustic Heritage Project (2011-2013), European program of Culture (2007-2013)** trough the European Acoustic Heritage web site : http://www.europeanacousticheritage.eu/

Assignor agrees that according to the above mentioned acceptance, his recording could be edited and reproduced for free for broadcasting on any telecommunication network such as internet, cable, satellite, 3G, 4G, etc… as well on any audio support (DVD, CDROM, .mp3, etc…)

Audio-visual recordings will be published under the Creative Commons Licence BY-NC-ND (Attribution-NonCommercial-NODerivs) as it described on the web site :

http://creativecommons.org/licenses/by-nc-nd/3.0/.

At …………………………………, le …………………………

Assignor's signature   Editor Signature

The users who intend to deposit sounds on our platform are encouraged to familiarize themselves with several classical licences that are used on the internet, and to choose between them. These are the licences:

Copyright (Authors' rights)
Public Domain (works that are "publicly available")
Attribution 3.0 (CC BY 3.0 3.0)
CC Attribution-ShareAlike 3.0 (CC BY-SA 3.0 3.0)
Attribution-NoDerivs 3.0 (CC BY-ND 3.0 3.0)
Attribution-NonCommercial 3.0 (CC BY-NC 3.0 3.0)
Attribution-NonCommercial-ShareAlike 3.0 (CC BY-NC-SA 3.0 3.0)
Attribution-NonCommercial-NoDerivs 3.0 (CC BY-NC-ND 3.0 3.0)

5.2.
Recording soundscapes

Successful sound recording techniques require much knowledge and great practical field experience. However, we do believe that recording can, and should, be carried out by non-professionals as well, and the recordings can be of good quality for dissemination on the Internet. The following subchapters will present two studies on field recording practices. First, Ari Koivumäki from TAMK presents a method of moving microphone recording, in comparison to the spotted microphone technique. Following that, Jürgen Schöpf, Nadja Wallaszkovits and Bernhard Graf from Phonogrammarchiv present their work flow at the sound archive, which involves surround sound and spatial recording technologies.

5.2.1. Using spotted microphone techniques and recording with a moving microphone

Our sonic environment is in constant transition. Recordings provide material for the analysis of this transformation as well as help with the description of soundscapes and sound objects as such (for definitions of the concepts see, e.g., Augoyard and Torgue 2005, 5--7). There are two ways to make a documentary recording of a soundscape. The first is to make a

recording from one or several spots in the middle of the sound sources, or at least close to them. The result is an edited compilation of soundscapes from different angles. The second way is to move with the microphone towards or inside the sonic environment. The outcome is one condensed sequence of sounds in which the dominance of different sound sources varies.

The outcome of these two methods differs significantly. In the first one the listener chooses the sound objects to be listened to one at a time from different sound sources. In the latter, the sound sources are selected by the recordist on behalf of the listener. To some extent, the moving microphone method bears a resemblance to the soundwalk (see Uimonen 2011, 257-258; McCartney 2010). The project One Hundred Finnish Soundscapes (2006) was mainly recorded with spotted microphones, while the Pirkanmaa Soundscapes (2009) recordings were usually made with a moving microphone.

Using a microphone setup that is constructed to record from a certain spot can be seen as a more accurate method of documenting a sonic environment. When the time and the place have been carefully chosen, the recordings carried out, for instance, during different times can be compared with each other and possible changes studied (e.g. Järviluoma et al. 2009). When recordings are made several times and from different perspectives in the same location, a large amount of information on the sonic environment will be gathered. In Dalsbruk village, the sound of the steam whistle was recorded several times from different distances with the attempt to capture the signal as the community hears it.

Walking with the microphone provides a different angle in documenting soundscapes, and a somewhat challenging one. Even though movement paths can be scheduled and carried out according to a strict plan, the recordists are prone to point the microphones at least slightly, if not totally, differently from one another. The focus of the recordists varies depending on the sound events occurring during the walk. Also, the distance between the microphone and the sound source, as well as the angle towards the sound source, alter accordingly.

With spotted microphone techniques, it is possible to record from one perspective at a time. While played back and listened to with a sufficient loudspeaker system or headphones, the listening experience can be a close reproduction of the recording event. However, the composition of sounds is more static than when moving with the equipment. The benefit for the listener is a more accurate and static stereo, binaural or multichannel sonic image. The basic challenge is to find the right place, position and direction for the microphone array – together with good weather conditions – and enough recording (and editing) time.

What are the benefits of recording with a moving microphone? Perhaps the most important is that the person making the recording is able to interact with the sound sources and events. The recordist can go closer, stay still or move away, depending on the nature of the sound. By pointing towards specific sound sources, different aspects of the soundscape can be focused on for the listener. If, in spotted microphone recordings, the soundscape is in balance "as it is", with the moving microphone it is possible to direct the images perceived from the recording – certain sounds can be put in front of others, giving them dominance over other sounds. Binaural recordings, especially, tend therefore to be more subjective by nature, i.e. more artistic, more intentionally composed.

In the Pirkanmaa Soundscapes project, the recording and interviewing team was listening to and documenting the sonic environment in collaboration with the informants, moving in the middle of the soundscape, e.g. at a fish market, where one could walk among the crowd, hear the seagulls above, fish sizzling on the frying pans and sales people yelling their advertisements, catching sounds here and there – and talking with the people inbetween the sound events, making conducted listening walks (applying a method adapted from the écoute situeé, developed by Cresson sound researchers, see e.g. Järviluoma et al. 2009, 175).

What is the main difference between these two methods? Perhaps they can be seen as two sides of the looking glass: one is a realistic soundscape as a compilation of sound sources to be mediated from the acoustic

environment to an audience, the other a subjective creation made by a sound designers who trusts in their own imagination and acoustic competence. In everyday surroundings, hearing is just one part of perception, different senses are interacting and receiving information on the environment as well. While awake, we are usually doing something for some reason, or have motives for our behaviour. With the help of hearing, we can keep watch of our environment, night and day. Sounds form a concrete element of our everyday lives; we hear sonic events all the time without focusing on the act of listening itself – until the intention arises (Truax 2001, 18). However, listening to a recording is a challenging task to do. Conscious effort is needed to make an image out of the acoustic information with hearing alone and without the interaction of the other senses.

5.2.2. Practicality of location recording with surround technology – exploring a workflow from field recording to user-friendliness and to long-term preservation

In the project European Acoustic Heritage, the Phonogrammarchiv has taken on the task of exploring surround sound or spatial recording technologies for use in fieldwork or location recording setups. In a larger perspective, this serves the Phonogrammarchiv's continuous effort to develop technologies for the creation and long-term preservation of audiovisual documents. Although surround sound technology is easily available today in the consumer electronics market (however little actually used), this should not obscure the fact that spatial recording technologies in use for scholarly audiovisual documentation are still in their infancy and have to be considered an innovation under way.

There are three main requirements for recording technology in field-use that should be taken into consideration: robustness and availability of parts, ease of use, and open standards. With robustness and availability of parts we mean, above all, mechanical robustness (metal device boxes are to be preferred over plastics, for example). Of course this applies to all parts of the recording system, be it a microphone, a cable, a plug, a recorder, or a carrier. Thus flash cards are usually preferred nowadays, as

no mechanical parts are involved in the recording process. A dedicated recording machine also carries an element of grace, whereas a laptop setup certainly has a number of risks, as software can never be as stable as dedicated hardware. Electrical robustness is an issue as well: a 6.3mm TRS connection can be found in many places in the world on local markets, and local radio or mobile phone repair shops are able to solder their connections, which is much less the case for an XLR connection, let alone a Lemo or MADI. Also, 12V car batteries and AA 1.5V batteries are available virtually everywhere, but the picture is a lot different for a 7.2V DC fed through special plugs of a certain manufacturer. However, this applies more to projects in anthropological fieldwork, when researchers depend on their equipment for months without the chance of professional service inbetween. In the context of "European Acoustic Heritage", the availability of parts is much less of an issue.

The ease of use aspect is highly important. Therefore the Phonogrammarchiv usually hands out, as a standard for recording, two AKG CK91 capsules in a fixed ORTF setup fed into an Edirol R09. This set has proven to be a good compromise between robustness (fixed microphone setup, small, light weight, 3.5 mm plugs), sound quality, and ease of use, as the Edirol R09 has a very simple menu structure. Moreover, all important functions have mechanical switches or buttons on its surface, not hidden in the menus. Many other devices may offer better quality (e.g. 48V phantom power, symmetrical XLR plugs), but would overstrain many users' technical understanding. The result would be a recording at risk of being distorted, or even a recording that would simply fail. Thus, for the recordings produced by a skilled staff, ultimate quality will of course be the aim, which dictates the use of the best equipment available. But compromises have to be made if the equipment is used by non-technical operators.

Open standards are especially important ffrom the long-term perspective – and archives, of course, have to look at the long-term preservation. MP3 and Minidisc technologies, for example, have always been discouraged by archives (IASA TC04), but have been used by people that have received no professional guidance before they started their recording work. Most

people do not have a sensibility of the difference in quality of the equipment offered, for instance, by a consumer HiFi shop or a professional musical instruments retailer; for most, simplicity, size and budget are deciding factors. On the professional archival level (according to IASA TC04), linear PCM is, of course, the way to go.

Why use surround audio in soundscape recording? Since soundscape recording is about documenting sounds in the open (at least most of the time), the question should rather be the other way round: why use non-surround audio in soundscape recording? A proper spatial representation of the sound environment, we believe, should be central to the concept of soundscape itself. On the other hand, all directional sound in location recording is about a certain sound source being documented, but not a true representation of the -scape aspect of sound.

We have taken the following recording technologies into account for our tests: OCT surround (Optimum Cardioid Triangle) as proposed by Günther Theile, Ambisonics (Soundfield), ORTF-Surround, and Double-MS. The choice of technologies was motivated by a mixture of reasons, of which the availability of the system in the Phonogrammarchiv and its standardization were the most important ones.

An OCT surround was readily available with a cardioid centre (DPA4011), two hypercardioids (Schoeps CMC641) as Left and Right channels, and two cardioids (Neumann KM140) for Left Surround and Right Surround. The distance between the Left and Right hypercardioids was 70 cm, the centre (DPA4011) was set 8 cm in front of the Left and Right microphones, the distance between the surround channels was 91 cm, and the distance from the front pair to the surround pair was 44 cm. OCT was also chosen since the playback setup is the most frequently marketed surround format for end-users ("5.1" standard), and the recording setup of the OCT directly relates to this quasi-standard loudspeaker setup. Thus considerations of mixing can be bypassed.
From Ambisonics, for the purpose of test recordings, we have rented a Soundfield ST450. First of all, being a coincident technology, it is easy to

handle. Further, Ambisonics is a well researched and documented format, even though some of the involved tools (VST plug-ins) are proprietary. The theoretical advantage is that it is independent of any loudspeaker configuration, at the expense of much more sophisticated processing. Also, for the archival environment, it is a disadvantage that the archival format (B-format) cannot be used to listen to directly; in other words, processing is obligatory.

The Double-MS setup was chosen because it is frequently used in documentary film making, i.e. location recording. Being a coincident technique, it is easily portable and rather unobtrusive. It is also perfectly mono and stereo compatible and does not relate to a specific loudspeaker configuration. Although it requires matrixing, the rules for matrixing are very simple (open standard) and can be done with any mixing console, analogue or digital. For our Double-MS, we had a Neumann RSM191 (which combines a short lobe with two cardioid capsules for the "S"-signal

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Double-MS setup
(Photo: Jürgen Schöpf)

in a not perfectly coincident arrangement). On top of this we fixed a hypercardioid (Schoeps CMC641). In figure 1, below, the lobe capsule must be situated behind the rightmost red rubber band, and one of the two cardioid capsules that form the figure-of-eight pattern is vaguely shimmering golden through the black grid a little further to the right. The lobe for the M-front signal, therefore, points to the left, and the hypercardioid (M-surround) on top points to the right.

When trying to use the free Schoeps MS-plug-in (VST), we have not yet managed to get satisfactory results. Probably this is due to the fact that this plug-in expects cardioid microphones for the M-front and M-surround channels, whereas we had a lobe and a hypercardioid. Also, a perfect coincidence was not possible within our windshield, but can perhaps be achieved by delaying the respective signals to correct phase problems.

Lacking a fixed ORTF surround system, we combined two Schoeps MSTCs on top of each other. The advantage of the ORTF microphone array is the fact that it is able to provide full compatibility with the material so far created in the Phonogrammarchiv: the Phonogrammarchiv has generally been using ORTF as the standard stereo field recording array for decades. Besides fulfilling the requirements concerning robust design, portability and ease of use, ORTF seems to be most useful when analysis and evaluation properties of the documentary recording are an important requirement. In this technique, the microphone capsules are separated by 17 cm at an angle of 110°. From an ORTF recording, when analysed via headphones, our brain can trace the wanted signal within a noisy surrounding, the well-known so-called "cocktail party effect". The head-related binaural microphone array imparts the extra information and so helps to identify wanted signals in noisy sound fields. The ORTF surround setup is simply an up-scaled version of the classical ORTF stereo; thus it is able to provide us with all binaural advantages of the ORTF array and carry them into the surround/spatial realm. From this point of view it can be said that ORTF surround is the format which we prefer: it delivers four discrete channels; all of them are meaningful without further processing; the position of the microphones used in this system is an

approved standard and will give the listener reproducible, clear directional information. Also, as the specification for ORTF is clearly defined, the microphone setup can easily be replicated in a standard way. Therefore, using ORTF surround for location recording offers us the possibility of staying within our previous standard, providing the extra advantage of a spatial recording technology that can easily be applied to our existing setups. Additionally, the four channels can easily be recorded with a single device (as four-channel recorders are more easily available than, e.g., six- or eight-channel devices necessary for an OCT), and they are meaningful without any matrix or mix-down processes inbetween.

When comparing the recording setups, especially when making sound-scape recordings simultaneously with three different systems, practicability is an important topic. The equipment has to be lightweight, small and unobtrusive, and, in addition, it should have the potential to be operated by non-technicians. The output quality must be a linear format (LPCM). OCT is out of the question due its enormous size and dramatic

OCT, Soundfield, and Double-MS (Photo: Bernhard Graf)

appearance. On the one hand it is nearly impossible to move this kind of microphone system without using a car, and, on the other hand – especially in crowded places – many people ask what you are doing (most of them want to know if a noise measurement is being done here), and as you can imagine, these questions can also be heard on your recordings. A further argument against OCT is that the position of the microphones needs to be checked carefully before the recording can be started. And last but not least, OCT delivers five channels, and most of the recorders in our preferred price range cannot record more than four channels. We do not have this problem with the Soundfield or Double-MS systems, which export their signal via a "matrix" and deliver four (Soundfield, ORTF surround) and three channels (Double-MS), respectively. The disadvantage is that you will have to use a "matrix", which means one more device to be carried around, apart from the hassle of preparing the signal for non-proprietary archival preservation purposes.

Another important factor to consider is the output and user format. Using surround technology for field recording raises the question of how to provide access for users to the material collected. Ideally, the user format follows an open standard on all levels and allows the automatic down-mix as a default playback format from the source material. At present, there exists a variety of possible standards, e.g. MP3 Surround, DTS, and AAC.

However, it may be of interest first to define the conditions which apply to the end-users of the Phonogrammarchiv. Usually the Phonogrammarchiv is used by expert researchers in their field, who will either personally come to the archive to listen to its holdings or request working copies of recordings on a digital carrier (CD, DVD, files via FTP). For in-house use, we are unable to provide a surround playback setup and will thus have to resort to stereo or other kinds of down-mixes. For researchers that request digital copies, we need the most widely distributed formats to ensure playability with those end-users on a range of systems we cannot foresee. The most likely surround playback setup is, of course, the most widespread, thus the standard 5.1 will be the most likely configuration. Practically speaking, however, only very few end-users are

able to listen to, and willing to properly set up, a surround sound system, thus full compatibility to stereo is important. Within the *European Acoustic Heritage* project the "end-users" will be the visitors of the travelling exhibition, where it should not be too difficult to provide a good quality surround system. On the other hand, users will be able to download soundscape sounds over the Internet. In this case MP3 Surround is, apparently, the most widely available option. Of course, a stereo version (from the front ORTF only) can be provided in parallel with ease.

MP3 Surround is a recent MPEG standard (Herre 2008) specifying a backwards compatible low bit-rate multi-channel audio coding technology. An MPEG Surround encoder is able to dissect a multi-channel audio mix (e.g. 5.1 channels) into a stereo down-mix and spatial data. These spatial data represent inter-channel properties and enable an MPEG Surround decoder to expand the stereo signal to be rendered to the original speaker configuration. The MPEG Surround encoding is locked to a certain speaker configuration. An alternative speaker setting would require a new multi-channel audio mix as well as a re-encoding. Currently, MPEG is extending the concept of MPEG Surround towards the coding of sound objects as opposed to the coding of channels. This future standard is referred to as Spatial Audio Object Coding (SAOC). From a multitude of sound objects, a SAOC encoder produces a down-mix and object parameters. At the decoder side, the user can interactively render the objects, including, for each object, a change of spatial position, equalization, volume and effects. As this is not yet generally available, MP3 (of a stereo ORTF) and MP3 Surround (of the ORTF Surround) will be provided as the download formats for the recordings made in the Phonogrammarchiv for the European Acoustic Heritage project. Tests regarding the behaviour of ORTF Surround recordings under different loudspeaker configurations (especially 5.1) could not yet be carried out; this will be done in due course, at least in order to provide recommendations for users.

Both DVD-Audio standards, DTS and AAC, are proprietary formats, just as MP3 Surround. But both DVD-Audio formats target the music/film

industries, whereas MP3 surround is more open towards end-users, especially in terms of licensing. For the current discussion of a surround technology workflow from recording to end-user and archive, none of the three (DTS, AAC, MP3 Surround) is satisfactory at the moment. Yet with LPCM as an archival format remaining, of course, top priority, the significance of an open standard for the end-user format can be rated lower in importance. In every change of end-user technology the end-user output format can be derived from the LPCM archival format (automatically, it is to be hoped).

The final issue at hand is to consider archival strategies. Elementary rules for archival work are to keep the number of work steps applied to the (audiovisual) documents as low as possible and the (audio) quality as high as possible (e.g. only uncompressed formats), with all tools on all levels ideally being open standards, as all work steps need to be documented (file formats, codec software, etc.).

Strategies for archiving multi-channel recordings are still underdeveloped. In earlier projects, typically multi-channel recordings – which can contain eight or more separate channels of audio information – were mixed down or compressed into fewer channels for preservation. While the mixing process eases the preservation work, it comes at a price – namely the destruction of the recording's surround sound experience. Recent approaches (Casey and Gordon 2007, Ackermann 2010) suggest the digital preservation of each individual channel as a stream. This can be carried out e.g. as a multi-channel BWF. The user will then be able to download the recording, complete with separate channels, as a digital file which can be manipulated using computer programs.

A special challenge is the metadata management for multi-channel audio recordings. The technical metadata elements are structured to fit the characteristics of the file and, therefore, consist of streams and regions. In the model application outlined in Casey and Gordon (2007), a stream is an individual channel of audio information contained within a region. Each region must have one or more stream elements. If an audio object's digital file contains interleaved audio channels, those channels are documented

as individual streams. If there are multiple audio files representing multi-channel audio, then each file is a separate audio object with a separate metadata entry. Documentation at the stream level consists only of naming the stream, assigning a channel number, and indicating its map location. All other documentation related to characteristics associated with the object occurs at the region level.

Also, the AES31 group of documents, a number of standards published by the Audio Engineering Society, has been designed to enable simple interchange of audio files and multi-channel projects between workstations. AES31-3 is used in archival work to model the relationship between the source recording and resulting digital files. It provides a standardized way of linking the various (multi-channel) files that are created, sometimes through multiple stops and starts during transfer of a deteriorating source, thereby reconstructing the source recording. Without it, future researchers are left with one engineer's interpretation of the edit points. This standard may also be used for the collection of marker information, or cue points, based on the start and stop times of performances in a digital file. (AES 2008/1999.)

For reasons of practicality as well as compatibility with archival standards currently in use, the preliminary results point towards the following workflow. Recording will be done in ORTF surround. Post-processing is not necessary for the ORTF format. Archiving formats will be two stereo files for front and back, and end-users will be provided with MP3 Surround or two sets of stereo files.

5.3.
Depositing a sound file online

As described above, it is very important to be aware of the metadata for any sounds that a contributor wants to deposit and archive to a sound map. If we want this sound to be listened to as intended and also used in the context that it has been created, and, of course, to be used for a research, we designed the site so that it is impossible to deposit a sound without filling out the following information. It is the minimal "identity

card" of a sound file. It is the one we use for our database and, of course, the one we recommend for everyone.

In the sound file identity card, the first description fields concern the sound itself. Authors have to describe:
• Sound title: given by the author
• Address: the user can input the address or find it through the Google Maps tool
• GPS coordinates are automatically updated when the address is found. The coordinates can also be read on Google Earth, for example.
• Address latitude
• Address longitude
• Sound description : a short text describing the contents and context of the sound.
• Technical information of the recording: mono, stereo, type of micro phone, sound recorder, meteorological conditions of the sound-recordings, etc.
• Date
• Time

Next, some data about the authors themselves:
• Phone Number:
• Email:
• Website
• Twitter
• Facebook

At the end, the authors have to try to categorize the sounds within the following categories.
• Acoustic signals, Mechanical sounds, Other sounds, Social sounds, Sounds of nature, Urban sounds

It is also possible to associate the sound with a
• Tag keyword
• An added image

5.4.
Connect your own database
to the European Soundscape Map

To get the European Soundscape Map to work in its full capacity, cooperation with other soundscape map projects is crucial and highly welcome. Below are the more graphic and detailed technical instructions from the developer of the European Soundscape Map, Escoitar, on how to get your own database to communicate with it.

The basis of the map is to work with AJAX (Asynchronous Javascript and XML), on which modern websites are usually based. By loading data from the Internet using this background scripting method, the site can show new content whenever required by the user, without having to reload the target web page itself:

Empty HTML document, no content. JavaScript motor to load data.
XML documents with all information needed
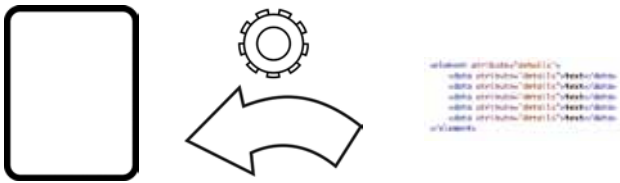
SoundMap works the same way.

Each RSS item or Json object corresponds to a marker on the map:

Each RSS item or Json object should contain at least the following data to create an info window

- Location / coordinates
- Title
- Sound URL
- Text / Description
- Image
- Date
- Author

A few words in favour of Json: the documents are smaller and lighter than with RSS. Escoitar began by using RSS, but our website became slow, so we shifted to Json instead. Now the site works much faster. Also, it is easier for the computer to process Json files. The management of files is uncomplicated: you can separate all information in several documents and manage one marker at a time. You can work with much more markers using Json than using RSS.

On the other hand, in order to make marker's data more accessible from different platforms, it is useful to be able follow some web standards.

Required elements in the RSS specification are
- title: Title of the item
- link: URL of the item
- description: Synopsis of the item

Recommended elements in RSS specification are
- author: Author of the item
- category: Includes the item in one or more categories
- enclosure: Describes a media object that is attached to the item
  – in this case the sound recording.
- guide: A string that uniquely identifies the item. Normally a unique URL for the DB entry.
- pubDate: Indicates when the item was published.

Adding the following tags to an RSS file allows iTunes to directly play all sounds included as a playlist. Recommended iTunes elements for podcasting are:
- itunes:author: Author of the item (= author)
- itunes:summary: The item synopsis (= description)
- itunes:duration: Recording duration
- itunes:image: Image related to the item

Dublin core allows you to extend RSS and use new elements following W3C standards. The extra elements the escoitar.org RSS uses from Dublin Core are:
- dc:subject: Tags of the item.
- dc:date: Indicates when the recording was made.
- dc:language: Language of the item.
- dc:creator: Author of the item (= author).

Hopefully these instructions will help you to connect your own database to the Soundscape Map. More information will be available on the project web page at europeanacousticheritage.eu.

6.

BIBLIOGRAPHY AND REFERENCES

Acoustic Environments in Change 2000. AEC project web page. URL: http://www.6villages.tpu.fi (accessed 1 August 2012).

Ablinger, Peter 2009. *Landscape Opera Ulrichsberg*. URL: http://ablinger.mur.at/landscapeopera.html (accessed 3 July 2012).

Ackermann, David 2010. Audio preservation for surround sound works. Paper presented at the *41st Annual Conference of the International Association of Sound and Audiovisual Archives* (IASA), Philadelphia, Pennsylvania, USA, 2–6 November 2010.

AES 2008/1999. AES31-3-2008: *AES standard for network and file transfer of audio - Audio-file transfer and exchange - Part 3: Simple project interchange*. S.L: Audio Engineering Society.

Amphoux, Pascal 1992. À l'écoute du paysage. *Paysage et crise de la lisibilité*. Lausanne: Université de Lausanne, Institut de Géographie.

Amphoux, Pascal 1993. *L'identité sonore des villes Européennes - Guide Méthodologique, à l'usage des gestionnaires de la ville, des technitiens du son et des chercheurs en sciences sociales*. Tome 1: Techniques d'enquêtes. Tome 2: Réperoire de concepts, rapport de recherche n°117. Grenoble & Lauzanne: Cresson & IREC.

Amphoux, Pascal et al. 1991. *Aux écoutes de la ville. Enquêtes sur trois villes suisses*. Grenoble: Cresson.

Attali, Jacques 1977. *Ruidos. Ensayo sobre la economía política de la música*. Valencia: Ruedo ibérico, Ibérica de ediciones y publicaciones.

Augé, Marc 1995. *Los no lugares. Espacios del anonimato. Una antropología de la sobremodernidad*. Barcelona: Gedisa.

Augoyard, Jean-François 1978. *Les pratiques d'habiter à travers les phénomènes sonores – contribution à une critique de l'habitat*. Grenoble: Cresson

Augoyard, Jean-François 1999. *L'objet sonore ou l'environnement suspendu. Ouïr, entendre, écouter, comprendre après Schaeffer.* Paris: Ina-Buchet Chastel.

Augoyard, Jean-François et al. 1985. *La production de l'environnement sonore: analyse exploratoire sur les conditions sociologiques et sémantiques de la production des phénomènes sonores par les habitants et usagers de l'environnement urbain.* Grenoble: Cresson.

Augoyard, Jean-François & Torgue, Henry (ed.) 2005. *Sonic experience - A guide to everyday sounds*. Translated by Andra McCartney & David Paquette. Montreal: McGill Queen's University Press.

Belder, Lucky 2011. The individual and the right freely to participate in the cultural life of the community. Keynote lecture at *Heritage and Individuals. 3rd Conference of the SIEF Working Group on Cultural Heritage and Property*, 14–17 September 2011 in Pori, Finland.

Borges, Jorge Luis 2005. *El hacedor*. Madrid: Alianza Editorial.

Bosteels, Bruno 1996. A Misreading of Maps: The Politics of Cartography in Marxism and Poststructuralism. *Signs of Change: Premodern, Modern, Postmodern*, ed. S. Barker. Albany: State University of New York Press.

Brenneis, Donald 2003. Reflections Toward New Conceptions of Rights. *Culture and the Questions of Rights*, ed. Charles Zerner. Durham: Duke University Press.

Cage, John 1999. *Escritos al oído*. Murcia: Colegio Oficial de Aparejadores y Arquitectos Técnicos.

Careri, Francesco 2005. *Walkscape. El andar como práctica estética.* Barcelona: Gustavo Gili.

Carroll, Lewis 2006/1889. *Sylvie and Bruno*. Sydney: Read How You Want.

Cartophonies 2012. Sound map ambiances urbaines et sonores, Laboratoire Cresson. URL: http://www.cartophonies.fr (accessed 1 August 2012).

Casey, Mike, Bruce Gordon (eds) 2007. *Sound Directions. Best Practices for Audio Preservation.* Indiana University. Appendix 1. URL: http://www.dlib.indiana.edu/projects/sounddirections/papersPresent/sd_app1_v1.pdf (accessed 1 August 2012).

Chatwin, Bruce 2007. *Los trazos de la canción.* Barcelona: Península.

Chelkoff, Gregoire et al. 1988. *Entendre les espaces publics*. Grenoble: Cresson.

Chelkoff G. & Thibaud J.P. 1996. *Ambiances sous la ville – une approche écologique des espaces publics souterrains*. Grenoble: Cresson.

Chelkoff, G. (dir), Jean-Luc Bardyn (sound recorder), Olivia Germon (archiving) and Sylvie Laroche (mapping) 2008. *Cartographoe sensible d'une ville nouvelle - Exploration du patrimoine sonore de l'Isle d'Abeau.* Grenoble: Cresson.

Chelkoff, Gregoire, Francoise Acquier, Jul McOisans, Sylvie Laroche, Gabriel Berubé 2012. How does the world sounds, introduction text of the web site. URL: http://www.cartophonies.fr/en/ (accessed 20 March 2012).

Connor, Steven 2004. Sound and the self. *Hearing History*, ed. Mark Smith. Athens, GA: University of Georgia Press.

Corbin, Alain 2003. The auditory markers of the village. *The Auditory Culture Reader*, eds Michael Bull & Les Back. Oxford: Berg.

Cosgrove, Denis E. (ed) 1999. *Mappings*. London: Reaktion Books.

COST 2012. Soundscape of European Cities and Landscapes. URL: http://soundscape-cost.org (accessed 1 August 2012).

Dafeldecker, Werner 2011. Monolith. URL: http://www.dafeldecker. net/projects/above-below.html (accessed 1 August 2012).

Erlmann, Veit 2005. But what of the ethnographic Ear? Anthropology, sound, and the senses. *Hearing Cultures*, ed. Veit Erlmann. New York: Berg.

Essl, Karlheinz 2012. Ambient soundscape generator. URL: http://www. essl.at/works/flow/download.html (accessed 1 August 2012).

Feld, Steven 1996. Waterfalls of Song. An Acoustemology of Place in Resounding in Bosawi, Papua New Guinea. *Senses of Place*, eds Steven Feld & Keith Basso. Santa Fe, NM: School of American Research Press.

Feld, Steve 2003. A Rainforest Acoustemology. *The Auditory Culture Reader*, eds Michael Bull & Les Back. Oxford: Berg.

Finnish Society for Acoustic Ecology 2006. One hundred Finnish Soundscapes compiled for publication. URL: http://100aanimaisemaa. akueko.com/tiedote.php?id=26 (accessed 1 August 2012).

Gieryn, Thomas F. 2000. A space for place in sociology. *Annual Review of Sociology*, vol. 26: 463-496.

Harley, Brian 2005. *La nueva naturaleza de los mapas. Ensayos sobre la historia de la cartografía*. Mexico: FCE.

Hellström, Björn 2003. *Noise Design - Architectural Modelling and the Aesthetics of Urban Acoustic Space*. Doctoral Dissertation, School of Architecture, Royal Institute of Technology KTH. Göteborg: Bo Ejeby Förlag.

Herre, Jürgen, Kristofer Kjörling et al. 2008. MPEG Surround- The ISO/MPEG Standard for Efficient and Compatible Multichannel Audio Coding. *Journal of the Audio Engineering Society*, vol 56(11): 932-955.

Hickey, Kevin 2001. Cartography. *Encyclopedia of Postcolonial Studies*, ed. John Charles Hawley. Westport: Greenwood Publishing Group.

Hörstadt 2012. Hörstadt. URL: http://www.hoerstadt.at/index.html (accessed 1 August 2012).

Järviluoma, Helmi, Meri Kytö, Barry Truax, Heikki Uimonen and Noora Vikman (eds) 2009. *Acoustic Environments in Change*. Tampere: TAMK University of Applied Sciences.

Järviluoma, Helmi, Ari Koivumäki, Meri Kytö and Heikki Uimonen (eds) 2006. *Sata suomalaista äänimaisemaa*. Helsinki: Suomalaisen Kirjallisuuden Seura.

Kennedy, Maev 2001. CD art and the sound of silence. Guardian 9 November. URL: http://www.guardian.co.uk/uk/2001/nov/09/maevkennedy (accessed 5 July 2012).

Kautonen, Outi & Ari Koivumäki 2010. Soundscape stories and routes in Pirkanmaa. Paper presented at the WFAE Koli 2010 conference.

URL: http://www.akueko.com/liitetiedostot/kautonen.pdf (accessed 1 August 2012).

Khan, Naseem 2005. Taking root in Britain. The process of shaping heritage. *The politics of heritage. The legacies of 'race'*, eds Jo Littler & Roshi Naidoo. London & New York: Routledge.

Koli 2010. *Ideologies and Ethics in the Uses and Abuses of Sound*, Post-conference webpage with abstracts and audio. URL: http://www.akueko.com/Default.aspx?p=WFAE%20Koli%202010 (accessed 1 August 2012).

Lechleitner, Gerda (ed.) 2004. *Austrian Folk Music (1902-1939)*. Sound Documents from the Phonogrammarchiv of the Austrian Academy of Sciences. The Complete Historical Collections 1899-1950. Ed. Dietrich Schüller, Series 8, OEAW PHA CD 22. Vienna: Austrian Academy of Sciences Press.

Littler, Jo & Roshi Naidoo (eds) 2005. *The politics of heritage. The legacies of 'race'*. London & New York: Routledge.

Lyotard, Jean-François 1987. *La condición postmoderna*. Madrid: Catedra.

Mallat, Otto Heinz 1968. *Filme richtig!* Wien: Verlag Adalbert Pechans Witwe.

Masjid, Asifa & Stephen C. Levinson 2011. The senses in language and culture. *The senses and society* 6(1): 5–18.

McCartney, Andra 2010. Soundwalking: Creating Moving Environmental Sound Narratives. URL: http://soundwalkinginteractions.wordpress.com/2010/09/27/soundwalking-creating-moving-environmental-sound-narratives/ (accessed 28 April 2012).

Ministry of Environment, Japan. Measures for Problems Relating to Local Living Environment. URL: http://www.env.go.jp/policy/hakusyo_e/honbun.php3?kid=221&bflg=1&serial=67 (accessed 1 August 2012).

NoTours 2012. Augmented Aurality for Android. URL: http://www.notours.org (accessed 1 August 2012).

One Hundred Finnish Soundscapes 2006. *Sata suomalaista äänimaisemaa project archive*. URL: http://100aanimaisemaa.akueko.com (accessed 3 July 2012).

ORF 2012. Kunstradio. URL: http://www.kunstradio.at (accessed 1 August 2012).

Phonotheque 2012. Compte-rendu d'une matinée sur les questions de droits et obligations des chercheurs en matière de conservation et d'archivage. URL: http://phonotheque.hypotheses.org/5098 (accessed 1 August 2012).

Pirkanmaa Soundscapes 2009. Pirkanmaan äänimaisemat. URL: http://pirkanmaanaanimaisemat.blogspot.com (accessed 28 April 2012).

Positive soundscapes 2012. Positive soundscapes. URL: http://www.positivesoundscapes.org (accessed 1 August 2012).

Rainbird, Paul 2002. Making Sense of Petroglyphs. The Sound of Rock-Art. *Inscribed Landscape. Marking and Making Place. Honolulu*, eds Bruno David & Meredith Wilson. Honolulu: University of Hawaii Press.

Russolo, Luigi 1998. *El arte de los ruidos*. Cuenca: Taller de ediciones. Centro de creación experimental.

Schaeffer, Pierre 1966. *Traité des objets musicaux*. Paris: Seuil.

Soundscapes and Cultural Sustainability 2009. SoCS project web page. URL: http://socsproject.blogspot.com (accessed 1 August 2012).

Schafer, R.M. (ed.) 1977a. *Five Village Soundscapes*. Vancouver, BC: ARC Publications.

Schafer, R.M. 1977b. *The Tuning of the World*. Rochester: Destiny Books.

Schüller, Dietrich 2012. Personal communication with Jürgen Schöpf on 30 April 2012.

SES 2006. Vuoden esteettinen teko 2006. URL: http://www.estetiikka.fi/toiminta/vuoden-esteettinen-teko-2006 (accessed 1 August 2012).

Stirling, Matthew W. 2008. *Origin Myth of Acoma and other records*. S.L: Forgotten Books.

Truax, Barry 2001. *Acoustic communication*. 2nd edition. Westport: Ablex Publishing.

TS 2011. Mission for Finland. URL: http://www.maakuva.fi/wp-content/uploads/2011/06/TS_Report_EN.pdf (accessed 1 August 2012).

Tuan, Yi-Fu 1975. Place. An Experiental Perspective. *Geographical Review*, 65(2): 151–165.

Tufvesson, Sylvia 2011. Analogy-making in the Semai sensory world. *The senses and society* 6(1): 86–95.

Turku kuuntelee 2011. Turku Listening Map. URL: http://turkukuuntelee.fi (accessed 1 August 2012).

Tuuri, K. & Eerola, T. 2012. Formulating a Revised Taxonomy for Modes of Listening. *Journal of New Music Research*, upcoming in 2012.

Uimonen, Heikki 2011. Everyday Sounds Revealed. Acoustic Communication and Environmental Recordings. *Organised Sound. An International Journal of Music and Technology* 16 (3): 256–263.

UNESCO S/A. What is Intangible Cultural Heritage? e-leaflet. URL: http://www.unesco.org/culture/ich/doc/src/01851-EN.pdf (accessed 1 August 2012).

UNESCO S/A. Questions and Answers e-leaflet. URL: http://www.unesco.org/culture/ich/doc/src/01855-EN.pdf (accessed 1 August 2012).
Urry, John 1990. *The Tourist Gaze*. London: Sage.

Waller, Steve J. 2003. Conservation of Rock Art Acoustics: ´Unexpected´ Echoes at Petroglyph National Monument. *Rock Art Papers*, vol 16(41): 31–38.

This is a book about European acoustic heritage. The authors and editors are proposing multiple ways to define, describe, conceptualise, document and represent acoustic heritage of various sound cultures in Europe. The writers are sharing knowledge on major research projects and methodological tools developed among the different disciplines, such as architecture and soundscape studies. They are bringing forth the archival practices in preserving acoustic heritage and how environmental sounds have been utilised in different research and art projects. In addition the book will provide a full description of the online tools that have been developed with the aim of managing and preserving contemporary acoustic heritage in Europe, including a "good practices guide" for any individual, collective or institution interested in participating in the European Acoustic Heritage project. Above all, with this book the authors are hoping to make European sonic environments audible for listeners attracted by the cultural heritage of the continent in different times, places and contexts.

The project European Acoustic Heritage is coordinated by Axencia Galega das Industrias Culturais (AGADIC) and elaborated on by Tampere University of Applied Sciences (Tampereen ammattikorkeakoulu, TAMK), The Centre for Research on Sonic Space & Urban Environment (Centre de Recherche sur l'Espace Sonore et l'environnement urbain de l'Ecole Nationale Supérieure d'Architecture de Grenoble, CRESSON – ENSAG), Phonogrammarchiv, the Austrian Audiovisual Research Archive (Phonogrammarchiv, the Austrian Academy of Sciences PHA-ÖAW), the multidisciplinary collective Escoitar.org (http://Escoitar.org) and the Isle of San Simón Foundation (Fundación Illa de San Simón).