Standardization in Soundscape Research

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ISO/TC 43/SC 1/WG 54

- In 2008 the International Organization for Standardization (ISO)decided to put together a new expert working group on soundscape
- The working group was named ”Perceptual assessment of soundscape quality”

Official of WG54

Convenor: Östen Axelsson, Stockholm University

Secretary: Daniel Pérez Kaiser, German Standards (DIN)

Soundscape

- An environment of sound (or sonic environment) with emphasis on the way it is perceived and understood by the individual, or by a society

Truax, B. (1999). *Handbook for Acoustic Ecology* (2nd Ed.). Cambridge Street Publishing.

Soundscape – a scarce resource

Noise Control Engineering

- sound is a waste product to be disposed of
- aims to allow quality of life

Soundscape Research

- sound is a scarce recourse to be managed and designed
- promote quality of life, health, and well-being

Soundscape management

- Noise limit values [e.g., 55 dB(A)] are counterproductive
- Acoustic objectives:
  - In this area transportations sounds must not be hear and natural sounds should dominate.
  - In this area care takers must be able to hear the sounds of their children at play

Directive 2002/49/EC

- In determining noise limit values EU countries must taking into account the need to preserve quiet areas in agglomerations, and aim to protect quiet areas against an increase in noise
- "quiet area in an agglomeration" shall mean an area, delimited by the competent authority, for instance which is not exposed to a value of L_{den} or of another appropriate noise indicator greater than a certain value set by the Member State, from any noise source
- "quiet area in open country" shall mean an area, delimited by the competent authority, that is undisturbed by noise from traffic, industry or recreational activities

Soundscape support to health

- The initiative to WG54 resulted from the Swedish research program Soundscape support to health, 1999 – 2007
- In this research program we aimed to understand how people perceive soundscapes, and to develop new research tools
- The idea of an international standard for measuring perceived soundscape quality evolved gradually

Why standards?

1. Methods are needed for measuring soundscape quality
2. Existing acoustic metrics are not valid as indicators of soundscape quality
3. Knowledge and experience in evaluation of soundscapes is well developed
4. Standardized methods are needed for:
   a) compilation of knowledge (metaanalysis),
   b) harmonization of guidelines based on perception,
   c) evaluation and preservation of high soundscape quality

Standards in perspective

- Compare with marketing research
- There are no/few standards
- Each marketing research company has its own methods
- Comparison of results are impossible between suppliers
- Customers are “locked-in” and it is hard to move to a new supplier
- Marketing research companies are uninterested in new research development

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WG54 an international cooperation

- Australia
- Belgium
- France
- Germany
- Italy
- Japan
- Norway
- South Korea
- Sweden
- United Kingdoms
- United States of America

Interdisciplinary approach

- Acoustics
- Architecture
- Epidemiology
- Environmental planning
- Psychology
- Sociology
- National Park Management

Scope of WG54

- Provide minimum specifications for soundscape studies
- Standard(s) will primarily be intended for researchers and public users evaluating soundscape quality
- Standard(s) will include definitions, methods, measurements and reporting requirements

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Soundscape methods for standardization

- Methods to assess perception/experience
- Taxonomy and identification of specific acoustic events
- Physical measurement: recording and analysis
- Modeling, mapping and simulation methods
- Soundscape design methods

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Examples of applications

- Visitor questionnaire studies in outdoor areas intended for recreation (e.g., city parks, or open green spaces)
- Resident questionnaire studies in residential areas, including areas with designated places of high acoustic quality

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May soundscape methods be standardized?

- I propose a module approach
- There are certain aspects of a soundscape that a researcher like to evaluate
  - Sound source identification
  - Perceived overall soundscape quality
  - Preferences
  - Congruence with user objectives

Sound source identification

To what extent do you presently hear the following 5 kinds of sounds?
Please mark one response alternative per kind of sound

	Cannot hear at all	Hear vaguely	Hear clearly	Hear a lot	Dominates completely
1. Traffic noise (e.g., car, buss, train, plain)	☐	☐	☐	☐	☐
2. Fan noise (e.g., ventilation)	☐	☐	☐	☐	☐
3. Other noise (e.g., construction noise, industry, machines, sirens, music, etc.)	☐	☐	☐	☐	☐
4. Sounds from humans (e.g., talk, laughter, children at play, footsteps)	☐	☐	☐	☐	☐
5. Natural sounds (e.g., wind whispering in the trees, purling water, singing birds)	☐	☐	☐	☐	☐

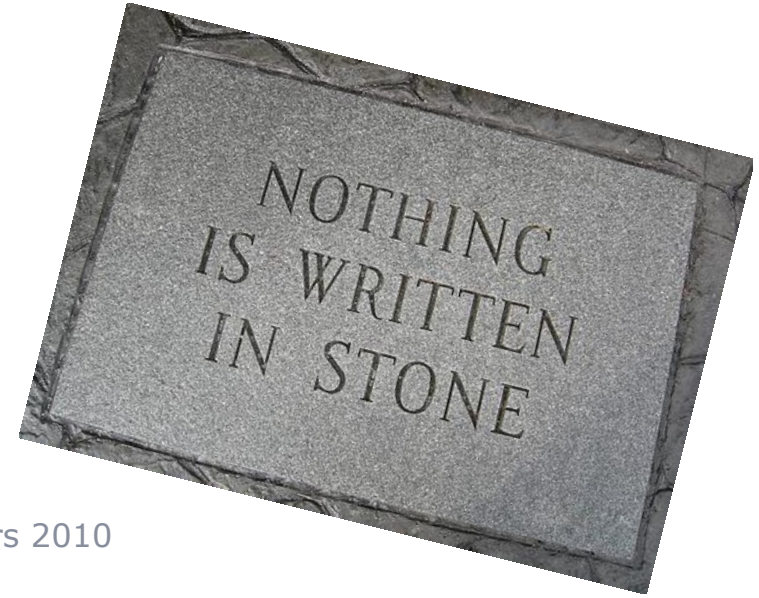
Overall soundscape-quality measurement

Over-all, how would you describe the present surrounding sound environment?

Very good	Good	Neither good, nor bad	Bad	Very bad
☐	☐	☐	☐	☐

Standards are not written in stone

- In ISO international standards are revised every 5 years in order to be up to date with the latest development



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Future perspectives

- WG54 aims to propose the first international standard on soundscape in the beginning of 2011
- The standard is expected to be finalised in 2015
- In parallel to this process WG54 will propose additional standards

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Questions

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