MADRID
inter.noise 2019
June 16 - 19
NOISE CONTROL FOR A BETTER ENVIRONMENT

# The concept of soundscapes reflected on the development of smart cities and new urbanism

**Schulte-Fortkamp, Brigitte**[1]
**Technische Universität Berlin**
**Einsteinufer 25**
**10587 Berlin**
**Germany**

## ABSTRACT

**Smart growth principles are most relevant with regard to new urbanism. Soundscape will be the agent to be discussed here with regard to needs, acceptation, and its future in modern cities. It is about serving the economy, community, and the environment to enhance the livability in modern cities particularly with regard to the key feature: the acoustic environment. Soundscape analysis and application is a proven method of providing an improved acoustic environment for urban dwellers, thus addressing a significant portion of the smart growth agenda. The intersection and similarities between soundscape goals and urban smart growth principles are the enhancement of the quality of life with regard to balancing technical innovations and environmental protection. Moreover, it covers the collaboration between stakeholders and communities concerning further development with regard to new urbanism.**

**Keywords:** Soundscape, Smart Cities, new urbanism
**I-INCE Classification of Subject Number:** 60, 61

## OVERVIEW

The concept of soundscape was adopted to provide a holistic approach to the acoustic environment, beyond noise, and its effect on the quality of life. Soundscape suggests assessing all sounds perceived in an environment in all its complexity. To do this, soundscape studies use a variety of data collection and measurement methods related to human perception, the acoustic environment and the context, which is known as triangulation. This increases the validity and reduces the uncertainty of the measurements, compared to relying on a single method. Importantly, the study of soundscape relies primarily upon human perception, and only then turns to physical measurement.

[a)] b.schulte-fortkamp@tu-berlin.de

By discussing possible options for soundscape management and design with stakeholders such as residents, citizen groups, or transport authorities, planning technicians such as architects, engineers, urban planners, consultants involved, and decision makers such as local authorities, for example, light will shed on the best applicable solutions and on the user's expectations.

Following the United States Environmental Protection Agency, "Smart growth is development that serves the economy, the community, and the environment". Like the Soundscape approach there is no "one-size-fits-all-solutions", but it provides choices and seeks to build on proven successes. "Smart city concepts, internet-of-things, and equivalented connectivity create new opportunities and tools for urban design. Augmented reality seems an ideal tool for soundscape (re) design; digital twinning may connect planners, mangers, city authorities to urban areas, machine listening and recommendation may adapt the public space to the users of today." (Dick Botteldooren)

Sergio Luzzi provides in the same context the following discussion, that will support the holistic in approach in soundscapes:" The global comfort holistic approach is based on the idea of planning and designing urban areas and buildings safeguarding people's safety, health, and serenity, respecting the laws of nature and harmonious development. In this integrated approach, acoustics plays an important role as one of the founding elements of the man-habitat-environment system. In planning strategies and designing solutions for urban development a set of variables representing smartness and pleasantness can be defined, representing comfort level categories in terms of visual, thermal, acoustic, safety, energetic, cultural, social, welfare, etc. In the global comfort approach to noise control and noise mitigation, costs and benefits of actions are calculated as weighted sums which take in account different variables, allowing to achieve the primary objective of the design with one or more free secondary added benefits. Awareness and participatory design should be a part of the definition and implementation of this scheme, where action planners and solutions designers collect stakeholders and users' opinions on strategic issues, useful for planning and designing phase".

The challenge will be to connect soundscape to smart growth principles that are the most relevant with regard to new urbanism, and that will be directed toward the needs, acceptance, and its future in modern cities. Smart growth serves the economy, community, and the environment to enhance the livability in modern cities, moreover an essential feature of livability is the acoustical environment. Soundscape analysis and application is a proven method of providing an improved acoustical environment for urban dwellers, thus addressing a significant portion of the smart growth agenda. The intersection and similarities between soundscape goals and urban smart growth principles are the enhancement of the quality of life with regard to balancing technical innovations and environmental protection. Moreover, it advances the collaboration and co-creation between stakeholders and communities concerning further development in the choice of varied tools in a community.

**ACKNOWLEDGEMENTS**

I like to acknowledge the group of people that are involved in the standardization and application of Soundscape.

**REFERENCES**

List of related references:


1. International Organization for Standardization, ISO *12913-1:2014 Acoustics Soundscape Part* Definition and Conceptual Framework, ISO, Geneva, 2014
2. International Organization for Standardization, Technical Specification ISO TS *12913-2:2018 Acoustics Soundscape Part* 2 Data Collection and reporting requirements; ISO Geneva,2018
3. D. Botteldooren, A Sound Eutopia, Proceedings Euronoise 2018, Crete
4. S. Luzzi, Acoustic smartness and sustainability in urban planning and building design, Proceedings, Euronoise 2018
5. B. Schulte-Fortkamp, J. Kang, Special issue on soundscapes, J. Acoust. Soc. Am. 134 (1) (2013)
6. J. Kang, B. Schulte-Fortkamp (Eds.), Soundscape and the Built Environment, CRC Press, 2016
7. L. Lavia, H.J. Witchel, J. Kang, F. Aletta, A preliminary soundscape management model for added sound in public spaces to discourage anti-social and support pro-social effects on public behavior, in: Proceedings of the DAGA 2016 Conference. Aachen, 2016
8. COST TUD Action TD-0804, 2013, J. Kang, K. Chourmouziadou, K. Sakantamis, B. Wang, & Y. Hao, (Eds.) 2016, Soundscape of European Cities and Landscapes: http://soundscape-cost.org/.
9. L. Lavia, M. Dixon, H.J. Witchel, M. Goldsmith, Applied soundscape practices, in: J. Kang, B. Schulte-Fortkamp (Eds.), Soundscape and the Built Environment Press, Boca Raton, 2016
10. L. Lavia, H.J. Witchel, J. Kang, F. Aletta, A preliminary soundscape management model for added sound in public spaces to discourage anti-social and support pro-social effects on public behaviour, in: Proceedings of the DAGA 2016 Conference. Aachen, 2016
11. A. Fiebig, V. Acloque, S. Basturk., M. Di Gabriele, M. Horvat, M. Masullo, R. Pieren, R., K.S. Voigt, M.Yang, K. Genuit, B. Schulte-Fortkamp (2010). Education in Soundscape -A seminar with young scientists in the COST Short Term Scientific Mission "Soundscape-Measurement, Analysis, Evaluation", Proceedings of 20th International Congress of Acoustics, ICA 2010, Sydney, Australia
12. D. Botteldooren et al., Soundscape of European Cities and Landscape – Understanding and Exchanging, in COST TUD Action TD-0804, 2013, J. Kang, K. Chourmouziadou, K. Sakantamis, B. Wang, & Y. Hao, (Eds.) 2016, from COST TUD Action TD-0804 Soundscape of European Cities and Landscapes: http://soundscape-cost.org/
13. J. Kang, et al., Ten questions on the soundscapes of the built environment, Building and Environment (2016), http://dx.doi.org/10.1016/j.buildenv.2016.08.011