Cultivating Urban Sound Unknown Potentials for Urbanism Trond Maag

Cover: Between Freudenbergerplatz and Zentrum Paul Klee, Bern Photo: Trond Maag, 2010

Cultivating Urban Sound Unknown Potentials for Urbanism

Trond Maag

Master thesis of the experience-based master's program «Master of Urbanism» submitted on 2012 November 30 to Institute of Urbanism and Landscape Oslo School of Architecture and Design

Trond Maag 2013 April 21 www.urbanidentity.info

Abstract

There are good reasons to assume that the European cities in some years will sound fundamentally different from they do today. The progress of the European cities doesn't only affect the built structure of the urban environment, rather a whole series of features is exposed to change, such as ways of life, socio-economic structures, demographic patterns, spatial logics, symbolic values, atmospheres, smells, and sounds. What are the audible consequences for the European cities? How does the change in urban sound affect urban quality? And in particular, what does this change necessitate for urban planning in order to keep or even to improve a city's listening quality?

This applied-oriented thesis aims to explore the opportunities for planning and designing urban sound. In particular, the benefits of taking into consideration «urban sound in the planning and designing process» are studied. The thesis has been carried out with the help of expert interviews with sound experts, including consultants, planners, and sound artists, as well as representatives of noise control authorities and municipalities. Field recordings have been performed in order to find listening examples and to underline the statements made in the interviews.

The interviews demonstrate that the listening situation in the European cities will not become more pleasant in future, as long as private and public players don't become aware of their acoustic responsibility and of the benefits of city-wide, pleasant listening qualities. Urban sound is particularly influenced by the progress in technologies, the progress in the design of the built environment, and the ongoing effort in noise regulation. The interviews also indicate possible influences on urban sound because of the progress in noise regulation.

Out of these findings certain possible consequences significant for the further progress of cities can be drawn. The findings particularly indicate that the expected changes in urban sound sharpen socio-economic segregation, and that everyday public spaces, including streets, squares, and parks, become further «devalued» of their acoustic qualities, and hence become deserted in the long run. The reason for that lies in the fact that people always yearn for pleasant listening qualities, which more and more become rare in the European cities. People who can afford it move away to more pleasant listening situations, either for pastime, job, business activity, or housing. By doing so, people remain «victims» trapped in a man-made acoustic feedback system that erodes any listening quality in the European cities.

The author suggests a «sound agenda» with the objective to foster a «sound culture» within the municipalities and to speed up that thinking in terms of sound comes into the urban planning department of any European city. The «sound agenda» aims to motivate

professionals to consider the sounding urban environments, thereby in particular involving people in specific projects related to urban sound. Further, the «sound agenda» intends to properly communicate all efforts related to urban sound, thereby keenly avoiding to raise false expectations. Lastly, the «sound agenda» aims to establish a citywide working group – the «sound care team» – to support the different city areas in improving listening qualities and cultivating urban sound.

The «sound agenda» proposed is reasoned by the fact that currently hardly anyone cares about the sound of cities and about listening qualities. The interviews confirm that noise regulations need more progress, education and research in urban sound currently are poor, architectural design and urban design don't foster, but rather impede pleasant acoustic atmospheres, and that sound sources won't become more silent nor more pleasant. If a city opts for improving its listening quality, it is up to the city to make a step forward. The thesis shows that there is a real chance to gain city-wide listening qualities by taking acoustic self-responsibility. The «sound agenda» is a best-practice approach encompassing various planners, designers, artists, and people interested, as well as different authorities and municipalities. It supports cities in their change from thinking in terms of noise to thinking in terms of sound. It's an approach for building bridges between different disciplines and for achieving a city-wide «sound language», a necessary task to recover confidence in urban sound.

In the long run, buildings, cars, mobile devices, and other technologies have to learn to «listen» to each other, to people, and to the environments in order to ensure listening quality. There is no doubt that the need for action is big and that it is an enormous way to go.

People who don't know about the potential of cultivating listening situations will miss small chances and big opportunities, they will ignore important innovations, and they will not be able to direct necessary interventions to chance the listening quality, the character of sound sources, and the design of the built environment. They will never gain confidence in sound and continue to neglect all aural values and qualities of public space. Abstract 5 Table of content 7

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REVIEW

7 Review

There are good reasons to assume that the European cities in some years will sound fundamentally different from today. The progress of the European cities doesn't only affect the built structure of the urban environment, but rather a whole series of features is exposed to change, such as ways of life, socio-economic structures, demographic patterns, spatial logics, symbolic values, atmospheres, smells, and sounds. What are the audible consequences for the European cities? How does the change in urban sound affect urban quality? And in particular, what does this change necessitate for urban planning in order to keep or even to improve a city's listening quality?

This applied-oriented thesis aims to find out the opportunities for planning and designing urban sound. Particularly in terms of urbanity, the benefits of taking into consideration «urban sound in the planning and designing process» are studied. Urban planning intending to cultivate the listening situation in urban environments requests an understanding for the progress of cities (chapter 2.1), an insight into how people experience the sounding surroundings (chapter 2.2), and an understanding for urban sound (chapter 2.3). This underlying framework is the starting point for investigating the following research questions (chapter 3.1):

- What are the changes in the European cities and their consequences in terms of urban sound?
- What are possible consequences for the European cities due to the changes in urban sound?
- What could urban planning learn from the findings, and what would be the benefits for the European cities in terms of listening quality in particular and urban quality in general?

For the purpose of studying the research questions, a series of six expert interviews has been carried out with sound experts, including consultants, planners, and sound artists, as well as representatives of noise control authorities and municipalities. Field recordings have been performed in order to find listening examples and to underline the statements made in the interviews (chapter 3.2).

The interviews demonstrate that the listening situation in European cities will not become more pleasant in future, as long as private and public players are not aware of their acoustic responsibility and of the collective benefits of city-wide, pleasant listening qualities. Urban sound is particularly influenced because of the progress in technologies (chapter 4.1), the progress in the design of the built environment (chapter 4.2), and the ongoing effort in noise regulation (chapter 4.3). Additionally, the interviews indicate an influence on urban sound because of the progress in noise regulation (chapter 4.4).

Out of these findings certain consequences significant for the progress of cities can be drawn. The interviews indicate that the expected changes in urban sound sharpen socioeconomic segregation (chapter 5.1), and that everyday public spaces, including streets, squares, and parks, become «devalued» of its acoustic qualities, and hence be deserted in the long run (chapter 5.2). The reason for that is that people yearn for pleasant listening qualities, which become more and more rare in European cities. People who can afford it move away to more pleasant listening situations, either for pastime, job, business activity, or housing. By doing so, people remain victims trapped in a man-made acoustic feedback system which erodes any listening quality in European cities (chapter 5.3).

The author suggests a city-wide «sound agenda» with the objective to foster a «sound culture» within the municipality and to speed up that thinking in terms of sound comes into the urban planning department of any European city. The «sound agenda» intends to motivate people to think about their sounding environments (chapter 6.1), to properly communicate all efforts related to urban sound (chapter 6.2), and to establish a citywide working group – the «sound care team» – to support the different city areas in improving listening qualities and cultivating urban sound (chapter 6.3).

The «sound agenda» proposed is reasoned by the fact that currently hardly anyone cares about the sound of cities and about listening qualities. The interviews confirm that regulations need much more progress. Education and research in urban sound currently are dramatically poor, architectural design and urban design don't foster, but rather impede pleasant acoustic atmospheres, and sound sources won't become more silent nor more pleasant for everyday listening situations. Thus, if the municipality opts for easing the painful listening situation, it is up to the municipality to make a step forward.

Considering the benefits (chapter 6.4), there is a real chance to gain city-wide listening qualities by taking acoustic self-responsibility. The «sound agenda» is a best-practice approach encompassing various planners, designers, artists, and people interested, as well as different authorities and municipalities. The «sound agenda» supports cities in their change from thinking in terms of noise to thinking in terms of sound. It's an approach for building bridges between different disciplines and for reaching a city-wide language in terms of urban sound, a necessary task to recover confidence in urban sound.

From the point of view of the author, the expert interviews chosen were most suitable for investigating the topic. This is also reasoned by the pleasant fact that the interview partners were very interested in the topic. One weak point is that not all examples mentioned in the interviews could be further observed, for example by field recordings. That was not possible on short notice and would have needed much more time in terms of organizing journeys and arranging new appointments. For the purpose of exemplifying and underlining the statements of the interviewees, the author has originally wished to perform (more)

field recordings that contains both video and sound. The combination of video and sound is always much more significant. However, that sort of field recording was not possible given the time schedule and have to be done in other projects of the author.

Further research needs to be done about reducing noise levels and optimizing frequency ranges of products, multi-sensory perception of people, soundproof technologies for vehicles and buildings, and many topics that are not directly related to the presence and to the activity of people in the urban environment. For the purpose of cultivating urban sound, the author suggests

- to test multidisciplinary sound agendas within municipalities,
- to explore people's multi-sensory experiences of the urban environment,
- to evolve multidisciplinary building designs and surface designs in order to «recycle» urban sound actively, thereby transforming presence and experience of unpleasant sounds,
- to document pleasant and surprising situations worthwile listening,
- to develop evaluation tools for assessing the emotional dimension of sound,
- and to develop technologies which make buildings and machines «listen» to each other, to people, and to the built/artificial and natural environment for the purpose of cleverly adapting acoustic features and modulating sound emitters.

REFERENCES

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References

- Ascher, F. (2004). Métapolis. A third urban revolution. Changes in urban scale and shape in France, in: L. Bölling & T. Sieverts (eds.), Mitten am Rand. Auf dem Weg von der Vorstadt über die Zwischenstadt zur regionalen Stadtlandschaft, pp. 24–37. Zwischenstadt. Müller & Busmann.
- Augoyard, J.-F., & Torgue, H. (2005). Sonic experience. A guide to everyday sounds. Montreal: McQuill-Queen's University Press.
- Baum, M. (2008). Urbane Orte. Ein Urbanitätskonzept und seine Anwendung zur Untersuchung transformierter Industrieareale. Karlsruhe: Universitätsverlag Karlsruhe.
- Baur, R., Feuz, M., Gasser Derungs, C., Gmünder, A., Hausheer, T., Jann, M., et al. (2009).The World's fairest city yours and mine. Features of urban living quality. Baden:Lars Müller.
- Blesser, B., & Salter, L.-R. (2006). Spaces speak, are you listening? Experiencing aural architecture. Cambridge: MIT Press.
- Bosshard, A. (2009). Stadt hören. Klangspaziergänge durch Zürich. Zürich: NZZ Libro.
- Bosshard, A., & Maag, T. (2012a). Klangraumgestaltung. Chancen im Lärm: Fünf Fallbeispiele im urbanen Raum des Kantons Zürich. Zürich: Baudirektion Kanton Zürich.
- Bosshard, A., & Maag, T. (2012b). Klangraumgestaltung mit offenen Ohren durchs Mittelland. Fallbeispiele im Nebeneinander urbaner Stimmen. Bern: Bundesamt für Umwelt. URL: http://www.bafu.admin.ch/laerm/10520/10522/index.html (2012 August 19).
- Le Breton, D. (2005). Anthropology of silence, in: M. Zardini (ed.), Sense of the city. An alternate approach to urbanism. pp. 204–205. Baden: Lars Müller.
- Cardiff, J. (2005). The walk book (M. Schaub, ed.). Köln: Walther König.
- Choay, F. (1976). Semiotik und Urbanismus, in: A. Carlini & B. Schneider (eds.), R. Hommes & B. Schneider (trans.), Konzept 3. Die Stadt als Text, pp. 43–60. Tübingen: Wasmuth Ernst.
- Diener, R., Herzog, J., Meuron, P. de, Meili, M., & Schmid, C. (2007). Die Schweiz. Ein städtebauliches Porträt. Basel: Birkhäuser.
- EU (1996). European commission green paper on future noise policy com(96) 540.
- EU (2002). Directive 2002/49/ec of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise.
- EU (2012). European green capital. Green cities fit for life. URL: http://ec.europa.eu/environment/europeangreencapital/index_en.htm (2012 November 06).

REFERENCES

von Fischer, S. (2008). Versuche, die Musik der Welt zu erfassen. archithese, (6), pp. 56–59.

- Hagson, A. (2008). Trafikkplanlegging og byrom. Lecture notes, 2008 November 17, Master i urbanisme AHO.
- Hajer, M., & Reijndorp, A. (2001). In search of new public domain. Analysis and strategy. Rotterdam: NAi.
- Halvorsen Toren, A. K. (2009). Grøntstruktur og bærekraft. Lecture notes, 2009 September 30, Master i urbanisme AHO.
- Hellström, B. (2003). Noise design. Architectural modelling and the aesthetics of urban acoustic space. Göteborg: Bo Ejeby Förlag.
- Kang, J. (2007). Urban sound environment. London: Taylor & Francis.
- Kanton Zürich Statistisches Amt. (2012). Statistisches Jahrbuch des Kantons Zürich 2012. URL: www.statistik.zh.ch/internet/justiz_inneres/statistik/de/daten/jahrbuch/ publikation.html (2012 November 03).
- Karlsson, H. (2000). The acoustic environment as a public domain. The Journal of Acoustic Ecology, 1(2), pp. 10–13.
- LaBelle, B. (2010). Acoustic territories. Sound culture and everyday life. London: Continuum.
- Lachmann, M. (2012a). Akustik. Lecture notes, 2012 October 23, Blockseminar «Stadt/Klang Architektur» ETHZ.
- Lachmann, M. (2012b). Schall und Rauch. TEC21, 2012(11), pp. 16–25.
- Loderer, B. (2008). Das Lob der Zersiedelung. Hochparterre, 21(1/2), pp. 24–25.
- Loos, A. (2008). Das Mysterium der Akustik. TEC21, (22), p. 26.
- Löw, M., Steets, S., & Stoetzer, S. (2008). Einführung in die Stadt- und Raumsoziologie. 2. Auflage. Opladen: Barbara Budrich.
- Lueger, G., Gratt, W., Gattinger, A., Retzl, H., Wenny, & Edtstadler, T. (2010). Urban vision Linz. Ganze Stadt – halber Lärm, in: M. Schrenk, V. V. Popovich, & P. Zeile (eds.), REAL CORP 2010. Cities for everyone. Liveable, healthy, prosperous.
- Mayer, H. O. (2009). Interview und schriftliche Befragung. Entwicklung, Durchführung und Auswertung. 5. Auflage. München: Oldenbourg.
- McGurk, H., & MacDonald, J. (1976). Hearing lips and seeing voices. Nature, 264(1976-12-23), pp. 746–748.
- Pierce, J. R. (1992). The science of musical sound. Revised edition, originally published in 1983. New York: W H Freeman & Co.
- Rasmussen, S. E. (1962). Experiencing architecture. Cambridge: MIT Press.

Rossi, A. (1984). The architecture of the city. Cambridge: MIT Press.

REFERENCES

- Schafer, R. M. (1993). The soundscape. Our sonic environment and the tuning of the World. Revised edition, originally published in 1977. Rochester: Destiny Books.
- Secchi, B. (2005). Medium sized-cities and the new forms of the European metropolis, in:M. De Michelis & P. Pakesch (eds.), M Stadt Europäische Stadtlandschaften.M city European cityscapes, pp. 28–39. Köln: Walther König.
- Sennett, R. (1996). Flesh and stone. The body and the city in Western civilization. Originally published in 1994. New York: W.W. Norton & Co.
- Thompson, E. (2004). The soundscape of modernity. Architectural acoustics and the culture of listening in America, 1900-1933. Cambridge: MIT Press.
- Treasure, J. (2012). Why architects need to use their ears. URL: http://www.ted.com/talks/ julian_treasure_why_architects_need_to_use_their_ears.html (2012 October 23).
- Truax, B. (1999). Handbook for acoustic ecology. CD-ROM edition, originally published by the World Soundscape Project, Simon Fraser University, and ARC Publications, 1978. Cambridge Street Publishing.
- Truax, B. (2000). Acoustic communication. 2nd edition. Westport: Ablex.

Vitruvius. (2006). Ten books on architecture. (M. H. Morgan, tran.). Project Gutenberg.

- WHO (1999). Guidelines for community noise.
- Xenakis, I. (2008). Music and architecture (S. Kanach, ed.). Pendragon Pr.
- Zukin, S. (2008). The cultures of cities. Originally published in 1995. Malden: Blackwell.

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