

Thoughts towards a Fourth Phase of Soundscape Research: (re)merging quantitative and artistic practice.

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ABSTRACT

Three significant phases and two distinct research trajectories are discernible in the past forty years of urban soundscape research. The three phases are the World Soundscape Project (1970s), The Positive Soundscape Project (2000s) and The Soundscape Approach (2010s). The two research trajectories that can be traced throughout these three stages can be recognised as data-driven (engineering/planning) and practice-led (humanities/artistic) research. In this brief paper I want to propose that a third phase of artistic research that concentrates on urban sound is running in parallel with an emergent soundscape approach pursued by engineers and planners. These two research trajectories can provide each other with much needed insights into how an urban soundscape can be made to feel more eventful and vibrant. This paper proposes that it is the reemerging of these two trajectories of soundscape research that reveals the possibilities of a fourth phase of interdisciplinary soundscape research.

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1. INTRODUCTION

Global awareness of the importance of soundscape design to urban liveability is increasing. This is a consequence of forty years interdisciplinary research into urban soundscapes, which has as its focus the impact of everyday urban sounds on human well-being. However, consideration of urban sound remains primarily concerned with the impact of noise, which results in largely negative conversations focused on regulation and mitigation. While these considerations are important, they needn't dominate the conversation. Two research trajectories - engineering/planning and humanities/artistic – can be identified throughout the history of soundscape research, which have continued to seek a more complex understanding of soundscapes and their design. Both research trajectories attempt to move away from a negative conversation about the impacts of noise, towards a consideration of how the sounds of the urban environment can be designed to produce more eventful soundscapes and positive emotional responses. This paper proposes that these two research trajectories,

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discernible throughout historical soundscape research, have recently bifurcated, and that this bifurcation is a departure from the interdisciplinary history of soundscape research. Using a practice-led case study in which a new approach to motorway noise management was successfully tested, it is suggested that these two trajectories might remerge to formulate a new phase of soundscape research that combines quantitative and artistic approaches.

2. THREE PHASES OF SOUNDSCAPE RESEARCH

2.1 World Soundscape Project

The World Soundscape Project (WSP), which originally proposed the possibility of designing and scaping the sounds of the city, was driven by a group of composers concerned about the quality of the sound environment (see Schafer 1977 and Truax 2000 for further discussion). While there was an appetite amongst these researchers to combine science and art in the pursuit of healthier soundscapes, the research was driven mostly by the aesthetic concerns of composers. Transformations to the sonic environment were limited to the aspirational (soniferous garden), the concert hall (soundscape compositions) and listening exercises (soundwalking/sound mapping). Beyond the development of these practical applications, the most important contribution by the WSP to soundscape research was the repositioning of city sound discussions from negative remonstrations of noise towards a more positive conversation about the possibility of designing the soundscape. However, a hostile position towards urban noise is discernible in the WSP project, most recognisably in the lo-fi–hi-fi concept (Lacey 2016).

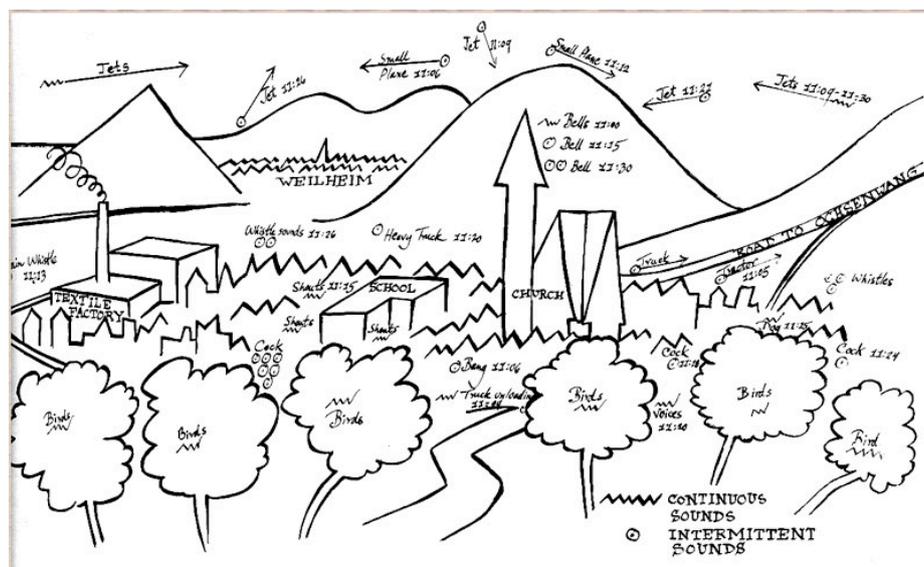


Fig 1. From Truax's (1999) documentation of the Five Village Soundscape study. This diagram (drawn by R. Murray Schafer) represents the emerging interest of composers in the make-up of the sonic environment. Artistic representation of sounds is found in symbols and trajectories.

As suggested by Figure 2, the authors propose that rather than the city being defined as something noisy or quiet, its soundscape can be understood by the number and type of sonic events within the context of a calmness/vibrancy scale. This important discovery, the result of a qualitative study of soundwalking participants, presents new ways for understanding how sound artists might perceive the soundscape as a type of music enabling the possibility of intervention.

2.3 The Soundscape Approach

More recently a third stage has emerged, which sits exclusively in the engineering, planning and environmental design domains. For further reading about this important development, see Kang and Schulte-Fortkamp 2016. Of particular interest to this paper Alletta and Kang (2018) have further developed the work of the PSP, and other PSP contemporaries, to develop a model for understanding *urban vibrancy*. This research responds to the authors' insight that the management of urban environments can no longer rely on traditional approaches to noise control. Instead, the authors note, a more sophisticated approach to urban sound planning is called for that focuses as much on the production of vibrant spaces as it does the creation of quiet areas. Alletta and Kang pursue an exclusively data driven approach in their research, making it distinct from the first two phases of soundscape research in which artistic research and thought was embedded. The benefit of this is that the authors provide a clear model for understanding the relationship between eventfulness, pleasantness, vibrancy, and calmness in the soundscape; however, their analysis lacks the interdisciplinary arts/science ambitions of the previous phases of soundscape research (although they do note their research is intended for designers and practitioners).

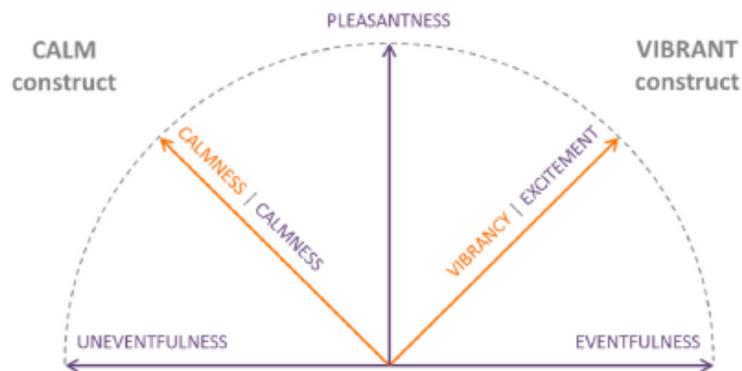


Figure 3. From Alletta and Kang, 2018. This is a synthesis of two previous studies by Axelsson et al 2010, and also by Cain et al 2013. A sophisticated model begins to emerge for understanding urban soundscapes as events that produce calm, vibrant and pleasant environments.

Figure 3, formulated by Alletta and Kang, builds on prior research to locate pleasantness mid-way between uneventful and eventful soundscapes, with calmness tending toward the uneventful and vibrancy towards the eventful. While the actual quantitative means behind this research is beyond the scope of this paper, their

terminology provides potentially strong insights for sound artists and soundscape designers in thinking about the creation of vibrant interventions.

3. ARTISTIC APPROACHES TO SOUNDSCAPE RESEARCH

There are emerging practice-led approaches to soundscape design that run parallel to the data-driven discoveries of Alletta and Kang (and their contemporaries). Four are identified here.

Marcel Cobussen's *(New) Sonic Ecologies* (2016) proposes sound artists and engineers/planners can work collaboratively to discover new ways to design the urban soundscape, particularly with a focus on the insights of atmosphere/ambiance theory as a means to combine the two approaches. Atmosphere/ambiance helps understand how perception and environments are intrinsically intertwined, and the role in which sound art intervention can play in creating new atmospheres/ambiances.

The work of Peter Cusack has been critical in understanding the role of sound artists in urban soundscape design. He was a leading artist in the second phase of soundscape research (PSP) and his recent *Berlin Sonic Places* project provides new insights into the relationships people have with the urban environment.

In my own book *Sonic Rupture* (2016), a practice-led approach to urban soundscape design is introduced. It considers how the artist might interact with, and create, diverse sonic environments within an urban context. With a specific focus on the mechanics of making and possible approaches to intervention, a model for rupturing homogenous soundscapes is developed that favours the diversification of experience.

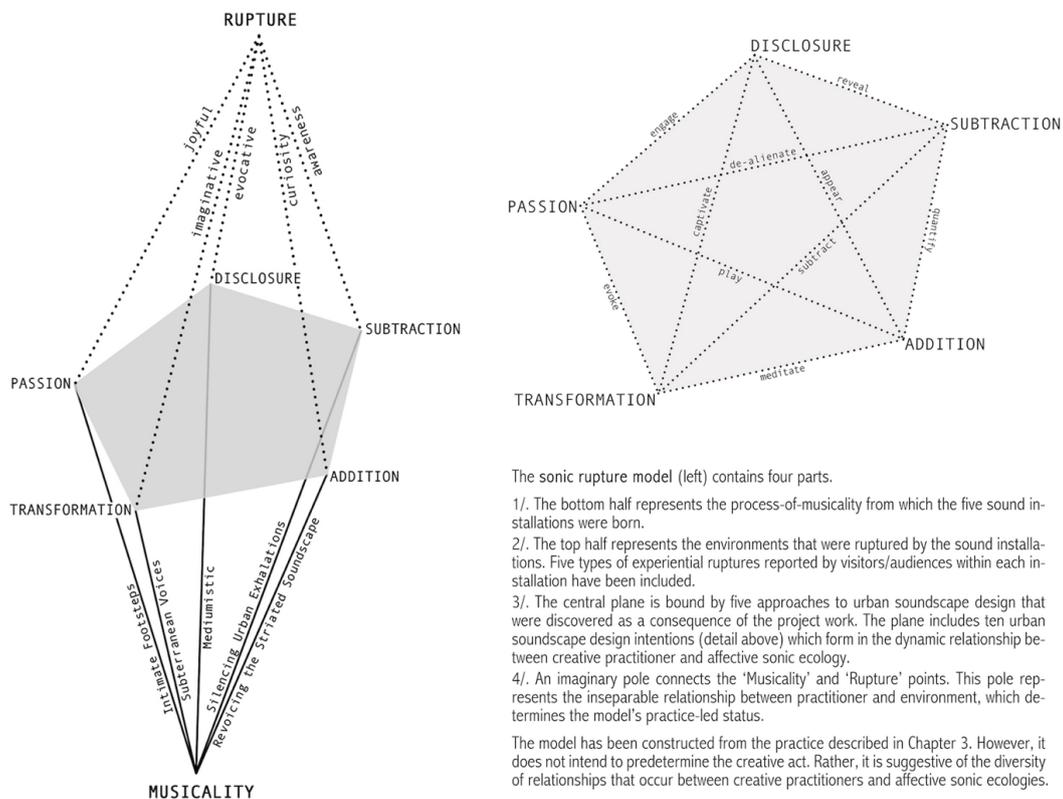


Fig 4. From Lacey 2016. The sonic rupture model demonstrates how practice-led research can reveal ways in which artists might create vibrant soundscapes.

Finally, Jean-Paul Thibaud, until recently the director of CRESSON, pioneered the “sonic ambiance” concept. Ambiance theory is similar to atmosphere theory, insofar as both study the in-between spatial qualities that emerge in relationships between environmental emanations and human apprehension (Thibaud 2014; Anderson 2009; Bohme 2000). The chief distinction between these is that “ambiance has a long tradition of fieldwork, interdisciplinary tools and design activity while atmosphere is more grounded on philosophical, ontological and geographical issues” (Thibaud 2014). Thus, ambiance is a potentially rich connector between engineering/planning and humanities/artistic approaches to soundscape. It both complements the practice-led approach of sound artists and soundscape designers who want to produce new human experiences, and the importance of rigorous fieldwork for understanding the environments in which these experiences occur.

These four scholars/artists provide a range of creative approaches for producing more vibrant soundscapes that improve the city experience, without casting judgment on the quality of sounds as being noisy or otherwise. It is my position that these efforts are consistent with Alletta and Kang’s research to create a model that focuses on the creation of vibrant soundscapes.

4. CASE STUDY: *NOISE TRANSFORMATION*

I want to briefly discuss a practice-led research project, which potentially points the way towards the research activities of a fourth phase of soundscape research. The project is only briefly discussed here. For a full discussion of the outcomes of the project see Pink *et al* 2018 and Lacey *et al* 2018.

In 2016, I led an interdisciplinary research group to work with a major motorway company to discover if the application of a *noise transformation* methodology could lead to more vibrant soundscapes. The project sought to provide green spaces located between noise walls and residential housing with more pleasant soundscapes, with the aim being to increase their desirability as recreational spaces. To achieve this, we assembled an outdoor soundscape system, which included speakers and microphones. The technique was to capture the motorway noise with the microphones, send the audio signal through a computer-based algorithm, and then play the transformed sound through a speaker array. The audio play back was 1-2 dB louder than background levels. While this may seem counterintuitive to typical noise mitigation approaches, the mixture of original and transformed sound produced significant perceptual improvements for the local community.

Community response was tested with an ethnographic study (Pink *et al*, 2018) with a selection of community members, to understand their response to the designed environments. We discovered that people felt the transformations made the typically dull drone of the motorway more pleasant to listen to. Of note, a Melbourne resident of an adjacent apartment block told us that the transformed sounds compelled him to sit on his outdoor balcony. Typically, he avoided his balcony, but the transformations made the space feel more relaxing and even evocative. At the Sydney site, some teachers from a local school told us that they would leave their office windows open if the noise transformations were a permanent experience. Typically, they closed their windows as a means to block out, as much as possible, the unerring traffic sounds. In both cases, the

transformations led to a calmer and less anxiety-provoking soundscape. Overall, our study suggested that carefully designed soundscapes could transform unpleasant/undesirable spaces into pleasant/desirable spaces.

This project is a very good example of how urban planning/engineering researchers and creative practitioners might work together to understand how sound art interventions could lead to permanent soundscape transformations. For instance, were these soundscapes calm or vibrant? Were there particular soundscapes that could be located in Alletta and Kang's vibrancy model (see Fig 2)? Although the community and industry partners were enthusiastic about possible future applications, it has been difficult to translate the experience into future grant/research opportunities without the backing of a robust quantitative study. Creative practitioners are at their best in creating experiences, rather than collecting the data that will later prove the value of the experiences. It is in the consideration of such questions, that we might find located a fourth phase of soundscape research.

4. CONCLUSIONS

This paper proposes that the two trajectories of historical soundscape research, one that is engineering/planning based and another that is humanities/artistic based, have bifurcated during the third phase of soundscape research. The paper suggests a fourth phase of soundscape research will require these separate(d) lines of inquiry to (re)merge, leading to investigations as to how practice-led sound art interventions might contribute to urban sound planning initiatives. To achieve this, sound artists could work with urban planners/engineers to target specific urban areas to analyse which interventions produce environments recognised by a sample population as pleasant, calm, vibrant or otherwise. The presented case study illustrates how sound-art interventions might work, and the important ways in which quantitative studies can reveal further insights into practice-led research. These insights could lead to the creation of new design principles that are not only statistically relevant, but provide evidence of real-world applications validated by community response.

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6. REFERENCES

1. Aletta, F.; Kang, J. "Towards an urban vibrancy model: A soundscape approach". *Int. J. Environ. Res. Public Health*, 15 (2018).
2. Anderson, B. "Affective Atmospheres", *Emotion, Space and Society*, 2: 77-81 (2009).
3. Augoyard, F. *Step by Step: Everyday Walks in a French Urban Housing Project*, trans. Curtis, D A. University of Minnesota Press, Minneapolis, MN (2007 [1979]).
4. Augoyard, J.F. and H. Torgue (eds). *Sonic Experience: A Guide to Everyday Sounds*, Montreal: McGill-Queen's University Press (2006).
5. Axelsson, Ö.; Nilsson, M.; Berglund, B. "A principal components model of soundscape perception". *J. Acoust. Soc. Am.*, 128, 2836–2846 (2010).

6. Böhme, G. "Acoustic Atmosphere: a contribution to the study of ecological aesthetics", *The Journal of Acoustic Ecology*, 1: 14-18 (2000).
 7. Brown, L., and A. Muhar. "An Approach to the Acoustic Design of Outdoor Space", *Journal of Environmental Planning and Management*, 47 (6): 827-42 (2004).
 - Cain, R.; Jennings, P.; Poxon, J. "The development and application of the emotional dimensions of a soundscape", *Appl. Acoust.*, 74, 232-239 (2013).
 8. Cobussen, M. "Towards a 'New' Sonic Ecology" (inaugural lecture on the acceptance of position as professor of Auditory Culture at the Universiteit Leiden, Netherlands, November, 21, 2016). Accessed February 21, 2017. <http://cobussenma.files.wordpress.com/2011/10/cobussen-inaugural-text.pdf>. (2016).
 9. Davies, W., Adams, M., Bruce, N., Marselle, M., Cain, R., Jennings, P., Hall, D., Irwin, A., Hume K., and Plack, C. "The positive soundscapes project: A synthesis of results of many disciplines", *Proc. INTER-NOISE 09*, in09-379, (2009).
 10. Kang, Jian and Brigitte Schulte-Fortkamp (eds), *Soundscape and the Built Environment*. Boca Raton, FL: CRC Press (2016).
 11. Lacey, J. *Sonic Rupture: a practice-led approach to urban soundscape design*, Bloomsbury: New York (2016).
 12. Pink, S., J. Lacey, M. Duque, S. Sumartojo, L. Harvey and S. Moore. "Recycling Traffic Noise: Transforming Sonic Automobilities for Revalue and Wellbeing" *Mobilities* (accepted 9th October 2018).
 13. Lacey, J., S. Pink, L. Harvey and S. Moore. "Noise transformation: a critical listening-based methodology for the design of motorway soundscapes", *Qualitative Research Journal* (accepted 30th May 2018).
 14. Schafer, R.M. *The Tuning of the World*; Knopf: New York, NY, USA, (1977).
 15. Thibaud, J. "Urban Ambiances as Common Ground?", *Lebenswelt: aesthetics and philosophy of experience*, 4(1) (2014). Available online at: <https://riviste.unimi.it/index.php/Lebenswelt/article/view/4205> (accessed: 13 February 2018).
 16. Truax, B. *Acoustic Communication*. 2nd ed. Greenwood Publishing Group (2000).
 17. Truax, B. *Handbook of Acoustic Ecology*. 2nd ed. Cambridge Street (1999).
- See: <https://www.sfu.ca/sonic-studio-webdav/WSP/FVS/fvs.html>

