



Soundscape research

(in less than 8 minutes)

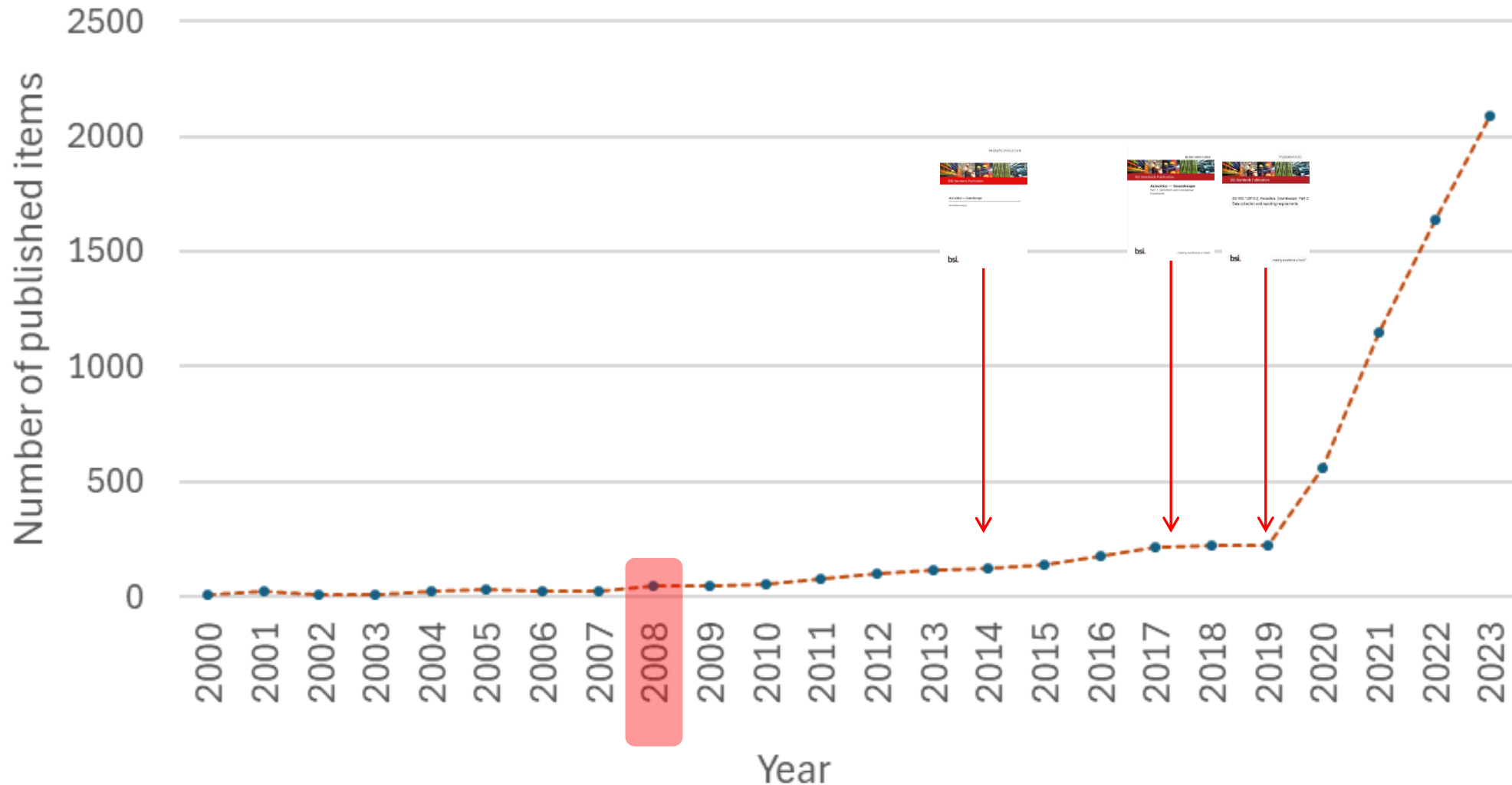
Dr Francesco Aletta

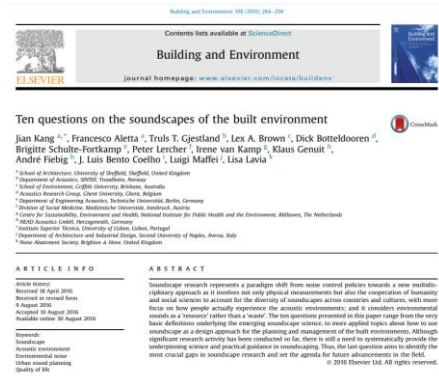
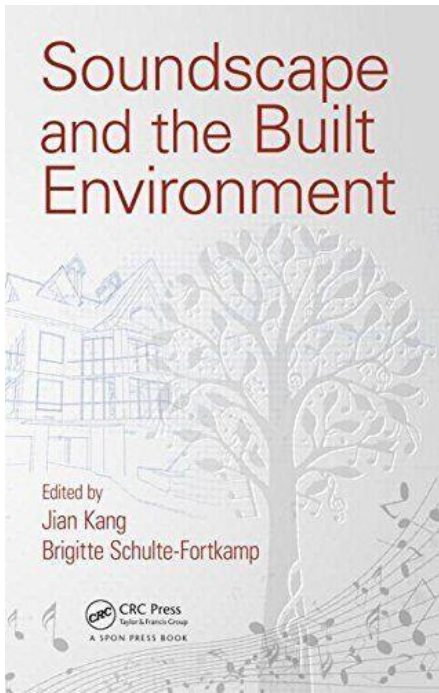


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Web of Science: **soundscape** (topic)

[Science Technology OR Physical Sciences OR Arts Humanities OR Social Sciences OR Technology]





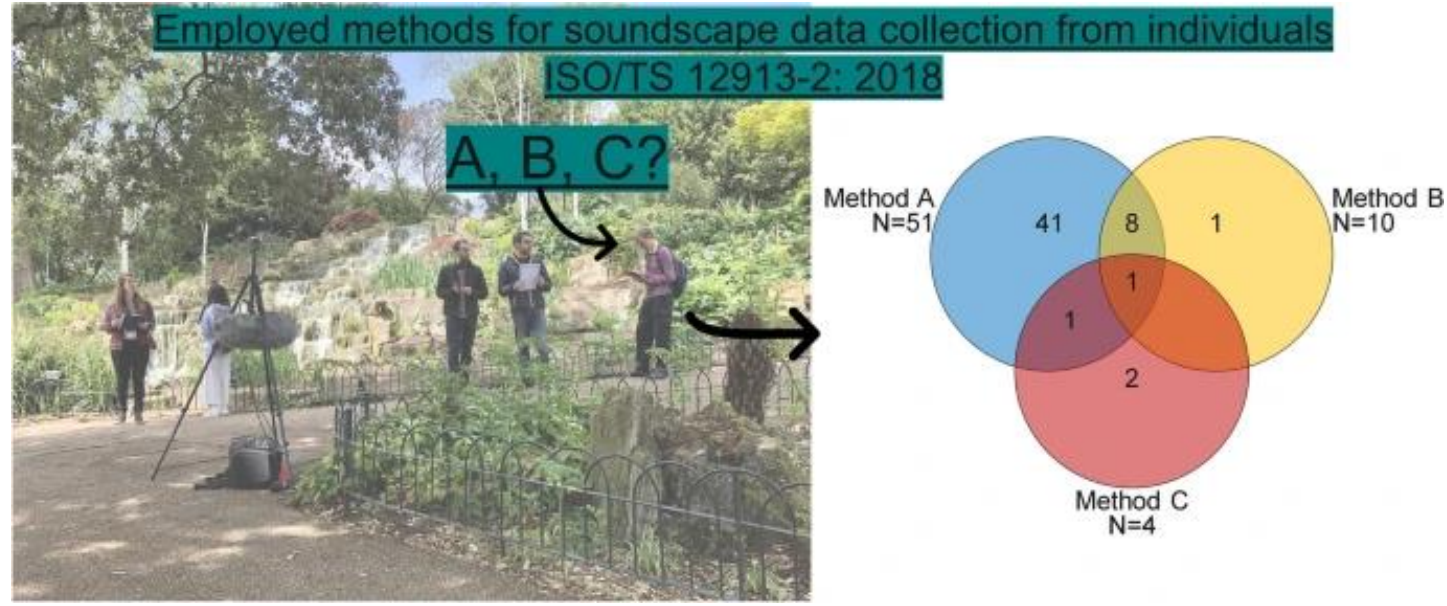
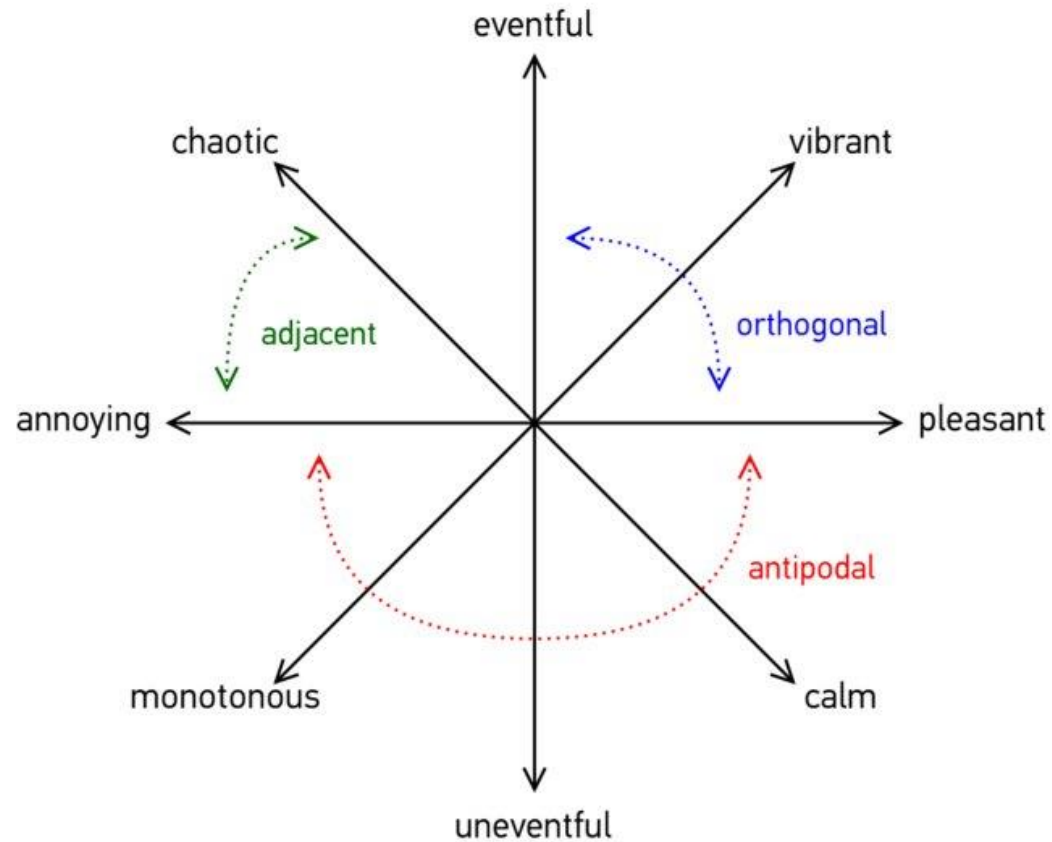
1. What is the **definition** of soundscape?
2. How can acoustic environments become soundscapes?
3. How are soundscapes related to **socio-cultural backgrounds and context**?
4. How are soundscapes influencing **health and quality of life**?
5. How can we **measure** soundscapes?
6. How can we **represent** soundscapes?
7. How can we **plan** and **design** soundscapes for the built environment?
8. How are soundscapes shaping our **history**?
9. What examples of **soundscape practices** do we have so far?
10. What are the **challenges** of soundscape research for the next years?

Kang, J., Aletta, F., Gjestland, T. T., Brown, L. A., Botteldooren, D., Schulte-Fortkamp, B., ... & Lavia, L. (2016). **Ten questions on the soundscapes of the built environment**. Building and Environment, 108, 284-294.



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Measure



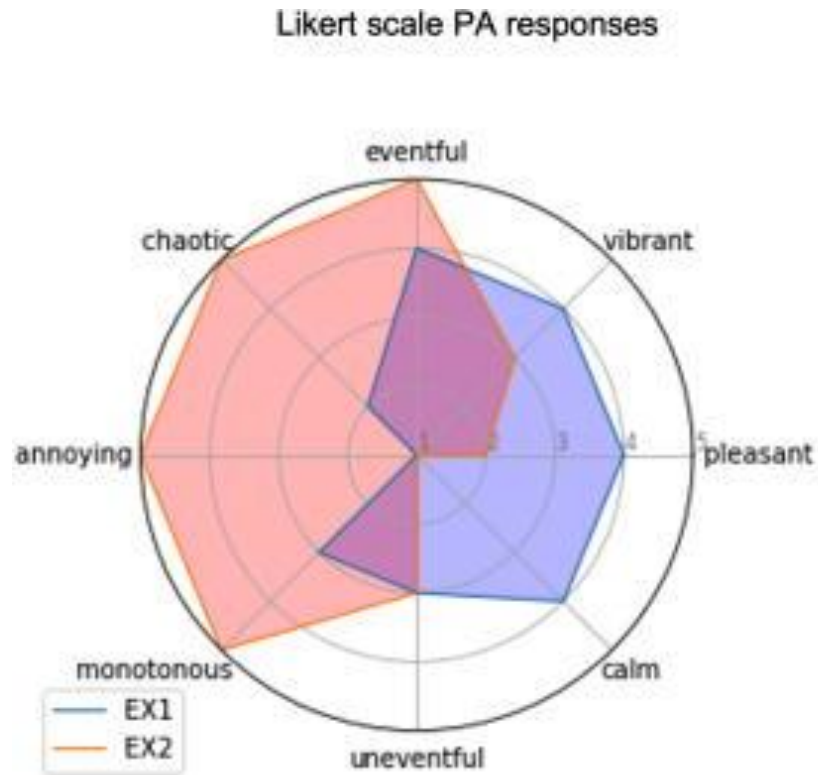
Watcharasupat, K. N., Jaratjarungkiat, S., Lam, B., Jitwiriyanont, S., Ooi, K., Ong, Z. T., ... & Gan, W. S. (2022). Quantitative evaluation approach for translation of perceptual soundscape attributes: Initial application to the Thai Language. *Applied Acoustics*, 200, 108962.

Aletta, F., & Torresin, S. (2023). Adoption of ISO/TS 12913-2: 2018 Protocols for Data Collection From Individuals in Soundscape Studies: an Overview of the Literature. *Current Pollution Reports*, 9(4), 710-723.

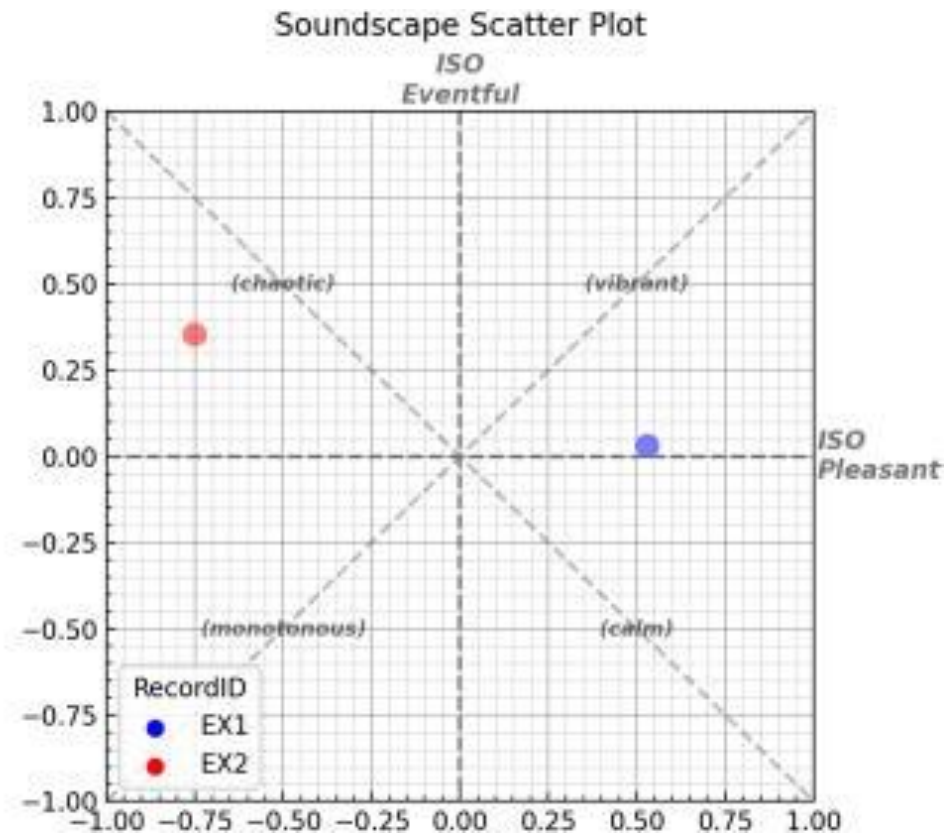
Represent

$$ISO\ Pleasant = [(pleasant - annoying) + \cos 45^\circ * (calm - chaotic) + \cos 45^\circ * (vibrant - monotonous)] * 1 / (4 + \sqrt{32}), \quad (1)$$

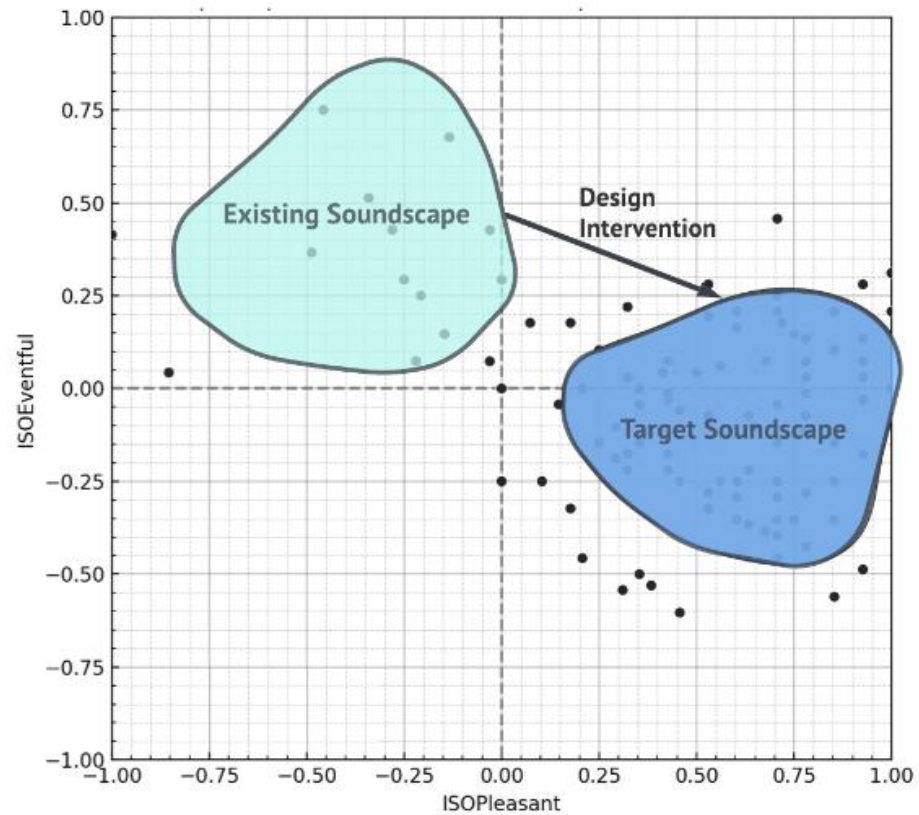
$$ISO\ Eventful = [(eventful - uneventful) + \cos 45^\circ * (chaotic - calm) + \cos 45^\circ * (vibrant - monotonous)] * 1 / (4 + \sqrt{32}), \quad (2)$$



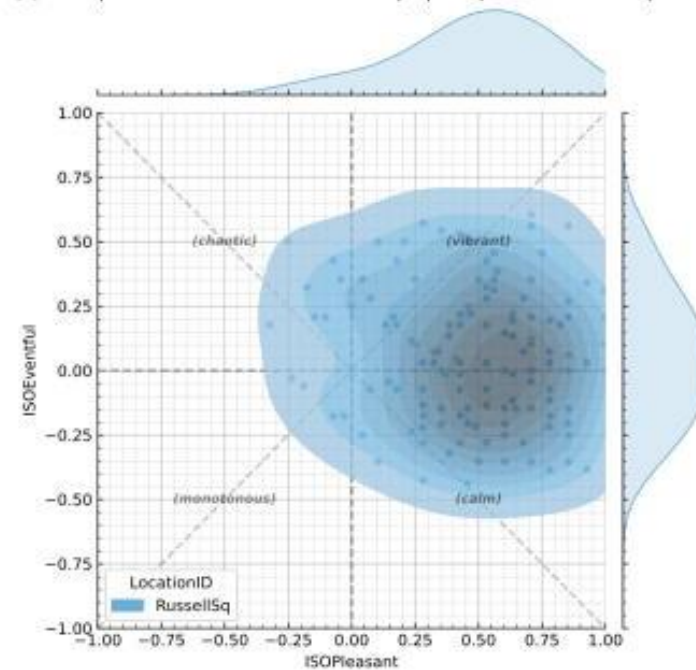
ISO Coordinate transformation (Eqs. 1 and 2)



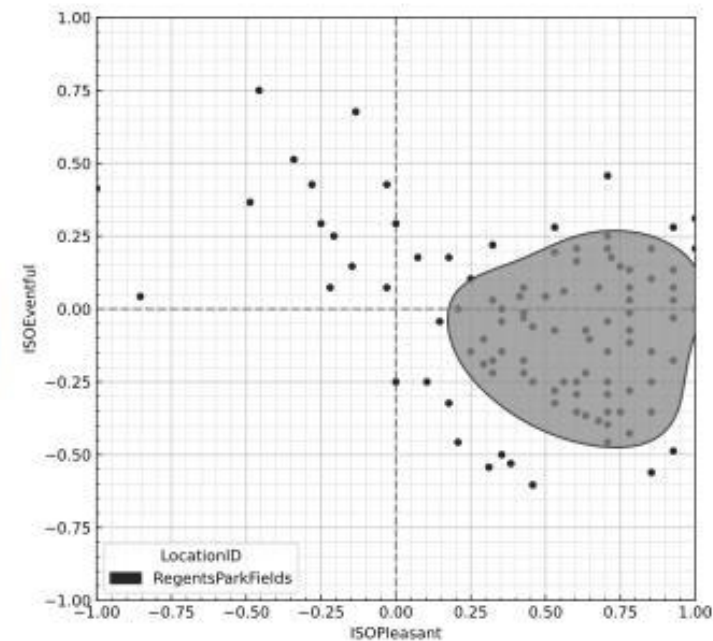
Represent



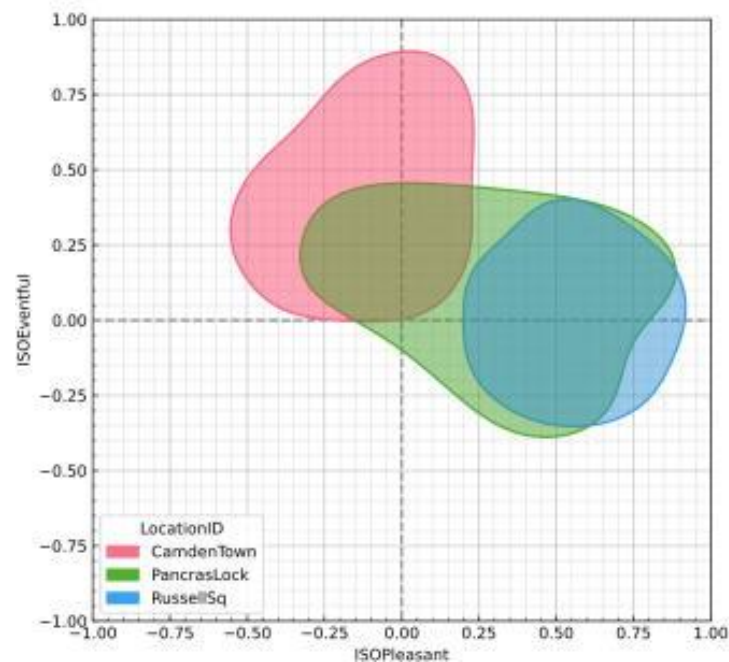
(a) Example distribution of the soundscape perception of an urban park



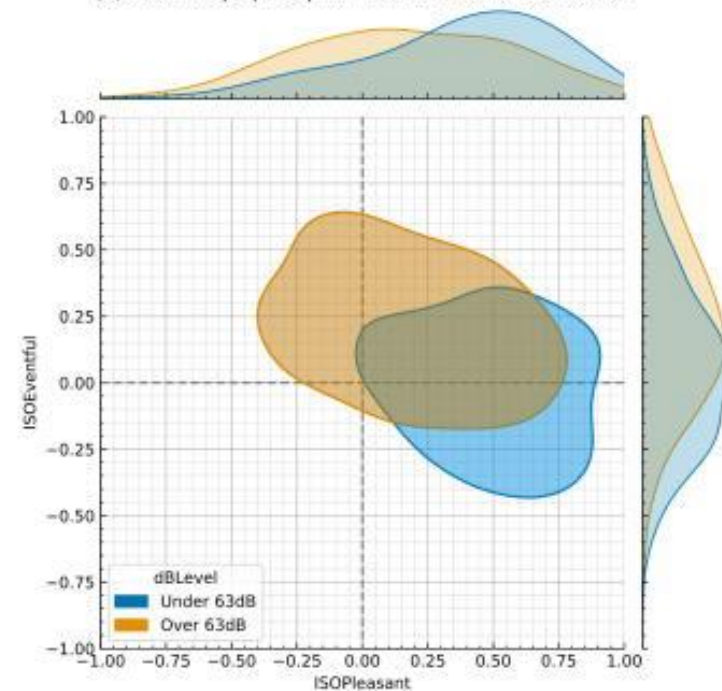
(b) Median perception contour and scatter plot of individual assessments



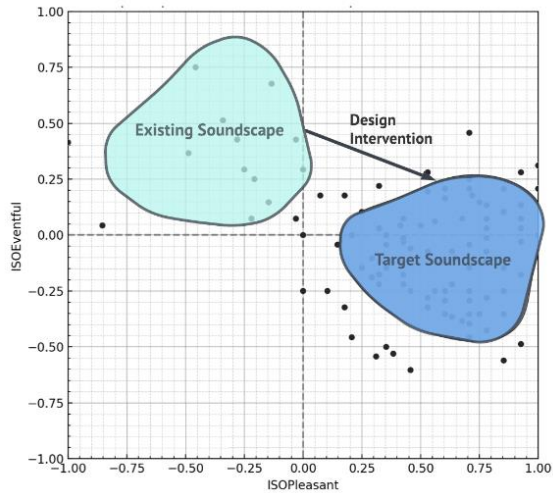
(c) Comparison of the soundscapes of three urban spaces



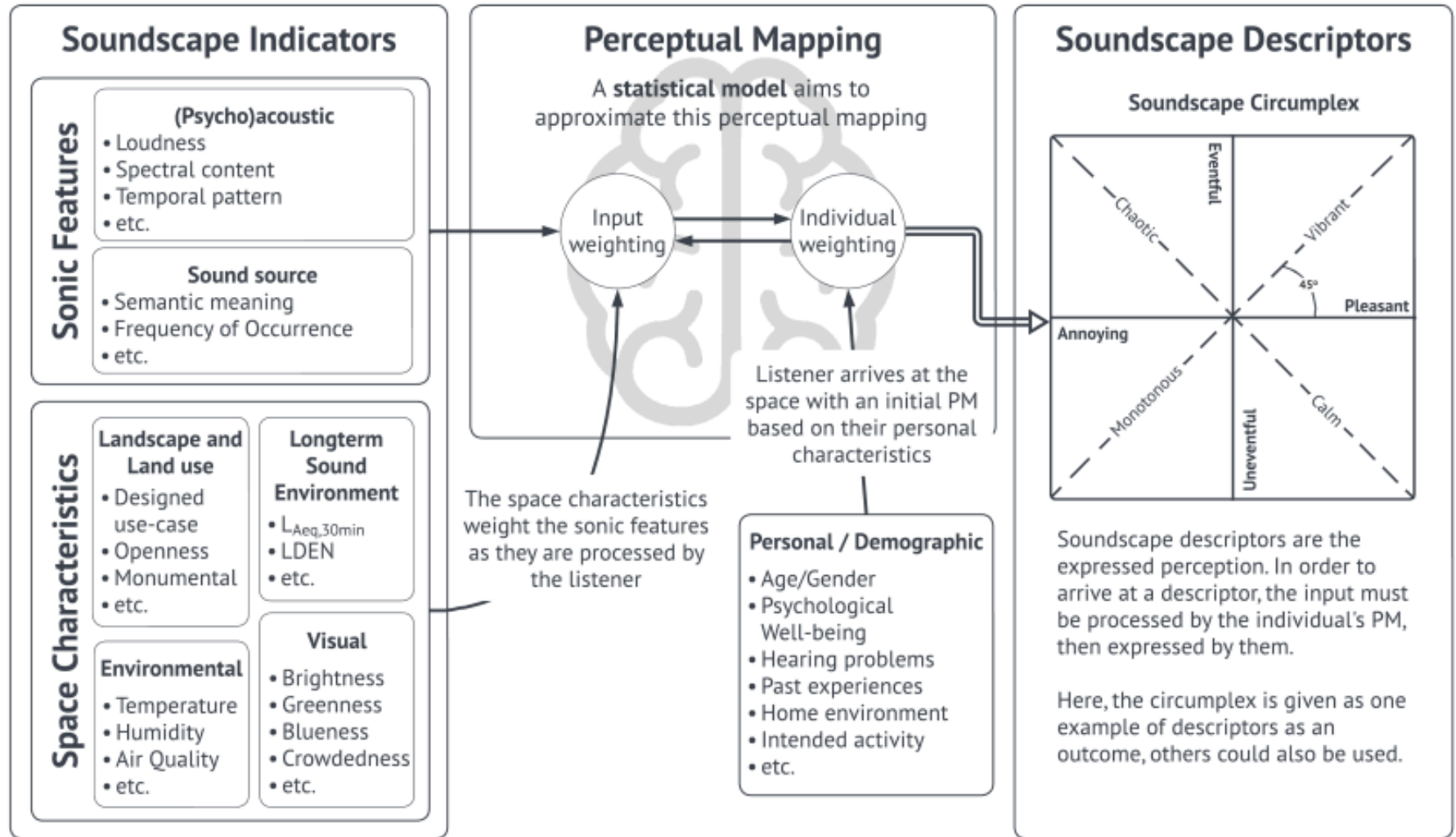
(d) Soundscape perception as a function of sound level



Design

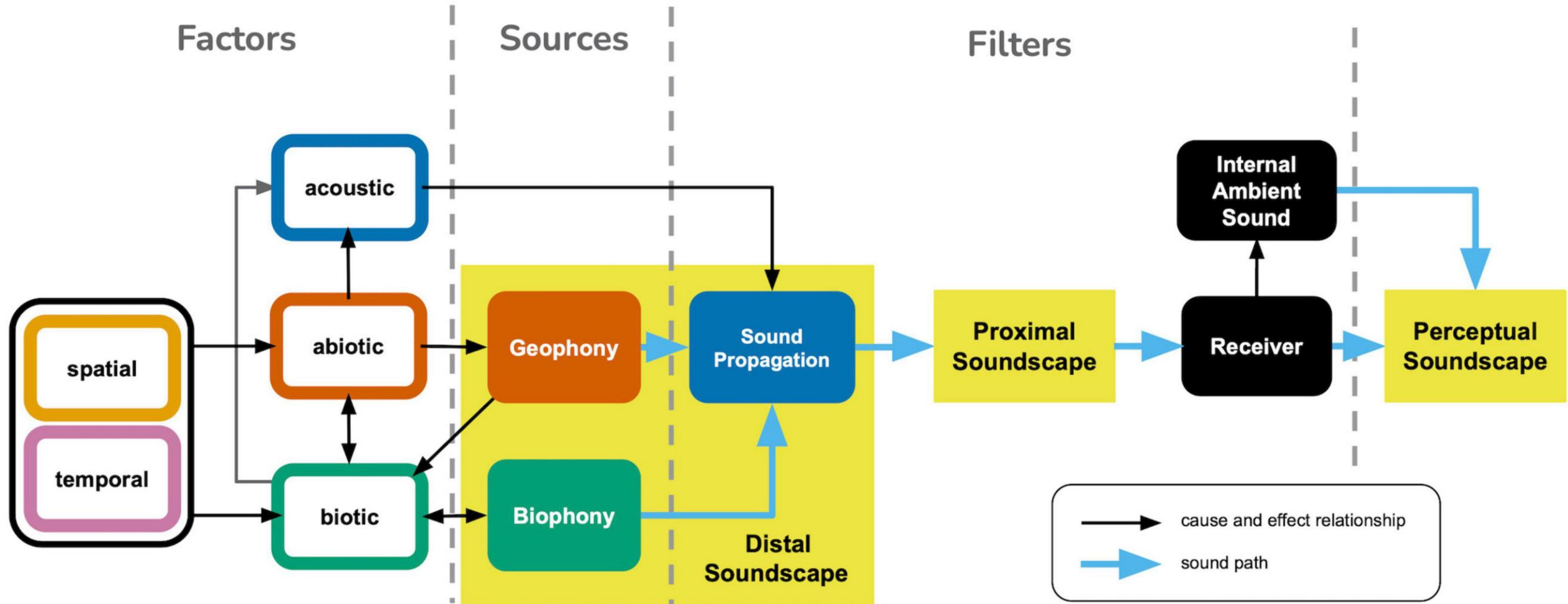


Conceptual Model of Soundscape Perception



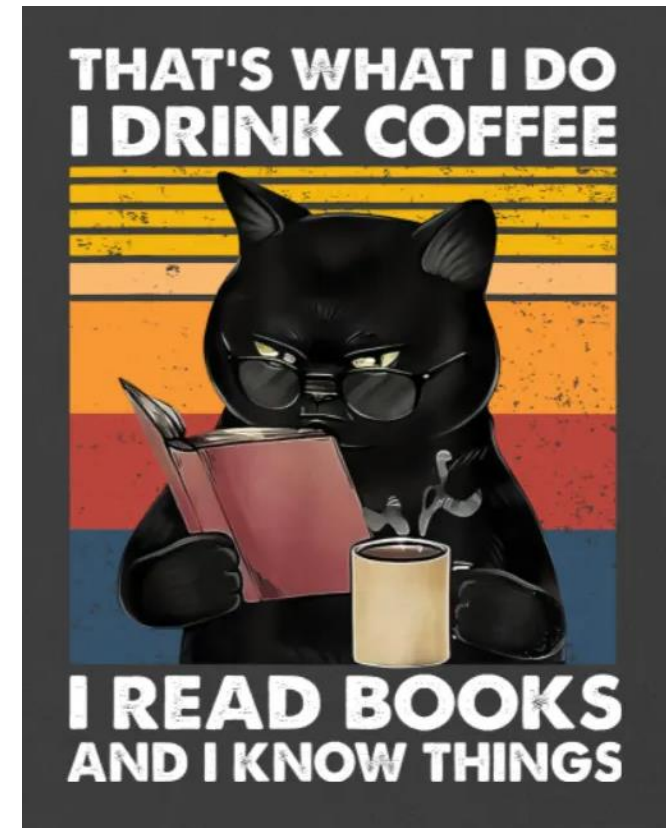
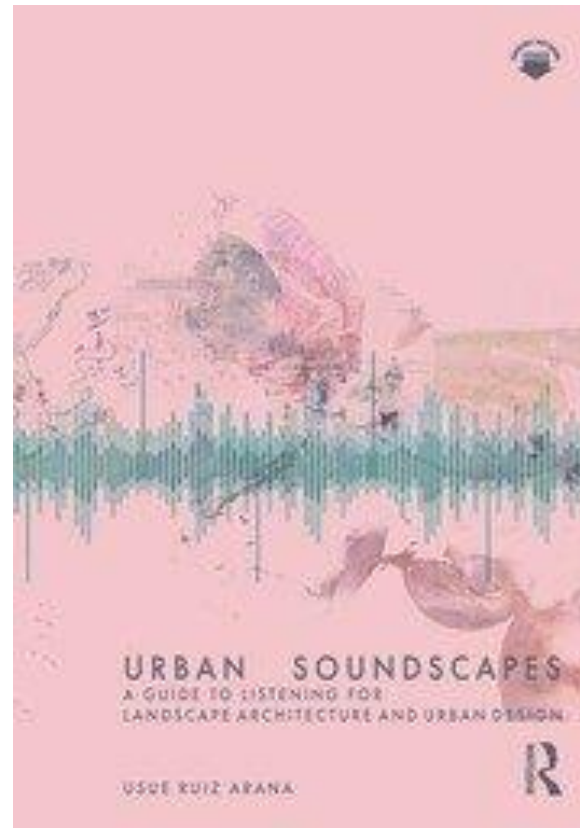
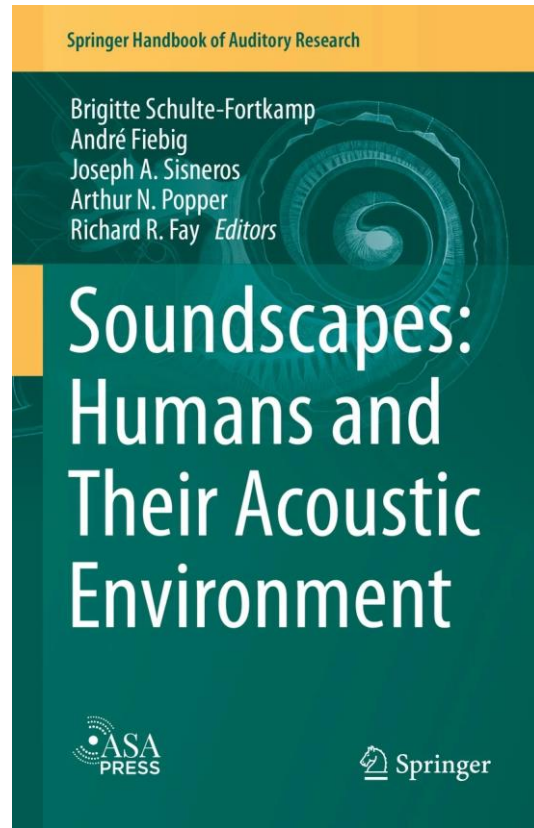
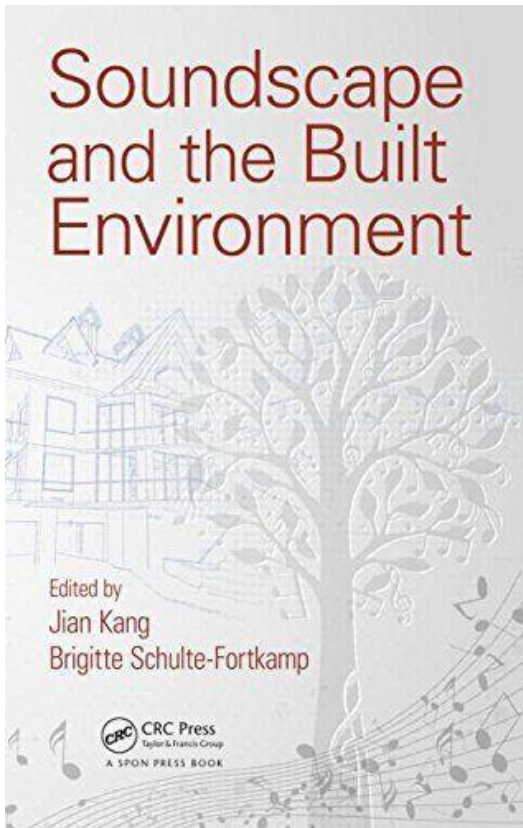
Mitchell, A., Aletta, F., Oberman, T., Erfanian, M., & Kang, J. (2023, November). A conceptual framework for the practical use of predictive models and Soundscape Indices: Goals, constraints, and applications. In *INTER-NOISE and NOISE-CON Congress and Conference Proceedings* (Vol. 268, No. 6, pp. 2108-2118). Institute of Noise Control Engineering.

Beyond “perceptual” soundscapes...



Grinfeder, E., Lorenzi, C., Hauptert, S., & Sueur, J. (2022). What do we mean by “soundscape”? A functional description. *Frontiers in Ecology and Evolution*, 10, 894232.

Starting points...





Thank you.

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