

Inclusivity and diversity issues in soundscape and participatory action research

Mattia Cobiauchi ¹, Carmen Rosas-Pérez ²

¹ Music Department, Goldsmiths University of London, London, UK

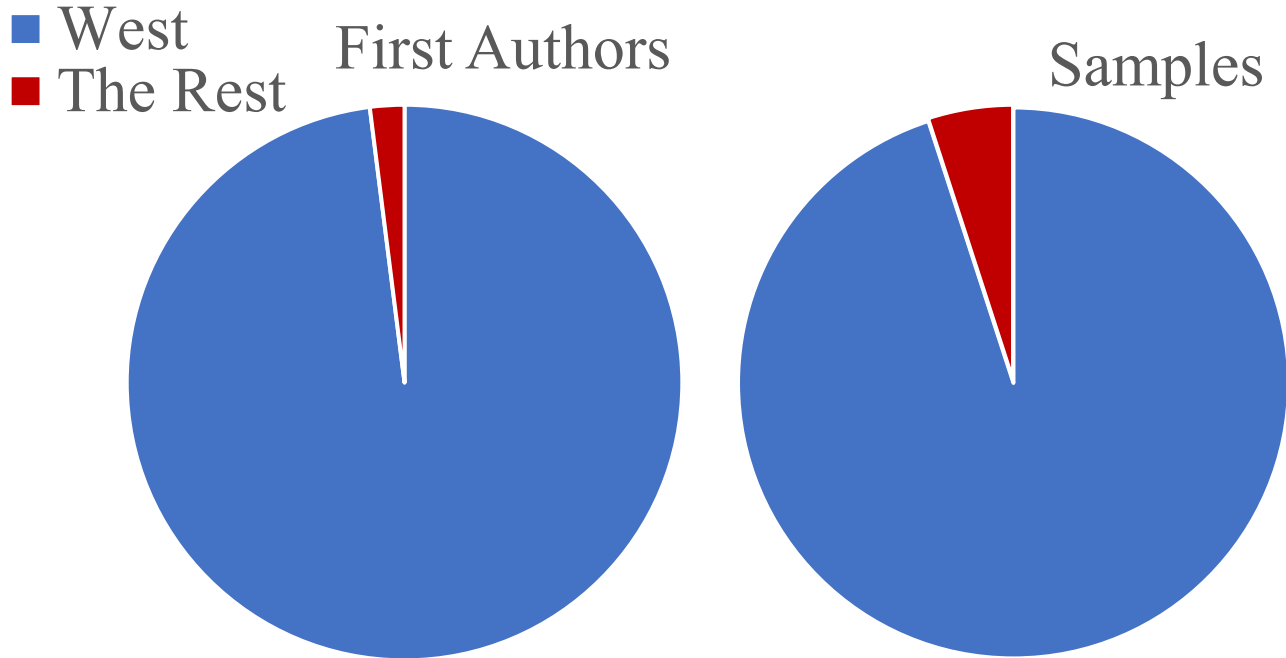
² Institute for Sustainable Building Design, Heriot-Watt University, Edinburgh UK

1. Western Cultural Bias: welcome to WEIRD research
2. How WEIRD is soundscape research?
3. Other important under-represented populations in acoustics and soundscape research
4. Inclusion \neq not exclusion
5. Participatory Action Research and inclusivity
6. Art based participatory research for soundscape design
7. Inclusivity towards non-human species
8. Closure

- “Since listening with understanding depends on culture, rather than on the biology of hearing, auditory spatial awareness must be considered the province of sensory anthropology. To evaluate aural architecture in its cultural context, we must ascertain how acoustic attributes are perceived: by whom, under what conditions, for what purposes, and with what meanings. Understanding aural architecture requires an acceptance of the cultural relativism for all sensory experiences.” (Blessner and Salter, 2007, p.18)

Welcome to WEIRD research

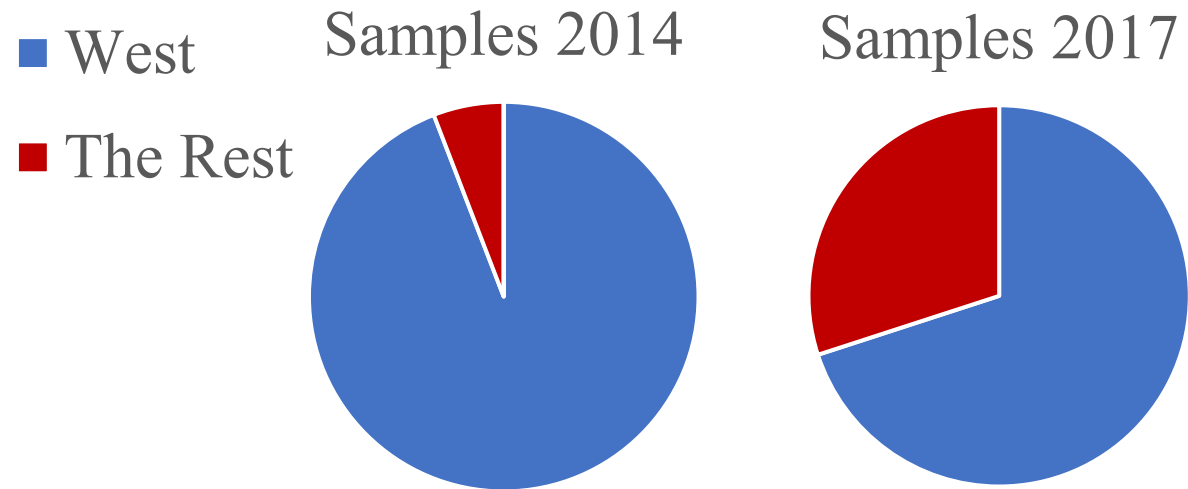
- Most psychology and environmental psychology articles have an intrinsic bias in relation to researchers and participants: they are mostly from the Western, Educated, Industrialized, Rich, and Democratic societies. (Henrich)
- 2008, Arnett - APA journals 2003-2007



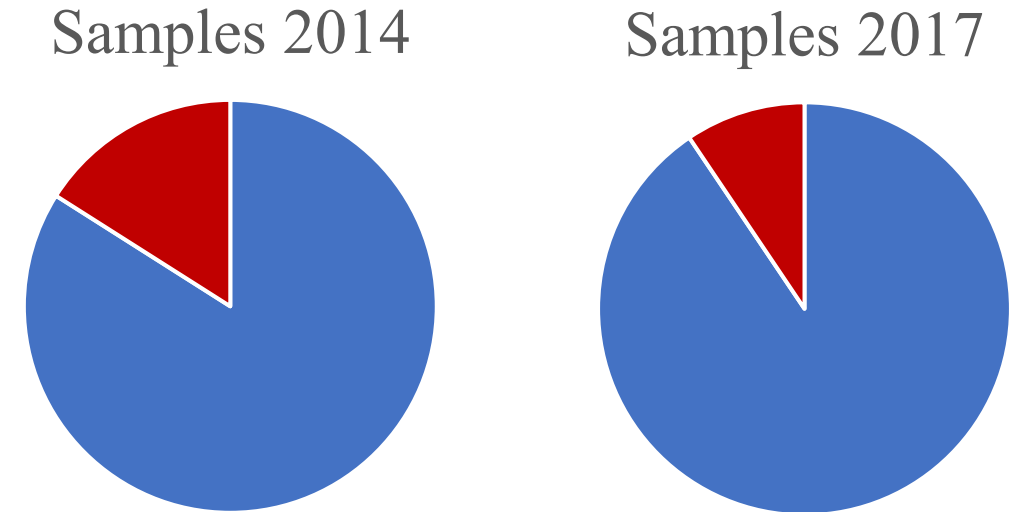
In 2010, in a review of comparative databases from across the behavioral sciences, Henrich concluded that **`WEIRD subjects are particularly unusual compared with the rest of the species – frequent outliers`** (Henrich *et al.* 2010).

Welcome to WEIRD research

2018, Rad et. - Psychological Science



Tam and Milfont - Journal of Env. Psychology



‘Perhaps the most disturbing aspect of our analysis was the **lack of information given about the WEIRDness of samples**, and the **lack of consideration given to issues of cultural diversity in bounding the conclusions**’. (Rad et. 2018)

‘Western participants dominated the samples used; and that More often than not, there was apparently a **lack of attention by the authors in their writing to the potential cultural dependence of their findings**’ (Tam and Milfont 2020)

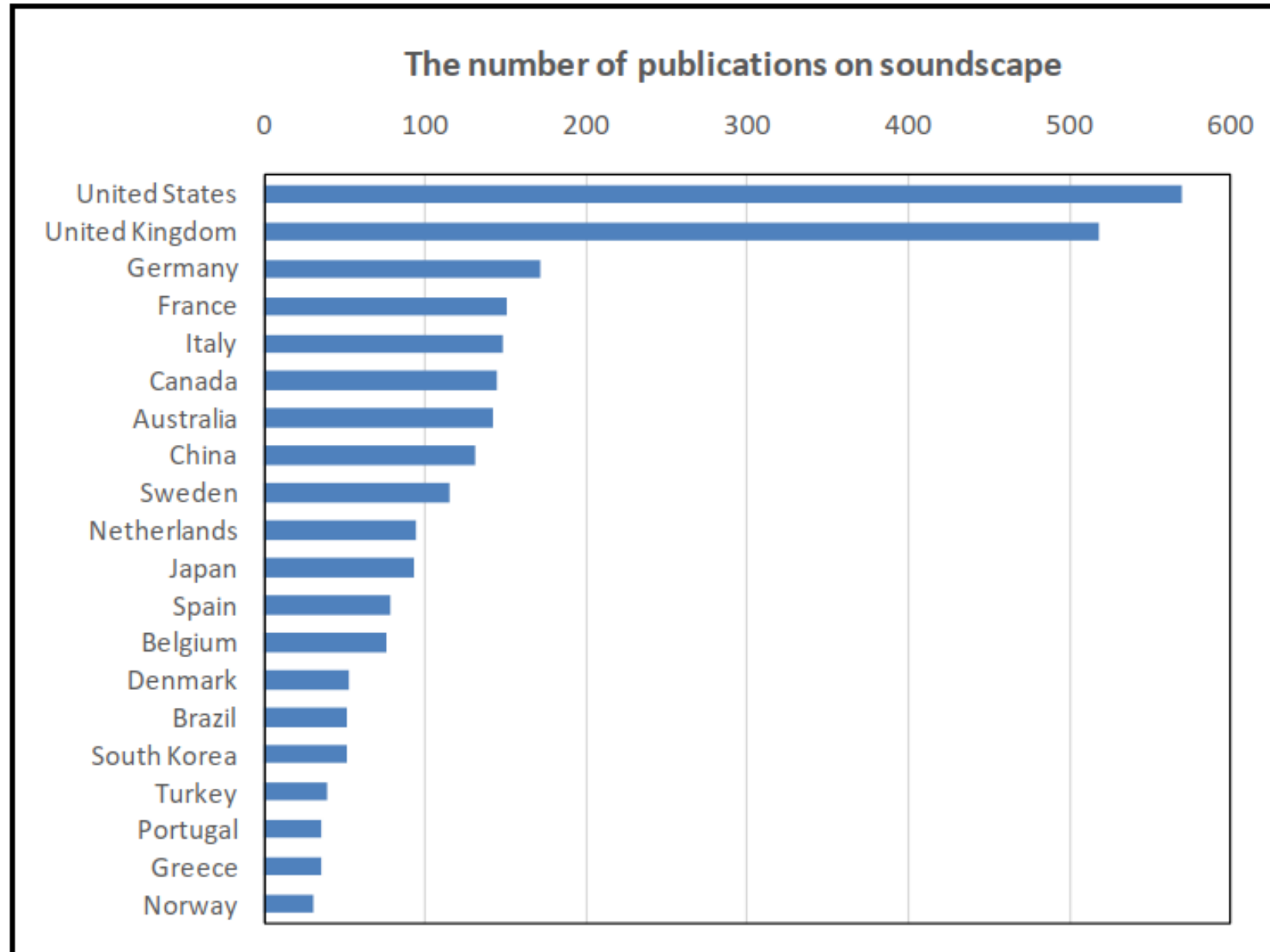
Welcome to WEIRD research

- The importance of these results is in the foundations in psychology of part of the knowledge and methodology in acoustics and soundscape research that we use to study sound and noise perception.
- A critical approach to the assumptions and the literature that our research methodology is based upon may reveal some WEIRDness.
- A WEIRD example in acoustics is the Weinstein's Noise Sensitivity Test (1978), that sampled a group of fresh US college students living in dormitories, 18 y/o median age, balanced in gender (Weinstein, N.D., 1978).

How WEIRD is soundscape research?

- There's very little literature on the WEIRDness of research in acoustics and soundscape, but a conference paper by To, Chung and Vong (To *et al.* 2018) contains some interesting data about the country of publication.
- In 2018 they interrogated Scopus for entries with the word “soundscape” in their title, abstract, or keywords.
- 2720 publications were returned, and if we look at the ranking of the number of publications by country of publication, the Western hegemony is very clear.

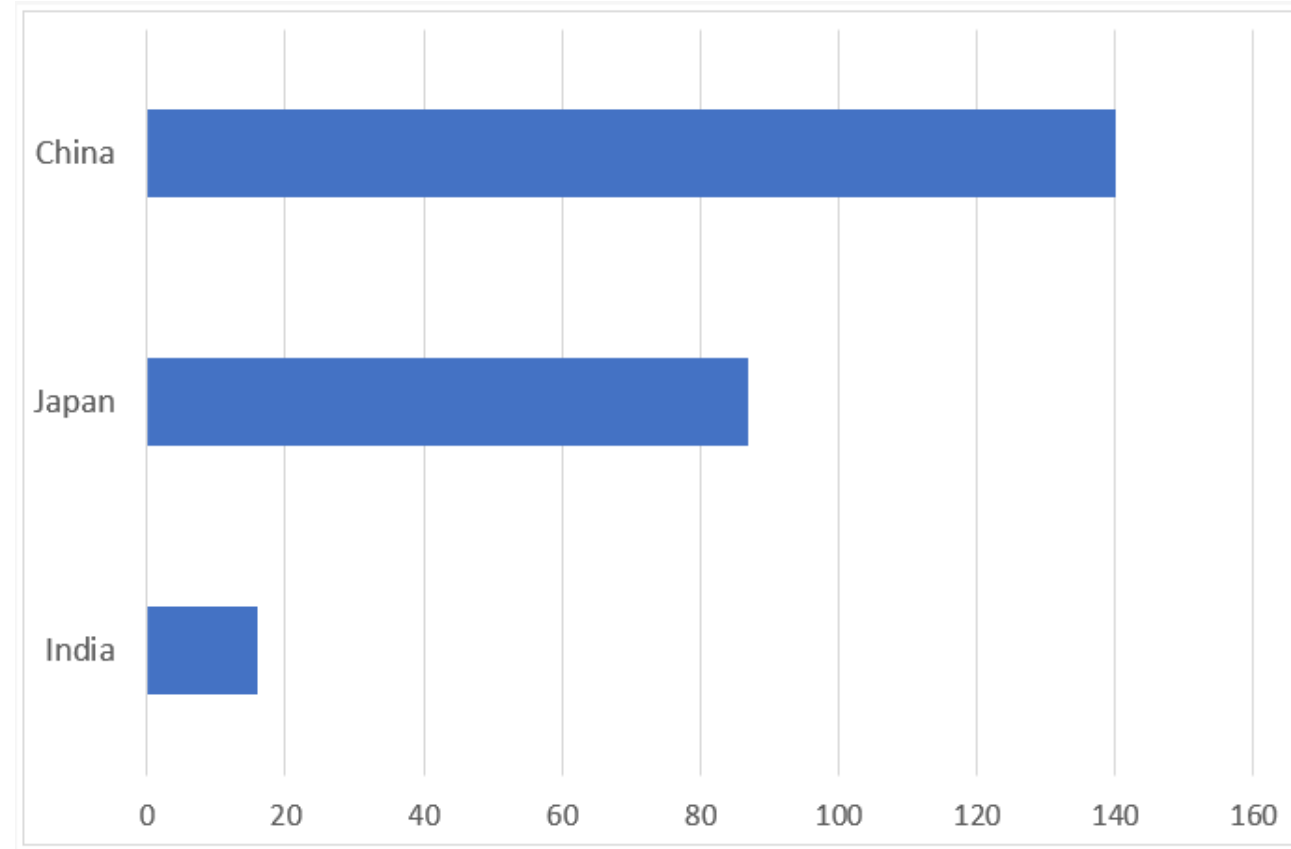
How WEIRD is soundscape research?



Reproduced with kind permission of the authors from (To et al. 2018)

How WEIRD is soundscape research?

- They also analysed the results to understand how many publications were about the soundscape of a specific country, and found 140 for China, 87 for Japan and 16 for India.
- Data from (To et al. 2018).



Other under-represented populations

- Apart from cultural diversities, other important minorities which are under-represented in soundscape studies are the aural and the neural diverse populations (and they may overlap in some cases).
- Our modern concept of “normal hearing” has a strong monolingual and speech-based bias, as shown by Mara Mills in “Testing hearing with speech”, from the book “Testing Hearing, the making of modern aurality” (Hui et al. 2020).
- Further to this, what has been standardized in BS ISO 226:2003 as “Normal equal-loudness-level contours” is very problematic as well, since it defines a medical “otologically normal hearing” that is applicable only to a ‘person in a normal state of health who is free from all signs or symptoms of ear disease and from obstructing wax in the ear canals, and who has no history of undue exposure to noise, exposure to potentially ototoxic drugs or familial hearing loss. On top of that it stipulates an age range, 18–25 years.’ (Drever 2017)

Other under-represented populations

- If we consider Europe demographics published by Eurostat, ‘young people aged 15-29 years [account for] for 17 %’ (Being young in Europe today - demographic trends - Statistics Explained 2021).
- Thus definitely less than 17% of the European population would show normal hearing according to the standard.
- Still, most studies in acoustics and soundscape research require participants with “normal hearing”:
 - advantages for comparability of evaluation of noise and sound, but it’s a “normal hearing” evaluation
 - possibly miss diversity of perception

Other under-represented populations

- In his paper, John Drever provides a long but non-exhaustive list of "contexts, conditions and/or stages of life" that may lead, permanently or temporarily, to a very different hearing from what is considered "typical". (Drever 2017)

– people dealing with complex cognitive tasks	– vestibular conditions
– people who rely on effective speech intelligibility	– autistic spectrum disorders with hyper/hypo-acute hearing
– sleep disturbance (shift workers)	– dementia and Alzheimer's disease
– antenatal, neonatal (premature babies), infancy and childhood	– hypertension
– over-60s/ older people	– chronic fatigue syndrome
– effects from ototoxic medications	– acoustically-related social phobias (i.e. parcopresis, paruresis)
– visual impairment	– post-traumatic stress disorder (i.e. exaggerated acoustic startle reflex)
– hearing impairment (conductive, sensorineural & mixed hearing loss)	– migraine headaches
– other hearing disorders: hyperacusis, misophonia, phonophobia, recruitment	– epilepsy
– hearing aid users and cochlear implants	– Lyme disease
	– cerebral palsy

- We can not ignore our duty of care for vulnerable groups, and indeed the WHO in its “GUIDELINES FOR COMMUNITY NOISE” acknowledges that ‘protective standards are essentially derived from observations on the health effects of noise on ‘normal’ or ‘average’ populations. [...] usually adults [...] selected because of their easy availability. However, **vulnerable groups of people are typically underrepresented.**’ (Berglund, Birgitta et al, WHO 1999)
- And in its Environmental Noise Guidelines for the European Region, it discloses that ‘the **recommended guideline values might not lead to full protection of the population, including all vulnerable groups.**’ (Weltgesundheitsorganisation and Regionalbüro für Europa 2018, page 28)
- For a more inclusive soundscape design, we need to expand the discourse and include diverse ways of aural sensing at all stages of the process, from research design, to data collection and analysis, to end with intervention projects.

Inclusion \neq not exclusion

- Acknowledging diversities is the first step, it's recognizing the different organs in a body and their peculiarities, but inclusion is only realized when all the organs are brought to work together towards a common goal.
- Often participants recruiting strategy and data gathering methodology are chosen because convenient for the researchers and tend to sample college students or existing users of a public space with verbal or textual engagement.
- Random sampling as a strategy for participants recruitment, although not explicitly excluding any particular minority, is not inclusive.
- The students population for example can be already severely biased in terms of minorities representation (gender, age, ethnic, socio-economic status, sensorial and neuraldiversity etc.).

Inclusion \neq not exclusion

In the standard **ISO/TS 12913-2:2018 Acoustics: soundscape. Part 2: Data collection and reporting requirements. Annex A, page 7**, some sampling examples are given:

- ‘An example of a field study is a case study of a residential area where the acoustic environment is redeveloped. In such a case **it is common to select residents as participants** in order to learn how they perceive the acoustic environment and how they would like it to sound (indoors as well as outdoors). Other examples of field studies are **evaluations of parks or green areas**. **In these cases it is common to select visitors** in order to learn how they perceive the park and its acoustic environment. ‘

Although these examples are not prescriptive, it's important to stress that passers-by, citizens living in a neighbourhood, and users of a public space are already groups for which the soundscape, even if not optimal is at least acceptable. But those who have willingly decided to avoid that neighbourhood or public space, for example because belonging to one of the diverse groups and finding the soundscape distressing, would be automatically cut out of the research.

Inclusion \neq not exclusion

A short and non exhaustive list of issues affecting participation to research:

- socioeconomic issues which affect who can afford to be involved as a participant;
- problems of physical access (physical disabilities or age-related mobility impairments);
- gender bias, if children can not be included in the project and mothers are the ones taking care of them and can not participate.

Inclusion ≠ not exclusion

- A further key aspect of inclusion is to consider the concept of **intersectionality** when working with minorities and diverse groups. It acknowledges that identity dimensions are not independent variables. It is...
- ‘...a conceptual framework to debunk the singular binaries through which research with minorities is often conducted, with, in the process, complex modalities constructed wholly on the basis of a single social stratification’ (Sallah, M., 2014)
- It recognizes that “**competing dimensions of difference do not operate in isolation but are inextricably interconnected**” (Lykke in Sallah, M. 2014)

Inclusion \neq not exclusion

A short and non exhaustive list of issues in data gathering:

- Technological – whether for sensing or design, smartphone-based apps may be an issue for visually impaired users or participants with physical disabilities;
- Language and literacy;
- Textual / verbal issues (and some non-verbal individuals may understand language perfectly but are not able to express themselves verbally).

Participatory Action Research and inclusivity

- PAR needs ‘...to address inequality, include marginalized people and perspectives in all phases of the research, empower disenfranchised groups, and democratize knowledge production and dissemination.’ (Leavy, P., 2017).
- ‘Different **stakeholders should be given leadership roles** in the various stages of the research process to avoid research that occurs within communities, but not with communities’ (ibid)
- Randy Stoeker writes: "The ideal research project is one that **serves community identified needs**, is sensitive to the cultural understandings of the community, and supports action around some community identified issue". (Stoeker in Leavy, P., 2017).

Participatory Action Research and inclusivity

- Many projects that have used the label “participatory” are only using participants as active data gatherers, with no control over the formulation of the research questions, and data processing and dissemination.



**Cities have the capability
of providing something
for everybody, only because,
and only when, they are
created by everybody.**

JANE JACOBS

PAR and Inclusivity - Ideas

- Use purposeful sampling (or non-probability sampling) (Patton, 2015 pg. 401) to recruit a diversity of participants from different vulnerable groups or minorities together with typical/non vulnerable participants.
- Make them work together using “contact theory” to increase mutual understanding of needs and requirements and create focus groups with enough diversity (Pettigrew and Tropp 2006)
- Ask the participants how they would like to be engaged, which research questions are the priority and co-design the research process itself.
- Recruit - and collaborate with - researchers from vulnerable groups or minorities. They can act both as gate-keepers and as co-leaders in the research process and help to understand the specific needs and language used within a group.

PAR and Inclusivity - Ideas

- Diversity of needs doesn't need to be translated into a one (does not) fit all solution based on averaging: different needs can be accommodated by dividing a public space like a square or a park in areas with different design choices.
- **Averaging works for noise, but diversities are not noise.** (see also Blesser and Salter, 2007, pg.312)
- Including multiple perspectives and different needs will result in a better space for everyone, the 'typical' population included.
- **We can here use the concept of hospitality as discussed by Jacques Derrida as a guiding principle. Derrida invites us to be always prepared for and welcoming the unexpected visitor - thus refusing a static concept of soundscape design.**
- 'Let us say yes to who or what turns up, before any determination, before any anticipation, before any identification, whether or not it has to do with a foreigner, an immigrant, an invited guest, or an unexpected visitor, whether or not the new arrival is the citizen of another country, a human, animal, or divine creature, a living or dead thing, male or female.' (Derrida, J. and Dufourmantelle, A., 2000)

- And another aspect of hospitality that Derrida highlights, is **the role of language**:

‘Nevertheless, **we have come to wonder whether** absolute, hyperbolic, **unconditional hospitality doesn't consist in suspending language**, a particular determinate language, and even the address to the other.’ (Derrida, J. and Dufourmantelle, A., 2000)

- In this direction, art based participatory research allows the suspension of language, and values preverbal and alternative ways of knowing, embodied and sensorial experiences, both communal and individual, which may allow the self-expression and knowledge-making of a more diverse group of participants.
- Again, **far from being a one solution fits all, participative sound art can become a useful tool** for inclusive redevelopment of urban soundscapes.
- In the next presentation, Nadine Schütz will show some of her case studies.

- **As an issue of environmental conservation, it's important to include other species in our analysis and redevelopment of urban soundscapes.** Soundscape ecology as a discipline already offers both a theoretical background and operative tools to assess biodiversity and the impact of anthrophony on different species.
- Recognizing the often positive and supportive effect of natural sounds, the protection and promotion of biodiversity synergically works towards more inclusive public spaces.
- **This requirement is not currently included in any of the ISO/TS 12913 standards on soundscape.**

Concluding remarks

- It's important to:
 - check the **weirdness of your literature** review before applying results;
 - reflect on the implicit exclusions** towards minorities and vulnerable groups of your research strategy;
 - consider using art-based participatory approaches** to bring down language and other self-expression barriers.

Acknowledgements

We would like to thank **John L. Drever** and **Antonella Radicchi** for the fruitful conversations during the preparation of this keynote.

We cannot become another. But the challenge of getting close or at least closer, of glimpsing, hearing, touching other realities, is thoroughly compelling to us. Another way to say it is that what turns us on is human complexity and diversity, and we celebrate and document it all, from beauty and hope to horror and despair. In fact we tend to do this in far more detail and with far more obsession than the general public cares to know about. We justify what others perceive as our excess by claiming, simply, that there is too much we don't know about the sources and varieties of human difference. But deep down we hope that by writing and circulating other peoples' histories, by giving their voices places to speak and shout and sing from, we in some measure combat and counter the longstanding arrogance of colonial and imperial authority, of history written in one language, in one voice, as one narrative. (From Ethnomusicology to Echo-Muse-Ecology: Reading R. Murray Schafer in the Papua New Guinea Rainforest, By Steven Feld, from The Soundscape Newsletter, Number 08, June 1994).

References

<https://auraldiversity.org/network.html>

Arnett, J.J., 2008. The neglected 95%: Why American psychology needs to become less American. *American Psychologist*, 63 (7), 602–614.

Being young in Europe today - https://ec.europa.eu/eurostat/statistics-explained/index.php/Being_young_in_Europe_today_-_demographic_trends

Berglund, Birgitta, Lindvall, Thomas, Schwela, Dietrich H, 1999. GUIDELINES FOR COMMUNITY NOISE.

Blesser, B. and Salter, L.-R., 2007. Spaces speak, are you listening? experiencing aural architecture. Cambridge, Mass: MIT Press.

Derrida, J. and Dufourmantelle, A., 2000. Of hospitality. Stanford, Calif: Stanford University Press.

Drever, J., 2017. The Case For Auraldiversity In Acoustic Regulations And Practice: The Hand Dryer Noise Story. Presented at the ICSV 24, London, UK, 6.

Henrich, J., Heine, S.J., and Norenzayan, A., 2010. The weirdest people in the world? *Behavioral and Brain Sciences*, 33 (2–3), 61–83.

References

Hui, A., Mills, M., and Tkaczyk, V., eds., 2020. *Testing hearing: the making of modern aurality*. New York, NY: Oxford University Press.

International Organization for Standardization, 2018. *ISO/TS 12913 2:2018 Acoustics: soundscape. Part 2: Data collection and reporting requirements*.

Leavy, P., 2017. *Research design: quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. New York ; London: Guilford Press.

Patton, M.Q., 2015. *Qualitative research & evaluation methods: integrating theory and practice*. Fourth edition. Thousand Oaks, California: SAGE Publications, Inc.

Pettigrew, T.F. and Tropp, L.R., 2006. A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 90 (5), 751–783.

Rad, M.S., Martingano, A.J., and Ginges, J., 2018. Toward a psychology of Homo sapiens : Making psychological science more representative of the human population. *Proceedings of the National Academy of Sciences*, 115 (45), 11401–11405.

References

Sallah, M., 2014. Participatory Action Research with ‘Minority Communities’ and the Complexities of Emancipatory Tensions: Intersectionality and cultural affinity. *Research in Comparative and International Education*, 9 (4), 402–411.

Tam, K.-P. and Milfont, T.L., 2020. Towards cross-cultural environmental psychology: A state-of-the-art review and recommendations. *Journal of Environmental Psychology*, 71, 101474.

To, W., Chung, A., and I. Vong, A.I., 2018. Opportunities for soundscape appraisal in Asia. Presented at the Euronoise, Crete, Greece.

Weinstein, N.D., 1978. Individual differences in reactions to noise: A longitudinal study in a college dormitory. *Journal of Applied Psychology*, 63 (4), 458–466.

Weltgesundheitsorganisation and Regionalbüro für Europa, 2018. Environmental noise guidelines for the European Region.