ADDRESSING DIVERSITY AND INCLUSIVITY IN SOUNDSCAPE RESEARCH, DEVELOPING METHODOLOGIES FOR UNDER- AND NON-REPRESENTED PARTICIPANTS.

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ABSTRACT

Soundscape research has often struggled to deal with multidimensional phenomenological perception of the sound environment. When teaching sound related studies and conducting soundscape research, often little or no consideration is given to addressing the diversity of participants taking part in the class or study. For example, there is often no consideration made of a participant's hearing ability, with many of the standard methods and practices emphasising and assuming 'normal' hearing. There have been some studies with consideration of hearing impairment, but aural diversity is not all about impairment, diversity of unimpaired listeners can often be related to '*quite basic mechanisms like pitch detection*' (DAVIES 2019). The consideration of diversity in soundscape research creates a further epistemological problem of perception. This paper discusses the author's experience from their practice based research to start addressing the issues of inclusivity and diversity, suggesting how the creative industries can adapt existing methods and be at the forefront of new methods including gamification, social data collection and analysis, implementation of VR and AR in community studies, along with the consideration of adapting soundwalking into 'soundsitting', which can both raise awareness of the sound environment and obtain phenomenologically rich empirical data from inclusive and diverse under- and non-represented participants.

Keywords: soundscape research, diversity, inclusivity, participatory action research, community-based.

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1 INTRODUCTION

"Why should there be a conscious experience at all? It is central to a subjective viewpoint, but from an objective viewpoint it is utterly unexpected...When someone strikes a middle C on the piano...sound vibrates in the air and a wave travels to my ear. The wave is processed and analysed into frequencies inside the ear, and a signal is sent to the auditory cortex. Further processing takes place here: isolation of certain aspects of the signal, categorisation, and ultimately reaction. All this is not so hard to understand in principle. But why should this be accompanied by an experience?" Chalmers (CHAPPELL 2005 p56),

In recent years, there has been an increased research activity in understanding and managing both urban and rural soundscapes, often with a focus on health benefits, planning and in creating pleasant and functional environments (TRUAX, 2001). Research activity has led to the development of a range of methodologies and tools for soundscape study, including sound mapping, soundscape simulation, soundwalking and soundscape ecology (PAYNE & BRUCE, 2019; KANG et al., 2016; ADAMS et al., 2008). However, whilst there has been an increase in research and funded projects, the majority have often 'neglected the diverse and complex ways in which different communities experience soundscapes' (BULL, 2004) and the social and cultural dimensions of soundscape experience (TRUAX, 2001). Truax argues that soundscape research should widen its focus to include perceptions and experiences of soundscapes, particularly those of marginalised communities (ibid). It is now time to reconsider soundscape research practice, and look to develop newer and more diverse and inclusive research projects and methodologies which consider the diversity of people and species who use and inhabit acoustic environments. This paper will discuss the importance of the inclusion of the social and cultural contextual dimensions of soundscapes in soundscape research, as well as the need for greater engagement with under-represented users and communities in planning and designing their soundscape by suggesting new and enhanced methods for soundscape research.

The consideration of a participants' perception of the soundscape, is currently an aspect of current soundscape research which is based in a constructivist, relativist epistemology which is ethno-centric and restrictive. This in part relates to soundscape research being a relatively new discourse (KANG & ALETTA 2018), with much of the research being focused on developing methods from a wide range of epistemological and stakeholder disciplines (COST n.d.; SCHULTE-FORTKAMP & KANG 2010) with an emphasis on deconstructing phenomenological studies into objectivist quantitative data. One method which has bridged the epistemological gap in soundscape research is the soundwalk (ADAMS & BRUCE, 2008) which is used in both qualitative and quantitative research, and whilst it has been shown to be a very effective methodology (DREVER, 2020; CARRAS, 2019) by the very nature of it being a walking method excludes those who are unable, for example, to walk for whatever reason.

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The creative industries and research, especially in sound design, music, film, and gaming, have a unique opportunity to be integral parts of the development of new research methods (SKAINS, 2018) that are both academically rigorous and creatively innovative as forefront of exploring new and emerging technologies and techniques for creating and manipulating sound worlds (FORSYTH, 2018). For example, the growing development in the use of spatial audio and immersive soundscapes to create more immersive and engaging gaming, cinematic and music listening experiences, which could inform new methods for studying the emotional and affective effects of sound in these contexts (RAJGURU C, et al., 2020). Creative collaboration between academia and creative industries are principally positioned bringing expertise in world building, qualitative interpretation, sound, audio design and manipulation, as well as a willingness to experiment with new technologies and techniques, not constrained by epistemological and methodological approaches.

2 BACKGROUND

The focus on interdisciplinary methodologies in soundscape research is no longer a new activity within the soundscape research community, and has led to a series of large scale projects as well as the formation of the COST network which was integral in developing the ISO 12913 standard definition of soundscape (ISO 12913, 2018). Whilst there has been progress within the soundscape research community towards forming a multidisciplinary soundscape epistemology is is a challenging task (ENGEL et al., 2018; AXELSSON et al., 2019) with such a wide range of stakeholder disciplines in soundscapes research with varying epistemological and methodological approaches, finding a universal approach and methodology is an issue which can and has provided a barrier to developing a cohesive and clear definition of, and approach to soundscape (KRAUSE, 2012; TRUAX, 2014). The challenge of working across the schism of disciplines, split between their positivist methods of interpreting complex multidimensional, multi-epistemological, multi-phenomenological experiences of a soundscape, to those of a more positivist, objectivist, quantitative approach perspective, has not yet been successfully bridged.

However, in recent years, a focus on using sound as a way of understanding environmental quality, urban planning, and public health (KANG & ZHANG, 2018) has led to a growth in the field of soundscape research and while there have been some efforts to include diverse participants in soundscape studies (EL AYADI, 2022 ; FRANCOMANO, 2022), there has been little attention paid to developing methodologies that are inclusive and accessible to under- and non-represented participants. There has been an emphasis on physical and perceptual factors such as noise levels and sound quality as defined in the ISO standard, with investigations into how sounds affect emotional and cognitive responses, as well as overall quality

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of life. However, the diversity of human experience and the ways in which sound is perceived and valued by different individuals and communities have often been overlooked and dominated by urban, and scientific perspectives (BIELETTO-BUENO, 2017; LEONARDSON, 2015).

As a result, soundscape research has been criticised for being biassed towards the perspectives of certain groups, such as urban, middle-class, able-bodied and aurally normal individuals (THIBAULT, 2018), with limited consideration of aural diversity, or recognition of the under- and non-representation of certain groups, such as those on low-income or in rural areas (ibid) and with an overall bias towards eurocentric and anthropocentric perspectives, with little consideration for acoustic ecology and the biosphere (SCHAFER, 1977).

Specifically, the field has not addressed issues of representation and inclusion of under- and non-represented participants, such as those with disabilities, non-native language speakers, or individuals from low-income communities in addition to considerations around the aural diversity (HUGILL, 2022) This lack of attention to diversity and inclusion in soundscape research leads to biassed and incomplete results, as well as a lack of engagement with communities who may benefit the most from the soundscape awareness and intervention. "*People who live or work in loud environments are particularly susceptible to long-term health problems, and generally, it is the working classes and people of colour who bear the brunt of urban noise exposure.*" (KELLY, 2022).

There is also a need to confront the idea that soundscape research as it stands is not the panacea to its own objectives with the need to explore the ways in which the definition of soundscape and soundscape epistemology may inadvertently reinforce dominant modes of perception and exclude underrepresented and marginalised voices (CHANG & LEE 2020; BULL, 2019). Engaging with a critical theory epistemology alongside sonic activism, an argument that soundscape is not a neutral or objective approach to the acoustic environment can be developed, demonstrating that soundscape design and study, is additionally shaped by underlying power structures and ideologies (DROUMEVA, 2019), and as such, we must be mindful of the ways in which soundscape may perpetuate the very inequalities it seeks to address (THOMPSON & DUFRESNE, 2018). Consideration of an unequal power dynamic between researcher and participant is an area which could impact research outcomes (CORNWALL & JEWKES, 1995), if, for example, participants feel uncomfortable or fearful sharing their experiences due to personal, social and cultural reasons, or linguistic barriers.

The widely held and utilised assumption that the acoustic environment can be studied objectively through positivist and empirical approaches to a deeper understanding of human experience overlooks the fact that our perception of sound is shaped by our cultural, social, and historical context (KANG & ALETTA 2018; BORNMANN 2013; SCHAFER 1977). Current soundscape discourse also assumes that the

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acoustic environment is a passive entity, somewhat removed from human agency and activity, overlooking the idea that activity within an environment is often shaped by who has the power to make decisions about the creation, distribution, and consumption of sound, and how different groups are represented or excluded within these processes. It is the diversity of experience and human agency within the acoustic environment (KANG et al., 2016) which create additional requirements for soundscape study as these also have implications for the design, management and planning of soundscape, as they suggest that a one-size-fits-all approach to soundscape planning may not be appropriate.

There is then the need for a more inclusive, cultural, societal, qualitative and phenomenological approach to soundscape research, as a way of further examining phenomenological aspects of the soundscape as well as developing a sonic pedagogy to increase both sound and soundscape awareness. The aim is in leading to a discourse that acknowledges and seeks to address the under- and non-representation of certain groups in the research process, whilst also acknowledging the contribution existing soundscape research has made to the discourse. Thus there is the requirement for methodologies that actively engage with the widest possible selection of participant engagement, which is both time consuming and costly (XIAO et al, 2018) involving aurally diverse, under- and non-represented participants in the research process. We are currently at a foundation point for the essential reevaluation of soundscape discourse and methodologies, with the aim of inspiring further discussion and action towards inclusive approaches to study design, recruitment, data collection, and analysis.

Through proposes a process of enhanced experiential soundscape practice that encourages practitioners and participants to listen more attentively to the sonic environment, introducing methods of co-creation including soundsitting, sonic dérive, immersive audio, performance-based practices, and sonic awareness pedagogies, engaging with the acoustic environment in a way that is grounded in experiential, multisensory and embodied listening practice. With an aim to both understand and encourage more sustainable sound practices, and promote a greater appreciation of the value of the soundscape relevant to the underlying social and cultural contexts. By moving beyond current methods in soundscape practice will encourage and allow for the development of more diverse and inclusive methods essential for creating an equitable, representative sonic culture by formulating new avenues of creative expression, promotion of social justice and equity, and the creation of an inclusive and participatory culture of sound.

2.2 SOCIAL AND CULTURAL DIMENSIONS OF SOUNDSCAPES

Many soundscape studies have now shown that the same environmental conditions can induce very different emotional and perceptual states within a listener, particularly if conditions change, for example, the introduction to all night bin collections in Soho (BRUCE, 2011), the re-routing of a flight

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path, or a new neighbour with a noisy car particularly in relation to elements within the soundscape (ibid). This demonstrates a relationship between the habitus (BOURDIEU, 2002) of the listener and their attitudes towards the sound producer, be it human, natural or electromechanical, which in turn influences the way listeners perceive and respond to sounds within their soundscape. Bourdieu would argue that attitudes, and behaviours which are acquired through social and cultural capital. Habitus is not fixed, and can change over time as individuals views, norms and sonic habituation take place, as well as exposure to new experiences and social environments. In the context of listening further research into a possible interpretation of sonic capital is to be considered as further work; alongside the granularity of listener type and state, their listening experience, their control and autonomy in a soundscape and place and social expectation.

In addition to the diversity of individual and group experiences of soundscapes, it is also important to consider the framework in which social and cultural dimensions contribute to the sonic activity with the soundscape. Soundscapes are not simply physical environments but are also social and cultural constructs that reflect the values and beliefs of the communities that inhabit them (BULL, 2003), For example, the soundscape of a traditional market, such as those on Berwick Street in Soho, London (BRUCE, 2011) can reflect the cultural practices and traditions of the local community, while the soundscape of a vibrant shopping street, such as nearby Oxford Street, can reflect the values of consumerism and capitalism (BULL, 2003), with soundscape elements often centralised to corporate control.

Corporate control and influence can be responsible for the branded music from selected providers throughout the country which is played in shops to attract the right demographic, through to the removal and dispersal of 'noisy' youths, to the design of reflective, reverberant concrete and glass shopping arcades which are cheap to clean, but introduce large amounts of reverbance into the soundscape. Ignoring social and cultural dimensions of soundscapes has implications for the way in which soundscapes are designed, planned and situated. For example, urban soundscapes are often characterised as vibrant, noisy or chaotic (DAVIES et al., 2011), without considering the ways in which these sounds may be meaningful or even comforting to the people who live in these environments (BRUCE, 2011).

The evidence of the effects on social diversity, has been shown by Guastavino in a study of attitudes towards the sounds of public transport against those of the private car in France (GUASTAVINO, 2006) show a preference for the sound of public transportation. Further research is needed to investigate if or how a change in social and politicals values, from a more socially democratic France to conservative, libertarian UK's, changes the interpretation and feelings towards socially beneficial sounds against those from a libertarian focused ideology where individuals are free to make their own choices and pursue their own goals without interference from the state or other individuals. In relation to soundscape, this means

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others will suffer (Jensen et al., 2019) which then situates soundscape also as a behavioural, anti-social problem requiring a different approach beyond that of design or acoustic intervention. To address these issues, a proposed set of methodologies that can be used to facilitate the participation of a more diverse range of individuals in soundscape research.

3 METHODS

The development of methods to address diversity and inclusivity in soundscape research do not require radical or intrinsically different approaches from already existing methods, but primarily require an awareness and willingness to consider participant selection and recruitment as a prime objective. Analysing methods from current research, it is difficult without further study and intervention to say if existing methods, such as questionnaires, lab experiments, soundwalks meet the needs of different groups. In addressing the selection and recruitment challenge, the first, and perhaps self-evident approach is engaging in co-creation research with under- and non-represented participants in the research process, using participatory community-based research.

As established methods, they both offer useful existing frameworks for developing conversations, identifying barriers to participation and the appropriateness of the proposed methods, allowing for the study and methods to be developed or adapted accordingly (KANG et al., 2016). For example, soundscape research could be designed to be more accessible to individuals with hearing impairments by using visual cues or sign language interpreters. Soundsitting, which will be described later, can be considered an alternative to those who are unable to partake in a walking based methodology, namely soundwalking. Further examples, also use non-invasive methods of data collection, such as wearable devices, gamification, soundscape simulation or analysis of online conversations, to reduce discomfort or inconvenience for participants.

The first stage in implementing any of the methods suggested below is using co-creation as the process to begin collaborating with individuals or groups with the aim of jointly creating knowledge and ideas, which form the basis for developing relevant methods. As part of co-creation, this could also involve the development of new research questions that are relevant and meaningful to the participants' experiences with the soundscape. At this stage conversations, ideas sessions, focus groups, mobile devices, soundsits or sonic play form methods of collaborative creation, and highlight the developing new methods as needed. Using co-creation as a way of connecting and working with community and social organisations to recruit under- and non-represented participants, with an objective of engaging with a participant group helps provide a primarily a voice for the community being studied. Through this

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initial recruitment it is then possible to gain an insight into the group's thoughts and approaches to the methodological design and project objectives. from defining research questions to data analysis and dissemination (REASON & BRADBURY, 2001). This approach allows for the co-creation of knowledge and the empowerment of participants, who become co-researchers rather than passive subjects (CORNWALL & JEWKES, 1995).

From this there is the potential for further investigation into the degree by which the research subjects are or are not affected by their surroundings, *"Noise is neither a nuisance nor permanent, but rather an indispensable building block for cities where people want to live, stay and recreate"* (KELLY, 2022), or if certain participants or groups do not or have not engage with their sound environment; or if the proposed methods do not take into consideration the participant or group experience and interaction with the soundscape. Another benefit of a community led approach is that it will also help to build trust and rapport between researchers and participants, which in turn can lead to more meaningful and accurate data.

3.1 INCORPORATION OF SOUND IN TEACHING AND LEARNING PEDAGOGY AND ACADEMIC OUTPUTS

The pedagogic practice of listening in schools and in higher education has traditionally focused on the production and reception of sound, usually in the form of harmonic based music, rather than on the act of listening itself. Schafer proposed 'ear cleaning' as one of many methods in "*learning how to listen*" and reconnecting with the sound world (SCHAFER, 1977), however these methods have not been widely utilised. However, this lack of attention to listening as both a process and a skill has been identified by some scholars as a significant gap in the field, according to Voegelin, the lack of emphasis on listening in sound studies has led to a "deafness" to the ways in which sounds are heard and interpreted by listeners (VOEGELIN, 2010). Similarly, Sterne has argued that sonic studies including music have been too focused on the technical aspects of music production, and are therefore neglected the social and cultural contexts in which listening takes place (STERNE, 2003). Therefore there is a need to refocus and develop a sonic pedagogy of listening in sound studies, including how listening practices are shaped by social and cultural factors, and how they affect our experiences and understandings of sound.

In addition to the lack of listening in environments where listening should be a key learning outcome, the use of sound in sonic and soundscape conferences is often surprising by its absence, where the typical powerpoint and talk style presentation is the normal. The use and reproduction of soundscape and sonic research can help to bridge the gap between academia and the broader public, by making soundscape research and the academy more inclusive and engaging to a diverse audience. In presenting

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research through sound installation, online and interactive experiences, researchers can engage diverse communities and promote the importance of soundscape studies beyond academia.

In addition the incorporation of sound in conferences can help to promote new forms of interdisciplinary collaboration and creativity by encouraging artists, researchers, and interested parties from different disciplines to work together. Sound has been found to be a useful tool in engaging learners and improving their retention of information (CHALLIS et al., 2017). Research has shown that the use of audio-based methods, such as podcasts and audio recordings, can enhance students' ability to recall information and improve their motivation to learn. Additionally, incorporating soundscapes and sound effects in educational materials has been found to create a more immersive learning experience that can capture students' attention and foster their engagement. Furthermore, sound has also been found to be an effective way of conveying emotion and helping learners connect with content on a deeper level. As such, sound can be a valuable tool for educators to consider when designing their pedagogical approache*s.*

3.2 CREATING INCLUSIVE SOUNDWALKING

*S*oundwalking has become an ubiquitous method within soundscapes research, which is widely usef across different disciplines, and as such has various methodological approaches, however the basis of the method is a 'walk-scape' (CARERI, 2017) and is a positive method in engaging with the soundscape. However, the requirement to walk does mean there is a restriction on how inclusive the method is as it can exclude those who are unable to walk or require access for walking or mobility aids (MEDIASTIKA, 2022, PAQUETTE, 2012). The mobility of a participant can lead to a new route being chosen for them, but this can mean inconsistency in correlating soundscape and place with other participants, it also may mean limiting the route thus being unable to take in places of sonic relevance to the research question. In addition, a requirement of walking for a long time period, often for longer than an hour, provides a further barrier to inclusivity. Furthermore, there are risk assessment considerations when working with groups such as visually impaired or hearing impaired groups, who engagement and perception of the sonic environment is of great use to soundscape researchLimitations of soundwalking also extend to the consideration of the safety of working with visual impaired participants, whose insight into sound perception would be extremely useful to soundscape research (MEDIASTIKA, 2022).

Soundsitting is an alternative method to soundwalking for soundscape research which can be used to create an inclusive method for participants, although this does depend on the focus of the research, for example, soundsitting enables the in-depth study of a single soundscape, whereas soundwalking tends to involve transiting through various soundscapes. The method removes the risks associated

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with walking and is therefore an easier method to risk assess. Soundsitting has been a part of the author's research and pedagogical practice for many years with applications in teaching in learning, and exploratory research. The method is currently implemented on the 'Our Dee Estuary Coastlives' project on which the author is a practitioner partner. The work is being carried out in collaboration with University of Manchester, University of Liverpool, and Cheshire Wildlife trust.

3.3 GAMIFICATION, VR AND AR

Gamification methods can be a useful tool in soundscape research, as they provide an engaging and interactive way to collect data and involve participants in the research process. Through the use of virtual reality (VR) and augmented reality (AR), possibilities for research with some under- and non-represented groups through online engagement and dissemination, The simulation of realistic environments and/or the augmentation of elements in the real-world, such as real-time soundscape simulation in a real-world environment, allow for engagement through active learning and exploration, rather than exclusion, of course there is a requirement for the participant to own or have access to a smart device, but does increase the diversity of participants and goes further to being an inclusive method. Virtual reality also provides a safe and controlled environment to test hypotheses and theories, making the process of risk assessment easier .

However, the development and implementation of gamification, can be costly and time-consuming, as well as requiring specialised expertise and equipment, this is an area where academic and industry collaboration can be beneficial. There is a risk of study and participant bias, as gamification can influence participants behaviour and perception as well as the possibility of the technology taking the spotlight of the study at the expense of the research question (QINGTANG et al., 2021).

Methods using mobile applications which allow participants to record and annotate sounds in their environment, whilst this method has been used before, for example, the Sounds Around you Project (MYDLARZ, 2013), the inclusion of gamification such as a soundscape building tool with a points system for recording certain types of sounds or a leaderboard for participants who record the most sounds. This process can also be used to create a sound map of a participant's environment, using GPS data and other sensor data from a smart device; the gamification could involve hunting for certain sounds within the environment. Further inclusive participation is through the use of interactive installations in public spaces that allow participants to contribute to a soundscape project.

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3.4 SOCIAL MEDIA AS A METHOD TO RESEARCH UNDER- AND NON-REPRESENTED SOCIAL GROUPS

Social media can be a valuable tool for researching underrepresented social groups, as it provides a platform for individuals to share their experiences and perspectives. However, it is important to approach this type of research with care and sensitivity, as there are potential ethical and methodological considerations to be aware of. Ultimately this is a method to study groups ethnographically, without any researcher input. As such it is a useful method to gain an unbiased perspective without research presence bias. Hashtags, keywords, and geolocation can be ised to extract data related to the group or the topic being studied, for example, reactions to noise in city centres, current noise complaints (THE GUARDIAN, 2023) or neighbour noise. There are of course ethical concerns such as privacy, confidentiality, and informed consent if collecting data by downloading social media posts. Initial investigation can then lead to connections forming with participants who may be willing to conduct online research or interviews. For example, a study by (BITMAN, 2021) used social media to explore how people with disabilities approach social activism and are represented in social digital storytelling using qualitative methods to analyse how disability representation is discussed on the platform.

3.4 USE OF SOUNDSCAPE SIMULATION

Soundscape simulation refers to the use of audio technology to simulate environmental sounds in a laboratory setting (.TARLAO, C. et al., 2023; SUDARSONO et al,. 2017; BRUCE et al, 2009), and has been used in soundscape research, architecture, urban planning, and environmental psychology, primarily to study how people perceive and respond to different types of sounds in their environment with an use in the design of urban spaces. By using soundscape simulation, urban planners and architects can create and test different scenarios to determine how people will respond to different soundscapes in public spaces. For example, soundscape simulation has been used to test the impact of traffic noise, changes in facades and building materials and the presence of other sources of sound in urban areas in addition to study how people respond to natural sounds, such as birdsong or running water, compared to urban sounds, such as traffic or construction noise (PAYNE & BRUCE, 2019).

Soundscape simulation can also be used to study the impact of sound on individuals with specific health conditions, such as individuals with autism or dementia. By using soundscape simulation to test different types of sounds, researchers can gain insights into how specific sounds may impact individuals with these conditions and how to design soundscapes that are more supportive and beneficial. The ability to use immersive environments in game engines such as Unity or Unreal, using ambisonic data which tracks a user's head moves, as common is with gaming is a method current not utilised, and due to the

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method could be used and delivered to anu participant, and data of their interaction with space tracked, and is a method available to all.

4 CONCLUSION

Across academia there is a pressing need to include diverse and under represented groups in research across the board (LUSK, 2018) and soundscape research is no exception. Soundscapes research must be more responsive to the diversity of people, and other species, who use and inhabit acoustic environments, from a social, cultural and aurally diverse perspective before a true interdisciplinary soundscape epistemology can be formed. Schafer's original perspective of a soundscapes researcher was, "*The true acoustic designer must thoroughly understand the environment he is tackling; he must have training in acoustics, psychology, sociology, music and a great deal more besides, as the occasion demands.*" (SCHAFER, 1977 p206), in adopting methodologies that address issues of representation and inclusion of under- and non-represented participants, the requirement is a reevaluation of what soundscape research is, and who it is for, that takes into account the diverse experiences of soundscapes, the social and cultural dimensions of soundscapes, and the need for greater engagement with communities and ecosystems in soundscape planning. The proposed methodologies outlined in this paper are intended as a starting point for researchers to develop their own inclusive approaches to study design, recruitment, data collection, and analysis. In doing so, researchers will be able to form a more meaningful interpretation of individual and collective perceptual experiences of the sonic environment. By adopting a more inclusive and community-centred approach to soundscape design, consideration and management, we can create acoustic environments that are not only pleasant and functional but also reflective of the needs and values of the communities that use and inhabit them and contribute to a more just and equitable society.

However, there are challenges to implementing these methodologies, such as the need for specialised skills, implementation and co-creation development time, participant access, ethical approval and research resources to facilitate participation from under- and non-represented participants. Of course the benefits outweigh these challenges, as development of these methods can lead to more data rich, phenomenological, ethical and meaningful research outcomes. Moreover, inclusive research practices can also promote social justice and equity by providing opportunities for marginalised communities to be given a voice to share their experiences and perspectives, thus contributing to knowledge production. This is particularly important in soundscape research, as the findings of such studies can inform policy and planning decisions that have a direct impact on the lived experiences of individuals in their sonic environment. and unlock the potential of sound as a powerful medium for expression, communication, and

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understanding. By understanding the ways in which soundscape influences place attachment, designers and urban planners can create more meaningful and memorable experiences in the built environment that promote a stronger connection to the surrounding community.

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