

Institution: Goldsmiths, University of London		
Unit of Assessment: 33, Music, Drama, Dance, Performing Arts, Film and Screen Studies		
Title of case study: 'Auraldiversity': how a creative arts practice generated new professional, public and policy responses to people's diverse experiences of their acoustic environment		
Period when the underpinning research was undertaken: 2009-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
John Levack Drever	Lecturer to Professor	2003-
Period when the claimed impact occurred: 1/8/2013-31/7/2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Drever's influential concept of 'auraldiversity' arises from his work as a creative practitioner and theorist in soundscape composition, and the insight that notional standards of hearing in that area did not reflect the true diversity of people's aural capacities. Further investigation showed that the same held in wider society: International Standards and practices around sound and noise – especially as they have pertained to technology, and the design of place – envisaged and serviced an ideal hearing subject whose profile is based on long out-of-date assumptions. This can drastically diminish quality of life for those whose hearing renders them sensitive or vulnerable. Drever has worked to transform this situation through creative practice, public engagement activities, consultancy and policy work, and pedagogy. He has impacted the ways that members of the public, architects, designers, charities, future acoustics professionals and those writing International Standards understand and organise our diverse relationships with the acoustic environment. Drever's auraldiversity research thus shows how an arts practice can lead to significant social change.</p>		
2. Underpinning research		
<p>At the heart of Drever's recent research (2017 [a]; 2020 [a]) is a critical address of the 'auraltypical' subject whose hearing – based on studies and thresholds set generations ago – does not reflect the true diversity of aural experiences. This model originated from the 'Acoustics – Normal Equal-Loudness-Level Contours ISO 226:2003,' from which A-weighted decibels are derived. Benchmarks made according to this International Standard can be found in the majority of acoustics regulation and practice across the world: building and planning, noise at work, aircraft noise, and so on.</p> <p>The equal-loudness-level contour (developed by Fletcher and Munson in 1933; refined in 1956 and 2003), establishes what Drever sees as an idealised hearing subject: its measurement requires a test subject between 18-25 years old, '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' (ISO 226:2003). Thus, the equal-loudness-level contour, and the benchmarking for 'safe' levels of noise in everyday life that result from it, envisage and serve only an idealised, normative demographic group. Drever has coined the provocative term 'auraltypical' to refer to this supposedly 'normal' hearer.</p> <p>However, accompanying auraltypical hearing is the actual variety of (often less than ideal) hearing that we experience throughout a normal day and throughout our lives, from the trifling experience of a temporary threshold shift or transient ear noise, to the intolerable pain of hyperacusis. This reality is what Drever calls 'auraldiversity'. Drever (2017[a]) offers numerous case studies to demonstrate the ways in which people's lives are disrupted by notionally 'safe'</p>		

sounds which are experienced as painful, anxiety- or depression-inducing. For those chronically affected, these acoustic norms perpetuate a 'social model of disability': 'what makes a [person] disabled', Drever writes (2017[a]), 'is not their medical condition, but the attitudes and structures of society' that reinforce their disadvantage. Drever argues that by adopting a more diverse and inclusive approach, designers and policy-makers can improve the wellbeing of a heterogeneous and ageing population.

This research builds on Drever's longstanding interest in the relationship between listening subjects and their acoustic environments. He has explored these issues through creative and theoretical work focused on two sonic arts practices: the soundwalk, and field-recording centred composition. Drever (2009; 2020 [b]) theorises the soundwalk as a method through which participants – specialist or non, of 'normal' hearing or otherwise – may gain insight into place, or transform extant and intimate knowledge of it, by way of a range of situated listening strategies. Meanwhile, Drever (2017 [b]) stages the history and practice of field recording-centred composition as a dense web of traditions and disciplinary norms that becomes more complex as it is obliged to manage an ever-increasing and overlapping litany of contexts: place, heritage, urban design, accessibility, environmental noise, sustainability and ecological engagement from the perspective of sound and listening. Drever explores the tensions between the compositional mechanics of organising sound, and the apparent sociality of field recording material, arguing that artists are not *de facto* more socially sensitive or ethically minded by virtue of carrying out field recording. Drever's creative work (as collected in 2020 [a]) aims to address these issues by replacing sonic arts composition's usual, 'auraltypical' presumptions with a fully auraldiverse approach. The performances 'Ayre #2 [Dan Dryer]' (2016), a site-specific installation featuring 98 different voices including those of infants and people in their 80s, and 'Ayre # 3' (2019), a live work for 6 performers, are participatory and inclusive, placing the performers' hearing at the centre of the creative process.

3. References to the research

[R1] Drever, John L. 2009. '[Soundwalking: Aural Excursions into the Everyday](#)', in *The Ashgate Research Companion to Experimental Music* ed. J. Saunders. Aldershot: Ashgate, pp. 163–192. [Book Section]

[R2] Drever, John L. 2017 [a]. '[The Case for Auraldiversity in Acoustic Regulations and Practice: The Hand Dryer Noise Story](#)'. 24th International Congress on Sound and Vibration (ICSV24). Westminster, London, United Kingdom, 23-27 July 2017. [Conference Item]

[R3] Drever, John L. 2017 [b]. 'Field-Recording Centered Composition Practices: Negotiating the "Out-there" with the "In-here"', in *The Routledge Companion to Sounding Art* ed. M. Cobussen; V. Meelberg and B. Truax. New York: Routledge, pp. 71-80. [Book Section]

[R4] John Drever. 2020 [a]. '[Hearing in Particular: From Auraltypical to Auraldiverse Practice](#)'. [Project] [Submitted to REF2]

[R5] Drever, John L. 2020 [b]. 'Listening as Methodological Tool: Sounding Soundwalking Methods', in *The Bloomsbury Handbook of Sonic Methodologies* ed. M. Cobussen and M. Bull. Bloomsbury Academic. [Book Section]

*All references to research are available on request

4. Details of the impact

The impact of Drever's work on auraldiversity is evident on both local and large scales: his work has changed the thinking and activities of professionals and members of the public, and has contributed to the development of new International Standards around sound and the environment.

Professionals: For arts' acoustics, urbanism and broadcasting professionals, Drever is a leading authority on this subject. People working in those fields have made use of Drever's thinking on auraldiversity in diverse organisational enterprises, training sessions, and broadcasting.

In 2018, Drever's work inspired composer Andrew Hugill to found the research project, auraldiversity.org. The project hosts events for acoustics professionals, as well as public concerts. Its mission statement states: "auraldiversity" was coined by John Levack Drever [...] The Aural Diversity project applies this idea to music, the sonic arts, environmental design, audiology, hearing aid design and other related areas' [S1]. The project has significantly enhanced professional engagement with auraldiverse experiences, as evidenced by the GBP20,000 developmental grant awarded to the project by hearing-aid manufacturer, GNResound. (Project user feedback is detailed under 'Publics').

Drever has worked with urban planners, placemakers, civic designers and architects to increase awareness of, and implement critical thinking practices concerning, the acoustic environment. Drever is a member of the Academy of Urbanism, where his activities have helped demonstrate the importance of auraldiverse approaches to place-making professionals. Notably, he introduced and conducted acoustic assessments for the Academy's influential Great Place Award. Stephen Gallagher, the Academy's Director of Engagement, writes: 'Drever has raised awareness among the Academy and its built environment experts of the often-overlooked importance of sound in the places we inhabit. Through his own endeavours, Prof. Drever has used his expertise on the subject to enrich our analysis of good places, which we do through The Urbanism Awards, by adding acoustic ecology as a completely new dimension to our reporting' [S2].

Drever regularly devises and leads soundwalks for external professional gatherings and organisations (for example the 24th International Congress of Sound and Vibration, London, and Young Urbanists, both 2017). He also acts as advocate of the practice in professional and other public contexts, as with his keynote 'The Role of Improvisation in Auraldiverse Soundwalking', given at the 2018 conference *Space, Sound and the Improvisatory: Methods, Technologies and Theories for Improvising with Natural and Built Environments*, at the Onassis Stegi, Athens, or by way of the soundwalk resources he has developed for external bodies, like the open access *DIY Primer for Soundwalking* for the Museum of Walking (2017). These resources enable special interest groups to approach their work differently by offering methods to explore the sonic and social characteristics of an environment.

Drever also has an ongoing association with the acoustics consultancy Anderson Acoustics, with which he has participated in numerous public events and a redevelopment project in the London borough of Newham. Drever's work has shaped the company's work beyond those collaborations. Company Director John Newman writes: '[Drever's] work has directly helped develop and guide Anderson Acoustics' Soundscapes and Tranquillity Practice. It is helping society understand the value of soundscapes as environmental capital and promoting it within the built environment agenda for sustainability, health and wellbeing' [S3].

Drever is frequently recruited by media companies and producers who wish to explore issues concerning the sonic environment. He was employed by Grapevine Digital as an acoustics expert as part of the release campaign for the film, *A Quiet Place*. In press interviews, which took place across the digital news platforms, iNews, Vice and Yahoo, Drever articulated a critical approach to the idea of silence, and its supposed desirability. Drever also contributed to monocle.com's radio show, 'The Urbanist' (2015), discussing soundscapes and urban ecology, and to two Radio 4 segments produced by David Sillito (2018). Sillito writes: '[Drever] and I have managed to push the issue of sound in to some of the prime slots on the Today Programme. It was radio that provoked thought, surprise and delight and above all sounded wonderful'. Speaking on-air of Drever's Radio 3 'Music Matters' interview (2019), presenter Tom Service called auraldiversity 'just about the most transformative idea you could possibly imagine' [S4].

Pedagogy: Drever's teaching has helped shape the careers of younger colleagues who are now further developing their own approaches to auraldiverse theory and practice.

The Academy of Urbanism's Stephen Gallagher writes that 'John has been keen to inspire the next generation of experts on the subject, through "Sound Walk" events aimed at the Academy's Young Urbanist network' [S2]. Drever's students at Goldsmiths and other universities

have been similarly inspired. The charity Theatrum Mundi, which brings together architects, planners, engineers, and urbanists to improve the understanding of cities and their design, is directed by former student John Bingham-Hall. The charity's Sonic Urbanism programme, which explores 'how acoustics structure social life', reflects Bingham-Hall's undergraduate study with Drever in 2008-9. Bingham-Hall writes that Drever's 'creative and academic work on urban soundscapes opened up a new set of ideas for me about what music study could mean', and gave him interests that 'enabled me now to lead ... Theatrum Mundi' [S5]. Drever is committed to coupling graduate training and social impact, and in 2018 secured a CHASE/AHRC doctoral award in collaboration with Goldsmiths and the Noise Abatement Society, for a PhD project titled 'Liveable Listenable Cities: Human-Centred Planning and Appraisal of Applied Soundscape Design for an Auraldiverse Population.' Drever's sustained commitment to teaching, and his ability to inspire among his students both creative thinking and practical action, are a central component in the continuing impact and enrichment of auraldiverse approaches across society.

Publics: Owing to the broad relevance of his thinking, and his ability to communicate ideas to general audiences, Drever is frequently invited to give talks, produce events and design educational activities for diverse publics. These explore multifaceted approaches to issues of sound, diversity, and wellbeing within the acoustic environment.

Drever has given over a dozen public talks since 2015, including a Royal Society of Arts Talk on the future of urban sound-planning (2017), and a series of nationwide lectures as part of Sound Affects (2018), a series organised by the Clod Ensemble that culminated with an event at the Royal National Throat, Nose and Ear Hospital. Drever also addresses smaller, special-interest groups. Unsolicited feedback from the secretary of the Quaggy Waterways Action Group exemplifies the ways in which Drever's public lectures inspire new kinds of awareness and thinking: '[I] noticed your voice had a slight resonance in the room which you had mentioned. I realised in that moment we have our own personal "soundscape" [...] Your talk was very thought provoking and stimulating' [S6]. The group extended an invitation to discuss further the ideas generated, and their future application to waterways conservation work.

In 2018-19, the auraldiversity.org project (described above) hosted a series of inclusive public concerts exploring how a consideration of auraldiversity might reshape music performance and listening practices. Attendees were encouraged to move around freely, and to experiment with different modes of engagement. Anonymous questionnaire feedback conveys the impact these auraldiverse approaches had on concert attendees: one, who attended having seen the concert advertised in the Attenborough Arts Centre (Leicester) brochure, described it as '[a] great evening that really made me think about different ways of listening and the importance to me of sounds and soundscapes.' Another, who lives with hearing loss, said with 'the diversity of listening modes [...] I don't feel hearing impaired. I feel like I can listen better than ever' [S7].

Policy: Drever has been an important contributor to several projects that have impacted on the development of new International Standards ('ISOs') around soundscape. These Standards have been designed to ameliorate people's diverse experience of their acoustic environment. Drever's work around BS ISO 12913-1:2014 contributed to the term 'soundscape' becoming formally recognised in acoustics and planning. The term is referenced in the award-winning revision of Professional Practice Guidance on Planning and Noise, ProPG (Institute of Acoustics, 2017). This Guidance aims 'to provide practitioners with an industry-recommended approach [...] advocat[ing] full consideration of the acoustic environment through state-of-the-art design principles' [S8].

Drever has developed a sustained collaborative relationship with the Noise Abatement Society (NAS), whose Managing Director, Lisa Lavia, has been a central figure in the development of new ISOs around soundscape since 2010. Lavia writes that Drever's work 'has provided the NAS with valuable insights and support to make these concepts more widely known and better understood to new audiences, namely policy makers, the public and practitioners. This has been extremely important in helping the NAS to extend its impact and achieve support for its work helping to develop the International Soundscape Standard series (ISO 12913-1:2014; ISO/TS 12913-2:2018; ISO/TS 12913-3:2019), and numerous action research projects' [S9].

Max Dixon is one of the world's leading town planning, urban regeneration and environmental analysis experts. Assessing Drever's contribution to recent professional discourse around the acoustic environment, he writes: 'Drever's many contributions to cross-disciplinary workshops, conferences and other events have had significant practical influences on the evolution of public policy and services, both across the UK and internationally ... [H]is theory and practice in the fields of open space soundscapes and soundwalking have undoubtedly influenced developments in the analysis, design and management of public environments ... Drever's growing body of innovative work is an outstanding exemplar of how arts and cultural activity can both maintain its own integrity and independence while engaging productively with real world problems and stimulating evolution of new practical approaches in public policy and service delivery' [S10].

5. Sources to corroborate the impact

[S1] Contribution to social and community initiatives; [AuralDiversity.org](https://auraldiversity.org) project, retrieved 7 May 2020. [Website]

[S2] Contribution toward the Academy of Urbanism's Great Place Award and Young Urbanist schemes; Statement from the Director of Engagement, Academy of Urbanism, 9 July 2020.

[Testimony]

[S3] Work with commercial enterprise to shape urban redevelopment projects; a) Statement from Company Director, Anderson Acoustics, 26 March 2019. [Testimony] and b) Anderson Acoustics, '[Designing Soundscapes for Terry Spinks Place](#)' retrieved 3 July 2020. [Case study] Grouped source

[S4] Impact on media companies and sound producers, see; a) Rhiannon Williams (2018) '[Inside an Anechoic Chamber: What it's Like to Experience the Deepest Possible Silence](#)'. *iNews*, 07 August. [Article]; b) Statement from Producer, BBC Radio 4, 9 February 2019. [Testimony]; c) Tom Service (2019), '[Music Matters: Music, roots and heritage](#)' BBC Radio 3, 29 June [39'55"].

[Audio] Grouped source

[S5] Inspiring new ventures; Statement from former student and Director of Theatrum Mundi, 26 March 2019. [Testimony]

[S6] Increasing awareness and introducing organisations to new ways of thinking; Statement from the Secretary of the Quaggy Waterways Action Group, 17 January 2020. [Testimony]

[S7] Inspiring audiences to engage in soundscapes; Anonymous questionnaire feedback from auraldiversity.org concert at Attenborough Arts Centre, Leicester, 30/11/2019. [Survey results]

[S8] Introduction of the word 'soundscape' to acoustics and planning policies; Noise Abatement Society (2017), '[John Connell Awards, 2017 – ProPG wins Soundscape Award](#)' 2nd November.

[Press release]

[S9] Collaboration with UK advisory body leads to International Soundscape series; Statement from Managing Director, Noise Abatement Society (NAS), 16 April 2019. [Testimony]

[S10] Contribution to professional discourse and policy; Statement from expert in town planning, urban regeneration and environmental analysis, 28 March 2019. [Testimony]