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INTRODUCTION

Rumble Filters: Sonic Environments and Points of Listening

Lenore Manderson  and Ed Osborn 

Our knowledge of Earth, and of biological and physical environments, ecologies and biota, largely derives from visual observations. Such information is collected both directly from observations in the field and analysis of what can be seen, and indirectly, through the use of technologies such as time-lapse cameras and laboratory analysis of samples. This knowledge is significantly enriched by attending to aural fields. In this journal issue, through five essays on sound and listening, we explore two related questions. First, we ask how the works of acoustic ecologists and sound artists, including (but not limited to) those who have contributed to this issue, illuminate questions of the environment. Second, we consider how the contributions in this issue relate to the work of other artists and scholars working in this same field.

Science has been popularized particularly through visual means. Consider the role of *National Geographic*, established in 1888, in describing unique geomorphologies, topographies, climates, plants, humans, and non-human animals through photography and supporting text. Such popular representations of the ‘natural’ and ‘cultural’ world, now increasingly accessible through multiple media (youtube, film, television, and more), highlight the links of biologies, species and things, and the animate and inanimate world. Complementing this material, we have a growing appreciation of different meanings of geographic and biological diversity, through a growing appreciation and enhanced understanding of indigenous and other local ontologies and local ecologies. Anthropologist Eduardo Kohn (2013) illustrates this in *How forests think*, as he reflects on ways of comprehending the interconnections of biology, structures and elements, and the significance of engaging with different ecologies without privileging human life and specific human formulations. This is a radical rethinking of the relationship of humans and the environment. Conventionally, knowledge and its dissemination are human-centred, reflecting the predomination of human processes and projects. In *How forests think*, Kohn challenges the centrality of human apperception, and highlights the limits of points of convergence across local and cosmopolitan knowledge systems and political economies. Yet such knowledge is the evidence on which we draw now, with growing awareness and concern of planetary fragility, to

define human custodianship and stewardship, and to develop and implement policies and programmes that might mitigate environmental damage and enable sustainability.

Shifting our perceptual field away from the visual and attending to the aural environment, we suggest, deepens our understanding of planetary ecology, and in this issue, we argue the importance of recording, interrogating, and understanding aural data. We are—with Krause (2013; Krause & Farina, 2016) and Kohn (2013)—suggesting not only that forests ‘think’, but also that forests (and other landscapes) ‘speak’. Accessible mappings of non-human worlds and states, geographical and biological, currently provide limited information on the aural environment, audible difference, and the different fields in which sound is produced and perceived. But, as we have already indicated, global warming and climate change have sharpened the need for acoustic ecological and sound research as well as other information to map changes in local ecology, biota distribution, density, and behaviour.

Sound is one field of production and perception that varies considerably across species and within them. Yet to a large extent, the mutuality, shifts, violence, and symbiosis among life forms and in response to environmental forces are unnoticed. As we have suggested already, human populations hear the world around them in various ways, ignoring some sounds and attending to others, distilling difference and drawing meaning from these sounds. Lorimer (2015), among others, has reflected on this differentiation in relation to visual bias, even when the sounds produced by species are familiar and distinct (a bird call, elephant trumpet, lion’s roar), or when they are, in certain cases, attended to precisely because of their relevance to human communication systems. Sound is an important component of what Lorimer (p. 45) calls ‘affective logics’, a way of evoking particular species and locations that inform what we value; information on sound adds to a corpus of knowledge that feeds into policies of resource allocation and conservation investment. We assess certain sounds—often the mechanized sounds of heavy industry—as negative, while we privilege other sounds that have ‘aesthetic charisma’ (p. 46)—consider the appeal of bird calls or the sound of a babbling brook. In writing of the conservation of birds, and using the example of the corncrake in the Hebrides, Lorimer illustrates how at times the only evidence of birdlife available is birdcalls and song—when the bird is hidden in brush, by mist and under cover of dark. Nowhere do non-human animals spend their entire time in full view and audibility; animals consistently rely on nocturnality, camouflage, silence, and stealth for their survival, and we acknowledge their presence through our capacity to hear, listen, and interpret as much—or more than—our capacity to see and watch.

We are interested in sound and listening, reverberation, iterations between different perceptual fields, and the politics of sonic practice. Sound provides data that are more sensitive to disruptions and adaptations in species habitat and behaviour than those which might be visible to the human eye and its visualizing technologies (cameras and videos, for instance), and acoustic ecological research therefore has been motivated partly by the importance of sound maps to bring to diverse publics information about audible as well as visible worlds. In his influential work on soundscapes and

environmental change, and his popular exposition of this, Bernie Krause (again, 2013; Krause & Farina, 2016) highlighted the use of biophonic data from sampled field recordings to document the impact of human interventions on local ecologies. Here, there is much work to do. As Krause has illustrated, audio recordings can often reveal much more, in quality and quantity, about ecosystems and changes in habitation than visual records, adding to the records of the depletion of the biosphere through industrialization and economic development, and to changes in biota that render various species vulnerable. Sound is a way of documenting changes through migration, density of and changes to habitat, and changes in behaviour in response to ecological change. The audible environment is therefore one component that can be observed, recorded, and analysed. Yet the emission, reception, and imputed meanings of sound are often treated as marginal to other information—as elusive, ephemeral, transient, and epiphenomenal. For instance, acoustic behaviour—both vocalization and sound produced by movement—is a minor field in entomology, despite the nuisance to humans of the sounds produced by mosquitoes, for instance, as well as the significance of sound communication for species, the significance of sound for vector control, and so the potential uses of sound with changes in insect breeding, feeding behaviour, and habitat (Cator & Zanti, 2016).

Sound adds an important dimension to acknowledging uncertainty of earth systems (both elemental and biological) and of how time, space, and place shape what is known and how it is known. How important is authenticity in this context—in the compositional use of sound, as opposed to its use when framed by scientific purpose, as Krause’s work in ecological change might be? Is there a risk of romanticizing sound, as if romanticizing ‘nature’? To what extent does the process both of recording and editing distort ecologies, as implied by Lawrence English in his article in this volume, on learned listening?

Artificial reproduction of a landscape as soundscape and the conditions for recording combine to produce a particular set of sounds. But the conditions of listening are equally important. What does it mean for sound to be taken as matter out of place for broadcast or transmission, and to what extent does this change how we listen and how we interpret the objects to which we listen?

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Since April 2015, the Institute at Brown for Environment and Society (IBES) at Brown University (Providence, RI) has supported an art-science programme, *Earth, Itself*, to facilitate conversations and build collaborations across creative arts practice and theory, the humanities, and the social, natural, and physical sciences. This is partly motivated by our concern with climate change, the most immediate and current driver of change in biota, habitat, and behaviour. It is partly motivated too by our interest in the history and current approaches of different disciplines. Through annual art and science events, we have highlighted different ways of understanding earth systems and elements, environmental change, knowledge systems and policy. We have drawn on the elements for its themes, with creative arts practices integrated with research by coupling themes and form: earth/dance (*Thinking the earth*, 2015);

air/music/sound (*Atmospheres*, 2016); fire/the fire arts, in this context ceramics and glass (*What fire does*, 2017); and water/text (*Water's edge*, 2018).¹ This special issue draws on work presented in *Atmospheres* in 2016.²

Atmospheres was concerned with air. Air sustains us, and virtually all life forms. As we have emphasized above, people, plants, non-human animals, and microbiota populate different settings, in which the elements—earth, air, fire, and water—are backdrop, foreground, and footing. Of these elements, air is particularly elusive, despite that it reflects anthropogenic changes as much as the other elements. Air has density, weight, direction, force, momentum, and velocity: air therefore varies from place to place, by altitude and climate. Air moves, creates energy, and carries water, dust, toxins, and pollen across space. It enables the transmission of pathogens. It provides passageways for birds and insects, and the transportation of humans, goods, and information. Air is colourless, and yet takes its colour from and gives colour to its surrounds. And air is a key vector of sound, and changes in sound allow us to map other environmental changes, including those that elude ready detection through the other senses.

In *Atmospheres*, we brought together with climate scientists, historians, anthropologists, and biologists. The programme included a keynote address from Kenyan Mwangi Githiru, ornithologist and Director of Biodiversity and Social Monitoring at Wildlife Works, a non-profit organization in Africa working to reduce carbon emission, foster conservation, and ensure the sustainable management of forests. In speaking of atmospheres from perspectives of the atmosphere itself, as much as to anthropogenic notions, Githiru highlighted the critical thresholds pushed by humans for this global commons, and what he saw as the ramifications and atmospheric retaliations of this, leading to efforts towards healing the atmosphere that are implicit in carbon trading and forest management programmes. *Atmospheres* included an early morning bird walk, student posters and presentations, interdisciplinary panels, a film programme, a theatre performance, and diverse music and sound installations from students and from the authors of the articles in this issue of *Contemporary Music Review*. The contributions of the musicians and sound artists to this mix forced participants to think about how we come to know the environment, and to reflect on listening and the (re)production of sound.

* * * *

The articles from Lawrence English, Leah Barclay, and Brian House, included in this issue, all suggest a particular interest in unique settings, with their technical decision-making an essential component of capturing and reproducing sounds in places such as the Amazon, Patagonia, and Okavango Delta. Their point is not, however, to romanticize certain sound environments and their geographies, and to dismiss other spaces, to privilege pristine natural environments and the 'wilderness', for example, in contrast with spaces that are densely humanized while concurrently ecologies for non-human animals and other sounds (cf. Lorimer, 2015). Acoustic ecology is more than a way of decrying and documenting human disruption of a 'natural' landscape or of providing an imagined geography through edited audio

recordings. In his work, Brian House draws attention to the ways in which information other than sound supplements and enhances listening and interpretation. Unless we live in an environment where hippopotamuses are precinctive and populous, for example, we do not know how to listen for and to the sound of an animal without the recording being foreshadowed. Minimally, we give meaning to particular grunts and groans which we assume to be those of a hippopotamus, if only because of their base tones—in contrast, for instance, with the bright treble tones of bird songs and calls. In this we draw on analogy: we transfer familiar sounds, and our understanding of what they represent, to other sounds. Jim Moses, as he describes below, relied particularly on this mechanism in his creation of ‘critter sounds’ on an old analogue synthesizer, whereby the organic sounding rhythms and creature-like tones were both surreal and unpredictable, yet entirely familiar and recognizable.

The environment—whether visual or aural—is always epistemologically fraught. Questions of how one might intervene—as an artist, as an ecologist, or both—is critical, shaped by value-based decisions about validity and authenticity, distortion and creativity. Here field recordings and composition appear to have contradictory purposes. While the sampling in acoustic ecological recordings relates to decisions made about when and where to record, sampling is integral to sound that is produced for the secondary listener—the person who downloads a recording or listens to an installation. This includes the curatorial decisions of a sound artist in editing a selection of sounds for others to listen to. In producing a sound clip—whether a 60 second or a 1 hour track—the artist inevitably distils out from the complete set of sounds those sound bits considered to be most salient to purpose. These may be regarded as characteristic, melodic, discordant, unusual, or dramatic, they may be amplified or muted, at time of original recording or through engineering in editing. As a fluid track, the sounds that are sutured together by the artist as mediator provide a narrative of a given setting or environment.

The editorial work of audio recording, like photography, occurs at the points of both capture and framing—which views or sounds are chosen to be source material, then edited, printed, amplified, and presented for public reception. Sound recordings of environmental spaces are necessarily influenced by the quality of the recording devices and microphones, their placement and orientation in the field, and their capacity to capture sounds across distance: these are things that set the acoustic horizon of a recording as much as the immediate terrain does. In addition, the time of day, season, and local weather conditions influence decisions about where and when recordings are made. These require active choices on the part of the recordist, and with each choice, comes the certainty that some part of the acoustic field will be foregrounded or occluded. This continues through the extended process of editing and mixing, where the recordings are prepared for presentation in locations and situations far from their origins. Lastly the format presentation and circulation of the work in public settings serve as a significant filter for the listening audience. The authors in this issue navigate these conditions in their work and in their writing here, illuminating not only a production process that involves technical,

aesthetic, and cultural questions, but also an ecology of listening that incorporates the space of the field, the agency of the artist, and the situation of the listener. Hence Garth Paine writes of *Acoustic Ecology 2.0*.

The artificial reproduction of a landscape as soundscape and the conditions for recording combine to produce a particular set of sounds. But the conditions of listening are equally important. What does it mean for sound to be taken as matter out of place for broadcast or transmission, and to what extent does this change how we listen and how we interpret the objects to which we listen? In their art practices and in the texts that we present in this issue, the artists re-enact and engage with older debates related to composition from found sound, intentional recordings, and sound ecology. Questions remain about what sounds are privileged, what sounds do, how artists want to use sound, and how people listen, as English discusses in this issue.

In the articles which we include here, the authors consider the importance of sharpening the capacity of a listener to listen, including acknowledging the ways in which cultural factors shape what we hear, how we distil sound (an infant cry versus the sound of a car versus a bird chirping), and what meanings we give to particular sounds or sequences of sound. Lawrence English's field recording work navigates this set of questions through an exploration of a 'listener's listening', an approach to environmental sound that reflects an awareness of the recordist's methods and strategies for sensing the acoustic environment. He argues that the recordist's agency in and affective relation to place is a critical component of any recordings made on site. They are a core element of the experience of listening to those recordings and in his work, he strives to make that agency audible and part of the compositional process. The agency of the recordist is similarly considered in the social context of place by Leah Barclay, who makes a case for using social engagement in place as the framework for her environmental recording practice. By working with local communities she is able to gain a perspective on the sounds of place that reflect the experience and knowledge of those who have a long-term engagement with a particular site. That engagement then shapes her recording practice and the strategies she uses in producing artwork from it. Brian House's essay takes the widest view, looking at both strategies for soundscape recording and composition as well as the philosophical and cultural assumptions that inform many of those strategies. In all their essays the presence of the histories and particular works of soundscape recording inform their arguments. Among these the research and practice of Steven Feld looms large.

Anthropologist Steven Feld's work with the Kaluli people of the Papua New Guinea rainforest is well known in the field of soundscape studies, particularly for his pioneering work in investigating their use of sound in language that relates to and derives from their local environment. In their essays, both Brian House and Garth Paine discuss his work, with House considering in depth his concept of *acoustemology*, a portmanteau of the words *acoustic* and *epistemology* that describes a form of knowledge derived from bodily experience and the acoustic world. Even if they do not mention his work directly, all the essays touch on ideas that his work raises. One project in particular serves as a focal point for them. Feld's 'Voices of the Rainforest' (1991) includes a

recording of a woman, Ulahi, with whom he had a long working relationship and had recorded before. Before making the recording, he explained to her that he was recording her again so that many people in America and Australia could hear her sing. (The CD was to have a commercial release and was planned to reach many more people than Feld's previous recordings had had—something that he noted was difficult if not impossible to convey to Ulahi.) In her song, she then sang the lines, 'calling out, my America men, what are your names? my Australia women, what are your names?' This was followed by a spoken explanation for the song:

Well, myself, thinking about it, speaking sadly, I won't see your place but you see mine, I don't know your names, who are you? I'm wondering, thinking like that, you people living in far away lands, listening to me, I haven't heard your land names, so who are you? That's what I'm saying. [...] I don't really know the land names, just America, Australia, so I'm sadly singing like that so they will hear it. (Feld, 1993, p. 14)

The Kaluli songs function as maps of local places and their contents trace paths of the landscape. In her song, Ulahi addresses the space between herself and the listener, something that field recordists often do their best to make disappear. She is singing into a kind of void, in which she literally does not know the geography of the listener. This is a space of sadness at not being able to sing something that might reflect some understanding of those listening to her and the spaces around them. This is the inverse of the goals of common field recordings, in which the listener is the one who attunes themselves into the recording to try to connect with a particular sound environment. By addressing the listener directly, Ulahi is in effect asking, 'How are you hearing me?'. This is not in reference to the technical and cultural systems that make it possible (though these are important), so much as it is to the perspective of the listener: 'How *are* you hearing me?'. The condition of the state of the listeners, people who will remain anonymous to Ulahi, is of critical importance here: the question relates to the listeners' ability to absorb the gap between Ulahi's language of and for the world, and their worlds. The listeners' understanding of that gap also delineates the ways that they can inhabit the acoustic world, so defining their state of listening. Ulahi articulates in song and in word what the authors in this issue navigate: the space between the site and the site recording, between the recordist and listener, and between the kinds and limits of knowledge that can be derived from either one.

Feld made a 7.1 surround sound version of 'Voices of the Rainforest', completed in 2017. The revisiting of this key work in soundscape practice was a chance for many to hear it anew and, with the aid of a quarter-century's worth of recording technology developments, present a version that more closely resembled the sonic space of the rainforest than could be achieved with the original version's two channels. Feld is acutely sensitive to the issues around soundscape recording, cultural interchange, and the nature of listening, and the reworking of the project reflects that sensitivity. While the result is more vivid and enveloping than before on a sensory and technical level, the listening gap that Ulahi describes remains as clear as ever. The persistence of

that gap and its demand of a mode of listening that involves an active navigation among site, recordist, and listener is an opening for new space in sound practice, and an avenue for a holistic way of inhabiting and responding to the sonic environments around and among us.

Notes

- [1] See <https://www.brown.edu/academics/institute-environment-society/earth-itself-artscience-collaborations>.
- [2] Lenore Manderson conceptualized and has been responsible for the programming of these events; in 2016 Ed Osborn played a lead role in programming the sound art program.

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No potential conflict of interest was reported by the authors.

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