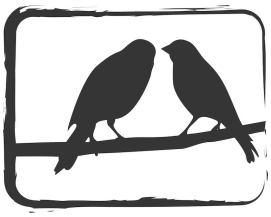
Environmental Humanities, vol. 6, 2015, pp. 53-71
www.environmentalhumanities.org
ISSN: 2201-1919



Listening to Birds in the Anthropocene: The Anxious Semiotics of Sound in a Human-Dominated World

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ABSTRACT Ever since Rachel Carson predicted a "silent spring" environmentalists have been carefully and anxiously listening to birds. More recently the musician and scientist Bernie Krause has examined the effects of human activity on avian soundscapes throughout the world. He argues that human activities cause ecological and sonic disruptions that really are rendering the world silent or discordant, submerging the "animal orchestra" beneath noise. A healthy natural environment can be heard, according to Krause, in a rich and harmonious soundscape that has evolved over millions of years. The loss of wildness thus elicits a loss of harmony. I consider these Anthropocene interpretations of silence, noise and dissonance by comparing the environmentalist concerns of Krause with responses to the *Listening to Birds* project—an anthropological investigation of bird sounds. These responses emphasise the significance of bird sounds for people's sense of place, time and season and the longing that many have for their own lives to resonate with the birds around them. I argue that this has less to do with desires to hear harmony in pristine nature but with developing relations of companionship with birds living alongside humans. While listening to birds can still iconically and indexically ground people, signs of absence and change can precipitate anxieties that stem from the ambiguities implicit in the Anthropocene's formulation of human relations with other species. Using narratives and field recordings I explore the anxious semiotics of listening to birds in the Anthropocene by drawing on Kohn's recent arguments on the semiotics of more-than-human relations and Ingold's understanding of the world as a meshwork.

Silent Spring and the Anthropocene

Ever since Rachel Carson warned of the prospect of a "silent spring" environmentalists and concerned citizens have been listening carefully and often anxiously to birds.[1] My argument here is about that process of listening and the responses to what is heard and not heard. I use the concept of the Anthropocene—the recently advocated geological epoch in which human activity emerges as a dominant Earth-shaping force—to think through these anxieties.[2] What is it like to listen to birds in the Anthropocene? How are responses to what is heard influenced by

[1] Rachel Carson, *Silent Spring* (London: Penguin Books, 1962).

[2] Will Steffen, Paul Crutzen, and John McNeil, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?" *Ambio* 36, no. 8 (2007): 614-621.

the understanding that the Anthropocene brings that humans have profoundly influenced the mix of sounds that can be heard?

The Anthropocene has ambiguity and anxiety at its heart.[3] According to Lorimer, "The recent diagnosis of the Anthropocene represents the public death of the modern understanding of Nature removed from society."[4] Human and non-human worlds can no longer be conceived as existing in separate realms, and nature, at least in the sense of that which is separate from society, struggles to be convincing as a concept. And yet, as Crist has argued, the Anthropocene also appears to place humans on a pedestal as the only species in the history of the planet powerful enough to be deemed the primary Earth-shaping force.[5] The Anthropocene at once draws humans and non-humans together and separates them out. The "end of nature" provokes anxiety both about what has been lost and how it has been caused. Human power over Earth systems provokes hubristic hopes for the sort of technocratic solutions rightly critiqued by Crist but also draws attention to the human culpability for silence, discord and destruction. Even if one remains sceptical as to whether the Anthropocene is "real" in the sense of creating an anthropogenic boundary in geological stratigraphy, these anxieties about the pervasiveness of human ecological effects are real enough and are grounded in often readily apparent but sometimes invisibly creeping shifts in the world we perceive around us. The Anthropocene's usefulness as a concept lies in its ambiguities, which emphasise the anxieties and possibilities that might be imagined in human-driven global systems, and in its power to signal both the interconnectedness of human and non-human lives and the potential for their destruction and silencing.

Carson was writing 40 years before the Anthropocene was coined, but she was amongst the first to realise the impact of what Steffen *et al*. call the Great Acceleration on the everyday experience of many people.[6] She found one of the most persuasive environmentalist symbols in *Silent Spring*. What if spring was no longer heralded by the sound of singing birds? Why, she asked, was the modern world moving, rapidly in some cases, into such a state? She actually wrote rather little about birdsong itself, but she didn't need to. She was pointing to something so fundamental and familiar that the meaning of its loss would be both shocking and immediately understood. 'Silent spring' was so powerful an idea because it, quite literally, brought home to people what damage was being caused to ecosystems by humans. As Lockwood argues, Carson skilfully drew together private feelings with collective and general concerns for anthropogenic ecological degradation.[7] This damage wasn't happening far away; it was having quite tangible and deleterious effects on many people's everyday experiences.

[3] While there is debate about when the start of the Anthropocene might be taken from, I follow Steffen *et al*.'s argument of dating the Anthropocene from the onset of industrialisation. I do this because it aligns with Krause's emphasis on the emergence of electromechanical sounds at this time, which ushered in a new and more disruptive kind of anthrophony.

[4] Jamie Lorimer, "Multinatural Geographies for the Anthropocene," *Progress in Human Geography* 36, no. 5 (2012): 593.

[5] Eileen Crist, "On the Poverty of our Nomenclature," *Environmental Humanities* 3 (2013): 129-147.

[6] Steffen, Crutzen, and McNeil, "The Anthropocene," 617-618. The "Great Acceleration" is defined as the period since 1945 in which human enterprise, assessed from a wide range of measures, has dramatically increased in scale.

[7] Alex Lockwood, "The Affective Legacy of *Silent Spring*," *Environmental Humanities* 1 (2012): 123-140.

The post-war Great Acceleration had its symbol in the loss of something meaningful and beautiful, but also common enough to have once been taken for granted. Listening to birds, Carson implied, was no longer something conceivable as straightforward or inevitable.

Carson exemplified this shift by quoting an Alabama resident writing about the effects of a massive spraying programme to control fire ants:

> Our place has been a veritable bird sanctuary for over half a century. Last July we all remarked, "There are more birds than ever." Then, suddenly, in the second week of August, they all disappeared … There was not a sound of the song of a bird. It was eerie, terrifying. What was man doing to our perfect and beautiful world? Finally, five months later a blue jay appeared and a wren.[8]

Life in such a perfect world was thus accompanied by the presence of birds, a presence made most readily and delightfully manifest in their songs. When once familiar companions no longer accompanied local residents, the shock was unexpected and unnerving.

The Anthropocene is still a new and largely academic term but one that relates to concerns that have been more widely felt, particularly since they were so clearly articulated by Carson. First, there is the concern that everyday experiences of birds and other wildlife are under threat from everyday human activities. Second, there is a belief that local changes and local activities can have global causes and effects. Finally, there is the concern that while things might seem okay in the present, nothing can be taken for granted about the future—not even the near future and what now seems commonplace. The Anthropocene is thus both a term that relates to real and observable changes in the local worlds people perceive around them and to semiotic elaborations on those perceptions that draw together local and global, human and non-human, present and future, into anxiety-laden narratives. There is nothing inherently new about the experience of anxiety in relation to environmental conditions, but the Anthropocene brings with it particular configurations that underpin many experiences of listening to birds. I use the term anxious semiotics to convey this sense of uncertainty and concern over potential human culpability in loss. Listening to birds in the Anthropocene is not simply a process of grieving for what is lost, although as van Dooren has argued, grief and loss are profound elements of modern relations with birds on "the dull edge of extinction."[9] Anxious semiotics is central to listening to birds in the Anthropocene not only directly in the face of loss but in the tensions of daily experiences that might seem, on the face of it, to be positive. Fluctuations and changes in what can be heard lead back to possible human causes, perhaps even our own activities. Anxious semiotics can even emerge in response to an increase in some species, perhaps spreading in the wake of anthropogenic changes, or to birds singing earlier in the season, perhaps because of climate change. Anxiety points towards potential, as well as actual, loss. It also points towards concerns about human culpability for change, both locally and more generally. Conservationists monitor the fortunes of birds and their habitats assiduously, enjoying the support of much of the public as they do so. But growing desires to attend to and to care for birds and their ecology seem to be continually outstripped by our capacity to disrupt and endanger.

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[8] Carson, *Silent Spring*, 100-101.

[9] Thom van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction* (New York: Columbia University Press, 2014), 46.

The environmentalism spawned by *Silent Spring* has constantly drawn attention to the ways that ecosystems, both local and global, are affected by human activity. What prospers and what disappears are causally bound together with human actions in ways that are sometimes readily apparent and sometimes barely perceptible. I explore the associations that people perceive as emerging between bird sounds and environmental changes. Following the semiotic approach of Kohn,[10] I argue that the symbolic and moral connotations of listening to birds in the Anthropocene follow from their iconic and indexical grounding in places, producing an *anxious semiotics* in which even positive associations can have portentous or uncertain implications. My argument progresses from recent claims made by Bernie Krause about the evolution of soundscapes and their disruption by humans to a series of narratives contributed to the Listening to Birds project: an anthropological study of people's relations to birds through sound. Finally, I invite the reader to listen to four recordings and consider the sounds they hear as a means of sensing life in the Anthropocene.

Anthrophony and the Loss of Harmony

Harmony and balance was a state that Carson considered to be under threat in the modern world. She began *Silent Spring* with the nostalgic statement, "There was once a town in the heart of America where all life seemed to live in harmony with its surroundings."[11] This harmony was not just something that could be seen or measured but that could also be heard in the varied mix of sounds in the environment. This point finds elaboration in the work of musician and scientist Bernie Krause, most notably in his book *The Great Animal Orchestra*.[12] Krause's argument is that places have evolved their own acoustic ecology and that in a natural environment the sounds will tend to fit together rather than disrupting or competing with one another.

He begins *The Great Animal Orchestra* by speculatively describing the soundscape of the American plains, 16,000 years ago and prior to the arrival of humans in North America. An array of now extinct mammals, along with more familiar birds, insects and amphibians, fill the air with their sounds. But despite this complex mix of sounds, each animal is able to make itself heard. Inspired by Murray Schafer's soundscape approach, Krause argues that this is because each species has a sound that occupies a distinct bandwidth and so can exist in harmony with the other sounds that tend to occur around it, be they from other species or from physical factors such as running water. "This is," he writes, "the tuning of the great animal orchestra."[13] This tuning can be rendered visible through the use of spectrograms, which translate sound into a graph plotting time against frequency. As Mundy has pointed out, spectrograms have played a significant role in creating an "image of evolution," but she argues that, more typically, this takes the form of a stable, visible object that is readily comparable and

[10] Eduardo Kohn, *How Forests Think: Toward an Anthropology Beyond the Human* (Berkeley: University of California Press, 2013).

[11] Carson, *Silent Spring*, 21.

[12] Bernie Krause, *The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places* (London: Profile Books, 2012).

[13] Krause, *The Great Animal Orchestra*, 10.

can thus be more easily incorporated into larger taxonomies.[14] In Krause's argument, each spectrogram is an image of evolution because it is assumed that the sound of each species is indexically related to the other sounds in the same soundscape, i.e. there is a causal relation between the sounds in an environment and the "bandwidth" occupied by the sounds made by each species. This set of inter-relating sounds occupying a distinct sonic niche has emerged, according to Krause, through evolutionary processes. The nesting of these sounds is rendered as a visible object in the spectrogram.

Krause divides up sound into three categories. First is the geophony, sounds made by the physical environment such as waves, wind or rain. Second is the biophony, which consists of sounds made by animals, plants and other organisms. Finally is the anthrophony or human-generated sound. While this classification is ostensibly based on the origins of the sounds rather than what they actually sound like, Krause emphasises the evolutionary emergence of the different types of sound, arguing that:

> The sounds of geophony were the first sounds on Earth—and this element of the soundscape is the context in which animal voices, and even important aspects of human sonic culture, emerged.[15]

So here we have a sense of the sounds of the world developing in relation through the geological eras and into the present day. The different types of sound that Krause outlines might themselves be regarded as sonic epochs in which a particular category of sound emerged or tended to predominate. As such, Krause is implying that we have now entered the epoch of anthrophony and that human sounds are drowning out the biophony and geophony in many parts of the world. The Anthropocene has also ushered in a new kind of anthrophony, with the sounds of industry, machinery, combustion engines and electronic amplification being a rather different and more disruptive type of human-induced sounds than those that would have predominated in the pre-industrial era. As such, I would argue that one can differentiate between pre- and post-Anthropocene anthrophony, the former tending to integrate more closely with other sounds and the latter often disrupting or dominating them. Indeed, Krause's main concern is not with the effects of anthrophony in general but the effects of what he calls electromechanical sounds. Problematic sounds don't so much originate in human bodies themselves but in Anthropocene technologies used by humans.

Humans, Krause argues, are not just having an effect on the biophony by drowning out the sounds of other species with their own but also by disrupting ecosystems. Here his concerns are clearly aligned with those of Carson. He is troubled by the loss of sounds but also by the disruption to the harmonious sonic ecosystem. It is not simply a spring of silence that is worrying but one of disharmony. Humans have effects on other sounds not just through their own sounds but through their effects on habitats. These changes reduce the quantity of sound but also cause disruption to the relative harmony of the soundscape.

> When a biome is compromised, spectrograms will lose both density and diversity, along with the clear bandwidth discrimination among voices that is otherwise visible in

[14] Rachel Mundy, "Birdsong and the Image of Evolution," *Society and Animals* 17 (2009): 206-223.
[15] Krause, *The Great Animal Orchestra*, 39.

> nonstressed-habitat graphic displays. Biophonies from stressed, endangered, or altered biomes tend to show little organisational structure.[16]

This emphasis on considering sounds within the context of the environments in which they emerge is a point sometimes forgotten in the analysis of bird sounds by scientists and other scholars, who take recorded sounds as discrete, decontextualized objects. Biophonic sounds are thus indexical of the conditions within which organisms live and have evolved. Krause also defines noise in relational terms:

> I think of noise as an acoustic event that clashes with expectation—loud heavy metal music in an intimate restaurant is noise … A straight-piping motorcycle gunning its way through the delicate landscape of Yosemite Valley shatters the numinous experience for both visitors and animals.[17]

Noise is thus a conflict that emerges from perceived disjunctions of one set of sounds and another, or between one aspect of the world as experienced and another. It is dissonant rather than resonant, and Krause's argument is that dissonance and noise have increased greatly to the detriment of the biophony and to human well-being. As sounds are the products of activities, this also points to increasing dissonance between human activities more generally and the activities of other species in our environment.

These conclusions lead Krause to lament that, "In order to hear the wild biophonic world, we need to get to places free from human noise."[18] The world as it should sound, for Krause, is not just pre-Anthropocene, like the rural idyll Carson draws on, but pre-human. It is a world not of companions but of strangers. How then should one listen to birds in the Anthropocene—in a world in which humans are not just present but dominant and noisy and in which our activities are often dissonant with those of other species? What signs are people listening for and how are they listening?

The Anxious Semiotics of Humans and Other Species

Krause's work provides support for what many have long realised: that the sounds of birds and other animals are importantly *sounds in place*. Sound-making happens in relation to other sounds and to the acoustic conditions. For birds, sound-making is also place-making; it is an act of territorialising space, of making relations with other birds and continually re-weaving the context of their lives. In order to do this, as Krause argues, birds make sound in relation to other sounds and both their lives and their evolution enable them to be responsive to signs within their environment.

This emphasis on sound and communication as emerging relationally and across species boundaries can be aligned with the recent proliferation of "more-than-human" approaches in the social sciences.[19] These new ways of thinking about life have created fresh

[16] Krause, *The Great Animal Orchestra*, 80.

[17] Ibid., 158.

[18] Ibid., 213.

[19] See for example the following: Donna Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2008); Tim Ingold, *The Perception of the Environment: Essays on Livelihood,*

impetus in the environmental humanities and social sciences, but few authors in this field have explicitly addressed how to analyse the sorts of meanings and communication that emerge in more-than-human relations. A recent exception has been Eduardo Kohn, who has argued that the grounding for how humans and non-humans perceive and understand their world is similar across species.[20] Drawing on the varied works of Peirce, Bateson and von Uexküll, Kohn argues that the semiosis of life is grounded in iconic and indexical signs. The tendency of anthropology and other social sciences has been to emphasise symbolic signs, particularly language, as the primary means of communication. The apparent absence of symbolic communication in non-humans has fuelled an emphasis on human communicative exceptionalism that appears to forge a gulf in human and non-human semiotics. Kohn argues that symbols should instead be seen as nested within a semiotic field of icons and indexes from which their meaning emerges. In this respect, the ways that humans find meaning in the world is not so different to the ways that other organisms do: they are all grounded in the iconic and indexical.[21] Birds perceive the representations of other organisms, including those of their own kind, and their sound-making emerges in association while, for humans, the symbolic only "works" because it is emergent from the same sorts of associations. As Kohn puts it, "The semiosis of life is iconic and indexical. Symbolic reference ... is an emergent dynamic that is nested within this broader semiosis of life from which it stems and on which it depends."[22] What follows from this grounded and emergent concept of the symbolic is morality. "The moral is also distinctively human, because to think morally and to act ethically requires symbolic reference. It requires the ability to momentarily distance ourselves from the world and our actions in it to reflect on our possible modes of future conduct … This distancing is achieved through symbolic reference."[23] While I am more hesitant than Kohn to exclude ethical consciousness from non-humans, I agree that both the symbolic and the ethical emerge from the iconic and indexical semiosis of being-in-the-world[24] and that the symbolic also provides the potential for a conceptual, and usually partial, distancing from this immersion. Being-in-the-world is, for humans at least, double-edged because it entails a constant oscillation along a spectrum of mindfulness[25] that runs between engagement and detachment (see also the work on scientists and naturalists by Candea, MacDonald, and Ellis),[26] between

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Dwelling and Skill (London: Routledge, 2000); S. Eben Kirksey and Stefan Helmreich, "The Emergence of Multispecies Ethnography," *Cultural Anthropology* 25, no. 4 (2010): 545-576.

[20] Kohn, *How Forests Think*.

[21] Ibid., 38-39.

[22] Ibid., 55.

[23] Ibid., 133.

[24] By "being-in-the-world" I wish to convey a relational sense of life that is derived from thinking of the organism-in-its-environment as indivisible and emergent. "Being" cannot be separated from "the world."

[25] Gregory Bateson, *Steps to an Ecology of Mind* (Chicago: Chicago University Press, 1972); *Mind and Nature: A Necessary Unity* (Cresskill: Hampton Press, 1979). I use "mind" in the sense that Bateson does, as a living, relational phenomenon through which organisation, form and pattern emerge. For Bateson, as for Kohn, forests can think as readily as humans.

[26] Matei Candea, "'I Fell in Love with Carlos the Meerkat': Engagement and Detachment in Human-Animal Relations," *American Ethnologist* 37, no. 2 (2010): 241-258; Helen Macdonald, "'What Makes you a Scientist is the Way you Look at Things': Ornithology and the Observer 1930-1955," *Studies in*

the real and the symbolic, between is and ought. Focusing on this oscillation is, I argue, essential to understanding how people listen to birds in the Anthropocene.

In order to clarify my argument, I first need to describe the semiotics of being-in-the-world that I have in mind. Developing Kohn's argument, I bring his semiotic approach into conversation with Tim Ingold's claim that life is best realised as a *meshwork*. By doing so, I aim to add some flesh to Kohn's semiotics and give a sense of how meanings emerge from the entanglements of the meshwork. Ingold introduces his understanding of meshwork thus:

> Every… trail [of movement or growth] discloses a relation. But the relation is not *between* one thing and another—between the organism 'here' and the environment "there." It is rather a trail *along* which life is lived. Neither beginning here and ending there, nor vice versa, the trail winds through or amidst like the root of a plant or a stream between its banks. Each such trail is but one strand in a tissue of trails that together comprise the texture of the lifeworld. This texture is what I mean when I speak of organisms being constituted within a relational field. It is a field not of interconnected points but of interwoven lines; not a network but a *meshwork*.[27]

As such, any organism is a tangle of interconnecting life lines and thus is emergent from these relations and associations. "Organisms and persons … are not so much nodes in a network as knots in a tissue of knots, whose constituent strands, as they become tied up with other strands, in other knots, comprise the meshwork."[28] For Ingold then, life is characterised by movement and constant birth; it is a process out of which forms emerge but are never fixed.

A question that arises from such a view of life is how, in such a fluid and entangled world, can any phenomenon be knowable enough to be dealt with or represented? How can living beings make a good enough "guess" at what is emerging to keep on living in a form that is iconic of what it has been before? It is in answer to these questions that Kohn's employment of Peirce's semiotics can be helpful. According to Kohn, Peirce "strove to situate his entire philosophical project … within a special kind of realism that could encompass actual existence within a broader framework that would account for its relationship to spontaneity, growth, and the life of signs in human and nonhuman worlds."[29] This "broader framework" might be better thought of as a meshwork—a way of thinking about the world as emergent, fluid and entangled that chimes with both Kohn's and Peirce's ontological claims. The lines, knots and texture of the meshwork are themselves semiotic. Iconic forms are continually emerging in the continuous rebirth of the world; materialised indexical associations are what "things" are made of. The meshwork is semiosis made flesh.

Kohn develops these themes by drawing on Peirce's concepts of "firstness," "secondness" and "thirdness." Firstness is that which is spontaneous and ephemeral—a

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the History and Philosophy of Science Part C 33, no.1 (2002): 53-77; Rebecca Ellis, "*Jizz* and the Joy of Pattern Recognition: Virtuosity, Discipline, and the Agency of Insight in UK Naturalists' Arts of Seeing," *Social Studies of Science* 41, no. 6 (2011): 769-790.

[27] Tim Ingold, *Being Alive: Essays on Movement, Knowledge and Description* (London: Routledge, 2011), 69-70 emphasis in original.

[28] Ingold, *Being Alive,* 70.

[29] Kohn, *How Forests Think*, 58.

glimpse of possibilities that are as yet unrealised and unconnected. Kohn describes the tantalising whiff of cinnamon from a freshly opened passion fruit as an example of firstness. Secondness is more startling and sometimes shocking; secondness can be unpredictable or a jolt to habits. For Kohn, a crashing palm tree exemplifies secondness, as a sudden disruption in the meshwork that might realign its relations and draw attention to troubling indexical causation. Thirdness, finally, is more general, regular and habitual. It can take the form of behaviour but can also be seen in terms of certain general tendencies of life such as self-organisation and resistance to entropy. As Kohn argues, "This tendency is what makes the world potentially predictable and what makes life as a semiotic process, which is ultimately inferential, possible. For it is only because the world has some semblance of regularity that it can be represented. Signs are habits about habits."[30] Thirdness is the sort of regularity that Krause hears represented in a relatively uncompromised ecosystem in which each bird responds to the regularities of other sounds and acoustic conditions, and it is essential to semiosis more generally. All signs contain aspects of firstness, secondness and thirdness but tend to amplify one of these more than the others. They are all relational. Humans and other beings can sometimes be shocked (secondness) by what is encountered, but being shocked draws deeper attention to habits and regularities. We know the world and our movements within its meshwork differently through shock, and listening to birds in the Anthropocene is habitually shocking.

In examining perceptual practices in the meshwork, Ingold writes not of shock but instead marks a distinction between astonishment and surprise.[31] Astonishment, he argues, is a response to a world that is open and continually being remade. In this, even the mundane can be astonishing. Surprise is a response to a world conceived of as closed and predictable, which thus creates the possibility for surprising deviations. Astonishment involves "riding the crest of the world's continued birth"[32] whereas surprise involves grasping the world "within a grid of concepts and categories."[33] The former Ingold associates with animism and the latter with the sciences. However, I do not see the two sorts of response as being wholly inimical. Kohn's argument that the symbolic realm, in which the world might be conceived of as closed, predictable and thus potentially surprising, is itself emergent from an openness to the world, in which entanglement, continuous birth and astonishment are endemic. Moving too far into the closed, symbolic world can be pathological. As Kohn points out when describing his own temporary breakdown, symbolic semiosis that is divorced from an iconic and indexical grounding can easily induce panic:

> Panic and its dissipation reveal these properties of symbolic semiosis. They point both to the real dangers of unfettered symbolic thought and to how such thought can be regrounded. Watching birds regrounded my thoughts, and by extension my emerging self, by recreating the semiotic environment in which symbolic reference is itself nested. Through the artifice of my binoculars I became indexically aligned with a bird, thanks to

[30] Kohn, *How Forests Think*, 59.
[31] Ingold, *Being Alive*, 74-75.
[32] Ibid., 74.
[33] Ibid., 75.

> the fact that I was able to appreciate its image now coming into sharp focus right there in front of me.[34]

In his account, Kohn describes a movement from being deeply alienated and ungrounded in his semiosis while travelling on a bus to the dissipation of this panic when he takes time to look at a tanager while out walking. This move marked a 're-astonishment' with the world, while the panic was a shock that revealed more clearly his regular habits of being. The move was not so much between engagement and detachment but between immersion and alienation. This is what can happen when symbolic thoughts drift free from their anchoring in the indexical and iconic conditions of being-in-the-world. As Candea argues in relation to his work with scientists studying meerkats, detachment is not the opposite of engagement but a particular manifestation of engagement, one that enables scientists to understand the world of the meerkats more deeply and sensitively.[35] It is, in fact, a manifestation of the oscillation I described earlier between the real grounding of being-in-the-world and the symbolic and ethical. The surprise of a scientist is not so much a product of disengagement but of the oscillation towards an emergent symbolic semiosis in which the world is conceptualised as a closed model. However, in producing such a model the scientist needs to be fully engaged with a world of complex movement and constant form generation. They need to have consciously dwelt in the meshwork in order to build the model. In order to be surprised, one first needs to be astonished. The shocking surprises of the Anthropocene are most readily perceived by those who find the world constantly astonishing.

My reason for discussing these relational semiotic approaches is to emphasise that the symbolic and ethical associations and interpretations of listening to birds in the Anthropocene are grounded in an experience of being-in-the-world; they are not simply cultural models that are imposed onto what is perceived. Any such models or symbolic associations are emergent from being-in-the-world rather than prior to it. Likewise moral ideas are *emergent from* the iconic and indexical grounding of the meshwork. Following Ingold and Kohn I argue that it is not possible to have symbolic and moral ideas without first being instantiated in the world in a meshwork of relations and associations that are at once both material and semiotic. As such, the ways that humans listen to their surroundings are not fundamentally different in their grounding to the ways that birds listen to theirs. In the narratives that follow a range of moral and symbolic ideas are represented, but these draw on the indexical associations of place and temporality.

While the approach that I have outlined above is more broadly about how humans and other species perceive the world, there are some particularities to listening to birds in the Anthropocene that require elaboration. I argue that the semiotic context of the Anthropocene is peculiarly *anxious* because, as I pointed out earlier, it emphasises our separation from the rest of life just at the moment we connect with it. As Aldo Leopold knew, "One of the penalties of an ecological education is that one lives alone in a world of wounds."[36] The Anthropocene world is increasingly not a world of reassuring thirdness and regularity but of a shocking

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[34] Kohn, *How Forests Think*, 57.

[35] Candea, "'I Fell in Love with Carlos the Meerkat.'"

[36] Aldo Leopold, *Round River: a Parable* (New York: Oxford University Press, 1993), 165.

secondness— such as Carson wrote about in *Silent Spring*—in which the causes of deleterious change seem to lead us back to our own actions. As the indexical and iconic grounding of our being-in-the-world shifts, those wounds become more apparent to those that are the least alienated from other forms of life. The moral and symbolic fallout is the anxious semiotics of the Anthropocene.

Anxious Narratives of Listening to Birds

I derive three principles from the above discussion that together provide insights into the particularities of listening to birds in the Anthropocene:

1. The semiotic grounding of perception is an indexical and iconic meshwork, both for birds and for humans. Although the meshwork is constantly emerging, there is still potential for regularities (thirdness) that are responded to by organisms in their actions and that provide a basis for the continuance of their lives.
2. The symbolic emerges from this grounding and provides potential for an oscillation between different kinds of mindfulness e.g. engagement and detachment, real and ideal etc. Human perception often involves this kind of oscillation.
3. The semiotic grounding of the Anthropocene is particularly unstable and the causes of this instability can often be traced to human action. The perception of instability and uncertainty thus provokes a distinctly anxious semiotics that can shock and unsettle senses of place and time, as well as provoking moral disquiet.

To add some flesh to the bones of these principles, I turn now to the Listening to Birds project, an anthropological study of people's relations with birds through sound. Through this research I received many stories from people narrating their own experiences of listening.[37] Most came from respondents in the UK but many were also contributed from other parts of the English-speaking world, including Australia and New Zealand. I take these narratives as a means by which people highlight what sounds they notice, why those sounds are significant and how they respond to changes in what they hear. They also illustrate broader moral and symbolic dimensions of people's relations with their environment and the role that the sound-making of birds plays in this. What I find most striking about many of the stories is that they concern listening to birds in familiar places around where people live. They are about birds that live alongside people and inhabit their gardens and towns. These are not stories of distant soundscapes in remote and wild places but of companion species that make their own places through sound in the places that people make.

What also becomes clear in these narratives is the importance to people of a sense of *resonance* with birds and with their environment more generally. By this I mean a kind of iconic resemblance or indexical association that arises between human activities and those of birds, as represented in their sound-making. The activities of birds are widely understood to resonate with the rhythms of time and season and, following from this understanding, many

[37] These were received via the project website, which invited contributions of people's experiences of listening to birds. The website was widely publicised when the project was covered by the BBC News website.

respondents expressed feelings of well-being in response to hearing birds. This seems most apparent when people's lives also resonate with these rhythms,[38] as Rob from Droitwich wrote:

> As a farmer I'm up well before dawn at this time of year but even now there are birds singing in the morning. I heard my first dunnock yesterday. They have already started pairing up and the little owls have been amusing us with their bright chirrups every evening and morning. They certainly brighten up the dark mornings and evenings. As we move into spring I'm lucky enough to hear the dawn chorus every day and it does give me a real lift. Lambing time can be magical when you see new-born lambs taking their first steps to a sometimes deafening suite of blackcaps, robins, chiffchaffs, willow warblers and the rest. If you can't appreciate that then there's something seriously wrong with you.

When people like Rob attend to the activities of birds as they go about their lives they are given, as he puts it, "a real lift." This lift, I argue, stems from a sense of resonance that comes from this sympathetic attention to the activities of other beings around us. The sort of attunement of activities that Rob describes *resonates,* but it also requires that he be sensitive to the lives of those around him. Rob is, according to his account, astonished on a daily basis by listening to birds. His engagement with his surroundings enables him to notice the daily and seasonal changes and regularities. The signs of new and burgeoning life that he perceives serve to exemplify the stability of the place where he lives and the life he leads in it. This resonant grounding even draws Rob into making a moral point about the need for others to appreciate such an experience, perhaps reflecting an anxiety that many do not. His sensing of place and time and of his own resonance with birds is grounded in his being-in-the-world but also draws forth this generalised reflection. As Ingold argues, resonance is analogous to the rhythmic interplay of musicians, who may be playing different sounds but who are following the patterns of sounds around them in ways that are complementary and harmonious.[39] As Krause implies, resonance is also integral to the listening and sound-making of birds and other animals, as they make themselves heard through resonating with the acoustics of their own worlds.

The apparent regularity of home, as signalled to Rob by the sound-making of birds, is important in forming many people's sense of the temporality of days and seasons. Rachel Carson clearly understood this connection and its power. Indeed, her book might better have been called *Silenced* Spring. Spring as a period on the calendar might not be silent without the birds, but for many it would scarcely have been spring either. Bird song does more than simply herald the spring; in an important sense *it is spring*. As Carson realised, the Anthropocene was making home seem less stable and unproblematic. Many narratives describe the effects of this instability in how home sounds through its birds. A respondent from northern England wrote:

> I grew up in a suburban area of a northern industrial town and was used to seeing lapwings flitting away across the fields, pee-witting as they did so. I haven't seen a lapwing anywhere near the area for years now and it saddens me to think that my daughters won't get that simple joy of seeing and hearing something otherworldly on their doorstep.

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[38] Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*, 196.
[39] Ibid.

In this example, an integral sight and sound of the rural-urban fringe has disappeared, probably because of the changes wrought by modern agriculture and our attempts to produce more food more cheaply. The silencing of lapwings is felt anxiously by a father who wants his daughters to experience some continuity with his own sense of place. Again, the grounding of sights and sounds comes to have symbolic connotations of home and of this respondent's own biography, but the differences between his own experience and that of his daughters provokes shock.

Other narratives describe new birds that have moved in, like the Asian ring-necked parakeets that now add colour and sometimes discordant sound to the south-eastern suburbs of England. A respondent from Surrey writes:

> Over the last year or so I started hearing strange squawking in my garden. Normally the bird songs are of the usual garden variety, so this was interesting. It turns out that we have ring-necked parakeets living in the area and it was them creating the squawks and screeches. Now I listen out for them as it's lovely to see the bright green parakeets flying around and "terrorizing" the local woodpigeons.

The ordinary suburban lives of the English Home Counties are enlivened by these exotic birds, terrorising the woodpigeons and contrasting with bird songs "of the usual garden variety." Sometimes the apparent stability and quietude of suburbia needs something to shake it up; the shock of the new serves to emphasise familiar regularities. But whether these stories concern disappearing species or incoming exotics they speak of the sorts of connections with place that people make through bird sounds and of the acoustic ecologies of places. This grounding leads on to moral pronouncements about how people would like places and times to sound and of the sort of resonance they seek.

In this final example, a respondent from Cumbria articulates memories of the place where he grew up before raising concerns over the increasing dissonance between farming and the activities of the birds, a dissonance that has led to the silencing of one particular bird:

> I grew up in Ireland and lived about three miles from Foxford, County Mayo. In the summer, and especially in the late evenings and at night, one could hear the corncrake call—lots of them—some near, and others far away. The call told me that summer was at last here. I would dearly love to hear that sound again or for my children and grandchildren to hear it too. Sadly the corncrake went into decline because of silage making—farmers cutting grass while the corncrake and other wild birds are nesting on the ground. I would love to see a comeback.

The resonance that my respondents described in relation to the sound-making of birds is, I argue, an emergent ethic that draws lives and activities together. It is integral to how they experienced their surroundings but also to how they *idealised* experience and how they wanted their relations with a place to be. The desire for corncrakes to make comeback in County Mayo derives from this sort of idealisation of how a place *should* be experienced, and this ethical concern is thrown into sharp relief by their disappearance since the advent of Anthropocene agricultural intensification.

This desire for resonance is not just about how things sound but about fitting in with the activities of birds in a way that is sometimes iconic and sometimes complementary. Listening to birds, for my respondents, is not simply about apprehending the sound but about

trying to understand how sounds relate to their own activities and the places and temporalities they inhabit. When people move to new areas or other countries they often find the different bird sounds they encounter to be unsettling, to precipitate a sense that they don't belong and that their activities no longer resonate with the right kind of bird sounds. Even without the abruptness of moving to a new area, changes in local bird populations and the loss of species and their sounds can foster a sense of anxiety and loss.

But silence, as Carson and Krause both realised, is more unsettling still. My respondents are, I think, revelling in perceiving the activities of other species as they become manifested in sound. Life makes sound and movement and their lack can easily come to be understood as a kind of death. The silence and stillness of birds killed by pesticides or motor vehicles, or habitats depleted by logging or drainage, promote an anxious semiotics of death and loss typical of the Anthropocene, when change and loss is readily attributed to disruptive human actions, sometimes perhaps even the listener's own. Silence and discordance are *symptomatic* of the Anthropocene.

Listening in the World

To explore these issues further, I now invite the reader to listen to four sound recordings of birds that were made in four different countries. These span a range of situations from urban gardens, to islands, to a celebrated rural location for birds, to a rainforest remnant where an enigmatic bird lingers on the edge of extinction. I offer a description of my own listening as a starting point for the reader and as a guide to what is being heard. These are not intended as exhaustive interpretations but to facilitate closer listening. I aim to assist the reader in understanding why these places sound the way they do and to encourage them to listen more closely to what they hear as they go about their lives more generally. The anxious semiotics that is never far away only emerges through active listening. Finally, I add as a proviso that listening to these recordings is not the same experience as "being there." Listening is not simply a process in which sound is heard but is a whole bodily experience of being in place in which sound is a focal point. Recordings may "transport" one somewhere but they do not furnish the entire semiotic context and sense of being-in-the-world.

Capertee Valley, New South Wales: June 2013[40]

I spent a week writing a draft of this paper in the, to me, unfamiliar surroundings of the Australian bush. The Capertee Valley is a renowned area for birds a couple of hours from Sydney: a mix of woodland, fields, hills and valley. Certainly there is abundant life here: a constant twitter of fairy-wrens, thornbills and red-browed finches; the chirrups of a Jacky winter; a garrulous cry from a kookaburra or a currawong; the eerie calls of Australian magpies and ravens; the distant squawks of a flock of cockatoos and the agitated bleating of masked lapwings. What do these sounds tell me about the place where I am? At times it seems chaotic, with a whole range of disparate and similar sounds competing with one another. But I am, unusually, in a place where birds, together with a few insects and amphibians, are *almost all I can hear*. If this place sounds of anything it sounds of its birds. It is far from silent, or even quiet,

[40] See audio clip #1 at http://environmentalhumanities.org/archives/listening-to-birds/. Recorded with an Olympus LS11.

but does seem to have what Krause calls tranquility.[41] Silence, he argues, is not a desirable state but quite disorienting. In silence, as Carson probably realised, it is hard to find a sense of place. Tranquility, on the other hand, is a state between noise and silence in which a kind of endorphin-rich serenity is attained.

The only significant disruption to the sounds of birds comes when a plane flies high overhead. I likely flew over this area on my own journey to Australia and so the sound of aircraft is, in part, enabling me to hear this place. But air travel also seems to be contributing to climate change and the increasingly severe summer heat that regularly leads to devastating fires in this part of Australia. The valley is, to use Haraway's phrase, "full of bumptious life" but the strains of Anthropocene anxieties and the ironies of global travel still encroach.[42]

Mata da Balbina, Brazil: August 2008[43]

The Atlantic forest of eastern Brazil has fragmented enormously over the last century. Many of its bird species have disappeared or become extremely scarce and localised. Some are so rare they are almost like ghosts. One such bird is Stresemann's bristlefront, a thrush-sized bird with a long tail and mass of bristles around the base of its bill from which it takes its name. Until the mid-1990s this was a species only known from two museum specimens. It seemed like a shadowy myth of the past but was then discovered fleetingly in the coastal forests before disappearing as soon as it had appeared. Then in the early 2000s it was found again in a fragment of hilltop forest called Mata da Balbina close to the border of the Bahia and Minas Gerais provinces. Here the small population lingered and I was able to visit in 2008, together with another British birder.

We arrived at the forest knowing little about the bird and our knowledge of its singing came from a single online recording made the previous year. The field guides that we used had no description of the sound at all, presumably because it was unknown when the guides were produced. After some time searching, a liquid, cascading song rose up from the thick undergrowth. It was soon close enough to make a recording, which we carefully played back, quietly and at long intervals, to try to entice the bird to show itself.[44] The bird we could hear in the forest sounded slightly different to the online recording because it added in an alternating ending to the song. Curiously, it seemed to respond more enthusiastically to the recording we had downloaded rather than the playback of its own song. It overlapped with the recording almost as if in a duet. The lack of scientific information on the singing of Stresemann's bristlefront rather liberated my thinking about what I was listening to; the singing had no "facts" to conform to.

Almost an hour passed in the midst of the dense tangle of branches before we saw a female creep nervously across the forest floor, its singing encircling us enigmatically. It was a

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[41] Krause, *The Great Animal Orchestra*, 216.

[42] Donna Haraway, *The Companion Species Manifesto: Dogs, People and Significant Otherness* (Chicago: Prickly Paradigm Press, 2003), 32.

[43] See audio clip #2 at http://environmentalhumanities.org/archives/listening-to-birds/. Recorded with a Fostex FR2-LE and Sennheiser ME66.

[44] The ethical issues surrounding playback of bird sounds are complex. For further discussion see David Sibley, "The Proper Use of Playback in Birding," accessed 27 February 2015 http://www.sibleyguides.com/2011/04/the-proper-use-of-playback-in-birding/.

beautiful but disconcerting experience; I wondered if the recording I made of its song might outlive the species itself.

Stewart Island, New Zealand: November 2008[45]

The small harbour of Oban is named after a port in the west of Scotland but this Oban is the main settlement on Stewart Island, an hour or two's boat ride from the southern tip of New Zealand's South Island. It's only my second day in the country, after a lengthy flight from the UK. Jet-lagged and weary, I had already had the strange experience of finding myself on the other side of the world, switching from early winter to early summer as I did so. And yet the birds were much the same as at home in Britain, thanks to a range of familiar garden birds that had been brought to New Zealand by acclimatisation societies in the late 19th century. The impoverished avifauna of the main islands is swamped by these settler birds, most of which are well-regarded songbirds back in Europe. The sense of *similarity* to home is oddly disorienting. I am, in part, shocked by the *familiarity* of what I hear.

I arrived by boat in Oban and began to hear some of the "real" New Zealand birds: the voluptuous warbles of tuis and the raucous gabble of kakas. These exotic sounds contrasted with the more prosaic chatter of house sparrows and the descending chirruping of chaffinches. This mix of the recognisable sounds of home and the new sounds of the Antipodes jarred, both in terms of familiarity and in the quality of sound. A duck flying over was again familiar, although most ducks in the area were a hybrid mix of introduced European mallards and native grey ducks. An oystercatcher and a gull were both familiar sounding too, much like those that careen about the coastlines of Scotland, but these were subtly different native species rather than introduced birds.

Human history and the sounds of birds are inextricably bound together in New Zealand. The relatively short period of human settlement has shaped the avifauna and ecology in dramatic and readily perceptible ways. As much as the presence of the birds I hear, I sense the absence of those that have disappeared since Europeans arrived: bush wren, piopio, huia and many others. In Krause's terms it sounded like an ecosystem that has yet to become sonically integrated, with disparate types of sound, meant for different acoustic and ecological conditions, in uneasy coexistence.

Aberdeen, Scotland: March 2014[46]

A bright morning, just as winter is turning to spring. The winter has been the wettest on record, perhaps an effect of global warming; the switch to mild, dry weather seems to encourage a rush of activity in the botanical gardens. I'm reminded of the hubbub of sounds from the Capertee Valley: a rush of twittering finches, tits, dunnocks, treecreepers, goldcrests and robins. A great spotted woodpecker taps loudly at a trunk and, being near the coast, the wail of a herring gull cuts through the air. While the gardens seem like a green oasis in the city, the

[45] See audio clip #3 at http://environmentalhumanities.org/archives/listening-to-birds/. Recorded with a Fostex FR2-LE and Sennheiser ME66.

[46] See audio clip #4 at http://environmentalhumanities.org/archives/listening-to-birds/. Recorded with an Olympus LS11.

distant thrum of traffic is ever-present and soon the stream of birdsong is engulfed by a passing helicopter heading out to serve the offshore oil rigs.

These garden and suburban sounds seem homely enough and the vibrancy of early spring exudes from the tumble of sounds. The clashes and contrasts are most obvious with the rumble of traffic, both aerial and terrestrial. I wonder if the birds are adapting their soundings to the ambient conditions, just as great tits are purported to have done in noisy urban areas.[47] Is the loud exuberance of singing a response to the noisy environment as much as the onset of spring warmth?

The above descriptions reveal something about the sounds on the recordings and the context of their making. They also reveal a lot about how I listen to birds and how my own Anthropocene anxieties inform how I do this. My listening practices are somewhat specialised, given that listening to birds has been a central part of my life, but there are certain aspects of my own process of listening that I consider to be exemplary of how many people listen to birds in the Anthropocene. Much of what might be deemed distinctive about my own practices derives from a fine-grained knowledge of what kinds of birds I am hearing. Although in some situations I was not entirely familiar with the local avifauna, I could, with a little practice, put a name to many of the sounds. This was a result of careful listening and comparison to recordings but also through visual identification, facilitated by field guides illustrated with systematically arranged iconic images and descriptive texts.[48] But, while I was doing this to a rather precise degree, the naming of what is being heard is common to any narrative of listening. Even if the listener only thinks of the sound as being a bird then they are entering into the symbolic process of relating a perceptual encounter to a linguistic marker. This process of naming enters the experience into other sets of relations. Some named sounds might be redolent of place and time; others might be out of place or exotic. Some will be familiar and expected; others could be strange and unexpected. Like many people, I am astonished by the liveliness of the birds I listen to, but I can also be shocked, both by the strange case of a ghostly bird clinging tenuously to existence and by the familiarity of the birds I hear in another hemisphere. When people name aspects of what they directly encounter, they enter those phenomena into a whole range of other narratives, relations and reflections, which are in turn re-entered into the way one listens to one's surroundings. In the Anthropocene those new relations often lead us back to ourselves and the actions of humans, leading us into listening for discordance, disruption and absence. Even in hearing familiar and comforting sounds there is an anxiety in knowing that these can shift abruptly, or are competing with ever encroaching noise and habitat destruction.

The Anxious Semiotics of the Anthropocene

The more we care about our world and the more we pay attention to it, the worse things seem to get. This is a powerful anxiety for many in the Anthropocene. Engaging with and reflecting upon the world is essential to our own sense of well-being, but it brings with it the realisation

[47] Hans Slabbekoorn and Ardie den Boer-Visser, "Cities Change the Songs of Birds," *Current Biology* 16, no. 23 (2006): 2326-2331.

[48] John Law, and Michael Lynch, "Lists, Field Guides, and the Descriptive Organization of Seeing: Birdwatching as an Exemplary Observational Activity," *Human Studies* 11 (1988): 271-303.

of our own destructiveness. The more we listen to birds the more we notice the loss of birds from pesticides, the destruction of habitat, the encroaching dominance of Anthrophonic sounds, the sounds that are out of place and the ecosystems that are dissonant. There is nothing new about the way that the semiotics of our listening oscillates between our being-in-the-world and our reflection upon it. The semiotics of the Anthropocene, however, destabilises the groundings of our perceptions and draws our reflections anxiously towards our own disruptiveness.

Silence and loss hang heavy in the Anthropocene, but this does not mean that our ongoing relations with birds and their sound-making are not fruitful or that we should desist attending to them to avoid the inevitable unease. These lives are ones that people often hope to resonate with, that is, to attend to them in a way that is ethical, that is aesthetic. As Donna Haraway puts it: "All ethical relating, within or between species, is knit from the silk-strong thread of ongoing alertness to otherness-in-relation."[49] The "ongoing alertness" to the sounds of birds that my respondents told me about is just this kind of ethical relating, but it is a relating that is importantly grounded in the same kinds of semiotic processes through which birds listen to their own world. I argue that listening to birds in the Anthropocene should not encourage a separation of human activities from those of birds but should instead ground the development of relations of companionship. It elicits not simply a narrative of encroaching loss and the ever present threat that humans pose to non-humans, but one of enskillment, of how we learn to listen to birds and to the rest of our world and how we learn to make ourselves, however uneasily, at home in it.

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ACKNOWLEDGEMENTS Funding for much of the research on which this article is based was provided by the Arts and Humanities Research Council of the UK. I thank them and Tim Ingold for their support.

[49] Haraway, *The Companion Species Manifesto,* 50.

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