Swamp, Sound, Sign: Reflections on interspecies difference in compositional practice

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Soundscape composition and environmental sound art already imply critiques and negotiations of nature/culture divide and human/non-human difference. This article, along with the composition it frames, thinks through a vision of environmental sound art that completes a link between sonic practice and its object. As a project, it navigates human/animal difference through a sonic knowing which is founded on life's shared constitution in signs. Sounds beyond spoken words, like the signs that dominate non-human life, are foundationally non-symbolic, and the ability of environmental sound art to resemble and evoke networks of icons and indices is in some respects a privileged position of electroacoustic music. The article presents a non-dualistic sonic thinking within the decentred perspective of the environment, which emerges as a plural product of its engagements and participants. A vision for soundscape composition is presented, along with a frame for its interpretation as sonic thought, or phonosophy.

1. INTRODUCTION: THINKING SWAMP

'The wet centre is bottomless' – the final line from Seamus Heaney's poem 'Bogland' (Heaney 1969: 47) is also the title of the acousmatic work framed and presented here (Sound example 1).[1] For Heaney, the peat bogs are a kind of root of subjectivity, connected to 'levels of consciousness beneath the floor of memory', which recall what ordinary memory does not (Tobin 1999: 65).[2] This feeling is also articulated in Hildegard Westerkamp's *Beneath the Forest Floor* (Westerkamp 1996), where such a subterranean subjectivity and inter-person (the 'voice' of the forest) is sounded out; this sentiment is also reminiscent of Steven Feld's thesis that 'sound is memory' (Feld 1994) in his presentation of anthropology in sound – both suggest to us the role that sound and composition have in exploring these ambiguous forms of (inter-) subjectivity.

2. PURIFICATION AND 'KNOWING WITHOUT KNOWING'

A summer night in a tropical swamp is dense with life – in a single pond, dozens of species, sometimes hundreds of frogs, can be heard calling together (Bogert 1958: track 3). We know a tremendous amount about how these creatures live in their environments, but modern scientific method divests our knowledge of the life which it describes. By the strength of its method, natural science has, in Bruno Latour's language, 'purified' the natural from the cultural, the objective from the subjective (Latour 1993: 11), and we cannot grasp other animals' lives as we grasp our own. In Derrida's language, there lies an 'abyssal rupture' (Derrida 2008: 30) between the human and the non-human, and others contend that we could never know 'what it is like to be' another being or species (Nagel 1973: 437). Specifically within the study of animal sounds, Rachel Mundy traces this purification as a product of changes in the sciences after 1945, where imagining 'what it was like to be a bird' was 'a breach of scientific conduct', placed on the status of a confession (Mundy 2018: 141). These 'breaches' in the personal biographies of animal scientists betray that there is a practical sense which objects to such a sharp boundary between humans and non-humans, and instead draws contingent, perhaps imaginative, conclusions. One scholar has called this decidedly unscientific knowledge 'knowing without knowing' (Kohn 2013: 86).

However, these animal studies and science studies scholars who analyse the loss of subjectivity in scientific knowledge do not generally respond through wholesale rejection of modern science; rather, Donna Haraway, and many who followed after, actually centre scientific learning, but place it within the context of practical interspecies engagements, encouraging those who have 'risked knowing something

[1]The full ambisonic version of the piece can be found at willbertrand.com/the-wet-centre-is-bottomless.

[2]Heaney draws his own metaphor from the 'recollections' that are studied by archaeologists, which are owed to the wetlands' 'extraordinary preservation' (Coles and Coles 1989: 7) of materials – in one case, a man who stumbled upon a bog body called the police for investigation, only to later discover that the corpse had been lying there for nearly two millennia (Wilson 2018: 134).

Organised Sound **25**(3): 321–326 © Cambridge University Press, 2020. doi:10.1017/S1355771820000278

https://doi.org/10.1017/S1355771820000278 Published online by Cambridge University Press

more about [non-humans] and how to look back, perhaps even scientifically, biologically, and therefore also philosophically and intimately' (Haraway 2007: 20). In other words, these so-called nature/culture abysses reveal themselves as a rich terrain of contingent knowledge, which recognises humans and non-humans on the same plane of subjectivity.

While Haraway's work draws practical and scientific engagements into philosophical/conceptual reflections, the work and text presented here takes a sonic path towards the project of returning the 'intersecting gaze' (Haraway 2007: 21) – or rather, returning the call – of those who inhabit the southeastern Florida swamplands out of which this work developed. Through arguing that a specific affinity exists between the processes of electroacoustic music and the semiotic networks of non-humans, this article contends that electronic music can draw these same engagements into a unique sonic knowing, or phonosophia.

Within my personal artistic practice, my work moves towards answering this directive in the form of a soundscape composition with shifting, distorting actors and scenes. Scientific knowledge, in the form of field guides and a computational model for the self-organisation of frog breeding choruses, is used to inscribe imaginative differences within the objective modality of field recordings. This approach opens up a space where real and virtual elements hybridise and intermingle, and where we may have difficulty concretely locating our position in listening – exposing us to the vertigo of feeling the many perspectives which abide in the swamplands.

3. SOUNDSCAPE COMPOSITION AND THE DANCE OF ENCOUNTER

There are many ways in which soundscape composition, from its outset, addressed these issues of de-purifying and mediating nature/culture divides through centring conscious, first-hand engagement with – and scientific learning about – environmental sounds. By their very nature, soundscape compositions are already nature–culture hybrids, cultural productions emerging from some situated environment. Furthermore, many have emphasised concrete engagement with sources, as articulated by Hildegard Westerkamp's insistence on composers' own attentive listening to their environment, writing that 'the actual recorded materials are of course important, but the listening experiences while recording and while going about one's life are just as important' (Westerkamp 2002: 53). Further, R. Murray Schafer has discussed his frustration with students and other composers failing to learn more about what specifically they are recording, writing that 'a composer owes it to the cricket to know such things. Craftsmanship is knowing all about the material one works with. Here is where the composer becomes biologist, physiologist—himself cricket' (Schafer 1977: 206). We even see Schafer suggesting here the relationship between scientific learning, practical engagement and the imaginative transformation of subjectivity.

However, in the nearly five decades since the birth of acoustic ecology at Simon Fraser University (Truax 2002), critiques of this approach have emerged. Steven Feld has criticised Schafer for his romanticism and 'evolutionism' (Feld 2001) underscored by his conception of soundscape, 'with all its physical distance from agency and perception' (Feld 2015: 15). Speaking of this reification of a distant nature which is as unchanging as it is lost, sound artist Erik DeLuca criticised the stultifying presence of 'wilderness ideology' (DeLuca 2018: 72) in some forms of environmental sound art, which 'present nature as if it was universal and had no cultural context' (ibid.: 75). While soundscape composition hybridises nature and culture, these authors suggest that in some instances a certain form of domestic/wild dualism endures, brought on by the preconceptions that a composer may have in the process of artistic production.

The needed reflexivity to transform preconceptions can be characterised as an encounter, where 'encounters transform us', including transformations of our subjectivity and crucially our own concepts in the process (Tsing 2015: 28). This encounter, or negotiation of difference between the twin traps of anthropomorphism and reification, has been characterised as a 'dance' (Haraway 2007: 4), but one with the possibility of conceptual transformation, as Haraway writes that for some, encounters have 'undone and redone themselves and their sciences' (ibid.: 21). Though merely one example of such an encounter, what follows illustrates the conceptual transformations resulting from listening and recording, reading and thinking in and about the swamps of southeastern Florida.

While the practice presented here remains within the framework of fixed media acousmatic works, it is hoped that in what follows, the incorporation of concepts from other humanities provide fertile directions for soundscape composition to think about these critiques and develop a method which strives to not hold the aforementioned divides fixed, but can rather provide directions for realising such an ostensible impasse as a complex continuum. This realisation is effected through tools which are in some respects uniquely available electroacoustic music – namely, by utilising the sympathy which exists between sign-processes and forms in acousmatic music and living signs. This work aims to position its vision of soundscape composition within a context of conceptual and reflexive listening to these interspecies engagements, taking the tradition, in the fashion of Feld, 'with but against' (Feld 2015: 14) the initial formulation of acoustic ecology.

https://doi.org/10.1017/S1355771820000278 Published online by Cambridge University Press

4. THEORETICAL RESOURCES: LIVING SIGNS AND LARVAL SUBJECTS

In order to articulate the process of one such encounter, the sound-work presented here begins from two mutually supporting directions, from two reference frames. The first – call it critique – questions whether human categories are indeed uniquely human, and the second – call it discovery – realises non-human qualities within the human.[3] Taken together in the current context, these methods are a movement of subjectivity and objectivity drawing nearer.

4.1. Acousmatic music and living signs

On the side of discovery, in his book *How Forests Think*, Eduardo Kohn (2013) provides a framework for bridging interspecies difference – his method begins with recognising life as semiotic, and then he reinterprets the results of the biological sciences as providing the forms of lived semiotic networks, which ground our lives as much as they constitute those of other animals. Unlike human language, which is dominated by symbolic signs, non-human semiotic networks are largely made up of the other two semiotic modalities: indices, where the signifier is caused by the signified, and icons, where the signifier resembles the signified (ibid.: 8). He uses the example of the anteater, whose snout has evolved to best fit the shape of ant tunnels, thereby making an iconic relation between the snout (signifier) which resembles, by virtue of sharing a shape, the ant tunnels it feeds on (signified) (ibid.: 74). From this framework, rational evolutionary logics are revealed as relational functional networks of strange signs and strange language, a far cry from our notions of signs and language which appear as starkly delineated from the background from which they emerge. Whereas human language is composed of homogeneous bearers of meaning (i.e., written or spoken words), living sign-systems propagate equivocal signals across heterogeneous media, among multiplicities of organisms and sense-modalities.

This is reminiscent of the distinctions historically drawn between instrumental and electronic music – classical music is built on homogenous bearers of meaning (notes on the staff), whose significance is constituted through formal, symbolic relations between notes (tonality/serialism) (Wishart 1996: 23–35; Roads 2015: 68). Within electronic music, we see something much more like living signs, where sound objects are heterogeneous bearers of meaning, in which no single set of sonic parameters is exhaustive (Wishart 1996: 93–4; Smalley 1997: 107–8). From sound objects' spectromorphologies, meaning emerges from a multiplicity of top-down cognitive processes (Hirst 2006); carriers of meaning are pluralised and made polysemous when multiple paradigms are applicable. This parallels the dynamics of living signs, where many living perspectives match acousmatic sound's many paradigms to create contended and fuzzy lines between figure/ground, content/form and information/materiality.

Living signs are also uniquely characterised by long chains of propagation – interpretations propagate as signs because of the responses they elicit in interpreters, responses which then become available to any other interpreters present (Kohn 2013: 33–4). David Hirst, in describing his cognitive framework for listening to acousmatic music, writes of similar propagations of musical signs, as sound objects are grouped into 'streams (sequences or chains)', which then have variable and varying 'causal' – that is, semiotic – 'linkages between the sonic objects within the chain-type pattern' (Hirst 2004: 11). These features of living signs are on display in Bernard Parmegiani's *De Natura Sonorum* (1976), with long chains of sounds which carefully overlap in morphology; the piece, to a large extent, is structured out of iconic relations of resemblance between sound object morphologies.[4] Perhaps it is no accident, then, that Parmegiani describes his style as 'a certain mobility, a certain color, a manner of beginning and ebbing away, making it living. Because I consider sound like a living being' (Gayou 2002; Roads 2015: 318).

Kohn attests to the possibility of humans learning to think akin to the movement of living signs in what he calls 'iconic thinking' (Kohn 2013: 176–8), and it seems that perhaps these living, mobile semiotic networks are already weaving their way through acousmatic music. This article sketches a means of making these tacit connections explicit, thereby moving towards an account of acousmatic music as an ecological knowing-through-sound.

4.2. Larval subjects and numerical models

Within the composition presented alongside this text, a simulation of the organisation and timing of frog breeding choruses allows me to transform objective field recordings into slipperier territory. For this piece, a stationary version of a mathematical model developed by Aihara et al. (2015) was implemented, which describes the organisation of certain breeding

[3]Within electroacoustic music, Trevor Wishart's *Red Bird* (2000) is a powerful example of hearing the non-human in the human (discovery), as the sounds of speech, birdsong, human bodies, and machines (Wishart 1996: 172) all transform into one another; and Jana Winderen's works expose startlingly nuanced sociality in hidden sonic realms (i.e., critique), particularly in her audio installation RATS, of which she writes that 'Parallel to the world of people is another bustling society – a world of rats' (Winderen 2017).

[4]Iconic resemblances are most present in 'etude elastique' and 'conjugaison du timbre' as gradual mechanisms; and on 'matières induites' and into 'ondes croisés' as quicker, adroit transitions between textures sharing morphology.

https://doi.org/10.1017/S1355771820000278 Published online by Cambridge University Press

choruses as a 'frustrated system of coupled phase oscillators' (Aihara 2009: 5). This general class of problems describes an enormous range of phenomena, ranging from animal communication to the timing of motor neurons in muscles and pacemaker cells in the human heart (Strogatz and Stewart 1993). It represents a bridge over the interspecies gap via the human-broadening tact of critique, as pioneered by Gilles Deleuze. For Deleuze, the approach begins with a radical extension of the predominantly human categories of soul, habit and contemplation, assigning habits to periodically firing neurons and perennial crops (Deleuze 1994: 74–5). With his concept of 'larval subjects' (1994: 78), he then critiques a unified seat of subjectivity as instead emerging from a vast number of subterranean pre-individuals and inter-subjects. Thus, in a sense, the formal properties which play out in the breeding chorus and within the sound-work resemble and propagate processes which constitute the human organism as much as they afford the amphibian assemblages which are the focus of this piece.

However, the intent is not to maintain a scientific correctness or suggest for composition a formal correspondence resembling serialist values; in this piece, these networks are taken up in order to generate something unscientific, to reach not a formal correspondence but to show the ontologically fertile properties of these processes. Kohn attributes agency to forests, to networks of living signs; and psychoanalysis describes the human subject as emerging from similar networks of signs in the unconscious (2013: 177). If these networks think, then can we not consider electroacoustic music as thinking in a similar way? These connections frame composition as allowing living thoughts to 'think through us' (Kohn 2013: 222) as these thoughts also think through their own environments.

These connections in semiosis and process give us directions, albeit schematic ones, for viewing soundscape composition as transforming interspecies boundaries into a continuum of self–sound–other, where similar processes constitute the human subject, the sound-work, and the environmental subject of the work. This transforms dualisms into a link which critically exposes subterranean affinities beneath what are initially stark differences.

5. ON PHONOSOPHY

The account of sonic knowing here exposes some resemblances between acousmatic music-making and Steven Feld's acoustemology – which centralises 'knowing-with and knowing-through the audible' (Feld 2015: 12), even though acousmatic music preserves the 'physical distance from agency and perception' that Feld objects to, at least for the listener. It is hoped that this direction outlines a critical reflexivity which does not take concepts of 'nature', 'animal' and 'soundscape' as reified wholes, which risks flattening animal subjectivity, but rather integrates scientific knowledge production and the electronic medium's sympathies with living signs to reveal how the categories of 'self' and 'other' are in constant transformation through continuua of subjectivity. Through electroacoustic music developing relationality to its dynamic environments, vis-à-vis transformations and correspondences in the languages and processes of living signs, soundscape composition can attest to a speculative sonic knowing which takes inspiration from Feld's knowing-through-sound as 'relational ontology' and a 'connectedness of being' (Feld 2015: 13) across interspecies lines, built on listening and sounding. Hence a real, but murky, connection emerges between composition, Feld's notions of knowing-through-sound, and Kohn's notion of iconic thinking in a mixture which may be called phonosophy. With this sketch completed, we can now turn towards an explicit discussion of my compositional work, which represents a first step towards practising this sonic knowing.

6. COMPOSITIONAL PRACTICE

I chose the compositional processes for *The wet centre is bottomless* by listening to the specific flows and changes in the sonic networks of the swamps encountered, which have their own peculiar perceptual dynamics. Smalley writes that '[a] listener needs time to progress from an initial listening encounter with the soundscape to a state of engaging actively and fully' (Smalley 2007: 37), but in sonically bustling swamps, I find myself continually thrown back into the flat density of the initial listening encounter as the experience's many layers adjust, with myself and other recordists present only noticing changes retroactively.[5] The peculiar vertigo is the result of my shifting attention between different networks of species within the aural scene – that is, between the many possible points of attention which are of relevance to the many auditors and sounders present.[6] When recounting what I heard with the others with whom I was recording, it became clear that this environment creates divergent perspectives between listening experiences. I settled on the musical processes for this piece based on these experiences of hard-to-track gradual change and a non-human plurality of perspectives translating into a human one.

The wet centre is bottomless constructs real-virtual hybrids of swamp soundscapes, where I have attempted to allow acoustic images and scenes to

[5]There are basically no visual cues to these changes, due to the fact that these environments are most active during the late-night hours – underscoring the causality and salience of the sound with its own kind of acousmatic veil to human listeners.

[6]Environmental sound art which thematises other-than-human listening perspectives can be found, for example, in works by Jana Winderen (2019), David Dunn (2008), and Erik DeLuca (2008).

https://doi.org/10.1017/S1355771820000278 Published online by Cambridge University Press

propagate and distort out from the living signs within the slough. Compositional flexibility is created using spectral isolation to separate acoustic niches within field recordings, and the computational model for frog breeding choruses is fed into extracted sample banks of recorded or synthesised frog calls to reassemble shifting scenes within the final work. Except for a rupture in the middle of the piece (Sound example 1: 3:00), gradual transitions between scenes occur as iconic resemblances, where acoustic niches fade and transform at staggered rates in the background. Distributions of spectral energy gradually morph in shape and focus as different regions are articulated through a layer of foregrounded signals (e.g., 0:44–0:51, 1:22). In the play of resemblances, propagations and transformations, the virtuality of the experience is exposed as a breeding-chorus spirals, divergently propagating out from any feasibly real acoustic image (1:51–3:00), and the final scene (3:00–6:37) re-introduces the dream-like flow of niched sonic networks, which shift between moments of conjunction and disjunction. The uncertainty between the real/virtual distinction invites us to question our position in listening, as the choice of approach is intended to expose a heterogeneously propagating (from intra-environmental, to composer, to audience) network of perspectives and responses. I hope that this uncertainty opens up terrain for further encounter – an invitation and mediation – be it transmitted in an act of listening, sounding or thinking as these ecological signs continue to 'think through us'.

SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit https://doi.org/10.1017/S1355771820000278

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