

REORIENTING SONIC CREATIVITY AMID ECOLOGICAL DISORIENTATION

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To designers of better relations.

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ABSTRACT

REORIENTING SONIC CREATIVITY AMID ECOLOGICAL DISORIENTATION

Andrew Niess

Jairo Moreno

This dissertation offers ecological disorientation as an analytic for making sense of affective experiences of the climate crisis and the epistemological shifts that attend it. It focuses this analytic on a range of thinkers and makers whose reckonings with the climate crisis appeal to sonic creativity. It contributes to the difficult labor of reorienting music studies, the humanities, and higher education institutions to better contend with the climate crisis, for which there is no panacea. Chapter one analyzes the discourse of theorists, critics, scientists, and public officials who deploy sonic figures to make sense of ecological disorientation. The chapter opens this project's overriding concern—namely, that sonic figures and practices of embodied sense-making can spur action and mobilize affects. Chapter two constellates and analyzes music studies practitioners' reckonings with ecological disorientation to argue that such reckonings may perpetuate anthropocentric, identitarian epistemologies. Chapter three theorizes parahuman sonic creativity and compiles an archive of practitioners whose creative work in sound contends with, figures, or otherwise relates with the climate crisis and its disorienting effects; it argues that such works aestheticize the climatic, ecological conditions of possibility for their own existence. Chapter four offers a suite of the author's creative and pedagogical models for reorientation: a breath-controlled instrument linking users' breath to the real-time air quality of three user-defined cities around the world; a short film demonstrating the instrument; a film about the afterlives of industrial asbestos waste and environmental racism in Ambler, Pennsylvania; a video experiment in "pneumatography"; and two syllabi, available as supplementary files.

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Introduction

At some point over the past six years, my musical world ended. Or perhaps while it beat on, I withered within it. Music I once listened to, composed, or performed ceased to move me. What I had once heard as a vibrant spectrum of timbral delights and polyrhythmic jaunts lost all color. My desire to create with sounds evaporated. Why put these notes in relation? Why these instruments? Why call performers together in a space at all and invite an audience? I came to distrust the aesthetic compass that had formerly guided me to organize festivals of new music, conduct new works, and compose my own music. Such was the depressive height of my experience of ecological disorientation and its effects on my understanding of sonic creativity. In the face of the climate crisis and the disorientation I was experiencing, I was struggling to answer: how do I delimit my inquiry, pedagogy, and creativity—in short, my labor? What “type of analytical labor” (Ochoa Gautier 2016, 114) would I perform not only in writing but through sonic creativity?

On May 6, 2020, via a prerecorded talk hosted by the Wolf Humanities Center at the University of Pennsylvania, I listened to Amitav Ghosh describe his own ecological disorientation, though he did not use those words. In his talk, Ghosh, who is a novelist, recounted his changing relationship to literary practices and forms amid the climate emergency. He offers a useful framework for diagnosing how creative practitioners either adapt to or conceal the fact of the climate crisis. Specifically, he describes how his relationship with literature changed when he feared that its methods and forms could not cope with the planetary crises. He spells the end of his literary world as he knew it: “at

least one of the worlds that I had long inhabited, the literary world, which has sustained me through most of my life, was heading in a direction that would render it incapable of responding to the planetary crisis.” He understands this changing relationship with his own practice as an end of the literary world that prompted his own methodological adaptation: “This meant, over time, that this world did indeed end for me, in the sense that I began to feel that modern literary practices were deeply enmeshed in the mechanisms of concealment that prevent us from understanding the nature of our predicament. I started asking myself, then, what other kinds of literary practice I could turn to” (Ghosh 2020). Ghosh’s words so adequately describe the disenchantment, sadness, and loss that I experienced with respect to music but that I had hitherto struggled to verbalize. I realized that I had begun to understand the musical world I had for so long dwelled within, and which had nourished me, as ill-equipped to contend with the climate crisis if its practitioners did so at all. I understood its practices as “deeply enmeshed in . . . mechanisms of concealment” like deep-seated anthropocentrism (ibid.).

The Climate Crisis and Ecological Disorientation

This dissertation project focuses on ecological disorientation as an effect of the climate crisis, which upends, dislocates, extinguishes, floods, and threatens the conditions of livability for all life on this planet. I position “ecological disorientation” alongside others’ attempts to give descriptive and analytical shape to the disorienting effects of the climate crisis. Consider Déborah Danowski and Eduardo Viveiros de Castro’s distillation of the climate crisis as fundamentally a transformation of space and time, one that compels a dizzying experience of the “acceleration of time” and “compression of space” (Danowski

and Viveiros de Castro 2017, 13, 8). The acceleration of time results from the increasing rates and magnitudes by which the climate crisis intensifies. Such temporal intensification reduces the total biomass capable of sustaining life as bio-anthropo-geological transformations endure such as sea-level rising, ocean acidification, ice shelf melting, atmospheric carbonization, exponential human population growth, and the planetary-scale transformations to the life-supporting composition of the biosphere. This double condensation of time and space produces an “insufficiency of world” (ibid., 8) that threatens planetary conditions of livability. Each dimension of this double condensation perniciously feeds the other.

The climate crisis has prompted conceptual and linguistic changes across a range of professional fields. It is a small wonder that others have understood the climate crisis as a “wicked problem” whose formulations and solutions cannot be stated clearly, finitely, and definitively (Brown et al. 2010; see also Rittel and Webber 1973; Buchanan 1992; Thompson and Whyte 2012). Its dynamic ungraspability has compelled Timothy Morton to theorize the climate crisis, in a logical extension of the “wicked problem” formulation, as a “hyperobject” (Morton 2013). The climate crisis has compelled other neologisms and linguistic adaptations. Oceanographers struggle to use the word “glacial” to refer to very slow processes as rates of deglaciation accelerate (Englander 2019). Newspapers have formally changed their house styles to reflect the urgency not of “climate change” but of the “climate emergency” or “climate crisis” (Zeldin-O’Neill 2019). Public health experts and mental health professionals have considered how to reorient their professional practices given that “the effects of climate change are being

felt today, and future projections represent an unacceptably high and potentially catastrophic risk to human health” (N. Watts et al. 2015). Considering the interrelationship between human and ecosystem health, Glenn Albrecht has advanced the concept “solastalgia” to describe the distress and “loss of ‘psychic stability’” that accompanies “the pain experienced when there is recognition that the place where one resides and that one loves is under immediate assault” (Albrecht 2005, 45, 48).¹ Moreover, Albrecht furthers his neologisms in the recently published *Earth Emotions: New Words for a New World*, where he “create[s] many new ideas, words, and concepts that [he] think[s] will challenge the representatives of the Anthropocene and usher in the Symbiocene” (Albrecht 2019, x). Ashlee Cunsolo and Karen Landman have similarly theorized “ecological grief” and experiences of “mourning beyond the human” (Cunsolo and Landman 2017), while Angela Kurth, Darcia Narvaez, and others have conducted quantitative analyses of “ecological attachment,” albeit by way of an ahistorical, reductive, and universalizing appeal to “return to the Indigenous worldview” (Kurth et al. 2020, 112).

Others still, such as George Monbiot, have borrowed from medical terminology such as the term “dysbiosis”—which usually describes the collapse of the intestinal microbiome—to make sense of the social, economic, and ecological breakdown of the climate crisis (Monbiot 2020). Even the term “natural disaster” is a woefully inadequate descriptor for hurricanes, floods, and wildfires since “the imbrication of technology,

¹ Albrecht develops “solastalgia” from earlier published formulations such as “ecosystem distress syndrome” (Rapport and Whitford 1999), Elyne Mitchell’s *Soil and Civilization* (1946), and Aldo Leopold’s notion of “land health” and “sick landscapes” (Leopold 1966 [1949]).

economy, and nature creates ever-emerging conditions for catastrophe, making crisis seem a permanent condition when it is in fact the effect of financial, technological, militaristic, and political processes interacting with earth systems” (Masco 2017, S73). Such conceptual shifts are evidence of how the climate crisis impinges on epistemologies, disciplines, and professions. Practitioners’ need to find language adequate to the crisis might be understood as a means of coping with ecological disorientation.

And despite their various methodological shortcomings and limitations, such examples demonstrate how discursive attempts to make sense of a crisis contribute to the possible terms on which we might relate to the crisis. As Didier Fassin writes of crises, “there is an actual situation, which is considered to be problematic, and there is the account of it, which makes it exist through various forms of argumentation and representation” (Fassin 2021, 264).² If anything, these examples constellate a discursive precedent for ecological disorientation as an analytic for naming affective experiences of and epistemological shifts in the face of the climate crisis. While I and other settler or non-Indigenous people may experience such disorientation, our experiences have a necessarily limited analytical reach. On the distinct historical experiences of colonialism and genocide that differently inform the range of epistemologies of settlers and Indigenous peoples, Kyle Whyte writes compellingly that

as Indigenous peoples, we do not tell our futures beginning from the position of concern with the Anthropocene as a hitherto unanticipated vision of human intervention, which involves mass extinctions and the disappearance of certain ecosystems. For the colonial period already rendered comparable outcomes that cost Indigenous peoples their reciprocal relationships with thousands of plants,

² See also Trouillot (1995, 1–30).

animals, and ecosystems—most of which are not coming back. . . . That colonizers today, from settlers to imperialists, are concerned about climate change, suggests that they are now being affected by the seismic waves of massive ecosystem transformation that began over 500 years ago. (Whyte 2017, 159)

Hence, to posit ecological disorientation as either a “novel” or a universal experience would be a gross misuse of the analytic.

Other theorists offer language that helps us define disorientation more generally. In *Queer Phenomenology*, Sara Ahmed theorizes disorientations as “bodily experiences that throw the world up, or throw the body from its ground.” In upsetting the relation between body and ground as a dependable and stable one, disorientations “can shatter one’s sense of confidence in the ground or one’s belief that the ground on which we reside can support the actions that make a life feel livable” (Ahmed 2006, 157). The question that the hyperobjective scale of the climate crisis poses is: what to do “if disorientation itself becomes worldly or becomes what is given?” (ibid., 159). Hence, throughout this project I am not concerned with *whether* we experience ecological disorientation but with *how* ecological disorientation prompts reformulations of knowledge- and sense-making practices. As Ahmed writes, “the point is what we do with such moments of disorientation, as well as what such moments can do” (ibid., 158). Bruno Latour likewise prioritizes the performative question over the definitional one, as when he writes that

modernity was a way to differentiate past and future, north and south, progress and regress, radical and conservative. At a time of profound ecological mutation, such a compass is running in wild circles without offering much orientation anymore. This is why it is time for a reset. (Latour 2016, 2)

Following Latour's "reset," I focus the analytical labor of this dissertation toward offering a series of reorientations. For instance, in chapter one I constellate and analyze how theorists, scientists, and public officials rely on sonic metaphors and figures to make sense of their own ecological disorientation. I mobilize such analysis toward actually existing designs and propositions for reorienting the relations and intensities that inhere to these sonic figures. In chapter two, I focus on music studies practitioners' reckonings with ecological disorientation not as a critical end in itself but to better understand the terms upon which we might remake and reorient the labors and outcomes of music and sound studies toward better alignment with the exigencies of the climate crisis. In chapter three, I analyze examples of sonic creativity that model non-anthropocentric—and what I theorize as parahuman—relationality between species, bodies, and land. In chapter four, I offer a suite of my own creative and pedagogical models that facilitate access to such parahuman perspectives in order to thereby foster more compassionate, less harmful ways to make research and to design and enact pedagogies that connect learners to the life and land on which they learn rather than treat such life and land as parenthetical to learning.

Cautious readers might suspect that by organizing this project around ecological disorientation I am unhelpfully perpetuating apocalyptic doomsaying. But I humbly request that such readers approach this project with patience and grace to understand that I treat disorientation as a point of departure from which to imagine, model, and enact possible reorientations. I hope that I might share with such readers a concern with the tendency to fixate on merely naming precarity and representing its complexity rather than imagining and enacting options for reorienting the outcomes and effects that our labor

might have in the world. We might agree with Joseph Masco that one “perverse effect” of the climate crisis on contemporary theorists is that it prompts them “to focus narrowly on the endless modes of precarity that are emerging rather than articulating the alternative futures that are needed, reinforcing a generational gestalt of political gridlock and decline” (Masco 2017, S75). One affordance of ecological disorientation is therefore that it provides an experiential basis from which we may “take the time needed to think” and reorient our labors toward different outcomes (Ochoa Gautier 2016, 140; see also Stengers 2009; 2015).

Even when such awareness afforded by disorientation does not clearly indicate to us how to act, it can nonetheless be morally and politically beneficial. Such is the thesis of Ami Harbin’s work of moral philosophy *Disorientation and Moral Life*, which despite not explicitly or even primarily offering insights on ecological disorientation or the climate crisis does provide a framework for mobilizing experiences of disorientation. Harbin’s book invites us to understand how disorientations, however confounding and discomfiting, may generate relational changes such as epistemic humility, reidentification, and collaborative action (Harbin 2016, 91–6). Such changes generate shifts in habits and expectations that more accurately reflect and better respond to conditions of unpredictability, vulnerability, and interdependence. In short, disorientations can be “morally or politically productive” insofar as they allow “individuals to relate differently to others and themselves as knowers,” allow “individuals to relate differently to their histories and communities of origin,” and allow “privileged individuals to relate differently to feelings of power” (ibid., 91, 93, 95). Despite its

anthropocentric limits, Harbin's framework helps us to move through ecological disorientation from petrified inertia to informed action, an increasingly urgent skill to develop given a contemporary US political discourse riven by censorship and misinformation.

Overview of Chapters

In chapter one, I cull and analyze the written and spoken discourse of theorists, critics, scientists, and public officials who deploy sonic figures to make sense of ecological disorientation. Among those who contribute to this discourse, such as geologist Marcia Bjornerud, some make explicit reference to musical figures or even specifically to Western classical genres and repertoires. The figures I consider in detail are rhythm; attunement; voices, vocalities, and voicings; the sonic boom; and the Doppler effect. I argue that this partial collection of sonic figures demonstrates the need for relational, sensory, and specifically sonic practices to contend with ecological disorientation. Sonic and musical figures have shaped how theorists make sense of and communicate their analyses of ecological disorientation in textual forms. The chapter highlights the tension between textual appeals to sonic figures and the affordances and limitations of knowing through texts alone. The chapter thus opens this project's overriding concern—namely, that sonic figures and practices of embodied sense-making can spur action and mobilize affects in ways that argumentative prose does not and cannot. Therefore, such practices are crucial to the work of reorienting the labor of music studies specifically and of the humanities generally toward different relational outcomes (see also Niess 2021).

Chapter two continues chapter one's method by constellating and analyzing music studies practitioners' reckonings with ecological disorientation. I organize these fields of reckoning into ecomusicologies, "music ecology," acoustic ecology, environmental music and sound art, and speculative musicologies. That such a range of reckonings exists is evidence of the extent to which ecological disorientation has impinged upon music studies practitioners' labor. I demonstrate how the practitioners within each field of reckoning differently confront the problem of indistinction, which we might understand through Ana María Ochoa Gautier's words as "part of the broader change of the relation between the human and nonhuman sciences, between ontology and epistemology, due to the contemporary irruption of 'nature' as an unsilenceable political category in the affairs of the social sciences and the humanities" (Ochoa Gautier 2014, 213). The terms and insights of Ochoa Gautier's 2016 essay "Acoustic Multinaturalism, the Value of Nature, and the Nature of Music in Ecomusicology" help me to ask: as the practice of music studies struggles to endure in North American humanities institutions, what do these fields of reckonings' visions for the futures of music studies promise and portend? Which worlds do they seek to make, unmake, or remake? I demonstrate how many of these reckonings perpetuate anthropocentric, identitarian epistemologies and argue that such frameworks' limits therefore require reorientations based in other terms, practices, and relational outcomes. To make this argument, I again draw on Ochoa Gautier's essay and consider the affordances of her appeal to acoustic multinaturalism for doing such work. This chapter is akin to the conventional literature review, but its aims, arguments, and organization exceed the genre. In it, I offer a partial timeline (Figure 2.2),

beginning in 1962 with Rachel Carson's *Silent Spring*, to clarify a historiography of ecomusicological concerns.

Chapter three theorizes two concepts both separately and then together—namely, the parahuman, sonic creativity, and finally parahuman sonic creativity. The practitioners I consider demonstrate a capacity to reconfigure the aesthetic, material, and political components of their creative work in sound in order to contend with, figure, or otherwise relate with the climate crisis and its disorienting effects. Such works aestheticize the climatic, ecological conditions of possibility for their own existence. As works of sonic creativity, they theorize such conditions through sound, by sounding them, and by putting them into sonic relation. I contrast parahuman sonic creativity with the representational and economic strategies that musicians such as Taylor Swift, Grimes, Busta Rhymes, Esperanza Spalding, and Brian Eno have deployed in their endeavors to contend with the climate crisis. Among the projects of parahuman sonic creativity I consider are Yakushimaru Etsuko's "I'm Humanity" project (2016) of encoding recorded music in the genome of a living bacteria population as an experiment in very long-term data storage designed to outlast the extinction of all human life; the 1949 "Re-creation of huia calls" recorded by Hēnare Hāmana and R. A. L. Batley as an effort to preserve a sonic record of an already extinct bird in New Zealand; and environmentalist Bill McKibben's invocation of "the atmosphere" during an October 8, 2011 demonstration of Occupy Wall Street. Navigating these examples' respective complexities, I argue that they and their limits variously model relational practices and aesthetic techniques for living amid the climate crisis. They afford us access to parahuman perspectives, the cultivation of which

is an urgent task for reorienting the labors and outcomes of music studies and humanities practitioners.

In chapter four, I contribute to the instructive archive of parahuman sonic creativity by offering a suite of my own creative and pedagogical models that foster access to parahuman perspectives. These include a breath-controlled instrument linking users' breath to the real-time air quality of three user-defined cities around the world; a short film demonstrating the instrument; a film about the afterlives of industrial asbestos waste and environmental racism in Ambler, Pennsylvania where I grew up; a video experiment in "pneumatography" that uses breath and still images to proffer relational possibilities other than familiar anthropocentric envelopes that gather around "bodies"; and two syllabi, titled "Audiovisual Climate Research" and "Ecological Design for Contemporary Crises," which a range of instructors across disciplines may reuse and adapt.

The best outcome for this project is that it may in some small way contribute to the most difficult labor of reorienting just what those of us in music studies, the humanities, and institutions of higher education might do to contend with the climate crisis. My experience and the experiences of those from whom I have learned have taught me that such work cannot be done alone. Those undertaking the work must identify pervasive norms, name their harms and limits, and offer thoughtful counter-designs that yield different, healthier, more compassionate, life-sustaining outcomes. The analyses and models I offer here are just those: analyses and models. The climate crisis and its intensifying threat to life on the planet cannot be reversed. There is no panacea. In the

face of cruelty, extinguishment, and hopelessness, may courage, perseverance, and collective fortitude guide us.

— March 2022

Chapter 1: Sonic Figures of Ecological Disorientation

If singing animals are proto-musicians interacting in a proto-orchestra, we can then predict that changing the thermal and moisture conditions of the concert hall will detune the ensemble and affect the performance capacities of the players. Furthermore, it will likely introduce a perceived dissonance in the music. The same is happening for Earth's orchestra: new atmospheric conditions are detuning natural sounds and only major mitigation actions will help preserve Earth's beat. (Sueur, Krause, and Farina 2019, 973)

Carbon's grand, eternal symphony unifies all of the elemental essences—Earth, Air, Fire, Water. . . . Humans have learned to impose their own urgent themes and ever-accelerating tempi on this ancient score. (Hazen 2019, 245, 246)

Introduction

Mismatched rhythms; being out of tune, being out of time, out of sync with; attunement to nonhumans and their voices; composition; world as orchestra, nonhumans as musicians. . . . Theorists, scientists, and government officials contending with ecological disorientation have deployed these and other sonic figures to theorize contemporary ecological problems. I interrogate the conceptual, communicational, and pedagogical affordances of theorists', scientists', and government officials' uses of such sonic figurations. What analytical purchase do sonic figures have in making sense of the climate emergency? What relations do they make possible? What kinds of relations do they foreclose? What subjectivities do they foster or negate? How do they afford reorientations toward their ecological matters of concern?

By "sonic figures" I mean any of the concepts or techniques involved in the production and theorization of sound. In some instances, sonic figures are more explicitly related to musical practices. For instance, rhythm is a common sonic figure that reveals particular orientations toward time. In other instances, these figures are more abstract but related to sonic practices. For instance, synchronicity, being in tune, and attunement are

more specific sonic figures that theorists use to describe states of being in relation to multiple scales of time, space, or life unfolding. Such figures, like synchrony, may contain value-statements toward certain arrangements: e.g., this state of affairs is better when synchronized and worse when out of sync. The sonic operates both materially—as vibration perceived—and discursively—as metaphors and descriptions that shape and contextualize such perceptions (Novak and Sakakeeny 2015, 1). Hence, by focusing on sonic *figures* in this chapter, I highlight appeals to the sonic within this latter, discursive domain. Doing so helps me address why and how theorists, scientists, and public officials turn to the sonic as one means of coping with ecological disorientation. And since ecological disorientation is an effect of the climate crisis, it is critical to attend to not only the crisis’s material conditions (the problem itself) but also to construction of the crisis (the problematization of the problem) (Fassin 2021). In other words, the relationship between the sonic and the ecological crisis as I frame it in this chapter is not primarily a material one; it does not help us address the material conditions of “what caused the problem” of ecological crisis. Rather, attending to sonic figures helps us address the other dimension of crisis—namely, “how did it come to be problematized” via sonic figures (ibid., 268).

These sonic figures exist within a theoretical discourse in written texts and the method I deploy in this chapter is akin to culling and analyzing that discourse. But my aim in the rest of this project is to mobilize such analysis toward actually existing designs and propositions for reorienting the relations and intensities that inhere to these sonic figures. My first aim in this chapter is to constellate a number of theorists’ uses of these

sonic figures. In presenting these uses, I show how sonic figures function as “components of subjectification” (Guattari 2000 [1989], 23) for equally reproducing and contesting anthropocentrism, for rejiggering conditions of possibility and relational outcomes. They are vectors for producing and reproducing anthropocentrism as much as they are vectors for practicing other modes of living and orienting toward life. These figures are more elusive than objects and operate outside the logics of discourse because they instead name relations and intensities. They are “governed by a *different logic* to that of ordinary communication between speakers and listeners which has nothing to do with the intelligibility of discursive sets, or . . . fields of signification” (ibid., 29). I distinguish between logics of discourse and logics of intensity not to exclusively peg these figures into one logic or the other; they operate within both logics. I make this distinction to clarify my own orientation toward these figures as both analytical descriptors and also capable of effecting broader relational changes from those analyses. In short, this chapter presents a discourse defined by the overlap of knowledge about sound and music with an analysis of the climate emergency’s disorienting effects. In the broader project, I put this discourse to work to propose designs and techniques for reconfiguring relations amid such disorientation.

Rhythm

It is tempting to understand contemporary ecological crises only spatially. On one end are accumulative processes like waste accrual and sea-level rise. On the other end are deleterious transformations like ozone layer destruction and ice shelf melting. Other crises are defined by the improper location of deadly materials: oil spills and poisonings.

Yet it is helpful to understand such crises temporally, as the theorists below demonstrate. Contemporary ecological crises are problems of times, rhythms, and synchronicities. To understand them as such may allow us to produce other, less harmful rhythms, to relate differently to and to be differently in time.

Déborah Danowski and Eduardo Viveiros de Castro poignantly analyze ecological disorientation as a double effect of transformations to both space and time. Contemporary ecological crises produce conditions for a simultaneous experience of the “compression of space” and the “acceleration of time” (Danowski and Viveiros de Castro 2017, 8, 13). The compression of space is an effect of transformations like sea-level rise, ocean acidification, ice shelf melting, atmospheric carbonization, exponential human population growth, and planetary-scale disruptions to the life-supporting composition of the biosphere. The acceleration of time is an effect of increasing rates and magnitudes by which these crises are intensifying. This double condensation of space and time produces a dizzying “insufficiency of world” (ibid., 8).³ Some opportunists have responded to this double claustrophobia and lack of world with geo-constructivist projects to engineer the planet out of these constraints, projects which they justify under the delusional capitalist logics of scarcity and frontiers (see Neyrat 2019; Princen 2005). As opposed to confronting this lack of world with such labors of reconstruction, I advocate throughout this project labors of reorientation.

³ Of tangential significance is the physiological role of the inner ear in maintaining spatial equilibrium. One’s sense of balance and equilibrium is an effect of the mechanics of fluids, sensory hair cells, and otoconia as they interact with gravity.

Others, like geologist Marcia Bjornerud, have more explicitly relied on musical figures for analyzing ecological precarity. In her book, *Timefulness*, which I cite at length, she writes of time as an organizing dimension without which it would be impossible to figure our predicament:

Focusing simply on the age of the Earth is like describing a symphony in terms of its total measure count. Without time, a symphony is a heap of sounds; the durations of notes and recurrence of themes gives it shape. Similarly, the grandeur of Earth's story lies in the gradually unfolding, interwoven rhythms of its many movements, with short motifs scampering over tones that resonate across the entire span of the planet's history. We are learning that the tempo of many geologic processes is not quite as *larghissimo* as once thought. (Bjornerud 2018, 17)

When Bjornerud compares the Earth to a symphony, she turns to Western classical music analytics to communicate geological concepts to non-experts. She likens the notion of “timefulness”—“a feeling for distances and proximities in the geography of deep time” (ibid.)—to a feeling for or familiarity with symphonic forms. Movements, motifs, tempo, rhythms, tones—the referents of Western classical musical mattering here become conceptual tools for narrating geological history, for developing a “view of our place in” and feeling for deep time (ibid.).

Bjornerud's thesis is that we lack perceptive capacities for attuning to “the intrinsic rhythms of the solid earth” (19), a capacity she calls “timefulness.”⁴ A capacity for timefulness may yet become a “common philosophy or list of principles” (18) for reconstituting politics as less anthropocentric, less harmful, and more aligned with

⁴ I would nuance Bjornerud's thesis by specifying that twenty-first century capitalism produces subjectivities that either devalue or are hostile toward capacities like timefulness. Moreover, Indigenous peoples—whom I presume are not included in her primary audience—have for centuries maintained practices for being in good relation with the earth.

geological timescales. Hence, she argues, cultivating timefulness is urgent amid capitalist and colonial systems and infrastructures that otherwise produce subjectivities whose values and capacities are misaligned with those of timefulness. How does she build this argument, by what means does one develop timefulness, and to what ends?

She goes on to develop her thesis by way of further references to Western classical art forms and to notions of speed, musical coordination of human and nonhuman bodies, and the value of synchrony. She writes that “one could imagine an alter ego planet where surface morphology changed too quickly for evolutionary adaptation of macroscopic life, like a ballet orchestra that is playing so fast the dancers can’t keep up. Fortunately, all members of the Earth ensemble—volcanoes, raindrops, ferns, and finches—perform in synchrony” (80). Bjornerud’s point is that Earth’s surface morphology generally changes at rates slow enough for certain forms of life to endure and adapt. The metaphors she uses to convey this point—*orchestra as geological processes* and *dancers as macroscopic life*—idealize synchrony as the relation between different timescales capable of supporting life. In these terms, synchrony is thus the ideal temporal relation between geological timescales and human and nonhuman biological timescales. Dyssynchrony, or being-out-of-time with, is synchrony’s corollary; it is not ideal because it impinges on the capacity of certain beings to carry out their life-making projects. It is this dyssynchrony which theorists have attempted to describe as a feature of contemporary politics, affects, and arts amid ecological disorientation. That the ballet orchestra should figure this relational problem suggests on a surface level that, yes, Bjornerud has a predilection or predisposition for Western art forms. More importantly,

however, this figuration suggests that certain Western music theoretical concepts, such as tempo, and aesthetic values, such as synchrony, participate in conceptualizing an ethical relation between biological and geological processes. By drawing on Western classical musical performance and theoretical concepts to illustrate complex geological processes, Bjornerud seems to understand such musical theories and traditions as harboring an ethical kernel capable of orienting herself and her readers toward the cultivation of timefulness as an ethical sensory practice.

In an inverse relation, Bjornerud also links geology with aesthetic practices as a reminder that the former is a condition of possibility for the latter. The climatic stability of the Holocene Epoch “is arguably the very thing that allowed humans to build civilizations at all” (134). Bjornerud is not alone in referring to Western art music as an index of such “civilization.” Geologist Jan Zalasiewicz, in imagining *The Earth After Us*—that is, a planet after the extinction of humans—wonders about the necessary conditions for a future intelligent life form to discover and decipher artifacts “embodying the essence of humanity.” As examples of this “essence,” he mourns that the creative outputs of Mozart, Schubert, Ellington, Armstrong, and Gershwin would be unlikely to endure in any form of phonographic inscription long enough for others to find or listen to them (Zalasiewicz and Freedman 2008, 236). Such writers link geological conditions and sonic creativity by identifying climatic stability as a condition of possibility for sonic creativity, which itself comes to function as evidence of “civilization” and “the essence of humanity.” If such stability is a historical bygone of the Holocene, and instability and unpredictability are the new normal of the Anthropocene, then the conditions of

possibility for sonic creativity are profoundly impinged upon by climate change. This impingement does not render sonic creativity impossible. On the contrary, these impingements become legible, audible, and encoded in sonic creativity (chapter two).⁵

In contending with this new normal, “the central challenge of the Anthropocene,” according to Bjornerud, is that “there is an immense asymmetry in the time it takes to consume, alter, or destroy natural phenomena compared with the time required to replace, restore, or repair them” (Bjornerud 2018, 157). Daniel Innerarity clarifies that this challenge is defined by how “the destruction of the environment is due to the overburdening of natural cycles of regeneration” (Innerarity 2012, 83). For instance, consider that Western agricultural practices require about a “dozen fossil fuel calories for each food calorie” it produces (Orr 2009, 33). For Bjornerud, this fundamental incommensurability of timescales is one of the problems with geoengineered attempts—no matter how well-intentioned—to “solve,” “manage,” or “mitigate” the carbonification of the Earth and the consequent deterioration of aerobic life’s conditions of livability. Consider, for instance, projects that pursue “biomass energy with carbon capture and storage” (BECCS) and “negative emissions technologies” (see Gough et al. 2018; Bui, Fajardy, and Mac Dowell 2018). By optimizing “efficiency” of carbon capture systems, those behind such projects are contending with the climate crisis as a problem of rhythms, as a problem defined by the need to accelerate rates of carbon removal that are “too slow” relative to accelerating rates of carbon emissions. The Anthropocene’s central

⁵ The question of stability as a condition of possibility for musicking can be framed within deep-historical inquiries such as Gary Tomlinson’s *A Million Years of Music: The Emergence of Human Modernity* (2015) as well as his essay “Two Deep-Historical Models of Climate Crisis” (2017).

problems are problems of outpacing, of a “lack of temporal synchronicity in our lives [that] causes severe dysfunctionality” (Innerarity 2012, 83). Mass extinction is an event defined by environmental changes that outpace evolutionary adaptation. The moral lag of technological societies is defined by rates of technological developments that outpace rates of change in knowledge about the consequences of such developments.

Consumption outpaces restoration (Bjornerud 2018, 157). If one accepts this analysis, how might one intervene, disrupt, or syncopate within the given rhythmic field to provide different conditions for different outcomes? The question becomes almost composerly.

Such problems of outpacing are less causes of the planetary crisis than they are symptoms of a delusional relationship to time. This way of relating to time orients colonial life-making (and -extinguishing) projects and has been made to seem inevitable: it has been so forcefully and pervasively articulated by Western modernity, colonial expansion and extraction, and technological globalism as to appear ubiquitous, unshakable. This modern temporality is defined by “a peculiar propensity for understanding time that passes as if it were really abolishing the past behind it”; it is structured by “epistemic ruptures so radical that nothing of that past survives in them—nothing of that past ought to survive in them” (Latour 1993, 68). This singular temporality, this “one vision or way of experiencing time is cast as the only temporal formation—as the baseline for the unfolding of time itself” (Rifkin 2017, 2). The violence of this temporality particularly undergirds “the contemporaneity of non-natives and Indigenous peoples, the frame for thinking their synchronicity usually is provided by settler discourses, structures, and perceptions” (ibid., 1). Such a temporality posits the

United States as an inevitable and justified polity that must endure, no matter the cost to Indigenous human and nonhuman life. This temporality subtends historical narratives and masquerades as universal. It becomes codified through historiographies that deploy the technique of periodization. This temporality is analyzed incisively⁶ by the Jicarilla Apache philosopher Viola F. Cordova as:

The idea that all human beings exist in a stage either as “modern” (read: European) or on the way to becoming so is a “fact” of Western “knowledge.” There is no awareness here, by the Western thinker, that other peoples are denied the claim to be pursuing a *valid* lifestyle by virtue of having been placed on the Western hierarchical scale of being. (Cordova 2007, 160–161)

Theorists such as Walter D. Mignolo (2011; Mignolo and Walsh 2018), Kathleen Davis (2008) and Nadia Altschul (Davis and Altschul 2009), Rochona Majumdar (2010), and Dipesh Chakrabarty (2009) propound that the historicist convention of situating events into singular, fixed periods amounts to epistemic violence. For instance, Davis (2008) writes about the politics of periodizing as a historical technique by questioning the extent to which periodization is a construct for furthering modern discourses and violence. She argues that “periodization functions as sovereign *decision*,” and not as methodological a priori (ibid., 14). Drawing on Davis, Chakrabarty focuses on how periodization becomes a technique for “objectivist constructions of historical distance,” and asserts the necessity of “disrupting” such constructions (2009, 111).

Bjornerud herself writes that the “‘modern’ idea that only Now is real is arguably delusional” (2018, 164). With this colonization of time comes great power, for “once you

⁶ Scholars across anthropology, history, and philosophy have variously analyzed such temporality. See Johannes Fabian’s *Time and the Other: How Anthropology Makes its Object* (1983); Elizabeth A. Povinelli’s “The Governance of the Prior” (2011); Kathleen Davis’s *Periodization and Sovereignty* (2008); and Dipesh Chakrabarty’s “Historicism and its Supplements” (2009a).

control (the idea of) ‘time,’ you can control subjectivity and make the many march to the rhythm of your own time” (Mignolo 2011, 177). Walter Mignolo summarizes Daniel

Innerarity’s notion of chrono-politics as

a *civilizational* principle that serves to ostracize all who do not conform to the modern conventions of time, that devalues “subalterns” for being slow and not racing toward death, which in the rhetoric of modernity is translated as “progress and development.” Chrono-politics . . . shows how the colonality of knowledge and being is managed by the Eurocentered [*sic*] system of ideas built around the colonization of time. (ibid., 178)

Innerarity himself formulates the relationship between control of time and “who” has power as a matter of “Who regulates timeframes and rhythms?” and “Who can place other people, societies, or social subsystems under time constraints?” (Innerarity 2012, 78). For Bjornerud and other proponents of theories such as the Anthropocene, Gaia (Margulis and Lovelock 1975; Lovelock 2009; 2016; B. Clarke 2017), or the hyperobject (Morton 2013), the contemporary analytical problem is that this “who” is not so much a “who” as it is a distributed, non-local, nonhuman person with planetary agency that pervades micro through macro scales of time and space. Ecological dyssynchrony is a problem defined by the complex overlap of colonial projects and their temporalities, anticolonial ones, and planetary ones. None of these is easily identifiable as a “who,” yet they each produce and contain different subjectivities for relating to life through time. Dyssynchrony results from the fact that they each maintain different “temporal orientations”⁷ toward, for instance, what some might call “oil” and others might call

⁷ Following Sara Ahmed (2006), Mark Rifkin defines “temporal orientations” as “the ways that time can be regarded less as a container that holds events than as potentially divergent processes of becoming” (2017, 2).

“relatives,”⁸ some a “corporation” and others a “person,”⁹ and some an “estuary” or “river” and others a “person.”¹⁰ The political friction and violence that ensue from divergent temporalities results from heterochrony, which is defined by a “lack of synchronicity between diverse social systems” maintained by differently oriented peoples at different scales. Heterochrony gives way to dyssynchrony in which, for example, “the time of the ecosystem [does not coincide] with the time of consumption” (Innerarity 2012, 82). Or in another example figured in more explicitly Western musical terms, “mass extinctions imply that the normally commensurate tempos of evolution and environmental change . . . have fallen out of synchrony” (Bjornerud 2018, 118–19). In still other terms, “what is entirely lost today is the notion of a *harmony* between the micro- and macrocosm” (Latour 2010, 481).

Because these systems’ “dynamics, acceleration, rhythm, and speed are largely independent” from one another, the remaining challenge is “how to mark a rhythm for these times” (Innerarity 2012, 82). The work of chrono-politics is to compose or otherwise design rhythms that reduce the violence of dyssynchrony through arrangements of non-hegemonic synchrony—that is, to “achieve as much balance as possible between

⁸ Here I draw on Max Liboiron’s conversation with Rick Harp and Candis Callison on two episodes of the podcast *Media Indigena*, “Pollution is Colonialism: Part 1 (Ep. 258),” May 27, 2021 <https://mediaindigena.libsyn.com/pollution-is-colonialism-part-1-ep-258> and “Pollution is Colonialism: Part 2 (Ep. 259),” May 29, 2021, <https://mediaindigena.libsyn.com/pollution-is-colonialism-part-two-ep-259>, accessed June 17, 2021. See also Liboiron (2021, esp. 109), Zoe Todd (2017), and Shawn Wilson (2008).

⁹ *Citizens United v. Federal Election Comm’n*, 558 U.S. 310 (2010).

¹⁰ Here I am referring to “bodies of water” that have “struggle[d] to exist” between settler states’ ontological arrangements and Indigenous peoples’ ontological arrangements and practices of care (Povinelli 2016, 100). The Whanganui River was declared to be “a legal person and [to have] all the rights, powers, duties, and liabilities of a legal person” according to “Te Awa Tupua (Whanganui River Claims Settlement) Act 2017,” §14 “Te Awa Tupua declared to be legal person,” date of assent 20 March 2017, <http://www.legislation.govt.nz/act/public/2017/0007/latest/DLM6830851.html>. Following this ruling, Indian courts accorded the status of legal personhood to the Ganges and Yamuna rivers (Safi 2017).

the velocities of diverse social systems and configure democratic rhythms” (Innerarity 2012, 77). How to “formulate modes of thinking that allow synchronizations that are not impositions” (ibid., 84)? And not only cognitive modes of thinking or rationalizing, but attentional practices capable of moving us to such rhythms so that the forms of thinking and living are adequate to the problems with which they contend.

Attunement

At Princeton University in 2015, Dipesh Chakrabarty delivered his Tanner Lecture in Human Values entitled *The Human Condition in the Anthropocene* (2015). In it, he distinguishes between homocentric and zoocentric views. The former constructs the world around a particular definition of “humanity” while the latter positions human lives alongside all life (*zoë*, from the Greek for “life”). The homocentric view is steeped in the discourses and undergirded by the purposes of human management of the environment, geoengineering, climate justice, and human exceptionalism; it is summarized by Indian intellectual Amartya Sen’s statement that “since we are enormously more powerful than other species, . . . [this can be a ground for our] taking fiduciary responsibility for other creatures on whose lives we can have a powerful influence” (qtd. in Chakrabarty 2015, 178). In contrast, the zoocentric view aims to decenter “the human” and to question, reposition, and multiply its dominant, oppressive definitions. Chakrabarty concludes his lecture with a section called “Falling into Deep History” in which the notion of attunement plays a crucial role in articulating what to do with this analysis, how to access it and its affects (ibid., 179).

From these homocentric and zoocentric views emerges a tension that defines the contemporary ecological emergency—namely, that “you do not have experiential access to any of these longer histories” of geological and planetary change “but you fall into a sudden awareness of them” (ibid., 181). Drawing on Karl Jaspers’s and Martin Heidegger’s notions of “mood,” Chakrabarty asks, “how do we think of this tension” which is unresolvable (ibid., 182)?¹¹ Citing Heidegger, he answers that perhaps attunement is a mode of relation more fundamental than cognition, and so “thinking” this tension turns out to be the wrong figure for answering what to do and how to relate to the planetary climate emergency. Instead, he suggests becoming attuned or “awakening to the awareness” of an “aesthetic relationship with this place where we find ourselves” (ibid., 183). The cultivation of such an aesthetic relationship through attunement is important to another theorist of contemporary ecological crises, Timothy Morton. He frames the distinction between cognition and attunement in these terms: “reasoning on and on is a symptom of how people are still not ready to go through an *affective* experience that would existentially and politically bind them to [the climate emergency]” (Morton 2013, 184). Morton and Chakrabarty articulate the need for figures capable of affording affective experiences, figures that exceed but do not wholesale replace reasoning and its experiential affordances when mediated through texts.

Morton explicitly draws from Western classical musical figures, theories, and instruments to develop what he means by ecological attunement. In a characteristically

¹¹ Attunement—or in the original German forms of *Grundstimmung*, *Stimmung*, and *Befindlichkeit*—has a longer history in Western philosophy, a genealogy of which I will not rehearse here. See Heidegger (2010 [1953]), Jaspers (1963), and Zigon (2014).

evocative and veering chapter entitled “Attune,” Morton begins with the premise that nothing can be completely known or accessed, “one can only attune to it, with greater or lesser degrees of intimacy” (Morton 2017a, 151). Attunement names a mode of relating to ever-changing relations within a system. These relations are tuned, designed, or otherwise maintained toward particular ends or to uphold certain values, in the same way that “the strings and the wood and the curvature of the violin form a unit such that tuning the strings by turning the pegs” alters all the relations named by “violin” (ibid., 152). Such tuning practices, like “anthropocentric equal temperament,” can have violent effects (ibid. 156–7). This equal temperament, “by which everything else becomes keyed to our teleological reference tone” (ibid., 156), is constructed to impose a harmonic design on matter and life that, left to attune to their own surrounding relations, would be otherwise tuned. It is a conceptual and practical technology to “eliminate ‘beating,’ the production of rhythmical pulses between tones, because the human manipulator of the instrument should be in charge of beating it according to what the human telos of the tune happens to be” (ibid., 157). Tuning is a sonic figure for understanding how certain values are upheld by design, how systems and their relations are tuned to certain outcomes and not others. Anthropocentric equal temperament one such design for maintaining the anthropocentric view that Chakrabarty identifies and the systems that maintain it.

Morton explains the process by which such tuning systems foreclose or dampen outcomes in favor of others. By way of analogy, he uses anthropocentric equal temperament as an analytic that connects the logics undergirding modern agriculture, linguistic practices, and capitalist economies: “equal temperament dampens the haunting

harmonics of an instrument's timbre, monoculture dampens biodiversity, logocentrism dampens the play of the signifier . . . and the dream of 'ecological' society as immense efficiency (the fantasy of perfect attunement) dampens the uneasy coexistence of lifeforms" (ibid.). It is a design that alters a field of possibility and delimits the possible tones to which we may become attuned. It is a technique for adjusting "the basic tone[s] to which the system is tuning" (ibid., 152). Such tones emanate power such that "attunement [to them] is the feeling of [their] power over me," of being moved (ibid., 162). And what of systems that shirk their own tuning, abdicate their own aesthetics, that sanitize from their attunement spaces the possibility of being moved? This false purity describes much of academic, argumentative writing that operates in the disposition of critique (Latour 2004). In such a space, knowledge workers debunk how "Everyone gets conned . . . except for me, the one who writes the sentence *Everyone gets conned*. . . . All sentences are ideological, except for the sentence *All sentences are ideological*" (Morton 2017a, 163). By identifying such "detuning" or "retuning," Morton highlights the tension between knowledge and the format of its presentation, between ideas and the modes by which they are accessible.¹²

Perhaps this is a problem of control. Attunement is a practice of vulnerability, of openness to that which you relate to but do not control. Perhaps modern Western knowledge practices and institutions are "afraid of . . . the fact that art has an effect on me over which I am not in control" (ibid., 158). Anthropocentric equal temperament

¹² By referring to an idea's "accessibility," I am not invoking debates within speculative realism about "philosophies of access" or "correlationism" (see Harman 2002; Meillassoux 2009). I am merely naming the modes and formats by which ideas are communicated and made sensible, a point which I elaborate throughout this dissertation with respect to "embodied sense-making."

pervades North American academia and is the infrastructure of its knowledge economy. Those who know and make according to alternate tunings only continue to do so from the contradictory space of the “undercommons” (Harney and Moten 2013) or else the system dampens them with its normative tuning. This role of the aesthetic is what North American universities, their inheritors and progenitors “have been trying desperately to delete” as a valid way to know and to be, to make the world (Morton 2017a, 159). It is not enough for anthropocentric equal temperament to merely exist in the world; its designers must protect it from resounding and harmonizing with instruments of alternate tunings like the zoocentric view or one that maintains the role of the aesthetic in contending with a problem like the climate emergency. It expunges alternate tunings so that it alone may delimit the world’s possibility space. It maintains its value by creating artificial conditions of scarcity through the “hegemony of textualism” (Conquergood 2002, 147).

Even when imagining other ways of being, theorists may do so in textual terms. Consider Rosi Braidotti, whose ecophilosophical thought turns to nonhuman forms and “nonverbal communication at its best” as models for other ways of being human (2011, 102). She considers insects as exemplars for enacting nomadic subjectivity insofar as their musicking challenges the limits of human perceptions of time (as sound/pitch/rhythm). The problem, for Braidotti, is not defined by existential lack, for “we inhabit uncoded, posthuman acoustic environments all the time.” It is instead defined by (in)attention: “we just call it ‘nature’ and mostly ignore it . . . we are not used to ‘taking them in’ or to tuning into them” (ibid., 108). In other words, the political

challenge of such subjectivity lies not in creating new worlds amid cosmological monism, but in activating already existing possibilities via the redirection of perception and attention. If only, she concludes in an appeal to attunement, we could “extend our perception, cognition, and empathy far enough to actually inhabit all these possible worlds and do justice to their multiplicity” (109).

Braidotti’s ideas challenge the ethical limits of intellectual conservatism, entrenched liberal humanism, and anthropocentrism. Yet her work reveals the same incommensurability between an idea and the format of its presentation that Morton identified. Braidotti announces an ethical imperative that “requires a transformation of our perceptual apparatus” and a “shift of perspective,” for which “we need to develop new faculties . . . in order to be *tuned into* the nonhuman temporality of our cosmic world” composed of “non-logocentric life” (109, my emphasis). However, she communicates these ideas through linguistic formats conventional to academic economies of knowledge production: books, articles, talks. In other words, ethics and method are misaligned in a state of affairs where “pragmatic action is seldom driven by humanist prose, and only in the rarest of cases are humanities professors placed so as to have much impact on climate policy” (Tomlinson 2017, 19). As Morton writes, “the only thing inhibiting us [from dismantling an anthropocentric world] is our habitual investment in that world” (Morton 2017a, 157). A shift in perspective, perceptual transformation, an extension of capacities, a tuning in—such “ecological awareness” is “a way to take one’s hands away from one’s ears” (Morton 2017b, 62), to reject a system

that would have you willfully attune away from such awareness, to know and to live an alternate tuning.

Voices, Vocalities, Voicings

Earlier in this chapter I showed how different temporalities produce different subjectivities and corresponding values and relational practices. By way of Daniel Innerarity's notion of chrono-politics, I also discussed the analytical difficulty of identifying "who" wields chronopolitical power. Others have posed a similar question, "what kind of subject is nature" (Oyama 2006, 60) by distilling "Nature" into a subject with vocal capacity. Vocality and voicings have gathered intensity as horizons of possibility for rehearsing a politics that challenges anthropocentrism.¹³ Bjornerud writes that "the Earth is speaking to us all the time" (2018, 179). Pope Francis, in *Laudato Si'*, his 2015 encyclical letter on contemporary ecological crises, speaks of both the "the cry of the earth" and the "the cry of nature" and cautions against a failure to adequately listen to them in order to reorient actions (Pope Francis 2015, 35, 87). For Dominic Pettman, imagining and cultivating ways of relating to a *vox mundi*, or to a "non-metaphoric ecological voice" (2017, 66) remains a pressing task for developing social projects and political arrangements commensurate with the crises of global warming. For Amitav Ghosh, the events of global warming throw into relief "the presence and proximity of nonhuman *interlocutors*" in "a universe animated by nonhuman *voices*" (2016, 30, 73). Such analytical usages of vocality to theorize ecological politics are further examples of what I mean by sonic figures for theorizing the disorientation of ecological crises.

¹³ I expand on this in chapter three where I consider protest vocality at Occupy Wall Street and consider the politics of representation in light of invocations of the atmosphere.

Ghosh relies consistently on vocality and nonhuman, planetary, and atmospheric voices in his *The Great Derangement*. He writes of the coeval emergence of artistic and literary avant-gardes, intellectual methods (structuralism, postmodernism, postcolonialism), and increasing atmospheric carbonization that “very few (and I do not exempt myself from this) of the literary minds of that intensely *engagé* period were alive to the archaic *voice* whose rumblings, once familiar, had now *become inaudible to humanity*: that of the earth and its atmosphere” (Ghosh 2016, 124, my emphases). While Ghosh perhaps oversteps in describing the incapacity of “humanity” to be attuned to such voices, his analysis nonetheless reveals the relationship between intellectual and creative labor and planetary ecological processes as one of attunement to voices. This relationship is defined less by such voices’ de facto inaudibility than by practicing ways of listening to them, of becoming attuned to them.

For all the attention to vocality and attunement to nonhuman voices as sonic figures, Ghosh adds a crucial caveat—namely, that vocality is a limited site for individuals to perform moral and political sincerity. Because “the scale of climate change is such that individual choices will make little difference unless certain collective decisions are taken and acted upon,” vocal expressions of political orientation and moral certitude have a limited efficacy because they still exist within rather than reinvent normative infrastructures that subtend their utterance. To think in terms of individual utterances and voices is “to accept neo-liberal premises”—such as a society comprising autonomous individuals whose rights and political representation are mediated by their singular voices—and limit the perhaps more crucial task of practices of attunement that

can be mobilized to redesign new infrastructures (Ghosh 2016, 133).¹⁴ And yet, it is precisely such attunement that opens possibilities “to find a way out of the individualizing imaginary” (ibid., 135).

Perceptual Limits, the Sonic Boom, and the Doppler Effect

UN Secretary-General António Guterres has made sense of his ecological disorientation through the figure of a sonic shockwave: “climate change is moving faster than we are—and its speed has provoked a sonic boom SOS across our world” (Guterres 2018). A sonic boom is the result of an object moving faster than the speed of sound; it is the perceptible shockwaves from such an object. Guterres’s analysis is compelling because it relies on dyssynchrony to show that “we” lag behind “climate change” and that such an object emits a high amount of energy when moving faster than the speed of sound. It is a desperate figure in which “we” are already behind and unlikely to “catch up” or synchronize upon recovering from the shock of its sonic boom. For Guterres, “climate change” is transmitting an SOS, an emergency request for help, in the form of these shockwaves. This figuration invites his audience to imagine themselves as listeners. It posits an auditory-ethical scenario that asks them: Do you hear its message? How are you responding? Guterres’s figure of the “sonic boom SOS” is a version of the ethical refrain that goes “if only ‘we’ listened better, then we might act differently.”

Akin to the sonic boom phenomenon is the Doppler effect, which ecologist Peter Sale uses to explain his perspective on our contemporary ecological predicament as a matter of perceptive capacities and limits (Sale 2011, 153–65). Sale is concerned with the

¹⁴ See also Oyama (2006) on speaking *of* nature, O’Neill (2006) on speaking *for* nature, and Shotter (2006) on “hearing the voice *of* nature.”

Daniel Pauly's notion of "shifting baselines" which explains how scientists "[fail] to identify and use the appropriate reference point, or baseline" for evaluating and responding to changes across time (ibid., 154). To explain this methodological shortcoming, Sale first offers a physical explanation via the inverse square law, which states that "the intensity of a stimulus is reduced at a rate proportional to the inverse of the square of the distance over which it has traveled" (ibid., 157). For example, if you are one foot away from a light, that same light will appear one-quarter as bright if you were now two feet away, and one-ninth as bright if you were three feet away. He invites us to imagine the headlights of an approaching car, where the stimulus is in motion. The inverse square law helps explain why the headlights "will appear to change very little until the last minutes": as they approach us, the headlights exponentially increase in intensity (ibid., 158). This same effect applies if, instead of flashing its headlights, the car were honking its horn. While the car is approaching us from far in the distance, it is difficult to perceive any changes in the horn's intensity. It is somewhat obvious to state, but it is much easier, however, to perceive changes in intensity the nearer the car gets because "the rate of change in the stimuli becomes far greater" (ibid.).

To this physical reason for explaining shifting baselines, Sale adds a "physiological reason"—namely, that human sensory organs like eyes and ears are not "faithful recorder[s] of intensities." Perception of light and sound is a "far more complex process" dependent upon "a set of specialized cells, the sensory receptors," which translate stimuli like sound into electrical potentials via our nervous system (ibid., 158, 159). "Hearing" and "seeing" are thus already processes of translating sound or light into

electrical potentials. Sensory receptors are not faithful translators of stimuli because they activate these potentials at higher rates in response to new stimuli “but become progressively less responsive as the stimulation continues” (ibid., 159). This quality of “adaptation” explains why we can ignore background noise when conversing with someone in a crowd, or why we might become acutely aware if that crowd suddenly fell silent, leaving us the only ones speaking. Adaptation explains why

our sensory systems do a good job of emphasizing edges in space and in time: they tell the central nervous system when stimulation starts, where the edge of a patch of stimulation falls, and when stimulation stops. They are great at detecting change—the more sudden the better—and lousy at reporting unchanged or slowly changing conditions. (ibid., 160)

Hence, it is easier to respond to stimuli that map onto spatial and temporal scales that would trigger embodied responses. A fast-approaching, loud truck will yield different embodied responses from me than will a slow Prius; “the same is true for a predator—or for a threatening environmental change” (ibid.). The consequence of Sale’s physical and physiological explanation is that “we are quite good at dealing with *immediate events* but not at responding to *distant or gradual threats*” (ibid., 161, my emphases). For Sale, establishing meaningful baseline data is a crucial methodological concern for affording greater access to changes that may seem gradual.

More recently, researchers like Tzu-Hao Lin (Biodiversity Research Center at Academia Sinica, Taiwan) have used acoustic methods to establish such baselines in marine ecosystems. Lin uses hydrophone recordings to research changes in biodiversity at the Suiyo hydrothermal vent southeast of Japan. Before it is too late, Lin aims to expand the Ocean Biodiversity Listening Project, a repository of baseline soundscape

recordings of “healthy, deep-sea ecosystems”; he thinks that “deep-sea mining is about to start anytime now” given that deep-sea prospecting has already begun (qtd. in Imbler 2020, n.p.). Such a database may function as an acoustic record against which “future generations will be able to see what biodiversity was like decades ago” (ibid.). Lin’s work (Lin et al. 2019) shares much with Bernie Krause’s earlier soundscape recordings, which functioned as indexes of biodiversity and therefore indicated how ecosystems’ health had deteriorated over several years (Krause 1996; 2012; 2015).¹⁵ Work like Lin’s, Krause’s, and others’ (Sattar, Cullis-Suzuki, and Jin 2016; Sueur, Krause, and Farina 2019; Elise et al. 2019) creates tuning systems in the way that Morton described anthropocentric equal temperament. These baseline recordings establish reference tones or “urgent archives” (Caswell 2021) to which we may become attuned, not only in future acts of passive listening back to *how things were* but to actively delineate possible actions today for *how things might yet be*.

For Sale, human perception and affect unfold at a microtemporal scale¹⁶ while geological deep time unfolds at a macrotemporal scale. Geological and planetary events are therefore less accessible to an experience of the world mediated by microtemporal perception. At first glance, Sale’s formulation appears to invert Guterres’s, in which “climate change” moves so fast that we are left in its shockwaves; it is *its* rapidity and not ours that generates problematic dyssynchrony. But Sale’s view accounts equally for the microtemporality of our perception as it does for the climate emergency’s exponential rates of change. The two are not binarily opposed, they have collapsed into each other

¹⁵ I elaborate on Krause’s work in chapter two.

¹⁶ For more on microtemporal affect see Brian Massumi (2002; 2009).

(Serres 1995, 4; Chakrabarty 2009b).¹⁷ As Sale writes, “the data are accurate, they show the car approaching with its headlights on, but they do not have the urgency of the direct experience” (Sale 2011, 162). The problem is not *whether* one knows that different temporal scales are at play, but of *how* one knows this dyssynchrony. In pointing to the limitations of accurate data, Sale raises aesthetics’ role in cultivating “urgency” to “subjectively appreciate” and “truly appreciate” this dyssynchrony (ibid.). He admits that even though physics and physiology limit our capacity to develop such an appreciation, “we can rise above these limitations and learn *new ways of viewing* environmental change” (ibid., 161, my emphasis). For all his and others’ attention to sonic figures, Sale’s call for “new ways of viewing” equally articulates a need to identify and develop ways of *listening* to contemporary environmental crises because such modes of attunement afford experiential access to the crises in ways that data and textual analysis alone cannot. If an ecologist’s turn to aesthetics and sonic figures to make sense of the problem does not name a need for aestheticizing the problem, then what does?

The Need for Sonic Figures, Methods, and Forms

Together, this partial collection of sonic figures demonstrates the need for relational, sensory, and specifically sonic practices to contend with the disorienting problems posed by contemporary ecological crises. Figures that draw from sonic and musical practices have helped theorists to quite literally make sense of, analyze, and communicate their analyses of ecological disorientation in textual forms. This array of sonic figures

¹⁷ As Chakrabarty writes in more recent work, this is a collision of more than two timescales: “The time of human history—the pace at which we tell stories of individuals and institutions—has now collided with the timescales of two other histories, both deep time, the time of evolution of life on the planet, and geological time” (2015, 179).

constitutes a double analytical reckoning: first, a reckoning with the somewhat obvious realization that “nonhuman forces have the ability to intervene directly in human thought” (Ghosh 2016, 31) and second with sound, its figures, and its capacities to mobilize affects where argumentative prose cannot. This double reckoning is evidence of the impingement of the planetary crises that we differently share. It is an impingement not only upon embodiment and lived experience but also upon the theories, concepts, terms, and figures adequate to analyzing the crises’ complexities. It articulates the need for alternate tunings according to whose frequencies we might perceive, feel, and know this crisis in order to contend with it. That theorists outside music studies’ academic silo have turned to these sonic figures further represents a shared set of possible terms, concepts, and values with which occasions for collaborative thought, making, and pedagogy might take place between those within and outside of music studies. It foretells that “new, hybrid forms will emerge and the act of reading itself will change once again” (ibid., 84). It represents an inroad, a point of contact for music studies practitioners to contend with ecological problems in their professional labor. This analytical reckoning with sonic figures poses compelling challenges to music pedagogy. It challenges music theory instructors to rethink the terms and repertoires they use to teach rhythms, tempi, and tunings in a world whose capacity to sustain aerobic life is daily a problem of rhythmic misalignment. To what extent might music theory participate in formulating “a theory of social rhythm” and a set of practices and pedagogies attuned to our differently shared ecological precarity (Innerarity 2012, 77–89)? Given the theoretical sway of sonic and musical figures for theorists of ecological disorientation, it prompts music theorists

with another reckoning: what theories of music are analytically adequate to contemporary ecological crises and the labor of contending with them?

The emergence of such reckonings—of such questions, hybrid forms, and intellectual fields—is a symptom that “our gaze is turning” (Ghosh 2016, 30), an index of the need for sonic figures, methods, and forms to contend with the disorientation of contemporary ecological crises. The theorists whose work I have considered here perform the necessary labor of identifying this need. But they do not extend their labor to consider how this need for sonic figures implicates a need for sonic formats commensurate with the content of their incisive, written propositions. Recall Braidotti’s call for “tuning in” and Pettman’s invocation of nonhuman voices. Even Sale, whose discourse is steeped in the “hard” sciences concedes that, though we may seem bound to physics and physiology, “we also have culture, language, rationality, and the collective memory that language has provided” to enact other options (Sale 2011, 161). Chakrabarty’s analysis identifies the urgent task of “motivating globally coordinated human action on global warming,” which “necessarily entails the difficult, if not impossible, task of making available to human experience a cascade of events that unfold on multiple scales, many of them inhuman” (Chakrabarty 2015, 183). If not through the cognitive labor of parsing texts like his own, then through what other forms might academic laborers design occasions that would make these complex crises “available to human experience”? For me, this critical work of identifying limits and insufficiencies is not an end result of analysis, but a point of departure for delineating actions and building forms capable of

fostering other relational outcomes than the production and consumption of texts alone might afford.

For others, art represents a set of aesthetic practices capable of doing precisely such labor. Bjornerud understands aesthetic practices to address the “need [for] a new relationship with time,” as a domain of sensibility for modeling such temporalities, as a practical intervention in the dyssynchrony of temporal regimes (Bjornerud 2018, 162). Such practices involve “learn[ing] to adjust our pace to the tempos of the Earth” by cultivating a “polytemporal way of thinking,” feeling, and being (ibid., 177, 163). She names “time-transcending art projects” that model “alternative relationships with time” and “reframe the way we think about ourselves in time” (ibid., 167, 169), including Rachel Sussman’s photographs of millennia-old organisms, On Kawara’s *Today* series, Katie Patterson’s *Future Library* and other geological works, John Cage’s *Organ²/ASLSP* (*As Slow as Possible*), and Daniel Hillis’s “10,000 Year Clock.” In chapter three, I turn to projects like these and others that model other ways of perceiving, feeling, knowing, and orienting toward our contemporary ecological crises. Morton distinguishes between modes of cognition and attunement, writing that “we need art that does not make people think . . . but rather that walks them through an inner space that is hard to traverse” (Morton 2017, 157). Such projects prioritize quality of coexistence over depth of argument because one mode, better than the other, helps us “[find] other ways in which to imagine the unthinkable beings and events of this era” (Ghosh 2016, 33).

Like the analyses I have gathered here, my own analysis of the state of academic labor at the intersection of sonic creativity and the climate emergency is just that—an

analysis. It is not an end, but a point of departure. It clarifies a set of problems and absences *in order to* design practices and pedagogies for contending with ecological disorientation and reorienting academic labor's possible relational configurations and outcomes. Chapter two continues this chapter's analytical mode by presenting music studies practitioners' reckonings with the climate emergency. Chapter three pivots to works of sonic creativity that model other relational configurations between bodies, senses, affects, ethics, land, and life. I use later chapters to present my own proposals for sonic creativity's role in reckoning with ecological disorientation and in reconfiguring and reorienting academic labor's values, methods, forms, and outcomes toward a state of greater alignment and commensurability with the emergency subtending the relations that compose the very conditions for aerobic life.

Chapter 2: Reckoning with Ecological Disorientation in Ecomusicologies and Music Studies

One needs to question whether the central objective of sound/music scholars concerned with the environment is to create a sub-disciplinary field centered on the issues of “nature, culture, and music” or, to the contrary, to take the time to drastically rethink the political implications of keeping the underlying ontology that such a relation implies. (Ochoa Gautier 2016, 140)

This chapter is dedicated to Ana María Ochoa Gautier, whose thinking has had the profoundest impact upon me.

Introduction

This chapter presents and analyzes a range of music studies practitioners’ reckonings with the climate crisis. While each practitioner whom I consider advances distinct ideas, I take the analytical liberty to organize their work into six general fields of reckoning: ecomusicologies, “music ecology,” acoustic ecology, environmental music and sound art, speculative musicologies, and acoustic multinaturalism. In offering an overview of each of these fields of reckoning, I attend to their objects of inquiry; matters of concern; methods; formats; outcomes; values; assumptions; how each operationalizes “culture,” “nature,” and “music”; what each sees as a problem; and what each proposes as a solution. As I make my own proposals for reorienting music studies practitioners’ labor to contend with ecological disorientation, I consider what these fields of reckoning afford and foreclose.

Decolonial theorists and anthropologists have problematized “nature” as a conceptual ground for thinking “cultural” difference (Descola 2013a; Descola 2013b) and situated it within colonial logics and practices for legitimizing the ravishment of land, women, and enslaved people (Federici 2014; Federici 2019; Mignolo 2011; Tinsley

2010). Others propose an “ecology without nature” (Morton 2009) while still others reject the anthropocentrism that frames much Western academic discourse concerning contemporary ecological crises and cultural forms (Avelar 2014). While I do not summarize such literature here, I do extend its critical impulses to consider how music and sound studies scholars and practitioners of “environmental sound art,” for example, tend to forgo the labor of historicizing the practices, forms, and concepts that sustain their work. In doing so, they leave the crucial terms of their work—“nature,” “culture,” “environment,” “music”—unproblematized givens for their musical thought and practice. The epistemological result is that they sidestep “the problem of ‘difference,’” subsuming it into universalizing and relativistic epistemologies (Ochoa Gautier 2016, 135). The ontological and political result is that the labor of music studies and the possible worlds it can imagine and enact are limited by not contending with the differences produced by ecological disorientation.

What follows is a critical departure point for making my own proposals for reorienting the labor of music studies toward alignment with the exigencies of the climate crisis. It hews closely to the analytical methods and aims of Ana María Ochoa Gautier’s essay, “Acoustic Multinaturalism, the Value of Nature, and the Nature of Music in Ecomusicology” (2016). I draw extensively from her essay, which I view as proposing reorientations amid disciplinary and methodological disorientation. I also consider the extent to which music studies practitioners have substantively engaged—or in most cases how they have *not* engaged—Ochoa Gautier’s essay since the roughly half-decade since its publication. As the practice of music studies struggles to endure in North American

humanities institutions, what do these visions for the futures of music studies promise and portend? Which epistemologies do these reckonings uphold? Which worlds do they seek to make, unmake, or remake? What outcomes are foreclosed by delimiting the terms and methods of the conversation to some intellectual traditions and what outcomes become possible by attending to yet other intellectual traditions?

The Problem of Indistinction

That such reckonings exist—with a range of methods, inquiries, and values—evinces the extent to which ecological disorientation has impinged upon music studies practitioners’ labor. These reckonings may be understood as labors of contending, as “type[s] of analytical labor” for grappling with ecological disorientation and thereby with “the political purposes of music scholarship” (Ochoa Gautier 2016, 114). Each offers a partial response to the question *what theories and methods are adequate to the crisis, especially those concerning sound, music, and listening?* While the range of responses to this question is seemingly daunting, each differently confronts what Matthew Calarco calls “indistinction” (2015). Indistinction is an epistemological effect of ecological disorientation that calls into question how that which might have been understood to be distinct is in fact not distinct but in relation. Indistinction is perhaps an initially foreboding term because of its negative prefix. Achille Mbembe helps us to understand indistinction in positive terms, whereby the events of the climate emergency result in “an age of entanglement” defined by “distributed agency and . . . the rejection of Cartesian dichotomies between subject and object, society and nature, human and nonhuman” (Mbembe 2017). And though not explicitly using the language of indistinction, Ochoa

Gautier offers a helpful statement for constellating the meanings of indistinction as “part of the broader change of the relation between the human and nonhuman sciences, between ontology and epistemology, due to the contemporary irruption of ‘nature’ as an unsilenceable political category in the affairs of the social sciences and the humanities” (Ochoa Gautier 2014, 213). The climate crisis intensifies indistinction’s reach even into fields such as music studies, ecomusicology, and their practitioners’ reckonings.

Theorists of indistinction contend with the epistemological tension between Western modernity’s foundational distinctions of human/nonhuman and culture/nature and the blurrier fact of ecological coexistence. From this tension between ontological perspectives emerge distinct ethical orientations toward the living world: zoecentrism and anthropocentrism. In alignment with zoecentrism, indistinction theorists “develop ways of thinking about human beings, animals, and ethics in a manner that radically displaces human beings from the center of ethical reflection and that avoids many of the exclusions associated with lingering forms of anthropocentrism” (Calarco 2015, 50). Those who embrace indistinction resist anthropocentrism. They advocate for something like what Dipesh Chakrabarty calls zoecentrism. Chakrabarty (2015) defines zoecentric views in contrast with homocentric ones, where homocentrists construct the world around a universal definition of “humanity” (for critique of which, see Wynter 2003). For homocentrists, differences across the spectrum of life are collapsed into a universal lens through which ontological differences are interpreted, understood in the image of the universal, and subsumed into the life-making regimes of the universal. Adherents of zoecentrism, in contrast, position the multiplicity of human lives alongside all life or *zoë*

(from the Greek for “life”). Those who embrace homocentrism (per Chakrabarty) or anthropocentrism (per Calarco) “place human beings at the center of ethical reflection” and “[seek] analogues of the human” in all other forms of life (Calarco 2015, 50). These centrism perform the labor of contending with difference and organizing such difference into ethical perspectives. They are cosmological devices for making worlds within and against whose limits political struggles of existence unfold (Povinelli 2016). They organize music studies practitioners’ reckonings with ecological disorientation and the indistinction it generates, especially regarding how they accept, reject, or otherwise operationalize “culture” and “nature.” How one orients toward indistinction and toward difference is existentially fundamental, and thus fundamental to knowing, studying, and making musics as part of ecological coexistence.

If indistinction challenges music studies practitioners, Bruno Latour helps us to understand how nature is not given and therefore neither singular, as in mononaturalism, nor universal. What to do, then, in the absence of nature as an organizing principle for directing and delimiting our labors of inquiry and creativity? “Nature is not a thing, a domain, a realm, an ontological territory. It is,” Latour writes, “a way of organizing the division . . . between appearances and reality, subjectivity and objectivity, history and immutability” (Latour 2010, 476). With such binaries, “nature” creates a “difference of potential” that is epistemologically foundational to modernity, its modes of inquiry, and its forms of creativity.¹⁸ Hence, the crucial question that the climate crisis raises is one of indistinction: “what it is to live without this difference of potential” (Latour 2010, 477).

¹⁸ For extended engagements with Western modernity’s epistemological foundations, see Latour (1993) and Mignolo (2011); for a pithier gloss, see Chuh (2020, esp. 174–77).

In other words, indistinction forces practitioners to contend with the degradation, transformation, or absence of “nature” as an organizing principle, a progenitor of potentials. In Ochoa Gautier’s terms, this is the problem posed by the “irruption of Gaia” or, in Isabelle Stengers’s terms, by “the intrusion of Gaia” (Ochoa Gautier 2016, 114–17; Stengers 2009; 2015; 2017). Ecological disorientation confronts practitioners with indistinction, and thereby confronts us with the necessity of asking: how to delimit my labor in the face of indistinction? With what conceptual grounding do I differentiate that which I presume to be distinct? Or as Aaron S. Allen and Kevin Dawe ask, “How do humanists contribute to confronting some of the gravest threats to humanity, and how, in particular, can music scholars contribute to the study of the environmental crisis?” (2016, 10).

For a visual organization that coordinates this chapter’s framework and the interrelations of thinkers, terms, and orientations that follow, refer to **Figure 2.1**. To orient readers to this visualization, the left column depicts the multiple registers or scales considered throughout the chapter. The upper-level problem is ecological disorientation (which is itself an effect of the broader climate crisis, as I clarify in the introduction of the dissertation). One effect of ecological disorientation is the production of indistinction, which I elaborate in the immediately subsequent paragraphs. The chapter is organized around three orientations toward ecological disorientation and its production of indistinction: indifference, identitarianism, and multinaturalism. The indifferent orientation operates in a mode of avoidance. By contrast, identitarianism and multinaturalism both contend with ecological disorientation, but the two differ in that

identitarianism avoids indistinction while multinaturalism contends with it. Finally, at the specific register of music studies fields and methods, I specify ecomusicology, acoustic ecology, and environmental sound art/music as perpetuations of identitarianism; throughout the chapter I demonstrate why. At the same register, Ochoa Gautier's proposal for acoustic multinaturalism is an instance of the multinaturalist orientation. Drawing explicitly on the anthropological and methodological insights of Anthony Seeger (1981; 1987), Steven Feld (1982), Eduardo Viveiros de Castro (1998; 2014), and Roy Wagner (1975), Ochoa Gautier's essay does much to explain what we might understand as the epistemological incommensurabilities between ecomusicology and acoustic multinaturalism as distinct orientations.

Given my frequent appeals to Ochoa Gautier's analytical labor, I want to clarify that I am not casting multinaturalism as a prescriptive program, nor as a panacea that stands binarily opposed to the identitarian orientation; in fact, they share an orientation toward the climate crisis and ecological disorientation even if their methods, assumptions, and values diverge from there. Hence, readers may wonder what it would look or sound like to "adopt" a multinaturalist orientation and its ensuing ethics, pedagogies, and creative practices. In response, I would say that I am not advocating practitioners to explicitly "adopt" the name of multinaturalism or even its complete intellectual genealogy (though surely an understanding of the latter would be beneficial). If not in the name of "multinaturalism," what I advocate is an intellectual, ethical, and sonic creative practice that contends with ecological disorientation and its production of indistinction through a shared orientation toward the assumptions and values that inhere

to and ensue from a multinaturalist orientation. In short, a practice that furthers a multinaturalist ethic is not the same as “multinaturalism.” This is both a thorny and delicate matter that I endeavor to both clarify and treat with care in what follows.

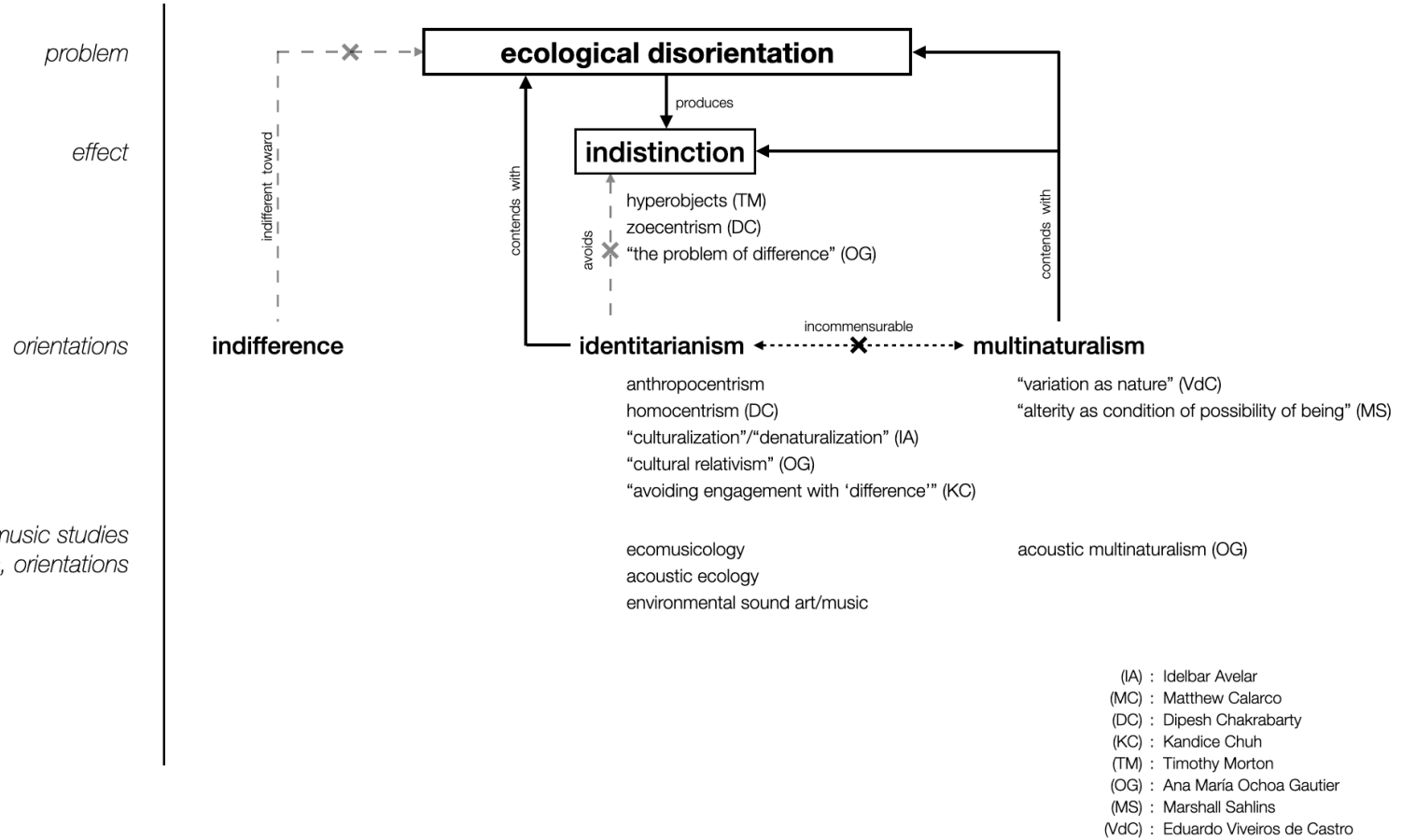


Figure 2.1: Visual summary of this chapter's framework, key thinkers, terms, and orientations.

Indifferent and identitarian orientations

In response to ecological disorientation and the eroding tenability of “nature” as an organizing principle,¹⁹ music studies practitioners (excluding Ochoa Gautier and others I will discuss) have assumed primarily two postures: indifference and identitarianism.

Indifferent practitioners conduct their work in a business-as-usual manner while avoiding the need to respond to, reconfigure, or reflect on necessary changes. Such practitioners assume a posture of willful paralysis. Their omission of the climate emergency does not necessarily indicate ethical ambivalence on the topic, but it does not necessarily indicate ethical concern either. For them, the climate crisis is at best a special topic only tangentially aligned with Euro-American music studies’ traditional methods and matters of concern. At worst, the climate crisis and fundamental questions concerning ecological conditions of possibility are unjustifiable distractions improper to music studies. In neither case of indifference does the crisis compel interrogation, reorientation, or action.²⁰ One might sketch the institutional contours of the indifferent orientation by surveying the award-winning scholarship recognized by the American Musicological Society and the Society for Music Theory.²¹ Indifference in music studies may even take the more active

¹⁹ On Western music studies debates concerning music’s and sound’s positions relative to “nature” and “culture,” see Clark and Rehding (2001) and Sterne (2003).

²⁰ I do not think that all music studies practitioners must or should organize their labors around ecological disorientation. I do not assume the militant posture of prescribing a research program. I do, however, conduct this research to constellate a spectrum from absolute indifference to absolute dedication in hopes of orienting more music studies practitioners away from indifference and toward some median. A study of music indifferent to the crisis is a study of music in crisis and one unlikely to endure.

²¹ AMS award winners can be surveyed at <https://www.amsmusicology.org/page/awards>; likewise for SMT, see <https://societymusictheory.org/archives/awards/publications>. The Society for Ethnomusicology’s recent awards, available at https://www.ethnomusicology.org/page/Prizes_Home, recognize scholarship that explicitly contends with the ecological crises; see especially recipients of the 21st Century Fellowship at https://www.ethnomusicology.org/page/Prizes_21stCentury, such as Keisuke Yamada and Tyler Yamin.

form of “the rejection of the drastic need to rethink the political stakes provoked by climate change” (Ochoa Gautier 2016, 123). I will return the favor of not paying this indifferent posture further attention beyond identifying its lurking existence. The identitarian posture, however, I consider in further detail.

Identitarian practitioners are so-called because they mobilize a *particular* identity as a *universal* category under which differences are sensed, made sense of, and subsumed. From such subduction of difference emerges a cosmology and a premise for theorizing, articulating ethical positions, and advocating actions. Moreover, the limited archives from which they theorize—European and American sound art and composition (Gilmurray 2016), Western classical music (e.g. Currier 2014; Rehding 2002; Grimley 2011; Von Glahn 2011; Watkins 2011)—belie the universal reach of their claims. As Peter McMurray writes, “ecocritical musicology formulates many of its touchstone ideas (nature, environment, ecology) from within the relatively narrow scope of white European and North American thought” (McMurray 2021, 81). The posture of the identitarian is dominant, whether willfully or not.

Identitarian practitioners “often start with human-centered ethical frameworks and then seek to demonstrate that these frameworks extend . . . outward from human beings to include animals, thereby founding continuity on the basis of animals exhibiting certain human traits or capacities” (Calarco 2015, 49). This identitarian posture is analogous to anthropocentrism or homocentrism (to use Chakrabarty’s term). It is also analogous to what Idelber Avelar identifies as humanities practitioners’ tendency toward “denaturalization” or “culturalization” whereby “traits assumed or mistaken as natural”

are “unveil[ed] as cultural” (Avelar 2014, 108–9).²² The result of this culturalization tic is that “nature” is only negatively defined and singular as opposed to positively defined and multiple, as in “natures” that can be multiply framed but not contained by an orientation of multinaturalism (*ibid.*). Identitarian practitioners may operate out of ethical concern for the climate crisis and ecological problems. But because their frameworks caliper difference from a singular, universal referent, the effects of their ethical claims are subsequently limited. For instance, they may end up hierarchizing sentient mammalian beings that most resemble human anatomical forms over other life such as plants, or over sedimented forms of “non-life” comprising once-living beings undergoing geological transformations.²³ In the context of the climate crisis, identitarian practitioners contend with their ecological disorientation but tend to advance their ethical claims from a series of epistemological unthoughts. While unthoughts are by definition absences in the framing of an inquiry, they are absences that nonetheless have pervasive and normative effects on the system in which they circulate.

Identitarian thinking can be recognized by its preoccupation with “aboutness,” which Kandice Chuh helps us to understand. In her refusal of such “identitarian logics,” Chuh views them as “intimately linked to the compulsory normativity naturalized through the institutions and epistemologies of modernity” (Chuh 2020, 174). In positive

²² For an example of “culturalization”/“denaturalization” in recent ecomusicological discourse, consider Jeff Todd Titon’s position that “we would do well to examine how ideas of nature are embedded in culture, how science constructs nature, and how economic rationality constructs the environment” (2020a, 224).

²³ For a “defense of a sentiocentric approach to environmental ethics,” see MacClellan (2012). On “plant blindness” and its far-reaching effects see Wandersee and Schussler (1999); Balding and Williams (2016); and Ryan (J. Ryan 2012). For a critical perspective of “centrisms” themselves in environmental ethics and for an alternative approach, see Samuelsson (2013). On the mattering of geological “non-life,” see Povinelli (2016).

terms, identitarian practitioners are fixated with identifying a topic's or a field's "aboutness." In an extension of property logics to the domain of knowledge work, they territorialize this aboutness once it has been identified. Why do this? Because identification and territorialization are tactics for avoiding difference. In negative terms, the identitarian's inquiries into "the determination of what something . . . is 'about' . . . often [are] conducted as a way of *avoiding engagement with 'difference'*" (ibid., 174, my emphasis). Writing specifically about racialized difference within academic knowledge economies, Chuh understands the identitarian fixation with aboutness as a tactic of avoidance that "preserves the (racist) epistemologies of (neo)liberalism through a reproductive logic that is utterly unqueer" (175). For instance, the academic industry's politics of aboutness manifest "in such ordinary academic activities as the creation of doctoral exam lists, course titling, and departmental hiring practices," and as the fixation with subject-matter expertise (174). Within music studies specifically, the identitarian orientation is a symptom of "the dogmatism of mastery-of-field ideology" that pervades, territorializes, and codifies its proper labor, forms, and relational practices.

Ecomusicology's identitarianism favors a definitional logic, thereby sidestepping the labor of contending with difference as fundamental to its inquiry. This work of contending with difference is, as I understand it, the crux of Ochoa Gautier's critical perspective of ecomusicology. It is also this crucial point that ecomusicology's defenders appear to overlook, on which I elaborate below. Insisting on definitions and aboutness, its practitioners negatively relate to difference through culturalization and multiculturalism;

they subsume difference into a singular epistemological frame (i.e., “culturalization”) within which fundamental differences go unthought or uninterrogated.

Extending Chuh’s work on racialized difference and the emergence of racialized categories of literature helps us to understand ecomusicology’s identitarian underpinnings. Chuh exposes the intellectual aridity of aboutness, the peculiarity of “the logic/world within which it is sensible to ask, What is Asian American literature *about*? Or, . . . What is Asian American/queer/black/feminist/brown *about* that piece of writing, music, criticism?” (175, *passim*, my emphases). Rather than frame her work around such “intellectually impoverished questions,” Chuh advances a non-identitarian, relational orientation toward “knowledge formations . . . that might result from thinking knowledge in terms of the worldliness of affective relationality.” For Chuh—whose work closely aligns with that of José Esteban Muñoz (2009; 2013) and draws on Jean-Luc Nancy’s thought (2000)—such relationality extends from a queer orientation toward aesthetics and worldmaking. Here, queerness could be thought of as “a mode of ‘being-with’ that defies social conventions and conformism and is innately heretical yet still desirous for the world, actively attempting to enact a commons that is not a pulverizing, hierarchical one bequeathed through logics and practices of exploitation” (Muñoz 2013, 96). Neither Chuh’s nor Ochoa Gautier’s analytical labors function in the negative mode of critique as destruction (see Latour 2004; Sedgwick 2003). Nor do they seek to subsume difference into a singular framework. Instead, they focus on relationality and ways of orienting toward the world and its differences as conditions of possibility for living in it.²⁴

²⁴ Following an identitarian logic, one might initially fault Ochoa Gautier for not explicitly engaging such a queer approach or naming it as an analytic in her essay. Yet her essay is undeniably queer to the extent that

Within music studies, I use “identitarian” to refer primarily to those who contribute to and sustain the projects of ecomusicology and acoustic ecology. Their ethical projects begin as responses to environmental crises, but the conceptual frameworks underwriting them tend toward identitarianism. Ecomusicology’s conceptual foundations reinforce rather than contextualize or challenge the distinctions upon which the notions of “nature” and “human” are based (Ochoa Gautier 2016). This identitarian response seeks analogues in “nature” of (usually) Western classical music, which amounts to “dissolving the human into the natural through a transhuman extension of music or sound” (Ochoa Gautier 2016, 132). Examples of (eco)musicologists’ or acoustic ecologists’ identitarian extensions of human capacities include Bernie Krause’s *The Great Animal Orchestra* (2012), Jonathan Gilmurray’s introduction to *Environmental Sound Artists: In Their Own Words* (2016) and R. Murray Schafer’s Western musical cosmology evident in the following statements: “I am going to treat the world as a macrocosmic musical composition” and “Behold the new orchestra!” (1977, 5). Ecomusicology could benefit from “theoretical approaches that question the relation between ontology and epistemology in such a way that naming is not confused with *inaugurating* a topic” (Ochoa Gautier 2019, 269).

As Ochoa Gautier’s essay does, following this non-identitarian orientation involves “acknowledging the historicities of knowledge work, which can readily explain the externalities of knowledge formations from each other” (Chuh 2020, 175). Ochoa

its sustained analysis of ecomusicology does not stop at identifying its identitarian conceptual grounds; it also offers practitioners another epistemological, relational option for orienting toward the shared problematic of nature, culture, music, sound, and the urgency of contemporary ecological crises.

Gautier's essay exposes ecomusicology as a particular knowledge formation whose historicity, once clarified, reveals the values and assumptions undergirding it. Such awareness is crucial, first, to understanding ecomusicology's "priorities and paradigms and pedagogies" (Chuh 2020, 175–76, *passim*). Second, it "illuminate[s] the structured conditions of possibility that subtend the forms" ecomusicology has taken "and the principles by which [it was] established and organized." Finally, cultivating such awareness "provides entry to the embeddedness of the academy in the social realm in ways that illuminate the mobilization and participation of the university in the shaping of the social itself." Hence, what follows demonstrates ecomusicology's identitarian tendency, which, in different terms, was the object of Ochoa Gautier's sustained analysis of the field. Some of ecomusicology's practitioners and commentators are aware of this tendency, as I will discuss. But such awareness does not change ecomusicology practitioners' fundamentally identitarian orientation toward the problematic of nature, culture, music, and sound. I offer this review of the field alongside a partial timeline of key publications relevant to the field not as a critical end in itself. To do so would not significantly contribute to the conversation beyond Ochoa Gautier's essay. I undertake this critical labor in order to pivot to the remainder of my dissertation's proposals for reorienting toward the problematic named here.

Ecomusicologies and "Music Ecology"

Addressing the field of ecomusicology as a coherent, singular whole is a fool's errand. However, by considering those whose works have helped shape its shared values, methods, and assumptions helps us to understand the dynamics of its epistemological

foundations. I consider here a core body of works that have articulated key values, methods, archives, intellectual precedents, and disciplinary connections for what we might understand in the plural as “ecomusicologies,” following Allen and Dawe (2016, 2). Especially relevant in this critical review are the uses of “nature” and the role of sustainability in variously shaping ecomusicological discourse.

Frameworks for understanding ecomusicologies and bibliographic timeline

To begin, consider Brent Keogh and Ian Collinson’s distinction between “music ecology” and “ecomusicology.” As they write, works of *music ecology* claim that “music behaves like nature, or that music can be understood via ecological analogies.” Works of *ecomusicology* possess a “political consciousness connected to ecocritical approaches to the study of music and sound” (Keogh and Collinson 2016, 8, 4). Ecomusicology’s connection to ecocriticism conforms to Ochoa Gautier’s analysis of literary ecocriticism as framing ecomusicological analyses of music and sound (Ochoa Gautier 2016, 110). It also conforms to Allen and Dawe’s own statement that “rather than as ‘ecological,’ the ‘eco-’ prefix [in ‘ecomusicology’] is better understood as ‘eco-critical,’ referring to ecological criticism, which is the critical study of literary and other artistic products in relation to the environment” (Allen and Dawe 2016, 2). Further evidence of ecomusicology’s epistemological affinities with ecocriticism is apparent in the American Musicological Society’s 2007 establishment of the Ecocriticism Study Group, whose webpage (www.ams-esg.org) is now defunct (Allen 2011a, 391n2). Within Keogh’s and Collinson’s distinction, music ecology is exemplified by Bernie Krause’s view that “music” is an “acoustic mirror” that “reflects our culture and our surroundings at any

point in time” (Krause 2012, 121). Holly Watkins likewise suggests “musical ecology” as preferable to “ecomusicology” (Watkins 2011, 405n5). Ecomusicology is exemplified by the 2011 colloquy in the *Journal of the American Musicological Society (JAMS)* (pp. 391–424), comprising short essays by Allen (2011a; 2011b), Grimley (2011), Rehding (2011), Von Glahn (2011), and Watkins (2011), in which Allen acknowledges that “a primary background [for ecomusicology] is ecocriticism, or ‘ecological criticism’” (Allen 2011a, 393). Other exemplars of ecomusicology within this framework include Dawe (2016), Ingram (2006; 2010), Pedelty (2012), and Ryan (2015).

Jeff Todd Titon’s distinction between “representational” and “direct” approaches to ecomusicology is another helpful frame for clarifying ecomusicologies’ varying approaches. For Titon, the *representational* approach considers “how musical works represent nature” and the *direct* approach considers “music’s direct impact on the environment” (Titon 2020a, 226).²⁵ Exemplary of the representational approach is the critical discourse about John Luther Adams’s music, as well as his own writings (Adams 2006; 2009; Herzogenrath 2012). We might consider work on the materiality of musical instruments and recording and listening technologies exemplary of what Titon calls the direct approach, even if their authors do not explicitly name their work as such (Allen 2012; Devine 2015; 2019; Yamada 2020a; 2020b). The categories outlined by Titon and by Keogh and Collinson exhibit a degree of overlap. For instance, music ecology’s reliance on ecological analogy for the interpretation of music is consistent with the

²⁵ Titon published “The Nature of Ecomusicology” (2013) before the publication of *Toward a Sound Ecology* (2020), which includes the essay (pp. 223–35). For simplicity, I will cite here the 2020 publication, which as far as I can tell has been unaltered since the 2013 publication.

representational approach, especially regarding the shared assumption of a singular nature as an organizing principle for their analyses. And John Luther Adams's writings can be understood as both representational and in alignment with music ecology (Adams 2006). Keogh and Collinson's and Titon's frameworks provide useful language for identifying how ecomusicologies differ with respect to their aims, their objects of inquiry, their modes of comparison, and their epistemological foundations.

A number of works with a range of approaches precede the proliferation of this twenty-first-century ecomusicological discourse in the Euro-American academy. William Kay Archer's (1964) short essay on an "ecology of music" has been cited as an early instance "in which music is framed in ecological terms" (see Keogh and Collinson 2016, 2). Setting aside earlier texts on "music and nature" (see Gardiner 1832) and "rhythm in nature" (see Dewey 1934, 147), I would add Rachel Carson's *Silent Spring* (1962), which was hugely impactful on American environmental discourse and politics, as a work borne from a question of ecological attunement: "what if spring was no longer heralded by the sound of the singing birds?" (Whitehouse 2015, 54). R. Murray Schafer's (1977) work on soundscapes is an oft-cited precedent especially for work in the vein of acoustic ecology (see Krause 2012; 2015).²⁶ Anthony Seeger's (1981; 1987) and Steven Feld's (1982) anthropological contributions to understanding and complicating the nexus of sonic practices, Indigenous acoustemologies, natures, and cultures are key to Ochoa Gautier's critical review of ecomusicologies. In short, the omission of Feld's and Seeger's insights

²⁶ For a critique of Schafer's settler colonial politics in his aesthetic and intellectual endeavors, see Lee Veeraraghavan's dissertation, "Dirty Ears: Hearing and Hearings in the Canadian Liberal Settler Colony" (2017). See also Dylan Robinson's *Hungry Listening: Resonant Theory for Indigenous Sound Studies* (2020), especially the introduction and chapter four.

and the Indigenous acoustemologies on which they are based, reflects ecomusicologies' tendency toward an unproblematic understanding of nature.

In the early 2000s, Alexander Rehding published an article titled "Eco-Musicology" (2002). In this review article, Rehding surveys German-language musicology books by Helga de la Motte-Haber, Peter Schleuning, and Roland Schmenner. Despite its title, Rehding's article does little to expand on ecomusicology beyond "the study of nature in music" in which "perhaps ecological and musicological interests can be seen to converge" (2002, 319). In Rehding's piece, the representational and music ecology approaches are evident. Rehding contrasts de la Motte-Haber's, Schleuning's, and Schmenner's views on "nature" as they consider discourses of "the pastoral" and debates over musical mimesis of "nature." While it is easy to agree with Rehding's conclusion that "the study of nature urges us to pose anew the old question: what is this stuff called music?" (ibid., 320), his and the three authors' are hardly critical examinations of "nature." Instead, they consider entirely Euro-American musical repertoires, mostly classical music of especially Beethoven and Bach, in order to maintain pastoralist understandings of a singular nature. Within Rehding's and these three authors' imagination of "the study of nature in music," both "nature" and "music" are firmly overdetermined within the imaginaries and practices of Euro-American classical music and the notion of a singular, pastoral nature.²⁷

²⁷ What's more—and what has gone unrecognized in citations of Rehding's piece—his statement that "there is only one way in which Schmenner's approach can be adequately appreciated: this man has balls" reveals his sexist assumption of masculinity as a priori intellectual value and substance. Rehding's conflation of the possession of male sex organs with intellectual achievement is a further perpetration of an identitarian logic, in this case a sexist one.

Following Rehding's 2002 essay, at least two events helped institutionalize ecomusicologies into a "critical mass of publications" (Pedelty 2020, 312).²⁸ The first is Jeff Todd Titon's blog, *Sustainable Music* (2008), to which he has actively contributed since its 2008 inception. This blog demonstrates the enduring importance of sustainability as an ethical goal of ecomusicological work, an idea that Titon developed the following year in the article "Music and Sustainability: An Ecological Viewpoint" (2009) and in later publications such as "Sustainability, Resilience, and Adaptive Management for Applied Ethnomusicology" (2015) (see also Titon 2020a; 2020b). These works center sustainability and musical heritage as key to the ethical outcomes of ecomusicological labors, which has featured in the thinking of a number of subsequent authors such as Catherine Grant (2012; 2014; 2016), Mark Pedelty (2012; 2013; 2016, 255), Marc Perlman (2014), and Huib Schippers and Catherine Grant (2016). The second event is the ecomusicology colloquy issue published by *JAMS* in 2011. As mentioned above, this issue comprises essays by Allen (2011a; 2011b), Grimley (2011), Rehding (2011), Von Glahn (2011), and Watkins (2011). For the contributors to this colloquy, sustainability is less prominent as an organizing concept or ethical outcome. The *JAMS* colloquy is significant because, as the partial timeline I present in **Figure 2.2** helps to show, its contributors' essays have helped to shape much of the terms, methods, and epistemological underpinnings of ecomusicological endeavors, especially as stemming from the methods and concerns of ecocriticism.

²⁸ For a broader overview of ecomusicological events, institutions, and publications, see Allen and Dawe (2016, 3–4).

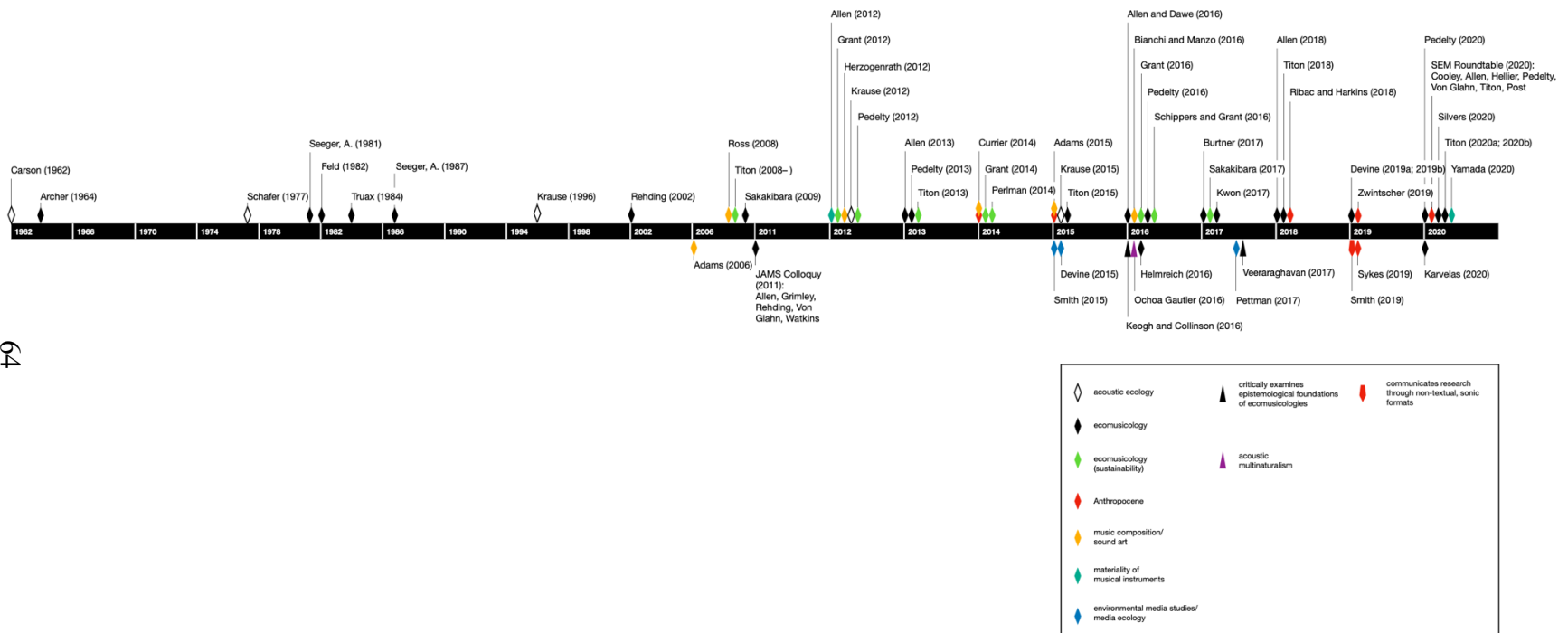


Figure 2.2: Partial timeline of scholarship on the shared problematic of musics, sounds, listenings, ecologies, ecomusicologies, the Anthropocene, and musical instrument materialities.

While by no means comprehensive, this timeline contributes to clarifying a historiography of ecomusicological concerns, a historiography which Pedelty has contested in response to Ochoa Gautier’s essay (see Pedelty 2020, 311). I offer this partial timeline as a visual aid for contextualizing and understanding debates in which ecomusicologies have participated and which they have shaped, and to position those debates alongside the work of scholars who address similar problematics but who themselves might not consider their work as explicitly aligned with ecomusicologies. The timeline highlights the work of younger scholars whose work I have observed receiving less attention in these conversations (Veeraraghavan 2017; Yamada 2017; 2020a; 2020b). The timeline features work that critically examines the epistemological foundations of ecomusicologies (marked with triangles, see Keogh and Collinson 2016; Ochoa Gautier 2016; Veeraraghavan 2017). It also includes research that communicates through non-textual sonic formats, the need for which I demonstrate throughout this dissertation, such as Jacob Smith’s fully open-access “experimental audio-based scholarship,” *ESC: Sonic Adventure in the Anthropocene* (Smith 2019). Finally, the timeline highlights (in red) works that in some way address or are organized around the Anthropocene (Currier 2014; Adams 2015; Ribac and Harkins 2018; Smith 2019; Sykes 2019; Zwintscher 2019), including the Society for Ethnomusicology’s 2020 publication of a roundtable on “Humanities’ Responses to the Anthropocene” (see Cooley et al. 2020).²⁹

²⁹ I would also point readers to J. Martin Daughtry’s presentation, “Hyperchoral Entanglements: Reflections on Voice and Environment in the Anthropocene” (2020), as well as his forthcoming book.

Definitions, ecologies, ethics

Two oft-cited definitions for ecomusicology clarify its practitioners' assumptions regarding the *aboutness* of music, culture, nature, and ecology. The first is Aaron S. Allen's statement that ecomusicology is "the study of music, culture and nature in all the complexities of those terms" (Allen 2013, n.p.). The second is Jeff Todd Titon's, which appends to Allen's definition that ecomusicology is "the study of music, sound, nature, culture, and the environment *at a time of environmental crisis*" (first published in Titon 2013, 9; reprinted in 2020a, 224). Titon's definition follows from Rehding's view that if twentieth-century musicologists' were considerably occupied with psychoanalytic and deconstructive methods and questions, then this century's musicologists will have to contend with ecological crises (Rehding 2011, 409). These definitions alone are enough to recognize that the proliferation of ecomusicologies is itself an effect of ecological disorientation. Their range of approaches evinces the need to contend with, make sense of, and respond to contemporary ecological crises. In the wake of Ochoa Gautier's essay and provocation to (re)orient toward acoustic multinaturalism, the question remains: how do these approaches operate within identitarian paradigms that limit their capacity to both treat difference as a fundamental condition of possibility for life and to orient differently toward the problematic that compels them?

In considering these definitions, I echo Kyle Devine who is concerned that "the ongoing efforts to define what ecomusicology *is* may unwittingly participate in the construction of canonistic authors, approaches, and ideas that limit the prospects of what ecomusicology might *do*" (Devine 2019, 1). Like Chuh, Devine rejects the identitarian

logic of aboutness and emphasizes instead a performative logic: what can the field do, what effects does it have in the world? Despite its territorializing potential within such identitarian logics, the term ecomusicology does aid in organizing certain common principles and concerns; for Devine, “the term ecomusicology [does] represent a potent rallying point for likeminded scholars who wish to work together to produce new empirical knowledge and reconstructive social criticism about the relationships between nature and culture and music in ways that respond to contemporary ecological crises” (Devine 2019, 2). The problem, however, as Ochoa Gautier demonstrates, is that ecomusicology does not problematize “the political implications of keeping the underlying ontology that such a relation [between ‘nature and culture and music’] implies” (Ochoa Gautier 2016, 140).

Hence, ecomusicologies, in their identitarian extreme, tend toward what Lewis R. Gordon calls “disciplinary decadence” (2006). Ecomusicologies “treat our discipline as though it was never born and has always existed and will never change or, in some cases die.” Gordon cautions that “if one’s discipline has foreclosed the question of its scope, all that is left for it is a form of ‘applied’ work . . . [which] militates against thinking” (Gordon 2006, 4–5). Such applied logic finds its expression in composer Nathan Currier’s facile formulation of “ecocriticism + musicology = ecomusicology” (Currier 2014, 9). Within this framing, the musicological, its methods, and its matters of concern may be unproblematically “applied” to the ecological, whose own methods and matters of concern themselves go unproblematized. The result is a reclamation of the privileged, redemptory role of classical music and its drive toward resolution. An applied approach is

also evident in *The Oxford Handbook of Applied Ethnomusicology*, in which appears Titon's essay "Sustainability, Resilience, and Adaptive Management for Applied Ethnomusicology" (Titon 2015; reprinted in 2020a, 171–215; see also 2020a, 87–119). While I partly endorse applied ethnomusicology as an endeavor "guided by ethical principles of social responsibility" and a desire to be in better relation with surrounding communities, I maintain a skeptical posture toward its harmful politics of promoting the "traditional" and, in my observations of such work, its destructive tendency for the people and institutions executing such labor to operate within and uphold whiteness as a means of possessing such "traditions" (Titon 2020a, 88, 89; see Moreton-Robinson 2015).³⁰

There is a difference between (1) representationally including "the ecological" into a field, like musicology, without historicizing that field's material or conceptual conditions of possibility and (2) fundamentally reconfiguring and opening the inquiries, methods, pedagogies, relations, and outcomes that currently enclose (or worse, exclude) ecological matters of concern into musical disciplines and departments. The former calls itself an epistemological "turn," an "ecological turn" *in* music, or territorializes its domain of knowledge work as a "field"; it does not question the conditions of possibility for inhabiting a perspective from which one can then "turn"; it maintains the grounds on which it inhabits a perspective and defends the site of its enunciation. The latter,

³⁰ Aside from my own observations, such applied endeavors exist within a anthropology's and ethnomusicology's history of archival practices and the ensuing complex politics of "cultural property," musical repatriation, and "the right to be forgotten." For differing orientations toward these histories of sound archiving, see Anthony Seeger (1996); Judith Kaplan and Rebecca Lemov (2019); Trevor Reed (2019; 2021).

however, contends with an inversion of agency: the disciplinary “implosion” that is an effect of our disorientation is *impinged upon us* by “the entanglement of existence” (Povinelli 2021) and by the collapsed agentivity and historicity of the human and the geological (Chakrabarty 2009, 2015). This impingement renders unstable disciplinary sites of enunciation and points of view as traditionally and currently constituted. Is it really possible to consider the representational genres of “classical music *in* the Anthropocene” or “popular music *in* the Anthropocene” (see Currier 2014; Ribac and Harkins 2018) without questioning the weird, residual agentive and historical reciprocities between what is claimed to be “music” and what is claimed to be the “Anthropocene”?

Identitarian thought in ecomusicologies facilitates a conservative contraction rather than a generative expansion of the conversation. Such contractions limit the relational, ethical outcomes that many of ecomusicologies practitioners hope to enact. Consider Currier, who thinks that classical music, “compared to all the other music listened to on the planet,” occupies a privileged role because it “provides a seemingly unique sense of an irreversible arrow of time, of a non-repetitive one-way narrative thrust forward, of a development, an unfolding, downward towards some resolution and finality in time” (Currier 2014, 12). Currier’s privileging of classical music is symptomatic of a (eco)musicological myopia that not only hubristically “wrestle[s] music [*in general*] into center place” in its worldview (Wong 2014, 351, my emphasis), but that beholds Western classical music *in particular* as promising salvation. I am left wondering: to what extent can Mahler’s Third Symphony represent “classical music” (Currier 2014, 12)? Is this

intellectual operation necessary to argue that ecomusicology ought to be “a more science-based, Gaian musicology,” the result of an “ecology + musicology” (ibid., 11)? What epistemological premises make it possible to separate and then join, by way of mathematical addition, these two fields of knowledge, ecology and musicology, that make it possible to think the combinate “ecomusicology”? More egregiously, Currier mobilizes ecomusicology toward establishing the supremacy of Western classical music. He thus dismisses what he calls “the rest”—namely, “popular, non-Western, avant-garde, minimal, indigenous” musics (ibid., 12). To recapitulate Ochoa Gautier’s formulation, such work “reaffirm[s] . . . the values of musical analysis, of musico-cultural relativism . . . based on the constant confusion between Western ontology and epistemology (knowledge as being), and of the rejection of the drastic need to rethink the political stakes provoked by climate change.” Affirmations such as Currier’s lionization of classical music are “deeply rooted in certain political positivities that prevail within the notion of music itself in Western disciplinary contexts,” but in which contexts ecomusicology and advocates like Currier fail to situate themselves (Ochoa Gautier 2016, 123).

Key to this conversation, then, are the uses of “ecology,” both discursively and methodologically, within ecomusicologies. From which ecological epistemologies and intellectual trajectories do ecomusicologies draw in order to advance ethical claims? In Allen’s words, “the ‘problem of ecology’ is essentially about how we use the term [ecology]—about how the term has been defined, co-opted, used, misused, and reused in various contexts with and without explanation” (Allen 2018, 6). While I do not disagree

that the uses and meanings of “ecology” within ecomusicologies, I do take issue with Allen’s limited scope for understanding and deploying ecology. He delimits ecological inquiry as following from the work of Ernst Haeckel (1866), who coined the German term “*oekologie*,” and Richard E. Ricklefs (1990), an ecologist who paraphrases Haeckel’s definition of ecology as “the study of the natural environment and of the relations of organisms to each other and to their surroundings” (Ricklefs 1990; quoted in Allen 2018, 2).

In aligning with Haeckel and Ricklefs, Allen appears to address the unscientific uses or “misuses,” to borrow the language of Keogh and Collinson (2016), of ecology in musicological work. At issue is the use of ecology as either a popularized “point of view” or as a codified science, a helpful distinction offered by Dana Phillips (see D. Phillips 2003, 42–51). In the former usage, ecology is synonymous “in the popular mind with such values as balance, harmony, unity, purity, health, and economy,” whereas ecology as a science generally rejects the view of ecosystems in states of harmonious equilibrium (ibid., 42).³¹ This division itself emerges from a 1960s paradigm shift in ecological science away from a view of ecosystems as defined by harmonious equilibrium and interspecies cooperation—a view epitomized by Eugene P. Odum’s *Fundamentals of Ecology* (1953)—and toward a view of ecosystems as “*fundamentally* erratic, discontinuous, and unpredictable,” as summarized by Donald Worster (1994, 167).³² And

³¹ For a fascinating survey of students’ understandings of the “balance of nature” metaphor and its effects on how the climate crisis is understood, see Zimmerman and Cuddington (2007).

³² Jeff Todd Titon (2020a, esp. 230–32) reviews this paradigm shift in the context of the so-called deconstructive “science wars” waged against the supposed objectivity of scientific knowledge by thinkers such as Bruno Latour (1993). Titon draws on the work of biologist Michael Soulé who helped coin the term and values surrounding “conservation biology” (Soulé 1985; Soulé and Lease 1995b). Soulé responds to the “science wars” with a realist defense of nature, defending the position that “the world, including its

so, in writing that “the ‘problem of ecology’ for music and sound studies [is] the invocation of ecology to mean something other than what Haeckel and Ricklefs [or professional ecologists] would understand as ecological,” Allen helpfully clarifies the terms of the conversation by providing definitional referents (2018, 6). Yet, by hewing so closely to Haeckel’s and Ricklef’s definitions and uses of ecology, Allen unnecessarily contracts the terms of the conversation.

Why limit “ecology” to the thought of Haeckel and Ricklefs? What is to be gained is, admittedly, greater clarity and precision of a key concept deployed consistently in ecomusicological conversations. But what is to be lost? What important insights and future directions for ethical action might Allen and other concerned ecomusicologists develop if their frameworks for “ecology” engaged with the range of complexity of Indigenous peoples’ thought rather than delimiting definitions of “ecology” to the thought of Haeckel and Ricklefs? For instance, Kyle Whyte writes about ecology in relation to “collective continuance,” which contrasts with the ecomusicological tendency to value “sustainability” (Whyte 2018). In her telling of Haudenosaunee and Anishnaabe histories, Vanessa Watts demonstrates the colonial violence perpetuated by the “epistemological-ontological divide” in misrepresenting Indigenous cosmologies (V. Watts 2013, 22). Watts’s framework for agency, governance, and nonhumans emphasizes that Western theorization *about* the world extends from the epistemological-ontological divide and “necessitates a separation of not only human and non-human, but a hierarchy of beings in terms of how beings are able to think” (ibid., 24). Such identitarian, binary

living components, really does exist apart from humanity’s perceptions and beliefs about it . . . in spite of differences among us in class, culture, gender, and historical perspective” (Soulé and Lease 1995a, xv–xvi).

theoretical methods in ecomusicology are evident, for instance, in Margaret Q. Guyette and Jennifer C. Post's statement: "we look at various ways that science and music intersect to demonstrate that human and non-human sounds and sound-making play equally important roles in *providing ecological knowledge about a sound landscape*" (Guyette and Post 2016, 43). How might a thoughtful, non-appropriative engagement with Indigenous writers' and scholars' thinking about the Anthropocene and human/nonhuman and nature/culture binaries foster a more nuanced conversation involving music studies "in/and" the Anthropocene (see TallBear 2015; Todd 2016; Horton 2017; Whyte 2017; 2018)? How would ecomusicologists orient themselves if they took seriously Davi Kopenawa's understanding of "environment" as a word white people use to refer to "what remains of the forest and land that were hurt by their machines," hence the "environment" is "what remains of everything they have destroyed so far" through mining in the Amazon where his people, the Yanomami, live (Kopenawa and Albert 2013, 397).

Returning to Allen's essay, I especially take issue with his omission of Ochoa Gautier's essay two years after its publication, an essay which significantly expands the terms of the conversation. I do understand that the latency of academic publishing can be an obstacle to engaging recent work, but Allen's engagement with other 2016 and even 2018 publications suggests that he did not consider Ochoa Gautier's contributions at least relevant to, or at most necessary for the conversation he seeks to clarify. The insights of Ochoa Gautier's essay would helpfully complicate the conversation by questioning the works of Haeckel and Ricklefs as adequate referents for ecological thinking, referents

without which Allen's essay collapses. To do so would not be a merely "deconstructive" exercise but would politicize the grounds upon which Allen constructs his argument and from which he develops an ethical perspective. Allen appears to encourage an expansion of the conversation by imploring readers and practitioners "to take a 'both/and' rather than an 'either/or' approach to the problem and opportunity of ecology for music and sound studies" (2018, 11). But his omission of Ochoa Gautier's essay selectively narrows the scope of the conversation by excluding insights that would otherwise challenge Allen and other ecomusicology practitioners to question the foundational assumptions and values from which they make their ethical claims about the critical and political work that ecomusicology does in the world.

While Titon concedes that "to date, most ecomusicologists have accepted nature as real, external, and objectively knowable," he does respond to the challenges to the organizing principle of "nature" posed by "critical theory, the so-called science wars, and a changed paradigm within ecology" (2020a, 224). He advocates for a "relational epistemology" and suggests that ecomusicologists respond "by relying on an ecological construction of nature based in a relational epistemology of diversity, interconnectedness, and copresence." He advises this course so that ecomusicological labor can support musical sustainability amid a "period of environmental crisis" (ibid.). But is this position in alignment with contending with indistinction and difference?

His subsequent paragraphs would suggest not. In them, Titon upholds and directly cites Allen's definition of ecomusicology as "the study of music, culture, and nature in all the complexities of these terms" (Allen 2013, n.p.; quoted in Titon 2020a, 224), while

appending, as I cited before, that it is “the study of music, sound, nature, culture, and the environment *at a time of environmental crisis*” (Titon 2020, 224, my emphasis). If one accepts Ochoa Gautier’s careful and thorough examination and politicization of these definitions’ key terms—especially “nature” and “sustainability”—then one cannot accept these definitions as adequate formulations of the problematic they attempt to name. One thereby cannot accept ecomusicology as a project in whose name practitioners enact musical sustainability. Hence, Ochoa Gautier’s intervention is a critical provocation to contend with difference. It is a provocation that recent ecomusicological work appears to have omitted, even for those practitioners who view the field as itself an ecosystem.

In distinguishing ecomusicology as a field and not a discipline, Allen and Dawe emphasize that “a field is a place” (2016, 12). If the field of ecomusicology is a place, what kind of place is it? Allen and Dawe answer this by way of ecological metaphors. For them, ecomusicology is where disciplines may “cross-pollinate”; it is itself “an infrastructure of viaducts and aqueducts that transect the valleys and peaks of current sonic and musical scholarship” (ibid., 11, 12). It is also a stream, which, in order to maintain “ecosystem health,” is best kept “unencumbered” from the reification of its key terms (ibid., 8). What frameworks subtend its outcomes? What is the quality of the relations it engenders among those who traverse that place?

As much as they attempt to problematize such the uses of “ecology,” “nature,” “culture,” “music,” and the binaries they construct (e.g., Allen and Dawe 2016, 6–10), ecomusicologies practitioners ultimately redeploy those very binaries in order to stake their ethical claims. However, no single author is responsible for this gap between

discursive problematization of terms and their ultimate redeployment. This problem of problematization is a symptom of the broader relations and colonial legacies that undergird the Euro-American academic industry and its modes of knowledge production. I fear that such discursive problematization does little to identify and propose other options than the foundational problems undergirding the need for such problematization. Like Jim Sykes, “I fear we may only focus on those (worthwhile) aspects while ignoring how the very problems that constitute the Anthropocene *deeply shape our academic disciplinization, areas of inquiry, and modes of representation*” (Sykes 2019, 7, my emphasis). Attending to the extractive colonial discourses and practices that have deeply shaped the field in order to find other orientations amid ecological disorientation is the schism that Ochoa Gautier’s essay introduces to the conversation, and which I quoted in this chapter’s epigraph:

One needs to question whether the central objective of sound/music scholars concerned with the environment is to create a sub-disciplinary field centered on the issues of “nature, culture, and music” or, to the contrary, *to take the time to drastically rethink the political implications of keeping the underlying ontology that such a relation implies*. (Ochoa Gautier 2016, 140, my emphasis)

Discursive problematization of the kind that Allen and Dawe engage in is not equivalent to this analytical labor of rethinking and reorienting.

If the field of ecomusicology is a place, what kind of place has it been since the 2016 publication of Ochoa Gautier’s essay? If ecomusicology, to continue Allen and Dawe’s metaphor, is a stream best kept unencumbered, then Ochoa Gautier’s provocations and insights appear to have gone quietly neglected or ignored in the stream of ecomusicologies since 2016: a minor lap against the shore instead of the white-water

rush I understand it to be. Consider the journal *Ecomusicology Review*, a joint project of the American Musicological Society's Ecocriticism Study Group and the Society for Ethnomusicology's Ecomusicology Special Interest Group. Since 2016, it has published four volumes (vol. 5–8) containing at least fourteen total essays (three of which are from volume 6's ESeminar). Of these fourteen contributions, only *one* makes a single passing citation of Ochoa Gautier's essay (Kwon 2017) and none attempts a sustained engagement. Aside from this, the most thoughtful reckoning with Ochoa Gautier's essay I have encountered is Brian Alexander Karvelas's master's thesis, "Listening to Landforms: Intersections of Ethnomusicology and the Environmental Humanities" (Karvelas 2020, esp. 12–22). Of additional note is Peter McMurray's essay, "Toward a Black Ecomusicology, 1853? Listening to Enslavement with Solomon Northup" in which he aligns himself with Ochoa Gautier's "critique [of] the narrowness of ecomusicology's aims and scope," but seems to mistakenly conflate her appeal to acoustic multinaturalism with "alternative approaches ([such as] acoustic ecology, acoustemology)" that he finds less useful (McMurray 2021, 81).

Mark Pedelty's "Moving Forward with Ecomusicology" (2020) is perhaps the only piece to have responded to Ochoa Gautier's essay. Unfortunately, his short engagement with her work misunderstands the core of her contribution to the conversation. Pedelty introduces Ochoa Gautier into his piece by writing that "many ethnomusicologists welcomed and have been taking active roles in the ecomusicological conversation. But not all. Ana María Ochoa Gautier . . ." (2020, 310). To state that Ochoa Gautier neither welcomed nor took an active role in ecomusicological conversation is

ungenerous and false and fails to extend a modicum of conversational grace. Ochoa Gautier contends with ecological disorientation as much as ecomusicology practitioners do, which is partly why I frame the conversation in such terms. In her words, “the political implications of ecological concern are the common cause of our shared interests” (Ochoa Gautier 2016, 139). Simply because her essay posits “a different entry point into the problematics of sound/music, the anthropological, and the cosmological”—namely, through “acoustic multinaturalism” and an intellectual historiography including anthropological insights as well as Seeger’s and Feld’s works—does not mean that her essay’s critical posture toward ecomusicology neither welcomes nor participates in ecomusicological conversation (ibid., 132). Simply because her reckoning with ecological disorientation “proposes a radically different set of possibilities than that proposed by ecomusicology today” is evidence of her intellectual and ethical commitment to contend with the problems posed by the climate crisis. Pedelty’s appeal to “the diversity of disciplines that are contributing to the field [of ecomusicology]” does nothing to address or historicize those disciplines’ foundational assumptions, a move that is key to her own contribution to the conversation (2020, 310). In fact, his appeal to so-called diversity only supports Ochoa Gautier’s critique of the ecomusicological tendency toward multiculturalism wherein the mere presence of different disciplines constitutes a sufficient response to the need to interrogate and historicize those disciplines’ epistemological foundations.³³ If ecomusicology is the open stream that Allen and Dawe

³³ Pedelty’s response resembles the simplicity of “diversity and inclusion” initiatives that structure academic departments and that redeploy the logic of identitarianism by incorporating and managing difference under a supposedly universal particular without changing the industry’s constitutive relationships of systemic whiteness to foundational colonialism, enslavement, and land dispossession.

understand it to be, then it is not a system that exhibits “ecological thinking,” defined by Daniel Belgrad as the not uniquely human “ability to self-correct in response to feedback” (Belgrad 2019, 1). Instead, in its waters, intellectual exchange dissolves into a defense of territorialized knowledge whose proponents have immunized the territory in advance through claims to its “porosity” and “diversity” (Allen and Dawe 2016).

In providing models for reorientation, Ochoa Gautier engages the work of Steven Feld and Anthony Seeger, which she understands to call into question “the anthropological and musicological grounds on which ethnomusicology had been constructed” (Ochoa Gautier 2016, 112). In other words, by focusing on cosmological questions (how worlds, cosmologies, and ontologies are sustained) such work could not directly ask “how musical sociality and performance [were] articulated” because the meanings of “music,” “the social,” “culture,” and “nature” could not be assumed or imported from their own positions and ontologies (ibid.). This is the crux of Ochoa Gautier’s contention with ecomusicology—namely, that its practitioners do not adequately interrogate their own imported and taken-for-granted notions of “nature” and “culture” in thinking relations between sonic, musical, and ecological practices. And this is also the crucial aspect that Pedelty ignores in his response to Ochoa Gautier’s essay (Pedelty 2020). He instead chooses to view the matter as an attack against which he must defend himself. He incorrectly understands Ochoa Gautier’s contention as a purely semantic one; to him, ecomusicology is less a “discipline” than a “field” for whose “erasure” Ochoa Gautier is supposedly calling (ibid., 312).

If Pedelty thinks that Ochoa Gautier's concern is merely semantic or nominal, he is mistaken. Yes, she is concerned with naming. Yes, she refers to the instantiation of a "new discipline" despite Allen's earlier framing of it as a "field." And yes, ecomusicology has undoubtedly yielded important connections, insights, and formations of relationships and networks among practitioners. But, as I understand them, Ochoa Gautier's concerns with terminology matter not because of a didactic insistence on semantic precision, but because "the *terms* through which networks are operationalized are also crucial in defining how the network itself actually works" (Ochoa Gautier 2016, 113). The terms grounding the field's matters of concern—"nature," "culture," "environment," "music," "sound"—have more-than-semantic effects in the world. Conceptual grounds determine and subtend the field's intended and realized outcomes. Without critical interrogation and reorientation—which Ochoa Gautier offers in patient and thorough detail—the stakes, methods, and outcomes of ecomusicology practitioners' work will continue to be limited by such a multiculturalist, mononaturalist framework, even if they self-reflexively problematize that framework in their discourse.

The crucial difference between ecomusicologies and acoustic multinaturalism is that ecomusicology tends to "reaffirm the idea of nature as central to a new disciplinary subdivision" whereas acoustic multinaturalism "acknowledg[es] the political importance of different ontologies across cultures and history" (Ochoa Gautier 2016, 139). This fundamental difference means that each mode of inquiry yields starkly different political, epistemological, and cosmological results. Acoustic multinaturalism, in contrast with ecomusicology, offers an orientation toward difference, nature(s), culture(s), music,

sound, and listening and thus “proposes a radically different set of possibilities than that proposed by ecomusicology today” (ibid., 132). To maintain acoustic multinaturalism’s orientation toward these notions, toward humans and nonhumans, and toward how they are differently operative in the world depends on understandings “that unsettle the historically constructed boundaries between nature and culture, the human and the nonhuman in Western modernity” and not on ones that uphold them despite discursively problematizing them (ibid., 139).

Acoustic Ecology

R. Murray Schafer has been understood, by way of settler colonial language, as an “ecomusicological pioneer” (Allen and Dawe 2016, 7). In fact, beyond this discursive moniker, Schafer’s aesthetic projects in acoustic ecology demonstrably enacted settler colonial violence, the political complexities of which Lee Veeraraghavan (2017) helps us to understand. Without summarizing here Schafer’s contributions to the discourse and practice of acoustic ecology and its mobilizations in ecomusicologies, I recognize that his work continues to inform ecomusicological labors and subsequent work in acoustic ecology, especially those of Bernie Krause.

According to the career trajectory that Krause himself traces, his acoustic reckoning was not immediately or primarily with the climate crisis and its effects (per Titon’s definition for ecomusicology). Instead, as I understand it, Krause’s work is driven by his need to connect with “the sonic timelines of evolution,” which involves, for instance, reconstructing bygone dinosaur soundscapes and vocalizations (Krause 2012, 124). More simply, as stated in the subtitle of *The Great Animal Orchestra*, his acoustic

ecology project attempts to “find the origins of music”—though to be fair, this subtitle may be the marketing work of publishers at Little, Brown, and Company and not Krause’s own formulation. Nonetheless, his search for musical origins pervades his written work and subtends the ethical project he advances for reorienting the values and referents of contemporary musical creativity to better align with those natural origins.

Krause offers the useful analytical distinction between geophonies, biophonies, and anthrophonies. In distinguishing these three domains of audibility, Krause’s broader thesis emerges—namely, that anthrophonies (including musicking) derive from and are influenced by biophonies. As he writes, “human music has its roots in the soundscapes of the natural world” (2012, 130). While he does deploy “human music” in the singular, he does pluralize and nuance his argument. Through frequent citation of the musical practices of the Ba’Aka people of the Central African Republic, Krause analyzes and compares different musical practices according to their degree of separation from biophonies. He writes that, “Unlike the Ba’Aka’s music, Western song hasn’t been inspired by the biophony for thousands of years. Rather . . . our music is self-referential” (ibid., 135). Krause’s analysis is undergirded by the assumption that musics are fundamentally referential, whether they refer to biophonies or to themselves. According to this analysis, Western musical practices have, for Krause, lost their primary connection to biophonies through their tendency to reference themselves. “How,” he bemoans, “did our music become so detached from nature?” (ibid., 135). Krause answers his question by acknowledging the role of Christian missionaries in altering the Ba’Aka’s musical aesthetics in recent decades and demonstrating colonialism’s destruction of ways of

living and knowing. Nature, for Krause, is thus a pre-modern, pre-colonial aesthetic ideal that human musicking once valued (evidence of which is the Ba'Aka's music) but from which musicking has unfortunately become detached through post-modern self-reference.

Krause is aware of how his work may be politically and affectively mobilized amid resource extraction and ecosystem destruction. Recordings can be used to countermand the extractivism of those like former Alaska senator Ted Stevens, who understood the Artic National Wildlife Refuge as a resource that, because devoid of life in his perspective, was ripe for extraction: "except for oil, nothing was there" (*ibid.*, 230). To contradict Stevens's claims, Krause and a team of recordists, during a ten-day span at the Refuge, "managed to record a total of about eighty hours of spectacular wildlife soundscapes that included more than seven dozen species of birds, and we had sightings of bears, Arctic foxes, wolves, caribou, squirrels, and mice" (*ibid.*, 230). While it is unclear from his writing whether Krause has politically mobilized his recordings to combat projects he views as destructive, his writing at least indicates his awareness that recordings could be so mobilized.

Hence, the stakes for Krause's project of acoustic ecology appear to be two: (1) to establish an archive of baseline field recordings that can be used as comparative sonic templates against which contemporary and future recordings can be measured for evidence of biome degradation, loss of biodiversity, or extinction; and (2) to implore Western musical aesthetics and practitioners to be less self-referential and instead achieve greater alignment with natural biophonies. The problems compelling these stakes are, respectively: (1) the destruction of biomes due to industry and extraction; and (2) a

creative “myopia” or anthropocentrism in Western music practitioners who “claim nature as an inspiration” in what he calls “nature-related music” (ibid., 146). His project’s methods for combating these problems are three: phonography through field recordings, visualization of the audible through spectrograms, and comparison of these recordings of the “same” place as they change over years.

Krause does deploy the notion of a singular “nature” to signal pristine nonhuman environments in equilibrium, but he also acknowledges the concept’s inherent contradiction: “the word itself [‘nature’] was a symbol of division” (ibid., 143). Nonetheless, Krause’s proposal for a music that better aligns with biophony is an instance of what Marshall Sahlins calls the “good nature/bad culture variant,” where “culture” is a disruptive human romp that could learn a thing or two from an inherently harmonious “nature” (Sahlins 2008, 43). Acoustic ecology can result in compelling recordings that allow us to aurally perceive how ecosystems change over extended durations that we otherwise could not hear, but its identitarian, anthropocentric, pastoral tendencies limit its ethical horizon for reorienting values and methods.³⁴

Environmental Music and Sound Art

In his introduction to *Environmental Sound Artists: In Their Own Words*, Jonathan Gilmurray posits “environments” as nonhuman contexts in which humans exercise their auditory perception to “cognitively translate . . . vibrations into psychological experience” (Gilmurray 2016, xix). Within this frame, “environmental sound art” names

³⁴ Not discussed here are the identitarian affinities between acoustic ecology and biomusicology, which shares an interest in establishing an “origin of music” within an evolutionary framework. See the work of Nils Wallin (1991) and Wallin et al. (2000). In contrast, for a more recent, non-identitarian and biosemiotic take on the problematic, see Gary Tomlinson (2016) as well as his *A Million Years of Music* (2015).

the coincidence of classical musical forms with fixed assumptions about a human/nonhuman relationality that is constitutive of “the environment” in the singular. This conceptual frame, for instance, yields such unproblematic phrases as “the symphony of the rainforest” and “the polyphonic yodeling and water drumming” (ibid., xx). Gilmurray’s tendency for sonic figures based on the social models and techniques of Western art music finds its parallel in the writings and compositional/recording practices of both R. Murray Schafer and Bernie Krause. For Schafer and Krause, ideas about musical composition and the social forms that gather around their practices appear to be given and thus sufficient as analytics for making universalizing claims about the world and its forms of life. Schafer writes, “I am going to treat the world as a macrocosmic musical composition” and “Behold the new orchestra!” (Schafer 1977, 5); while for Krause, “biophony”—or “the sounds of living organisms”—comprises a “proto-orchestra” (Krause 2012, 68; see also 1996; 2015). This anthropocentric becoming-orchestra of nonhuman life, “tuning of the world,” and the assumptions they import about the social roles of and hierarchies between beings-as-musicians, all contrast sharply with, for instance, the theories of Jakob von Uexküll in which organisms’ life-worlds (*umwelt*) cannot be reduced to either particularly human forms or perceptual affordances, let alone historically contingent cultural institutions like orchestras (Uexküll 2010 [1934]). Moreover, the archive from which they theorize elides Indigenous practices, acoustemologies, and knowledge production which severely tempers and delegitimizes their claims to the universally “musical” in the name of the particularly Western (Ochoa

Gautier 2016; Feld 2012 [1982]; Brabec de Mori 2012; Brabec de Mori and Seeger 2013; Avelar 2014; Hill and Castrillon 2017; Lima 1999; Sahlins 2008).

Gilmurray's, Schafer's, and Krause's assumptions amount to no less than epistemological coloniality: they render particular forms into universals while eliding the contingency of their own knowledge production practices. Small wonder, then, that the actors to whom Gilmurray refers as environmental sound art practitioners are described no fewer than fifteen times within a few pages using the formula *national identity* + "*composer*" + *name*: as in "American composer La Monte Young" or "French composer Luc Ferrari." According to this usage, "environments" are less multiply constituted or contested relational sites of becoming and more bounded resources ripe for (ex)appropriation into predefined, institutionalized practices by "environmental artists" in the properly designated Euro-American venues of performance and publication. Within this logic, environments' sounds may be "captured" (Gilmurray 2016, xxii). How do you care for that which you have captured? By maintaining attachments to "art" and "aesthetics" geographically fixated on Europe and North America and their institutional forms, this conceptual framing of "environmental sound art" risks excluding all those who do not or could not identify according to the formula *national identity* + "*composer*" + *name*, yet who nonetheless fiercely contest and produce knowledge sonically, collectively, and extra-textually. Of what analytical use, and to whom, is "environmental sound art" if it will not recognize, for instance, the aesthetic-political mobilizations of Indigenous leaders who voiced, musicked, and protested in San

Francisco during the Rise for Climate protests in early September 2018?³⁵ I liken this problem of the institutional and Western epistemic enclosures of “environmental sound art” to the one that Steven Feld triply identifies with “sound studies,” namely that it (1) “totalizes the object ‘sound,’” (2) “presumes an imagined coherence to that object that one is supposed to know in advance,” a knowledge supposedly derived from (3) “Western sound technologies and Western avant-garde music and sound art” (Feld 2015). While Feld proposes instead “studies of sound as a critical mode of relating and relationality across species and materialities,” he bemoans “what [are] much more marketable,” representational modes of thinking about sound: “sound *genre* studies and sound *object* studies and sound *technology* studies” (ibid.). The same logic of academic marketability that toxifies academic interrogations of the nexus of sounding/mattering/vitality has also gripped so-called “environmental sound art” by crystallizing the possible referents of those three words into particularly Western frames and forms. I make a consistent effort in this project, then, to depart from such thinking by deploying what I think is a more capacious term, “sonic creativity,” to refer to any aesthetic-political intervention that is irreducible to established, Western forms of knowledge production, social organization, or musical mattering. A primary concern of this project is reconfigure the traditionally entrenched parameters of musical mattering by constellating an archive of sonic creativity that contests those overdetermined parameters.

³⁵ See Indigenous Environmental Network, <http://www.ienearth.org/>, accessed 10 September 2018.

Speculative Musicologies

One vein of music studies in close alignment with the values of acoustic multinaturalism is what might be called speculative musicologies. Joanna Demers's work is exemplary of this speculative mode of music studies, especially her *Drone and Apocalypse: An Exhibit Catalog for the End of the World* (2015) and *Anatomy of Thought-Fiction: CHS Report, April 2214* (2017). By creating speculative worlds and inhabiting future narrative points of view, Demers's work compellingly calls attention to the broader conditions of possibility that would sustain music studies some two hundred years into the future.

Doing so helps her to call attention to the anthropocentric tendencies of music studies.

She writes that:

human culture has sustained multiple blows to its sense of preeminence since the eighteenth century. And whereas traditional musicology frequently conceives of musical works as props for human subjectivity, pop styles that rely on sampling and audio treatment . . . propose an alternative biological presence that is not a mouthpiece for humanity. (Demers 2017, 26)

By contrasting an anthropocentric musical aesthetic with musical practices that differently imagine and position humans relative to other life, Demers calls into question the thought-fiction that both sustains traditional musicologists' analyses, and which traditional musicologists sustain in their analyses—namely, that certain humans' sonic creativity erects a center around which other sonic and life-making projects are peripheral and into which their differences are subsumed. Such an anthropocentric operationalization of music is an identitarian thought-fiction, “a concept that serves a purpose even though it is known to be untrue” (Demers 2017, 10).

What purpose, then, does the thought-fiction of anthropocentrism serve in relation to music studies' labors of thought, speech, writing, analysis, creativity? Whether stated explicitly by its practitioners or implicit in their ideas, anthropocentrism in musicological labors serves the purpose of perpetuating colonial commitments to who and what matters. These priorities find their expression in graduate music seminars, undergraduate music curricula, and explicitly in practitioners' analytical essays.³⁶ At stake is not whether the colonial commitments to the thought-fiction of anthropocentrism are "true" or "untrue," in Demers's terms, but rather how these commitments orient the labor of music studies toward the maintenance of painful pedagogies and away from the possibility of redress, repair, healing. Music that is not "a mouthpiece for humanity" or for forms of humanity premised on violence toward and extraction of other life describes practices of sonic creativity capable of fostering other relational outcomes. Speculative musicologies that address us today from narrative perspectives located in possible futures perform the crucial labor of envisioning other worlds that caution against how things are as much as they model how things could be (see Chavannes 2021).

Conclusion

The conversations in which ecomusicologies engage have produced important insights and challenges into the politics and historiography of knowledge work. Ochoa Gautier

³⁶ For an example of a graduate seminar framed by anthropocentric and identitarian thought-fictions, see Jeffrey Kallberg's fall 2018 seminar at the University of Pennsylvania's Department of Music titled "Ec(h)ohistories: Place, Environment, and Modernism(s)," a description of which is available at <https://music.sas.upenn.edu/index.php/course-list/fall-2018-graduate-seminars> (accessed January 11, 2022). For a critique of the colonial commitments of music survey courses, see Chavannes and Ryan (2018). In contrast, for an essay upholding anthropocentrism and Eurocentrism in music studies, see Currier (2014).

has offered a thorough review of those conversations as well as a counterproposal to orient toward acoustic multinaturalism. Since her essay's 2016 publication, ecomusicology practitioners have ungenerously engaged her work, with only two exceptions of which I am aware (Kwon 2017; Karvelas 2020). These divergent approaches ultimately cohere around their shared reckoning with ecological disorientation and its concomitant production of the problem of indistinction. The practitioners and ideas considered in this chapter variously contend with ecological disorientation and the production of indistinction: some remain indifferent, some reckon with ecological disorientation as a "crisis" without contending with the problem of difference posed by indistinction, while yet others reckon with ecological disorientation and contend with the problem of difference posed by indistinction. With **Figure 2.1**, I offered a visualization of this framing of the problematic. With **Figure 2.2**, I offered a partial timeline in order to help clarify a historiography that is often cited in conversations concerning ecomusicologies and the problematics they attempt to name. I hope that these two visual distillations of the thinking I elaborate in writing will aid a range of readers in placing ecomusicologies and other music studies' reckonings with ecological disorientation, from those already absorbed in and familiar with these reckonings to those curious about but unfamiliar with them.

From these ecomusicological and other music studies conversations, a dual problem emerges—namely, what relational outcomes are textual forms of scholarly labor capable of effecting, and what to do about the gap between discursive calls to change the methods and formats of such labor and the endurance of textual supremacy within

academic knowledge economies? To invigorate the ethical stakes of these questions for music studies in particular and the humanities in general, consider the words of Timothy Clark:

It is far easier for critics to stay inside the professionally familiar circle of cultural representations, ideas, ideals and prejudices, than to engage with long-term relations of physical cause and effect, or the environmental costs of an infrastructure, questions that involve nonhuman agency and which engage modes of expertise that may lie outside the humanities as currently constituted. This would also suggest that *the humanities as currently constituted make up forms of ideological containment that now need to change*. (Clark 2012, 164, my emphasis)

In this chapter, I have demonstrated the extent to which identitarianism is one such form of ideological containment defined by its tendency to subsume difference into a singular universal regime. There are those doing textual and more-than-textual work to challenge the currently constituted enclosures around thinking and practicing the urgent relations between sonic creativity and our ecological crises (Ochoa Gautier 2016; Kanngieser 2011; Kanngieser and Beuret 2017; Hawkins and Kanngieser 2017; Feigenbaum and Kanngieser 2015; Tomlinson 2016; Wodak 2018). It is theirs and others' analytical propositions and innovative communicational techniques and creative formats that invite an otherwise relational model than the circling antagonism of citational prose economies that hegemonically circumscribe academic labor. Hence, we return to the question posed by indistinction: how to delimit the labor of music studies practitioners in the face of the climate crisis?

For one, textual critique is a helpful but insufficient mode. As Idelber Avelar writes, "we must think outside the anthropocentric paradigm, or pretty soon we will not be thinking anymore. An internal deconstruction of this paradigm will not suffice"

(Avelar 2014, 111). A field's "internal deconstruction" has the useful function of problematizing and unsettling the complex terms on which it builds a conversation, but it also has the harmful effect of immunizing itself against any analysis that questions "the political implications of keeping the underlying ontology" that it discursively problematizes but effectively upholds (Ochoa Gautier 2016, 140). Such internal deconstruction is evident in ecomusicologies' discursive problematization of nature/culture and human/nonhuman binaries. But the more urgent problem is that its practitioners fail to understand how their own participation in the proprietary logics of argumentative prose economies of knowledge production upholds the very dynamics they problematize. Elsewhere, I analyze this inattention to the form that scholarly labor takes in the humanities, highlight the pitfalls of textual supremacy as a design that sustains anthropocentric normativity in the humanities, and advocate a research practice that intentionally aligns problem, form, and relational outcomes (Niess 2021). What is needed most are, first, proposals for fundamental reorientations and reorganizations of the constitutive labor of the humanities and by extension of music studies, and second models that enact those reorientations. An identitarian, anthropocentric machinery pervades North American institutions of higher education where students enter on one side and leave through the other without ever having directed their analyses toward the gap between ethical discourse and the form their analyses take. The machinery steers toward its own destruction. Its logical conclusion is "the destruction of the very conditions of possibility in which man can exist as such" (Avelar 2014, 111). Left unchecked, this machinery and those sustaining its operation in the North American

academic industry will implode because the very conditions of possibility for aerobic existence are increasingly on the fritz.

Two implications and directions for reorientation

There are two crucial implications of Ochoa Gautier's essay, of the proposal to orient toward acoustic multinaturalism, and of speculative musicologies that imagine possible futures. By "implication," I mean a direction for reorientation amid ecological disorientation. The first implication is for non-Indigenous, settler scholars to engage humbly, generously, with the range, complexity, and plurality of Indigenous philosophies and ways of being. In the context of anthropology, Avelar implores Latin American humanities practitioners "to come to terms with" Amerindian societies' "wealth of knowledge" of "non-anthropocentric understanding[s] of the world" (Avelar 2014, 111). For Avelar, to engage humbly with Amerindian cosmologies is so urgent as to be an "inalienable ethical task for Latin American intellectuals today" (ibid.). I likewise believe that in North American institutions humanities practitioners have the ethical obligation to do more than "decolonize" their pedagogies, syllabi, or classrooms. Coloniality pervades deeper. Confronting coloniality in these institutions requires logics that exceed those of "diversity and inclusion" into a normative, hegemonic, white, capitalist, heteropatriarchal superstructure. In the context of ecomusicologies, I share Michael Silvers's concern "that ecomusicology runs the risk of being apolitical—missing the politics of class, race, and gender, for example, in favor of a more explicitly environmental politics" (Silvers 2020, 18). "Diversity and inclusion" redeploys the same identitarian logic by incorporating and managing difference under a supposedly universal particular. For white, non-Indigenous,

settler scholars like myself, to read, understand, and engage work—broadly understood outside of texts alone—of Indigenous peoples and scholars is one option for reckoning with rather than subsuming difference.

Caution. This is not license for facile, appropriative citation.

As Ochoa Gautier warns in her essay’s parting words: “this does not mean that suddenly it is time for all of us to ‘go native.’ To the contrary, indigenous ontologies from different parts of the world provide models *even if, and especially when, they do not resonate with our own categories of knowledge and being*” (Ochoa Gautier 2016, 141, my emphasis). As I understand Ochoa Gautier’s proposal, such models are not epistemological resources to be extracted despite the inevitability that scholars past, current, and future will operate in an extractive mode within the currently constituted knowledge economy in which citations are currency and facile inclusion is an empty ethical imperative. As Vanessa Watts writes, to engage with the complexity and non-uniformity of Indigenous thought need not result in “purposeful and ignorant misrepresentations of Indigenous cosmologies” (V. Watts 2013, 22). A humble, generous engagement means, especially for settler scholars, that Indigenous cosmologies and histories are not to be “regarded as story and process—an abstracted tool of the West” (ibid., 28). Within an identitarian logic, one might subsume the differences between Indigenous and non-Indigenous cosmologies and ways of relating under a universal category. In contrast, following Ochoa Gautier’s proposal for acoustic multinaturalism, one’s scholarship might emerge from a reckoning with that very difference without aiming to settle or otherwise resolve that “site and instrument of ontological

differentiation and referential disjunction” (Viveiros de Castro 2004, 6). One might foreground the relations that one’s work forecloses and enables, and question the quality of those relations. One might, to borrow Jairo Moreno’s pedagogical refrain, avoid thinking in ones (universals) and twos (identitarian binaries, cultural relativism) and instead think in threes, or in terms of what Tânia Stolze Lima calls “the two and its many” (Lima 1999, esp. 113).³⁷

Hence, there is a middle ground between “going native” and outright omission of an engagement with the differences between Indigenous and non-Indigenous worlds. This middle ground might help non-Indigenous scholars to contribute to orienting our pedagogies and institutions away from discursive debates and their tendency to devolve into the register of self-defense, and toward “being in good relation.”³⁸ There is a middle ground between the appropriative mode of “going native” and the apolitical mode of indifference.

Operating in this middle ground does not mean abandoning ethical commitments. Consider that Keogh and Collinson critique the ecological holism and pastoralism of John Luther Adams’s music and writings about music as much as they critique the ecomusicological assumption of harmoniousness and equilibrium as the basis of a utopian ecological ethics. They conclude that the consequence of rejecting this ethical

³⁷ This quick reference to Tânia Stolze Lima’s essay (1999) does not adequately account for the brilliance and complexity of her work and its implications. Nonetheless, I cite it here to encourage others to engage with it and to share my insight of its connection to my adviser’s impactful insistence to think in threes.

³⁸ Throughout her work, Kim TallBear foregrounds an Indigenous analytic of “being in good relation,” which she poignantly states as “liv[ing] together in a good way here—as kin or as Peoples in alliance with reciprocal responsibilities to one another and to our other-than-human relatives with whose land, water, and animal bodies we are co-constituted” (2019, 36). On being in good relation and sexualities, see TallBear (2018a; 2018b).

premise is that “the natural world cannot offer a utopian model for music-making and human-nature relationships” (Keogh and Collinson 2016, 8). This extractive, identitarian ethical program is, I agree, reductive. However, if we follow Keogh and Collinson’s critique and reject this premise, then from what ethical premises can we orient toward ecological disorientation and the problem of indistinction? In other words, rejecting this utopian, identitarian framework for creative knowledge work with and through sound does not mean that the labors of music studies practitioners cannot do the work of orienting toward better relations amid destructive ones. The ethical prospects of reckoning with ecological disorientation are not all or nothing, nor are the relational outcomes are reducible to harmony or disharmony, sustainability or unsustainability, preservation or extinction, presence or absence, inclusion or exclusion. Each of these states is a matter of aboutness, of whether and to what extent it is absent or present. The historiographical insights of Ochoa Gautier and of Chuh that I have highlighted throughout this chapter encourage us to orient instead around the quality of relations that a given method fosters. What relations does it foster? Between what? How does it respond to feedback? In contending with difference and the “fuzzy edge of the limit between nature and culture,” how does it focus more on “the types of action that [it] enables than [on] determining the meaning of the field” (Ochoa Gautier 2014, 214)?

The second implication is that argumentative prose alone is an insufficient form for academic labor in the humanities generally and music studies specifically. This is because the relational outcomes it is capable of effecting are inadequate to the problem of the gap between discursive calls for change and forms of knowledge and labor that

themselves express those reorientations. I written at length about this problem and offered a non-textual model in the form of a breath-controlled instrument that brings into embodied relation the current air quality of three user-defined cities (Niess 2021). If the previous chapters of this dissertation have operated within the analytical affordances of and limits of textual knowledge production, the following chapters of this dissertation operate in a propositional mode. In chapter three, I offer reorientations toward models of sonic creativity that aestheticize the climatic, life-supporting conditions of possibility for their own unstable existence. Such works of sonic creativity theorize their own existential conditions of possibility through sound, but not only sound. In the final chapter, I offer a pedagogical toolbox of models, ranging from course syllabi to instrument designs to films, that align with and take seriously the implications considered in this chapter.

Chapter 3: Parahuman Sonic Creativity

Reasoning on and on is a symptom of how people are still not ready to go through an *affective* experience that would existentially and politically bind them to [the climate crisis]. . . . We need art that does not make people think . . . but rather that walks them through an inner space that is hard to traverse. (Morton 2013, 184)

As you listen to melodies unfolding in the atmosphere you are breathing, you are not only hearing the instrument, you are hearing the living beings that make it. At this point, you think of how significant it is that music would have been and will be impossible without biodiversity. (Bertin 2021, n.p.)

Human nature

Scrambling late to curb hard consequences

Young mankind so much potential

Time to heed Earth's guidance

Though our science brought us to novel heights

We must come back to mother

First she'll ground us then she'll whisper

You were my most endangered species

She's in danger, too

— *Esperanza Spalding, "Endangered Species," from Radio Music Society (2012)*

Disenchantment and Re-enchantment

In the introduction to this dissertation, I offered this partial glimpse into my experience of ecological disorientation and its effects on my aesthetic and creative sensibilities. This chapter presents the inverse of that disenchantment by featuring some of the works responsible for my re-enchantment with sonic creativity. Their practitioners demonstrate a capacity to reconfigure the aesthetic, material, and political components of their creative work in sound to contend with, figure, or otherwise relate with the climate crisis and some of its disorienting effects. In short, this chapter constellates labors of sonic creativity that aestheticize the climatic, ecological conditions of possibility for their own existence. As works of sonic creativity, they theorize such conditions through sound, by sounding them, by putting them into sonic relation. Following Amitav Ghosh's insights (2020), these works do not conceal or obscure the climate crisis but grapple openly with its disorienting effects. In other words, their practitioners orient their creative work

toward revealing the crisis and its effects. What follows is a brief section clarifying how I think about this exemplary archive of sonic creativity that aestheticizes its own existential and ecological conditions of possibility through sound. The remainder of the chapter clarifies what I mean by “sonic creativity” and “parahuman” and then analyzes how and why each work of sonic creativity models relational practices and aesthetic techniques for living amid the climate crisis. This archive constitutes a system processing feedback, in which the climate crisis impinges on sonic creativity and its practitioners as much as sonic creativity and its practitioners model ways of being, sounding, and knowing amid the ecological disorientation.

“Sonic Creativity” and “Parahuman”

Sonic creativity

For the reasons offered in detail in chapter two, “environmental sound art” and “environmental music” promote mononaturalist, multiculturalist, identitarian, and anthropocentric discourses and practices. And while “music” might be a fair descriptor for some of the labors of sonic creativity, it does not adequately name the degree of material and aesthetic experimentation present in parahuman sonic creativity. For example, one might rightly consider Yakushimaru Etsuko’s “I’m Humanity” project (2016) of encoding recorded sound in the genome of a living bacteria population to be “music”—but to do so would fall short of naming its interspecies experiment with a living phonographic format as a very long-term data storage medium capable of outlasting the extinction of all human life. Consider the 1949 “Re-creation of huia calls” recorded by Hēnare Hāmana and R. A. L. Batley in an attempt to preserve a sonic record

of an already extinct bird. Hāmana's whistled imitation of huia calls, drawn from his memory, could rightly be heard as an utterly forlorn musicking. But listen to this recording today as if it were "music" alone does not adequately name this sonorous meeting place of human, bird, and phonograph that connects our twenty-first century analytical framing of ecological disorientation with settler colonization and overhunting in New Zealand. And consider environmentalist Bill McKibben's invocation of "the atmosphere" during an October 8, 2011 demonstration of Occupy Wall Street (OWS). Speaking through the human microphone—through which a single speaker's words are repeated piecemeal by a surrounding audience—McKibben and his amplifiers reenact a representational politics wherein humans speak for disenvoiced entities. The frameworks of music or sound/performance art account for neither the politics of nature nor the vocal medium through which McKibben and OWS protesters sound such a politics. I find the term sonic creativity sufficiently capacious for signaling the formal, material, and aesthetic range of these examples and others I consider in this chapter.

In contrast with the identitarian tendencies considered in chapter two, parahuman sonic creativity does not merely represent ecological disorientation. This representational mode is evident, for example, in Taylor Swift's 2020 albums *Folklore* and *Evermore*, which conservation biologist Jeff Opperman lauded in the New York Times because "the albums' lyrics abound with references to nature" amid a cultural landscape in which "the language of nature has been steadily draining from the vocabulary of our culture" (Opperman 2021). I can appreciate Swift's music and the fact that she "uses nature-themed words seven times as frequently as the other pop songs [from the first thirty-two

songs of Spotify's Today's Top Hits] do" (ibid., passim). But in such pastoralist, lyrical references to "nature," I do not find any aesthetic or pedagogical models for living amid ecological disorientation, for being in good relation, or really for changing anything. In Swift's case, representation offers no challenge to the capitalist systems of extraction and circulation that keep the global consumption of music running. In fact, in the case of Grimes's album *Miss Anthropocene* (2020), Grimes (former partner of Elon Musk) espouses an apocalyptic glee that lead critic Anupa Mistry to describe the album as "a convoluted narrative about personifying climate change through a fictional cosmology of demons and villainesses giddily celebrating global warming as a force of good" (Mistry 2020, n.p.). In contrast, representational examples that do pose such challenges (and which move and sadden me) include Busta Rhymes's *Extinction Level Event: The Final World Front* (1998)—whose opening track is eerily prescient of twenty-first-century crises, followed by its own apocalyptic glee in subsequent tracks—and Esperanza Spalding's "Endangered Species," which she performs with Lalah Hathaway on *Radio Music Society* (2012). Spalding's lyrics, excerpted in this chapter's epigraph, are pedagogical and critical; they implore listeners to listen better, to "heed Earth's guidance," to "come back to mother." Spalding and Hathaway envoice our planet as "mother," challenge listeners to understand how the technological "heights" of modernity are destructive, and invite us to hear our planetary mother whispering to us, "You were my most endangered species." And lest listeners should be so vain as to wallow in our own species' extinction, Spalding and Hathaway leave listeners with this parting alert, each syllable sounding throughout its own measure: "She's in danger, too."

By contrast, in the lyrical world that Swift conjures, representation only reinforces anthropocentric ways of relating, where the sea serves to separate humans and where trees are the backdrop to human love stories. So, while I do not disagree with Opperman's concession that "Ms. Swift's songs aren't going to reverse climate change or the decline of wildlife," I do disagree that Swift's songs "are a step toward reversing the decline of nature in pop culture, and that matters." Yes, music plays the social role of modeling ways of seeing, understanding, and sensing the world, but an increased representation of "nature" in lyrics and album art models little else than familiar anthropocentric ways of relating, seeing, listening, and sensing.

Others in the contemporary global music industry turn away from the representational mode of lyricism and toward the economic mode of philanthropy. For instance, consider Brian Eno's recent EarthPercent charity project. Founded by Eno in 2021, EarthPercent aims to redirect a larger percentage of music industry profits toward "the most impactful organisations dealing with climate change."³⁹ As *The Guardian's* Adam Corner observes, other artists and music festivals—Coldplay, Massive Attack, Ellie Goulding, Radiohead, and the annual Shambala Festival—have committed themselves to diminishing their carbon footprint by altering whether and how they tour, removing meat and fish from event menus, and embracing online streaming of music (Corner 2021, n.p.). Such economic interventions demonstrate how music industry professionals mobilize their public platforms toward reconfiguring the industry's

³⁹ EarthPercent's site states that it "is a charity providing a simple way for the music industry to support the most impactful organisations addressing the climate emergency." earthpercent.com, accessed February 16, 2022.

distribution and flow of energy and money to reduce harm and waste. Though parahuman sonic creativity operates in neither an economic mode nor a representational one, it might help to spur economic changes such as those described above. The following subsection and the examples considered throughout the chapter will theorize the parahuman with greater clarity and in positive terms.

One key feature of labors of parahuman sonic creativity is that they do not merely represent ecological disorientation but *express* it. By this I mean that, through sound, they aestheticize ecological disorientation as an affect, a “sensibility that permeates our society today, although it cannot be attributed to any subject in particular” (Shaviro 2010, 2). Hence, in doing so, they crystallize feelings and events that pervade their creator’s experiences and perspectives but that are not reducible to such experiences and perspectives in an authorial sense. In Steven Shaviro’s words, they are expressive in that they are both “*symptomatic* and *productive*” (ibid., original emphases). They are symptomatic in that they “provide indices of complex social processes, which they transduce, condense and rearticulate”; and they are productive in that “they do not *represent* social processes, so much as they participate actively in these processes, and help to constitute them” (ibid., 3). As an analytic, parahuman sonic creativity helps us to understand how ecological disorientation is not only an *effect* of the climate crisis but also operates as an *affect* expressed through and distributed among parahuman sonic creativity.

“Parahuman sonic creativity” is not the snappiest term. To help, I mobilize the frameworks of those who have found pithier terms such as Jacob Smith’s “eco-sonic

media,” Linda Weintraub’s “eco art,” and Joanna Zylińska’s “nonhuman photography” (Smith 2015; Weintraub 2012; Zylińska 2017). Others such as Amitav Ghosh (2016; 2020), Claire Colebrook (2013), and Steven Shaviro (2010) provide insights for thinking and sensing the climate crisis and extinction within literary and visual practices. J. J. Gibson (1979) helps us understand one of sonic creativity’s pedagogical affordances—namely, that it affords sensory learning through direct environmental perception in ways that learning from texts alone do not. Likewise, Stefan Helmreich (2016) affirms sonic creativity’s capacity to provide an “unexpected, sideways way in” to accessing and thus orienting toward ecological disorientation and the climate crisis. I draw on this array of theorists and theorist-practitioners—informed by creative practices such as literature, photography, visual and conceptual art, and phonography—to assemble a shared language for analyzing sonic creativity that aestheticizes its own existential and ecological conditions of possibility.

Linda Weintraub describes four ecological attributes of “eco art”: topics, interconnection, dynamism, and ecocentrism. The “topics” eco artists create with are three: “nonhuman organisms, the nonliving environment, and human actions,” where such topics “[determine] the work’s material and expressive components” (Weintraub 2012, 6, 7). Eco artists create from a fundamental orientation toward the interconnection and interdependence of all life and nonlife. Such interconnections highlight “the relationships between the physical constructs of a work of art and between the work of art and the context in which it exists” (*ibid.*, 7). Eco artists accept dynamism as the fact that all things change through time. By aestheticizing processes of “melting, evaporating,

growing, mutating, dying,” eco artists emphasize “actions over objects, and changes over ingredients.” Eco artists reject anthropocentrism and align instead with ecocentrism or “the principle that humans are not more important than other entities on Earth” (ibid.). Analogous to my analysis of Swift’s musical representation of “nature,” Weintraub likewise warns that aesthetic representation, for instance of nonhuman life, is not alone a sufficient criterion for ecocentrism. Visual artists who represent or otherwise depict such things as flowers, weather, and landscapes—such as Andy Warhol, Walter De Maria, and On Kawara—may still be rooted in anthropocentric methods, perspectives, and values (9). This somewhat differs from one of Jacob Smith’s four criteria for eco-sonic media, which may “represent environmental crisis” (Smith 2015, 6). However, Smith’s inclusion of representations of “crisis” is a more generous criterion than Weintraub’s.

Jacob Smith offers a four-part framework for understanding what he calls “eco-sonic media”:

sound media become eco-sonic media when they manifest a low-impact, sustainable infrastructure; when they foster an appreciation of, or facilitate communication with, nonhuman nature; when they provide both a sense of place and a sense of planet; and when they represent environmental crisis. (Smith 2015, 6)

In short, eco-sonic media are themselves materially or energetically sustainable, enable connections to nonhumans, emplace us planetarily, and/or “represent environmental crisis.” Smith’s academic labor itself is a kind of parahuman sonic creativity in that his theoretical framework of eco-sonic media does not stop at prose-based analytical labor. Rather, he mobilizes that framework to enact and create eco-sonic media, “putting some of the ideas from the book into practice, in the form of phenomenological and

collaborative experiments in eco-sonic media” (ibid., 12). And his more recent works model the same experimentation with sonic forms, as in *ESC: Sonic Adventure in the Anthropocene* (2019) and *Lightning Birds: An Aeroecology of the Airwaves* (2021). Smith’s attention to the energy requirements of eco-sonic media helps us to analyze not only the relational outcomes of academic labor or of sonic creativity alike, but also the energy and material inputs required to produce and sustain communicational formats such as books, conference presentations, instruments, and performances. Like eco-sonic media, parahuman sonic creativity calls into question or otherwise aestheticizes its own uses of energy and materials relative to a broader ecology of living beings and lands.

Parahuman sonic creativity fosters knowing through environmental perception, what J. J. Gibson calls “a different kind of knowledge” (Gibson 1979, 253). Such “knowledge of the environment” is different from the knowledge a child acquires “from parents, teachers, pictures, and books,” and it “does not ‘come from’ anywhere” but “is got by looking, along with listening, feeling, smelling, and tasting” (ibid.). Parahuman sonic creativity invites embodied sensemaking and thus affords ways of knowing the climate crisis based in bodies, senses, affects, and sounds. Its practitioners take seriously the alignment of form, problem, and relational outcome. Their designs may be understood as counter-designs to the anthropocentric normativity that would seek to wrangle such alignment into textual forms alone (Niess 2021).

Parahuman

The parahuman can be understood as a matter of perspectives and subjectivities that humans co-constitute with other life, land, and the atmosphere but which are never

reducible to human perspectives and subjectivities alone. Such a formulation might to some readers resemble a number of popular analytical proposals, including Timothy Morton’s “hyperobjects,” Rosi Braidotti’s writings on the “posthuman,” or Donna Haraway’s “cyborg” (Morton 2013; Braidotti 2011; 2013; Haraway 2016 [1985]). Such proposals helpfully reconfigure the distributions and scales at which humans participate in the formation of subjectivities and perspectives. One limit of such analytical formulations is a reliance on visual and textual thinking and world-making. For instance, consider Braidotti’s ethical charge that, amid the disorientation of the Anthropocene, “we need to *visualize* the subject as a transversal entity encompassing the human, our genetic neighbours the animals and the earth as a whole, and to do so *within an understandable language*” (Braidotti 2013, 82, my emphases). The imperative is an incisive and instructive model for what the parahuman might name, but why limit the formation of such a subject to an act of visualization?⁴⁰ And why circumscribe its affective potential within a politics and aesthetics of linguistic intelligibility and “*logos*-political being” (Moreno 2013)?

The parahuman is non-individual, a perspective that enfolds disparate perspectives. Hence, parahuman sonic creativity does not resolve those perspectives’ disparities but coordinates and aestheticizes them so that they may be temporarily traversed and sensed. The parahuman thus fosters connection among otherwise disconnected beings and scales of time and perception. On the question of such a metaperspective, Dipesh Chakrabarty wonders whether “it is possible to develop a *shared*

⁴⁰ From this question I exclude Timothy Morton, whose ecological theorizations rely on frequent appeal to musical examples, sonic thought, and attunement (Morton 2010; 2013; 2017a; 2017b).

perspectival position that can inform—but not determine—competitive and conflicted actions by humans when faced with the unequal and uneven perils of dangerous climate change” (Chakrabarty 2015, 142, my emphasis). This chapter demonstrates what such a “shared perspectival position” might sound like in selected labors of sonic creativity. While Chakrabarty interrogates the possibility of such a perspective, Claire Colebrook points to the climate crisis’s pernicious perspectival problem—namely, we lack such systems- and intersystem-level perspectives for accessing the “complex multiplicity of diverging forces and timelines that exceed any manageable point of view” (Colebrook 2013, 52). Even if “[t]he experience of climate change,” as Colebrook writes, “reveals multiple and incongruent systems for which we do not have a point of view” (ibid.), this neither means that anthropocentric relations are sufficient relations for such a problem nor that the development of parahuman perspectives is not a worthwhile response to such a problem.

The examples presented in this chapter demonstrate how practitioners of sonic creativity shape discrete points of view for feeling ecological disorientation and for fostering connections among humans, between species, and across time scales. They address questions such as: How does climate change impinge on the sensorium certain modes of sensing that call into question the commensurability of our everyday attention relative to the scales of climate change? How do those sensory modalities require new representational, communicational, and creative practices and forms? The prevalence of visual and textual responses to such questions leaves room for sound to “provide one unexpected, sideways way in, a way of rattling a common sense that usually operates in

the domain of the visual, in the register of the panoptic view from above, or from the future” (Helmreich 2016, xxii). The examples of parahuman sonic creativity considered here are pedagogical in that they model unexpected “ways in.” They facilitate occasions for contact with ecological disorientation, not so that we may wallow in existential dread and apocalyptic inaction, but so that we might learn something from that vulnerable space of being, for a time, disoriented and attuned to the parahuman. They demonstrate how the parahuman operates variously as both an object of attunement (e.g., Hāmana and Batley’s recording) and a perspective (an ethical practice of cultivating a point of view).

As a final introductory remark about the parahuman and the vulnerable space of deliberate connection with it, consider the American science fiction writer Ted Chiang’s story, “Anxiety is the Dizziness of Freedom” (2019). The story takes place in a near-future in which a quantum technology enables characters to relate with their “paraselves.” Such paraselves are parallel, but alternate versions of the characters; paraselves are windows into decisions that the characters themselves did not make but could have made. If you had a paraself their existence would be an extension of yours insofar as their existence affirms what you are not, but what you could have been had you made different decisions. Chiang’s figure of the paraself is useful for thinking the parahuman because the paraself names a relation that is constitutively of multiple, parallel worlds but never reducible to a single world or self.

The story’s conflict unfolds as characters struggle to navigate the emotional and ethical complexities that emerge from accessing a multiplicity of worlds and a multiplicity of selves. Characters contend with a spinning, centerless anxiety: Do my

decisions in this world make me responsible for terrible events that befall my paraself or other people I love in my paraself's world? Such anxieties result from a crisis of incorporation: the attempt to incorporate paraselves into one's understanding and experience of selfhood is so arduous it generates its own dysphoria. For instance, characters are profoundly troubled that actions they took within their known self "ruined someone else's life" in their paraself's world (Chiang 2019, 293). Other examples include "a man [who] obsessively worried that his paraself was having more fun than he was," and "a woman trapped in a spiral of doubt because her paraself voted for a different candidate than she did" (ibid., 297). By questioning the relationship between their decisions and far-removed outcomes, characters must navigate a new ethical paradigm and sense of responsibility. By wondering how their paraselves' decisions reflect on their own conception of self, characters are constantly renegotiating how they position themselves in their world relative to their paraselves. The story's quantum prism technology affords an abundance of world and of self. Such ontological abundance thrusts upon characters the need to navigate a novel ethical-emotional terrain and to question the ways that they relate to themselves and others.

We might understand parahuman sonic creativity as analogous to Chiang's fictional quantum technology. By aestheticizing the climatic, planetary, atmospheric conditions of possibility for aerobic life to endure and for sonic creativity to place at all, parahuman sonic creativity is critical technology that affords sensory access to ecological disorientation and its ensuing ethical and political quagmires. In some cases, such technologies already exist, and parahuman sonic creativity's role is to teach listeners how

attune themselves to the low hum of their parahuman perspective. For instance, consider Antoine Bertin's video essay *Species Counterpoint* (2021) (**Figure 3.1**), which is a plea to celebrate biodiversity as a condition of possibility for musicking. He does this by meditating on all the plant and animal species required to construct a mechanical, pneumatic piano. (I encourage readers to view Bertin's twelve-minute project for themselves, as well as his installation *333 Hz*, which "invites the visitor to listen to the evolving tempo of deforestation.")⁴¹ As Bertin narrates:

The mechanical piano is made of spruce (sound board), ebony (black keys), ivory (white keys), maple (bridge), beech, alder (windchests), hornbeam (hammer heads); bone glue, fish glue, and hare glue (to stick all that together), shellac (varnish); deer leather, cow leather, goat leather (bellows); felt from wool; rubber and rosewood for outside. (Bertin 2021)

Bertin's video essay compels listeners to access a parahuman perspective: when the instrument sounds, "you are not only hearing the instrument, you are hearing the living beings that make it." The pedagogy of Bertin's video essay crests when, addressing listeners in the second person, he softly narrates, "you think of how significant it is that music would have been and will be impossible without biodiversity" (ibid.). *Species Counterpoint* explodes the mechanical piano's "parts" in such a way that listeners might temporarily access a perspective that allows them to see, hear, sense, know the mechanical piano *as* a constitutively parahuman instrument. But why?

⁴¹ Bertin's *Species Counterpoint* is available at antoinebertin.org/species-counterpoint and directly on Vimeo at vimeo.com/588442882; a short, one-minute video and writeup on *333 Hz* is available at antoinebertin.org/333hz and directly on Vimeo at <https://vimeo.com/588443906>. I am grateful to Jacob Smith for introducing me to Bertin's work.

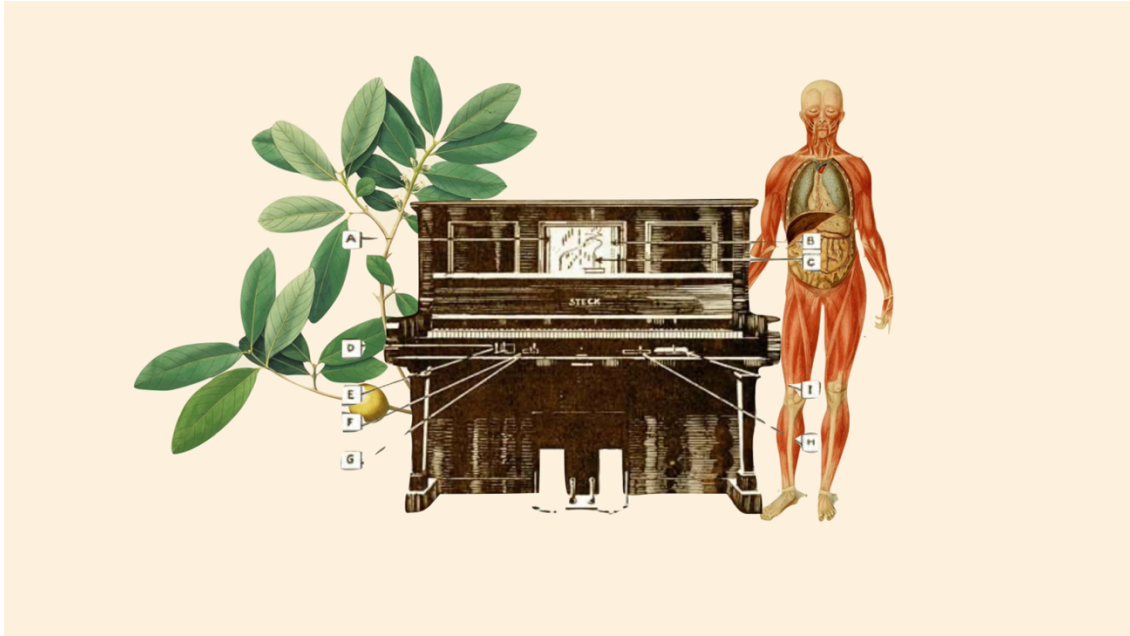


Figure 3.1: Still from Antoine Bertin's *Species Counterpoint* (2021) showing illustration of ebony plant (which includes species of the genus *Diospyros*), a mechanical piano, and an anatomical illustration of a human body. I gratefully reproduce this image with Antoine Bertin's written permission.

The urgent question today is whether and how to mobilize the parahuman as societies reconfigure their political arrangements and policies to contend with the climate crisis. The parahuman is, I think, a crucial figure in carrying out such work and the role of creative practitioners is to design occasions that temporarily afford access to scales, processes, systems, and relations that we otherwise could not perceive. Our knowledge of such scales, processes, systems, and relations, might be mediated by texts, but the role of creative practitioners is to design occasions for knowing them through embodied sensemaking. Hence, I have assembled the following examples of parahuman sonic creativity less for their compelling acoustic and musical aesthetics, and more for their pedagogical promise in teaching us what the parahuman might be and how it might be mobilized.

Extinctions

Consider two phonographic examples of parahuman sonic creativity that contend with species extinctions both actual and projected: (1) Hēnare Hāmana and R. A. L. Batley's 1949 "Re-creation of huia calls," and (2) Yakushimaru Etsuko's "I'm Humanity" (*Watashi wa jinrui*) from 2016. Through specific vocal techniques, both raise significant aesthetic, technical, and political shifts in phonography and music. Hāmana and Batley's attempt to vocally reanimate the extinct huia bird shifts away from the vocal politics of representation, of humans speaking for nonhumans. Instead, Hāmana's whistling models another relational possibility, an expressive parahuman voicing that is constitutively with/in/alongside. Yakushimaru's top-selling song represents a significant shift away from such fundamental musical aesthetic priorities as portability, audibility, and accessibility to humans by prioritizing instead its capacity to endure the extinction of humans, which I call *perdurability*. This shift reconfigures the technical basis of phonography via an organismal, genetic format that I call *microbial phonography*. Together, these shifts give dimension to a "parahuman aesthetics," which exhibits three key features, one negative and two positive: (1) it does not name relations that are "beyond human" or reducible to human vital or temporal scales, rather; (2) it instantiates relations in which humans are always only relative participants alongside extinct, yet-to-be-extinct, or yet-to-be-extant species, and; (3) this relationality constitutively voices and fosters points of contact with other-than-human perspectives. By unsettling harmful natural/cultural and human/nonhuman binaries articulated in musical and phonographic imaginaries, parahuman aesthetics might be one partial means of coping analytically and

creatively with ecological disorientation, especially as it manifests during this “sixth extinction” event. By voicing extinctions, these phonographic examples are occasions for attuning to parahuman relationalities: voicings-without-bodies, musicking-without-humans, and aurality-without-ears.

Hearing huia

Within a New Zealand radio station studio, the huia’s extinction brought together a narrator, a whistler, and a 10-inch acetate disk. The whistler is Hēnare Hāmana, an Indigenous Maori man and imitator of huia calls. The narrator is R. A. L. Batley, a local historian and descendent of New Zealand settler families. They and the phonograph they made in 1949 voice the following extinction story:

This recording has been made to preserve a resemblance to the call of the huia: one of our native birds, which is believed extinct. . . . During the first decade of the present century it became apparent to the New Zealand government and the museum authorities that the huia would soon become extinct unless some steps were taken to obtain and preserve live specimens. To this end, several expeditions were sent to a heavily bushed area . . . guided by local Maoris experienced in giving huia calls. The first expedition being led by Mr. Gregor MacGregor about 1909 . . . accompanied by Mr. Hēnare Hāmana. . . . We are fortunate to have in the studio Mr. Hēnare Hāmana . . . [who] will now give us his huia calls.⁴²

And then he gives them, and we can listen to them today. To listen today to this sonorous meeting place of human, bird, and phonograph is to complete a historical circuit that connects our twenty-first century analytical framing of the Anthropocene with settler colonization and overhunting in New Zealand. In a basic sense, Hāmana’s mimetic voicing represents the mobilization of phonography as a response to the extinguishment

⁴² Hēnare Hāmana and R. A. L. Batley, “Re-creation of huia calls,” *Ngā Taonga Sound & Vision* #26325 (1949), https://www.ngataonga.org.nz/collections/catalogue/catalogue-item?record_id=198333, accessed 10 December, 2017. The recording can be listened to at this source.

of species-scale existence. Thus, I am less interested the fact of the huia's extinction than in *how* this extinction compelled a phonographic response that voices something other than a human speaking for nonhumans.

We may wonder whether Hāmana's and Batley's phonograph "[makes] material the still recent silence in the biospheric fabric, a hole in the air, a placeholder where these birds were projected to be,"⁴³ to borrow Sally McIntyre's words. We listen at so many spatial, temporal, and material removes from the huia's call that Hāmana's and Batley's attempt to "preserve a resemblance" points more to the anxious performativity of archivization than to any aesthetic imperative for bio-acoustic veracity. Hāmana's whistling at once animates both Batley's decades-too-late anxiety about the huia's extinction and our contemporary awareness of an ongoing mass extinction event (Kolbert 2014). Here, following Ursula K. Heise, phonography intervenes to *counter* death through "[the] politically mobilizing power of mourning and melancholy" (Heise 2016, 35). Or, as Dugal McKinnon writes, "the recording affectively heightens the profundity of the ecological loss of sounds and their makers" (McKinnon 2013, 74). This "affective heightening" is possible insofar as Hāmana's and Batley's phonograph voices a parahuman relationality that exceeds any singular locus of enunciation. To attend to this parahuman vocality is to orient oneself to relational possibilities otherwise than being *in* or *after*. In the domain of politics, vocality operates as a speaking *for/against* that modulates one's *inclusion/exclusion*. Hāmana's whistling models, instead, a parahuman vocality: a co-relational voicing *with/in* vital assemblages.

⁴³ Sally McIntyre, <http://everyleafisanear.blogspot.co.nz/2011/04/collected-silences-for-lord-rothschild.html>, accessed 8 December, 2017.

To what extent would attunement to parahuman vocality render more empathic relations for configuring politics not around the anthropocentric *speaking subject* but in a web of *parahuman voicings*? By suturing our present attention to the open wound of an extinction for which certain human agents in the settler colonial history of New Zealand were responsible (Phillipps 1963; Dickison 2017), Hāmana’s voicing moves (us) between multiply enfolded temporal, spatial, and interspecies perspectives. This voicing unfolds from a singular species loss the densely interwoven agencies, forces, and histories of an ongoing mass extinction event, an event irreducible to the local agents convened in that studio in 1949 and thus irreducible to any historical or epochal analytic. This parahuman voicing so forcefully disrupts representational modes of thought, analytics of acoustic phenomenology, and the metaphysics of presence—which so dominate music studies—that it invites us to inhabit an aesthetic position that would “disembod[y] the anthropocentrism of sound analysis” (Ernst 2016, 45).

Herein lies the ethical charge of attunement to parahuman aesthetics: to listen for points of contact in a relationality that is not reducible to any human or other than human perspective. Hāmana’s whistling invites us to take up the ethical imperative of becoming attuned to the parahuman, of unmooring ourselves from the disciplinarily maintained, institutionally reinforced affective commitments of auralities based on a metaphysics of presence. The disorientation of the huia’s extinction with which Hāmana and Batley contend provides the conditions of possibility for a parahuman vocality to which, today, we might become ethically attuned.

Genetic phonography and Yakushimaru's "I'm Humanity" (2016)

In 2016, Yakushimaru Etsuko's⁴⁴ experimental pop song "I'm Humanity" (*Watashi wa jinrui*) was released in two conventional formats: the digital MP3 and the CD. In collaboration with geneticists at the Biological Resource Center of Japan's National Institute of Technology and Evaluation, Yakushimaru's song was also released in a microbial format: as genetically encoded in the genomes of a population of cyanobacteria. The technology that made this project possible follows recent developments in information encoding. Most significantly, it is possible to successfully transcode digital text and video files into the nucleic acids that make up DNA. Effectively the information encoded by the zeros and ones of binary code may also be encoded by the four base-pairs of DNA (adenine [A], thymine [T], guanine [G], and cytosine [C]) and finally inserted into the genomes of living bacteria (Shipman et al. 2017; Goldman et al. 2013).

Since binary code is the basis for digital music formats like the MP3, recorded music may also be genetically transcoded and inserted into living organisms' genomes. "I'm Humanity" is not the first musical project to explore this principle; precedents include Charlotte Jarvis's *Music of the Spheres* (2012) and OK Go's album *Hungry Ghosts* (2014).⁴⁵ But, unlike these other projects, "I'm Humanity" imagines a future musical context in which humans have gone extinct. Moreover, Yakushimaru depends on the long-term storage capacities of this genetic format in order to imagine future

⁴⁴ Following the Japanese convention in which family names precede given names, I will hereafter refer to Yakushimaru Etsuko as Yakushimaru.

⁴⁵ On *Music of the Spheres*, see Jarvis's now-archived webpage at Jarvis (n.d.); on *Hungry Ghosts*, which does not appear to have come to fruition by the time of writing, see Marantz (2014).

nonhuman “auditors”—a word we will have to rethink alongside the parahuman reconfigurations of Yakushimaru’s project. Yakushimaru calls this “post-humanity music”: “even if humanity as we know it becomes extinct, it will live on.”⁴⁶ I refer to this capacity to endure at especially long timescales as *perdurability*. Hence, Yakushimaru’s creative emphasis on phonographic *perdurability* establishes a parahuman circuit of audibility that is decreasingly “*of* the human,” “*by* the human,” and “*for* the human,” following Joanna Zyliniska’s framework in *Nonhuman Photography* (Zyliniska 2017, 5).⁴⁷

As Jonathan Sterne has argued, the MP3 format signaled the social importance of musical *portability* in the development of musical reproduction and listening technologies. If phonographic recording technologies made sound reproducible, it limited the sites of listening, a problem which the MP3 overcame by affording greater musical portability (Sterne 2006; 2012). While Yakushimaru still released “I’m Humanity” in MP3 and CD formats, her use of a genetic, microbial format represents a significant technical and aesthetic shift away from fundamental musical priorities like human audibility and accessibility. Instead, the possibility of human species extinction produces the conditions of possibility for Yakushimaru’s aesthetic innovation of genetic phonography, which responds to this crisis by intensifying the degree of *perdurability* of musical formats.

⁴⁶ STARTS Prize, “I’m Humanity,” <https://starts-prize.aec.at/en/im-humanity>, 2017.

⁴⁷ A number of those who have engaged with my writing and presentations on this topic have drawn parallels between Yakushimaru’s project and the Voyager Golden Records launched into space in 1977. I acknowledge the connections but do not explore them here. For more on the Voyager Golden Records, see Chua and Rehding (2021) and Schmitt (2017).

Lyrics such as “I’m humanity and I’ve gone extinct / Bye-bye” (*horon jatta baibai*) imagine a future world without humans that is phonographically written *in* a bacterial genome.⁴⁸ Yakushimaru is “waiting for the music within [these genomes] to be decoded and played by the species that replaces humanity,”⁴⁹ which stages a parahuman musical encounter in the song’s final lyrics, by way of a greeting “I’m humanity / Nice to meet you / Hello” (*Watashi wa jinrui / hajime mashite / harō*). Imagining the future fulfillment of this interspecies musical greeting requires us to dramatically rethink what constitutes phonographical audition. In this context, what is the analytical purchase of concepts like musicking, aurality, and voicing, in which “to listen” to “I’m Humanity” is to instantiate a not-yet-extant species capable of decoding Yakushimaru’s genetic inscription? While I am less concerned with the likelihood, tenability, or even “musical content” of Yakushimaru’s project—which can be listened to⁵⁰—I do find it significant that her imagined aurality recasts and re-voices fundamental assumptions about musicking, wherein existing *human auditors* are replaced by yet-to-exist *nonhuman decoders*.

The intensification of extinctions that attends the Anthropocene has not only generated new ways of imagining futures without humans. These disorienting effects have also impinged on fundamental principles of musical aesthetics. This impingement is commensurate with a shift away from musical priorities like audibility and accessibility

⁴⁸ Lyrics and translations from <http://yakushimaruetsuko.com/archives/2602>, and in consultation with my colleague, Dr. Keisuke Yamada.

⁴⁹ STARTS Prize, “I’m Humanity,” <https://starts-prize.aec.at/en/im-humanity>, 2017.

⁵⁰ “やくしまるえつこ『わたしは人類』Etsuko Yakushimaru - “I’m Humanity” / ArsElectronica STARTS Prize Grand Prize Winner,” <https://www.youtube.com/watch?v=92Dcp9Fbdac>, May 9, 2017.

for any human point of view, and toward perdurable formats that provide the occasion for parahuman musical encounters. We may thus historically situate projects like Yakushimaru's within an epoch that impinges on the technical and performative mattering of music certain parahuman scales of temporality and vitality. Even for stratigraphical thought, musical perdurability has figured importantly, including to geologist Jan Zalasiewicz for whom musical fossils might demonstrate "the essence of humanity" to future alien geologists (Zalasiewicz and Freedman 2008, 236). He writes, "even if petrified fragments of LP or CD lie somewhere among the city rubble-stone, their . . . melody is unlikely to be revealed": "music cannot long be fossilized" (ibid.). Yakushimaru's genetic technique responds to this problem of musical format disintegration by premising phonographical futurity on human obsolescence. That is, "I'm Humanity" produces a complex aural circuit that sutures two temporalities: (1) a present one that, insofar as we may still listen to it, contests human species extinction, and (2) a future aurality composed of a not-yet-extant species capable of decoding a genome. It is in the suspension between these two temporalities that a parahuman musical aesthetic gathers intensity.

Understanding the vocal technics at play in "I'm Humanity" as a form of deliberate archivization for future nonhuman auditors, we might ask: how does Yakushimaru's genetic archivization require us to rethink the two constitutive concepts of phonography: voicing (*phonē*) and writing (*graphē*)? For one, Yakushimaru answers this question in her lyrics: "Sea, mountains, wind, birds / sky, stars, and your voice / With A, G, C, and T / DNA makes you who you are" (*umi to yama to kaze to tori to / sora to*

hoshi to kimi no koe / A to G to C to T de / kimi wo tsukuru DNA). For Yakushimaru, voice (*koe*), specifically her own phonographical voicing, finds its material form in genetic encoding. In this arrangement, phonography both becomes thinkable *as* genetic inscription, and finds its technical basis *in* such inscription. By decentering voicing and musicking as uniquely referential to or even sonically accessible to human perspectives alone, microbial phonography becomes a musical technique for forging parahuman affinities with not-yet-extant perspectives.

Parahuman aesthetics

Listening today to Yakushimaru's "I'm Humanity" is like listening today to Hāmana's imitations of the *huia*: their voicings make audible already-extinct, not-yet-extinct, and not-yet-extant perspectives. Yakushimaru's microbial phonography ideally makes her own voicing⁵¹ audible to an imagined species of genome-decoders, and inversely makes those future bodies eerily audible to us today. Extending Claire Colebrook's (2013) analysis of "images without bodies," I understand Yakushimaru's genetic phonography to give way to a parahuman mode of voicing extinction: a voicing-without-bodies, musicking-without-humans, and aurality-without-ears. Commenting on images that similarly imagine futures without humans, Colebrook writes that such projects "indicate an era or epoch that has begun to sense, if not have a sense of, a world without bodies" (Colebrook 2013, 62). If this "having a sense" of the Anthropocene depends on visual mediations, then one of my aims has been to consider the role of phonographic

⁵¹ Extending Christopher Thurman's claim that "if Shakespeare survives the apocalypse, so too does whiteness" (Thurman 2015, 59), I find it important to temper Yakushimaru's claim to represent "humanity" in the titular statement "I'm Humanity" (*Watashi wa jinrui*).

voicings—not merely in representing this bodiless-ness but in fundamentally reorienting the aesthetic and technical grounds on which we might understand phonography, music, and voicing. Parahuman aesthetics strives toward “the difficult, if not impossible, task of making available to human experience a cascade of events that unfold on multiple scales, many of them inhuman” (Chakrabarty 2015, 183). Specific to the disorientation of extinction, to listen today to Hāmana’s and Batley’s 1949 phonograph alongside Yakushimaru’s “I’m Humanity” is an occasion for attuning to the aesthetic reconfigurations toward parahuman relations that attend the disorientation of the Anthropocene. In becoming oriented toward the parahuman, we as theorists, artists, breathers might find one means of coping—analytically, creatively, vitally—with the disorientation of feeling, thinking, and living that attend the ever-intensifying conditions of life amid the climate crisis.

“Beyond” Human and Parahuman Protest Vocalities⁵²

The below is excerpted from a forthcoming essay on protester’s uses of the human microphone during Occupy Wall Street (OWS) protests. The portion not included here contextualizes OWS, clarifies the mechanics of the human microphone, and juxtaposes contrasting instances in which the human microphone both enacts a non-hierarchical, “horizontalist” vocal politics and is vulnerable to cooptation that reproduces gender and racial hierarchies. The second half of the essay, reproduced below, considers the invocation of environmental politics at OWS as well as nonhuman speech and

⁵² This section is excerpted from my forthcoming essay, “Troubling Vocality: The Human Microphone and Parahuman Attunement,” in *Oxford Handbook of Protest Music*, eds. Noriko Manabe and Eric Drott (Oxford: Oxford University Press).

representational politics enacted through vocality. In it, I theorize a parahuman politics of attunement using my observations about protest vocality at OWS as a departure point.

Logo- and Anthropocentric Limits on Vocality

Commentators on the human microphone's role in fashioning OWS's political imaginary differentiate the political into that which matters and that which does not. In such analyses, the problem of political mattering relates to voicing as an act of both (self-)representation and intercorporeal relationality that never quite breaks from a notion of the linguistic. Consider that John Protevi is moved insofar as "the affect produced by entrained voices" via the human microphone yields "an *eros* or *ecstasis* . . . the characteristic joy of being together" (Protevi 2015, 91); that Marina Sitrin and Dario Azzellini attend to how "people recuperate . . . voices they did not have under representational forms of democracy," but whose voices come to matter insofar as their "claim for voice and language is a claim," enacted sonorously via the human microphone, "for real democracy" (Sitrin and Azzellini 2012, 19); that Frances Dyson lauds the human microphone's ability to "insert a pause" into highly mediat(iz)ed communication practices (Dyson 2014, 153); that, for Howl, an OWS participant whom I interviewed, "what was cool about the human mic is: it was my words . . . it was my contribution and it was being held up by all of these people and being amplified by all of these people who didn't have to"; and that, for Sitrin, the human microphone's "horizontalism is a tool in the sense that . . . language may become the [basis for] politics" (Sitrin 2012, 81).

Implicit or explicit in these commentators' capacity to be moved by the human microphone is the way that language functions as a condition of possibility for protest

vocality. That is, the vocal entrainment that so ecstatically moves Lorey, the capacity to make claims to voice and language that frames Sitrin and Azzellini's understanding of horizontalism as based in "affective politics" (2012, 38), the slowing echo that disrupts "communicative capitalism" (Dean 2014, 383–85), the amplification of Howl's speech—these depend partly on words' linguistic stickiness to constitute the human microphone's vocally repeatable content. Under such conditions, protest vocality is never entirely separable from speech, and words are the language-specific, sonic stuff of vocality and its ensuing political potentiality. In this way, the human microphone's variously imagined affective potentials to activate a politics through acts of voicing are unnecessarily limited by a conception of the political whose domain of audibility is tethered to the limits of linguistic mattering. Here my matters of concern begin to spiral outward from OWS, though it continues to matter and I will return to it.

If the reducibility of the human microphone's content to *logos* begins to trace its political periphery, then human microphone participants—and those who find in it affective, political potential—are commensurate with what Jairo Moreno calls the "*logos*-political being." For such a being, "the elevation of the possession of *logos* as the specific difference that organizes the social field" results in "the partition of the political field into one sphere of radical unintelligibility . . . and one of radical intelligibility" (Moreno 2013, 226, 228). While intelligibility may refer to instances when institutions or individuals organize political participation along an axis of linguistic difference (e.g., between Hispanophones and Anglophones), I treat vocality—the conditions of possibility for

voicing—with respect to a more expansive set of configurations irreducible to material configurations of human speech.

Consider Dominic Pettman’s “appeal to listen to voices that we would normally never think of as such and in the process make something audible that previously wasn’t” (Pettman 2017, 7). I extend Pettman’s proposal for “entertaining the *possibility* of a non-metaphoric ecological voice . . . in terms of a potentially productive thought experiment in this age of the Anthropocene” (ibid., 66). I understand Pettman’s appeal “to listen to voices” at more expansive scales as an ethical task for living in an age of differently shared ecological precarity, one for which the conditions for aerobic life are changing rapidly and drastically. As Brian Massumi suggests, such an ethical, epistemic endeavor may provide “fertile ground” for an “alternative politics . . . if only it [were] *attuned* to a different *affective tonality*” (Massumi 2017, 46 my emphasis). While Massumi’s “attunement” and “tonality” connect to sonority metaphorically (as in the colloquialism “to be in tune with”), I follow a more direct interpretation of these terms to give shape to becoming attuned to the Anthropocene’s “massively distributed” spatial, temporal, and vital scales and intensities (Morton 2013). The “Mic check!” that interpellates OWS participants as *logos*-political beings insofar as they now amplify (or refuse) the speaker’s words need not remain a normative, logo- and anthro-po-centric limit for thinking about, living with, or being moved by protest vocalities and their political mattering.⁵³

⁵³ While a thorough treatment of perspectivism is beyond the scope of this chapter, it may be another point in the constellation from which to re-view Althusserian interpellation; to be attuned to parahuman vocality would be to “[accept] the condition of being its ‘second person’” (Viveiros de Castro 1998, 483).

“Occupying the atmosphere”

Alongside economic and political equality, sustainability and environmentalism preoccupied some OWS participants who organized a sustainability working group, permaculture projects, and the non-profit direct-action environmental organization TIME’S UP!.⁵⁴ Bill McKibben—senior advisor and co-founder of 350.org, a non-profit for “climate justice”—spoke at OWS on October 8, 2011. Through the human microphone, McKibben spoke to a large crowd at Washington Square Park about the Keystone Pipeline. He linked his concerns about the climate emergency with anti-corporatism and framed OWS as a constructive occupation of space against Exxon’s destructive one:

The reason that it’s so great / that we’re occupying Wall Street / is because Wall Street / has been occupying the atmosphere. / That’s why we can never do anything about global warming. / Exxon gets in the way. / Goldman Sachs gets in the way. / . . . The sky does not / belong to Exxon. / They cannot keep using it / as a sewer / into which to dump their carbon.⁵⁵

By invoking “the atmosphere” as a nonhuman entity, McKibben and his amplifiers reenact a representational politics wherein humans speak for disenvoiced entities. If the human microphone makes possible an alternative to representational democracy—to being *spoken for*—then McKibben’s actions call into question whether the human microphone maintains anthropocentric limits on which entities are or are not social, to the extent that vocality modulates this political mattering. At one level, the human

⁵⁴ “Occupy Permaculture,” August 6, 2012, <http://www.permaculture.nl/en/occupy-permaculture>; TIMES UP! organized a “sound bike dance party,” in which bikers projected amplified dance music in the streets surrounding Zuccotti Park. “Time’s Up! Sound Bike Dance Party at Occupy Wall Street,” uploaded September 30, 2011, <https://www.youtube.com/watch?v=g8dK7e0yQP4>.

⁵⁵ “Bill McKibben at Occupy Wall Street rally 10/8/2011,” uploaded October 8, 2011, <https://www.youtube.com/watch?v=13S5uqPLJuk>. Slashes indicate pauses for amplifiers.

microphone struggles to be an otherwise to representational politics; at another level—one at which “social beings” does not invoke only human beings—McKibben’s human microphone reinstates representational politics by slicing the world into human beings and nonhuman entities, “the human” and “the nonhuman” being already overdetermined and too neat in their conceptual separation. Must human capacities for *logos* define the limits of political eventality in spaces of protest? Must those spaces remain the grounds for envoiced human figures when parallax perspectives are urgently needed? By what means might attunement to parahuman vocalities figure a vital politics? What are the political and ecological stakes that accompany such attunement? What are its own limits and failures?

Attunement to Protest Vocality Otherwise

Commentators of recent decades have critiqued late twentieth-century frameworks for critical thought—critical theory, ideology critique, biopolitics—for theorizing power, matter, and therefore what constitutes the political in overly logo- and anthropo-centric terms. Such approaches are insufficient for social theories that develop political possibilities in terms that depart from these centrism, especially in response to catastrophic climatic events and conditions of life in the Anthropocene (Barad 2012; Bennett 2010; Chakrabarty 2009b; 2015; Latour 2004; Morton 2013; Povinelli 2012; 2016; 2017). In light of these analytical offerings, I consider how the human microphone’s elevation of *logos*, with emphasis on McKibben’s speech, has the effect of separating out of the political sphere entities and beings that, within normative designs, do not speak, but that may otherwise express political vitality via the affective capacities

of their vocality as parahuman.⁵⁶ This exclusion enacts fraught human/nonhuman and culture/nature hierarchies that have been used to justify extractive, colonial projects for which “natural resources” sustain only certain human collectives while extinguishing others and their relatives. Such destructive projects develop, by design, techniques for figuring nonhumans and “nature” as mute(d) means to human ends. Fortunately, analytical interventions and other ways of living open possibilities for attunement to arrangements otherwise.⁵⁷

Stem cells, dietary fat, power outages, heaps of trash—“though such things do not [presently] qualify as political stakeholders,” Jane Bennett argues, “they form the milieu of human action or serve as means or impediments to it” (Bennett 2010, 39). To safeguard such material assemblages from relegation to the apolitical, Bennett advances a “vital materialist theory of democracy” wherein “the divide between speaking subjects and mute objects” is dissolved. Accordingly, “the scope of democratization . . . can be broadened to acknowledge more nonhumans in more ways,” constituting an “ontologically heterogeneous” public that is no longer “an exclusively human collective” (ibid., 108–9).

With McKibben’s linguistic instantiation of “the atmosphere” in mind, Bennett’s critique of the logocentric formation of publics is crucial to rethinking protest vocalities. In Bennett’s gloss of Rancière’s dissensus model of publics, political acts construct scenes wherein “what was formerly heard as noise by powerful persons begins to sound

⁵⁶ Note that ASL interpreters—including Howl, who told me this—aided deaf OWS participants in using the human microphone as speakers.

⁵⁷ For a gloss of these debates see Povinelli (2016: 69–76).

to them like ‘argumentative utterances’” (ibid., 105). Such utterances, or reasoned speech acts, are for Rancière the defining limit for becoming politically intelligible, making political participation an exclusively human activity; the human microphone, through which spoken language circulates, may just as well fit Rancière’s model. Bennett resists this model because, she maintains, nonhumans may “catalyze a public” affectively and make “argumentative utterances” not because they *speak*, but because they *semiotize*⁵⁸ or “*signal*” (ibid., 107, 101). Although Rancière does not include the possibility of nonhuman sound to repartition the distribution of the sensible and therefore constitute a political act, his model of politics, for Bennett, “implicitly raises this question: Is the power to disrupt really limited to *human speakers*?” (Bennett, 106, my emphasis).

If the human microphone (instances of its cooptation notwithstanding) successfully reapportioned the distribution of the sensible by activating affective responses to *logos*, then Bennett’s vital materialist political theory proposes to reconfigure the basis for political mattering. “What if,” she writes, “we *loosened the tie between [political] participation and human language use*, encountering the world as a swarm of vibrant materials entering and leaving agentic assemblages?” (ibid., 107, my emphasis). Rather than immediately responding, I wish to trace how others have similarly theorized political models that decenter the “human” while attending to “nonhumans.” I proceed not in a mode of critique—that “practice of negativity . . . subtraction, distancing, and othering”—but rather with a “practice of diffraction” that gathers generative insights into a constellation of thought. By “diffracting” this constellation and

⁵⁸ For a Peircean approach to musicking and biosemiotics see Tomlinson (2016). For a Peircean approach to biosemiotics see Kohn (2013).

“reading for patterns of differences that make a difference,” I hope my commentary may make analytical and methodological openings, not prescriptions (Barad 2012, 49–50; Latour 2004, 245–46).

Diffractions

(i) *Beyond Human—Its Limits—Parahuman*. Some thinkers propose a notion of “beyond” in order to figure an otherwise to anthropocentrism. Consider Val Plumwood’s “paths beyond human-centeredness” (Plumwood 1999) or Eduardo Kohn’s movement “beyond the human” (Kohn 2013). Or consider others still, like Zakiyyah Iman Jackson (2015), who name such proposals’ limits. Based on his work with the Runa of Ecuador’s Upper Amazon, Eduardo Kohn offers an analytic of “beyond” as that which “exceeds, at the same time that it is continuous with, its subject matter” (Kohn 2013, 225). “The goal” of practicing attunement “beyond the human” would be “neither to do away with the human nor to reinscribe it but to open it” (ibid., 6). At one level, I partially endorse a “beyond human” orientation toward vocality because I think it opens analytical possibilities for reconfiguring the mattering of vocality in relation to a more capacious range of selves that exceed logo- and anthropo-centric politics. Like Bennett, Kohn writes that “beyond human language lies semiosis”; that is, “there are selves [who semiotize] beyond the human” as a language-bound being (ibid., 226). While reasoned human speech may produce ideological speaking subjects in spaces of protest, an analytic of “beyond” implicates a different relational model of a sonorous self (“distributed over bodies”) *within* an ecology of selves (“one of many other selves within a body”) (ibid., 75). If “modes of *subjectivation*,” “collective *subjectivity*,” and “the transpersonal *subject*”

(Lorey 2014, 49; Juris 2012, 266; Lerner 2012, 67; my emphases) anthropocentrically overdetermine politics as a domain of relations between human subjects alone, then a “beyond human” analytic “draws attention to the fact that some of the attributes of our human selfhood”—namely, vocality—“are continuous with theirs [i.e., with ‘beyond human’ selves]” (Kohn 2013, 226). Such points of contact are occasions for empathic connection.

At another level, however, I echo Zakiyyah Iman Jackson who asks of such proposals: “What and crucially *whose* conception of humanity are we moving beyond? Moreover, what is entailed in the very notion of a beyond?” (Jackson 2015, 215).⁵⁹ By cautioning that “gestures toward . . . the ‘beyond’ effectively ignore praxes of humanity and critiques produced by black people” whose “potentially transformative expressions of humanity are instead cast ‘out of the world’ and thus rendered inhuman in calls for a beyond” (ibid., 215–16), Jackson invites us to see how Kohn’s singular “subject matter” risks overrepresenting “Man” as “human.”⁶⁰ While Jackson points to the effacing tendency of calls “beyond the human,” Val Plumwood responds to another argument against “paths beyond human-centeredness,” namely that they imagine an impossible “view-from-nowhere which abandons all specifically human viewpoint[s]” and are therefore inevitably anthropocentric (Plumwood 1999, 74). Plumwood counters such arguments by conceding that while “it is impossible for humans to avoid a certain kind of human epistemic locatedness,” such locatedness “is not the same as anthropocentrism.”

⁵⁹ To be clear, Jackson does not invoke or directly respond to Kohn. I am putting their writings in conversation. Jackson is responding in general to “appeals for movement beyond ‘the human’” (Jackson 2015, 215).

⁶⁰ On “Man” and its overrepresentation, see Wynter (2003).

That is, “ethical interest” need not be conflated with “epistemological locatedness” since empathy “involve[s] some form of . . . going beyond our own location and interests, but it does not require us to *eliminate* either our own interest or our own locatedness” (ibid., 75).

It is possible to reconcile these orientations toward the “beyond human” by positing what I conceive of as the parahuman. If the “beyond” risks imagining a non-location and effacing non-white, non-Western, and/or anticolonial human praxes, the parahuman avoids overdetermining “the human” as a particular genre of human practice (Wynter 2003). The parahuman names a constitutive relationality in which humans are possible participants, but to which relationality they cannot be reduced. Specific to vocality, the parahuman affords relational possibilities other than representation: if logo- and anthropocentric politics figure vocality as a speaking *for/against* that modulates one’s *inclusion/exclusion*, the parahuman figures vocality as a co-relational voicing *with/in* vital assemblages for which general semiosis, not restricted to and often refusing speech, modulates one’s *with/in-ness*. To think “beyond the human” is incisive and troubled, and invites us to ask: to what extent would practices of attunement render empathic political configurations not around the anthropocentric *speaking subject* but in relation with *parahuman voicings*?

(ii) *Anthropomorphisms*. One figure for decentering the anthropocentric speaking subject of politics is, counterintuitively, anthropomorphism or “the interpretation of what is not human or personal in terms of human or personal characteristics” (Bennett 2010, 98). The *anthropo* in *anthropomorphism* is porous and names, as Elizabeth A. Povinelli

writes, “regionally more or less densely compacted forms and modes of existence, one component of which has been abstracted out and named ‘the human’” (Povinelli 2017, 294). For Jane Bennett, anthropomorphisms allow one “to relax into resemblances discerned across ontological divides.” As an “everyday [tactic] for cultivating an ability to discern the vitality of matter”, anthropomorphisms forge points of contact for traversing such “ontological divides” and thus aid in countering late capitalist arrangements that fix life and matter (what lives, what matters) to commodity forms (Bennett 2010, 99, 119–20). Thus, although forests are not *mute*, this does not mean that envoiced forests are not vulnerable to being *muted* by other entities, a vulnerability too familiar within OWS.

Elizabeth A. Povinelli recounts a scenario in which the Australian settler state and extractive capitalist enterprises (the object of McKibben’s protest) are differently attuned to an estuary’s ontological status than are the Indigenous people who live there. For them the estuary, Tjipel, “does not refer to a thing but is an assertion about a set of . . . orientations without an enclosing skin” (Povinelli 2016, 100). Tjipel is at once a body of water, a breast-bearing person who fell to the ground, and, for state mining corporations, a profitable object of resource extraction; Tjipel names “the coexistence of multiple entities” and temporalities (ibid., 93). “Tjipel’s struggle to exist” between two differently attuned arrangements of existence for which Tjipel is “not the same thing” conjures two “political questions” concerning beyond human selves’ vocality: (1) “If all forms of life are being affected by one form of life, shouldn’t they *have a say* in how the planet is governed?”; and (2) “should modes of existence that are being suffocated by capital *have*

more of a say than those modes of existence that thrive on capital?” (ibid., 100, 115–116, my emphases). Taking seriously Povinelli’s questions about modes of existence *having a say* distinct from *logos*, let us reconsider Bill McKibben’s human microphone.

Speaking through the human microphone for the sky’s proprietary rights—“The sky does not belong to Exxon”—McKibben reenacts the representational politics to which the human microphone has been idealized as an alternative. Although the atmosphere may be *spoken for* (or *against*) in legislative forums or at protests, a politics of linguistic representation tethers political vocality to human *logos*, and is not attuned to the possibilities that (1) “the atmosphere” voices itself via material arrangements incommensurate with dominant human analytics for vocality; (2) to practice attunement to this voicing is to assert an ethical orientation; or (3) these may be conditions of possibility for activating an affective politics of attunement to parahuman vocality.

When McKibben instantiates and singularizes the sky’s presence with signifiers (“*the sky*,” like “*an estuary*”), it is not rendered politically sensible/vocal “on its own terms” (for want of a less logocentric phrase), insofar as the capacity for speech forecloses its entry into that domain of sensibility, audibility, and political mattering. Celebrations of the human microphone’s horizontalism must again be tempered for instantiating an exclusionary hierarchy between *logos*-vocality (what is intelligible and therefore matters politically) and parahuman vocality (what is unintelligible and therefore does not matter politically). Linguistic representation of “the sky,” while well-intentioned, risks reinstating the logic that figures “the sky”—that increasingly noxious oxygenic progenitor of McKibben’s vocality—as an up-there fixity separate from “us.”

Tobias Menely raises precisely this question of humans *figuring* nonhumans: “What elemental resources,” if not *logos* matter, “might we call upon *to figure* this elusive atmosphere?” (Menely 2014, 100, my emphasis).

Perhaps *parahuman vocality*, practices of *attunement*, and the designs and pedagogies that would gather around them are figures for rendering sensible a parahuman, affective politics for contesting the hegemonic power of normative regimes otherwise unattuned to such mattering. “Beyond human protest vocality” makes it analytically possible to figure politics otherwise by anthropomorphizing vocality—not speech—as an attribute of selves. Whereas the human microphone may figure nonhumans through exclusionary politics of *speaking for* or *against* mute/d nonhumans, I suggest several arrangements in which parahuman vocality may yet become the intelligible, sensible, affective basis of a politics for which attuning is the otherwise to representing and/or identifying: as when I am hailed by the gaping mouths of garbage trucks, whose roaring halitosis weekly connects me to distributed digestive cycles; or when I am nauseated by the bob of plastics in urban waterways’ lapping waves, the chronic spit-up of an organ overworked; or when air-conditioners sound like wheezing stomas between homes and ever-warmer “outsides.” I offer these vocal anthropomorphisms as a preliminary “poetics of an experimental orality” wherein “the mouth [is] a cavity by which the poetical” and the political “may gain intensity” through practices of attunement to such arrangements *as* parahuman vocalities and not as quotidian objects of disenchantment (LaBelle 2014, 12). This difference in orientation

consequently affords different relational horizons which other ways of knowing, living, and relating might sustain.

Vocal anthropomorphisms promise “oddly enough [to work] against anthropocentrism” (Bennett 2010, 120). As such, protest sites would not be limited to in-the-street gatherings or online forums, they would render quotidian encounters with parahuman vocalities highly political. A self attuned to this political arrangement becomes akin to Rosi Braidotti’s “nomadic subject,” who “moves across species and beyond anthropocentrism,” who is “an in-between . . . connected to a variety of possible sources, time lines, and forces” (Braidotti 2011, 101). Attunement to parahuman vocalicity circumvents limitations on subjects as possessors—of language, land, life—and thus rejiggers that crucial unit of political belonging—the language-having *subject*—into something more like *voicing selves* and *attuning selves*. What a representational politics comfortably figures as an “individual,” the parahuman scatters across multiple vital and material scales as a partial co-participant in contested processes of becoming. From this analytical orientation may follow counter-designs, methods, and pedagogies for resisting the designs that sustain anthropocentric normativity (Niess 2021).

Whether such possibilities are actualized will depend, I think, on aesthetic interventions that mobilize this bundle of parahuman vocal affects toward political action. Brian Massumi writes that “[t]hat would be the job of art: to distill the aesthetic dimension belonging to every event into an event in itself” (Massumi 2017, 81). Could this not at once be the task of protests but also of scholarship: to blur its resemblances to art and performance, to aestheticize urgent matters of concern?

(iii) *Anthropocene*. These diffractions implicate an ethical orientation toward the Anthropocene that I reflect in my thinking about protests, vocal practices, and sonic creativity broadly. Protest vocalities, within the scope of my thinking here, are moveable along various macropolitical axes according to which certain material configurations are coordinated as either politically intelligible or unintelligible, affectively moving or unmoving, vital or inert. The instances of the human microphone in OWS I have considered here show that the determinant of this coordination is the capping of vocality at *logos*. Other options for political arrangements may emerge from an attunement to parahuman vocalities and their engendering affects. Distinct from arguing for its *possibility*, the pursuit of such other forms of politics, thought, and creativity is an ethical imperative that compels me to cultivate practices of attunement to parahuman vocalities as a relational and political orientation.

To be clear: attunement to parahuman vocalities is no panacea for the catastrophic and inequitably distributed effects of the climate emergency. Nor should the human microphone be abandoned as unviable because logo- and anthropo-centric; rather those limits may be generative points of departure for enacting experimental alternatives (Zigon 2018). Still, questioning the conditions of possibility for sonorous creativity amid a climate emergency encourages those of us who work with the nexus of politics, vitality, and voicing “to rise above disciplinary prejudices, for [the climate emergency] is a crisis of many dimensions” that cannot be addressed solely from perspectives of human musicking that reenact the colonial binary between (one) “nature” and (many) “cultures” (Chakrabarty 2009b, 215; Ochoa Gautier 2016). Reading Chakrabarty’s “rise above” as

Kohn's "moving beyond," I aim to open "protest music" to broader analytics for studying that thorny nexus, not to vilify inevitable attachments to *logos*, but to observe the limits of these attachments and identify their analytical insufficiency for contending with the enfolding of vocality, protest, affect, and politics in the Anthropocene. A practice of diffraction illuminated three figures for attunement to parahuman vocality: the "beyond human," anthropomorphisms, and conditions of life in the Anthropocene. These kernels suggest figures other than those of representational political arrangements for which the affective capacities of vocality are circumscribed within logo- and anthropo-centric horizons of audibility. Diffracted, these kernels unsettle disciplinarily maintained boundaries of human musicking, unhinge sonorous political matter(ing) from *logos*, and necessitate the designing of analytics, forms, and methods commensurate with these relations.

Rethinking protest vocalities as an ethical response to human survival in the Anthropocene only goes so far in *actualizing* an alternative politics:

Reasoning on and on is a symptom of how people are still not ready to go through an *affective* experience that would existentially and politically bind them to [the climate crisis]. . . . We need art that does not make people think . . . but rather that walks them through an inner space that is hard to traverse. (Morton 2013, 184)

To traverse such inner spaces, "*to pass through* what we study" (Holbraad, Pedersen, and Viveiros de Castro 2014, n.p.), becomes possible insofar as practices of attunement engender careful, compassionate (at)tending to sonorous, vocal relations not between (human) subjects and (nonhuman) objects but with/in "ecological entanglement[s] needy of each other" (de la Cadena 2017, 429). Even then, corporations or states may find in

such practices possibilities for justifying mass deforestation, constructing pipelines, or maintaining status-quo policies and actions on the climate crises.

The question remains: how could this attunement initiate a politics otherwise than the demarcation of corporeal difference that affixes political voicings to *logos* (“The atmosphere is up there. I am down here, speaking for/against it”); one that is activated by the affects of parahuman mutual incorporation (“This urban smog is my voice as much as my worsening wheeze is its voice; I am swallowed, assimilated, and regurgitated by this subway-digestive system; I traverse other’s oral cavities, now incorporating others’ breath, now expelling it; our voices are co-conditional”); one that is ethically compelled by voicings as renderings of the conditions of a vital politics?

That this chapter is expressed textually signals its materialization in a format that fashions knowledge from *logos* matter. Whether and how this chapter comes to matter, then, might reflect the fact that its format is not commensurate with the problematic it identifies nor with the analytical possibilities it suggests, nor does its format generate relational possibilities other than citation in prose economies. This “incommensurability between an idea and the format of its presentation” (Niess 2021, 3) calls out for designs that render sensible the climate emergency’s parahuman and nonuniform effects, which are persistently reconfiguring the conditions of a vital politics. To be moved by this call is to refuse to participate only in its verbatim amplification.⁶¹

⁶¹ I am deeply grateful to *Oxford Handbook of Protest Music* editors Noriko Manabe and Eric Drott for their patience and thoughtful feedback, and to Jairo Moreno, Benjamin Oyler, and David Chavannes who all helped improve this section along the way. Since first devising this OWS essay in 2016, the world around me has changed drastically and so have my commitments, methods, and thinking. I am eager, in future work, to connect and to see how others may connect this chapter’s ideas with more recent Extinction Rebellion and Black Lives Matter protests, whose participants have called out the lethality of the climate crisis, of systemic anti-Blackness, and thus have called for and enacted different worlds.

Conclusion

There are a number of other examples of parahuman sonic creativity that I find compelling and which I invite others to consider in further detail include. Among those examples is the 2018 video game *Fe* developed by Zoink Games in which one plays as a small nonhuman animal navigating the ecosystems of an unfamiliar planet. As this creature, you learn to commune with other plant and animal life by learning their vocalizations and helping them to combat the snares of human-like colonizers. Other examples include Pamela Z and Christina McPhee's *Carbon Song Cycle* (premiered 2012); Alvin Curran's installations including *Pian de pian piano*, *Conversazioni Geologiche*, *Sinking Piano*, *Endangered Species*; Laurie Anderson's Grammy-winning project *Landfall* (2018); Wang Renzheng's (aka Nut Brother) *Dust Project* (2015), the result of his walking around Beijing for one-hundred days vacuuming the polluted air and turning the collected particulate matter into a brick (see T. Phillips 2015); Meredith Monk's *On Behalf of Nature* (first performed 2013); Katie Paterson's installations *As the World Turns* (2001) and *Langjökull*, *Snæfellsjökull*, *Solheimajökull* that link phonography with melting glaciers (see Smith 2015, 1, 6); Rebecca Belmore's *Wave Sound* installations (2017); and even Godfrey Reggio's 1982 film *Koyaanisqatsi* with music by Philip Glass, to name only a few. The limited archive from which I theorize sonic creativity and the parahuman in this chapter, both separately and together, consequently limits its potential reach and applicability. I invite a more extensive engagement with a broader archive for theorizing the limits and affordances of parahuman sonic creativity.

Despite the limits of the archive from which it draws, the theory of parahuman sonic creativity presented here has both analytical and pedagogical value even if its archive is limited. As an analytic, parahuman sonic creativity adds to extant critical frameworks for making sense of creative labors that mobilize sound to represent, figure, or otherwise contend with the climate crisis. Parahuman sonic creativity operates neither in a representational mode nor an economic one, as I demonstrated through the examples of Taylor Swift and Esperanza Spalding (different representational approaches) and Brian Eno's EarthPercent philanthropy (economic approach). Hence, parahuman sonic creativity theorists and critics to name with greater nuance the range of creative labors whose practitioners contend with ecological disorientation and the climate crisis.

Pedagogically, parahuman sonic creativity teaches listeners how to perform the difficult labor of inhabiting a parahuman perspective, a non-individual perspective of perspectives. Amid their apparent aesthetic, formal, material, historical, and political differences, Yakushimaru's "I'm Humanity," Hāmana and Batley's recording of imitated huia calls, and the human microphone at OWS all implicitly invite listeners to think about or explicitly model non-anthropocentric, parahuman relationality. They afford embodied access to sensing parahuman perspectives. And they provide blueprints to thinkers, teachers, students, and makers for designing their own instruments, compositions, and pedagogies that might similarly foster access to parahuman perspectives. These analytical and pedagogical outcomes help to move experiences of ecological disorientation from anxious dizziness (of the kind described in Ted Chiang's story about paraselves) to reorienting relations.

To further contribute this instructive archive of parahuman sonic creativity, I offer in this dissertation's final chapter a suite of my own creative and pedagogical models that foster access to parahuman perspectives. These offerings include a breath-controlled instrument that links users' breath to the real-time air quality of three user-defined cities (Niess 2021); a short film that demonstrates this instrument in use; a film about the afterlives of industrial asbestos waste and environmental racism in Ambler, Pennsylvania where I grew up; a short video experiment in "pneumatography" that uses breath and still images to proffer relational possibilities otherwise than the familiar anthropocentric envelopes, circumscriptions, and intimacies that gather around "bodies"; and two syllabi that a range of instructors across disciplines may adapt for their own purposes.

Chapter 4: Creative and Pedagogical Models

[T]here are some tasks for which reading, writing, and thinking philosophically will be especially helpful, though probably not reading, writing, and thinking in the manner that has been typical of academic philosophy. (Thompson and Whyte 2012, 486)

[T]o open a space for moving from the rather fixated question Is a particular piece of knowledge true, and how can we know? To the further questions: What does knowledge *do*—the pursuit of it, the having and exposing of it, the receiving again of knowledge of what one already knows? *How*, in short, is knowledge performative, and how best does one move among its causes and effects? (Sedgwick 2003, 124)

Introduction

This chapter assembles examples of my own work in parahuman sonic creativity alongside pedagogical models in the form of two syllabi. If this dissertation's other chapters perform their analytical labor through prose, then this chapter makes its contributions through audiovisual works, embodied sense-making, and actionable pedagogies. As such, I invite readers to traverse this chapter differently than they would when reading argumentative prose or this dissertation's other chapters. Opening our bodies to engage our senses is a component of reorienting the labors of music studies specifically and work in the humanities generally amid ecological disorientation.

I offer brief textual descriptions to help situate each example within the broader dissertation project. After reading each description, I encourage readers to engage with each example's corresponding supplementary file, which you may download separately. The two syllabi I offer under the "pedagogy" heading are also available for download and reuse, and I have reproduced here as Appendix A and Appendix B. To summarize, this chapter offers:

- One breath-controlled instrument design and video demonstration (*three breathing places*)
- One eleven-minute film (*Particulate Matters*)
- One video essay (*Pneumatography*)
- Two syllabi (“Ecological Design for Contemporary Crises” and “Audiovisual Climate Research”)

For access to these materials, the table below clarifies the names of the supplementary files for each of these examples along with URLs (which may be more temporary locations but more convenient for some readers):

Work	Name of Supplementary File	URL or other location
“Breath-controlled Instrument Design for Ecological Crises”	N/A	https://repository.upenn.edu/e-dissertations/3686/
<i>three breathing places</i>	N/A	https://vimeo.com/524000029 https://repository.upenn.edu/e-dissertations/3686/
<i>Particulate Matters</i>	Niess_ParticulateMatters_2022.mp4	https://vimeo.com/323348390
<i>Pneumatography</i>	Niess_Pneumatography_2022.mp4	https://vimeo.com/335996550
Syllabus 1: “Ecological Design for Contemporary Crises”	Niess_Appendix-A_Syllabus-01.pdf	See Appendix A
Syllabus 2: “Audiovisual Climate Research”	Niess_Appendix-B_Syllabus-02.pdf	See Appendix B

Sonic Creativity

Breath-controlled instrument design

As part of my dissertation work during 2020 and early 2021, I designed and built a breath-controlled instrument that connects one’s breath to the real-time air quality of

three user-defined cities. In May 2021, I assembled this work into my master's thesis, "Breath-controlled Instrument Design for Ecological Crises" (Niess 2021). While I do not reproduce that text here, I do encourage curious readers to consult it for a fuller explanation of why and how I made the instrument.⁶² Having theorized parahuman sonic creativity in chapter three, I include this project within my dissertation for its instructive value as a realized model of parahuman sonic creativity and of the design principles behind it. In short, the project takes as its point of departure the normative relationship between ethics and method in North American humanities institutions. I figure the normativity of that relationship as a problem of design and offer this instrument as one possible counter-design. This requires identifying designs that sustain anthropocentric normativity in the humanities and the identitarian mode I identified in chapters two and three. As a counter-design, the instrument and accompanying thesis advocates a research practice and design principles that intentionally align problem, form, and relational outcomes.

The instrument itself coordinates one's breath with the current air quality in three user-defined cities. It accepts five total inputs: one physical input—breath—and four data-based inputs—three city names and the current time of day at the user's location. The breath input is registered with a microphone placed under the user's nose. The city names are defined by the user (I encourage one of the three to be where the user is currently located). The current time is based on a computer's system clock. These inputs

⁶² This thesis is accessible to all readers via Scholarly Commons at <https://repository.upenn.edu/edissertations/3686/>. All associated files for this project are available there, including a zipped folder with Max/MSP and JavaScript files and a video file demonstrating the instrument in use.

are all processed in a Max/MSP patch that outputs three distinct audio signals. These signals are routed to an audio interface, from which they are then routed to a circuit board with three input jacks and three amplifiers. Finally, these amplifiers transmit the three independent signals to three bone-conduction transducers affixed to the user's skin with epidermal tape and an elastic headband (**Figure 4.1**). For an overview of this system, see **Figure 4.2**.



Figure 4.1: Transducers affixed to my forehead with headset for measuring breath.

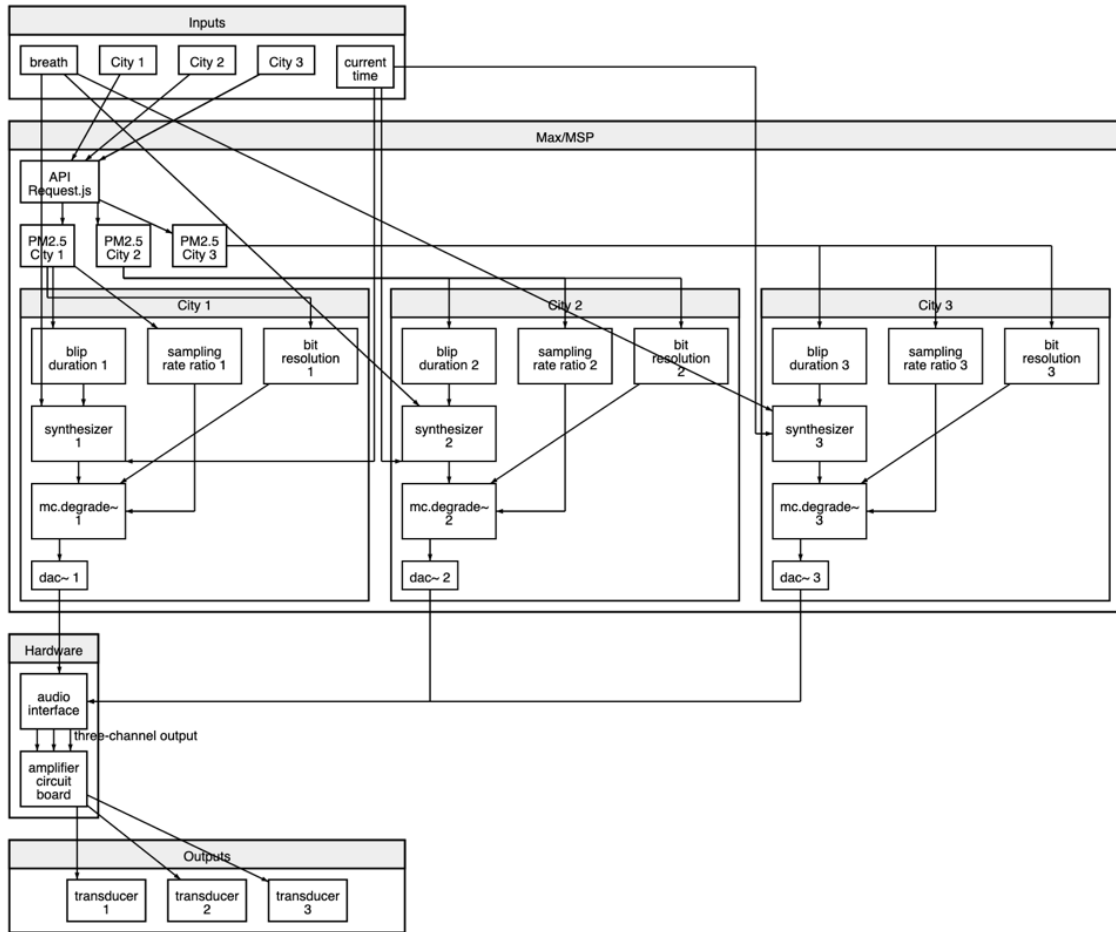


Figure 4.2: System overview of breath-controlled instrument showing inputs, Max/MSP, hardware, and outputs. Explained in greater detail in Niess (2021).

This instrument is an example of parahuman sonic creativity because it achieves as series of relational reconfigurations that (1) are neither representational nor economic and (2) establish connections among otherwise disconnected times, spaces, atmospheres, and aerobic life. The instrument reconfigures well-established notions and techniques of musical mattering. *Scales* cease to matter as pitch sets with determinate intervallic relations, and come to matter as the micro-, meso-, macro-, and hyper-registers to which the instrument invites you to become attuned. *Repertoires* matter no longer as bounded musical corpuses tethered to the creative output of composers, collectives, or nations, but

as the juxtaposition of ever-changing vital, atmospheric, and anthropogenic scales.

Composition matters not as the organization of sounds, but as the organization of the vital conditions of possibility for the performance of such sounds. *Virtuosity* matters not as mastery of an instrument, but as radical openness to being performed by the instrument and the relations it convenes between scales. *Breath* matters no longer only as a means for aerophonic instrumental performance, but as an ever-intensifying site through which the world performs the conditions of possibility for aerobic life (see Niess 2021, 9).⁶³

three breathing places

I filmed myself using the instrument in March 2021 and compiled several of those sessions into a continuous video demonstration. At the time, I was located in Philadelphia, PA and selected Beijing and Los Angeles as the remaining two cities. The short film, which I called *three breathing places*, provides visual aids to help listeners understand the relationships between the three distinct audio channels (mixed in stereo image as hard left, center, and hard right), PM2.5 measurements ($\mu\text{g}/\text{m}^3$), and qualitative descriptors of the air quality (**Figure 4.3**).

⁶³ See John Tresch and Emily I. Dolan (2015, esp. 282–85) on “ethics of instruments.”

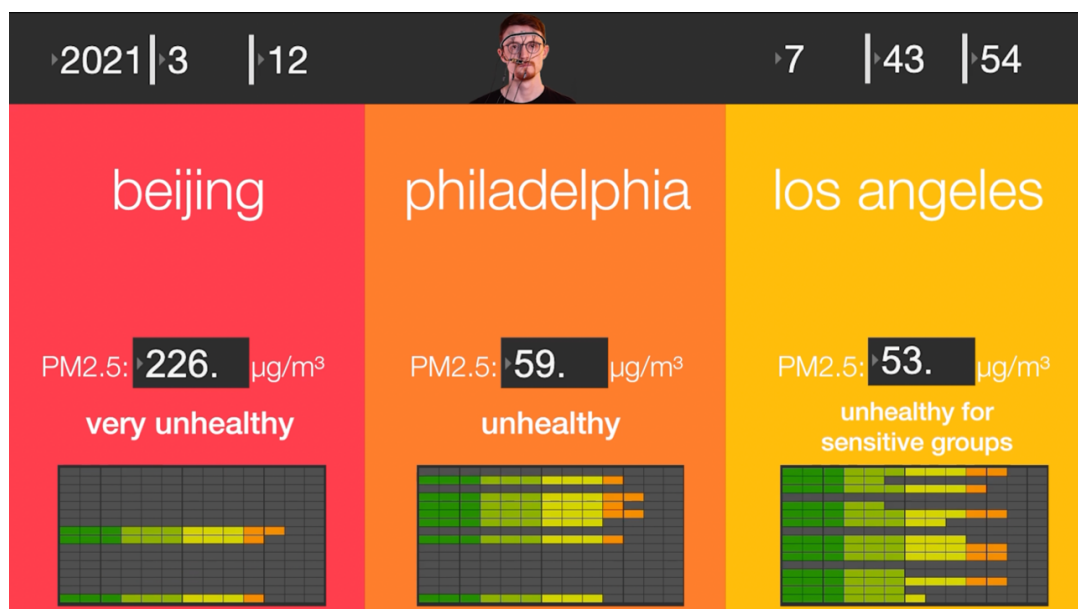


Figure 4.3: Still from *three breathing places* (2021).

Film: Particulate Matters

In 2019, I completed the short film *Particulate Matters*, which narrates the afterlives of asbestos waste and environmental racism in Ambler, PA, where I grew up. It was in this film that I first experimented with the coordination of breath, sound, and image. One of the film’s narrators, Sharon Cooke-Vargas, describes the recent transformation of the BoRit asbestos superfund site in Ambler into a “bird sanctuary.” Immediately following Sharon’s narration is the sequence from 5:52 to 6:42, which juxtaposes recordings of my breathing with field recordings of geese at the site, archival images of the “white mountains” of uncontained asbestos waste there, and satellite images of the site as it underwent major transformations from EPA remediation (**Figure 4.4**). Working on this film instilled in me the need to create “a film you can breathe,” a refrain that I scrawled in my notebooks as I was planning my dissertation project. I wanted to design a film that would not be passively received or simply watched, but one that would require one’s

breath as a driving input for image sequences. While the previously described breath-controlled instrument did not quite become a film you can breathe, it is what came of this creative kernel.



Figure 4.4: Stills from *Particulate Matters* (2019) depicting transformations of the BoRit asbestos superfund site in Ambler, PA. The top two photographs are the oldest, and clearly show the “white mountains” of exposed asbestos waste. Below that, the subsequent ten satellite images show decades of transformation, beginning in the top left down the column and continuing at the top right down the column.

Video essay: Pneumatography

I further explore this creative nexus of breath, sound, and image in the video essay

Pneumatography (Figure 4.5).

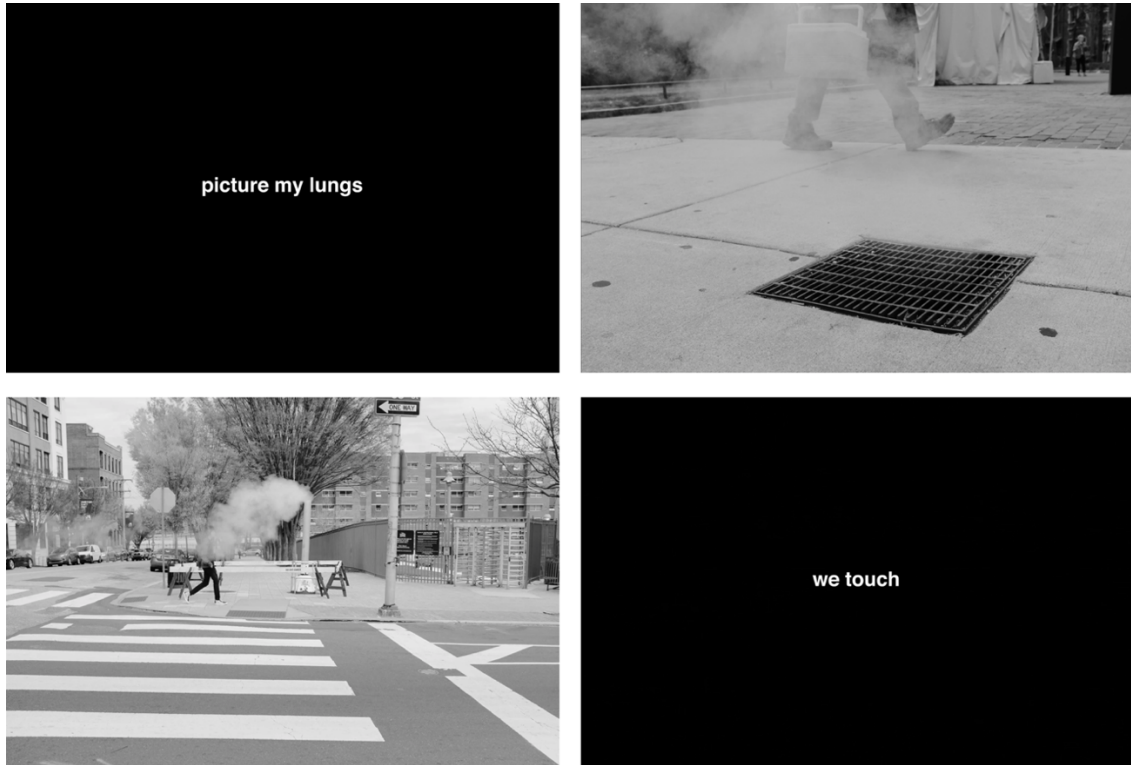


Figure 4.5: Four stills from *Pneumatography*.

Through a combination of still photographs, screens of text, and field recordings, the video essay intensifies breathing as an aesthetic strategy for rendering sensible our affinities with parahuman scales, flows, and accumulations. It invites viewers to imagine the body/ies to which “my” breath, lungs, and skin affix; to imagine the conversions of matter and the industrial needs that assemble this body. It is an exercise in cultivating empathy among parahuman bodies. This work of parahuman sonic creativity aestheticizes intimacies, mutual touches, and flows of co-produced breathing. At one scale, hissing ventilation mingles with human vocalization; at a parahuman scale, this

distinction disaggregates and is reconfigured into a co-constitution. It proffers relational possibilities other than the familiar humanist envelopes, circumscriptions, and intimacies that gather around “bodies.” These relational possibilities are non-metaphorical: the audio-visual strategy shirks the imperative to link a known category (“body,” “human,” “breath”) via an “as” (the metaphorical hinge) to some propositional category. This is an experiment in theorizing, thinking, and communicating parahuman matters of concern as they find their local expression around the Philadelphia campus of the University of Pennsylvania.

Pedagogy

Learning spaces are ecological, teeming with life, and deserving of care. At their worst they yield parasitic, patriarchal relations. But at their best they foster symbiosis through pedagogies designed to generate feedback, produce novel connections from basic building blocks, and contribute meaningfully to the life surrounding learners. I understand the role of the university instructor, irrespective of discipline, as primarily a facilitator of such symbiotic creativity. An ecologically imperiled world needs ecological approaches to teaching.

From these premises and values, I designed two syllabi that may be widely used across humanities disciplines. I invite readers to share, reuse, repurpose, and build upon these syllabi following attribution and citation requirements of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International under which they are licensed. Each syllabus begins with a section on copyright and attribution that spells out the terms of the license and how to properly attribute the work.

I reproduce below the overview, rationale, and learning outcomes for each syllabus. For further details on each course, including assessments and evaluations, visual overviews, and week-by-week calendars, see **Appendices A and B** and supplementary files.

Syllabus 1: Ecological Design for Contemporary Crises

Overview: This course proposes *ecological thinking* and *design thinking* as methods for contending with local ecological problems. In weekly discussions, you will learn to think ecologically about and design thoughtful solutions to such problems by engaging the work of scientists, philosophers, Indigenous thinkers, and designers. You will study principles of ecological thinking—relationality, systems thinking, second-order learning—and understand design as a practice of intentional problem-solving. You will mobilize this critical inventory to design a project that identifies a local ecological problem and proposes an intervention. This 15-week course encourages you to take the time necessary to thoughtfully *propose*, rather than *implement*, your project.

Rationale: Contemporary ecological crises pose immense challenges to all forms of life. The enormity of these problems can paralyze us with fear and confusion. We all need practice identifying, thinking about, and designing solutions to pressing ecological problems. It is imperative to value the land and life of the campus, especially when many US university students are from out of state or from other countries and have little connection to the land. In the face of individualism and consumerism, this course challenges you to mobilize your knowledge as well as your university's resources toward creating sustainable and equitable futures for the campus's life and land.

Finally, this course's focus on *proposing* a project is intended to complement my course on Audiovisual Climate Research, which will focus on collaboratively *implementing* a public-facing project as a class.

Learning outcomes: By the end of this course, you will be able to:

1. Explain core principles of and approaches to ecological thinking.
2. Explain core principles of and approaches to design thinking.
3. Mobilize ecological and design thinking to propose an intervention to a local ecological problem.

For more, see **Appendix A** and supplementary file.

Syllabus 2: Audiovisual Climate Research

Overview: In this course, you will collaborate with your peers to create a public-facing, digital exhibit that communicates research about a local problem posed by the climate crisis. First you will encounter theories for communicating climate research in sounds, images, and embodied practices. You will apply these theories to analyze exemplary audiovisual projects. Then you will connect with your university's digital scholarship librarian and visit a media lab to help you shift from theoretical to technical aspects of creating a digital exhibit and recording sounds and images. After agreeing on a local climate problem that the exhibit will address, you will then form teams focused on creating different components of the overall exhibit: on the *sound* team, you might combine field recordings and recorded interviews into a short podcast episode; on the *image* team, you might create photo or video essays; on the *education* team, you might create public educational resources like DIY monitoring kits, reading lists, or

create/improve relevant Wikipedia articles; on the *interface* team, you might link your skills in electrical engineering or environmental monitoring to build interfaces that connect bodies with real-time, local air quality measurements. Or you might devise an altogether different team in consultation with Andrew. The course culminates in a public showcase of each team's contribution to the digital exhibit. You will share your projects with peers, faculty, project participants/interviewees, and other community members. For a visual overview of the course, see below.

Rationale: The climate crisis is an unwieldy phenomenon pervading life at many scales. One way to address this problem is to orient learning toward local manifestations of the crisis. By inviting students to actively contribute to public knowledge about local problems, this course empowers students to understand the social, ethical, and ecological dimensions of life on and beyond campus. Another way to address the climate crisis is to communicate climate research by appealing to the human senses through multiple audiovisual formats. By training students to assemble a suite of audiovisual projects into a digital exhibit, this course equips students with an audiovisual toolbox for reaching wider audiences and spurring action. This course's focus on *implementing* a collaborative project is intended to complement Andrew's course on Ecological Design, which focuses on *proposing* a project using ecological and design thinking.

Learning outcomes: By the end of this course, you will be able to:

1. Analyze audiovisual climate research using frameworks studied
2. Create public-facing climate research using audiovisual techniques
3. Collaborate effectively in peer research teams

For more, see **Appendix B** and supplementary file.

Appendix A

Ecological Design for Contemporary Crises

Andrew Niess

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OVERVIEW

This course proposes ecological thinking and design thinking as methods for contending with local ecological problems. In weekly discussions, you will learn to think ecologically about and design thoughtful solutions to such problems by engaging the work of scientists, philosophers, Indigenous thinkers, and designers. You will study principles of ecological thinking—relationality, systems thinking, second-order learning—and understand design as a practice of intentional problem-solving. You will mobilize this critical inventory to design a project that identifies a local ecological problem and proposes an intervention. This 15-week course encourages you to take the time necessary to thoughtfully propose, rather than implement, your project.

RATIONALE

Contemporary ecological crises pose immense challenges to all forms of life. The enormity of these problems can paralyze us with fear and confusion. We all need practice identifying, thinking about, and designing solutions to pressing ecological problems. It is imperative to value the land and life of the campus, especially when many US university students are from out of state or from other countries and have little connection to the land. In the face of individualism and consumerism, this course challenges you to mobilize your knowledge as well as your university's resources toward creating sustainable and equitable futures for the campus's life and land.

Finally, this course's focus on *proposing* a project is intended to complement Andrew's course on Audiovisual Climate Research, which will focus on collaboratively *implementing* a public-facing project as a class.

LEARNING OUTCOMES

By the end of this course, you will be able to:










1. Explain core principles of and approaches to ecological thinking.
2. Explain core principles of and approaches to design thinking.
3. Mobilize ecological and design thinking to propose an intervention to a local ecological problem.











ASSIGNMENTS & EVALUATION













You will be evaluated on the following assignments that are designed to guide you toward the above learning outcomes.





5 %	Identify Possible Problems
	Goal: identify three local ecological problems while citing databases provided to you.
	Due: session 3
5 %	Problem Selection
	Goal: select one problem that you will think about throughout the course and state a possible intervention
	Due: session 4
20 %	Apply Ecological Framework
	Goal: demonstrate your understanding of ecological thinking by applying three principles to your problem in 1,000 words.
	Due: session 8
20 %	Apply Design Framework
	Goal: demonstrate your understanding of design thinking by applying three principles to your problem in a 1,000-word essay, a visualization/diagram, or non-textual format.
	Due: session 11
20 %	Small Group Shares
	Goal: informal check-in with classmates about new insights, questions, or problems pertaining to each other's proposal.
	Due: select weeks without another assignment, 4 total (sessions 5, 8, 10, 13)
30 %	Project Proposal
	Goal: synthesize your accumulated ecological and design thinking into a 3,500-word project proposal that summarizes the problem, reviews publicly available knowledge about the problem, applies ecological and design thinking, and states preferred outcomes.
	Due: last day of final exams

CALENDAR

MODULE 1: ECOLOGICAL THINKING	
1	Introduction Review syllabus Identify values and behaviors to foster ideal classroom climate
2	Ecological Foundations  Sotsisowah, "Our Strategy for Survival," in <i>Basic Call to Consciousness</i> , ed. Akwesasne Notes (Summertown, TN: Native Voices, 2005), 119–25.  David Oates, "The Ecological Worldview," in <i>Earth Rising: Ecological Belief in an Age of Science</i> (Corvallis, OR: Oregon State University Press, 1989), 3–5.  Adriana Petryna, "What Is a Horizon? Navigating Thresholds in Climate Change Uncertainty," in <i>Modes of Uncertainty: Anthropological Cases</i> , ed. Limor Samimian-Darash and Paul Rabinow (Chicago: University of Chicago Press, 2015), 161–64 (excerpt).  Gregory Bateson, "Pathologies of Epistemology" and "The Roots of Ecological Crisis," in <i>Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology</i> (Chicago: University of Chicago Press, 1972), 486–95; 496–501.
3	Relationality  Kim TallBear, "Caretaking Relations, Not American Dreaming," <i>Kalfou</i> 6, no. 1 (2019), 36–9 (excerpt), https://doi.org/10.15367/kf.v6i1.228 .  <i>Media Indigena</i> , "Pollution is Colonialism: Part 1 (ep 258)", featuring Max Liboiron with Rick Harp and Candis Callison, https://mediaindigena.libsyn.com/pollution-is-colonialism-part-1-ep-258 .  Dwayne Donald, "From What Does Ethical Relationality Flow? An Indian Act in Three Artifacts," <i>Counterpoints</i> 478 (2016), 10–16.
Due	Identify Possible Problems
4	Ecological Ethics  David Oates, "Ecological Ethics," in <i>Earth Rising: Ecological Belief in an Age of Science</i> (Corvallis, OR: Oregon State University Press, 1989), 148–77.  V. F. Cordova, "What is the Role of a Human Being?," in <i>How It Is: The Native American Philosophy of V. F. Cordova</i> , ed. Kathleen Dean Moore et al. (Tucson: University of Arizona Press, 2007), 183–5.

	Arne Næss, "The Shallow and the Deep, Long-Range Ecology Movement: A Summary," <i>Inquiry</i> 16, no. 1 (1973): 95–100, https://doi.org/10.1080/00201747308601682 .
Due	Problem Selection
5	Systems Thinking
	Margaret Mead, "Cybernetics of Cybernetics," in <i>Purposive Systems</i> (New York: Spartan Books, 1968), 1–11.
	Donella H. Meadows, "Leverage Points—Places to Intervene in a System," in <i>Thinking in Systems: A Primer</i> , ed. Diana Wright (White River Junction, VT: Chelsea Green, 2008), 145–65.
Due	Small Group Share
6	Second-order learning
	Gregory Bateson, <i>Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology</i> (Chicago: University of Chicago Press, 1972), 164–67.
	Gregory Bateson and Margaret Mead, "For God's Sake, Margaret: Conversation with Gregory Bateson and Margaret Mead," <i>CoEvolution Quarterly</i> 10, no. 21 (1976): 32–44. Reprinted at https://www.alice.id.tue.nl/references/bateson-mead-1976.pdf , 12–14 (excerpt).
	Daniel Belgrad, <i>The Culture of Feedback: Ecological Thinking in Seventies America</i> (Chicago: The University of Chicago Press, 2019), 12–13.
MODULE 2: DESIGN THINKING	
7	Design Foundations
	Liz Sanders, "On Modeling an Evolving Map of Design Practice and Design Research," <i>Interactions</i> 15, no. 6 (November 2008): 13–17, https://doi.org/10.1145/1409040.1409043 .
	Morten Hertzum, "Project Designs for Student Design Projects," in <i>Situated Design Methods</i> , ed. Jesper Simonsen et al. (Cambridge, MA: MIT Press, 2014), 25–39.
	IDEO, "The Design Process," in <i>Design Thinking for Educators</i> , 2 nd ed., 14–15.
Due	Apply Ecological Framework
8	Ethical Design
	Richard Buchanan, "Wicked Problems in Design Thinking," <i>Design Issues</i> 8, no. 2 (1992): 5–21.

	Bodil Jönsson et al., "Ethics in the Making," in <i>The Design Philosophy Reader</i> , ed. Anne-Marie Willis (London: Bloomsbury Visual Arts, 2019), 98–103.
Due	Small Group Share
9	Speculative and Critical Design
	Anthony Dunne and Fiona Raby, "Beyond Radical Design?," in <i>Speculative Everything: Design, Fiction, and Social Dreaming</i> (Cambridge: MIT Press, 2013), 1–7.
	Leon Karlsen Johannessen, "The Young Designer's Guide to Speculative and Critical Design," 2017, 1–12.
	James Auger, "Speculative Design: Crafting the Speculation," <i>Digital Creativity</i> 24, no. 1 (2013): 11–35.
10	Visualizing Design
	"Patrick Whitney on the value of abstracting design problems," IIT Institute of Design (2009), 3' 56", https://vimeo.com/5750600 .
	Jasper Liu, "Visualizing the 4 Essentials of Design Thinking," <i>Medium</i> (2016), https://medium.com/good-design/visualizing-the-4-essentials-of-design-thinking-17fe5c191c22 .
Due	Small Group Share
MODULE 3: PROJECT MODELS	
11	Campus Agriculture
	Duke University Campus Farm, https://sustainability.duke.edu/farm .
	University of Maryland Farm, https://ansc.umd.edu/about/campus-farm .
	University of California, Santa Barbara Campus Farm, https://sustainability.ucsb.edu/campus-farm .
Due	Apply Design Framework
Guest	Kay Sterner, Farm Manager, Pomona College Organic Farm
12	Connecting College Resources to Meet Community Needs
	Urban Ecology Arts Exchange, https://collaboratives.haverford.edu/urban-ecology-arts-exchange/ .
	North Philly Peace Park, https://www.phillypeacepark.org/ .
	<i>Contemporary Black Canvas</i> , "Episode 21: Tommy Joshua," http://www.contemporaryblackcanvas.com/ep-21-tommy-joshua-founder-north-philadelphia-peace-park/ .

Guests	Li Sumpter (MythMedia Studios, Moore College of Art and Design) Joshua Moses (Haverford College) Tommy Joshua (North Philly Peace Park, Executive Director)
13	Anticolonial Community Science
	Civic Laboratory for Environmental Action Research (CLEAR), https://civiclaboratory.nl/
	"Dr. Max Liboiron is changing how science is done," MEOPAR, April 16, 2021, https://www.youtube.com/watch?v=D5pStSuvFbw .
	Prakash Krishnan, "Collective Listening: CLEAR Soundscapes," July 27, 2021, https://civiclaboratory.nl/2021/07/27/collective-listening-clear-soundscapes/ .
	Bojan Fürst, "How We Do Science," 2016, project in participatory curation, http://bojanfurstphotography.com/how-we-do-science .
Due	Small Group Share
14	Proposal Workshop (One-on-one)
	One-on-one appointments with Andrew to discuss your proposals before submission.
15	Proposal Workshop (Group)
	Present for 5 minutes on your proposals and receive substantial group feedback.

Appendix B

Audiovisual Climate Research

Andrew Niess

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OVERVIEW

In this course, you will collaborate with your peers to create a public-facing, digital exhibit that communicates research about a local problem posed by the climate crisis. First you will encounter theories for communicating climate research in sounds, images, and embodied practices. You will apply these theories to analyze exemplary audiovisual projects. Then you will connect with your university's digital scholarship librarian and visit a media lab to help you shift from theoretical to technical aspects of creating a digital exhibit and recording sounds and images.

After agreeing on a local climate problem that the exhibit will address, you will then form teams focused on creating different components of the overall exhibit: on the *sound* team, you might combine field recordings and recorded interviews into a short podcast episode; on the *image* team, you might create photo or video essays; on the *education* team, you might create public educational resources like DIY monitoring kits, reading lists, or create/improve relevant Wikipedia articles; on the *interface* team, you might link your skills in electrical engineering or environmental monitoring to build interfaces that connect bodies with real-time, local air quality measurements. Or you might devise an altogether different team in consultation with Andrew.

The course culminates in a public showcase of each team's contribution to the digital exhibit. You will share your projects with peers, faculty, project participants/interviewees, and other community members. For a visual overview of the course, see below.

RATIONALE

The climate crisis is an unwieldy phenomenon pervading life at many scales. One way to address this problem is to orient learning toward local manifestations of the crisis. By inviting students to actively contribute to public knowledge about local problems, this course empowers students to understand the social, ethical, and ecological dimensions of life on and beyond campus. Another way to address the climate crisis is to communicate climate research by appealing to the human senses through multiple audiovisual formats. By training students to assemble a suite of audiovisual projects into a digital exhibit, this course equips students with an audiovisual toolbox for reaching wider audiences and spurring action.

This course's focus on *implementing* a collaborative project is intended to complement Andrew's course on Ecological Design, which focuses on *proposing* a project using ecological and design thinking.

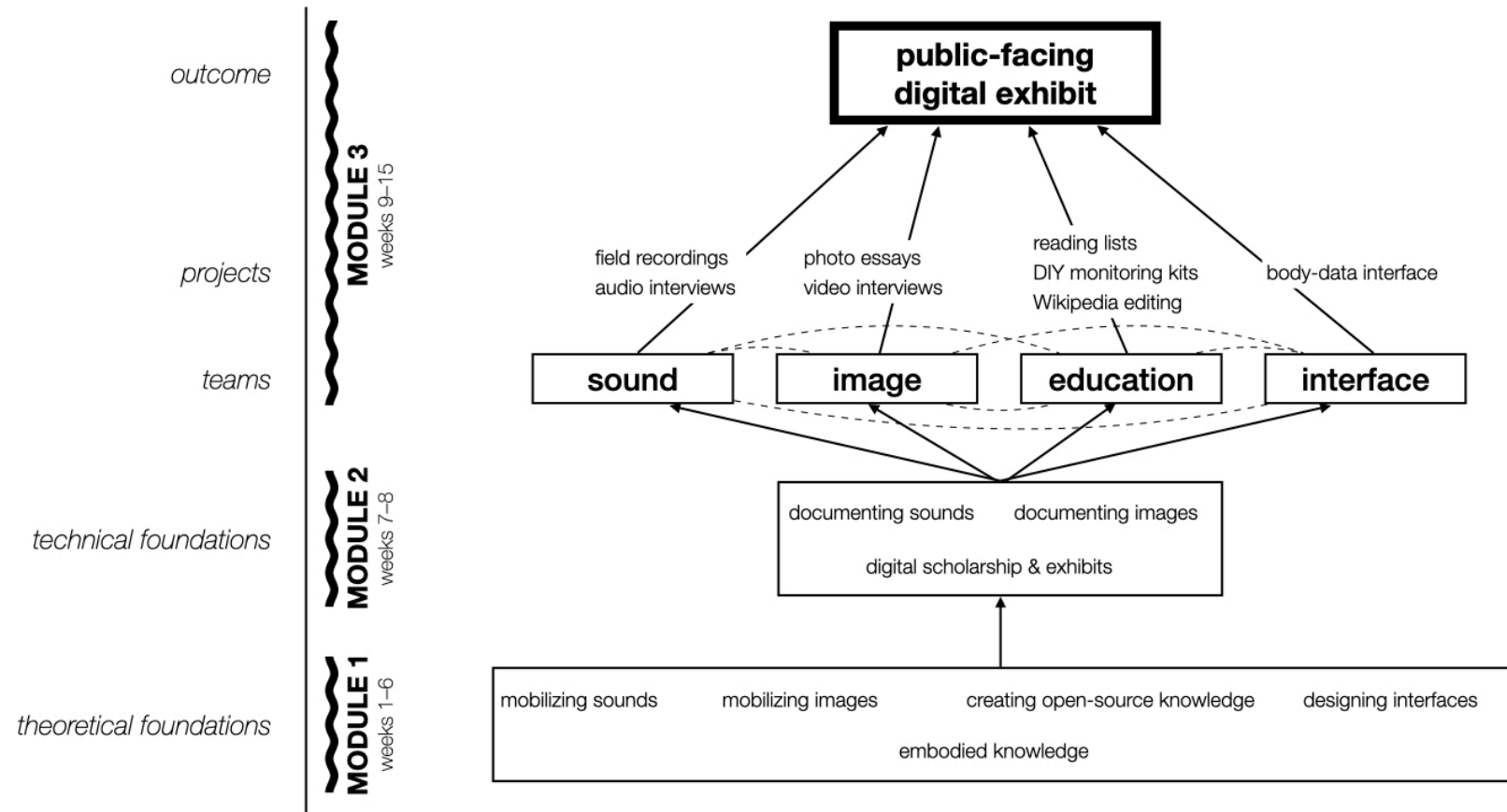
LEARNING OUTCOMES

By the end of this course, you will be able to:

1. Analyze audiovisual climate research using frameworks studied
2. Create public-facing climate research using audiovisual techniques
3. Collaborate effectively in peer research teams

VISUAL OVERVIEW












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ASSIGNMENTS & EVALUATION

You will be evaluated on the following assignments that are designed to guide you toward the above learning outcomes. For some assignments you will be evaluated as a team.

15 %	Theoretical Foundations Essay
	Goal: analyze an example of audiovisual climate research by applying one theoretical framework from weeks 2 to 6 in under 1,000 words.
	Due: week 7
10 %	Team Agreements
	Goal: create a document of the agreements and assumptions that will guide your team collaboration
	Due: week 10
10 %	Production Schedule
	Goal: clarify your team's production goal(s), outline a production schedule for completion, and assign tasks to team members
	Due: week 11
10 %	Team-signed Progress Report
	Goal: describe your own contributions to the team, challenges faced, and remaining work in under 500 words; to be shared with all team members for their review and signature
	Due: week 14
30 %	90-Percent Project Draft
	Goal: present your team's nearly finished project with entire class accompanied by description of each member's contribution using CLEAR's equitable authorship approach
	Due: week 15
25 %	Exhibit Showcase
	Goal: present your contribution to peers, faculty, and surrounding community; respond to questions during Q&A
	Due: during finals, date TBD

MODULE 1: THEORETICAL FOUNDATIONS	
1	Introduction Review syllabus Identify values and behaviors to foster ideal classroom climate
2	Embodied Knowledge  Tom Corby, "Systemness: Towards a Data Aesthetics of Climate Change," in <i>Far Field: Digital Culture, Climate Change, and the Poles</i> , ed. Jane D. Marsching and Andrea Polli (Bristol, UK: Intellect, 2012), 244–49 (excerpt).  Francisco J. Varela, <i>Ethical Know-How: Action, Wisdom, and Cognition</i> (Stanford: Stanford University Press, 1999), 3–19.  Aristotle, "Science, Art, and Practical Wisdom," in <i>The Design Philosophy Reader</i> , ed. Anne-Marie Willis (London: Bloomsbury Visual Arts, 2019), 36–38.
3	Mobilizing Sounds  Bernie Krause and Jonathan Skinner, "THE GREAT ANIMAL ORCHESTRA: A Performance & Dialogue in Soundscape and Poetry" Harvard University, November 26, 2012, https://www.youtube.com/watch?v=tsEgbo1o70g (selected excerpts).  Andrea Polli, "Soundscape, Sonification, and Sound Activism," <i>AI & Society</i> 27, no. 2 (2012): 257–68, https://doi.org/10.1007/s00146-011-0345-3 .
4	Mobilizing Images  <i>GUTS</i> , directed by Taylor Hess and Noah Hutton, 2019, video, 12:51, https://www.youtube.com/watch?v=ETnPiGNXw34 .  Jacob Bricca, "Analyses of Two Short Documentaries," in <i>Documentary Editing: Principles and Practice</i> (New York: Routledge, 2018), 215–24.
5	Designing Interfaces  Andrew Niess, "three breathing places," 2021, https://vimeo.com/524000029 .  Michael May, "Beyond Affordances," in <i>The Design Philosophy Reader</i> , ed. Anne-Marie Willis (London: Bloomsbury Visual Arts, 2019), 162–64.
6	Creating Open-source Knowledge  Civic Laboratory for Environmental Action Research (CLEAR), "Ethics and Principles of Open Source Science Tools," https://civiclaboratory.nl/methodological-projects/open-science-hardware-and-wetware-for-plastic-pollution-monitoring/ .  Maja van der Velden, "Design for a Common World: On Ethical Agency and Cognitive Justice," <i>Ethics and Information Technology</i> 11, no. 1 (2009): 37–47, https://doi.org/10.1007/s10676-008-9178-2 .

MODULE 2: TECHNICAL FOUNDATIONS	
7	Digital Scholarship and How to Share It
	Early Caribbean Digital Archive, https://ecda.northeastern.edu/ .
Guest	Digital scholarship librarian
Due	Theoretical Foundations Essay
8	Documenting Sounds and Images
Visit	Media lab
Guests	Director of media studies, media lab
MODULE 3: TEAM LABS	
9	Team Lab 1: Choose Problem, Form Teams, and Agreements
Goals	Choose which local ecological problem the exhibit will address; form teams (sound, image, education, interface, etc.); devise written agreements for effective collaboration and file sharing using readings as models.
	Randy Stoecker, "Roles for Scholars in Participatory Research," <i>American Behavioral Scientist</i> 42, no. 5 (1999): 840–54, https://doi.org/10.1177/00027649921954561 .
	Northeast Sustainable Agriculture Working Group, "Community Agreements," https://nesawg.org/conference/community-agreements .
10	Team Lab 2: Planning
Goals	Clarify what your team will contribute to the digital exhibit, devise completion schedule, and assign tasks to team members.
Due	Team Agreements
11	Team Lab 3: Making and Documenting
Goal	Begin making, recording, gathering, interviewing, etc., according to completion schedule.
Note	<i>For teams conducting recorded interviews, we will formally discuss informed consent, release forms, and interview best practices; see short text below. Other teams need not read this.</i>
	Oral History Association, "Principles and Best Practices," 2009, https://www.oralhistory.org/about/principles-and-practices-revised-2009/ .
Due	Production Schedule
12	Team Lab 4: Making and Documenting
Goal	Continue making, recording, gathering, interviewing, etc., according to completion schedule.

13	Team Lab 5: Making and Documenting
Goal	Continue making, recording, gathering, interviewing, etc., according to completion schedule.
14	Team Lab 6: Regroup and Final Touches
Goals	Regroup as entire class to clarify next actions regarding cross-team collaboration, solicit feedback on progress, troubleshoot; then Andrew will meet with one team at a time while other teams continue their work.
Due	Team-Signed Progress Report
15	Team Lab 7: Share and Debrief
Goal	Meet first as teams to debrief what worked and what didn't work during your collaboration; then each team will share with the class its 90-percent project draft; finalize presentation plans for showcase.
	Max Liboiron et al., "Equity in Author Order: A Feminist Laboratory's Approach," <i>Catalyst: Feminism, Theory, Technoscience</i> 3, no. 2 (2017): 1–17, https://doi.org/10.28968/cftt.v3i2.28850 .
Due	90-Percent Project Draft
Finals	Digital Exhibit Showcase
Goal	Share and celebrate your work with peers, faculty, project participants, and surrounding community.

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