

The Art of Losing: Performing Ecological Loss in Contemporary Art

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ABSTRACT

In this moment of global environmental crisis, the accurate representation of ecological loss has arisen as an area of concern. What formal strategies best depict the diffuse, the protracted, the barely perceptible? In this thesis, I demonstrate that one strand of contemporary ecological art assumes a negative position: ecological loss, certain artists propose, is beyond representation. I demonstrate this premise across three chapters, each of which deals with one contemporary ecological artwork: American artist Mark Dion's *The Life of a Dead Tree* (2019), New Zealand artist Sally Ann McIntyre's *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 and #50.767)* (2016–18), and Scottish artist Katie Paterson's *Vatnajökull (the sound of)* (2007–8). While each of these works deploys unique aesthetic tactics to treat its individual environmental issue and claim, the definitive aesthetic strategy in each of these artworks, I suggest, is that the artwork does not represent but instead *performs* ecological loss. Peggy Phelan has stated of performance that it “becomes itself through disappearance” and consequently resists representation; performance is by its nature ephemeral, and the crucial, final element of loss cannot be represented. This idea, I argue, underpins the three artworks I discuss. Conceiving of ecological loss as akin to performance in Phelan's terms and thus acknowledging that the loss central to both exceeds representation, these works opt to perform ecological loss over representing it. In this way, each work formally rehearses the nature of the loss it treats instead of describing it. Ultimately, enacting ecological loss allows the artwork to resist contradicting the ontological status of loss as a passing-out-of-existence, thus disclosing ecological loss to be irreversible.

RÉSUMÉ

Dans le contexte actuel d'une crise écologique mondiale, une représentation juste de la perte écologique est un problème auquel on attache une grande importance. Quelles stratégies formelles représentent le mieux ce qui est répandu, prolongé, à peine perceptible ? Cette thèse servira à démontrer qu'un élément de l'art écologique contemporain assume une position négative : selon les artistes de ce mouvement, cette perte écologique dépasse la sphère de la représentation. Les trois chapitres suivants soutiennent ce postulat au moyen d'une analyse d'une œuvre d'art écologique contemporain à chacun : *The Life of a Dead Tree* (2019) de l'artiste américain Mark Dion, *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 and #50.767)* (2018) de l'artiste néo-zélandaise Sally Ann McIntyre et *Vatnajökull (the sound of)* (2007–8) de l'artiste écossaise Katie Paterson. Bien que chacune de ces œuvres traite sa problématique environnementale à sa propre manière esthétique, je soutiens que chacune des stratégies esthétiques définitives employées dans ces œuvres ne consiste pas en la représentation de perte écologique, mais plutôt en *la performance* de la perte écologique. Au sujet de l'être de la performance, Peggy Phelan a dit qu'il « devient lui-même par la disparition » et, par conséquent, résiste à la représentation ; la performance est par nature éphémère, et donc on ne peut pas représenter ce dernier élément essentiel de la perte. Je conviens que cette idée est étayée par les trois œuvres d'art discutées. La conception de la perte écologique est analogue à l'être de la performance selon Phelan et ainsi reconnaître que la perte essentielle aux deux dépasse la sphère de la représentation, ces œuvres d'art s'agissent donc de la performance de la perte écologique plutôt que de sa représentation. De cette manière, chaque œuvre 'joue' le genre de la perte qu'elle traite plutôt que de la décrire. Enfin, ce théâtre de la perte écologique permet à l'œuvre d'art de résister le statut ontologique de la perte comme évanouissement, ce qui dévoile que la perte écologique est irréversible.

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INTRODUCTION: The art of losing

“The Anthropocene,” write Heather Davis and Etienne Turpin, “is primarily a sensorial phenomenon: the experience of living in an increasingly diminished and toxic world.”¹ Comprising the interrelated crises of global warming, deforestation, melting polar ice and rising water levels, ocean acidification, desertification, and the galloping loss of biodiversity identified as the sixth mass extinction,² the current era inspires a sensory experience described by philosopher Rosi Braidotti as an “all-pervasive paranoia”—functioning as we do under “the constant threat” of “imminent disaster,” our prevailing mood has become the melancholic.³ Ecological grief, “the grief felt in relation to experienced or anticipated ecological losses, including the loss of species, ecosystems and meaningful landscapes due to acute or chronic environmental change,” thus emerges as a burgeoning area of interdisciplinary inquiry.⁴

Amongst these disciplines are the arts, offering, over recent years, a sustained and diverse exploration of the affects and practices of mourning nature.⁵ The genre of ecological art, which might be said to concern itself with ecosystemic relations on a planet now experiencing the degradation and disregard of those relations, takes many forms; historically, projects have engaged with such (non-exclusive) strategies as activism, environmental remediation (if symbolic), didacticism, social sculpture, citizen science, and the deployment of both natural materials and eminently artificial ones (e.g., plastics).⁶ Occurring in conjunction with some of these methods,

¹ Heather Davis and Etienne Turpin, eds., *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environment and Epistemologies* (London: Open Humanities Press, 2015), 3.

² Ashlee Cunsolo and Neville R. Ellis, “Ecological Grief as a Mental Health Response to Climate Change-Related Loss,” *Nature Climate Change* 8, no. 4 (2018): 275, <https://doi.com/10.1038/s41558-018-0092-2>.

³ Rosi Braidotti, “On Putting the Active Back into Activism,” *New Formations* 68 (2010): 42.

⁴ Cunsolo and Ellis, “Ecological Grief,” 275.

⁵ This phrase is the title of Ashlee Cunsolo and Karen Landman’s edited volume *Mourning Nature: Hope at the Heart of Ecological Loss and Grief* (Montréal and Kingston: McGill-Queen’s University Press, 2017).

⁶ E.g., in order but, again, not exclusively of each type, Aviva Rahmani’s *Blued Trees Symphony* (2015); Mel Chin’s *Revival Field* (1991–); Helen and Newton Harrison’s *Greenhouse Britain* (2007–2009); Joseph Beuys’s *7000 Oaks* (1982); Natalie Jeremijenko’s *OneTree* (2000); Chris Drury’s *Carbon Sink* (2011), Agnes Denes’s *Wheatfield – A*

one significant thread within the eco art corpus represents what might be termed the aesthetics of loss. Artworks in this vein engage with, explore, and train a critical eye on ecological loss and, often, grief, frequently deploying such death-adjacent forms as elegy, requiem, and memorial. Canadian artist Sara Angelucci's *A Mourning Chorus* (2014), for example, took inspiration from public rituals of mourning to stage "an elegy to endangered songbirds," while American artist Roni Horn's *Library of Water/Vatnasafn* (2007–) functions as a proleptic, preservationist memorial, housing pillars of meltwater from twenty-four of Iceland's glaciers, one of which has already disappeared.⁷ Identifying this eco-elegiac cultural turn with regards to the disappearance of animal species, Ursula K. Heise contrasts the elegiac mode with the concurrent emergence of works that "engage with species loss by way of a database aesthetic" and thus "desentimentalize species elegies and tragedies," pointing to, for example, artist Maya Lin's website *What Is Missing?* (2009–), which attempts to catalogue stories of environmental loss from around the world. In works like Lin's, the focus is on "enumeration," on communicating the vastness of loss.⁸

If such works are guided by a hypothesis that somehow perceiving the extent of our planet's ecological loss has unique merits (for instance, might being impressed by the sheer magnitude of loss compel us to take environmental degradation more seriously?), the artists' primary methodological concern is to do with conceiving of or identifying a representational mode that

Confrontation (1982), and Alan Sonfist's *Time Landscape* (1965–1978–present); and Portia Munson's "green pieces," such as *Sarcophagus* (2009)—and on the use of plastics in contemporary art, see Amanda Boetzkes, "Plastic Vision and the Sight of Petroculture," in *Petrocultures: Oil, Politics, Culture*, ed. Sheena Wilson, Adam Carlson, and Imre Szeman (Montréal and Kingston: McGill-Queen's University Press, 2017), 222–241.

⁷ Magdalena Vasko, "Sara Angelucci, a Mourning Chorus," *The Senses and Society* 10, no. 1 (2015): 107–8, <https://doi.org/10.2752/174589315X14161614601321>. For a short overview of Roni Horn's *Library of Water/Vatnasafn*, see "The Library of Water: Stykkishólmur, Iceland," <https://www.atlasobscura.com/places/the-library-of-water-stykkisholmur-iceland>.

⁸ Ursula K. Heise, *Imagining Extinction: The Cultural Meanings of Endangered Species* (Chicago: University of Chicago Press, 2017), 56–86. Aptly, the cover design for *Imagining Extinction* rehearses the conceit of an artwork aesthetically akin to those discussed in this thesis: Brandon Ballengée's *The Frameworks of Absence* (2006–ongoing), in which the artist represents avian extinction by excising images of lost species from historical illustrations dated to the year of the species' extinction.

could be up to that substantial task. Again, per Heise, the database is one such representational mode. What I would like to address in the following chapters, however, is what might be termed the inverse of that aesthetic. Indeed, at issue in the artworks I discuss is not solely the eco-elegiac preoccupation with single instances of ecological loss as opposed to attempted treatments of ecological loss in its entirety; instead, additionally and—as I argue—primarily crucial to one genre of ecological artwork is a total turn away from the representation of ecological loss. In other words, these works subvert not simply the urge to represent ecological loss in its entirety but the desire to represent ecological loss at all. In so doing, artists opt instead to *enact* ecological loss, ultimately refusing to contradict the ontological status of loss as a passing-out-of-existence.

Loss and representation

Necessary to an understanding of the cultural context into which these artworks enter is a brief review of the theorization of ecological grief and loss and their intersection with representation. The definition of ecological grief excerpted in the first paragraph is that proposed by social sciences and health researcher Ashlee Cunsolo, a pioneering scholar on the subject, who, along with Neville R. Ellis, called for attention in 2018 to ecological grief as a crucial but understudied subject. Cunsolo situates her lived experience with environmental loss in her research with Inuit in Nunatsiavut, Labrador. Interviewing individuals, in 2011, about the impacts of climate change on Inuit communities and ways of life, Cunsolo grew despondent; rapid transformations in the landscape rendered increasingly difficult the maintenance of cultural traditions, and Inuit mental and emotional health were significantly, adversely affected.⁹ This localized crisis simultaneously brought to the fore Cunsolo's broader sense of despair, highlighting

⁹ Ashlee Cunsolo, "Prologue: She Was Bereft," in *Mourning Nature: Hope at the Heart of Ecological Loss and Grief*, xv–xiv.

her grief in terms of anthropogenic environmental destruction on a planetary scale. Significantly, she notes, there was no applicable memorialization, ritual, or dialogue—no action was taken to render the bereavement knowable or comprehensible.¹⁰

The situation Cunsolo studied and experienced has diffuse cognates. Environments globally are changing and degrading, altering quotidian lives and upsetting senses of place. The phenomenon is not new: the ecologist and conservationist Aldo Leopold is said to have been among the first, in 1953, to express a sense of ecological grief, writing that “one of the penalties of an ecological education is that one lives alone in a world of wounds.”¹¹ Half a century later, the neologism “solastalgia” was proposed by environmental philosopher Glenn Albrecht to name a similar emotional response to environmental loss.¹² Considering, primarily, the lived experiences of those facing the negative environmental change produced by coal mining and power generation in New South Wales, Australia, Albrecht sought to grasp the “pain or sickness caused by the loss of, or inability to derive solace from, the present state of one’s home environment” due to its transformation and degradation.¹³ He suggested as well the amenability of the term to the dispossession of the Indigenous people of Australia and the loss of “country”—defined by Deborah Bird Rose as “a living entity ... with a consciousness, and a will toward life”¹⁴—insisting on the distinctly emotional (over technically ecosystemic) tenor of environmental loss.¹⁵

¹⁰ Cunsolo, “Prologue,” xvi.

¹¹ Aldo Leopold in *From the Journals of Aldo Leopold: Round River*, 158–165 (New York: Oxford University Press, 1953), quoted in Cunsolo and Ellis, “Ecological Grief as a Mental Health Response,” 275.

¹² Glenn Albrecht, *Earth Emotions: New Words for a New World* (Ithaca: Cornell University Press, 2020), 43.

¹³ Glenn Albrecht, “Solastalgia,” *Alternatives Journal – Canada’s Environmental Voice* 32, no. 4/5 (2006): 34–36. See also Glenn Albrecht, Gina-Maree Sartore, Linda Connor, Nick Higginbotham, Sonia Freeman, Brian Kelly, Helen Stain, Anne Tonna, and Georgia Pollard, “Solastalgia: the distress caused by environmental change,” *Australasian Psychiatry* 15, supplement 1 (2007): S95–S98, <https://doi.org/10.1080/10398560701701288>.

¹⁴ Deborah Bird Rose, *Nourishing Terrains: Australian Aboriginal Views of Landscape and Wilderness* (Canberra: Australian Heritage Commission, 1996), 7, quoted in Albrecht, “Negating Solastalgia,” 13.

¹⁵ Albrecht, “Negating Solastalgia,” 13.

Crucially, however, tying into Cunsolo's articulation of her own global sense of ecological grief, Albrecht elaborates the applicability of solastalgia by invoking the contemporary capacity of digital media to bring distant instances of environmental destruction—e.g., “land clearing in the Amazon basin”—into intimate contact with a global spectatorship. Another much-cited example of this phenomenon is that of the 2010 BP Deepwater Horizon oil spill in the Gulf of Mexico, made eminently visible via live footage from its “spillcam” and since analyzed for its landmark visual significance by such scholars as T. J. Demos, Peter Galison and Caroline A. Jones, and James Nisbet.¹⁶ In this context, Albrecht suggests, “the meanings of ‘direct experience’ and ‘home’ become blurred.”¹⁷ As such, conceptually in keeping with Heise's proposal of “eco-cosmopolitanism”¹⁸—the imperative of conceiving of environmental world citizenship—Albrecht suggests that “the experience of solastalgia is now possible for people who strongly empathise with the idea that the earth is their home.”¹⁹ A sense of planetary residency, then, allows us to witness environmental destruction, the degradation of a place, anywhere on earth and find it “personally distressing.”²⁰

I highlight this acknowledged centrality of visibility to our experience of ecological loss and grief to point out the significance of what is, as I will claim, a turn away from the representation of ecological loss in certain artworks. Given the availability of images of and news stories about our environment in crisis, even the urban dweller, who might not be sensible of immediate environmental shifts, is liable to encounter the sight of environmental loss—hence Braidotti's

¹⁶ T.J. Demos, *Against the Anthropocene* (Berlin: Sternberg Press, 2017), 32–37; Peter Galison and Caroline A. Jones, “Unknown Quantities,” *Artforum*, November 2010 (cited in Demos); James Nisbet, “Environmental Abstraction and the Polluted Image,” *American Art* 31, no. 1 (2017): 114–31, <https://doi.org/10.1086/692160>.

¹⁷ Albrecht, “Negating Solastalgia,” 14.

¹⁸ Ursula K. Heise, *Sense of Place and Sense of Planet: The Environmental Imagination of the Global* (Oxford: Oxford University Press, 2008).

¹⁹ Albrecht, “Negating Solastalgia,” 14.

²⁰ Glenn Albrecht, “Solastalgia: A new concept in human health and identity,” *Philosophy, Activism, Nature* 41, no. 3 (2005): 49, quoted in Albrecht, “Negating Solastalgia,” 14.

suggestion of an all-encompassing paranoia. Despite the emotional discomfort that such views might cause, though, it is (of course) not the case that environmentalists or, indeed, artists generally seek to minimize our exposure to representations of ecological loss. On the contrary, in response to what has long been perceived as a “crisis of information,” the common philosophy regarding ecological loss is that it must be made perceptible and, thus, represented—through film, through art, through journalism—such that an otherwise uninformed public is equipped with the knowledge necessary to (somehow) take preventative action.²¹ Such is the project of, for instance, Canadian photographer Edward Burtynsky and his collaborators, Jennifer Baichwal and Nicholas de Pencier, with their 2018 film *Anthropocene*. Meanwhile, Rob Nixon has famously raised the issue of *how* to represent ecological destruction and its effects on humans; if ecological loss tends to take the form of “slow violence,” attritional destruction occurring over protracted periods of time and often lacking clear protagonists, victims, and villains, our existing narrative modes are ill-equipped to provide accurate literary representations of environmental crisis.²² As such, Nixon proposes, we need to develop new, fitting representational modes.

Also entering the discussion of how ecological loss might be translated into representation is historian of literature and environmental philosopher Timothy Morton. Morton, too, suggests that grief ought, at this moment, to suffuse the world. As such, he proposes that the “elegiac mode” is the appropriate aesthetic mode for our time, “given the loss of species, of habitats, of old forms of life.”²³ An elegiac mode, Morton notes, informs even what is often considered to be the watershed publication for the environmental movement: Rachel Carson’s 1962 *Silent Spring*, a

²¹ I am not suggesting that all ecological artworks seek to do this; certainly, many have more specific aims and intend to, for instance, offer or provoke insights about the affective experience of living with ecological grief.

²² Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2011), 2.

²³ Timothy Morton, “The Dark Ecology of Elegy,” in *The Oxford Handbook of the Elegy*, ed. Karen Weisman (Oxford: Oxford University Press, 2010), 254.

documentation of the negative effects of pesticide use on the environment, employs “*ubi sunt* tropes, elegiac figures that mourn the absence of things.”²⁴ As an example, he offers the title of Carson’s chapter on lawn pesticides (which quotes a line from John Keats’s “La Belle Dame Sans Merci”): “And no birds sing.”²⁵ Given our increasing awareness of anthropogenic environmental degradation, Morton suggests, we could anticipate that contemporary ecological writing would draw significantly on elegy.²⁶ Morton distinguishes contemporary ecological elegy from traditional elegy, however, on the basis of one significant point: while the traditional elegy mourns that which has already passed, today’s “ecological elegy weeps for that which *will have passed* given a continuation of the current state of affairs.”²⁷ Proposing that such a future-perfect elegy, functioning doubly as an augury, runs the risk of constituting a defeatist operation—paradoxically, he suggests, “ecological [elegy] kills nature for a second time, before it has fully happened for the first time”²⁸—Morton suggests that the latent constructive capacity of ecological elegy should be sought in its potential to resist closure: such an elegy would “mobilise some kind of choke or shudder in the reader that causes the environmental loss to stick in her throat, undigested.”²⁹ In so functioning, the environmental elegy would lead us to “hang out in melancholia and refuse to work through mourning to the (illusory) other side.”³⁰

This idea of a failed elegy, the elegy that stops short of serving its purpose of providing a conclusion, is germane to my discussion of artworks that resist the representation of ecological loss. Nixon suggests that new representational modes are needed to meet the unfamiliar challenge of depicting environmental loss; Morton states the same, but—because his aim is to fend off

²⁴ Morton, “The Dark Ecology,” 252.

²⁵ Morton, “The Dark Ecology,” 252.

²⁶ Morton, “The Dark Ecology,” 252.

²⁷ Morton, “The Dark Ecology,” 254.

²⁸ Morton, “The Dark Ecology,” 255.

²⁹ Morton, “The Dark Ecology,” 256.

³⁰ Morton, “The Dark Ecology,” 256.

elegy's foreclosure of the future—his claim is that the requisite aesthetic update entails a certain withdrawal from the thing grieved, asking for an elegy with an open-endedness that indicates resistance to the notion that our receding environment should be fully subsumed by our representational mode. Despite this notion, there remains, however, a fundamental concurrence that ecological loss can and should be represented—we just need to experiment with form.

Performing loss

What I demonstrate in this thesis is that one strand of contemporary ecological art takes up a position of dissent: ecological loss, these artists propose, is beyond representation. Across three chapters, I consider three contemporary ecological artworks that engage with this premise: American artist Mark Dion's *The Life of a Dead Tree* (2019), New Zealand artist Sally Ann McIntyre's *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 and #50.767)* (2018), and Scottish artist Katie Paterson's *Vatnajökull (the sound of)* (2007–8). While each of these works deploys unique aesthetic tactics to treat its individual environmental issue and claim, the definitive aesthetic strategy in each of these artworks, I suggest, is that the artwork does not represent but instead *performs* ecological loss. Similarly to the performative utterance, the “discursive practice” that, per Judith Butler, “enacts or produces that which it names,”³¹ these artworks do not simply describe, refer to, or represent ecological loss: they enact it.

The link between loss and performance has been theorized by Peggy Phelan. Phelan has stated of performance that it “becomes itself through disappearance” and consequently resists representation. Performance is by its nature ephemeral, Phelan writes, and that crucial, final element of loss cannot be represented.³² This premise, I suggest, underpins the three artworks I

³¹ Judith Butler, *Bodies that Matter: On the Discursive Limits of Sex* (New York: Routledge, 1993), 13.

³² Peggy Phelan, *Unmarked: The Politics of Performance* (London: Routledge, 1993), 146.

discuss. Conceiving of ecological loss as akin to performance in Phelan's terms and thus acknowledging that the loss central to both exceeds representation, these works opt to perform ecological loss over representing it. In this way, each work formally rehearses the nature of the loss it treats instead of describing it. Enacting ecological loss allows the artwork to resist contradicting the ontological status of loss as a passing-out-of-existence, thus, ultimately, proposing its irreversibility.

Three-chapter structure

I demonstrate this aesthetic method of performing loss through three exemplary contemporary artworks. *The Life of a Dead Tree* presents a durational experience of directly observing a decaying tree, suggesting that the tree's gradual disappearance is integral to the ongoing proliferation of other organisms and that the preservation of the 'lost' object via representation would negate this; *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 and #50.767)* consists of the recorded silence, the non-representation, of its disappeared species; and *Vatnajökull (the sound of)*'s live (non-recorded) audio implies both the imminent silence of its titular glacier's demise and the concomitant collapse of the artwork.

The first chapter deals with Mark Dion's *The Life of a Dead Tree* (2019), an installation consisting of a deceased white ash tree, a functional reconstruction of a scientific laboratory, and an in-gallery scientist. As heralded by the seemingly paradoxical title, the tree, while dead, plays host to a rich, reviving ecosystem of fungi, lichen, moss, and various insects. With reference to Anna Tsing's proposal that the "arts of noticing" are the means by which we might attune to local instances of environmental loss and find within them signs of the persisting possibility of life, I suggest that *The Life of a Dead Tree* offers a fairly optimistic perspective on ecological loss through its rejection of representation. Refusing to—as is typical—represent nature and, indeed,

science in the gallery, *The Life of a Dead Tree* simply transposes its central deceased tree and scientific apparatus into the gallery. I suggest that its fundamental premise holds that direct, close looking at apparent environmental ‘ruins’ and their human attendants can illuminate the ways in which ecological loss can be a source of continued life. Over time, we—and the scientist—see the tree decay and the organisms it hosts proliferate. Observing the tree itself decompose without attempting to preserve it through representation highlights the necessity of the tree’s eventual disappearance to the flourishing of other forms of life: sometimes, Dion proposes, ecological loss is inextricable from ecological life.

The second chapter addresses Sally Ann McIntyre’s *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 and #50.767)*, which takes a less optimistic approach to the problem of environmental loss than does *The Life of a Dead Tree*. McIntyre’s objects of inquiry are the artwork’s two eponymous numbered specimens: a pair of taxidermic laughing owls (*Sceloglaux albifacies*) now held at the Natural History Museum of Vienna but killed and collected in 1884 at Silver Stream (Otago, New Zealand) by an Austrian naturalist. The two owls were among the last of their kind; just thirty years after their death, the species was officially declared to have gone extinct. The specimens thus retroactively portend their species’ extinction, and it is this eerie correspondence between the owl specimens and species disappearance that McIntyre interrogates: what are the potentials, she asks, of performing memorials and mourning rituals for long-deceased, and irretrievably disappeared, creatures? I demonstrate that, through rendering silence perceptible through a Cagean aesthetics of sound, situating silence as historical through an ecological engagement with Jacques Derrida’s hauntology, and disclosing extinction as non-representable—the work’s central audio, like the extinct owls, fails to appear—*Twin signals at Silver Stream (fragments of a landscape for*

specimens #50.766 and #50.767) proposes that the effects of extinction are significant and long-lasting, necessarily exceeding our perception and understanding. Ultimately, this artwork enacts our inability to re-engineer nature, claiming the irreversibility of ecological loss.

Finally, chapter three turns to Katie Paterson's *Vatnajökull (the sound of)* (2007–8), a sound piece in which participants (be they in the gallery or elsewhere) could dial a phone number and connect to Vatnajökull, Iceland's largest—and rapidly melting—glacier. By dint of an underwater hydrophone wired to an on-land mobile phone, calling Vatnajökull allowed one to listen in on the dynamic soundscape of the glacier's meltwater lagoon. Trickling, crackling, and clicking indicated the dissolving of glacial ice and interfered in our typical perception of a glacier—frozen solid, unchanging—to communicate Vatnajökull's vulnerability to global warming. In this chapter, I propose that *Vatnajökull (the sound of)* discloses the glacier to be media—elemental media, in John Durham Peters's sense, locating the glacier as a container for and source of meaning as well as, ultimately, the condition of possibility for our and other organisms' existence. In tying the audio of the artwork to the existence of the glacier, Paterson positions Vatnajökull itself as the condition of possibility for *Vatnajökull (the sound of)*. Representation is thus augured to fail at the very moment of ecological loss—when the glacier disappears, so, too, does the artwork—proposing that the environment is itself a precondition for both our systems of meaning (e.g., art) and life on this planet.

CHAPTER ONE: The arts of noticing: Mark Dion's *The Life of a Dead Tree*

Sliced into sections and propped up across a series of blue metal sawhorses, Mark Dion's dead tree covers nearly the full length of the third floor at Toronto's Museum of Contemporary Art (fig. 1). The tree's root ball—still full of fresh soil—is winched to the gallery ceiling; rectangular work lamps at regular intervals beam hot, white light onto the bark. Power cords criss-cross the floor, heedless of the black-and-yellow tape—*do not cross*—demarcating a workspace around the tree. Standing by this border, however, a visitor to the gallery can observe sections of the tree's bark that have been peeled away, exposing networks of winding dark lines, lace-like tangles of pathways carved into the wood (fig. 2). These trails, as is explained by a nearby poster, are the work of the tunnelling larvae of the emerald ash borer, an invasive species of beetle afflicting ash populations throughout Ontario. Such is the impetus for the dead tree's display: this beetle is suspected to have occasioned the tree's demise, and this exhibit—described as an “autopsy”¹—seeks to ascertain the cause of death. On either side of the tree stands one of the coroner's workstations, each a stainless-steel table littered with pincers, hammers, insect pins, notebooks, coffee cups, and glass vials (some empty, and some teeming with drowned bugs) (fig. 3). At the other end of the gallery sits the principal workspace, a walled-in laboratory—a small, box-like space constructed *within* the gallery, complete with its own four walls and ceiling—painted a clinical shade of green and outfitted with all the material trappings of institutionalized science: microscopes, specimen jars, insect display cases, lab coats, butterfly nets, rubber boots,

¹ The exhibit is referred to as an autopsy on MOCA Toronto's website (“The Life of a Dead Tree,” <https://moca.ca/mark-dion-programs-2019/>); this is the standard exhibit text, used as promotional copy on numerous other websites. The description was also included in Chris Hampton, “New at MOCA: The surprisingly active life of a dead tree,” *The Star Toronto*, May 23, 2019, <https://www.thestar.com/entertainment/visualarts/2019/05/23/new-at-moca-the-surprisingly-active-life-of-a-dead-tree.html>.

and taxonomic posters (fig. 4). There is even a forest-green tote bag hanging by the door, emblazoned with a tree, a beetle, and a slogan: *We Cover Our Ash*.

This is Mark Dion's *The Life of a Dead Tree* (May–July 2019), and, as suggested by the artwork's title, the central deceased ash tree does bear signs of life. From its roots and branches sprout green, leafy shoots; a sizable fungus inhabits the core of its trunk; and, heedless of the border-demarkating tape, small bugs crawl out and scurry across the floor (it's rumoured that the gallery has developed an ant problem). A sweet, woodsy smell spills into the stairwell, and gallery attendants occasionally circle the tree, misting it with water. *The Life of a Dead Tree* thus stages the same concept of regenerative nature as does Dion's earlier *Neukom Vivarium* (2006)—a dead hemlock tree displayed in Seattle, sustained by the “life support” of a high-tech greenhouse²—but it twins the exhibition of a decaying tree with an overt focus on dendrology and entomology, expressed through the inclusion of those meticulously-constructed assemblages of material culture that function as scientific workplaces. Newly for Dion, though, *The Life of a Dead Tree* includes not only the objects of science but what appears to be a real scientist. An in-house researcher in a white lab coat—Alexandra Ntoukas, a landscape architecture graduate student at the University of Toronto—can be seen working at the exhibit daily, tapping on the tree out in the gallery space, squinting through a microscope in the museum diorama-like laboratory, or decanting preservative alcohol into tiny glass vials of executed insects (fig. 5). The results of her work can be tracked through the expansion of a display of high-definition specimen photographs on one wall of the gallery; as she collects invertebrates from the tree (seeking both traces of the emerald ash borer and other species present on the tree), their images are recorded and affixed to the gallery wall (fig. 6).

² Mark Dion, “Neukom Vivarium,” *art21*, <https://art21.org/read/mark-dion-neukom-vivarium/>.

By locating science within a gallery, Dion achieves a few things—the most productive in a didactic sense, he might say, being that it brings the typically behind-closed-doors nature of scientific investigation into the public eye.³ Doing this, however, offers us multiple instances of observation: we, as gallery visitors, observe the tree; so, too, does the scientist; in turn, we observe the scientist. I suggest that this focus on observation is central to the work, and that it can be understood through Anna Lowenhaupt Tsing’s notion of the “arts of noticing,” through which means, she suggests, we might become aware of the “possibilities of life” on a planet ravaged by global capitalism. In other words, the close observation of our world is posited as a method by which to locate perhaps implausible instances of multispecies coexistence—new life within what seems like ecological death—and, consequently, a necessary hope that a livable future might exist within our current environmental crisis. Staging science within a gallery, Dion co-opts our conventional museum-going acts of observation and close attention to propose that the transference of that attention to our local ecological and social contexts might allow us to notice the potential conditions for continued life amidst ecological loss. Crucially, however, this is only enabled by the durational observation of the decaying tree: in allowing its central tree to, however slowly, degrade and disappear, *The Life of a Dead Tree* enacts—and refuses to arrest or reverse—the loss it thematizes.

The issue of ecological loss is evidently central to *The Life of a Dead Tree*: the scientific investigation at the heart of the exhibit constitutes, as mentioned, a post-mortem inquiry. Found deceased in Orangeville, Ontario, the white ash tree was carefully removed from its environment by a team comprising the artist, forestry specialists from the University of Toronto (including Ntoukas, the in-gallery scientist), and a dedicated group of tree care experts. It was then driven to

³ “‘The Life of a Dead Tree’ Artist Mark Dion & Marc Mayer in Conversation (May 24th 2019),” Museum of Contemporary Art Toronto, <https://soundcloud.com/mocatoronto/mark-dion-talk-with-marc-mayer-may-24th-2019>.

the Museum of Contemporary Art, about an hour away. There, sectioned into pieces and installed across the third floor of the museum, the tree was to be thoroughly examined with the goal of determining the cause of its death. Consulting scientists (Dr. Sandy Smith, professor of forestry at the University of Toronto, and her lab) offered hypotheses to guide the inquiry. Based on their research, the primary suspect could be identified as one of Ontario's most deleterious invasive species, a metallic wood-boring beetle known as the emerald ash borer (*Agrilus planipennis*).⁴ Endemic to East Asia,⁵ the emerald ash borer was first detected in Canada in Windsor, Ontario, in 2002⁶ and determined to be invasive.⁷ A 2009 dendrochronological study pinpointed its likely original introduction to the early to mid-1990s in Michigan,⁸ to which location the beetle is thought to have arrived in imported ash wood, untreated and intended for use as packing material.⁹ The insect's eponymous proclivity for ash is no innocent trait: the emerald ash borer was identified as the culprit behind the extensive decline and death of ash trees in Detroit and Windsor,¹⁰ and it has since gone on to kill tens of millions of ash trees throughout North America.¹¹ The rapidity of this destruction is significant; once the emerald ash borer moves into a region, nearly all of the local ash trees may be killed within a decade.¹² This creature is, moreover, spreading quickly across the

⁴ Farah Hoque, Baoxin Hu, Jian-Guo Wang, and G. Brent Hall, "Use of Geospatial Methods to Characterize Dispersion of the Emerald Ash Borer in Southern Ontario, Canada," *Ecological Informatics* 55 (2020): 1, <https://doi.org/10.1016/j.ecoinf.2019.101037>.

⁵ "Emerald ash borer (factsheet)," Government of Canada, <https://www.nrcan.gc.ca/forests/fire-insects-disturbances/top-insects/13395>.

⁶ Christian MacQuarrie, Taylor Scarr, and Krista Ryall, "The science of the emerald ash borer (Coleoptera: Buprestidae): Where are we after 10 years of research?" *The Canadian Entomologist* 147, no. 3 (2015): 249, <https://doi.org/10.4039/tce.2015.19>.

⁷ MacQuarrie, Scarr, and Ryall, "The science," 249.

⁸ Roy Van Driesche and Richard C. Reardon, eds., *Biology and Control of Emerald Ash Borer* (Morgantown, WV: United States Department of Agriculture, Forest Service, Forest Health Technology Enterprise Team, 2015), 1.

⁹ D. B. Lyons, "Emerald ash borer," *Frontline Technical Note* 110 (Natural Resources Canada, Great Lakes Forestry Centre, Sault Ste Marie, Ontario) (2010), https://epe.lac-bac.gc.ca/100/200/301/nrcan-nrcan/frontline_forestry_research_applications-e/Fo123-1-110-eng.pdf.

¹⁰ MacQuarrie, Scarr, and Ryall, "The science," 249.

¹¹ MacQuarrie, Scarr, and Ryall, "The science," 249.

¹² "Emerald ash borer," Government of Canada, <https://www.nrcan.gc.ca/our-natural-resources/forests-forestry/wildland-fires-insects-disturban/top-forest-insects-diseases-cana/emerald-ash-borer/13377>.

continent, its swift travels thought to be enabled by the unintentional transport, by humans, of wood products infested with the beetle as well as adult insects latching onto vehicles.¹³ No native predators have been able to slow the emerald ash borer's spread,¹⁴ so researchers are exploring the potential efficacy of synthetic biocontrol solutions. *The Life of a Dead Tree* takes us not to an investigation of these potential solutions, however, but to the initial inquiry into how the problem manifests; it is not solely the emerald ash borer that occupies us, but, rather, the overall state of the potentially afflicted tree. There is an evident evocation, too, of not just ecological loss but ecological loss as brought on by global capitalism. The tree offers a material microhistory that illuminates the geographically widespread networks and interactions wrought by capitalist resource extraction and trade, indicating not simply our modes of direct, planned destruction (transforming trees into lumber) but the accidental side effects of those practices, such as the importation to new regions (when that lumber is shipped abroad) of non-indigenous and potentially harmful species. The exhibit's subject matter is local, but it clearly ties in with the global issue of environmental crisis and that crisis's connection to globalization itself. Dion states that he wants viewers to keep in mind the link between globalization and the "explosion of invasive species" as well as the fact that insect populations worldwide are in crisis—a critical issue, given that insects are integral to innumerable ecosystems.¹⁵ It is difficult to conceive of how life on our earth might continue in the face of such widespread damage rooted in economic systems that span the globe; I will suggest, here, that *The Life of a Dead Tree* proposes turning our attention to local ecologies to notice potential sites of persistent life (the organisms flourishing on the dead tree) amidst environmental loss (the tree, killed by the beetle). I will demonstrate how the artwork effects this

¹³ Lyons, "Emerald ash borer"; "Emerald ash borer," Government of Canada.

¹⁴ "Emerald ash borer," Government of Canada.

¹⁵ Hampton, "New at MOCA."

through discussing its tactic of engaging the audience in both ecological noticing and anthropological noticing as well as likening our activity to that of the scientist.

Ecological noticing

The Life of a Dead Tree notably centers an evident tension: the apparent dichotomy heralded in its title. Crucially, the exhibit allows us to discover this tension for ourselves; this, I suggest, is the first way in which the exhibit thematizes noticing, which I will expand on later. Initially, we are impressed with the perception of serious environmental loss: upon entering the gallery, we first notice the dead tree, stretching, dramatically, across the entire floor. There are aesthetic strategies at play, here, intended to emphasize the mournful nature of the dead ash; we can identify these elements as those most evidently diverging from standard scientific practice. For instance, for those with some insight into the typical activities of a dendrologist, it is apparent that the way in which the tree is laid out is atypical: it is not simply that the work carried out in the gallery would normally take place in the context of a scientific institution (and not an art museum), but, rather, that this is work that would regularly occur in the field. Resident scientist Ntoukas explains that an investigation into the biology of a deceased tree would not require the wholesale relocation of the tree, and the total excision of the root ball from the earth would not be necessary—indeed, the arborists hired to effect the removal and resettling of the tree had never before had to deal with such a task, and it proved particularly challenging.¹⁶ Ntoukas likewise describes some of her activities in the gallery, such as pounding the tree trunk with a hammer and chisel, as excessively “morbid.”¹⁷

¹⁶ Author’s interview with Alexandra Ntoukas, December 23, 2020.

¹⁷ Author’s interview with Alexandra Ntoukas, December 23, 2020.

These elements—the tree’s display, some of Ntoukas’s actions—are aesthetic choices not primarily concerned with contributing to the exhibit’s effect of ‘real science,’ but, for most viewers, they will do little to compromise the plausibility of the science underway. Instead, these aspects can be seen to emphasize the poignancy of the tree’s death. The white ash, though deceased, was nevertheless still upright when in its original habitat; laying it in a position of horizontal repose in the gallery not only intensifies the effect of its loss of life, but also likens the death of the tree to the death of a human, an association made evident through comparisons between the format of the gallery investigation and the set-up of an autopsy.¹⁸ The inclusion of the root ball contributes similarly: it emphasizes the standard verticality of the tree (without the root ball, it would not be as readily apparent which end of the tree were ‘up’) and indexes an element of violence in the interruption of the tree’s typical orientation and location. Dangling helplessly at odd angles, the exposed roots insist on the tree’s erstwhile liveliness; including just a tree trunk might have run the risk of offering an object that appears minimally different in death from how it did in life, but the full visibility of a tree’s roots has a similar effect to the visibility of any creature’s interior organs: this is a state in which life does not persist. As Ntoukas suggests, her actions also performatively highlight the tree’s death, as she hits the trunk with heavy tools that suggest the insensibility of the tree. The exhibit intends, thus, to create an atmosphere of death; the effect is palpable and depressing, so much so that gallery visitors have openly wept.¹⁹

On the other hand, however, the persistent liveliness of the tree becomes abundantly evident as we continue to look at (and listen to and smell) it. As previously mentioned, verdant plant life springs up across the tree’s length; moss and lichen proliferate; a fungus creeps out from within the lower region of the trunk; and the smell of the tree and its fresh soil suffuses the gallery

¹⁸ Hampton, “New at MOCA.”

¹⁹ Author’s interview with Alexandra Ntoukas, December 23, 2020.

space. Insects roam both the tree bark and the floor; one reviewer—somewhat overenthusiastically—reports that the ants march in such numbers that “they sound like boiling water.”²⁰ The scientific inquiry, moreover, while ostensibly focused on determining the tree’s cause of death and asking after the emerald ash borer, pays equal—if not more—attention to elucidating the other varieties of life present on the tree. One key element of the exhibit is, as mentioned, its inclusion of a photographic display intended to represent the ongoing ‘discoveries’ made by Ntoukas; to produce these images, the preserved insects that Ntoukas has extracted from the tree are periodically transferred to the Royal Ontario Museum’s entomology department (to postdoctoral fellow Mateus Pepinelli, specifically). The ROM identifies and sends back photographs of the specimens, captured with their state-of-the-art imaging technology, lending significant weight to this element of the exhibit.²¹ The photographs, arranged in neat rows with alternating black and white backgrounds, appear like a checkerboard on the wall; instead of holding circular pawns, however, each depicts a significantly magnified invertebrate at its centre. In one, a spider’s spindly legs reach nearly to the edges of the frame; below and to the left, an apricot-hued worm curls into a circle. Only a couple of iridescent beetles are suggestive in their green colouring—one might be the emerald ash borer, but it is here shown to be just one creature amongst many thriving on the central dead ash tree.

At issue, then, is not simply a critique of global capitalism made through the mournful presentation of one of its arboreal victims. Instead, the felled tree is disclosed to be a vibrant ecosystem in its own right, even in death. After our initial sight of the dead tree and its immediate emphasis on environmental loss, *The Life of a Dead Tree* then allows us to discover something quite different: the ecological reality, attested to by many a scientist, that dead trees—as the saying

²⁰ Hampton, “New at MOCA.”

²¹ Author’s interview with Alexandra Ntoukas, December 23, 2020.

tends to go—“are more alive than living ones.”²² Indeed, nearly all of a forest’s major organisms—plants, animals, microbes, protozoans and lichens—make use of deceased trees, and these trees’ affordances are many: they provide wildlife habitat, aid in the recycling of nutrients, promote plant regeneration, inhibit erosion, and improve soil quality by enabling drainage, regulating moisture, and increasing carbon storage.²³ Some researchers estimate that the majority of forest-dwelling organisms make use of dead trees throughout their life cycles, and some even claim that large “snags” and “down logs” (i.e., dead trees) are actually the most crucial habitat elements in a forest ecosystem.²⁴ Moreover, the cause of a tree’s death determines its decay trajectory and, as such, the nature of its continued role in a forest’s ecosystem; notably in the context of this exhibition, trees killed by bark beetles have been thought to *increase* biodiversity in their forest ecosystems. The apertures made in the tree’s bark by the tunneling beetles allow other species, like fungi and insects, to enter, as is the case with this ash tree; the bark beetles’ pheromones can attract new insect species to the tree; and the beetles’ activity may even increase the amenability of dead trees to acting as bird habitats.²⁵ *The Life of a Dead Tree* thus suggests to us that, through looking more closely and consistently at the tree, and looking, perhaps, with a scientist’s eye, we might notice dynamic new life and flourishing ecosystems where assumptions and cursory glances offered only death as an end. This is the first instance of sustained looking and ecological noticing—and its importance to finding evidence of the possibility of future life—that I want to point out.

²² Mark Harmon, “Art and science in the life of a dead tree,” Oregon State University, <https://today.oregonstate.edu/archives/2015/nov/art-and-science-life-dead-tree>.

²³ George Wuerthner, “The ecological value of dead trees,” *The Wildlife News*, December 20, 2018, <https://www.thewildlifeneeds.com/2018/12/20/the-ecological-value-of-dead-trees/>.

²⁴ Wuerthner, “The ecological value of dead trees.”

²⁵ Wuerthner, “The ecological value of dead trees.”

Seeing like a naturalist; seeing like an ethnographer

Clearly, *The Life of a Dead Tree* wants to posit the ecological productivity of a dead tree, asking us to move past outdated perceptions of death as inherently ‘bad’ or opposed to life—even if our perception of death, as we here sense it to be, is instinctively negative or mournful. If illuminating this were the work’s sole objective, though, it would hardly differ from certain predecessors; briefly, I will examine one of these earlier works to highlight the nature of Dion’s by contrast. Dion was not the first to haul a dead tree into a gallery or to make one the centre of an artwork; a constellation of other artists, some referencing the landscape tradition and, later, others referencing them, have taken up the motif since the emergence of the earth art movement in the 1960s.²⁶ The most significant comparand for Dion’s *The Life of a Dead Tree* is American artist Buster Simpson’s 1991 *Host Analog*, which also thematizes the biologically regenerative capacity of a dead tree. *Host Analog* relocated the segmented remains of a deceased Douglas fir tree from a forest outside Portland, Oregon—where the tree had formerly lived for around 600 years—to the plaza of the Oregon Convention Centre. Simpson presented the fir as a “laboratory environment,” a “nurse log” supporting a growing ecosystem.²⁷ Simpson’s presentation of ecological interrelations—the inextricability of one organism’s life cycle from another’s death—is overtly present in Dion’s *The Life of a Dead Tree*, too. While Simpson states that it is “imperative that little to no intervention be imposed upon [the] laboratory environment” of his tree,²⁸ however, Dion’s tree—though admittedly not open to much interference from its audience—necessarily welcomes the interventions of its attendant scientist. Unlike *Host Analog*’s focus on the purely self-sufficient quality of nature, then, Dion’s *The Life of a Dead Tree* centres not solely dead trees

²⁶ A brief survey of “deracinated trees” in art can be found in Mark Cheetham, *Landscape into Eco Art: Articulations of Nature Since the '60s* (University Park: Penn State University Press, 2018), 37–63.

²⁷ “Host Analog,” Buster Simpson, <http://www.bustersimpson.net/hostanalog/>.

²⁸ “Host Analog.”

but rather, additionally, dead trees and their interactions with human scientific institutions. For Dion, the “laboratory environment” is not just a metaphorical description of the tree’s abundance and dynamism of life forms, but, instead, an actual laboratory. If *Host Analog* shows us that nonhuman organisms, dead and alive, are biologically interdependent, *The Life of a Dead Tree* insists that humans do not stand apart from this cycle.

Dion thus uniquely ties together the notion of regenerating ‘dead’ nature and, broadly, the human practice of science. I suggested above that the experience of observing the tree and coming to notice the life thriving upon it might be akin to adopting a scientist’s perspective; now, I’d like to extend this to argue that the presence of the scientist in *The Life of a Dead Tree* not only overtly thematizes that scientific act of close observation but introduces a new vector of observation: our, the gallery visitors’, observation of the scientist and her practice. I bring up these two instances of observation because I want to address them in relation to Anna Tsing’s suggestion in her 2015 book *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*: we must adopt the observational methods of the naturalist and the ethnographer if we are to pay attention to our world in a way that will allow us to notice sites of life persisting against the odds. Looking closely at our world through this double/interdisciplinary lens, Tsing proposes, we might find evidence of collaborative life that regenerates within the capitalist ruins of our environment. It’s this practice of looking that *The Life of a Dead Tree* engages us in, I suggest, asking that we attune to our local environments to seek patches of life within, and arising expressly from, environmental destruction.

Prior to further addressing the instances of observation that I think are central to *The Life of a Dead Tree*, it is necessary to recount Anna Tsing’s premise in *The Mushroom at the End of the World*. The titular mushroom is the matsutake mushroom, a fungus that grows in various

regions (Japan, Oregon, China’s Yunnan province) and that, due to its role as a prized delicacy in Japan, has spawned a network of global commodity chains. Matsutake are also weeds: they resist cultivation by humans, but, nevertheless, they grow in human-disturbed forests.²⁹ It’s not solely human activity that renders environments fit for matsutake; forests located near such geological forces as glaciers, volcanoes, and sand dunes have also acquired the hostile characteristics—for example, a lack of trees or even a lack of organic soil—that matsutake seek.³⁰ As befits the argument of the Anthropocene, though—that humans have outstripped other geological forces with regards to their impact on the planet—human activity, such as the over-logging of Oregon’s ponderosa pines, is also a proven producer of matsutake-friendly environments. These harsh conditions—e.g., cutover forests—are what Tsing terms “capitalist ruins,” the leftover sites of once-burgeoning extractive activity. Such ruins appear worthless from a progress-bent capitalist perspective, which values environments for their ability to produce singular assets (e.g., timber); when these areas cease to provide, they are abandoned and the hunt for assets resumes in a new location. This process, which is evidently unsustainable, typifies our present approach to the natural environment; our engagements in resource extraction leave these ruins in their wake, and as such, environmental ruins circle the globe. Proposing the mushroom as a protagonist, however, Tsing offers a new perspective: instead of perceiving these environments as dead, we could focus on the life that often manages to thrive in discarded spaces. Instead of seeing just cutover forest, we could look harder, closer to the ground, and spot flourishing mushrooms—for instance, those matsutake that began to thrive in the ruins of Oregon’s logging industry. Tsing is, thus, against both idealistic imaginings of a pre-capitalist Eden and nihilistic concessions to certain death (the

²⁹ Anna Lowenhaupt Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (Princeton: Princeton University Press, 2015), 4.

³⁰ Tsing, *The Mushroom at the End of the World*, 50.

sort of sentiment expressed in philosopher Simon Critchley's statement: "We're fucked. We know it. Kind of."³¹). Tsing's perspective is, instead, that our only option is to look for life in the ruins we collectively inhabit. Finding these instances of new life can evidence that multispecies living is possible and that there can be something after, instead of, capitalism; although the quality of that life will be, fundamentally, precarious and fragile, it *can* exist. We need to believe, in short, in the possibility of multispecies coexistence, that species depend on and adapt alongside those they live with: "How else," Tsing asks, "can we account for the fact that anything is alive in the mess we have made?"³² Like looking for inconspicuous mushrooms on a brushy forest floor, however, the task requires sustained attention and observation; Tsing terms this the "arts of noticing."³³ Such noticing, Tsing suggests, is of two primary strands, humanist and naturalist, and consists of curiosity in and engagement with specific, local human/nonhuman assemblages. The concern is not with theorizing unifying principles, but with looking beyond broad assumptions to identify the possibility that ecological regeneration, pulling together both humans and nonhumans, might be occurring in different ways in different areas.

I'd like to suggest that *The Life of a Dead Tree* stages and draws us into such arts of noticing, directing our attention to a local instance of ecological regeneration, and human/nonhuman entwinement, within a broader environmental crisis. Despite the presence of an invasive species and the consequent demise of an afflicted tree, other species—fungi, lichen, moss, insects—persist in abundance. The province-wide 'attack' (which also stretches, of course, far beyond the province's borders) on ash trees by the emerald ash borer has left and threatens to leave

³¹ As pointed out by Timothy Morton in "Anna Lowenhaupt Tsing's 'The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins,'" *Somatosphere*, December 8, 2015, <http://somatosphere.net/2015/anna-lowenhaupt-tsings-the-mushroom-at-the-end-of-the-world-on-the-possibility-of-life-in-capitalist-ruins.html/>.

³² Tsing, *The Mushroom at the End of the World*, vii.

³³ Tsing, *The Mushroom at the End of the World*, 17.

still more dying and decomposing trees throughout the region; we assume, initially, that this is entirely negative, and the afflicted trees are generally removed and run through a wood chipper or burned.³⁴ What we might glean by closely observing these trees beyond their death, however, is that their passing is not necessarily at odds with—and may even be beneficial to—the overall health of the surrounding environment. Although we instinctively read death as negative and thus perceive these ecological ruins as unproductive or detrimental, noticing the life born of these ruins can indicate, firstly, that a future may still be possible despite the onslaught of capitalism-adjacent environmental wreckage, and, in addition, that that future requires us to learn to live with ‘strange,’ ruined nature: dead trees teeming with bugs and fungi.

The act of noticing this, I would propose, is overtly thematized not solely because the work locates the dead tree within an art gallery and thus invites us to observe it as we might any other artwork (though this is, of course, the crucial first step). In addition, I suggest, this form of durational close observation is modelled by the in-gallery scientist. We can watch her, for hours each day, attending expressly to the task of locating life on the dead tree; as she works, her discoveries multiply, displayed through the ROM’s photographs on the gallery wall and attesting with still greater conviction to the vibrance of the dead tree’s ecosystem. Careful observation and, thus, noticing—scaffolded by curiosity, Tsing suggests, and its openness to discovery³⁵—allow her to see what might otherwise go unremarked. Through this form of paying attention to ‘ruins,’ the resident scientist reveals the lively and complex ecology enabled by a dead tree, and *The Life of a Dead Tree* reveals the productivity of noticing as a means of not only understanding how our environments might persist, but also, simply, believing that they can.

³⁴ “Interview with Mark Dion ‘The Life of a Dead Tree,’” Museum of Contemporary Art, <https://moca.ca/mark-dion-programs-2019/>.

³⁵ Tsing, *The Mushroom at the End of the World*, 6.

Understanding the scientist to be but a ‘stand-in’ for the viewer, however, does not adequately explain the intricacy with which her work environment has been constructed. What I’d thus like to propose is that the meticulously assembled laboratory diorama produces the effect of watching the scientist work in her ‘natural habitat,’ her standard work conditions, and thus positions gallery visitors as *her* observers. In other words, it’s not just that we observe the tree alongside the scientist; we also observe the scientist (while she’s at work, observing the tree). Ultimately, thus, we observe a nature/culture assemblage through, necessarily, the two perspectives identified by Tsing: those of the naturalist and the ethnographer.³⁶

To understand the significance of *The Life of a Dead Tree*’s scientist and her workspace, it is helpful to view them in the context of Dion’s corpus of science-involving artworks. I suggested, earlier, that it is the emphasis on the scientific environment that distinguishes Dion’s exhibited tree from its antecedents. This emphasis is typical for Dion, who aligns his artistic practice with the discipline of the history of science³⁷; indeed, when it comes to conducting an entomological and dendrological investigation on a deceased tree in a gallery, *The Life of a Dead Tree* is preceded only by another of Dion’s own works, *The Great Munich Bug Hunt* of 1993. For that exhibit, a dead tree from Germany’s Black Forest was set up in Munich’s K-Raum Daxer, and, for the duration of the show, Dion and a team of local entomologists were on site in the gallery, dissecting the tree to remove any invertebrates they came across. Found creatures were identified, preserved in glass jars, and deposited in a wooden cabinet reminiscent of early natural history museum displays. The cabinet door remained open, allowing visitors to the exhibition to track the progress of the taxonomic process.³⁸

³⁶ Tsing, *The Mushroom at the End of the World*, 37.

³⁷ “‘The Life of a Dead Tree’ Artist Mark Dion & Marc Mayer in Conversation.”

³⁸ David Wilson, Irene Hofmann, Michelle Grabner, and Gregory Wittkopp, *Weird Science: A Conflation of Art and Science* (Bloomfield Hills, MI: Cranbrook Academy of Art Museum, 1999), 14.

The scientific laboratory

But science itself is no stranger to the gallery (one curator suggests that “a scientification of art like in the Renaissance [...] is emerging,” dubbing the present a “Renaissance 2.0”),³⁹ and artists have long both employed scientific methods and commented upon them, tending to explore the unique affordances of linking science with aesthetic strategies. Dion’s works have engaged with the visual and material culture of science and natural history in ways characteristic of institutional critique, and the element perhaps most identifiable as unique to Dion’s work is his emphasis on the scientist themselves, effected through the artist’s own performance of that character. Indeed, while most science-involving artworks absent the main character, Dion has historically assumed the role of scientific researcher himself, populating his exhibitions and moving them squarely into the realm of performance; as a self-avowed and deliberate amateur, he sometimes works alone (as in, e.g., *The Department of Marine Animal Identification of the City of New York (Chinatown Division)* of 1992) and sometimes leads a team of professionals, as in *The Great Munich Bug Hunt*. This practice was self-reflexively referenced with Dion’s *Costume Bureau* of 2006, an artwork that brought together outfits worn by Dion over a fifteen-year period of work. The garb of the field biologist, laboratory technician, archaeologist, and entomologist—binoculars, lab coat, shovel, butterfly net—were each displayed on mannequins, disclosing the sartorial means by which Dion had stepped into diverse roles for various artworks; the title emphasized the performative nature of these characters and, by extension, the work they performed. In these cases, it is not that Dion ‘exposes’ science to reveal the lie of objectivity and consequently undercut scientific knowledge, but instead that he seeks to disclose the processual character of scientific practice, highlighting how and *that* scientific knowledge is produced, and

³⁹ Peter Wiebel, “Introduction to the exhibition: Exo-Evolution,” Center for Art and Media Karlsruhe, <https://zkm.de/en/peter-weibel-introduction-to-the-exhibition>.

thus position science as not an inaccessible, impenetrable practice but simply a human means—with, indeed, humans at its core—by which the earth is investigated. In other words, science is shown to be cultural, but its significance is not diminished; instead, in Dion’s work, the thrill of scientific discovery is often celebrated, and the fundamental goal tends to be to inspire in the audience an urge for critical and passionate inquiry into the (often natural) world⁴⁰—much like that of ‘amateur scientist’ Dion. This is akin to what I suggested above: the scientist in *The Life of a Dead Tree* thematizes and models noticing; in this work, it’s a form of noticing deemed necessary for its capacity to seek out the possibility of life in ravaged environments.

The way in which *The Life of a Dead Tree* involves science, however, slightly departs from Dion’s previous performative forays into the field. In his other works, Dion is “always bumbling” and “the techniques are suspect” (as he puts it)⁴¹; for *The Life of a Dead Tree*, however, the methods seem relatively sound, and this is because, of course, Dion is not the one helming the investigation. Ntoukas has a background in forestry, ecology and evolutionary biology⁴²—and, unlike Dion, no known career as an artist—and thus presents as a real scientist. While Dion’s overtly amateur operations are easily read as entirely performative and deliberately so (again, seeking more than anything to have us cast a discerning eye, in multiple ways, on our surroundings), and his unpopulated dioramas are understood not to be in use by anyone (actor, artist, or otherwise), *The Life of a Dead Tree* is different: its laboratory diorama, as well as the entire ‘laboratory environment’ of the third floor of the gallery and its central dead tree, appear to be a functional research domain. Visitors can watch Ntoukas tapping the tree trunk, chiseling away

⁴⁰ “Science and Aesthetics – Interview with Mark Dion,” *art21*, <https://art21.org/read/mark-dion-science-and-aesthetics/>.

⁴¹ Ruth Erickson, ed., *Mark Dion: Misadventures of a 21st-Century Naturalist* (New Haven, CT: Yale University Press in association with the Institute of Contemporary Art, 2017), 15.

⁴² Author’s interview with Alexandra Ntoukas, December 23, 2020.

pieces of bark, bottling insect specimens, and, occasionally, behind the glass, taking notes or peering through a microscope in the enclosed laboratory. She is also available for direct inquiry: visitors are welcome to ask her questions (her hours are posted outside the lab) and discuss her working hypothesis about the emerald ash borers' tunneling patterns and their effect on the tree's health,⁴³ and she even hosts occasional workshops in the gallery, educating attendees on biological topics of pertinence to the research surrounding the tree (fungi and lichen, for example, or invasive species).⁴⁴ If Ntoukas were the only element of the scientific environment present, however, she might seem more like a tour guide—associated with an 'exhibit' that consisted of just the tree, but not herself exhibited as *part* of the exhibit—and we might feel too acutely that her activities were staged explicitly for gallery visitors' benefit (i.e., if she didn't have any 'real' scientific implements, how would we identify her as a 'real scientist' doing 'real science'?). The rich material environment constructed for Ntoukas, however, obviates this: the effect is that she is within not, primarily, the world *of* the gallery (in the same space as us, the gallery's visitors) but, instead, the world set *within* the gallery: the bounded, and typically fictional, space of art.⁴⁵ Positioning science as art renders us observers of science: of the scientist, her workspace, and her work.

Crucial to this effect is the physical complexity of the laboratory diorama—on this depends the believability of the scientific environment as both functional/real and self-contained (i.e., its own space, as opposed to coextensive with the gallery). Indeed, the work's emphasis on visual and material culture is as pronounced as in any of Dion's earlier works. *The Life of a Dead Tree* presents a highly realistic recreation of a recognizable genre of scientific interior setting,

⁴³ Hampton, "New at MOCA."

⁴⁴ Event archive, Museum of Contemporary Art, <https://moca.ca/calendar/2019-06-14/>.

⁴⁵ Bruce Wilshire, "The Concept of the Paratheatrical," *TDR* 34, no. 4 (1990): 169, <https://doi.org/10.2307/1146050>.

constructed through an assemblage of material, visual, and architectural elements and recalling a stage or film set or—primarily, perhaps, given our museum setting—a diorama in a natural history museum. In other words, we recognize this highly realistic construction of a setting, located in a space of display, as something to look at. The walled-in, mint-green laboratory is as convincingly cluttered as Dion’s earlier fictional environments (*The Field Station of the Melancholy Marine Biologist* of 2018, for instance); the artist spares no effort in assuring us not only that the gallery has been outfitted with all of the necessary implements of scientific investigation but also that it has been thus appointed—and consequently *used*—in precisely the way it would in a ‘real’ scientific setting. Perhaps the most apparent contributing factor to this effect of reality is the architecture of the laboratory: outfitted with glass windows such that visitors can peer in, the construction gives the effect of this being a real laboratory excised from a nearby university and relocated, fully intact, into the gallery.

The laboratory’s collection of objects also contributes to the effect of veracity. The mint walls are plastered with educational taxonomic posters (e.g., “Arthropods”) and two government-issued posters (“Important bark beetles in Canada” and a “Wanted”-style notice about the emerald ash borer); a bulletin board hangs at the back, studded with diagrams of the invasive beetle at various stages of its life, a column of laminated bug identification cards, and a few clusters of spare pushpins. The metal table nearest the window is littered with the standard accoutrements of a scientific workplace: notebooks, insect collection boxes stacked atop each other, dozens of glass vials (some empty, some filled with snuffed-out ants), a pamphlet about insects of the Northeast, scrap paper, a guide to the “Biology and Control of the Emerald Ash Borer,” a permanent marker, a ruler, a microscope, electrical tape, an Erlenmeyer flask, pieces of bark, isopropyl alcohol, a well-used eraser, and a mug with the logo of a graduate residence at the University of Toronto. A

grey metal bookcase stands against the right wall; on its highest shelf languish no fewer than six rusty soil sieves and a selection of metal canisters labelled “S. Smith, Faculty of Forestry, University of Toronto,” while the lower shelves hold reference books (two entitled *Insects*; one called *Trees and Shrubs*), binders, pamphlets, dusty file boxes, and stores of haphazardly stacked fieldwork paraphernalia. An equally cluttered back counter supports a clipboard, a few pieces of a cross-sectioned tree branch, a faded *Forest Flora of Canada* (1972), another panoply of glass vials and wooden specimen collection trays, and a novelty mug (depicting a dinosaur steering a boat and labelled, appropriately, “Boatosaurus”). Present, indeed, are a few items of more questionable import to the task at hand: one wonders, for example, about the utility of a battered and decidedly vintage paperback entitled *The Life of the Spider*.⁴⁶ Two butterfly nets, one without a handle, lean against the wall on either side of the bookcase, and the back counter also hosts certain quaint-looking ornaments: a sepia-toned photograph of a boy seemingly attired as an early naturalist, for example (sporting a wide-brimmed hat, kerchief, and pants stuffed into rubber boots), and two framed assortments of dried leaves (neither of which includes ash leaves).

This is a motley assortment of objects: some are clearly relevant to the present investigation, up-to-date, and functional (the microscope, the vials), while others are apparently personal, aged, and infrequently in use (the old photograph, the pressed leaves, the taxonomic posters). The message is that this lab hasn’t been constructed solely for the purpose of delivering science-related content for the duration of one exhibit in an art gallery—this is the real laboratory, *The Life of a Dead Tree* suggests, of someone with a local institutional academic appointment (the UofT-branded goods; the labelled canisters), a history of work in the discipline (the discoloured lab coats, the battered equipment), and a developed research interest in the emerald ash borer (the

⁴⁶ This is John Crompton’s *The Life of the Spider* (New York: Mentor Books, 1954).

multiple collected publications and posters on the subject, the worn emerald ash borer-themed canvas bag that suggests participation long ago in a conference or other research group). The effect is emphasized by the fact that gallery-goers aren't allowed entry into this workspace, the same way we wouldn't simply wander into any researcher's laboratory (or, indeed, onto a stage or into a diorama of an animal habitat); we can, at most, gaze in through the glass. The overhead lights are always on; on the front desk, a messy array of metal instruments gleams in the light of a perpetually lit floor lamp. When the laboratory is unoccupied, the effect of suspended human action rehearses that characteristic element of Dion's stage-like environments: our scientist, it seems, has just stepped out. But, of course, where the lack of any human presence or—if Dion is playing the scientist—the lack of any reputable scientific persona would, typically, reveal the fictionality of this material assemblage, Ntoukas, qualified and dedicated, complicates this.

The material effects of scientific work are not restricted to the laboratory; they continue throughout the more portable workstations set up around the tree: a gardening spade with a wooden handle engraved with "I dig you," for example, is stored beneath one metal table, and an empty coffee cup from the gallery cafe has been abandoned on the other. The remainders of a beverage index the presence of a living, breathing, working scientist in need of sustenance (and, similarly, were this all a carefully-crafted and unused gallery set-up—i.e., not a real workspace—we might expect that someone's discarded drink would be instantly cleared away); the spade incised with a Valentine-like message, meanwhile, suggests the presence of a scientist with at least one close friend who considers their inclination for plant life a salient part of their identity. The effect, again, is that the scientific activity central to *The Life of a Dead Tree* hasn't been staged solely for the purposes of an art exhibit: we're observing science being conducted as it officially *is* conducted, in a laboratory that's been assembled over a lifetime of work, helmed by an individual whose

identity is significantly constructed through their profession and objects of study. The intricate detail of the lab thus positions the scientist as someone with a genuine investment in their natural surroundings, who has devoted their life to the prolonged observation of the natural world (and, more specifically, trees and invertebrates). Including a real scientist alongside this material world—and not just Dion himself—renders the work uniquely earnest (it’s not, fundamentally, a critique of science that’s at play). But why look at real science?

Placing this environment within a gallery and positioning us as observers of this environment, I suggest, renders us not solely an art-appreciating public but, instead, also something like anthropologists. We observe the scientist and her laboratory in this way because we understand that she is part of the artwork: we’re not just looking with her, we’re looking at her. Dion thus stages a situation akin to that narrated in Bruno Latour and Steve Woolgar’s *Laboratory Life: The Construction of Scientific Facts*: the book is an ethnography of scientists, consisting of an anthropological study of Roger Guillemin’s laboratory at the Salk Institute based on Latour’s “field work” in that lab.⁴⁷ We adopt that same ethnographer’s perspective here: it is as though we observe science as it otherwise occurs (Dr. Sandy Smith notably stated that she was unsure how, exactly, the exhibit qualified as art: it was identical to her quotidian work⁴⁸). Because Ntoukas is legible as a qualified scientist—thus obviating the parodic element that arises when the exhibited science is conducted by a costumed Dion—we also are not led to discount science or to critique the discipline in any significant way. Instead, I suggest, we are fundamentally invited to observe it: the myriad objects and images in the laboratory should—like a cabinet of curiosities—incite our curiosity about the practice of science and the scientist herself. I return, now, to Tsing’s proposal about the

⁴⁷ Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton: Princeton University Press, 2013).

⁴⁸ Conversation with the author, June 2019.

arts of noticing, and her suggestion that the naturalist's observational practices and the ethnographer's observational practices are key to noticing the possibility of a liveable world within environmental ruins.

While noticing the regenerative, biodiverse potential of a dead ash tree—i.e., a local instance of what Tsing might term “life in capitalist ruins”—is one crucial aspect of coming to understand how (and believe that) the conditions of the possibility of future life might exist, Tsing highlights ethnography as a necessary companion to natural history such that we might understand not solely how the nonhuman environment might persist but how humans, too, must develop alongside it. The ethnographic perspective that *The Life of a Dead Tree* offers us discloses the scientist as an individual whose identity is remarkably entwined with their objects of study; their workspaces comprise *wunderkammer*-esque collections of material about their subject matter, suggesting long-term devotion, and their time is spent closely, minutely, investigating the natural world. If the dead tree's current state is the effect of its entanglement within a human-driven capitalist system of global trade and extraction, so, too, is the scientist's identity entirely constructed by both the tree and that tree's demise, dedicated as they are to ascertaining the nature of the tree's death and of its continued ecological existence. There is no perfect harmony here (indeed, much of the scientist's work consists of executing and preserving the insect life on the tree), but there is the notion that the scientist persists—despite and indeed because of the deaths of so many trees, despite and because of indications towards the futility of their efforts—in attending to, caring about, and caring for their nonhuman environment.

The specific methodology of the scientist's act of close investigation is also brought into relief by the laboratory's location in an art gallery. If we are invited to train our typical art-observing gaze on the tree, positioned as art, we might wonder: how does the scientist's

consideration of the tree resemble that incited by the artistic context? I would propose that the scientist's act of investigation is itself tied specifically to close, visual observation, a link suggested not solely by the fact that the emerald ash borer's larval pathways are termed "galleries" (a fortuitous coincidence) but also by the particular makeup of the laboratory. There is a sense of anachronism to the space: while 'vintage'-seeming items abound (sepia photograph, rusty sieves, faded books), some of the expected contemporary equipment (a computer, for instance) is conspicuously absent. This slightly 'historical' effect, I think, could be said to characterize this scientific practice as somewhat 'prior' in nature to that most abundant today; in other words, this scientist is shown to spend her time diligently *observing* the natural world instead of *making* it anew. This notion stems from historians of science Lorraine Daston and Peter Galison's book *Objectivity*, which I will briefly summarize below to explain what I mean.

In *Objectivity*, Daston and Galison construct a history of objectivity as an epistemic virtue in the field of science. The notion of objectivity has not been around forever, they explain; instead, the idea's emergence can be pinpointed to the mid-nineteenth century, and its specific workings—as well as those of alternative scientific epistemic principles—are most clearly seen in the quotidian but fundamental work of scientific image-making.⁴⁹ If being objective means pursuing "knowledge that bears no trace of the knower"—knowledge that is pure fact, unmarred by the beliefs, abilities, desires, or expectations of the knower—then the perceptive methodology that suits objective knowing is "blind sight, seeing without inference, interpretation, or intelligence."⁵⁰ It is this visual interpretation of objectivity that has been manifest in scientific representation, the authors claim, from the mid-nineteenth century to the present day. The concept is familiar: acceptable scientific images, we know, should neither bear any artistic flourish nor have suffered

⁴⁹ Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2010), 17.

⁵⁰ Daston and Galison, *Objectivity*, 17.

significant digital manipulation. Objectivity is but one approach, however, in a series of three principal representational strategies outlined by Daston and Galison: “truth to nature,” “mechanical objectivity,” and “trained judgment.”⁵¹ (The authors take care to note that these strategies are chronological insofar as their emergences are sequential and contingent—i.e., each develops in response to that which preceded it—but it is not the case that the emergence of one strategy obliterates the validity or use of the former: they continue to exist simultaneously, as different representational options.⁵²) A brief summary of the history of scientific seeing, following Daston and Galison, might go like this: in the eighteenth and early nineteenth centuries, naturalists hewed to a belief in not objectivity but representational “truth to nature” (in the authors’ terms), which held, in short, that accurate depictions of nature were not those that directly copied nature but instead those that idealized nature; truth, from this perspective, was equivalent to beauty. Scientists in the mid-nineteenth century then waxed suspicious of this method, newly perceiving it to be misleading;⁵³ they turned, instead, to what Daston and Galison dub “mechanical objectivity,” an imaging philosophy that seeks, as much as possible, to absent the image-maker from the representational result; central to this strategy was the use of such mechanized, indexical recording devices as “self-registering instruments, cameras, [and] wax molds,”⁵⁴ Later, in the early twentieth century, an interest in “trained judgment” as a pictorial method also developed, which introduced a caveat to mechanical objectivity and allowed that the highly disciplined and

⁵¹ Daston and Galison, *Objectivity*, 18.

⁵² Daston and Galison, *Objectivity*, 18.

⁵³ Daston and Galison, *Objectivity*, 15.

⁵⁴ Daston and Galison, *Objectivity*, 121. It is understood, of course, that there are multiple aspects of the photographic process that depend on the operating individual’s will (perspective, aperture, shutter speed, and so on), but the method nevertheless provides technical standardization. Kaja Silverman’s *The Miracle of Analogy, or The History of Photography, Part 1* also offers a good philosophical take on this. Silverman explains the significance of the exemption of the human from the process of photographic image-making by suggesting that the photograph is analogous (i.e., ontologically equivalent) to the world it is usually thought simply to represent. See *The Miracle of Analogy, or The History of Photography, Part 1* (Stanford: Stanford University Press, 2015).

experienced mind could be capable of contributing to valuable images. In sum, *Objectivity* demonstrates that scientific objectivity as a representational practice has a lengthy and identifiable history, developing in the mid-nineteenth century from certain conceptual prologues, and that central to its expression and evolution were “ways of seeing that were at once social, epistemological, and ethical.”⁵⁵ Crucially, the fundamental motivation behind all of these tactics—truth-to-nature, mechanical objectivity, and trained judgment—is a desire for “fidelity to nature,” to represent nature “as faithfully as possible.”⁵⁶

At the end of the twentieth century, however, a new mode of imaging began to develop that complicated this age-old aim. Instead of ‘simply’ representing nature, copying its appearance, scientists began to seek new capabilities and purposes for their images. Using the digital tools and methods of engineering, scientific imaging could now *present* instead of represent: scientists can now create interactive, dynamic visual experiences, such that the digital image has an existence separate from its referent. Just as this imaging practice entails the creation of new, not representational, images, the field of nanotechnology also consists in the *creation* of entities through minute atom-splicing: related images show “objects that are being made, not found.”⁵⁷ The ‘scientific self’ that accompanies this imaging mode, Daston and Galison suggest, is an “engineering self.” Its historical roots can, partly, be found in a longstanding debate about how knowledge is acquired through the senses: ought scientists to adopt a *vita contemplativa* and learn about the world through observing it, or should they intervene in the world, opting for a *vita activa* and believing that we can’t know things to be real until we’ve physically affected them?⁵⁸ This latter “interventionist ideal” holds, primarily, that seeing—“pure receptivity”—does not suffice;

⁵⁵ Daston and Galison, *Objectivity*, 10.

⁵⁶ Daston and Galison, *Objectivity*, 382.

⁵⁷ Daston and Galison, *Objectivity*, 391.

⁵⁸ Daston and Galison, *Objectivity*, 392.

active experimentation is necessary. The modern-day ‘self’ of the scientist-engineer, however, is guided less by ontological doubts than by questions of efficacy: what can we produce that is not accurate but functional? There has been a push to fuse science with industry, aiming for not just results but products that respond to an increasingly capitalist, corporate world: science desires results that can be patented and sold.⁵⁹

This strand of contemporary scientific image-engineering is, I suggest, what *The Life of a Dead Tree* does *not* engage. De-technologizing the exhibit’s laboratory removes its scientist from the practice of re-engineering nature, of creating nature as we think it should or could be, of producing it in such a way as might maximize the resultant profits. Instead, our scientist remains in the space of seeing, of pure receptivity, gazing at the larval galleries just as *we* observe this gallery exhibit and squinting at specimens under the microscope just as *we* peer at her through the glass of her laboratory. Indeed, and crucially, Ntoukas remains squarely in the space of prolonged observation, stopping short of ‘progressing’ to representation: the photographs on the wall are produced by the ROM. This scientist’s highlighted role is exclusively that of noticing.

In offering us this eco-ethnological perspective on the nature/culture assemblage of the tree and its attendant scientist—the former clearly *real* and the latter quite nearly so—within an art gallery, Dion not only thematizes Tsing’s notion of the possibility of life developing from capitalist ruins—the tree’s flourishing fungi, the scientist devoted despite the odds—but, in presenting us with these instances instead of representing them (real tree, real lichen; real scientist, real work), *The Life of a Dead Tree* also proposes that noticing—a holistic, protracted paying attention to the ecological and social networks surrounding local issues—is the means by which these possibilities might be uncovered: turning, with curiosity, to what is already there. Through close observation

⁵⁹ Daston and Galison, *Objectivity*, 395.

of our local landscapes—if we maintain our capacity for curiosity—we can come to notice the flourishing life on a dead tree, or the nature of the scientist as devoted to the natural environment. Ultimately, *The Life of a Dead Tree* advocates for refusing to foreclose ourselves to the possibility of seeing life in seemingly doomed environments: in the context of a persistent fear about ecological crisis, the first condition of the future’s possibility may simply be believing in its ability to come to pass.

Crucially, the tree itself, with its flourishing plant life, is nowhere imaged. Instead, this durational direct looking is key, because the dynamic process of life that we are invited to notice relies expressly on the tree’s progressive decay and disappearance. It is in this sense that the suspension of representation is fundamental to *The Life of a Dead Tree*: preserving the tree through representation would contradict the very disappearance, the passing-out-of-existence, that is central to the possibility of life re-emerging in environmental ruins. In refusing to thus preserve the tree, then, Dion proposes that environmental loss is irreversible and necessary to accept—but it is thus necessary, too, that we seek signs of persistence within that very loss.

CHAPTER TWO: Dead air: Sally Ann McIntyre's *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767)*

Near the town of Mosgiel, in Otago, Aotearoa New Zealand, a small river known as Silver Stream winds its way, occasionally dipping under roads, from the Silverpeaks hills to the Taieri river. Somewhere along this route, in 1884, an Austrian naturalist killed and collected two laughing owls, thirty years prior to the species' official extinction. To this day, these two birds reside at the Natural History Museum of Vienna. Much as French theorist Roland Barthes attributed photographs' melancholic status to their portrayal of the deceased as both dead and bound to die,¹ the preserved laughing owl has a melancholic relationship to its species: these captured and stilled traces retroactively portend their species' extinction. It is this eerie correspondence between the laughing owl specimens and the disappearance of their species that is taken up by artist Sally Ann McIntyre in her artwork *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767)* (2016–18), in which the artist performs a site-specific memorial sound piece for the two owls taken from Silver Stream. The work raises the question: is it possible to understand extinction through its representational traces? In this chapter, I suggest that, through rendering silence perceptible through a Cagean aesthetics of sound, situating silence as historical through an ecological engagement with hauntology, and ultimately disclosing extinction as non-representable, *Twin signals* proposes that the effects of extinction are intricate and long-lasting, extending beyond human perception and comprehension. Where *The Life of a Dead Tree* demonstrated the potentially generative character of disappearance, *Twin signals at Silver Stream* tends towards a view of loss inflected more by the notion of its finality. In offering only silence as the failed

¹ Roland Barthes, *Camera Lucida*, trans. Richard Howard (New York: Hill and Wang, 1981), 79. Barthes refers to this effect in photographs generally; one specific example, illustrating his notions of the *studium* and *punctum*, is made of the 1865 photograph of Lewis Payne (Powell) by Alexander Gardner (94–96).

representation of an extinct species, *Twin signals at Silver Stream* enacts its thematized extinction event and discloses it to be irreversible: the owl is gone, and the artwork refuses to—the artwork *cannot*—bring the species back.

Melancholic representations

At the centre of *Twin signals* is the extinct laughing owl, *Sceloglaux albifacies*, and its contemporary existence as a melancholic representation. Endemic to and once widespread throughout Aotearoa New Zealand, the laughing owl, or whēkau in Māori, was pronounced extinct after the last officially acknowledged member of the species was found dead on July 5, 1914.² The owl was most likely driven to extinction during the eighteenth and nineteenth centuries by European exploration and settlement.³ Although the exact cause of the birds' demise is not certain, the Europeans' imported ferrets and stoats—brought over from Britain in an attempt to limit the rabbit population, another European-introduced species—and cats are the most likely factor.⁴ Nineteenth-century New Zealand-based naturalist Walter Lawry Buller, in his *A History of the Birds of New Zealand* (1872–1873), proposed that the disappearance of the kiore maori, a rat introduced with Polynesian settlement and a significant food source for the laughing owl, was what occasioned the species' eradication⁵; while this assertion is dubious,⁶ Walter Buller himself remains a key figure in the story of the owls' extinction. Buller's engagement with birds most

² Errol Fuller, *Lost Animals: Extinction and the Photographic Record* (London: Bloomsbury, 2013), 95.

³ G. R. Williams and M. Harrison, "The Laughing Owl *Sceloglaux albifacies* (Grey, 1844), a general survey of a near-extinct species," *Notornis: Journal of the Ornithological Society of New Zealand* 19, no. 1 (1972): 4–18.

⁴ Trevor Worthy and Richard Holdaway, "Laughter in the night," *New Zealand Geographic*, <https://www.nzgeo.com/stories/laughter-in-the-night/>. The conversion of the owls' habitat into farmlands has also been suggested (Williams and Harrison), but this has been deemed unlikely in Richard N. Holdaway and Trevor H. Worthy, "Diet and Biology of the Laughing Owl *Sceloglaux Albifacies* (Aves: Strigidae) on Takaka Hill, Nelson, New Zealand," *Journal of Zoology* 239, no. 3 (1996): 567. Holdaway and Worthy suggest that the introduction of mustelids (stoats and polecats) and cats was the primary factor in the owls' extinction, in that these creatures preyed on owls.

⁵ Sir Walter Lawry Buller, *A History of the Birds of New Zealand*, Volume I (1888), 199.

⁶ Holdaway and Worthy, "Diet and Biology," 566–567.

infamously illustrates the nineteenth-century European attitude towards New Zealand's avifauna and points to another anthropogenic factor—less accidental than the importation of new species—in the demise of the laughing owl as well as other local species. Buller, not content with the passive observation of birds, collected and traded in the animals, both live and taxidermic, capturing no less than 1660 individual specimens from New Zealand for display in museum and personal collections both locally and abroad.⁷ Buller persisted in killing and collecting New Zealand's birds despite mentioning their waning populations; in the nineteenth-century context of colonial collection, moreover, Buller was but one of many overzealous naturalists.⁸

This vigorous trade in avian specimens resulted not only in the laughing owl's eradication but also in its posthumous global presence as a preserved specimen. As Australia-based palaeozoologist Trevor H. Worthy reported in 1997, extant traces of the laughing owl comprise fifty-two feathered specimens (twenty-four mounted birds and twenty-eight study skins), two specimens preserved in alcohol, three partial skeletons, and seventeen eggs, all dispersed across New Zealand, Australia, the United States, the UK, Austria, and Chile.⁹ Of the three owls now located in Austria, two specimens, numbered 50.766 and 50.767, are recorded as having been collected at Silver Stream, Otago, in 1884 (no data is available for the third owl).¹⁰ These specimens were part of the collection of Austrian taxidermist and naturalist Andreas Reischek, who arrived in New Zealand in 1877 and shared his contemporaries' enthusiasm for transporting local birds abroad, alive or stuffed, endangered or abundant. Reischek's ornithological collection comprised over 900 specimens, and it was an almost complete representation of New Zealand's

⁷ Trevor H. Worthy, "New Zealand Birds of Prey: Laughing Owl," TerraNature, <http://www.terranature.org/owlLaughing.htm>.

⁸ Buller, *History*, 199; Bruno J. Stasser, "Collecting Nature: Practices, Styles, and Narratives," *Osiris* 27, no. 1, (2012): 313.

⁹ Trevor H. Worthy, "A survey of historical Laughing Owl (*Sceloglaux albigifacies*) specimens in museum collections," *Notornis* 44 (1997), 241, 248–252.

¹⁰ Worthy, "A survey," 251.

bird species as well as the most complete collection of the island’s native birds assembled at the time.¹¹ Reischek’s collection, with its clear focus on avifauna as opposed to the Renaissance *wunderkammer*’s collation of disparate wonders,¹² speaks to the nineteenth-century European tendency to produce organized representations of nature, seeking to reveal the order of the earth through its comprehensive imaging.¹³ For the nineteenth-century naturalist, felling bird after bird, representing nature occurred at the expense of nature itself.

In 2014, a century after the laughing owl’s official extinction, Aotearoa New Zealand-based artist Sally Ann McIntyre set out to engage with the history of the laughing owls’ death and their global dispersal from a contemporary perspective. McIntyre’s medium is radio—as part of her practice, she operates her own station, Radio Cegeste—and her goal with this project pertaining to *Sceloglaux albifacies*, as she explains it, was to “re-collect” specimens of the laughing owl now held in worldwide museums’ permanent collections.¹⁴ The double entendre of “recollection” speaks to McIntyre’s layered aims: at stake is not simply the partial return of these specimens to their native Aotearoa New Zealand, though “symbolic repatriation” does, indeed, form part of the project,¹⁵ but also the recuperation of once-living creatures from the dusty obscurity of the museum display case or storage drawer. At issue is remembering the owl and its demise. McIntyre seeks to

¹¹ K. E. Westerskov, “The Austrian Andreas Reischek’s Ornithological Exploration and Collecting in New Zealand 1877-1889,” *Otago German Studies* 1 (Festschrift for E.W. Herd): 285, <https://doi.org/10.11157/ogs-vol1id110>.

¹² Eilean Hooper-Greenhill, *Museums and the Shaping of Knowledge* (London: Routledge, 1992), 85; see also Michel Foucault’s *The Order of Things* on the “Renaissance episteme” and its basis in seeking “the four similitudes” (see n. 57).

¹³ Stasser, “Collecting Nature,” 320.

¹⁴ Sally Ann McIntyre, “a memorial silence for *Sceloglaux albifacies*, on the centenary of its extinction,” Radio Cegeste 104.5FM, July 5, 2014, <http://radiocegeste.blogspot.com/2014/07/a-memorial-silence-for-sceloglaux.html>.

¹⁵ McIntyre, “Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767),” Radio Cegeste 104.5FM, November 3, 2018, <https://radiocegeste.blogspot.com/2018/11/twin-signals-at-silver-stream-fragments.html>.

create for the laughing owl the “memorials” and “mourning rituals” that they were historically denied.¹⁶

The specific work I discuss in this chapter is McIntyre’s *Twin signals at Silver Stream* (2016–2018), which comprises two separate but closely related components: a site-specific performance, subtitled *fragments of a landscape for specimens #50.766 & #50.767* (fig. 7), and a subsequent gallery presentation at Blue Oyster Art Project Space (Dunedin, NZ), subtitled *a transmission for specimens #50.766 & #50.767* (fig. 8).¹⁷ *Twin signals* is the most recent iteration in the aforementioned proposed series of laughing owl memorials. The inaugural work created with this serial context in mind was *a memorial silence for Sceloglaux albifacies, on the centenary of its extinction* (2014); both *Twin signals* and *a memorial silence*, meanwhile, reprise the thematics and method McIntyre broached still earlier in her radio piece *Collected Silences for Lord Rothschild* (2010–13).¹⁸ All of these works explore the possibility—or impossibility—of representing through audio recording and transmission the extinction of various avian species endemic to Aotearoa New Zealand, and McIntyre’s tactics for this endeavour are consistent. The initial stage of each project sees the artist visit the preserved specimens of extinct bird species in museum collections (primarily in New Zealand, but sometimes globally); using audio equipment, she records the ‘sounds’ of the dead creatures (fig. 9). Despite the artist’s ostensible best efforts—for *Collected Silences for Lord Rothschild*, for example, McIntyre enlisted the services of a recording device specifically designed to capture spectral communications from beyond the grave,

¹⁶ McIntyre, “a memorial silence.”

¹⁷ McIntyre, “Twin signals at Silver Stream,” and “Trace Music, mf/mp” at Blue Oyster Art Project Space, <http://www.blueoyster.org.nz/exhibitions/mfmp/>.

¹⁸ Sally Ann McIntyre, “Collected Silences for Lord Rothschild,” <http://songswhosebirdidontknow.blogspot.com/2013/01/collected-silences-for-lord-rothschild.html>, and Heise, *Imagining Extinction*, 43.

known as Electronic Voice Phenomena¹⁹—the recordings turn out silent, registering at most McIntyre’s own shuffling in the museum space.²⁰ These silent recordings are then transmitted by the artist, alone, via mini-FM (limited range) radio to a habitat of some significance to the recorded species or to the individual specimens. McIntyre refers to this bounded transmission as “narrowcasting.”²¹ Subsequently, the recordings are made available, via headphones or another radio transmission, to a human audience in a gallery setting.²²

That same sequence of events structures *Twin signals at Silver Stream*. First, in 2016, McIntyre travelled to Vienna, Austria, to encounter the two laughing owl specimens known as #50.766 and #50.767 at the Naturhistorisches Museum Wien. Using industry standard field recording equipment, she took audio recordings of the specimens in Hall 32 of the museum, allowing the microphone to collect whatever audio might present itself. Returning, then, to New Zealand, McIntyre’s next step was to release the owls’ sonic traces back into their erstwhile habitat: the first destination for the transmission of the owls’ recordings was Silver Stream, Otago, the site at which the two owls were originally killed and collected by Reischek in 1884. In late 2018, McIntyre brought six small radios to Silver Stream. Scattering them by the banks of the river and tuning them to two specific frequencies—the twin signals of the female owl specimen and the

¹⁹ Tom Jeffreys, *Nature Reserves* (London: GV Art, 2013), 17, accessible at <https://amycutler.files.wordpress.com/2013/07/gv-art-nature-reserves-catalogue-2.pdf>. Reportedly, one of EVP’s initial practitioners ‘discovered’ the technology when he was recording birds; see n. 42.

²⁰ Mark Westall, “Review: Nature Reserves,” *Fad Magazine*, August 28, 2013, <http://fadmagazine.com/2013/08/28/review-nature-reserves-gvart/>.

²¹ On mini-FM, see “Mini-FM: Performing Microscopic Distance (An E-mail Interview with Tetsuo Kogawa),” in *At a Distance: Precursors to Art and Activism on the Internet*, ed. Annmarie Chandler and Norie Neumark (Cambridge, MA: MIT Press, 2005), 191. Narrowcasting, the transmission of media within a limited range and with potentially niche appeal, is defined in opposition to broadcasting, the mass transmission of media. See, e.g., Miriam J. Metzger, “Broadcasting versus Narrowcasting: Do Mass Media Exist in the Twenty-First Century?” in *The Oxford Handbook of Political Communication*, ed. Kate Kenski and Kathleen Hall Jamieson (Oxford: Oxford Handbooks Online, 2014), https://doi.org/10.1093/oxfordhb/9780199793471.013.62_update_001.

²² See, e.g., Sally Ann McIntyre’s blog post “‘Nature Reserves’, group exhibition at GV Art, London,” Radio Cegeste 104.5 FM, September 12, 2013, <http://radiocegeste.blogspot.com/2013/09/nature-reserves-group-exhibition-at-gv.html>.

male—she transmitted to these radios and played out loud the recordings collected at the museum (fig. 10). Only the artist was present; no audience was invited. Thus was created a “performance without human listeners,” in McIntyre’s words.²³ Subsequently, the work was displayed at a gallery, Blue Oyster Art Project Space (Dunedin, NZ), where the Silver Stream radio performance was represented through photography, text, objects, and a radio transmission within the bounds of the gallery (fig. 11).²⁴

Signalling/signifying silence

The fundamental conceit of McIntyre’s project is expressed during the site-specific performance: the radios, having recorded two dead owl specimens, emit only silence, with the occasional murmur issuing from the artist’s body moving in the museum space. The absence of the owl’s call thus functions as a desolate indication of the bird’s disappearance. The specific workings of this signifying silence have been proposed by musicologist Dugal McKinnon with reference to two of McIntyre’s other works that deal with avian quiescence, *Collected Silences for Lord Rothschild* (2010–13) and *Huia Transcriptions* (2012–13).²⁵ The rhetorical deployment of silence as an indication of species loss, firstly, takes after Rachel Carson’s titular concept for her infamous environmentalist book *Silent Spring* (1962), in which the “silent spring” refers to the absence of birdsong and thus birds in the spring season, pointing to the harmful effects of chemical pesticides on avifauna.²⁶ In McKinnon’s terms, the premise of these figures of silence is the pursuit of “making dead silences speak,” turning that which is generally imperceptible, or understood to be the absence of information—especially, as McKinnon notes, to our modern ears that expect

²³ McIntyre, “Twin signals.”

²⁴ McIntyre, “Twin signals,” and “Trace Music, mf/mp.”

²⁵ Dugal McKinnon, “Dead Silence: Ecological Silencing and Environmentally Engaged Sound Art,” *Leonardo Music Journal* 23 (2013): 73, https://doi.org/10.1162/LMJ_a_00158.

²⁶ Morton, “The Dark Ecology,” 252.

‘nature’ to be a serene haven, free of the noise pollution characteristic of the urban²⁷—into an appreciable, signifying element. For Carson and McIntyre, birdsong functions as an index of avian life, and the absence of birdsong consequently indicates the absence of birds.²⁸ In both cases, silence is understood to be meaningful because it is presented as a replacement for a specific, expected sound; Carson references the notion of spring as conventionally replete and associated with the calls of birds, while McIntyre frames her recorded silences through media: both radio and the equipment of avian field recording imply sound; the latter, specifically, suggests birdsong.

McIntyre’s evocation of silence as an indication of absence and extinction constitutes a twist on her artistic antecedents. The demarcation of a period of silence by way of presenting it in the place of anticipated sound finds its earliest artistic deployment in the ‘performed’ silence of composer John Cage’s *4’33”* of 1952; to enact what is perhaps Cage’s most famous composition, a performer sits in silence for 4 minutes and 33 seconds.²⁹ This musical aesthetic was born of Cage’s revelation that silence did not truly exist, a recognition brought about by the composer’s visit to an anechoic chamber at Harvard University in 1951. In this six-walled, soundproof enclosure, Cage writes, he heard “two sounds, one high and one low”; the attending engineer informed Cage that the two sounds pertained to his nervous system (the high sound) and circulating blood (the low).³⁰ Attuning to the presence of heretofore unacknowledged but evidently ubiquitous

²⁷ McKinnon, “Dead Silence,” 73.

²⁸ Carson’s birds can also be understood as metonymic figures of the broader natural environment; the absence of birdsong thus also indicates ecological crisis more generally.

²⁹ John Cage’s *4’33”* was first performed in 1952 by the pianist David Tudor in Woodstock, New York. “During the piece’s premiere, Tudor sat quietly at his piano, opening and closing the keyboard lid to mark the progression of the three movements. The audience waited in anticipation of the performance, but their expectations of a conventional concert were shattered. Cage recounted, ‘You could hear the wind stirring outside during the first movement. During the second, raindrops began pattering the roof, and during the third people themselves made all kinds of interesting sounds as they talked or walked out.’” See “John Cage, *4’33”* (*In Proportional Notation*), 1952/1953,” Museum of Modern Art, <https://www.moma.org/collection/works/163616>.

³⁰ John Cage and Kyle Gann, *Silence: Lectures and Writings*, 50th Anniversary Edition (Middletown: Wesleyan University Press, 2011), 8.

sounds, Cage concluded that sound was omnipresent and consequently eternal. The fallacious distinction between sound and silence, he determined, was founded on a subjective filtering of sounds into either of those two categories; intended sounds were perceived as such, while the category of silence collected unintended sounds, the ambient remainder.³¹ This dichotomy is evident in *4'33''*; the absence of the intended sound (the expected piano music, suggested by the performer's seat at the piano bench and opening of the piano's lid) is interpreted as silence throughout the concert hall, while, in fact, the auditorium remains rife with noises, however low or subtle, produced by the audience and the environment (throughout the initial performance of *4'33''*, Cage reported wind, rain, and conversation).³² This incorporation of ambient factors into the artwork as constitutive elements was inspired as well by artist Robert Rauschenberg's all-white canvases, which appear 'empty' but are instead animated by reflecting the activity of their viewing public.³³

4'33'' thus rendered silence conspicuous by presenting the absence of intended sound. *Twin signals* likewise presents silence as noteworthy by transmitting it in the place of expected sound: playing the 'field' recording of a bird over a radio channel, an audio medium, would be expected to send out a signal containing birdsong; indeed, Radio New Zealand National's morning news program starts with a public broadcast of the call of a native bird, rendering radio-borne birdsong no unfamiliar tune.³⁴ The transmitted silence could also be thought of as particularly pronounced

³¹ Cage writes that when "one enters an anechoic chamber, as silent as technologically possible in 1951, to discover that one hears two sounds of one's own unintentional making (nerve's systematic operation, blood's circulation), the situation one is clearly in is not objective (sound [or] silence), but rather subjective (sounds only), those intended and those others (so-called silence) not intended." John Cage, *Silence: Lectures and Writings*, 13–14.

³² See n. 29.

³³ Morgan Falconer, *Painting Beyond Pollock* (London: Phaidon Press Limited, 2015), excerpted in "When John Cage met Robert Rauschenberg," Phaidon, March 2, 2015, <https://ca.phaidon.com/agenda/art/articles/2015/march/02/when-john-cage-met-robert-rauschenberg/>.

³⁴ Cecilia Novero, "Birds on Air: Sally Ann McIntyre's Radio Art," *Antennae*, no. 27 (2013): 33. Accessible at http://paulineoliveros.us/uploads/1/0/5/3/10530407/antennae_issue_27-1.pdf.

in the case of the laughing owl: its call was the topic of extensive commentary during its lifetime and the attribute for which it was named.³⁵ *Twin signals* departs from Cage's philosophy, however, to enable its commentary on extinction. While Cage sought to attune listeners to the sounds always present in so-called silence, hypothetically allowing them to rehearse his own discovery, McIntyre aims to draw listeners into noticing silence as, in fact, empty. Given that the call of the laughing owl has passed out of living memory, a resident of New Zealand would not interpret the soundscape of the area around Silver Stream as exhibiting a sonic lack; McIntyre's performance thus indicates the presence of an otherwise imperceptible silence, suggesting the imperceptibility, to us, of the absence of the laughing owl. McIntyre points out a silence that is already there, disentangling a specific silence from a seemingly mundane soundscape. As a radio functions to pick up on the invisible electromagnetic signals constantly surrounding us, *Twin signals* functions as a means of tuning into the silent frequency, the "dead air," of an extinct species.³⁶ Significantly, through transmitting this silence into the laughing owl's erstwhile habitat, McIntyre points to the laughing owl's inability, as a result of its extinction, to continue to co-produce its environmental soundscape and, by extension, co-produce the ecosystem of which it was once a constitutive organism.³⁷ The specifics of *Twin signals*'s commentary on extinction begin with this idea: the disappearance of a species is felt within that species' ecosystem; an entity's absence is, in some way, present.

³⁵ Listeners reported such sounds as "a loud cry made up of a series of dismal shrieks frequently repeated," a series of "startling" and "unearthly yells," and a "shrieking" that rendered the night "hideous"; according to nineteenth-century New Zealand naturalist T. H. Potts, "if its cry resembles laughter at all, it is the uncontrollable outburst, the convulsive shout of insanity." See "Laughing Owl," New Zealand Birds Online, [http://nzbirdsonline.org.nz/species/laughing-owl#:~:text=The%20common%20name%20of%20the,1800s%2C%20but%20declined%20rapidly%20thereafter.](http://nzbirdsonline.org.nz/species/laughing-owl#:~:text=The%20common%20name%20of%20the,1800s%2C%20but%20declined%20rapidly%20thereafter.;); T. H. Potts, "On the birds of New Zealand, Part II," *Transactions of the Royal Society of New Zealand*, Volume 3 (1870): 63. (NB: the first quote ["a loud cry..."] is widely used, but its original attribution remains elusive.)

³⁶ "Dead air," in radio parlance, refers to unintentionally transmitted silence.

³⁷ Heise, *Imagining Extinction*, 43.

Eco-hauntology

In addition to suggesting that a species' extinction has effects on its broader environment, *Twin signals* foregrounds the potentially prolonged time frame throughout which these effects can remain active. That McIntyre indicates the presence of a current-day silence by transmitting a 'historical' silence—one recorded from a specimen produced in 1884—is significant. Proposing that these owls' century-old silences form part of the soundscape of their ecosystem to the present day, *Twin signals* suggests that extinction can have not only significant but also enduring ramifications within a species' environment. McIntyre refers to the transmissions as instances of the owls "ghosting the airwaves," so it is clear that, in some sense, *Twin signals* posits the continued presence of the laughing owls' extinction (recalling her use, in a similar work, of EVP equipment, we could think of her audio recording process as an attempt to record the laughing owls' ghosts).³⁸

This suggestion of the persistence of past entities into the present received its most notable theoretical treatment by Jacques Derrida in his 1993 *Specters of Marx*, in which Derrida coins the term "hauntology."³⁹ Derrida's hauntology is an important reference point for *Twin signals*, because, as I will discuss, McIntyre slightly alters the hauntological notion of the past's endurance to reflect more precisely upon extinction. Termed *hauntologie* in its original French (in *Spectres de Marx*) and consequently functioning as a near-homophone for *ontologie* (ontology), Derrida's concept of hauntology is concerned with the nature of being. In contrast to our perhaps conventional assumption that the dead or past do not affect our world, hauntology proposes that those entities that are literally, corporeally present do not represent the limit of the living present.⁴⁰

³⁸ McIntyre, "Twin signals."

³⁹ Jacques Derrida, *Specters of Marx: The State of the Debt, the Work of Mourning, and the New International*, trans. Peggy Kamuf (New York: Routledge, 1994), 10.

⁴⁰ Colin Davis, "Hauntology, spectres and phantoms," *French Studies* 59, no. 3 (2005): 373, <https://doi.org/10.1093/fs/kni143>.

Derrida's literary exemplar is the figure of the ghost in Shakespeare's *Hamlet*. As a spectral figure that is ontologically indeterminate in being neither present nor absent, the ghost, for Derrida, demonstrates the displacement of ontology by hauntology, the need to undo the priority of 'presence' as a prerequisite for determining elements inflecting or constituting reality. In other words, the ghost represents a hauntological figure because he is 'not really here' but nevertheless has a hand in shaping the events of the here and now.⁴¹

In "repatriating," per McIntyre, these two laughing owls (or their ghosts) to their former habitat via a radio signal, *Twin signals* seems first to suggest that immaterial traces of the laughing owls continue to affect—to haunt—the ecosystem in which they once lived, still somehow "ghosting" the present despite being absent.⁴² Aptly, the medium of radio, of recording and transmission, has a long history of association with the spectral.⁴³ Media theorist John Durham Peters suggests that every medium is, in fact, a means for the "production of ghosts," in that such media as writing, photography, and sound recording allow for the voices and appearances of entities local to one time and place to communicate with individuals in entirely different temporal and spatial contexts; indeed, the "phantasmic" quality of new media was recognized in the

⁴¹ Derrida, *Specters of Marx*; see also Christopher Prendergast, "Derrida's Hamlet," *SubStance* 34, no. 1 (2005): 45.

⁴² McIntyre, "Twin signals."

⁴³ Spirit photography, which purports to produce images of the dead, dates back to the nineteenth century (when it operated via the hazy effects of double exposures and, ostensibly, the workings of ectoplasm). See, e.g., Arthur Conan Doyle, *The History of Spiritualism* 1, 114. The notion of sonically communicating with the dead, meanwhile, is often linked to Thomas Edison's "spirit phone" (in 1920, Edison spoke of an "apparatus" that would offer spirits "a better opportunity to express themselves than the tilting tables and raps and ouija boards and mediums and the other crude methods"), but Arthur Conan Doyle reported, in his two-volume *The History of Spiritualism*, that mediums had deployed "trumpets" to channel the voices of the dead as early as 1852. (Austin C. Lescarboua, "Edison's Views on Life and Death," *Scientific American* 123, no. 18 (1920): 446–60, <https://doi.com/10.1038/scientificamerican10301920-446>; and Doyle, *The History of Spiritualism*, Chapter XX.) Recording as a medium for ghost hunting enters the picture around 1956, and the possibility of capturing spectral utterances is dubbed "electronic voice phenomenon." Among the earliest 'practitioners' was Friedrich Jürgenson, who claimed to have encountered the voices of his deceased relatives on recordings he had made of, coincidentally, bird songs. (Jeffrey Sconce, *Haunted Media: Electronic Presence From Telegraphy to Television* (Durham, NC: Duke University Press, 2000), 84.) Jürgenson later penned a book, *Radio Contact with the Dead*, which inspired a subsequent paranormal investigator, Konstantin Raudive, to pursue the possibility of detecting beyond-the-grave voices on audio recordings (he also proposed that certain supernatural entities operated their own phantom radio stations) (Sconce, *Haunted Media*, 85).

nineteenth century, when both photography and telegraphy were deployed in the service of contacting the dead, and the term ‘medium’ was established in the nineteenth century to refer to those who could communicate with the spirit world.⁴⁴ Following up on this history of communion with the dead, McIntyre’s radio transmission of the laughing owl recordings to Silver Stream seems at first to suggest the immaterial, specter-like presence of the owls’ ‘ghosts’ within the contemporary ecosystem, in line with the standard conception of hauntology. The nature of the work as a site-specific piece is also relevant. In visual culture theorist Nicholas Mirzoeff’s application of hauntology to the visual, Mirzoeff states that “no ghost is indifferent to the time and place of its hauntings”; likewise, Mark Fisher, a scholar of Derrida, argues that hauntology is inseparable from temporal and spatial specificities: haunting, he claims, is “resistant to the contraction and homogenization of time and space,” occurring expressly “when a place is stained by time, or when a particular place becomes the site for an encounter with broken time.”⁴⁵ The ecological premise of *Twin signals*’s enacted haunting builds upon these notions: recording specimens from 1884 and transmitting their signals at the site of their collection, McIntyre identifies Silver Stream as just such a haunted site, continually marked by a past event (as Derrida quotes *Hamlet* in *Specters of Marx*, in such locales, “time is out of joint”⁴⁶). The effects of a nineteenth-century colonial collecting spree and the extinction that followed, McIntyre proposes, may reverberate throughout affected ecosystems to this day.

Identifying the presence of a ghost in *Twin signals* is, however, problematic. I would suggest that *Twin signals* does not hew precisely to a model for the formal representation of

⁴⁴ John Durham Peters, *Speaking into the Air: A History of the Idea of Communication* (Chicago: University of Chicago Press, 1999), 138–139, 63.

⁴⁵ Nicholas Mirzoeff, “Ghostwriting: working out visual culture,” *Journal of Visual Culture* 1, no. 2 (2002): 249; Mark Fisher, “What Is Hauntology?” *Film Quarterly* 66, no. 1 (2012): 19.

⁴⁶ Derrida, *Specters of Marx*, xxi.

hauntology, and it is through this re-articulation of hauntology that the work makes its ecological argument. Whereas the ghost of Hamlet, for example, is embodied and animated by an actor when the play is staged, insisting on the posthumous presence of the deceased King Hamlet by giving corporeal form to the specter, *Twin signals* brings into the present, into its site “stained by time,” its two deceased owls in the form of two empty silences, inaudible and immaterial. McIntyre’s work thus does not consist precisely of the suggestion that the presence of a departed entity persists; instead, the haunting portrayed in *Twin signals* proposes that the enduring force is the creatures’ very absence itself. Projected into the environment at Silver Stream is not a recording of the owl’s shrieking call—indeed, no such recording exists, emphasizing the disappeared owl’s irretrievability. Instead, the recorded silence communicates not a trace but the impossibility of producing a ghost at all. In this sense, when McIntyre speaks of the owls “ghosting the airwaves,” the meaning of “ghosting” corresponds instead to the contemporary colloquial turn of phrase: a total disappearance. McIntyre’s intention is to propose the silence as an index of the species’ disappearance (as with *Silent Spring*), and in choosing a silence that dates back to 1884, pertaining to a species that was pronounced extinct over a century ago, she emphasizes that the absence in question is historical in nature, suggesting an ecological haunting consisting of a void that has plagued its environment for decades. In this way, McIntyre works with the basic tenets of hauntology—that the past is inextricable from the present, that we cannot conceive of death as the cessation of a being’s capacity to affect our reality—but updates its representation to focus on the persistence of absence itself, tailoring the concept to the subject matter of extinction by rejecting the possibility of the presence of a ghost. Although the laughing owl’s extinction may have come to pass over a hundred years ago, the silent void produced by that extinction, *Twin signals* suggests,

persists as a defining factor of the environs of Silver Stream. McIntyre thus posits an eco-hauntology founded on the endurance of absence.

In this way, *Twin signals* suggests that extinction can have significant and long-lasting effects on a species' environment in the shape of a being's absence. In addition to communicating a lasting and impactful absence, however, *Twin signals*'s silence might offer another perspective on extinction, in its fundamental indeterminacy and denial of information: the suggestion that the effects of extinction may exceed our parameters of comprehension. In declining to offer a positive, legible aural or visual trace of the laughing owl, *Twin signals* firstly subverts the violent logic that feminist philosopher of science Donna Haraway has argued underpins taxidermy: writing that the practice "fulfills the fatal desire to represent, to be whole," she suggests that taxidermy and dioramas present nature in line with human-conceived ideals that could never be assumed by nature itself.⁴⁷ In translating the taxidermic laughing owls into imperceptible voids, into instances of non-representation, McIntyre re-situates the laughing owls, symbolically releasing them from subjection within the human system of representation that occasioned their demise. Crucially, this turn away from representation can also be seen to elaborate *Twin signals*'s primary statement on extinction, in that silence, in this case, is to be perceived as absence. Asking that we attune to the potential that species extinction constitutes remarkable loss with enduring, haunting effects, *Twin signals*'s silence forecloses the possibility of perceiving the owls' absence from the landscape with any degree of specificity; all *Twin signals* discloses about the nature of the owls' disappearance is that it remains in some way present in the contemporary environment. Even with ears primed to recognize silence through the Cagean bait-and-switch tactic of anticipated sound, a listener's comprehension could not extend past an acknowledgment of the silence and its immediate

⁴⁷ Donna Haraway, "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936," *Social Text*, no. 11 (1984): 25.

implication (“something is missing”). As such, *Twin signals* proposes that the intricacies of extinction might be beyond our representational capacities, representable only through silence and thus not representable at all. This impossibility of representing extinction consequently suggests that it operates in excess of our faculties of perception and comprehension. The occasional sounds within the silence of McIntyre’s own movements in the museum also become relevant when considered in relation to Cage’s inspiration; just as the anechoic chamber revealed to Cage the involuntary soundings of his body as a ubiquitous component of ‘silence,’ so does *Twin signals* propose that the only sounds that might register in an attempted human representation of extinction are those of the artist herself.

Perceiving loss

The claim that *Twin signals* seeks to communicate extinction as unrepresentable and thus beyond our comprehension ties into both scholarship on ecological art and ecophilosophy, as well as more recent writing on extinction theory. Artists’ deployment of failed representation or non-representation as an aesthetic tactic in the service of making ecological statements has been theorized by art historian Amanda Boetzkes in her 2010 book *The Ethics of Earth Art*. Discussing environmentally-oriented artworks from the 1960s to the present, such as those of Robert Smithson, Ana Mendieta, and Mark Dion, Boetzkes argues that earth art (as she collectively terms such works) exhibits a “recessive aesthetics,” meaning that earth art seeks to make evident the unrepresentability of the earth and thus posit that the earth exceeds the boundaries of human perception and comprehension.⁴⁸ These aesthetics, where nature appears as incommensurate with and always beyond representational form, echo what is referred to in eco-philosophy as “recessive

⁴⁸ Amanda Boetzkes, *The Ethics of Earth Art* (Minneapolis: University of Minnesota Press, 2010), 21.

ethics,” a relation to the earth premised on “retraction from and receptivity to the earth” that rejects the convention of seeking to “subsume” the earth within human systems of understanding.⁴⁹ In disabling the incorporation of the earth into our systems of representation, Boetzkes argues, earth art makes possible a recognition of the earth’s alterity: in recognizing that we cannot fold the earth into our systems of representation, we recognize that the earth is not an extension of the human but rather an ‘other.’ Following, then, feminist philosopher Luce Irigaray’s proposal that the basis of ethics is the recognition of another individual as other to oneself, Boetzkes suggests that recognizing the earth as an other is the foundation upon which an ethical relation to the earth can develop.⁵⁰

The methods by which earth art evinces the viewer’s inability to fully perceive natural activity through evading its representation are what constitute a recessive *aesthetics*. Although an earth artwork might allow a viewer to direct their senses towards an instance of natural activity, Boetzkes suggests, it typically does not allow the viewer a sense of perceptual mastery, suggesting that the earth exceeds our representational and thus cognitive parameters. British artist Richard Long’s work offers an example; Long’s performances consist of walks, but these walks are communicated in the gallery setting through such representational fragments as photographs of transient lines in the earth that index the artist’s trajectory.⁵¹ Boetzkes notes that Long’s work thus demonstrates that the “sensations” of the ephemeral “natural conditions of the site—sounds, smells, and changing light and weather conditions—cannot be delivered through visual representation.”⁵² In short, Boetzkes characterizes the tendency in recent and contemporary earth

⁴⁹ Boetzkes, “Introduction: At the Limit of Form,” in *The Ethics of Earth Art*. The “recession” refers to the “recessed subject” of the human withdrawing from the earth as opposed to imposing themselves upon it (not, e.g., the earth ‘receding’ beyond our perception, though the concept is similar).

⁵⁰ Boetzkes, *The Ethics of Earth Art*, 19–20.

⁵¹ For example, Richard Long’s *A Line Made By Walking*, 1967; see <https://www.tate.org.uk/art/artworks/long-a-line-made-by-walking-p07149>.

⁵² Boetzkes, *The Ethics of Earth Art*, 18.

art to confound visual representations of the earth—e.g., to document site-specific artworks through photographs and textual records that fail to fully communicate the sensual experience of the site—as a means of disclosing the impossibility of capturing natural activity in a visual representation. This calculated representational failure, in which artists “stage the inability to represent the earth as such,” is therefore the aesthetic means by which earth artists make a case for our awareness of the earth’s alterity and thus our ethical responsibility towards it.⁵³ The impermanence of the artist’s intervention in the site (Richard Long’s line in the grass, for example, or Dennis Oppenheim’s semi-circles traced through snow in *Annual Rings*, 1968) is also crucial, subverting a tradition of humans’ permanently disruptive impositions on nature.

Twin signals’s manifestation in the gallery setting here becomes particularly relevant. The site-specific performance at Silver Stream, although explained in detail via text in the exhibition and thus inextricable from the audience’s interpretation of the work, cannot have been experienced by any of the visitors to the gallery; the artist was the only individual present.⁵⁴ *Twin signals* as a performance in the environment is only accessible to other humans via secondary means; as such, the artwork partakes in many ways of the characteristic operations of earth art as Boetzkes defines it. Beyond the fact that we understand *Twin signals* to thematize extinction and to be ecological in intent, the work’s formal elements are familiar: *Twin signals* begins as a site-specific performance in a ‘natural’ (perhaps best described as non-urban) environment, inaccessible to an audience, and it is subsequently made available to a wider public via photographic, textual, and audio- and object-based documentation in a gallery setting. *Twin signals* manifested in the gallery (Blue Oyster Art Space in Dunedin, NZ) as an assemblage of radio transmitters, black-and-white photographs of the

⁵³ Boetzkes, *The Ethics of Earth Art*, 18.

⁵⁴ McIntyre is herself an art writer and documents her own work in detail on her website. I would suggest that, even if *Twin signals* did not also take place in a gallery and was accessible only through McIntyre’s digital documents, it would nevertheless be worthwhile to discuss the work for its innovative, if inaccessible, methods and proposals.

earlier performance at Silver Stream, a black-and-white photograph of the labelled feet of the laughing owl specimens in Vienna, batteries, copper circuit boards, a silver iPod, an mp3 player, and an old accordion (a nod to the statement in Buller’s *Supplement to the ‘Birds of New Zealand’* that the laughing owl could “always be brought from its lurking place in the rocks... by the strains of an accordion”⁵⁵—obviously but notably, in 2018, no owls could be lured out from hiding). These “secondary” means of representing the original performance appear as fragments of the absent event and the elements of nature it deals with; the original performance, and thus the evocation of extinction’s absence in the environment, always escapes our perception.⁵⁶

The idea of the ‘natural’ exceeding human representational systems is evident in McIntyre’s gallery assemblage. The photographed owls are shown partially, in monochrome, and the focus is on their museum specimen tags, demonstrating the animals’ translation into human labelling systems: the *Sceloglaux albifacies* of biological taxonomy and the #50.766 and #50.767 of museum collections management. The cropping out of most of each owl’s body from such images, as well as the photographs’ monochromatic scheme, suggests the inadequacy of human systems of categorization and knowledge in seeking to understand and name the natural world. Taxonomy as obfuscating systemic is no new issue: of the system of binomial nomenclature developed in 1735 by Swedish naturalist (and “father of modern taxonomy”) Carl Linnaeus, Michel Foucault wrote in *The Order of Things/Les Mots et Les Choses* (1966) that it “posited” nature “only through the grid of denominations,” while nature “glimmers far off beyond” taxonomy, “continuously present on the far side of this grid.”⁵⁷ Anna Tsing terms the classification

⁵⁵ Walter Buller, *Supplement to the ‘Birds of New Zealand,’* 65.

<https://archive.org/details/SupplementBirdsIBull/page/n77/mode/2up?q=accordion>.

⁵⁶ “Secondary” is the term used by Dennis Oppenheim for such documentation of performance/site-based works; quoted in “Methodological Position for Second-Degree Art History,” in *Photography and Doubt*, ed. Sabine T. Kriebel and Andrés Zervigon (London: Routledge, 2017), 242.

⁵⁷ Michel Foucault, *The Order of Things: an archaeology of the human sciences* (London and New York: Routledge, 2002 [1966]), 175.

system a “feature of European conquest” and likewise points out its avowed inadequacy for certain organisms.⁵⁸ Indeed, Reischek, Buller, and their contemporaries engaged in various disagreements and continued amendments regarding the laughing owl’s speciation and potential variety, indicating the possibility that speciation on the ground exceeds the precise and potentially reductive constraints of taxonomy; an article proposing a new perspective on the laughing owl’s speciation was published as recently as 2016.⁵⁹ The circuit boards, mp3 player, and radios likewise suggest the loss of information that can occur through human means of mediating nature (wherein an electromagnetic signal or digital cipher comes to stand in for its referent). Three monochrome photographs reconstruct the performance at Silver Stream only partially, in varying tones of greyscale and focussing predominantly on objects brought to the site by McIntyre.⁶⁰ The audience, having necessarily missed the performance at Silver Stream, is thus denied immediate access to the original performance and, by extension, its environment, experiencing the work only through the gallery documentation. This mediation can be seen to correspond with the commentary on humans’ systematizing mediation of nature through taxonomy and collection, emphasized also in the work’s title; referring to the owls by their object numbers, the title alone gives no indication as to what those two numbered entities are. The version of *Twin signals* presented to an audience,

⁵⁸ Tsing, *The Mushroom at the End of the World*, 227–240 (Chapter 17: Flying Spores).

⁵⁹ A 2016 article proposed that the owl be reclassified with regards to genus. The species *Sceloglaux albifacies* has always been the only member of the genus *Sceloglaux*; the authors claim that there is no biological basis for identifying *Sceloglaux* as a unique genus and suggest that *Sceloglaux* is synonymous with *Ninox*, a genus comprising three owl species (*Ninox connivens*, *Ninox rudolfi*, and *Ninox novaeseelandiae*). The authors thus propose that the laughing owl should be renamed *Ninox albifacies*. See Jamie R. Wood, Kieren J. Mitchell, R. Paul Scofield, Vanesa L. De Pietri, Nicolas J. Rawlence, and Alan Cooper, “Phylogenetic relationships and terrestrial adaptation of the extinct laughing owl, *Sceloglaux albifacies* (Aves: Strigidae),” *Zoological Journal of the Linnean Society* (2016): 1–12, <https://doi.org/10.1111/zoj.12483>.

⁶⁰ In this context, I am suggesting that the photographs serve to offer inadequate representations of their referents, emphasizing the excess of the earth beyond human systems of representation, but I would like to acknowledge that photography has also been discussed as a visual form with a privileged connection to the world: again, Kaja Silverman’s updated metaphysics of photography (see n. 54, chapter 1) proposes that photography is the primary means by which the world reveals itself to us.

then, foregrounds its own representational inadequacy. The photographs of Silver Stream are impossible—or at least very difficult—to interpret as coded with the absence of the laughing owl.

Furthermore, returning to the central issue of silence, the presentation of *Twin signals* in the gallery constitutes the audience's only immediate access to the transmitted silences. The two owls' silent signals are transmitted through and played out loud in the limited space of the gallery over the frequencies 87.6FM and 101.4FM, which correspond to the frequencies of the contemporary national public broadcasters of Austria and New Zealand, Österreichischer Rundfunk (Austrian Broadcasting Corporation) and New Zealand Radio National, respectively (the latter being the station that, as previously mentioned, transmits native birdsongs every day). As McIntyre has written of her work, this action constitutes “jamming,” or the intentional blocking of or interference with official wireless communications.⁶¹ Two implications might be drawn out. The owls' overtaking of official media channels ties their lingering absence to human experience, suggesting that the effects of extinction are not solely felt in a nature ‘over there,’ apart from humans, but instead that we, as humans, are implicated in the effects of these events; in addition, there is a still more overt articulation of extinction defying the constraints of human systems of representation—here, our typical communications media (national radio) fall silent when met with the task of communicating ecological loss. Moreover, in the gallery, *Twin signals* was presented alongside five other sound pieces, all of which were heard constantly and simultaneously.⁶² McIntyre's silences thus grew still more difficult to perceive—relocated from Silver Stream and presented in our conventional context for experiencing artistic representation, the silences wax increasingly elusive, escaping, again, the bounds of our conventional modes of representation and perception.

⁶¹ McIntyre, “Twin signals.”

⁶² Blue Oyster, “Trace Music,” <http://www.blueoyster.org.nz/exhibitions/mfmp/>.

Boetzkes suggests that an acknowledgment of the earth's excess beyond our comprehension can form the basis of an ethical relationship towards the earth; in *Twin signals*, I suggest, McIntyre renders loss as unrepresentable, beyond our perception, to communicate that the effects of extinction may exceed the parameters of our comprehension. The underlying claim of McIntyre's work is thus akin to that of eco-philosophy's recessive ethics; the loss of extinction here defies representation because its ramifications resonate throughout that realm, earth, that escapes our comprehensive understanding. Relatedly, extinction scholar Thom van Dooren has written specifically of the limitations of our understanding of extinction due to its immense complexity: contrary, for example, to our conventional approach that pronounces a species extinct when the last known individual of that species dies, extinction actually constitutes a dispersed phenomenon, not solely localized to individual disappearances or officially effected by the death of the final living specimen but instead characterized more accurately as the loss of a "way of life."⁶³ Van Dooren demonstrates this by way of the example of the passenger pigeon: although the species was determined to have gone officially extinct when its last member, Martha, died in captivity in 1914, the conditions for the passenger pigeon to exist as a species with a unique way of life had disintegrated long before Martha's death—the passenger pigeon's species trait of migrating in large flocks numbering thousands of birds had ceased to be a possibility long before the species' population dwindled to one creature.⁶⁴ As such, van Dooren proposes thinking of a species as a "flight way," a bird's characteristic way of living: extinction can thus be seen to pertain not simply to the material disappearance of a species but to the dissolution of its way of life. Also crucial is that a species exists in relation to myriad other species, and its extinction thus has the

⁶³ Thom van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction* (New York: Columbia University Press, 2014), Introduction.

⁶⁴ Van Dooren, *Flight Ways*, 11.

potential to affect numerous other organisms. Van Dooren links our conventional individualizing perspective to that which “reduces species to specimens—reified representatives of a ‘type’ in a museum of life—in a way that fails to acknowledge their entangled complexity,”⁶⁵ pointing out the very issue McIntyre does in locating the laughing owl specimen’s silence in its former environment: we might be able to attune to the potential presence of extinction’s enduring effects (the silence), but understanding their specific resonances throughout complex ecosystems may always exceed our understanding (the fundamental emptiness and non-representation offered by that silence).

The “entangled complexity” of life, per van Dooren, is what renders extinction elusive; its effects are not constrained to the single species that is lost. Each species is a component of an ecosystem; without needing to suggest that each ecosystem is an enclosed and flawlessly-balanced system (transitions between ecosystems are not clear-cut lines, for example—areas ‘between’ ecosystems, ecotones, exhibit characteristics of each ecosystem they bridge⁶⁶; historian of science Lorraine Daston and philosopher Stephen David Ross, likewise, have pointed to the potential fallacy of considering nature to be a perfectly harmonious interplay of organisms⁶⁷), it is known that disturbances in one element of an ecosystem can affect other organisms that are in some manner with them entwined.⁶⁸ (Ecological interdependencies can be surprising: in *The Mushroom at the End of the World*, for example, Anna Tsing pointed out that the flourishing of the prized matsutake mushroom is contingent on human interference in its environment; the fundamental

⁶⁵ Van Dooren, *Flight Ways*, 11.

⁶⁶ “Ecotone,” *Encyclopedia Britannica*, <https://www.britannica.com/science/ecotone>.

⁶⁷ See Lorraine Daston, *Against Nature* (Cambridge, MA: MIT Press, 2019) and Stephen David Ross, “Biodiversity, Exuberance, and Abundance,” in *Rethinking Nature: Essays in Environmental Philosophy*, ed. Bruce V. Foltz and Robert Frodeman (Bloomington: Indiana University Press, 2004), 246, the latter cited in Boetzkas, *The Ethics of Earth Art*, 13.

⁶⁸ Brian R. Silliman and Christine Angelini, “Trophic Cascades Across Diverse Plant Ecosystems,” *Nature Education Knowledge* 3, no. 10 (2012): 44.

interconnectedness of biological life has also been theorized at the microbiological level, as with the symbiotic theories of American evolutionary biologist Lynn Margulis and Canadian evolutionary biologist W. Ford Doolittle.⁶⁹) Extinction is thus a dispersed event not only because it cannot be pinpointed to the death of an individual creature but also because it cannot be understood solely with reference to an individual species, given that each species' existence affects and is itself contingent upon the activities of a multiplicity of other species. (As previously mentioned, the depiction of specimen labels in *Twin signals* suggests the reductive categorization of binomial taxonomy; the question of speciation is itself complex, because interconnections between species can 'blur' species lines.⁷⁰) Identifying the reverberating effects of an extinction event is not a straightforward process; elucidating the ecological interactions of the minutiae of a species—its microflora, for example—is not always necessarily possible.⁷¹

There is a complexity, thus, to the absence of extinction; species loss constitutes a multifaceted absence of which the potentially myriad elements cannot necessarily be known. In communicating extinction by way of the non-representation of silence, *Twin signals* not only subverts some of the anti-ecological tenets of nature's representation—the “fatal logic” of taxidermic representation and the related type-specimen understanding of nature that occludes its inter-relational complexity—but also suggests that no means of representation can positively

⁶⁹ Tsing, *The Mushroom at the End of the World*, 151; Lynn Margulis, *Symbiotic planet: a new look at evolution* (New York: Basic Books, 1998); W. Ford Doolittle, “Speciation without species: a final word,” *Philosophy, Theory and Practice in Biology* 11, no. 14 (2019), <https://quod.lib.umich.edu/cgi/t/text/text-idx?cc=ptpbio;c=ptb;c=ptpbio;idno=16039257.0011.014;view=text;rgn=main;xc=1;g=ptpbio>. Holdaway and Worthy write, “As the largest nocturnal predator in New Zealand, the owl was potentially a major selective force in the evolution of the behaviour and ecology of small vertebrates.” Holdaway and Worthy, “Diet and Biology.” Similarly, bat species that were once preyed on by the laughing owl preserve to this day behavioural patterns produced in response to the owl; J. E. Christie, “Nocturnal Activity Patterns of the Lesser Short-Tailed Bat (*Mystacina Tuberculata*) in Temperate Rainforest, Fiordland, New Zealand,” *New Zealand Journal of Zoology* 33, no. 2 (2006): 125–32.

⁷⁰ Tsing, *The Mushroom at the End of the World*, 227–40; Wood, Mitchell, Scofield, De Pietri, Rawlence, and Cooper, “Phylogenetic relationships.”

⁷¹ Emma Marris and Yasha Rohwer, “For whom, the mammoth?” February 27, 2015, Centre for Humans and Nature, <https://www.humansandnature.org/conservation-extinction-emma-marris-yasha-rohwer>.

encompass extinction, proposing that ecological loss resists being subsumed into human comprehension. Recognizing this might be the basis of developing alternatives to such endeavors as de-extinction (the bioengineering of new individuals of an extinct species), which is founded on the premise that humans can re-create nature⁷²; more productive, *Twin signals* suggests, would be to recognize that nature and its loss exceed the scope of our understanding, thus impressing us with a true and urgent sense of its irretrievability. This, ultimately, is what *Twin signals* performs: extinction as an irreversible loss.

⁷² Arguments against de-extinction include: extinct animals' habitats are not necessarily still intact or able to re-accept lost species, de-extinction efforts might detract funding and energy from conservation practices, bombastic projects like woolly mammoth resurrection are the likeliest to receive the necessary funding but the farthest removed from any ecological imperatives (with specimens likely doomed to a zoo-bound or Jurassic Park-esque existence as but marvels of humans' bio-engineering brilliance), the belief in a capacity to resurrect the extinct might lessen the urgency of protection in the moment, and, as van Dooren and others point out, speciation is complex; the return of a few specimens does not and likely cannot ever constitute the resurgence of a species and its unique way of life. These points are drawn from the collection of arguments regarding de-extinction in "How Far Should We Go to Bring Back Lost Species?" <https://www.humansandnature.org/how-far-should-we-go-to-bring-back-lost-species--question-13.php>.

CHAPTER THREE: Elemental medium: Katie Paterson's *Vatnajökull (the sound of)*

The glacial lake Jökulsárlón, located in Iceland's Vatnajökull National Park, forms at the head of Breiðamerkurjökull. Breiðamerkurjökull is an outlet—a 'tongue'—of the glacier Vatnajökull, the second largest icecap in Europe. As Breiðamerkurjökull has receded by over three kilometres since the 1970s (over five in total throughout the twentieth century and a conjectured twenty since Iceland's first settlers arrived around 900 CE¹), Jökulsárlón has expanded fourfold, acquiring the contextually dubious honour of being Iceland's deepest lake. Increasing through an abundance of meltwater, the lagoon evinces the rapid, global, and deleterious phenomenon of glacial retreat, which, in various regions, threatens rising sea levels, a depleting water supply, and destructive weather events.²

In 2007, Scottish artist Katie Paterson sought to translate Vatnajökull's retreat into an artwork. Following a trip to Iceland (involving, reportedly, a fever-induced conviction that she was intensely connected to the nearby glacier due to it providing the water she drank³), Paterson conceived of an audio project to facilitate a new mode of sensory engagement with Vatnajökull—something diverging from the optical sublime that typically frames our perception of glaciers and something more evocative, perhaps, than consuming its meltwater. To this end, *Vatnajökull (the sound of)*, first shown at the artist's MFA thesis show at London's Slade School of Fine Arts, took

¹ Zoë Robert, "Calling Vatnajökull," *The Reykjavik Grapevine*, April 4, 2008, <https://grapevine.is/icelandic-culture/art/2008/04/04/calling-Vatnajökull/>. A timelapse representation of the recession can be viewed at <https://earthengine.google.com/timelapse/#v=64.15306,-16.4,10,latLng&t=2.50>.

² See, e.g., Lorin Hancock, "Why are glaciers and sea ice melting?" World Wildlife Fund, [National Geographic, <https://www.nationalgeographic.com/environment/global-warming/big-thaw/#close>.](https://www.worldwildlife.org/pages/why-are-glaciers-and-sea-ice-melting#:~:text=What%20are%20the%20effects%20of,storms%20like%20hurricanes%20and%20typhoons, and Daniel Glick,)

³ Avril Ormsby, "British artist installs phone link to dying glacier," *Reuters*, June 8, 2007, <https://www.reuters.com/article/us-britain-glacier/british-artist-installs-phone-link-to-dying-glacier-idUSL0821975320070608?rpc=92&pageNumber=2#:~:text=Paterson%2C%20a%20final%20year%20student,glacier%20which%20supplied%20the%20water>.

shape as a piece of telephone-based sound art: from 6PM on June 5th to 1PM on June 13th, gallery-goers (as well as callers worldwide) were invited to dial a phone number, displayed in white neon on the gallery wall, to connect to and listen in on the glacier Vatnajökull itself (fig. 12).⁴ What callers heard were the submarine sounds of a melting glacier—trickling water, popping ice—offering us an “intimate” (in Paterson’s words) engagement with climate change.⁵ In this chapter, considering how *Vatnajökull (the sound of)*’s mediality shapes the listener’s experience of the glacier and ties the possibility of the work’s existence to the existence of the glacier, I suggest, with reference to communications theorist John Durham Peters’s notion of “elemental media,” that *Vatnajökull (the sound of)* discloses the glacier *as* media and consequently proposes that environmental loss will result in the dissolution of our conditions of existence and systems of meaning. Crucially, in linking the audio of the artwork to the existence of the glacier, Paterson positions Vatnajökull itself as the condition of possibility for *Vatnajökull (the sound of)*. Loss is, thus, enacted; when the glacier disappears, so, too, does the artwork, proposing that the environment is itself a precondition for our systems of meaning—in this case, art—and, by extension, life on this planet.

While the glacial phone line could be accessed from anywhere on earth, the other end of the work was site-specific in the strictest sense: the infrastructure of recording and transmission that allowed Vatnajökull to be audible could be located nowhere but on the glacier and in the lagoon itself. The artist was on-site, too; for the duration of the first iteration of the work, Paterson camped out next to the glacier, ensuring the equipment was properly installed and keeping an eye on the phone line (fig. 13).⁶ Enabling worldwide callers to connect with a glacier required a

⁴ “Vatnajökull (the sound of), 2007,” Katie Paterson, MFA, Slade 2007 Summer Shows, <https://www.ucl.ac.uk/slade/degree2007/paterson.html>.

⁵ Robert, “Calling Vatnajökull.”

⁶ Ormsby, “British artist installs phone link to dying glacier.”

specialized media set-up: Paterson sank a hydrophone—an underwater microphone, and, specifically, a modified, wireless DolphinEar DE500—into the Jökulsárlón lagoon, and she connected this insulated, watertight audio receiver to an amplifier; this amplifier, in turn, was hooked up to a Nokia mobile telephone.⁷ The amplifier and mobile phone were housed in their own tent on dry land; Paterson overnighted in another tent nearby. Sponsorship from Virgin Mobile activated Paterson’s mobile phone line at two numbers: 07757 001122 for UK residents and +44 7757 001122 for international callers.⁸ By dialing these numbers, which one could encounter either in neon in the gallery or in the less spectacular monochrome of a print or digital publication, a caller connected to the mobile phone transmitting the underwater acoustics of the Jökulsárlón lagoon, channeled from the underwater hydrophone and through the amplifier.

The acoustic experience of calling the glacier entailed the “trickling,” “popping,” “gurgling and hissing,” and “splashes, creaks, and groans” of Vatnajökull’s ongoing physical change of state.⁹ The popping, according to hydrophone manufacturer DolphinEar, was the sound of the release of “ancient air bubbles, compressed and frozen into the ice thousands (or hundreds of thousands) of years ago”;¹⁰ a brief recording of the sound can be heard online,¹¹ revealing this “popping” to be a fluid clicking, reminiscent of ice cubes clinking in a glass. Deeper-sounding groans, not available in any audio clip, point to larger pieces of the glacier’s ice sheets breaking

⁷ “Vatnajökull (the sound of),” <http://www.tertium.co.uk/katie/?LMCL=OvdLXX>.

⁸ “Katie Paterson’s Iceland Project,” DolphinEar, <http://www.dolphinear.com/iceland.htm>.

⁹ Melanie Vandenbrouck, “Fitting the entire universe into an art gallery,” *Apollo*, May 26, 2016, <https://www.apollo-magazine.com/fitting-the-entire-universe-into-an-art-gallery-katie-paterson/>; “Custom Applications – Melting Glacier Project,” DolphinEar, <https://dolphinearglobal.com/applications/custom/melting-glacier/>; Christine Kintisch, *Katie Paterson: Inside this Desert* (Vienna: BAWAG Contemporary, 2012), 8, http://2017.katiepaterson.org/wp-content/uploads/2017/04/Katie_Paterson_Catalogue_BAWAG_2012.pdf; Maev Kennedy, “Glacier death: Callers take part in art,” *The Guardian*, 2007, available at <http://www.tertium.co.uk/katie/guardian.jpg?LMCL=uRUurZ>.

¹⁰ “Remote Monitoring,” DolphinEar, <http://www.dolphinear.com/remote-monitoring.html>.

¹¹ Rebecca Roberts, “Artist Records Glacier’s Sounds from the Deep,” *NPR*, July 29, 2007, <https://www.npr.org/templates/story/story.php?storyId=12317438>.

off; this process is called calving.¹² As Jono Gilmurray, a scholar of ecological sound art, has described, *Vatnajökull (the sound of)*'s acoustic profile discloses the glacier as constantly in a state of flux, which is a state markedly different from the one that dominates our interpretations of a glacier when we perceive it visually. In contrast to the dynamism of *Vatnajökull (the sound of)*, the sight of a glacier suggests stillness, the quality of being “literally ‘frozen’” and unchanging¹³—moving, if at all, at a ‘glacial pace’—and recalls the Romantic perception of certain landscapes as sublime: overwhelming and awe-inspiring. Revealing the glacier to be actively protean, meanwhile, and acoustically not dissimilar to our miniature, domestic pieces of ice (alternately, one reviewer compares the sound to the equally tame running of a tap¹⁴), Paterson’s foregrounding of sound and foreclosure of image allow us to newly perceive the glacier as not unchanging and sublime but rather fluid and vulnerable.¹⁵ This notion of what a glacier is accords with that currently circulating more generally: as per Julie Cruikshank, anthropologist of the Yukon, our concerns about global warming are “giving glaciers new meaning for many people who may previously have considered them eternally frozen, safely distant, and largely inert.”¹⁶ *Vatnajökull (the sound of)* thus ties in with a perspective on glaciers that is, for some, thoroughly of the

¹² Rebecca Roberts, “Artist Records Glacier’s Sounds from the Deep,” transcript, *NPR*, July 29, 2007, <https://www.npr.org/transcripts/12317438>.

¹³ Jono Gilmurray, “Ecology and Environmentalism in Contemporary Sound Art” (PhD diss., University of the Arts London, 2018), 140.

¹⁴ Nancy Durrant, “Exhibition review: Katie Paterson — A place that exists only in moonlight, Turner Contemporary, Margate,” *The Times*, January 25, 2019, <https://www.thetimes.co.uk/article/exhibition-review-katie-paterson-a-place-that-exists-only-in-moonlight-turner-contemporary-margate-lgfsvnkzx>.

¹⁵ It is, however, also worth noting that the visibility of glaciers *does* contribute to their nature as indicators of climate change. Environmental scientists Benjamin Orlove, Ellen Wiegandt, and Brian H. Luckman write: “The first attribute is a simple one. As large, slow-moving objects, glaciers can be directly seen. Though this point may seem so obvious that it does not merit being mentioned, it is quite significant. There are many other environmental concerns that involve entities that cannot be seen by the naked human eye. One cannot gaze up into the sky and tell whether ozone thinning has taken place, nor can one feel whether one is exposed to harmful levels of radioactivity. Genetically modified crops cannot be distinguished from other crops simply by looking at them. However, a person who returns to a glacier after an absence of several decades or who compares photographs of it taken at different times can easily note glacier retreat.” Benjamin S. Orlove, Ellen Wiegandt, and Brian H. Luckman, *Darkening Peaks: Glacier Retreat, Science, and Society* (Berkeley: University of California Press, 2008), 5.

¹⁶ Julie Cruikshank, *Do Glaciers Listen?: Local Knowledge, Colonial Encounters, and Social Imagination* (Vancouver: UBC Press, 2005), 7.

Anthropocene: understanding humans and the natural environment to be intrinsically connected, with the latter not immune but instead vulnerable to the actions of the former.

Eco-acoustics

Identifying glaciers as vulnerable, as well as Paterson's desire to allow us to do so, is contingent on our contextual awareness of global warming and its effects. Spurred on by our knowledge of and sense of urgency regarding the state of our planet—and the idea that broadening our sensory connection to the planet might have positive effects—ecological sound art has become a significant subgenre of ecological art. *Vatnajökull (the sound of)* can be identified as one of many artworks conducting aural explorations of the environment. Paterson's work is also, more specifically, one of a number of sound pieces engaging with glaciers: in 2007, for example, the year that *Vatnajökull (the sound of)* first went live, sound artist Jana Winderen presented *+4°C*, recordings of the submarine soundscape of Norway's Hardanger Fjord and Folgefonna glacier¹⁷; four years earlier, Chris Watson had also recorded the ice and wildlife of Vatnajökull for an environmental album, *Weather Report*; and, in 2010, musician Douglas Quin released *FATHOM*, an album of four extended underwater field recordings from the Arctic and Antarctic.¹⁸ The desire to engage with environmental soundscapes has increased as awareness of our planet's environmental crisis (and the environmental crisis itself) has likewise intensified; many environmental sound works have clearly ecological aims (a good example is Icelandic artist Rúri's *Archive – Endangered Waters* (2003), which combines images of glacial waterfalls, many no longer extant, with their sounds¹⁹), while others have specifically preservationist motives:

¹⁷ "Folgefonna and the Hardangerfjord, 2007," Jana Winderen, <https://janawinderen.com/field-trips/folgefonna-and-the-hardangerfjord-2007>.

¹⁸ "Douglas Quin: Fathom," Soundohm, <https://www.soundohm.com/product/fathom>.

¹⁹ "Archive – Endangered Waters," Rúri, <https://ruri.is/2011/09/29/archive/>.

composer Charles Van Kirk, for example, trekked to Iceland to record Vatnajökull due to “a huge sense of urgency to make some kind of artistic tribute to these glaciers, now before they totally recede away.”²⁰

Due to the affordances of its medium, however, Paterson’s *Vatnajökull (the sound of)* is unique amongst contemporary sound works. While most other sound works either deploy recordings of their environmental subject matter or present real-time events through synecdochal objects (for this latter type, see, e.g., Cheryl E. Leonard’s *Meltwater*, which involves icicles melting ‘musically’ on a stage—observed by the audience in real time—representing but not actually presenting the melting of Antarctic ice²¹), *Vatnajökull (the sound of)*’s sounds are delivered both live and from the ‘source’ itself. Unlike its clear cognate and predecessor by a year, Olafur Eliasson’s *Your waste of time* (2006)—in which Eliasson removed blocks of Vatnajökull’s ice from the glacial lake Jökulsárlón and exhibited these blocks, melting, in a refrigerated Berlin gallery—*Vatnajökull* is not represented in Paterson’s work via segments of ice removed from the glacier²²; presented, though mediated, is the glacier itself. Upon dialing the given phone number, the caller hears not a preserved or predetermined fragment of the sounds of Vatnajökull’s melting ice, but rather the clicks and gurgles of the glacier as it retreats in real time. While the melting of Eliasson’s ice is inescapable, overdetermined, and thus not overly anxiety-inducing (Eliasson knows this, of course, and it’s part of why the work is dubbed a “waste of time”²³), the liveness of the melting ice featured in *Vatnajökull (the sound of)*, as Gilmurray has established, affords the piece a unique sense of immediacy and urgency.²⁴

²⁰ “Making music from the sounds of Iceland’s glaciers,” Splice Blog, April 22, 2020, <https://splice.com/blog/making-music-glaciers/>.

²¹ Gilmurray, “Ecology and Environmentalism,” 144–145.

²² Olafur Eliasson, “Your waste of time, 2006,” Olafur Eliasson, <https://olafureliasson.net/archive/artwork/WEK100564/your-waste-of-time>.

²³ Eliasson, “Your waste of time.”

²⁴ Gilmurray, “Ecology and Environmentalism,” 145.

Vatnajökull (the sound of)'s liveness (over recording) and presentation (over representation) do point, however, to one notable precursor in the field of what could be called "eco-acoustics"; I bring up this precursor because its creators' discussion of media allows us to understand Paterson's use of media by contrast. In the 1960s and 70s, during the first wave of the environmental movement and a few years after Carson's *Silent Spring* had yoked ecology to environmental sound, Canadian composer R. Murray Schafer and his colleagues at Simon Fraser University (BC) established the World Soundscape Project (WSP), dedicated to the study, promotion, and preservation of natural environmental soundscapes.²⁵ Although the WSP sought to amass a repository of field recordings to "'preserve' endangered sounds and soundscapes for posterity," one project developed by Schafer and his collaborator Bruce Davis was premised on liveness and presentation. Schafer had proposed that radio could be a radical medium ("Radical Radio," 1983) by which to stand up against the increasing industrialization of time and reconnect with the natural cycles of life. To set radio on this ecological path, Schafer and Davis conceived of a project entitled *Wilderness Radio*.²⁶ *Wilderness Radio*, as described in 1982, would involve placing microphones in secluded areas "uninhabited by humans" to broadcast, at length, the "natural soundscapes" of these environments.²⁷ Such a broadcast was intended to reintroduce, by way of radio, "bio-cycles" and "bio-rhythms" into human life, undoing humanity's entrapment in mechanic cycles and temporalities and bringing us back into harmony with the "great natural cycles of the universe."²⁸ Urging readers to "get out into... the ice fields" to record natural sound, Schafer almost uncannily anticipates Paterson's work: new equipment will be required for these

²⁵ Jonathan Gilmurray, "Sounding the Alarm: An Introduction to Ecological Sound Art," *Musicological Annual* 52, no. 2 (2016): 74–75, <https://doi.org/10.4312/mz.52.2.71-84>.

²⁶ R. Murray Schafer, "Radical radio," in *Sound By Artists*, ed. Dan Lander and Micah Lexier (Toronto: Art Metropole, 1990), 210. Originally published in *Canadian Forum* (Dec/Jan 1982–3).

²⁷ Schafer, "Radical radio," 210.

²⁸ Schafer, "Radical radio," 213.

environmental projects, Schafer writes, conducted as they necessarily are so far from the indoor comfort of the studio, but, if one takes the initiative to “stake out the new territory,” the appropriate equipment will materialize—such as, for example, “a microphone... to plunge into the ocean depths.”²⁹

Bruce Davis, Schafer’s collaborator on *Wilderness Radio*, outlines an issue with the medium of radio, however, that allows us to understand the significance of Paterson’s deployment of the mobile phone. In his essay “FM Radio as Observational Access to Wilderness Environments,” Davis writes that the impetus for seeking to reacquaint people with their acoustic environments was the observation that sound had (around his time of writing, in 1975) slipped into a marginal position within our hierarchy of the senses of perception.³⁰ Sound, Davis suggested, typically formed the backdrop against which experience played out; our dependence on the visual for information about our surroundings far outstripped our reliance on the acoustic (80% to 20%, Davis claimed), and he stated that most, given the choice, would choose deafness over blindness as a “preferred” impairment.³¹ Consequently, Davis suggested, the role of radio in our lives had become that of a “soothing background”—a context, and never the principal object of our focus.³² Davis advocated, therefore, for an intervention into this relegation of sound to the periphery; the “wilderness radio,” in its irregularity, unpredictability, and unfamiliarity, would demand slow, close listening (thus seeking to both re-familiarize us with the aforementioned natural rhythms of the environment and draw our attention to sound). It might be said, however, that Davis and Schafer more so attempted to bring *radio* out of the periphery than sound itself. In *Vatnajökull (the sound of)*, as we will see, Paterson chooses her medium—the mobile phone—not to recuperate the

²⁹ Schafer, “Radical radio,” 215.

³⁰ Bruce Davis, “FM Radio as Observational Access to Wilderness Environments,” *Alternatives* (Spring 1975): 21.

³¹ Davis, “FM Radio,” 21.

³² Davis, “FM Radio,” 21.

telephone but, conversely, to capitalize on the specific attention we are *already* accustomed to giving the phone. This attention, as I will propose, begins to disclose the nature of the glacier as media.

Close listening

The use of the medium of the phone for *Vatnajökull (the sound of)* shares Schafer and Davis's desire to frame sound, especially environmental sound, as an object of focus instead of marginal context. Davis suggested that visual media more easily offer specific objects that demand fixed attention; certainly, the immateriality of sound contributes to its dispersed, atmospheric quality, reflected in sound theorist Brandon LaBelle's notion of "acoustic spatiality," which sees sound as capable of forming an environment through suffusing a given space (binding together whatever sundry entities happen to occupy it, i.e., be within earshot).³³ Paterson deliberately avoids this 'spreading out' of sound: uninterested in "streaming" the sounds of the glacier, she ensured that the glacier could only be heard when funneled through a phone, in a "one-to-one," "intimate" encounter."³⁴ The typical experience of conducting a conversation over a phone tends to involve attempts at blocking out external sound ('environmental sound' is interpreted, in these instances, as noise); simultaneously, one must be physically engaged in the experience: one is required to hold the phone to one's ear as opposed to—in the case of, for example, sound playing on a radio—capable of participating by simply wandering within hearing distance of a sound.

³³ Brandon LaBelle, "Acoustic Spatiality," [sic] – *Journal of Literature, Culture and Literary Translation* 6, no. 2 (2012), <http://www.sic-journal.org/ArticleView.aspx?aid=123>.

³⁴ Tim Cooper, "Heard the one about the icecap calling?" *The Sunday Times: Culture*, February 2008, available at http://2017.katiepaterson.org/wp-content/uploads/2017/04/Katie_Paterson_30_FEBRUARY_2008_SUNDAY_TIMES_CULTURE_ICECAP_CALLING.jpg; Ormsby, "British artist."

The intent listening appropriate to the use of a phone is inextricable from the nature of the format's anticipated sound, the human voice, as well as the "one-to-one" experience Paterson references. Regardless of whether the voice on the other end of the line belongs to an individual we know and love, a distant acquaintance, or a stranger, our trained focus must result in part from the understanding that the human voice, over a phone, will deliver information to which we will have to respond; the "one-to-one" nature of this exchange heightens the responsibility we have to listen (for who else could reply?) as well as our desire to listen (the message, whatever it may be, is intended specifically for us). The mobile phone offers a bounded 'space' (a temporal space) in which to experience anticipated sound, in Cage's terms, and, by dint of the typically personal nature of the phone call's content and the expectation of intersubjectivity integral to the format, the sounds received via a mobile phone are never (or only exceptionally) relegated to the domain of background noise.

Channeling the sounds of the glacier through a phone thus fixes our attention on an instance of environmental sound that we might otherwise categorize and treat as an acoustic backdrop. The phone format thus also overtly pulls us into a relation with the sound of the glacier redolent of that within a standard human-to-human conversation, and it is through this framing, I suggest, that Paterson could be said to disclose the glacier as media: the glacier becomes an entity via which we perceive and interpret signs. Typically, a phone conversation involves an exchange of voices operating through a mutually intelligible language; each participant must interpret the words of their interlocutor to be able to respond. In the case of *Vatnajökull*, the caller is not listening to a voice 'speak' in a known language (regardless of which of the 47 countries that called in they are

phoning from³⁵), but it is nevertheless true that the caller is actively engaged in the interpretation of signs and, ultimately, a message. Callers write of hearing trickling, gurgling, and hissing, suggesting that listeners are engaged in parsing out the components of the glacier's sounds, listening attentively for changes in sonic texture. More importantly, however, reviewers note that *Vatnajökull (the sound of)* features the "creaking and splashing sounds of Europe's largest glacier slipping into an ocean grave,"³⁶ which, given that the piece, as they note, "coincide[s] with the palpable demise of our natural habitat,"³⁷ allows *Vatnajökull (the sound of)* to "highlight the disastrous effect humans have had on the planet in the relatively short time they have inhabited it."³⁸ Evidently, *Vatnajökull (the sound of)*'s sounds are interpreted as ominous. Still more explicitly, a reviewer from Iceland states that *Vatnajökull (the sound of)* presents "The Sound of Global Warming,"³⁹ while another review suggests that the call evinces "the audible reality of climate change"⁴⁰; likewise, Paterson's equipment sponsor, DolphinEar, invites us to "listen to global warming in action."⁴¹ These interpretations evince a tendency to understand the sounds perceptible in *Vatnajökull (the sound of)* not simply as the sounds of water and ice, and not simply as the sounds produced by a melting glacier, but as sounds indicative of a broader phenomenon. Glaciers form in places where the accumulation of winter snow exceeds the amount of summer

³⁵ Lucia Davies, "Katie Paterson," *AnOther Magazine*, March 21, 2011, <https://www.anothermag.com/art-photography/972/katie-paterson>. Paterson's equipment sponsor, meanwhile, suggests 130 countries: "Remote Monitoring," DolphinEar, <http://www.dolphinear.com/remote-monitoring.html>.

³⁶ Orsmy, "British artist."

³⁷ Erica Burton, *Modern Art Oxford*, 2008, available at http://2017.katiepaterson.org/wp-content/uploads/2017/05/Katie_Paterson_Extracts-1.pdf.

³⁸ Lisa Stein, "The art of thought: Katie Paterson's 'idea-images,'" *Burlington Contemporary*, April 3, 2019, <http://burlingtoncontemporary.org.uk/reviews/reviews/the-art-of-thought-katie-patersons-idea-images>.

³⁹ Robert, "Calling Vatnajökull."

⁴⁰ Gavin Frances, "The Library of Ice by Nancy Campbell review – an Arctic obsession," *The Guardian*, November 2, 2018, <https://www.theguardian.com/books/2018/nov/02/library-of-ice-readings-from-cold-climate-review-nancy-campbell>.

⁴¹ "Katie Paterson's Iceland Project," DolphinEar, <http://www.dolphinear.com/iceland.htm>.

melt, so, in fact, glacial melt is entirely natural and occurs every summer;⁴² the sounds of trickling water and groaning ice are thus not intrinsically suggestive of a glacier's death and disappearance. In the context of climate crisis, however, and given the prominence of the climate-related case study of the threat of glacial recession, the melting of a glacier, and thus the sound of this process, grows foreboding, depressing, and worryingly suggestive of doom and finality. (Indeed, since Paterson's work and primarily quite recently, it has been announced of numerous glacial regions that they have reached an irreversible point of retreat.⁴³) This affective response is Paterson's intent. Of the work's site, she has stated, "This lagoon is a graveyard of glaciers. In a way there is something heartbreaking about this, knowing that you are listening to something magnificent being destroyed—but it is also very beautiful, a celebration of nature."⁴⁴ Despite once denying a direct connection between *Vatnajökull (the sound of)* and climate change concerns (as the last section of the previous quote also suggests), Paterson has more recently described the work thus: "The phone call to the glacier was a one-to-one experience: listening to a graveyard of ice. The crisis of global warming doesn't feel intimate through screens and graphs—yet, of course, it is. Our planet is disappearing."⁴⁵ Here, Paterson is unambiguous about her intent for *Vatnajökull (the sound of)*: the sound of the glacier is intended to communicate the deleterious effects of global warming, signaling through one glacier's audible dynamics the ongoing activity of the large-scale phenomenon that is climate change. Both enabling and highlighting the communicative aspect of

⁴² Orlove, Wiegandt, and Luckman, *Darkening Peaks: Glacier Retreat, Science, and Society* (Berkeley: University of California Press, 2008), 4.

⁴³ See, e.g., Jan T. M. Lenaerts, Jan H. van Angelen, Michiel R. van den Broeke, Alex S. Gardner, Bert Wouters, and Erik van Meijgaard, "Irreversible mass loss of Canadian Arctic Archipelago glaciers," *Geophysical Research Letters* 40: 870–874, <https://doi.org/10.1002/grl.50214>, 2013.

⁴⁴ Kennedy, "Glacier death."

⁴⁵ Robert, "Calling Vatnajökull." The article itself associates *Vatnajökull* with global warming but notes that Paterson reportedly "isn't striving for an environmental message" and that she "insists that the project is more about the glacier's grandeur slipping away than a direct message about climate change." For Paterson's quote ("graveyard of ice"), see Philip Ball, "Artist of deep time," *Nature*, April 23, 2019, <https://www.nature.com/articles/d41586-019-01240-4>.

the artwork is the medium of the phone, pointing to the fact that the relation between glacier and caller is one of messaging and interpretation, though these relations are one-directional: the caller interprets the sounds of the melting glacier (the message, in this case) as indicative of global warming.

Such a mode of listening to the nonhuman environment has been advocated for in the context of ecological crisis. Scholar of environmental politics Andrew Dobson, for example, has argued for the necessity of listening to nature to a functional political ecology, advocating a refiguring of our stance towards nature that places the onus not on the nonhuman to, implausibly, ‘speak,’ but on us to listen, to be receptive; in this way, Dobson suggests, we might develop a human/nonhuman relationship founded on the equal recognition and participation of multiple entities—what James Dryzek calls for in advocating “a more egalitarian interchange at the human/natural boundary,” and what Val Plumwood identifies as a necessary “communicative interspecies ethics.”⁴⁶ These theorists agree that an ethical relation to the earth could come not so much from “finding ways of literally making nature speak” but, instead, from “listening harder to what it already has to say.”⁴⁷ Aptly, Dobson suggests that, had we listened more attentively, “we might have heard the drip-drip of melting glaciers as a ‘proposition’ to be considered” in the space of politics; listening, hypothetically, could have paved the way for progressive and preventative environmental policy.⁴⁸

Evidently, this perspective is not too far removed from what is proposed by *Vatnajökull (the sound of)*’s deployment of a phone line as the medium via which to listen to the glacier; the common idea is that, if we pay attention, environmental acoustics can alert us to the (in this case,

⁴⁶ Andrew Dobson, “Democracy and Nature: Speaking and Listening,” *Political Studies* 58, no. 4 (October 2010): 752–68, <https://doi.org/10.1111/j.1467-9248.2010.00843.x>.

⁴⁷ Dobson, “Democracy,” 764.

⁴⁸ Dobson, “Democracy,” 765.

troubled) state of the earth. Fundamentally, the premise is that we are capable of (and perhaps have a tendency for) interpreting nature; we can perceive signs in the natural environment and, from them, extract meaning. In *Vatnajökull (the sound of)*, the medium of the phone entreats us to focus on the sounds we hear, to treat them like a language to be interpreted, as opposed to allowing the sounds to be a background soundscape; this relation of active interpretation is apparent when commentators dub *Vatnajökull (the sound of)* “the sound of global warming,” and it is also the phenomenon undergirding descriptions of *Vatnajökull (the sound of)* as “heartbreaking” and “sad,”⁴⁹ its sounds as “death throes,” and its surrounding lagoon as a “graveyard of glaciers.”⁵⁰ For this reason, I have suggested that *Vatnajökull (the sound of)* discloses its titular glacier as media: we engage with it as though it is, essentially, environmental communication media.

Elemental media

As this point, I would like to suggest that we can consider this positioning of the glacier as media alongside communications theorist John Durham Peters’s notion of “elemental media,” as developed in his 2015 book *The Marvelous Clouds: Toward a Philosophy of Elemental Media*. With reference to Peters’s expanded media concept, we can elaborate *Vatnajökull (the sound of)*’s positioning of the glacier as communications media to understand the glacier as an instance of elemental media. I will suggest, ultimately, that Paterson discloses the glacier as constituting (as part of the environment) the conditions of possibility for life on earth as we know it.

Peters’s argument in *The Marvelous Clouds* is complex, and it is difficult to summarize it both briefly and convincingly. In short, Peters seeks to offer a new philosophy of media that understands the natural environment (the elements) as media, in the sense that the environment—

⁴⁹ Ormsby, “British artist.”

⁵⁰ Kennedy, “Glacier death.”

like the expanded concept of media that he argues for—provides the foundation for all meaning and, indeed, every aspect of our way of life. Inspired by the ‘new’ understanding of media that is enabled by new, digital media—e.g., the Internet—as all-pervasive and infrastructural instead of specifically communicative of human messages, Peters seeks to demonstrate that these ‘new’ concepts are actually in line with older notions of media as environmental and all-encompassing. These older notions of media, Peters proposes, can lend us new purchase on how we comprehend the environment and its centrality to our world. What Peters argues for is an inversion of the more common idea—today arising from our understanding of digital media—that media are environments: he suggests that we might now think as well about the possibility that environments are media.⁵¹ The titular “marvelous clouds” suggest one manifestation of the media/environment likeness: if we understand data to be stored in “clouds,” what makes the cloud an appropriate metaphor? Per Peters, the similarity is that both digital media and the environment provide the all-pervasive infrastructure upon which life—in terms of both material existence and conceptual worldview—is based. This is where the utility of our new understandings of media comes in: if we can understand that the character of contemporary life is almost entirely enabled by, e.g., the Internet, we might extend this idea to the natural environment in similar terms: the environment and its elements structure and enable our ways of life and systems of meaning in innumerable ways. As per Peters, “The media of sea, fire, star, cloud, book, and Internet all anchor our being profoundly, even if we can’t say what they mean.” Nature, he writes, is “the ultimate infrastructure.”⁵²

⁵¹ John Durham Peters, *The Marvelous Clouds: Toward a Philosophy of Elemental Media* (Chicago: University of Chicago Press, 2015).

⁵² Peters, *The Marvelous Clouds*, 14.

The intellectual history backgrounding Peters's argument is the understanding of media that prefigured the term's designation as solely "message--bearing institutions, such as newspapers, radio, television, and the Internet."⁵³ Such an understanding of media, he explains, is fairly recent; Peters quotes media scholar Jochen Hörisch's claim that "Well into the nineteenth century, when one spoke of *media*, one typically meant the natural elements such as water and earth, fire and air."⁵⁴ Thus Peters seeks to return our attention to a concept of media as environs, container and support, which, he argues, accords with the term's original significance. Indeed, the idea of medium maintains this significance in the life sciences, he suggests, where "media" refers to "gels and other substances for growing cultures."⁵⁵ It's this meaning that we should return to more generally, Peters suggests, coming to view media as "enabling environments that provide habitats for diverse forms of life, including other media."⁵⁶ In this view, the earth is the medium, and we are the culture (in both senses of that word).

The term "medium" has, historically, always signified an "element, environment, or vehicle in the middle of things," Peters claims.⁵⁷ Early concepts suggest this, he writes, such as Aristotle's τὸ περιέχον (*to periekhon*), which refers to a "surrounding" or environment ("peri") that allows for the "sympathy and harmony *between* the universe and man" (emphasis mine); critic Leo Spitzer ascribed to this notion "a 'skyey' quality," which, per Peters, recalls "atmosphere, cloud, climate, and the air."⁵⁸ Peters brings in Aristotle's theory of vision, too, which suggested that there must be an invisible "in-between" (*to metaxu*) that allowed an object to connect with the eyes; tying this idea to the more modern notion of the "medium" is thirteenth-century Thomas

⁵³ Peters, *The Marvelous Clouds*, 2.

⁵⁴ Peters, *The Marvelous Clouds*, 2.

⁵⁵ Peters, *The Marvelous Clouds*, 3.

⁵⁶ Peters, *The Marvelous Clouds*, 3.

⁵⁷ Peters, *The Marvelous Clouds*, 46.

⁵⁸ Peters, *The Marvelous Clouds*, 46.

Aquinas, who translates Aristotle's in-between substance as the "medium."⁵⁹ Subsequently, Isaac Newton's notion of the medium as "ether" saw it as "an intermediate agent," necessary for the travel of "light, gravity, magnetism, and sound"; here, again, the concept arises of a 'something' thought to necessarily exist in between visible entities.⁶⁰ With the proliferation of communication technology in the nineteenth century, new media such as the telegraph skewed the meaning of the term towards referring to human communication; this is evident, too, in the use of "medium" as a title for the human capable of acting as an intermediary between the dead and the living.⁶¹ The "medium" thus evolved to refer to human communication channels as opposed to all-encompassing environments. Now, however, in a moment where technologies could be said to have suffused our world, Peters posits the productivity of using our understanding of human-made media to reflect on 'natural,' or "elemental," media; stating that the Internet, for example, is the infrastructure upon which contemporary existence depends (arguably just as much as the "nitrogen cycle"), Peters suggests that we can conceive of elemental media in the same way: as infrastructural and meaning-bearing matter that underpins our existence, biologically and conceptually, and makes possible our activities and lives.⁶² Media, Peters argues, are "vessels and environments, containers of possibility that anchor our existence and make what we are doing possible"⁶³—again, the "medium" in which we develop.

Peters's aim in *The Marvelous Clouds* is to move through examples of elemental media (ocean, sky, fire) and demonstrate that each has historically been and continues to be crucial for our way of being in the world. Positing the skies, for example, and all the elements and celestial

⁵⁹ Peters, *The Marvelous Clouds*, 46.

⁶⁰ Peters, *The Marvelous Clouds*, 47.

⁶¹ Peters, *The Marvelous Clouds*, 47.

⁶² Peters, *The Marvelous Clouds*, 2.

⁶³ Peters, *The Marvelous Clouds*, 2.

bodies contained therein, as one instance of media, Peters recalls Plato's statement that "Vision... is the cause of the greatest benefit to us, since no account of the universe would have been given if the stars, sun, or heaven could not be seen. The vision of day and night and the months and the revolutions of the years has created the art of number, and has given us the notion of time as well as the ability to seek out the nature of the universe."⁶⁴ The dynamic skies are here accredited with enabling mathematics, time, and philosophy; relatedly, throughout history, the knowledgeable observer could make of the skies a "compass, calendar, and clock," a map, and, of course, a source for formidable and enduring mythologies (and astrologies).⁶⁵ The importance of our elemental surroundings to our existence as we know it is perhaps best understood through Peters's comparison to the potential of life on a different Earth: if we were inhabitants of an Earth surrounded by hazy clouds (like Venus, which is consistently enveloped in an opaque fog of carbon dioxide, nitrogen, and sulfuric acid), we would be unable to see the sun, moon, and stars, and our world (i.e., our conception of collective existence, not just our planet itself) would be drastically different.⁶⁶ Visible celestial bodies are "coordinates of meaning-making," Peters suggests: on Venus, we would lack astrology, constellations, architectural forms keyed to the heavens (e.g., Stonehenge), and the other results of the skies as orienting references: understandings of cyclicity, calendars, clocks.⁶⁷ As Peters suggests, in response to elemental media, we create other media: sundials, compasses, telescopes.

Peters claims that there is meaning in nature, and that nature can thus be seen as media: we just need to update our idea of what meaning is. Meaning need not be "mental content intentionally designed to say something to someone"—with this understanding, then, no, the environment does

⁶⁴ Peters, *The Marvelous Clouds*, 2.

⁶⁵ Peters, *The Marvelous Clouds*, 170.

⁶⁶ Peters, *The Marvelous Clouds*, 170.

⁶⁷ Peters, *The Marvelous Clouds*, 170.

not communicate. If we conceive of media as “repositories of readable data and processes that sustain and enable existence,” however, then we can see that such environmental elements as clouds and fire (and oceans and stars) do have meaning. Peters suggests that we reframe our idea of communication, of transmitting meaning, to be not “two human beings trying to share thoughts,” but instead “a population evolving in intelligent interaction with its environment.” With this, we can see that there are multiple facets to Peters’s philosophy: the environment has meaning and is the basis of all meaning; we interpret the environment to glean meaning; we are affected by and, in return, affect our environments, co-evolving.

Glacial media

I started with suggesting that *Vatnajökull (the sound of)* discloses the glacier as communications media, and, as I will now show, this idea of the glacier as information-bearing structure enters the work into a broader discourse of readable glaciers. We might term this discourse an anthropology of glaciers, and the ideas thereof accord with one element of Peters’s notion of elemental media: we understand glaciers to have meaning that we can interpret. With *Vatnajökull*’s proposal that we might listen more closely to glaciers, Paterson is on solid ground, scientifically: glaciers are acknowledged as telling indicators of climate change.⁶⁸ Interpreting a glacier is, moreover, no new pursuit; Paterson’s project ties in with a broader trend of more explicitly viewing glaciers as repositories of or means by which we might glean information about our planet and its history. In other words, there is a rich existing discourse twinning glaciers with media in Peters’s sense: infrastructures of information, backgrounds to meaning. In addition to acting as current-day bellwethers of global climate, for example, glaciers are seen to provide an

⁶⁸ Orlove, Wiegandt, and Luckman, *Darkening Peaks*, 5.

“archive” of climate history: because “records of climate going back millions of years” are “buried in polar strata,” glacial ice has been termed “a preserver of human history” (a “human history,” that is, that considers climate and environment inextricable from human existence).⁶⁹ Earth scientists use the metaphor, too: “crevasse patterns,” two glacier researchers wrote in 2001, “are the writings in a glacier’s history book,” signaling “the movement, strain and deformation frozen in ice.”⁷⁰ Likewise, the preservative quality of ice leads us to say that it “archives” such entities as viruses⁷¹; the geological sedimentation underpinning the glacier’s icy cover has been analogized with the “pages of a history book”⁷²; and such elements as the potentially-ancient “air bubbles trapped in ice cores”—integral to *Vatnajökull*’s soundscape, and highlighted as such by both the artist and her sponsor⁷³—allow glaciers to be deemed “nature’s archives.”⁷⁴ One particularly well-publicized evocation of the historical content of glacial stores was the 1991 discovery of “Ötzi the Iceman,” an ancient mummified human body, on the Similaun Glacier in the Tyrolean Ötztal Alps; not exempt from our archival impulse even in death, the “5,000-plus-year-old Neolithic man” was tasked with “telling scientists how he lived and died.”⁷⁵ In short, we *know* that we both seek and find meaning in glaciers—so much so that it’s become a commonplace to deem these geological

⁶⁹ Frances, “The Library of Ice.”

⁷⁰ Ute C. Herzfeld and Garry K. Clarke, “Analysis of crevasse patterns as indicators of ice dynamics using structural glaciology and geostatistical classification,” American Geophysical Union, Fall meeting 2001, abstract #IP21A-0674.

⁷¹ Zhi-Ping Zhong, Natalie E. Solonenko, Yueh-Fen Li, Maria C. Gazitúa, Simon Roux, Mary E. Davis, James L. Van Etten, Ellen Mosley-Thompson, Virginia I. Rich, Matthew B. Sullivan, and Lonnie G. Thompson, “Glacier ice archives fifteen-thousand-year-old viruses,” preprint, January 2020, <https://www.biorxiv.org/content/10.1101/2020.01.03.894675v1.full.pdf+html>.

⁷² “What is a glacier? Understanding the glacial history of the western Arctic,” Government of Canada, March 5, 2018, <https://www.ic.gc.ca/eic/site/063.nsf/eng/97537.html>.

⁷³ “Custom Applications – Melting Glacier Project,” DolphinEar; Davies, “Katie Paterson.”

⁷⁴ Alison Stevens, “Nature’s archives: piecing together 12,000 years of Earth’s climate story,” Climate.gov, <https://www.climate.gov/news-features/featured-images/nature%E2%80%99s-archives-piecing-together-12000-years-earth%E2%80%99s-climate-story>.

⁷⁵ “Ötzi,” *Encyclopædia Britannica*, August 27, 2020, <https://www.britannica.com/topic/Otzi>; Bob Cullen, “Testimony from the Iceman,” *Smithsonian Magazine*, February 2003, <https://www.smithsonianmag.com/science-nature/testimony-from-the-iceman-75198998/>.

forms media-esque. Paterson is, moreover, not the only artist to pick up on this trope; recently, other artists have taken up the notion of the communicative glacier, too. Roni Horn's *Vatnasafn/Library of Water* (2007), in Stykkishólmur, Iceland, houses the meltwater of twenty-four Icelandic glaciers, likening, through its title, the glacier to a book, and the aforementioned *Archive: Endangered Waters* (2003) by Rúri similarly presents glacial torrents as media to be stored away within an archive.⁷⁶ Finally—and precisely mirroring Peters's elucidation of elemental media by way of pointing out their re-use as digital media (e.g., the titular “clouds”), as the infrastructure of our digital lives—it should be noted that, in these analogies between glaciers and media, it is not always the case that the glacier is the target (the entity to be understood) and the human information-management system is the source (the familiar concept used to understand the unfamiliar one by comparison). More recently, the glacier has been called upon to concisely illustrate the affordances of a new technology: in 2012, Amazon launched Amazon Glacier, a data-storage service for data archiving and long-term backup.⁷⁷ The technology is intended for infrequently-accessed data (retrieval times can range from three to forty-eight hours, and one can only access 5% of one's stored data per month); as per multiple commentators, users “freeze” their data,⁷⁸ put it “on ice,”⁷⁹ and file it away in “cold storage.”⁸⁰ Google, meanwhile, is at work developing a competitor: a “rapid-thawing, ice-cold archive” that is more efficient than “tape and other glacially slow equivalents.”⁸¹

⁷⁶ See “Roni Horn: Vatnasafn / Library of Water,” Artangel, <https://www.artangel.org.uk/project/library-of-water/>.

⁷⁷ “Amazon S3 Glacier & S3 Glacier Deep Archive,” Amazon Web Services, <https://aws.amazon.com/glacier/>.

⁷⁸ Paul Cooper, “One of tech's most elusive mysteries: The secret of Amazon Glacier,” ITProPortal, November 09, 2013, <https://www.itproportal.com/2013/11/09/one-of-techs-most-elusive-mysteries-the-secret-of-amazon-glacier/>.

⁷⁹ James Trew, “Amazon launches Glacier archiving service, a cheap way to put your files on ice,” Engadget, August 21, 2012, <https://www.engadget.com/2012-08-21-amazon-launches-glacier-archiving-service.html>.

⁸⁰ Klint Finley, “Is There a Landmine Hidden in Amazon's Glacier?” *Wired*, August 21, 2012, <https://www.wired.com/2012/08/glacier/>.

⁸¹ Chris Mellor, “Google readies rapid-thawing, ice-cold archive. How much and when?” *Blocks & Files*, April 12, 2019, <https://blocksandfiles.com/2019/04/12/googles-deep-glacier-like-archive-flows-like-a-flash-flood/>.

From the above paragraph, I hope it is clear that I am articulating a broader understanding of glaciers that aligns with the framework presented by Paterson and elaborated by Peters: the glacier is a communications device, a bearer of signs, a book, an archive, and now a digital data storage service. By positioning the glacier as a communicative entity, by allowing us to access it through the medium of the phone and anticipating that we will parse out and interpret the sounds of glacial retreat and global warming, Paterson, I suggest, stages this common trope of the glacier as information-bearing entity and data infrastructure; in other words, I suggest that Paterson discloses the glacier as media.

Vatnajökull (the sound of) also enters where Peters's philosophy intersects with N. Katherine Hayles's theory of media and technology. Peters suggests that we "evolve in intelligent interaction" with our surroundings, and that, crucially, the environment is deeply mediated today. Hayles clarifies this interactive relationship in her 2012 book *How We Think*: media do not simply allow us to communicate, she states, but also exert influence on our ways of thinking and working, upon which we then seek to further develop media technologies. Hayles terms this "technogenesis," referring to the "continuous reciprocal causality" between people and technologies/media: in short, people and technology co-evolve.⁸² This idea elucidates another element of *Vatnajökull*: just as our understanding of the glacier as potentially informative leads us to develop improved ice-core-taking and -reading technologies, so, too, does *Vatnajökull* present an instance of media innovation in response to an acknowledgment of the communicative potential of elemental media. As Schafer predicted, in our rush to experience and understand the environment, new technologies would swiftly arise to suit our needs; our understanding of the glacier's information-bearing nature leads Paterson to mediate it—here, with a hydrophone, an

⁸² N. Katherine Hayles, *How We Think: Digital Media and Contemporary Technogenesis* (Chicago: University of Chicago Press, 2012), 85.

amplifier, and a mobile phone—so as to interact with it anew. We might say that Paterson is testing our ability to “evolve” by “intelligently interacting” with our environment: having equipped this instance of elemental media with human-made media created expressly for the purpose, Paterson questions our “continuous reciprocal causality”—how might this instance of human/glacier mediation affect us or cause us to further develop media or technologies? If new media allows us to recognize the need for significant reciprocal action, will we be able to react and evolve accordingly?

The aspect of elemental media that elucidates how *Vatnajökull* deals with ecological loss, however, is the fundamental idea that elemental media forms the background to all meaning and to the entire nature of our existence. In this sense, Peters’s philosophy accords not just with Hayles’s theory but with that proposed by historian of science Lorraine Daston: nature, she writes, must inspire and structure our thoughts, concepts, analogies and so on (she discusses primarily our concepts of value and morality) simply because it is all around us.⁸³ Before I discuss how *Vatnajökull* deals with the notion of the environment as elemental media that underpins our existence, I should outline a few ways in which glaciers can be seen to have shaped our experience of the world, so as to clarify how Paterson’s statement can be viewed as not just an abstract claim about the environment more broadly. Perhaps the principal anthropological volume on the subject, Cruikshank’s 2005 *Do Glaciers Listen?* discusses how, for the Athabascan and Tlingit peoples of the Pacific Northwest, glaciers are not inanimate entities but rather active agents in their environments. The Tlingit *Waas’eita Shaa* or *Yaas’eita Shaa* (Mount Saint Elias), for example, not only provided both navigational orientation and cues by which to read the weather but also was

⁸³ This is Daston’s thesis in *Against Nature* (Cambridge, MA: MIT Press, 2019), which expands on her edited book from 2003: Lorraine Daston and Fernando Vidal, eds., *The Moral Authority of Nature* (Chicago: University of Chicago Press, 2003).

thought to react negatively when humans acted disrespectfully towards it—in other words, while the notion suggested by Cruikshank’s title is that glaciers ‘listen,’ the fundamental idea is, in fact, that humans *react*, finding significance in the glacier’s activity and altering their behaviour in response to (the anticipation of) a glacier’s response.⁸⁴ Glaciers can thus be seen to function much like media in Peters’s sense (the environment that shapes existence) and, relatedly, Hayles’s sense (media changes our thought and behaviour). Similarly, as scholar of English literature Eric G. Wilson has noted in a volume on the relevance of ice to Spiritualism, in seventeenth-century Chamonix, a bishop exorcised a range of “demonic” encroaching glaciers; in 1723, a scholar assumed that wingless dragons inhabited those same Mont Blanc glaciers,⁸⁵ while others claimed that the glaciers were home to “monsters, malformed humans, witches, and demons.”⁸⁶ Glaciers gave form to not only these more-arcane myths but also to such more widely-known works as Mary Shelley’s *Frankenstein* (1823)—Victor Frankenstein and his monster first meet in Mont Blanc’s glaciers—while Percy Shelley and Goethe, inspired by glacier science, likened the creative ice to the imagination, comparing glaciers to poets of the earth.⁸⁷ About a century and a half later, land artist Robert Smithson would write of “glacial reveries,” again drawing from glaciers and geology a model for human thought.⁸⁸ This creative metaphor is sound not simply because, as is evident, glaciers have historically informed our actions, thoughts, and ideas of the past, but because of what is perhaps the most fundamental way in which glaciers shape our existence on this plane: glaciers are the geomorphic forces responsible for the face of the earth as we know it—Swiss-

⁸⁴ Cruikshank, *Do Glaciers Listen?*, 25.

⁸⁵ Eric G. Wilson, *The Spiritual History of Ice: Romanticism, Science, and the Imagination* (New York: Palgrave Macmillan, 2003), 74.

⁸⁶ Wilson, *Spiritual History*, 75.

⁸⁷ Wilson, *Spiritual History*, 73.

⁸⁸ Robert Smithson, “A Sedimentation of the Mind: Earth Proposals,” *Artforum* (September 1968), reprinted in *Robert Smithson: The Collected Writings*, ed. Jack Flam (Berkeley: University of California Press, 1996).

American earth scientist Louis Agassiz termed the glacier “God’s great plough.”⁸⁹ Incidentally, glaciers are also a vital source of fresh water, a linkage evidently felt by Paterson, who locates her inspiration for the work in an instance of drinking glacial water. So, as is also the case with data clouds and Amazon Glacier, the glacier is both a conceptual spur—Cruikshank says they’re “good to think with”⁹⁰—and an infrastructure of support, the container, the conditions for existence. Amazon Glacier might encourage us to work with big data (“data lakes”), leading us to gain new perspectives on our world as well as, as Hayles suggests, change our own habits and environments: working with digital media might lead us to, for example, work more collaboratively and thus require different workspaces.⁹¹ A real glacier, meanwhile, might allow us to see how and when the earth formed, giving us a sense of our place on the planetary timescale; it might inspire enduring notions of the sublime, guide us across an ocean, sustain us biologically, lead us to invent drills for taking ice cores and hydrophones for overhearing its acoustics, and alert us to the changing state of our earth.

Environment/media: conditions of possibility

Vatnajökull (the sound of) thus discloses the glacier as media, pointing by way of the tenets of its own medium to the information-bearing capacity of glaciers and suggesting as well our technological evolution in relation to our environments. The glacier is presented as communicator (of global warming) and archive (as preserver of ancient air), twinning technological communications media (the phone) with what Peters would deem elemental media. We could even say that the centrality of the medium of the mobile phone (or technological media more broadly)

⁸⁹ Wilson, *Spiritual History*, 72, quoting Edward Lurie, *Louis Agassiz: A Life in Science* (Chicago: University of Chicago Press, 1960), 98.

⁹⁰ Julie Cruikshank, “Are Glaciers ‘Good to Think With’? Recognising Indigenous Environmental Knowledge,” *Anthropological Forum* 22, no. 3 (2012): 239–250, <https://doi.org/10.1080/00664677.2012.707972>.

⁹¹ Hayles, *How We Think*, 5.

to our modern-day ideas of connectivity and togetherness could here seek to highlight the still more fundamental reason for our ‘togetherness’—the shared elemental media, the universal infrastructure, of our common earth.

As I’ve suggested, however, there is more to *Vatnajökull (the sound of)* than the fact that it allows us to perceive the glacier as media; the work is intended to deal with global warming, presenting us with the sounds of ecological loss. I would like to now suggest that the notion of elemental media is a productive idea alongside which to understand how *Vatnajökull* deals with environmental loss. In other words, *Vatnajökull (the sound of)* doesn’t simply present the glacier as media (in Peters’s and Hayles’s sense) and intend for us to extrapolate its centrality to our existence—instead, this idea is a central feature of the artwork, and perhaps the primary statement Paterson makes.

Peters’s philosophy of elemental media—and its expansion of the media concept to define media and environments as jointly entities to be interpreted and conditions of possibility—is relevant to *Vatnajökull (the sound of)*’s exploration of ecological loss because, I suggest, Paterson overtly deploys the glacier as the artwork’s ‘conditions of possibility’ by positioning the glacier as not just a medium but *Vatnajökull (the sound of)*’s medium. Indeed, the artistic notion of medium accords perfectly with Peters’s crucial idea of media as vessels and conditions of existence. Paterson accomplishes this through her use of live sound. I mentioned earlier that the use of live sound in *Vatnajökull (the sound of)* distinguishes *Vatnajökull (the sound of)* from most other works of ecological sound art (and, seemingly, all other ecological sound works that thematize glaciers); listening to the glacier melt in real time emphasizes the effect of urgency, as the effect is essentially that of perceiving global warming irretrievably alter the earth in real time. Relatedly, and crucially, however, *Vatnajökull*’s liveness also augurs the work’s logical

conclusion. The nature of *Vatnajökull* as a live transmission—not a recording of a past event, but a real-time phone connection—ensures that the presence of the glacier is integral to the work. The glacier itself thus provides the conditions of possibility for the work to exist; if the glacier were to melt entirely and disappear, it would take the possibility of *Vatnajökull* (*the sound of*) with it. In this sense, we could think of the glacier as the medium (or one of the media) for the artwork: we could imagine a didactic panel listing off *Vatnajökull*'s media as 'hydrophone, amplifier, mobile phone, glacier.' The glacier is the work's primary support; it is also, as previously discussed, the medium via which callers interpret the signs of global warming, the medium upon which we develop *other* media (the hydrophone/amplifier/phone set-up), and, additionally, it could be said that the glacier also provides the conceptual basis for the work: obviously, without glaciers, there can be no artwork about a glacier. This seems like a truism, but it is significant when considered alongside the multiple ways in which glaciers, as environments more broadly, underpin our existence in both a biological and conceptual sense; as outlined above, glaciers are repositories of history, sites of signs of current environmental conditions, landmarks for orientation, geomorphic forces, biological necessities, and agential entities that influence human behaviour, culture, and thought. In presenting the sound of *Vatnajökull* as a live call of a disappearing entity, and thus necessarily leading the caller to consider the work's eventual conclusion, Paterson augurs for the future what Sally Ann McIntyre articulated for the present: an unrepresentable ecological loss. In *Vatnajökull*, the glacier's role as artistic medium is harnessed to suggest its role as elemental medium: the dissolution of the glacier removes the conditions of possibility for the artwork, and so, too, can we infer, does the disappearance of the glacier remove the conditions of possibility for life as we know it, for life lived amidst and in interaction with an all-encompassing elemental media of which glaciers form an integral part.

Paterson rehearses this premise in another 2007 artwork about disappearing glaciers, *Langjökull, Snæfellsjökull, Solheimajökull*. For this work, Paterson pressed sound recordings from three Icelandic glaciers onto three vinyl records; from these records, new records were then cast and frozen in ice, each made of meltwater from the specific glacier whose sound it records. These ice records were then played on three turntables at the same time; their muffled sounds continue for nearly two hours until they melt completely.⁹² The effect is similar, though metonymic: the glacier becomes the medium, and its disappearance occasions the foreclosure of the conditions of possibility for the artwork.

In tying its own existence to the existence of the glacier, *Vatnajökull (the sound of)* proposes the unrepresentability of loss itself. Although a hypothetical scenario (due to such practicalities as funding, Paterson's hydrophone and phone line will be dismantled before the glacier can literally disappear), the moment at which the glacier passes out of existence will be the moment at which the artwork addressing its ongoing demise ceases to function (the phone will sink into the depths of the ocean; there will be no more dripping and groaning to overhear). This hypothetical situation, inherently anticipated by *Vatnajökull*, offers a small-scale analogy that suggests the unimaginable loss that the melting away of glaciers—and any environmental loss, more generally—would amount to; considered as an elemental medium, the demise of the glacier would result in the demise of the conditions of possibility for the existence of those beings, human and nonhuman, that rely on it. In one sense, the glacier is, here, an artistic medium, the supportive matter that allows the work to take shape; the artistically destructive nature of the glacier's looming demise can be understood as a cipher for the ecologically destructive potential of the glacier's

⁹² "Langjökull, Snæfellsjökull, Solheimajökull," Redtory Museum of Contemporary Art (RMCA), <http://www.rmcart.org/News/detail/id/39.html>; "Langjökull, Snæfellsjökull, Solheimajökull," Katie Paterson, <http://katiepaterson.org/portfolio/langjokull-snaefellsjokull-solheimajokull/>.

disappearance. In another sense, by extension through Peters's theory of elemental media, the artistic context also allows the work to comment on the significance of the environment to our systems of thought and understanding: because the disappearance of the glacier begets the failure of the work of art, environmental loss is figured as grounds for the dissolution of our cultural systems, our systems of representation and meaning, and ways of understanding our world. The notion of elemental media, in other words, allows us to conceive of the disappearance of the glacier as not the disappearance of an incidental entity but the erosion of the earthen foundation of all life and meaning. The suggested impossibility of art's treatment of the lost glacier, furthermore, brings up a foreboding question: if, as Peters suggests, "nature" is "the background to all possible meaning," what kind of meaning is there in a post-glacial world? How does our world (not our earth) erode alongside—on top of—the erosion of its elemental basis? Are we presently unable to truly conceive of it? Through doubling the notion of the artistic medium with the idea of elemental media, *Vatnajökull (the sound of)* augurs unimaginable loss of our conditions of life as a result of environmental loss. *Vatnajökull (the sound of)* thus portends its own loss, refusing, through its liveness, to prolong the existence of the glacier beyond its dissolution: the glacier, once lost, cannot be recuperated. In this way, the artwork performs ecological loss; negating the possibility of the artwork after the loss of its central environmental entity, *Vatnajökull (the sound of)* leaves us with the uneasy question of what comes after.

CONCLUSION

Grappling with historical, current-day, and imminent instances of ecological loss, contemporary artists are met with the question of how best to approach issues with resonances both local and global, affective and material, human and environmental. The degradation of our natural surroundings occurs both on the extended timescale of the geological and at the all-too-rapid pace of capitalist resource extraction; while the former is too slow for us to perceive, the latter, it seems, has always already happened: a forest cutover, a species extinct. As I discussed in the introduction, ecological grief as an emotional response to the desolation of our earth has become, perhaps, the defining affective state of our moment. Ecological loss has, concomitantly, arisen as an area of inquiry for the arts: how do we feel about it, think about it, represent it? Morton calls for an elegy that fails halfway and sticks in the throat. What shape might this take?

What I have sought to demonstrate in this thesis is that certain contemporary artists have approached the issue of ecological loss by attending expressly to its ontological status as a passing-out-of-being, resisting the negation of this status by eschewing representation. My argument has thus been that, in each of these artworks, the primary aesthetic strategy is not representation but *performance*—each artwork *enacts* ecological loss instead of representing it. This, I proposed, indicated each artworks' treatment of ecological loss as ontologically akin to performance as defined by Peggy Phelan: something that “becomes itself through disappearance” and, consequently, cannot be represented, because representation entails preservation. Founding their aesthetics on performance, these three artworks thus resist the recollection or conservation of their central environmental entities. As such, although each work takes a unique approach to and proposes specific claims about its individual ecological issue, all three works posit one fundamental idea: that ecological loss is irreversible. For Dion, this means, above all, that we need

to notice the possibility of continued life within the environmental ruins we inhabit; for McIntyre and Paterson, the significance is, perhaps, more dire: it is imperative that further loss be forestalled.

Mark Dion's *The Life of a Dead Tree* (2019), I suggested, proposed the sustained observation of decay—in this case, that of a tree—as the only means by which to perceive the emergence of new life from environmental loss. Sally Ann McIntyre's *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767)* (2016–18), meanwhile, offered a somewhat bleaker perspective: failing to produce any audible trace of its central extinct species and, thus, showing species loss to be non-representable, *Twin signals* suggested that the effects of extinction are long-lasting, complex, and beyond the parameters of our understanding. McIntyre thus rejected such endeavors as de-extinction—species loss, she proposed, is irremediable, because we can never re-engineer lost nature. Finally, I proposed that Katie Paterson's *Vatnajökull (the sound of)* (2007–08) posited its eponymous glacier as elemental media; situating the melting glacier itself as the audible basis for the artwork, *Vatnajökull (the sound of)* implied its own conclusion: the disappearance of the glacier would cause the destruction of the artwork, drawing a direct link between the glacier as a condition of possibility for the artwork and the environment as the conditions of possibility for not just biological life but also our ways of life and systems of meaning. In thus transmitting live instead of recording, Paterson refused to let the artwork outlive—to represent and preserve—the glacier. *Vatnajökull (the sound of)* is, thus, perhaps the most ominous of the three works I discussed: while Dion and McIntyre address the irretrievability of a tree and a species that have *already* been lost, Paterson proposes the irreversibility of a loss that has yet to transpire. As is evident from so many responses to *Vatnajökull (the sound of)*, it's an anxiety-inducing work—a proleptic elegy that, we might say, sticks in the throat.

If both McIntyre's *Twin signals at Silver Stream* and Paterson's *Vatnajökull (the sound of)* adopted moderately depressing perspectives on their examined environments—*Twin signals at Silver Stream* in its representational failure, *Vatnajökull (the sound of)* in its representational fatalism—the premise of Dion's *The Life of a Dead Tree* might inspire us to seek out some sign of persevering life within the two works. Although, I think, it is unproductive to take a prescriptive approach to art (and, especially, genres of art—such as ecological art—that are allied with activist concerns) and suggest that any artwork dealing with environmental crisis should offer benefits, optimistic perspectives, or, indeed, direct environmentally-ameliorative effects, the ability to salvage meaning from disappearance might be a crucial skill, one we can deploy even if an artwork does not intrinsically or intentionally invite it. Perhaps, then, what we can glean from both McIntyre's and Paterson's works is not too far removed from what Dion staged: McIntyre dedicates herself (and a significant part of her practice) to organizing memorial rituals for birds long dead and likely forgotten, and—without dismissing Paterson's equally dedicated choice to camp out on a glacier—the sheer number of callers that dialed in to listen to *Vatnajökull's* soundscape bespeaks a significant, widespread interest in and, indeed, care for the natural world. Our crisis may be one of political will, but art might still be able to assemble and disclose these moments and actions that attest to a persistent capacity for care and, thus, the potential of life in the ruins we inhabit.

The owls still silently reside in Vienna, and the phone line has been detached from the glacier. The dead tree, however, persists beyond its stint in the gallery. Today, the ash lies in Toronto's Don Valley River Park, discreetly identified on a nearby plaque as a former artwork and decomposing, now, slowly but surely. Eventually, the tree will disappear entirely, fully transmuted

into the soil, through fungi, into plant life. By the time this organism fully recedes from our perception, we might hope that a livable future will have come into view.

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FIGURES



Figure 1. Mark Dion. Installation view, *Mark Dion: The Life of a Dead Tree*, Museum of Contemporary Art, Toronto, 2019. Photo by Tom Arban Photography Inc. Courtesy the artist and Tanya Bonakdar Gallery, New York / Los Angeles.



Figure 2. Mark Dion. Installation view, *Mark Dion: The Life of a Dead Tree*, Museum of Contemporary Art, Toronto, 2019. Detail: the “galleries” produced by emerald ash borer larvae. Photo by Museum for Future Fossils.

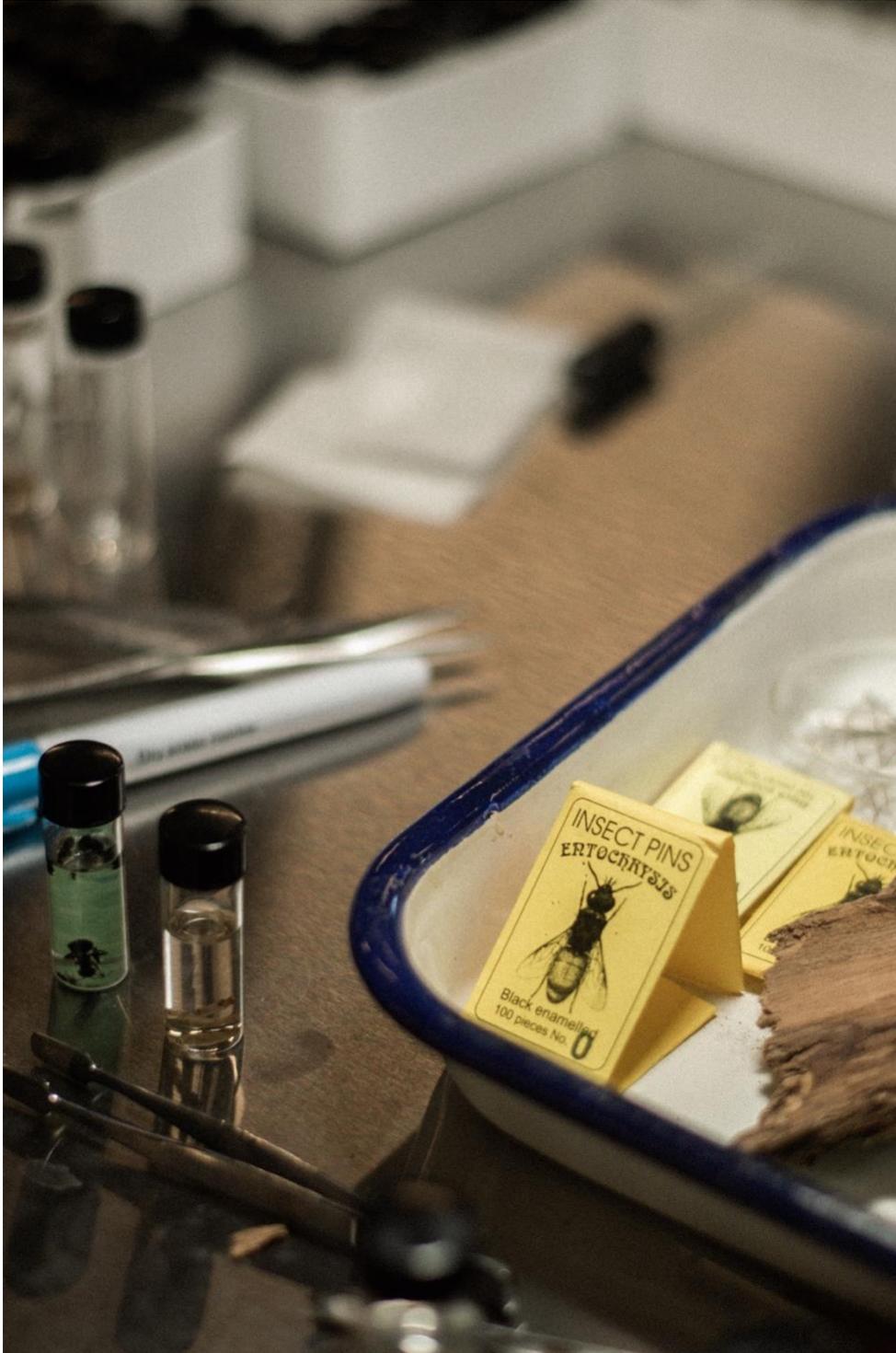


Figure 3. Mark Dion. Installation view, *Mark Dion: The Life of a Dead Tree*, Museum of Contemporary Art, Toronto, 2019. Detail: the scientist's workstations throughout the gallery. Photo by author.



Figure 4. Mark Dion. Installation view, *Mark Dion: The Life of a Dead Tree*, Museum of Contemporary Art, Toronto, 2019. Photo by Tom Arban Photography Inc. Courtesy the artist and Tanya Bonakdar Gallery, New York / Los Angeles.



Figure 5. Mark Dion. Installation view, *Mark Dion: The Life of a Dead Tree*, Museum of Contemporary Art, Toronto, 2019. Detail: Alexandra Ntoukas at work in the gallery. Photo: MOCA Facebook.



Figure 6. Mark Dion, *The Life of a Dead Tree*, 2019. Museum of Contemporary Art Toronto. Detail: photographs of invertebrates found on the tree. Photo: Mat Janson Blanchet.



Figure 7. Sally Ann McIntyre, *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767)*, 2016–2018. Photo: Campbell Walker. Courtesy of the artist.



Figure 8. Sally Ann McIntyre, *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767)*, 2016–2018. Exhibition at Blue Oyster Art Project Space, Dunedin, NZ. Photo: Sally Ann McIntyre. Courtesy of the artist.



Figure 9. Sally Ann McIntyre at the Canterbury Museum, NZ, 2014, collecting an audio recording of a museum specimen of the extinct laughing owl for another work in the laughing owl memorial series. Photo: Campbell Walker. Courtesy of the artist.



Figure 10. Sally Ann McIntyre, *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767)*, 2016–2018. Detail: mini-FM radios at Silver Stream. Photo: Sally Ann McIntyre. Courtesy of the artist.

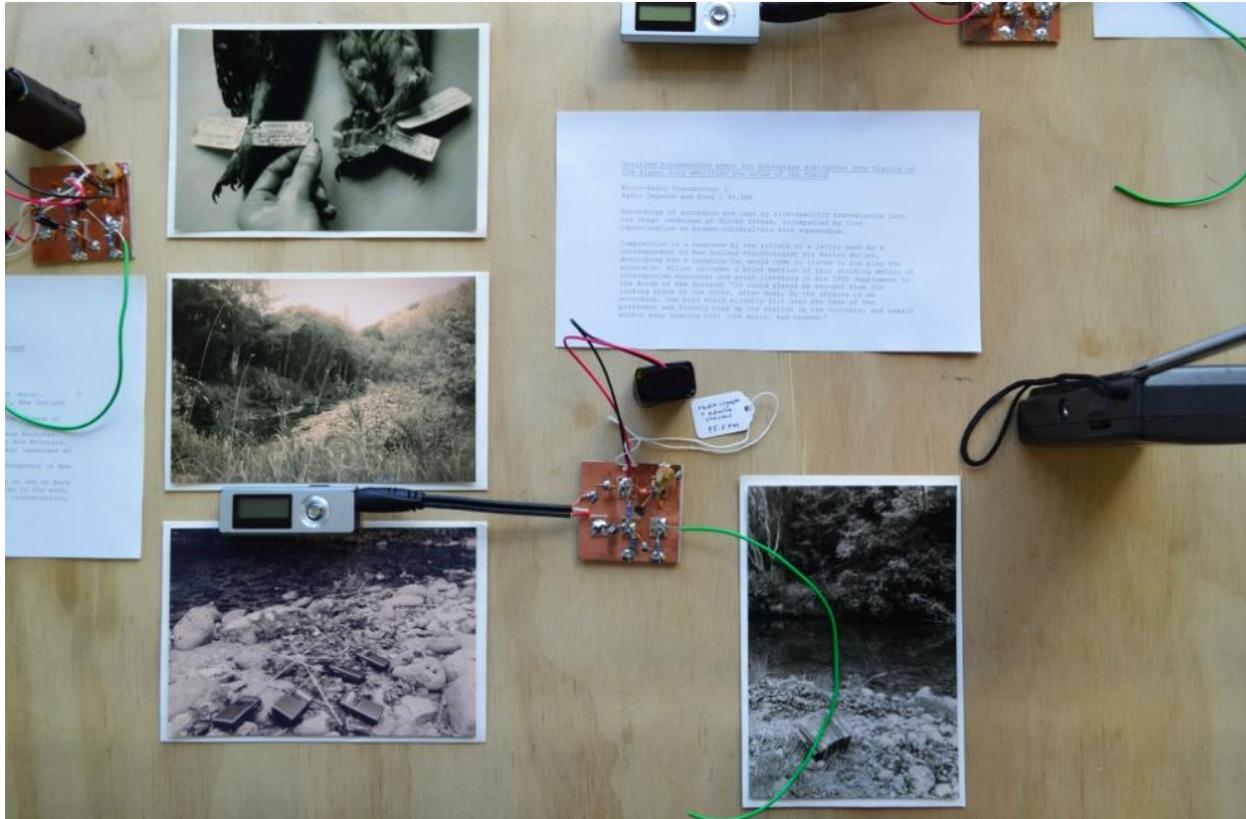


Figure 11. Sally Ann McIntyre, *Twin signals at Silver Stream (fragments of a landscape for specimens #50.766 & #50.767)*, 2016–2018. Detail: exhibition at Blue Oyster Art Project Space, Dunedin, NZ. Photo: Sally Ann McIntyre. Courtesy of the artist.

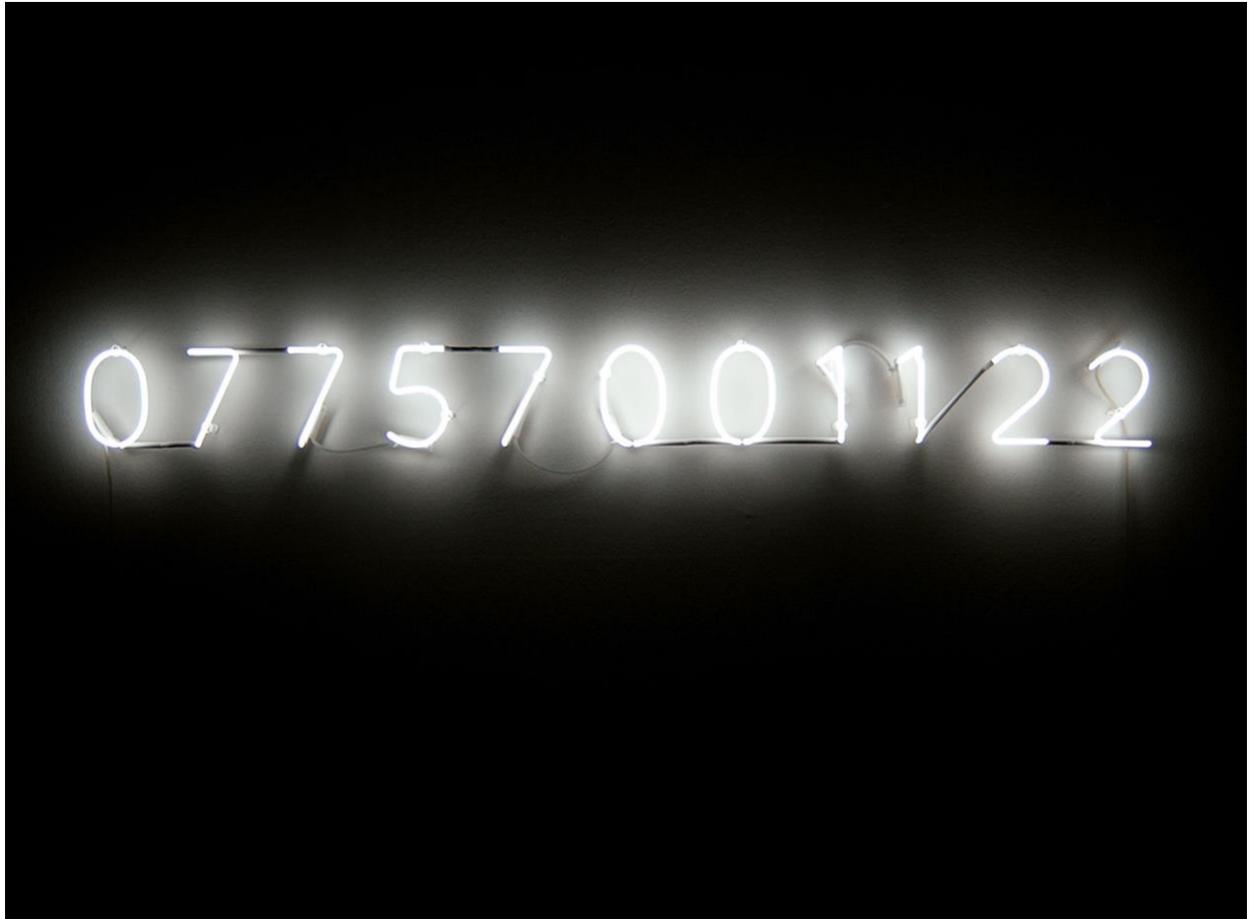


Figure 12. Katie Paterson, *Vatnajökull (the sound of)*, 2007/8. Photo © Katie Paterson, 2008. Installation view Modern Art Oxford.



Figure 13. Katie Paterson, *Vatnajökull (the sound of)*, 2016–2018. Paterson's tent and the tent used to house the amplifier and mobile phone.