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Sonic Figurations for the Anthropocene: A Musical Bestiary in the Compositions of Liza Lim

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AND

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Abstract This article presents a musical bestiary, a collection of creatures found in the work of the composer Liza Lim. It is a thought experiment, meant to unsettle current ways of thinking about music and its relationship with the world. Centring our discussion on sonic figurations rather than on a composer's works, we experiment with alternative musical ontologies and consider their lessons for understanding the role of contemporary art in a time of ecological breakdown. Thinking of Lim's musical creations in terms of strange beasts inhabiting the Anthropocene draws out a range of themes – including uncanny ventriloquism, performer-instrument symbiosis, theatricalization and the everyday, musical mourning and witnessing – that might help make sense of the sensory and conceptual derangements of our time. The prose style and nonlinear format are likewise experimental, intended as provocations that we might read and write otherwise about music in the Anthropocene.

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Prologue

'What music is remains open to question at all times and in all places.'¹

This article presents a musical bestiary, a collection of **creatures** found in the work of the composer Liza Lim.² It is a thought experiment, meant to unsettle current ways of thinking about **music** and its relationship with the world. As with older bestiaries, which often included fantastical creatures, plants and stones, we welcome all kinds of entity here.³ Like the chimeras and griffins of old, ours are unlikely hybrids: they are real assemblages of (human) musicians and (non-human) musical instruments; they are also imagined composites of plants, animals, elements, spirits and more. Confusing categories further, they are often both imagined and real: they exist in the composer's head, but also appear onstage to perform for audiences, and they thrive on their connections with actual creatures and with cosmologies that reach well beyond Lim's work.

The article is a response to the problems of **art-making** and academic **writing in the Anthropocene**,⁴ the era of human-driven climate emergency and ecological collapse. It is grounded on Lim's practice as a composer, but the **origins** of our bestiary as a speculative analytical framework emerged through a sustained period of experimental writing and dialogue involving both authors. Unable to separate form and content, the bestiary explores the meaning and purpose of art and scholarly writing in turbulent times, using Lim's music both to imagine other, more liveable worlds and recognise the fantastic, often harmful, worlds we currently inhabit. What emerges is a kind of science fiction musicology: a document of an unlikely, partial cosmology of sonic figurations, haunting and haunted by the Anthropocene.⁵

Lim's musical creatures live within what is known variously as 'contemporary classical' or 'new' music, but this bestiary is not, primarily, an argument about such music, still less about its special potential to change the world. Figurations of the kind we collect here might well be explored for other genres and musical cultures and our account of the role of music, contemporary or otherwise, within the Anthropocene is thoroughly ambivalent and deliberately speculative.⁶

After this prologue, the body of the bestiary comprises entries for eight of Lim's musical creatures with a commentary running alongside (like the marginal notes in some medieval manuscripts).⁷ Each entry describes and illustrates, with photos or video, the creature itself, its environment or kin, and what it might mean for how we think about music in a time of ecological trouble. Each section of the commentary draws an issue out of the neighbouring entry and relates it to the wider analytical and representational project of the bestiary. The unusual **format** is an invitation to experimental reading: following different routes through the text, looking for connections, entertaining uncertainty, rereading, and perhaps adding more marginal notes in the spaces

Commentary

Origins. The idea for this bestiary came from the one of us (Browning) with an outsider's perspective on Lim's work. An initial discussion suggested that the idea had potential, so we started a collaborative writing process. In other words, Lim did not intentionally compose a bestiary; rather, this **format** and other aspects of our analytical framework emerged out of years of compositional activity and a more recent collaborative act of interpretation. Thus, the bestiary is neither the outcome of a pre-determined compositional project, nor the result of a retrospective analytical framework, but rather an altogether more ambiguous artefact, somewhere between a creation and a discovery, that came to life through the meeting of composition and analysis. Discussing work on questions of ontology in music studies, Born and Barry observe that 'A central problem...has been the tendency to elide or confuse [...] [the] analytical ontology and the ontology of the people/culture/music that are the focus of research'.⁶⁴ Our bestiary can be thought of as an emergent effect of a dialogue between ontologies – initially that of ethnographer (Browning) and musical insider (Lim), but subsequently of two co-authors deliberately attempting to unsettle our own ontological presuppositions.⁶⁵

Formats. The bestiary format allows us to experiment with a narrative style and structure that is oriented as much towards conveying a sensibility as developing an argument; it allows us to emulate the affects associated with environmental crisis, a troubling and bewildering topic that demands an at least partially troubled and bewildered

remaining. We fear and hope that the bestiary will not make sense straight away and all at once; it necessarily hovers between fact and fiction, argument and speculation.⁸ Despite these potential challenges to the reader, we have tried to make it enticing and evocative, and the marginal commentary offers suggestions for navigating the text and thinking about its relationship with wider scholarly debates. Similarly, keywords in bold scattered throughout the text point the reader to the titles of sections in the Commentary or entries in the Bestiary, highlighting recurring themes and webs of cross-connection. For those who read linearly, the entries follow a rough logic of increasing complexity: relatively simple creatures, wedded to material artefacts or musical instruments, give way to ontologically slippery creatures with a basis in metaphor and myth. But several other forms of organisation are also at play. For example, the eight creatures come in pairs: first a musical instrument (**Woodblock**) and a performer-instrument hybrid (**String Creature**); then two distributed objects, one synthetic (**Plastic**), the other organic (**Mycelia**); then two musical birds, one extinct (**Kaua'i 'ō'ō**), the other mythical (**Sheng-Phoenix**); and finally, two creatures that embody performative extremes, one self-effacing (**Hidden Creature**), the other hyperbolic (**The Angel of History**). Themes such as ventriloquism or symbiosis weave across the entries, making other orderings possible. So, for those who read in a more wandering fashion, it will be clear that the creatures wriggle free of any linear narrative logic we might impose. However you read, the first entry is a good place to start.

modality of communication. It allows us to make strange the habitual textual structures – linear, developmental arguments – associated with contemporary Western thought. Pre-modern and medieval forms of ordering including bestiaries, the Babylonian Talmud (which presents a central text and multiple commentaries all on one page)⁶⁶ and devotional texts such as a book of hours permit the inclusion and sequencing of complex, multi-modal information and can offer paradoxically new ways of understanding what might ‘count’ in our own time. Indeed, the recuperation of such orderings is an undercurrent in twentieth- and twenty-first-century theory. The much-quoted fictitious taxonomy in Jorge Luis Borges’s ‘Chinese encyclopedia’, the ‘Celestial Emporium of Benevolent Knowledge’, offered a challenge to Western conceptions of order that influenced Michel Foucault and others.⁶⁷ More recently, the format of *Arts of Living on a Damaged Planet* results in a book with no single beginning or clear end, but an always partially upside-down book of two mirrored halves.⁶⁸ Thus, as well as experimenting with alternative figurations, our bestiary joins a long-standing project of reformatting whereby alternative taxonomies and textual structures invite new practices of reading and thinking.⁶⁹

Woodblock



Figure 1 Woodblock. © Liza Lim.

Appearance, behaviour, voice. The woodblock has a mouth (Figure 1). Lim's piece *An Elemental Thing* (2017) opens with the musician brushing the surface of a woodblock with a double bass bow to create breathing sounds. Later, moans emanate from the wood as a child's rubber ball is skidded across the surface; the sounds then intensify into strange cries with the application of a tiny, buzzing 'bullet' vibrator (Example 1). Over the course of a fifteen-minute piece, that simplest of percussion instruments, a hollow block of wood, turns out to be capable of an operatic expressivity.

Sometimes, instruments and performers suggest possibilities only half-imagined by the composer. Percussionist Eugene Ughetti, Lim's collaborator on the piece, discovered that by variously sliding fingers, hand and arm across the opening, one can produce wa-wa sounds (like a brass instrument). This discovery of the woodblock's capacity for vocal-like modulation led Lim to introduce a text into the piece – a section of Eliot Weinberger's book of essays, also titled *An Elemental Thing*, which speculates on the nature of stars.⁹ This text is not spoken, but guides

Creatures. The entries for the creatures in our bestiary follow a set format. Each starts with a description of the creature's '**appearance, behaviour and voice**'. Notation, photos and video of (human-instrument) bodies provide further illustration. We then turn to the creature's '**environment**' and '**kin**': the piece(s) in which it appears, its onstage environment, and the places, fellow creatures or ideas with which it is imaginatively connected, whether in Lim's work or in other cultural or intellectual settings. These 'environment, kin' sections elaborate on each creature's relationships with the wider world, showing that they are not isolated sightings. Finally, taking a leaf out of medieval bestiaries, each entry concludes with a '**moral**', but where historically this meant Christian teaching and normative instruction, we use this section to consider instead the questions and quandaries – variously epistemological, ontological, ethical, cosmological – that the creature raises. This moves the discussion into spaces of ambivalence or speculation, where the task of explication gives way to the productive ambiguities of art and the often-conflicted emotions, experiences and ideas that come with inhabiting the Anthropocene.

phonemic shapings of sounds, with the percussionist's hand and fingers acting as surrogate lips and tongue to the woodblock's mouth.

Example 1 Bar 71, Lim, handwritten score for *An Elemental Thing* for solo woodblock (2016). © G. Ricordi & Co. Bühnen- und Musikverlag GmbH, Berlin, reprinted with permission.¹⁰

The woodblock has a lower mouth. One completely unexpected affect of the piece only revealed itself at the first performance. While Lim had imagined the 'recitation' of Weinberger's text to create a sense of the woodblock as an orator, grandly philosophising about the cosmos, in live performance the audience – and specifically female audience members – found another set of resonances. The combination of the percussionist caressing the surfaces and mouth of the woodblock with a vibrator and the loud moaning sounds that resulted were suddenly highly intimate and suggestive.¹¹ With the shock of the sexualised quality of the woodblock's song, it became a 'queint' – in Middle English 'a clever or curious device or ornament', but also a pun or euphemism for female genitalia.¹² Sometimes, audience, instrument and performer together generate something that exceeds the composer's 'voice' or intentions.

Environment, kin. In *An Elemental Thing*, the woodblock speaks alone, coaxed by the musician. Elsewhere, in two operas by Lim, it appears *en masse* and takes on other voices. In *The Navigator* (2008), a night scene of croaking frogs is evoked by musicians stroking the serrated backs of frog-shaped Indonesian woodblocks. In *Tree of Codes* (2016), the orchestra plays woodblocks with rasp sticks, again evoking frog calls, which then morph into the rhythms of Goethe's poem *Erlkönig* (1782). This text is whispered by the soprano and echoed in skeletal form by the woodblocks, stripped of semantic meaning, yet still hinting at the horrifying meaning of Goethe's lines. These other types of woodblock song show how musical **creatures** travel between pieces. Indeed, the woodblock occupies a range of cultural (and sometimes creaturely) roles outside of Lim's work, including various fish-shaped woodblocks used in Buddhist temple rituals in East Asia (the fish symbolizing the wakefulness to which monks aspire during sutra readings). With their varied forms and flexible ventriloquism, musical creatures find their niches in diverse settings.

Moral. The woodblock is a sight-gag, its apparent ordinariness offering opportunities to play with the incongruity between visual identity and sounding identity.¹³ Its power to seduce or charm depends on the

Music. We hope the bestiary will speak both to musicologists and to scholars in the environmental humanities. For the former, it offers an alternative to certain familiar approaches to music, especially contemporary classical music (the genre in which Lim's music is most readily situated). Where scholarly discussions (of Western art music and many other repertoires) often focus on individual musical 'works',⁷⁰ by turning our attention to '**creatures**', the bestiary plays with other scales of analysis and other models of musical ontology that are often muted by scholarly convention. Here, music speaks through a series of figures, drawing attention to fragments of and relationships between pieces, to creative backstories, to scenarios of performance that elide musician and 'work', and to the relationship

audience underestimating the capacities of a ‘mere’ block of wood. As it turns out, the woodblock can take on many identities: element (wood), mouth, quaint, human, frog. This uncanny ventriloquism¹⁴ raises ethical questions around the politics of humanness and human responsibility. Objects that unexpectedly take on human behaviours or voices can startle us: the ventriloquist’s dummy fascinates and repels when it oversteps the boundaries we accord ‘dumb’ objects. It is tempting to ask: if other objects had a mouth and could speak, would this refresh our empathy for the things of the world? Would we hesitate to exploit our fellow creatures or discard obsolete technological devices so readily? But perhaps the question should be, not how would we respond, but why don’t we? Many creatures do already ‘speak’ – indeed the songs of animals from birds to whales are a celebrated part of much human music and culture – yet we often ignore the ethical implications of such speech. The speaking woodblock is also an odd relative of the many technological talking objects that surround us: telephones, radios, computers, digital assistants such as Alexa and Siri (often gendered devices which are, like the woodblock, subject to sexual fantasies). Perhaps, then, the strange thing about Lim’s *An Elemental Thing* is that the singing woodblock seems uncanny when talking objects and singing creatures are in fact so ubiquitous and naturalized. It reminds us of the highly selective nature of human listening: attentive to some things, inattentive to others, only occasionally surprised.

between sound and world. Although our focus remains, somewhat conventionally, on a single composer’s output, the bestiary also raises questions about who or what is making this music.

Musicians and musical instruments are clear collaborators in Lim’s work,⁷¹ but – extending the recent concern with ‘distributed creativity’ in musicology – we see the creatures themselves as active: both real world ecologies and imaginary beings somehow get into and shape this music. In some ways, the bestiary format is peculiarly suited to Lim’s oeuvre – not only is it populated with references to an unusual array of creatures (as characters in operas, as names of movements, in programme notes), but her compositional practice draws on a range of theoretical literature on more-than-human worlds – so our point is not that all music should be thought of in this way. Rather we want to argue for the wider value of speculative attempts to rethink particular cases of what music is or could be, and to explore new genres of writing that combine playfulness of method with seriousness of topic. Such reinventions and **risky** juxtapositions feel necessary in troubled times.

String Creature



Figure 2 Florentin Ginot performing Lim's *Table of Knowledge* (2018). Courtesy La Biennale di Venezia, ©Andrea Avezzi.

Appearance, behaviour, voice. After playing for several minutes, the bass player pauses, ties one end of a linen thread to the highest string on their instrument then takes the other end – attached to a button – and holds it in their mouth, behind the teeth (Figure 2). The long thread carries vibrations from the droning double bass into the mouth of the player, allowing them to transform the sound into a hallucinatory sweep of harmonics by changing the shape of the resonant space inside the mouth. (The technique and sonic effect are borrowed from the Vietnamese instrument, the *dan k'ni*, where the mouth is used as a resonator, allowing the instrument to imitate features of vocal music.) Tied with string, a strangely bisected creature emerges in which low sounds emanate from

a wooden body and high ones from a human head. Musical instruments are conventionally understood as tools of the musician, but here roles are shared and made strange, with tool-like functions displaced across the human-instrument assemblage: the player plays the bass, which plays the player, in an uncertain loop – their symbiosis lasts only until the end of the piece.

Environment, kin. This creature appears towards the end of Lim's piece *Table of Knowledge* (2017) and is one of several kindred 'string creatures' in her work. In *An Ocean Beyond Earth* (2016), the cellist plays an instrumental construction in which a cello is tied to a violin using a fine thread; when pulled, the thread sets both string instruments resonating. In *Winding Bodies: 3 knots* (2014) for hardanger fiddle and ensemble, the musicians similarly manipulate thread and horsehair attached to stringed instruments and piano strings to evoke a Nordic story of the wind tied up in the material form of a knotted string.¹⁵

Table of Knowledge was written for double bassist Florentin Ginot and inspired by a section of the medieval-influenced 'Garden of Nine Squares' of the Cistercian Abbey of Royaumont in Asnières-sur-Oise, France (a common destination for composers, since the abbey hosts residencies and summer courses; [Figure 3](#)). There, arrayed on a table, are pots of psychotropic and poisonous plants including some of the typical ingredients of a hallucinogenic mixture known as 'witches' flying ointment': datura, belladonna, henbane and cannabis.



Figure 3 'Table of knowledge'. Courtesy Royaumont Abbey, © Michel Chassat.

These plants are *pharmakon*, known in various traditions in Europe and Asia as both poison and remedy, plants whose potentially lethal toxicity can also be employed for medicinal purposes.¹⁶ In a balanced dose between healing and fatality lay the potency of the psychotropic 'high': the 'witches' flying ointment' traditionally enabled

Created things. The experiment in narrating other musical ontologies is necessarily somewhat disorienting, so we offer a few clues here about the kinds of creature in this bestiary. Some are newly invented, but others predate Lim's work and circulate more widely (the **sheng**, discussed below, is a Chinese traditional instrument long associated with the phoenix). Such creatures exist in wider cultural space – archetype, myth, other artworks – and can be summoned as 'introduced species' into the local settings of specific pieces, suggesting that the 'creature' ontology is already at play, albeit sublimated, in wider musical practice. Some creatures appear because of a particular assemblage of human performer, musical instrument and other material objects. These allow us to articulate features of the materiality of musical instruments and dimensions of the performer-instrument relationship – symbiosis, prosthesis, ventriloquism – that are not readily discussed in terms of existing musical ontologies. Still other creatures appear because of complex assemblages that cross between divergent taxonomic categories – real, imagined, biotic, abiotic, material, sonic, conceptual, performative – often with highly idiosyncratic or uncanny results. Throughout, we want to insist that these creatures are more than an analytical lens through which to view what are really 'works'. Helped by the etymology of 'creature' – meaning 'something created' or 'a created being' – we see the creatures identified here as having an often slippery or transient, but nonetheless tangible, ontological reality. They are not reducible or equivalent to a work, performer, instrument, or idea, but are created when such things come together. Relatedly, the role of composer as creative agent remains decisive, but not totalising – we repeatedly consider how Lim's music is conditioned by and responsive to specific engagements with the world: these creatures arise out of 'sympoietic' systems; they are made together.⁷²

the partaker to journey within a trance state. The human-instrument hybrid of *The Table of Knowledge* simulates this 'trance-flight' in the high, sustained sound of the drone modulated by the player's mouth-string. A drone is one of the simplest and most powerfully entraining devices in music and musical drones are found cross-culturally as part of the sonic-technologies of ritual and sacred practices. Their hypnotic monotony can, in the right conditions, induce meditative, mystical or ecstatic experiences.¹⁷

Moral. Even a listener unaware of the magical inspiration for *Table of Knowledge* would notice the moment of stagecraft involving thread and mouth late in the piece. Just as the uncanny voice of *An Elemental Thing* is surprising *despite* the ubiquity of technological ventriloquism, so the string creature of *Table of Knowledge* is striking not because it presents a remarkable bodily prosthesis or an intimation of an out-of-body experience – modern life provides (some of) us with many such objects and experiences, from artificial limbs to iPads, virtual reality to contemporary hallucinogens – but because it does so via deceptively simple means. This human-instrument hybrid relies on a mundane, yet ancient technology – string – and the trick of the piece is thoroughly on the surface, there for all to see, yet somehow spellbinding nonetheless. Writing about magic, Michael Taussig argues that 'faith seems to not only happily coexist with skepticism but *demands* it, hence the interminable, mysterious, and complex movement back and forth between revelation and concealment. Could it follow, therefore, that magic is efficacious not despite the trick but on account of its exposure?'¹⁸

Lim's piece stages a magic act through this same juxtaposition of mystery and exposed mechanism, but it is not, however, a scene of re-enchantment. Like Timothy Morton, we find that 're-' prefix unhelpful since it 'assumes that the world was once enchanted, that we have done something to disenchant it, and that we can, and should, get back to where we once belonged'.¹⁹ Rather, as the etymology of 'enchantment' – with its roots in the Latin 'cantare' ('to sing') – suggests, there has always been a latent magic in singing. The string creature of *Table of Knowledge* makes this magic audible and visible through forms of sensuous play and display that work, as Jane Bennett puts it, 'to resist the story of the disenchantment of modernity'.²⁰ Talk of 're-enchantment' also ignores the ubiquity of magic in contemporary life, including the charismatic abstractions of what Taussig calls the 'magic of the state', and of 'money' and 'the economy',²¹ which we might extend to include advertising and social media, fast fashion and internet memes, the trickster worlds of politics, media and entertainment. So, unlike commentators such as Glenn Bach who argue for the need to re-enchant digital music technologies,²² Lim's piece partakes of a long-standing tradition that sees enchantment as a persistent feature of all materials and bodies. The string creature's odd, yet obvious transgression of the normal player-instrument relationship hints at the hidden forms of prosthesis and symbiosis at stake in every musician-instrument relationship. In doing so, it attempts a form of 'apotropaic' magic (magic used to combat harmful magic), using the intimate, trance-like connection between body and instrument to temporarily break the spell of the impersonal machinations of power and influence that string us along in daily life.²³

Plastic



Figure 4 Arrival of the plastic. Rehearsal of *Extinction Events and Dawn Chorus*. Riot Ensemble, Kings Place, London, Feb. 2020. Courtesy Riot Ensemble, © Justyna Skwierawska. See video.²⁴

Appearance, behaviour, voice. After around six minutes of music, the violinist brings a huge, rustling sheet of cellophane from the back of the concert hall onto the stage – they have the choice to drag it or wear it as a cape – before passing it over the heads of the other musicians to the percussionist (Figure 4). The intrusion of this noisy ‘found object’ into the piece is a compositional anomaly, a moment of theatre in an otherwise standard concert performance (afterwards, the plastic joins the other instruments as a sound-producing device, becoming another

Art in the Anthropocene. Another aim of the bestiary is to use music to generate ideas relevant to the environmental humanities, especially regarding the relationship between art and world in ecologically troubled times. This is not the place for a full exposition,⁷³ but the environmental humanities and kindred disciplines have a history of thinking through and with **creatures**. Among our key inspirations are the ‘material-semiotic’ figurations that run through Donna Haraway’s work, not least the cyborg, and companion species including dogs, pigeons and the OncoMouse (a genetically modified laboratory mouse developed at Harvard University).⁷⁴ Collections like *The Multispecies Salon* and *Arts of Living on a Damaged Planet* also offer vibrant models for investigating and refiguring more-than-human worlds. Some scholars share our project of reinventing the bestiary.⁷⁵ Furthermore, running alongside and sometimes mingling with academic work there has been considerable literary and popular scientific interest in the bestiary since at least the second half of the twentieth century, from Borges’ *Book of Imaginary Beings* (1967) to Caspar Henderson’s *Book of Barely Imagined Beings* (2012).⁷⁶ Bestiaries are used to conduct a diverse range of work, but that work is always imaginative, and it is in that spirit that we write here.

By following the creatures in Lim’s work, we reframe art in terms of heterogeneous material and imaginative presences that inhabit the world, not simple reflections or representations, not something superfluous or separate. Of course, such a perspective is far from new, but our point is that it requires continual renewal, actively seeking new ontologies and epistemologies that respond to the challenges of the Anthropocene. The idea here is not that art can save the world. We have in mind something stranger: that we don’t yet know what art is or does or what it might be and do.⁷⁷

Several dimensions of this strangeness are worth noting here as themes that run through the bestiary. We consider the *uncanny properties of objects and bodies*, especially two

member of the ensemble). The aim for the ensemble is to find a piece of plastic that is disruptively loud, so that its arrival is subversive, breaking the taboo of the restrained concert atmosphere. (The rupture is brief, and the plastic soon fades into the background, but it has opened a space for the appearance of another creature, the **Kaua'i 'ō'ō**.)

Environment. This cellophane sheet – somewhere between musical instrument and theatrical prop – features in Lim's *Extinction Events and Dawn Chorus* (2017), a piece replete with references to ecological disaster: not only the anthropogenic crisis of plastic pollution, but also the buzzing dawn chorus of fish on a threatened Australian coral reef, the call of an extinct bird and the Geiger counter-like popping of percussion. *Extinction Events and Dawn Chorus* is constructed upon an analogy between an environmental process – the circulation and breakdown of plastic in oceanic gyres – and a musical process: looping, knotted repetitions of musical materials that degrade into smaller, distorted fragments.²⁵ Because the chosen musical materials are derived from disparate historical artefacts – including excerpts from *On an Overgrown Path* by Leoš Janáček, a transcription of the call of an extinct bird, and a transcription of the constellations on a ninth-century Chinese star map into musical notation – the piece sets up a further analogy between the environmental accumulation of plastic and the legacy of the multiple, heterogeneous, yet only partially recoverable histories impinging on the current moment.

Moral. Plastic is a deceptive creature, useful and ubiquitous, dangerous and elusive – another *pharmakon*. It is arguably *the* modern consumer material: cheap, everyday, malleable, multi-coloured, the bright face of the fossil fuel industry. It is also harmful, toxic and entangling, disposable and long-lasting. Both good and bad, plastic seems to be everywhere: in households and supermarkets, in the oceans and our drinking water, in fish, birds, insects, animals, and in our own bodies. Yet – another contradiction – plastic is also hard to pin down, it both accumulates and degrades, becoming microscopically small and widely dispersed. We treat plastic as a 'creature' here because it is active, both as a toxic agent in real bodies and environments and, by analogy, as an agent of theatrical interruption in Lim's piece. Yet the pervasiveness of plastic troubles any easy distinction between creature and environment: it is residual in both, a **monstrous** vector for their interconnection. Indeed, plastic is an example of what Morton calls a 'hyperobject', 'things that are massively distributed in time and space relative to humans', and so at once confound our normal conceptual habits and 'compel us to think ecologically'.²⁶ It might not be too much of a stretch then to suggest that we humans are all part of this 'thing'; at the least, we made plastic (from the bodies of once living creatures) and now it lives in us and the environment as a prolonged dying. At the same time, plastic is not only a ubiquitous *material* threat to bodies, but a widespread *imaginative* threat – in the news, in our consciousness (albeit too little and too late to prevent a future legacy of harm), it can seem both literally and figuratively inescapable. The combination of imagined ubiquity and microscopic intangibility make it as pervasive and insidious as ideology.

If plastic is everywhere, that includes the concert hall. The inclusion of the cellophane sheet in *Extinction Events and Dawn Chorus* builds on a tradition, associated with figures such as John Cage, of using 'found objects' as

questions regarding the significance of *ventriloquism* at this historical juncture: what it means for objects to speak or sing; and what it means for humans to take on more-than-human voices.⁷⁸ Such moments of material or bodily performance also draw attention to the odd relationship between *artistic theatricalization* and *the numbing spectacle of 'everyday' life in the Anthropocene*.⁷⁹ Relatedly, we note the *discrepancies that animate our experience of both art and the Anthropocene*. The sleight of hand and odd onstage assemblages involved in making these creatures often provokes a reflexivity about musical experience – flickering between the mundane and the magical, hiddenness and showy performativity, belief and doubt – that matches the sensory, affective and conceptual blockages involved in experiences of ecological damage: seeing but not quite believing, hearing but not quite comprehending.

percussion instruments. But plastic is not just any found object: it is at once mundane commodity, abject rubbish and 'the substrate of advanced capitalism'.²⁷ Converted into an expressive and theatrical device, it still contrasts starkly with the conventional instruments in the ensemble (violin, piano, trumpet, flute etc.), with their associations of professionalism and prestige. This contrast is undergirded by a difference in sound and sound production: conventionally highly controlled in the case of traditional instruments, but complex and unpredictable in the case of the cellophane sheet. These transitions and juxtapositions at first theatricalize the object (as in *An Elemental Thing*) as something uncanny and striking. The subsequent disappearance of the plastic into the background, providing a rustling accompaniment to other instruments, encapsulates the wider logic of musical degradation in the piece as it shifts from object to environment, from locatable to pervasive or hidden, and from short-lived event to long-term legacy.

There have been no substantial scholarly studies of found objects in contemporary music,²⁸ but any such engagement would likely question the word 'found', since the implication of a chance discovery arguably obscures composers' selection of such objects (and the resulting sounds) for use in their compositions.²⁹ Perhaps such objects are neither simply 'found' nor 'selected'; rather their use is a *collaboration* between composer and historical circumstance. Consider some of the most iconic found objects of twentieth-century music: the 'amplified plant materials' specified by Cage in *Child of Tree* (1975) and *Branches* (1976) or the collection of resonant objects-turned-loudspeakers in David Tudor's installation *Rainforest IV* (1973); as well as a neglected feminist lineage of found and environmental works, including Alison Knowles's *Bean Garden* (1976/2016; and other 'bean' pieces) and Annea Lockwood's *Piano Transplants* series, especially *Piano Garden* (1969–70) and *Piano Drowning* (1972), where plants and water become musical objects. These examples suggest that late twentieth-century environmentalist imaginaries have been particularly important in animating composers' choices, both of sound-making objects and associated titles for pieces (not to mention offering ancestors to some of the **creatures** in Lim's work, potential entries in a more expansive musical bestiary). Seen in this light, the appearance of plastic in Lim's piece is not simply the deployment of a 'found' object, but rather the interruption of a uniquely disruptive and historically significant object into the scene of musical performance. Piekut writes that musical experimentalism, the tradition with which found objects are usually associated, 'performs not simply a return to daily life but an intensification of it – a peculiar mix of the commonplace and the singular'.³⁰ But where the object in question – plastic – is, even prior to its incorporation into the artwork, at once commonplace and a profoundly anomalous and toxic historical force, the ongoing liveability of 'daily life' is called into question.

Ghosts and Monsters. Several of our **creatures** figure a central trope in ecological thinking: *interconnection*. They help us to explore *connections between metaphor and matter, mediations between diverse cosmologies*, and to see the paradox of *interconnection as both beneficial and malign*. The hybrid ontologies enacted by such interconnections – real–imagined, present–absent, here–there, dead–alive, life–giving–toxic – also signal kinships between our creatures and two types of figure that have recently emerged at the forefront of thinking about the Anthropocene: ghosts and monsters. In the book *Arts of Living on a Damaged Planet* (one of the key inspirations behind our bestiary), Anna Tsing, Heather Swanson, Elaine Gan and Nils Bubandt thematize these two figures, 'hiding in plain sight', as follows: 'If monsters are excess, ghosts are absence and invisibility. Monsters are entangled – and contaminated – bodies. Ghosts suffuse landscapes with many kinds of time.'⁸⁰ The creatures we discuss here demonstrate what the authors call 'the wonders and terrors of symbiotic entanglement' (i.e. 'monsters') and 'traces of more-than-human histories through which ecologies are made and unmade' (i.e. 'ghosts').⁸¹ At the same time, we want to foreground dimensions that are sublimated in these authors' account. Most simply, where the 'art' in *Arts of Living on a Damaged Planet* denotes kinds of sensibility or skill valuable for navigating the Anthropocene, here we place 'art' more conventionally conceived – as the outcome of creative and imaginative work – in the foreground. Drawing on the shared etymology of 'monster' and 'demonstrate', we want to show that *musical creatures are performative* – without fixed essence, they emerge in acts of performance, are given life through repetition, and so do work that remakes the culture of which they are a part.⁸² Like ghosts and monsters, many of our creatures are also figures for death and damage, prompting us to consider the role of **art in the Anthropocene** in developing *emergent forms of witnessing of, and lamentation for, the violence and losses of ecological harm,*

Mycelia



Figure 5 Guiro bow and violin. Courtesy hcmf// UK, image reprinted with permission, © Angela Guyton. See video.³¹

Appearance, behaviour, voice. This creature is hard to pin down: it is spread out, in-and-amongst, here-and-there. Like others in this bestiary, it is real and imagined: mycelia are simultaneously a type of living organism – a fungal colony that composts other organic matter, sometimes in symbiosis with plants – and an imagined musical entity (and the title of a movement) in Lim’s *How Forests Think*. Its voices are, accordingly, divergent: as organism, it is silent (at least to human ears); as music, its sounds are many and varied. This distributed identity is given life through a series of analogies, which draw likenesses between apparently separate things. First, the collectivity of the

including the deep ambivalences involved in these necessary yet potentially harmful forms of attentiveness.

musical ensemble – ten musicians, guided by a conductor while retaining some autonomy – offers a parallel with the decentralised network of the mycelium. Second, the interacting materials of the musical ensemble – wood, breath, body, string – offer parallels with the interacting materials of the forest – tree, wind, animal, tendril etc. Thus, breath through a pipe is like wind through leaves; a violin bow scraping on string is like mycelial strands twisting around a tree root (although the piece relies not so much on direct musical mimesis as on pervasive resemblances between ensemble and forest). Third, musical processes parallel ecological processes. The movement titled ‘Mycelia’ opens with a trio of string instruments – violin, cello and double bass – played using what Lim calls a ‘guiro bow’, a normal bow with the hair undone and twisted around the stick (named for a Brazilian percussion instrument with a ridged playing surface; see Figure 5). As well as resembling the entwined structure of mycelia and tree root, the guiro bow also initiates a musical process that serves as an analogue for the composting activity of mycelia, which breaks down organic matter that is then taken up by other plants: the unstable passage of the ridged bow over the instruments’ strings results in the granulation of their sound, making it ‘available’ for take-up as a sonic behaviour in all the other instruments, whether as whispered air sounds or fast rhythmic iterations of notes.

But these are not simply analogies. Our insistence that this creature is at once real and imaginary, organism and music – despite the fact that it seems always on the edge of slipping out of our grasp – is motivated by a desire to trouble assumptions about artistic ‘representationalism’ or ‘the belief in the ontological distinction between representations and that which they purport to represent’.³² The musical features described above – material interactions, sonic processes, collective creativity – do not simply ‘represent’ mycelia. Rather, Lim’s ability to think about and create the music in these ways is only possible because of the real organism; a figure for interconnection, the mycelia enable the analogies, rather than standing, inert, outside of them.

Environment. Mycelia appear in Lim’s piece *How Forests Think*, which responds to anthropologist Eduardo Kohn’s 2013 book of the same name.³³ Kohn’s *How Forests Think* concerns the culture of the Runa people of the Upper Amazon – or perhaps better it concerns a ‘natureculture’,³⁴ in which the relationship between humans and other kinds of person, including spirits and forest animals such as jaguars, peccaries and monkeys, is very much at issue. Kohn’s book describes Runa forest relations in terms of an ‘ecology of selves’ involving humans and non-humans;³⁵ Lim treats the contemporary music ensemble (in many ways an incredibly conventional entity) as a heterogeneous collective of people and instruments. Again, the affinity between performance scenario (musicians in a concert) and ecological scenario (beings in a forest), helps to yoke seemingly disparate things. Thus, the mycelia’s habitat is complex and nested, neither the concert stage nor the Amazonian forest, but a strange combination of both. To complicate matters further, mycelia are not mentioned in Kohn’s book, but entered the piece through Lim’s wider reading: this is an additive as well as translational process. All this compounds our sense of the creature itself as distributed: not only across musical and ecological assemblages, but also spatially and culturally, a web of contingent and idiosyncratic connections.

Bestiary

Moral. Where Runa lifeworlds are peopled with humans, jaguars, trees and peccaries, Kohn's book is full of story and theory, and Lim's piece is populated by musicians, musical instruments and sounds. Runa lifeworlds centre on the Upper Amazon; Kohn's book circulates transnationally, primarily in academic circles; Lim's piece is played in the concert halls of Australia, Europe and North America. Of course, these are extremely partial characterizations, but they hint at the kinds of radical transformation at stake. The result is a burgeoning web of interspecies and intercultural communication: within Runa forest ecologies, from Runa to anthropologist, to composer, to listening audiences. The mycelial creature discussed here demonstrates that relatively bounded communicative projects (e.g. Kohn's fieldwork with the Runa) can reach beyond their boundaries and spawn other projects, in this case Lim's piece. Networks of signification are, then, theoretically unbounded – another translation is always possible.

What happens when ideas spread in this way? How does more-than-human knowledge become Indigenous knowledge, become anthropological knowledge, become music? And what does this chain of responses tell us about the relationship between environment, indigeneity and contemporary art today? Lim's 'Mycelia' is useful for thinking across these transformations – not because it is ethically pure, or otherwise exemplary, but because it is, to borrow a term from Donna Haraway, a 'non-innocent', yet engaged figuration.³⁶ Métis anthropologist Zoe Todd draws attention to a double-edged **risk** by which 'Indigenous stories are often employed without Indigenous peoples present to engage in the application of them in European work. However, there is a risk as well, to Indigenous thinking not being acknowledged at all.'³⁷ It is what Todd calls the 'tension' between these two issues that Lim's *How Forests Think* navigates. On the one hand, the chain of transformations underlying the piece is thoroughly enmeshed in power relations, in which colonialist logics of appropriation and representation continue to structure both contemporary anthropology and the 'borrowing' of non-Western thinking (and musics) in contemporary classical music.³⁸ From a traditional critical perspective, the movement from Runa lifeworlds to Kohn's book to Lim's piece follows a unidirectional, extractive logic. But it can also be understood in terms of tentative attempts at attunement with, and advocacy for, alternatives to dominant Western modes of understanding the cosmos. Kohn describes his anthropological work as 'cosmic diplomacy', mediating between the 'sylvan thinking' of the Amazonian forests in which he works and a range of human actors including Indigenous leaders, lawyers and conceptual artists.³⁹

Lim's piece, and the distributed mycelial creature it helps to generate, extend and figure this mediation. They do this partly by exploring affinities between musical processes, Runa-sylvan cosmologies and Western scientific knowledge about mycelia and other ecological phenomena. But they also catalysed a more tangible connection: Lim and Kohn, having never previously met in person, were brought together to teach a course around the music and ideas of *How Forests Think* at Banff's Ensemble Evolution summer music camp in July 2019. At the instigation of Kohn, the musicians listened to a soundscape co-created by Manari Ushigua, a spiritual leader of the Sapara Nation in the Ecuadorian Amazon, sound artist Fabiano Kueva and Kohn himself. In response, the musicians created an improvised work which was sent back to the Amazonian community. This gave rise to an ongoing, evolving project,

Commentary

Risk. Bestiaries often include dangerous creatures and likewise there are risks in our writing. Our project here is not centrally one of critique; indeed it is partially reparative,⁸³ so writing about Lim's work could serve to build and secure hierarchies of privilege and power through (self-)promotion and canon-formation (two powerful forces within contemporary art music – although as Lim notes, 'one of the rarest creatures in the Classical music canon is the woman composer'). We hope instead that the bestiary undercuts any conventional reading of authorship by showing that it is impossible to write about one individual's oeuvre without recognising the input of a host of other people and entities. Where the creatures described here have been cultivated through intellectual engagements with Indigenous lifeways, there are also risks of appropriation and misrepresentation. Sonic figurations for interconnection offer ways to think about intercultural encounter that recognize both the play of power and the possibilities for communication as creatures migrate between Indigenous, anthropological, artistic and other settings. A related danger is in re-inscribing distinctions between the West and the rest that are etched into the very idea of 'Western art music'. On this point it is important to note that Lim's biography complicates any straightforward reading: she was born in Australia as a second-generation migrant of Chinese ancestry and grew up in Brunei and Australia, both former British colonies where fault-lines around identity and belonging are exposed by the changing winds of the political conversation.⁸⁴ It is no accident that cultural difference has come to be a source of creative energy thematized, particularly in her operas, as memory, narrative slippage and through an erotics of possession. So her fascination with what aesthetics reveals about epistemology colours and complicates the understanding of her work as

sometimes titled 'Flute in the Forest', instigated by flautist and Banff artistic director Claire Chase and director-choreographer Julie Beauvais, alongside Sapara leaders Manari Ushigua and Belén Páez, and Kohn, Kueva and Lim. This led to a performance of Pauline Oliveros' *The Witness*, involving Chase, Ushigua and Kohn, at Carnegie Hall in January 2023. A planned trip to the Amazon was disrupted by the Covid-19 pandemic, but the collaboration continues.⁴⁰ Viveiros de Castro describes shamanism as 'a cosmic diplomacy devoted to the translation between ontologically disparate points of view'.⁴¹ This ongoing musical exchange is likewise one of translation between disparate ontologies and its effects are not simply conceptual: sounds have been transmitted, social connections formed, and the story continues. Music can act as a nodal point for both connecting and radiating forces that manifest real-world consequences. While the risk of neo-colonialism remains, the more plural and decentralized the web of signification, the greater the possibility that fixed, culturally bounded and incommensurable worldviews give way to mycelial cosmologies born of intercultural and interspecies encounter: spread out, in-and-amongst, here-and-there.

straightforwardly 'Western' art music. Indeed, the scholarly designation of a range of culturally diverse art musics as 'Western art music' has long been out of step with creative practice.⁸⁵ While terminology such as George Lewis' notion of 'Eurological' and 'Afrological' systems of improvisation helpfully pluralises and historicizes our understanding of cultural and creative genealogies beyond a monolithic 'West', no doubt still other concepts are needed.⁸⁶ On the one hand, the music of Lim and many others demands a more expansive term than either 'Western' or 'Eurological', not least because of its production in and connection to Australia, Asia and elsewhere. On the other hand, too quick an appeal to 'global' or 'cosmopolitan' art music flattens these specific connections and obscures the ongoing biases of the classical music industry towards Europe and North America. While we have no new terminology to suggest, there is clearly a need to theorize the constellation of contemporary art musics as at once heterogeneous, decentred and dispersed, yet still contoured by power relations and subject to ongoing scholarly interrogation and creative reconfiguration.⁸⁷

Kaua'i 'ō'ō

Example 2 Musical 'modules' containing 'faulty transcriptions' of the call of the male Kaua'i 'ō'ō. Bars 63–65, Lim, *Extinction Events and Dawn Chorus* (2018). © G. Ricordi & Co. Bühnen- und Musikverlag GmbH, Berlin, reprinted with permission.

Musical notation for 'Tongue slap'. The staff shows a sequence of notes starting with a treble clef and a key signature of one sharp (F#). The notes are G4, A4, B4, C5, B4, A4, G4. There is a '9' under the first three notes and a '7' under the last three notes. The dynamic marking is *mf*. An asterisk is placed below the first note.

Musical notation showing a sequence of notes: G4, A4, B4, C5, B4, A4, G4. The dynamic marking starts at *mf* and increases to *ff* over the sequence. A '3' is written below the notes.

Musical notation showing a sequence of notes: G4, A4, B4, C5, B4, A4, G4. The dynamic marking starts at *mp* and increases to *ff* over the sequence. A '7' is written below the notes. The notation includes a slur and a *gl.* marking.

Musical notation showing a sequence of notes: G4, A4, B4, C5, B4, A4, G4. The dynamic marking starts at *mf*, drops to *pp*, and then rises back to *mf*. A '3' is written below the notes. The notation includes a slur and a 'very breathy' marking.

Appearance, behaviour, voice. This creature barely exists, but we can still see it in grainy video footage or hear its disembodied voice in sound recordings. This creature used to be the Kaua'i 'ō'ō (*Moho braccatus*), a small bird, formerly endemic to the island of Kaua'i and presumed extinct since sometime after 1987, when its call was last

recorded. Now the creature is harder to name. From some angles it looks like a **ghost**, from others it's an abject artefact of everyday recording technologies. Even the last recorded song is an incomplete fragment: Kaua'i 'ō'ō birds mated for life, with males and females performing interlocking duets, so the already absent female (the last individual presumed killed in a hurricane) is audible in recordings as gaps between the phrases of the male's song.⁴²

Environment. The ghost-voice of the Kaua'i 'ō'ō can be heard fleetingly in Lim's *Extinction Events and Dawn Chorus*. Its appearance is orchestrated (both contrived and musically voiced) soon after the disruptive entry of the cellophane (see above) in the first movement, 'Anthropogenic Debris', with the piccolo playing a transcription of the bird's call. The score asks the player to place the bird calls within, but not in strict rhythmic relation to, an otherwise metred texture – giving the player a kind of autonomy in the voicing of the bird. The transcription, described as 'faulty' in Lim's programme note, adds another layer of degradation to the already fragmentary and remediated bird call (Example 2). A personal superstition from Lim's childhood guides this compositional choice: the belief that you should not look directly at a ghost or invite it into your life. The 'faulty' transcription is a careful attempt to avert that **risk**, another example of apotropaic magic, which uses opposites, imitations and distorted parts, not perfect wholes, as means of magical protection.⁴³ The transnational, corporate violence of ecological disaster also proceeds via magic – why else would we ignore a problem so plainly in sight? – and so requires apotropaic magic to counter its effects.⁴⁴ Thus we can see so-called 'ecological art' not (only) as protest or awareness-raising measure, but as a means for unsettling our relationship with secular reality, with the spell of business as usual.

Moral. Dead or alive? The Kaua'i 'ō'ō is extinct, but it's easy to think that its voice 'lives on' or is given an 'afterlife' in recordings and in artworks such as *Extinction Events and Dawn Chorus*. This ghost-voice emerges from a long historical association between death and recorded sound. Writing about the origins of sound reproduction, Sterne notes that 'for its early users, death somehow explained and shaped the cultural power of sound recording', while in the twenty-first century 'We now dwell without comment among these voices of the dead'.⁴⁵ Writing about 'posthumous duets', Stanyek and Piekut describe the emergence of a new tendency, after World War II, towards the recombination of sounds, situating this amongst 'the new arrangements of interpenetration between worlds of living and dead' under late capitalism.⁴⁶ The call of the last Kaua'i 'ō'ō shifts this historical association once more: first, towards the problem of non-human voices, making posthumous communication even more uncertain; second, from the voices of dead individuals towards those of extinct species. Hearing this ventriloquism of a vanished life-way, the unanswered call of the last individual in a line of countless previous generations, revivifies the sense of the uncanny once attached to the voices of dead people. Perhaps this is why the Kaua'i 'ō'ō has provoked multiple representations in musical and other media.⁴⁷

The deathly nature of the voice of the Kaua'i 'ō'ō is amplified by the timing of its appearance after the entry of the **plastic** sheet in Lim's piece. This pairing of two, briefly emergent, creatures creates two juxtapositions: the near-absence (or haunting presence) of the bird versus the ubiquity of plastic; and the termination of countless avian generations versus plastic's incredible durability (almost extinction's opposite: its proliferation, even as it degrades). Despite these juxtapositions, both creatures are subject to an increase in entropy: where the once-functional voice of the Kaua'i 'ō'ō has become a fragmentary relic, so once-valuable plastic commodities become toxic microparticles – death is woven into the continued existence of both. With death comes grief and music.

Writing in the Anthropocene. To compose and write about art **music** in a time of ecological crisis is to exercise considerable power and privilege, so we hope that this bestiary remains ethically engaged alongside its experimental ethos. This text was written through repeated exchange of drafts between the UK and Australia, punctuated by in-person meetings. We met for several days of intensive conversation and writing in Oxford in late February 2019, including the hottest February day recorded in the UK (25 February 2019). The troubling beauty of the hot winter sunshine coincided with moorland fires in the north of England (near places where one or other of us used to live). We met again in Huddersfield in November 2019, soon after major flooding in the north of England and as the bushfire season began unseasonably early in Australia (a portent of the unprecedented destruction it would bring). Such 'extreme events' are at once exceptional and increasingly normal, noticed and neglected. This changed with the Covid-19 pandemic: an impossible-to-ignore global upheaval that, nonetheless, emerged out of processes – ecological pressures,

Traditions of sung and sounded lamentation are long-standing and culturally diverse, but the Anthropocene will require new forms of musical mourning, equal to these new (or at least newly resurgent) forms of death: mass extinction; the slow decline of toxic land-, sea- and sky-scapes; and no doubt other, now only nascent, chimeric experiments in death-in-life.⁴⁸

Sheng-phoenix



Figure 6 Wu Wei with sheng. Courtesy Wu Wei, © Elsa Thorp. See opening sheng solo in video.⁴⁹

Appearance, behaviour, voice. This creature is an instrument-animal: two near-symmetrical wings of bamboo pipes, studded with metal key-work and folded over the metal wind-chamber of its body, the blow-pipe its protruding neck (Figure 6). It lives in symbiosis with human musicians, whose breath and fingers help it to sing. Its voice is bright and, because it sounds on both the player's in- and out-breaths, it can sing continuously.

infrastructural connections – that have long been intensifying. The pandemic temporarily flipped the foreground–background relationship that has characterized relatively privileged life in the Anthropocene, making an ‘extreme event’ into a tragically inescapable feature of daily life, even prompting speculation that Covid-19 offered a preview or practice run for climate breakdown. The virus gradually infected this bestiary, entering our emails and Zoom meetings through talk of personal worries, societal problems or shambolic governments, then finding conceptual links with our writing. The SARS-CoV-2 virus shares several characteristics with creatures in this bestiary, like them figuring hiddenness, emergence, the harms of interconnection, and, perhaps most importantly, the visceral unreality of real life in the Anthropocene. We write this bestiary from a time when experience is out of joint with itself.⁸⁸

Environment. The sheng-phoenix is not Lim's creation, but something much older. Thrasher cites the 2nd-century Chinese dictionary *Shuowen Jiezi*: '[It] looks like the body of a phoenix. [Its music] is the sound of the New Year, [when] all things *sheng* ["grow"]; therefore it is called *sheng* ["mouth organ"]'.⁵⁰ Over time, and as it travels, the sheng carries this story with it and picks up new ones along the way.⁵¹ Like other composers before her,⁵² Lim transplants it into a new habitat: here the Amazonian landscape of *How Forests Think* (also home to the **Mycelia** discussed above). In that piece, the Chinese musician Wu Wei plays a substantially transformed version of the traditional *sheng* with additional keys and pipes, which emerged after the 1950s, an instrument 'with increased volume and range, greater chromaticism and new techniques, [...] associated specifically with [...] twentieth-century concert hall music'.⁵³ Wu Wei, a leading figure in developing new repertoire for the instrument, has commissioned more than twenty concertos for sheng and orchestra, by composers including Unsuk Chin, Toshio Hosokawa, Jürg Widmann, Tan Dun, Guo Weijing and Ruo Huang, as well as cross-fertilizing the instrument's performance practice with jazz, free improvisation and Baroque music.

This newly resurgent 'introduced species' – part-plant, part-mythical beast, part-mechanical contraption – has moments of showy display in Lim's forest-scape but it also interacts in other, more symbiotic, ways with its fellow creatures including the **Mycelia** and musical figurations of rain, vines, pollen and trees. Here, the sheng-phoenix's soloistic potential is subsumed into a more co-operative environment where its extraordinary capacity for variations in breath led Lim to use it as a set of 'lungs' that animate the whole body of the work. Breathing rhythms from the *sheng* are taken up across the instrumental group to coordinate the placement of events, encouraging an ecology of listening. The conductor departs the front of the stage to join in creating a music of 'breathing with' the *sheng* that reveals emergent patterns of attention within the ensemble. Time and timing acquire the textures of organic growth that hark back to the sheng's link with 'growth' in the *Shuowen Jiezi* and to later Chinese writers' development of this association through descriptions of the *sheng*'s bamboo pipes as 'sprouts'.⁵⁴

Moral. As part of the sounding ecology of *How Forests Think*, the sheng-phoenix is not only a mixture of instrument, animal and plant, but also a hybrid born of Chinese, Runa and Western interpretations of the cosmos. As such it compounds the dynamic traced by the mycelia, amplifying both the **risk** of cultural imperialism and the potential for Kohn's 'cosmic diplomacy'. The sheng-phoenix appears via a complex history that builds twenty-first century musical cosmopolitanism on top of twentieth-century cultural policy in the People's Republic of China, a history that emerges at the intersection between Chinese musical nationalism, the 'modernization' of Chinese traditional instruments, and wider processes of 'Westernization', as well as the politics of global art music, animated by cross-cultural interaction yet nonetheless dominated by the norms of European concert culture.⁵⁵ In short, the *sheng*'s biography is at least as complex as Lim's own and no more amenable to forms of analysis that rely on binary divisions between East and West. Our aim here is not to arbitrate on these complex debates, but to note how the sheng-phoenix persists despite them. It offers a figuration for the navigation of changing cultural contexts, a creature riding the winds of much larger cultural transformations and circulations, both subject to and symptomatic of existing power structures (contemporary, transnational concert culture) as well as of projects for the reconfiguration of these dominant regimes. Like the mythical phoenix, this creature is a figure for creative renewal – it shows that the 'creature' ontology is an inheritance not an invention and that sonic figurations are made and remade across history.

Hidden Creature

Example 3 Bar 1, Lim, *bioluminescence* (2019). © G. Ricordi & Co. Bühnen- und Musikverlag GmbH, Berlin, reprinted with permission. See video.⁵⁶

$\bullet = 56$

pp p mf

resultant sound

alternate D/D# trill keys

breathy

2

pp mp pp

Appearance, behaviour, voice. A flautist plays scalar movements and non-standard trills simultaneously, creating vibrational interference in the body of a flute, which produces a hybrid pattern that hides the identities of the

Limits. Does our text sometimes run away with itself? We found the bestiary format so lively and open that conceptual threads could be followed indefinitely, pulling ever more stuff into our narrative. This proliferating aesthetic is also a feature of Lim's compositional output, with pieces commonly incorporating heterogeneous inspirations and intertextual references, often ranging across diverse cultural, intellectual and artistic traditions. So our sketches of each creature are necessarily highly compressed, suggestive rather than exhaustive, and if our text nonetheless sometimes becomes tangled, let this stand in part as an attempt to render the worldliness of Lim's music and counteract a discourse of musical autonomy that has, historically, oriented much discourse on Western art music (including in the long-standing devaluation of extra-musical reference as 'mere' programmaticism). Readers of early drafts of this bestiary and later this journal's reviewers suggested still other ideas and authors linked to Lim's work and our writing, and other musical creatures we might include. This published version should be understood as an inevitable concession to the proprietary logics of academia, which requires clear relationships between defined authors and circumscribed works, placing fictitious limits on intellectual networks that can be extremely hard to pin down (there is always more to say, more debts to credit, more resemblances to acknowledge). The creatures presented here strain against these logics, our text gestures uneasily beyond its limits.

original components (Example 3). The sounds are difficult to put a finger on – neither scales nor trills, steps nor slides, smooth nor articulated, but wavering and seemingly non-directional. Is there a creature here? Unlike the other entries in this bestiary, there is no uncanny ventriloquism, no striking performative moment, no unusual instrumental setup, no long-standing cultural symbolism, just a flute, a flautist and their sounds. If there is a creature here, its elusiveness is part of its allure.

Environment. If you read Lim’s programme notes for *bioluminescence* (2019), a creature does begin to emerge, a figure in a heterogeneous material-semiotic environment. The piece takes its cue from the symbiotic relationship between a squid (*Euprymna scolopes*) and luminescent bacteria (*Vibrio fischeri*), one feature of which is the regulation of light for the squid’s counter-illumination camouflage. This symbiotic pairing migrates into Lim’s piece via the writing of Donna Haraway and so illustrates a chain of borrowings: new music drawing on the environmental humanities, drawing on biological science, drawing on the ecology of the squid-bacteria symbiosis. (By this point in the article, this kind of interdisciplinary borrowing – symbiosis? parasitism? infection? – should be familiar.)

The creature has an afterlife in Lim’s wider work. Just as the **woodblock** in *An Elemental Thing* subsequently reappeared in Lim’s opera, so this interference-pattern technique first existed as a stand-alone specimen in *bioluminescence* – a short solo flute piece written for Paula Rae – but now populates an orchestral piece called *Sappholbioluminescence* (2020). Short studies like this allow Lim to examine and develop particular instrumental techniques before they are deployed in more complex constellations within larger works. Haraway describes how ‘[t]he [*Vibrio*] bacteria are fully part of the squid’s developmental biology’, since they must infect the juvenile squid at a particular time and in a particular location for it to reach normal adult development.⁵⁷ In Lim’s work too, the infection is developmentally significant, in that the instigating conceptual nexus (Haraway–scientists–squid–bacteria), and the resulting musical nexus (particular conjoined patternings of body-instrument-sound), shape not only a single piece, but broader shifts in Lim’s compositional practice and aesthetic.

Moral. The squid-bacteria pairing and the creature lurking in Lim’s *bioluminescence* are figures not just for symbiogenesis, but also for *hiddenness* and for entities that collaborate in order to disappear. We’d like to try to emulate that skilful yet self-effacing style here: even if we believe that thinking about musical **creatures** may well have value beyond Lim’s work, the ‘creature’ ontology proposed here is not intended as a model for future musicology, nor meant to supplant the ‘work-concept’ or any other presiding conceptual framework. Rather, we

see this bestiary as an experiment in refiguration, one that we hope might encourage an ongoing project – shared across multiple authors and contexts – of rethinking what music is, what it might be, and how it might relate to the world. At the same time, this musical bestiary joins a wider, ongoing project of refiguration within the environmental humanities, offering figures and themes from the performing arts that might be of use elsewhere. Such projects have a strange relationship with the much wider, complex, deeply divisive and often stubbornly inert debate around the ecological crisis: art and academia (and, indeed, the natural sciences) are important arenas for the reconceptualization and generation of responses to this crisis, yet are necessarily limited in their reach, hidden from wider view by their specialist vocabularies, practices and institutional structures.

What should we make of this state of hiddenness? How can scholarly and creative work *matter*, in any meaningful sense of the word, when they offer a complex re-storying of a dizzyingly complex world? Such questions have been asked of the environmental humanities before, with scholars such as Haraway and Tsing criticised for ‘publishing hazy and elusive dithering [...] [and] devoting their intellectual energies to everything *but* contributing to an analytically rigorous grasp of our dilemma’.⁵⁸ We will not attempt a defence of Haraway and Tsing here, though clearly we feel more kinship with such writers than we do with those who arguably overestimate the power of scholarly critique to effect change, however clear or rigorous it may be. Instead, we join moves to recast scholarly responses to ecological crisis as cultural, sentimental and creative (rather than exclusively critical-discursive) projects that have a symbiotic relationship with the wider world. Even as we recognise the limited constituencies of, and structural inequalities inherent in, the worlds of contemporary art and academia today, the complexity and inertia of wider debates around ecological crisis should make us less, not more, certain about what it means for something to matter; it should change our sense of what counts as an intervention (or an appropriate scale of intervention); and, indeed, it should encourage us to proliferate new, potentially contagious, figurations that might somehow get passed on and take on a life of their own. As Haraway notes, ‘Truly nothing is sterile; and that reality is a terrific danger, basic fact of life, and critter-making opportunity.’⁵⁹ Hence the squid-bacteria symbionts have found fame at once despite and precisely because of their camouflage. Whether we recognise them or not, creatures of the kind we identify here will continue to populate various types of music and animate cultural worlds. Equally, we hope this bestiary might live on, hidden in other texts and creative projects, an old **format** written and rewritten, helping to spawn new figurations.

The Angel of History



Figure 7 Deborah Kayser as the 'Angel of History' in Lim's *The Navigator* (2008). Courtesy ELISION Ensemble, © Justin Nicholas.

Appearance, behaviour, voice. The Angel of History speaks in tongues, although 'speak' may seem a euphemism if you hear it. There are words, but these are often crowded out by stratospheric song, by insectoid buzzes, bird calls and bestial snarls in a deep register. This creature is made possible by the remarkable vocal capacities of a particular singer, Deborah Kayser (Figure 7). She uses a small membrane-whistle that sits against the top palate of the mouth to create distortion effects by setting up interference patterns between the resonances of the membrane and the changing resonances of her

vocal cords, mouth, tongue and head. It is a visceral, difficult task, this grappling with multiple fields of energy inside her body in the moment of performance, and when embodying the creature, the singer is transformed, jerking as if possessed.

Example 4 Bars 222-225, Scene 1, Lim, *The Navigator* (2008). © G. Ricordi & Co. Bühnen- und Musikverlag GmbH, Berlin, reprinted with permission. See video.⁶⁰

The image shows a musical score for two parts: Trumpet and Angel of History. The Trumpet part is in the upper staff, and the Angel of History part is in the lower staff. The score includes various performance instructions and dynamics.

Trumpet part:

- Starts with a *mp* dynamic.
- Includes a *half-valve* instruction.
- Features a triplet of eighth notes.
- Ends with a *poco* trill and a *gliss.* (glissando) over a triplet.
- Dynamic markings include *mp*, *f*, and *f*.

Angel of History part:

- Includes a *mf* dynamic.
- Features a triplet of eighth notes.
- Includes a *trill* instruction.
- Dynamic markings include *mf*, *f*, and *f*.
- Includes a *+ Wacky whistle* instruction.

Lyrics:

soon _____ it will mouth

their two feet _____ in a te- rri- ble hun- ger

Additional performance instructions:

- trill with half-valve interjections*
- (half-valve)*
- (d)*
- spoken (creaking throat)*
- (whistle)*

Environment, kin. The Angel of History appears in Lim's opera *The Navigator*, accompanied by an instrumental avatar, called the 'Wild winged-one'. The trumpet player tasked with embodying this creature also performs with a membrane-whistle, splitting sounds into multiple streams of bird and trumpet call, uneasy mutterings and the fluttering of broken wings. A pair of **creatures** then: human performers, augmented with devices both strange and conventional to produce a tangle of multispecies voices (Example 4).

Walter Benjamin famously wrote of another Angel of History, close kin or ancestor to this one, but with important differences:

This is how one pictures the angel of history. His face is turned toward the past. Where we perceive a chain of events, he sees one single catastrophe which keeps piling wreckage and hurls it in front of his feet. The angel would like to stay, awaken the dead, and make whole what has been smashed. But a storm is blowing in from Paradise; it has got caught in his wings with such a violence that the angel can no longer close them. The storm irresistibly propels him into the future to which his back is turned, while the pile of debris before him grows skyward. This storm is what we call progress.⁶¹

Like Benjamin's creature, the fate of Lim's Angel is to bear **witness** to catastrophe. In the operatic world of *The Navigator*, the Angel's gaze takes in landscapes of tidal blood, unwinding rivers, glaciers, a comet, the ocean, the desert, and finally – in a vision of rebirth during which a cicada is placed on the eye of a foetus – the submarine amniotic world of the womb. Both Angels are imprisoned, but where Benjamin's seems stunned into silence, this creature channels its visions in an outpouring of sound, regurgitating history in pulverised sonic fragments. And where Benjamin's Angel is male or neutral (depending how the original German is read), Lim's Angel is a collision of female performer and diverse, damaged multispecies voices. Where Benjamin's Angel is benevolent but impotent, Lim's is **monstrous** and corrupt, part deity, part beast.

Moral. Lim's Angel is witness to a particular stage of 'progress', that of ecological collapse.⁶² While we share other scholars' beliefs in the importance of the 'arts of attentiveness' and 'arts of noticing' as a response to the Anthropocene,⁶³ the Angel of History reveals the violence and ambivalence of attentiveness. Its witnessing is compelled, inescapable; its outpourings are disruptive, not reparative, aesthetically overloaded, performatively out of control, and even potentially damaging to the singer's voice.

The Angel allegorizes – through both contrast and affinity – the witnessing of ecological damage that pervades everyday life for many of us. Like the Angel, we constantly bear witness: to the pile-up of headlines, the insistent repetitions and escalations of news cycles, to a dim sense of something – weather, seasons – wrong close to home, or to full-blown crisis at first-hand. But where the Angel performs a constant grief, many of us are desensitized, in denial, our experiences and sense of agency profoundly at odds with overwhelming evidence. In this, perhaps, the Angel offers an outlet for registering what cannot be registered in daily life. But the Angel is unable to do anything except witness – and here the question of our similarity or difference is sharpest, because we do not know what we will do.

Witnessing and Singing. As we wrote this final entry, we discovered that an Australian magpie had learnt to imitate the sirens of emergency vehicles as unprecedented bushfires threatened lives and landscapes across Australia. The implications are mind-boggling: has our inability to hear the warning signs of ecological crisis prompted a semiotic inversion, with other creatures taking up our own symbols in a last-ditch attempt to communicate with us? Or does that hope of communication underscore the very semiotic unhearing it seeks to transcend, turning the magpie's calls to anthropocentric ends by 'asking that its epistemology resonate with our own'?⁸⁹ As Morton notes with reference to parrot ventriloquism and wider problems of anthropocentrism and interspecies communication, '[t]he trouble with pure semblance is that it's like an illusion. You can't tell whether it's an illusion or not'.⁹⁰ Similarly, we can't tell whether the Australian magpie's sounds constituted meaningful communication, arbitrary resemblance or something else entirely; nor can we tell whether they signalled ecological creativity, ecological collapse, both, or neither. Whatever we make of it, the juxtapositions are stark: while that bird (a composer, repurposing human sounds)

Bestiary

With their litany of accumulating pasts, the Angels of History (Benjamin's and Lim's) call out for further witnessing. Lim's Angel is placed last in our bestiary because her multiplicitous voice contains all the previous creatures and thereby circles us back, resisting any clear-cut ending. Meanwhile, our commentary goes haywire, not circling back, but circling out and gesturing beyond itself. With both these moves, we want to refuse academic conventions of closure and point, instead, towards the necessary on-goingness of this project and others like it. This bestiary should be open-ended – more entries can be written, other commentaries elaborated, other ruined creatures salvaged – and other **formats** should be experimented with. For this to happen, we must make Benjamin's silent Angel voluble, continuing the work of Lim's Angel, further multiplying its song. Like traditional bestiaries, which contain signs and wonders, portents and omens, our bestiary should emulate this double response, a counterpoint of systemic collapse and abundant, proliferating voices.

Commentary

spread across the world through social media and news items due to its siren song, other creatures and voices vanished in numbers that defy comprehension – alongside the loss of human life, the Australian bushfires of 2019-2020 killed around a billion animals and burnt more than twelve million hectares of land.⁹¹

Faced with devastation, witnessing becomes the ground zero of ethical action in the Anthropocene, a damaged place from which to build our response. As we do so, patterns of attention and responsibility resonate with others, both human and not. It is in this spirit that we write this bestiary, hoping to echo, amplify and augment a much broader outpouring of concern. Both Lim's music and its narration here add another node to the expanding web of thinking with and through creatures across the environmental humanities, a web that draws in new entities only to spin threads further out in a ramifying, decentred mesh of figurations across academic worlds, art worlds, Indigenous worlds, and beyond, symbiotic and parasitic, spreading attention and invention even as lives are lost and voices silenced, to summon a cacophony, sonic and linguistic, and a deafening silence, of lamentation and wonder, of interspecies (mis) communication and 'cosmic diplomacy', of magpies singing fire truck sirens, a **Woodblock** moaning, millions of Siris and Alexas asked and answering, **String Creatures** with harmonics whistling, **Plastic** rustling, a dead **Kaua'i 'ō'ō** bird silent yet still singing, forests thinking, **Mycelia** ramifying, **Sheng-phoenix** trilling on and on, **Hidden** and barely heard things, **the Angel of History** pouring out the tremors of irradiated voices, human, animal, spirit, matter: ~~~~ singing ~~~~

Notes

- ¹ Philip V. Bohlman, 'Ontologies of Music', in *Rethinking Music*, ed. by Nicholas Cook and Mark Everist (Oxford: Oxford University Press, 1999), pp. 17–34 (p. 17).
- ² Lim is an Australian composer and academic, who is especially known for her operas and compositions for large ensemble and has worked at universities in the UK and Australia. For detailed biographical information on Lim, see Tim Rutherford-Johnson, 'Patterns of Shimmer: Liza Lim's Compositional Ethnography', *Tempo*, 65 (2011), 2–9, and <https://lizalimcomposer.com/liza-lim/>.
- ³ We take medieval bestiaries not as our object of study, but a playful point of departure. Our article adopts some key features of these texts, including entries on individual creatures; the combination of description, illustration and (there moral, here conceptual) interpretation of the featured beasts; a taste for the fantastical. We even echo a specific creature (the phoenix featured in medieval bestiaries and reappears here in a different guise). But we also depart from, stretch and freely reinterpret the bestiary tradition in various ways, not least in turning it to musical and ecological issues. A similar project, oriented towards the relation between rhetoric studies and the Anthropocene, features in a special issue titled 'A Rhetorical Bestiary' of *Rhetoric Society Quarterly* (47.3 (2017)). As we note repeatedly, the bestiary seems to lend itself to such reinvention and reinterpretation. For a serious study of medieval bestiaries and a recent summary of the growing literature in this area, see the contributions to *The Mark of the Beast: The Medieval Bestiary in Art, Life, and Literature*, ed. by Debra Hassig, 2nd edn (London: Routledge, 2013). For a musicological and literary study of a medieval text that draws on the bestiary tradition, see Elizabeth Eva Leach and Jonathan Morton, 'Intertextual and Intersonic Resonance in Richard de Fournival's "Bestiaire D'Amour": Combining Perspectives from Literary Studies and Musicology', *Romania*, 135 (2017), 313–51. Much of what Leach and Morton analyse – including the *Bestiaire's* 'sonic animals' (p. 339), its 'blurring of sensation, memory, imagination and text' (p. 316), and even the 'semiotic cacophony' (p. 340) that results when singing creatures double as figures for meaning-making – prefigures or resonates with our aims here.
- ⁴ The term 'Anthropocene' is much debated. For one important critique, see Andreas Malm and Alf Hornborg, 'The Geology of Mankind? A Critique of the Anthropocene Narrative', *The Anthropocene Review*, 1 (2014), 62–69. For a use of the term in the spirit we intend here, see Elaine Gan, Anna Lowenhaupt Tsing, Heather Swanson and Nils Bubandt, 'Introduction: Haunted Landscapes of the Anthropocene' in *Arts of Living on a Damaged Planet*, ed. by Anna Lowenhaupt Tsing, Heather Swanson, Elaine Gan and Nils Bubandt (Minneapolis: University of Minnesota Press, 2017), G1–G12.
- ⁵ On haunting and the Anthropocene see below, and *Arts of Living on a Damaged Planet*, ed. by Tsing, Swanson, Gan, and Bubandt. We are grateful to one of the anonymous reviewers of this article for drawing our attention to other speculative work in the same vein as our bestiary, including *An Ecotopian Lexicon*, ed. by Matthew Schneider-Mayerson and Brent Ryan Bellamy (Minneapolis: University of Minnesota Press, 2019) and Natalie Loveless, *How to Make Art at the End of the World: A Manifesto for Research-Creation*, (Durham, NC: Duke University Press, 2019). During the later stages of revising this article we also encountered *A Bestiary of the Anthropocene*, ed. Nicolas Nova & DISNOVATION.ORG (Eindhoven: Onomatopoe, 2021): this book-length compilation of 'hybrid creatures' differs from our article in scope and disciplinary orientation, but clearly the bestiary format fits our times.
- ⁶ Musical creatures or nonhumans populate ethnomusicological studies of indigenous cosmologies such as Steven Feld, *Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression*, 2nd edn (Philadelphia: University of Pennsylvania Press, 1982) and the special issue of *Ethnomusicology Forum*, 22 (2013) on 'The Human and Non-human in Lowland South American Indigenous Music', ed. by Bernd Brabec de Mori and Anthony Seeger. Nonhuman, supernatural or animist figurations also appear in the popular music of the Anthropocene, although with less overt thematization in the attendant scholarship. Examples might include Björk's multimedia project *Biophilia*, Gorillaz's album *Plastic Beach*, Grimes's album *Miss Anthropocene* and Tanya Tagaq's album *Animism*. See, respectively, Nicola Dibben, *Biophilia* (London: Bloomsbury, 2014); Michael Larson, 'Welcome to the World of the Plastic Beach: Gorillaz and the Future', *TRANS-*, 14 (2012) <<https://doi.org/10.4000/trans.577>>; Kate Galloway, 'The Aurality of Pipeline Politics and Listening for Nacreous Clouds: Voicing Indigenous Ecological Knowledge in Tanya Tagaq's *Animism* and *Retribution*', *Popular Music*, 39 (2020), 121–44.

- ⁷ For other, more recent examples of parallel texts, commenting on themselves, see Geoffrey Bennington and Jacques Derrida, *Jacques Derrida* (Chicago, IL: University of Chicago Press, 1993) and Annemarie Mol, *The Body Multiple: Ontology in Medical Practice* (Durham, NC: Duke University Press, 2002).
- ⁸ Another musicological text tracing the fact-fiction boundary is William Brooks, Stefan Österjö and Jeremy J. Wells, 'Footnotes', in *Voices, Bodies, Practices: Performing Musical Subjectivities*, ed. Catherine Laws et al. (Leuven: Leuven University Press, 2019), pp. 171–232.
- ⁹ Eliot Weinberger, *An Elemental Thing* (New York: New Directions, 2007).
- ¹⁰ Eugene Ughetti performs *An Elemental Thing*. <https://vimeo.com/255231752#t=10m40s>.
- ¹¹ On 'buzz' as not only 'sound, but also as a physical sensation, an emotional state', see Mary Kosut and Lisa Jean Moore, 'Buzz', *The Multispecies Salon*, <<https://www.multispecies-salon.org/buzz/>> [accessed 25 May 2023].
- ¹² See Eva Siebert, *Skeptical Humanities*, <<https://skepticalhumanities.com/2011/01/18/chaucers-cunt/>> [accessed 25 May 2023].
- ¹³ In Carroll's taxonomy of sight gags, the woodblock perhaps represents the 'object analog'; Noël Carroll, *Theorizing the Moving Image* (Cambridge: Cambridge University Press, 1996), p. 153.
- ¹⁴ For a wide-ranging discussion of ventriloquism, see Steven Connor, *Dumbstruck: A Cultural History of Ventriloquism* (Oxford: Oxford University Press, 2000).
- ¹⁵ See Liza Lim, 'Intervention: Knots and other forms of Entanglement', in *Distributed Creativity: Collaboration and Improvisation in Contemporary Music*, ed. by Eric Clarke and Mark Doffman (Oxford: Oxford University Press, 2017), pp. 207–13.
- ¹⁶ See Jacques Derrida, *Dissemination*, trans. by Barbara Johnson (Chicago, IL: University of Chicago Press, 1981), pp. 61–171.
- ¹⁷ The seminal text within ethnomusicology is Gilbert Rouget, *Music and Trance: A Theory of the Relations Between Music and Possession* (Chicago, IL: University of Chicago Press, 1985). Recent work spans a range of comparative and ethnographic positions; see Judith Becker, *Deep Listeners: Music, Emotion, and Trancing* (Bloomington: Indiana University Press, 2004), Deborah Kapchan, *Traveling Spirit Masters: Moroccan Gnawa Trance and Music in the Global Marketplace* (Middletown, CT: Wesleyan University Press, 2007), and Richard C. Jankowsky, *Stambeli: Music, Trance, and Alterity in Tunisia* (Chicago, IL: University of Chicago Press, 2010).
- ¹⁸ Michael Taussig, 'Viscerality, Faith, and Skepticism: Another Theory of Magic', *HAU: Journal of Ethnographic Theory*, 6 (2016), 453–83 (p. 455).
- ¹⁹ Timothy Morton, *The Ecological Thought* (Cambridge, MA: Harvard University Press, 2010), p. 104.
- ²⁰ Jane Bennett, *The Enchantment of Modern Life: Attachments, Crossings, and Ethics* (Princeton, NJ: Princeton University Press, 2001), pp. 4, 6.
- ²¹ Michael Taussig, *The Magic of the State* (London: Routledge, 2013), pp. 3, 130.
- ²² Glenn Bach, 'The Extra-Digital Axis Mundi: Myth, Magic and Metaphor in Laptop Music', *Contemporary Music Review*, 22 (2003), 3–9 (p. 8).
- ²³ See Michael Taussig, 'The Corn-Wolf: Writing Apotropaic Texts', *Critical Inquiry*, 37 (2010), 26–33.
- ²⁴ Riot Ensemble conducted by Aaron Holloway-Nahum performs *Extinction Events and Dawn Chorus*, <https://youtu.be/cygYmvVLPSE?t=380>.
- ²⁵ See Liza Lim, 'An Ecology of Time Traces in *Extinction Events and Dawn Chorus*', *Contemporary Music Review*, 39 (2020), 544–63.
- ²⁶ Timothy Morton, *Hyperobjects: Philosophy and Ecology after the End of the World* (Minneapolis: University of Minnesota Press, 2013), pp. 1, 48.
- ²⁷ Heather Davis, 'Life & Death in the Anthropocene: A Short History of Plastic', in *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed. by Heather Davis and Etienne Turpin (London: Open Humanities Press, 2015), pp. 347–58 (pp. 348–9).
- ²⁸ To be clear, by 'found objects' we refer to material objects appropriated as sound-making devices, not the use of 'found sounds' in a range of genres, including musique concrete, sound art, sample-based popular and experimental musics, on which there is a modest, if disparate, literature.
- ²⁹ On Cage's 'modest self-abnegation' (including through chance) as a form of modernist objectivity, see Benjamin Piekut, 'Sound's Modest Witness: Notes on Cage and Modernism', *Contemporary Music Review*, 31 (2012), 3–18, after Donna J. Haraway *Modest_Witness@Second_Millennium.FemaleMan©_Meets_OncoMouse™: Feminism and Technoscience*, 2nd edn (New York: Routledge, 2018).

- ³⁰ Benjamin Piekut, *Experimentalism Otherwise: The New York Avant-Garde and Its Limits* (Berkeley: University of California Press, 2011), p. 2.
- ³¹ Video trailer for *How Forests Think*, performed by ELISION conducted by Carl Rosman, <https://www.youtube.com/watch?v=MTFqBxrdxo>.
- ³² See Karen Barad, 'Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter', *Signs*, 28 (2003), 801–831 (p. 804).
- ³³ Eduardo Kohn, *How Forests Think: Toward an Anthropology Beyond the Human* (Berkeley: University of California Press, 2013).
- ³⁴ See Donna Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness*, (Chicago, IL: Prickly Paradigm Press, 2003).
- ³⁵ Kohn, *How Forests Think*, p. 16.
- ³⁶ Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2016), p. 71, and Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies*, 14 (1988), 575–99 (pp. 579, 594).
- ³⁷ Zoe Todd, 'An Indigenous Feminist's Take On The Ontological Turn: "Ontology" Is Just Another Word For Colonialism', *Journal of Historical Sociology*, 29 (2016), 4–22 (p. 9), after Vanessa Watts, 'Indigenous Place-Thought and Agency amongst Humans and Non-humans (First Woman and Sky Woman go on a European Tour!)', *DIES: Decolonization, Indigeneity, Education and Society*, 2 (2013), 20–34.
- ³⁸ See Georgina Born and David Hesmondhalgh, 'Introduction: On Difference, Representation and Appropriation in Music', in *Western Music and Its Others: Difference, Representation, and Appropriation in Music*, ed. by Georgina Born and David Hesmondhalgh (Berkeley: University of California Press, 2000), pp. 1–58 (pp. 12–21), and John Corbett, 'Experimental Oriental: New Music and Its Other Others', in *Western Music and Its Others*, pp. 163–86.
- ³⁹ The term 'cosmic diplomacy' has a complex history. We take it from Eduardo Kohn, 'Philosophe, Trop Philosophe', *Cahiers Philosophiques*, 153 (2018), 113–24 (pp. 118–19). Kohn draws on Bruno Latour, *An Inquiry into Modes of Existence: An Anthropology of the Moderns*, trans. by Catherine Porter (Cambridge, MA: Harvard University Press, 2013). The phrase also appears – a separate provenance but similar usage – in Debora Battaglia, 'Cosmos as Commons: An Activation of Cosmic Diplomacy', *E-Flux*, 58 (2014), which draws on Eduardo Viveiros De Castro, 'The Crystal Forest: Notes on the Ontology of Amazonian Spirits', *Inner Asia*, 9 (2007), 153–72 (p. 154); the latter develops the earlier idea of 'cosmic politics' in Viveiros De Castro, 'Cosmological Deixis and Amerindian Perspectivism', *The Journal of the Royal Anthropological Institute*, 4 (1998), 469–88 (p. 472).
- ⁴⁰ The collaborations between Chase, Kohn, Ushigua, Lim and others intersect with a wider project titled *The Witness* curated by Beauvais for the Swiss organisation Sonic Matter and built around Oliveros's text score of the same name. For documentation, see <<https://www.thewitness.earth/fragments/the-witness-at-carnegie-hall>>; <<https://www.clairechase.net/sonic-matter-the-witness>>; <<https://www.carnegiehall.org/Calendar/2023/01/22/Day-of-Listening-Part-Two-0200PM>>; <<https://www.thewitness.earth/about>> [all accessed 7 June 2023]. The idea of 'the witness' resonates with our discussion of the **Angel of History**.
- ⁴¹ Viveiros De Castro, 'The Crystal Forest', p. 154.
- ⁴² For background on the Kaua'i 'ō'ō, see Sheila Conant, H. Douglas Pratt and Robert J. Shallenberger, 'Reflections on a 1975 Expedition to the Lost World of the Alaka'i and Other Notes on the Natural History, Systematics, and Conservation of Kaua'i Birds', *The Wilson Journal of Ornithology*, 110 (1998), 1–22; Daniel Lewis, *Belonging on an Island: Birds, Extinction, and Evolution in Hawai'i* (New Haven, CT: Yale University Press, 2018), chapter 2. See also International Union for the Conservation of Nature Red List <<https://www.iucnredlist.org/species/22704323/93963628>> [accessed 25 May 2023]. For video and audio recordings, see <<https://search.macaulaylibrary.org/catalog?taxonCode=kauoo>> [accessed 25 May 2023].
- ⁴³ Michael Taussig, *Mimesis and Alterity: A Particular History of the Senses* (New York: Routledge, 1993), pp. 1–14.
- ⁴⁴ See Michael Taussig, *Palma Africana* (Chicago, IL: University of Chicago Press, 2018), especially his discussion of palm oil as an alchemical elixir (pp. 1, 14) – like plastic, a deeply destructive material that metamorphoses into diverse commodities and transforms human bodies.

- ⁴⁵ Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham, NC: Duke University Press, 2003), pp. 290, 189.
- ⁴⁶ Jason Stanyek and Benjamin Piekut, 'Deadness: Technologies of the Intermundane', *The Drama Review*, 54 (2010), 14–38 (p. 14).
- ⁴⁷ See, for example, Silica Magazine, 'How a YouTube Video Brought an Extinct Bird Back From the Dead', *Engadget*, 25 May 2018 <<https://www.engadget.com/2018/05/25/kauai-oo-honeyeater-youtube-memorial-ghost-media/>> [accessed 25 May 2023]. John Zorn's album *O'o* (Tzadik 7376, 2009) also memorialises the bird; see also 'Songbird: A Virtual Moment of Extinction in Hawaii - 360° Video' <<https://www.youtube.com/watch?v=Wg27NyaVaXk>> [accessed 25 May 2023].
- ⁴⁸ On new forms of lamentation in contemporary music, see the chapter 'Loss: Ruins, Memorials, and Documents' in Tim Rutherford-Johnson, *Music after the Fall: Modern Composition and Culture since 1989* (Oakland: University of California Press, 2017), pp. 206–31. Scholarly work on musical mourning ranges from monographs on specific cultural groups, such as Fiona Magowan, *Melodies of Mourning: Music and Emotion in Northern Australia*, (Crawley: University of Western Australia Press, 2007) to collections that span cultures and historical periods such as *Music and Mourning*, ed. by Jane W. Davidson and Sandra Garrido (Abingdon: Routledge, 2016), as well as an abundant literature within music therapy, summarised in Clare O'Callaghan and Natasha Michael, 'Music Therapy in Grief and Mourning', in *The Oxford Handbook of Music Therapy*, ed. by Jane Edwards (Oxford, 2016), pp. 405–14. The growing literature on emotion and ecological crisis includes Lesley Head, *Hope and Grief in the Anthropocene: Re-conceptualising Human–Nature Relations* (London, Routledge, 2016) and *Mourning Nature: Hope at the Heart of Ecological Loss and Grief*, ed. by Ashlee Cunsolo and Karen Landman (Montreal and Kingston: McGill-Queen's University Press, 2017). Related, although relatively scarce, work attentive to sound includes Andrew Whitehouse, 'Listening to Birds in the Anthropocene: The Anxious Semiotics of Sound in a Human-Dominated World', *Environmental Humanities*, 6 (2015), 53–71, and Owain Jones and Louisa Fairclough, 'Sounding Grief: The Severn Estuary as an Emotional Soundscape', *Emotion, Space and Society*, 20 (2016), 98–110.
- ⁴⁹ Wu Wei (sheng) and International Contemporary Ensemble conducted by Baldur Brönnimann perform Lim, *How Forests Think*. <https://www.youtube.com/watch?v=afsF1vbVFXI>
- ⁵⁰ Alan Thrasher, 'The Chinese Sheng: Emblem of the Phoenix', *ACMR Reports: Journal of the Association for Chinese Music Research*, 9 (1996), 1–20 (p. 2).
- ⁵¹ The Japanese *shakuhachi* does something similar. See Joseph Browning, 'Mimesis Stories: Composing New Nature Music for the Shakuhachi', *Ethnomusicology Forum*, 26.2 (2017), 171–92.
- ⁵² See Christian Utz, 'Beyond Cultural Representation: Recent Works for the Asian Mouth Organs Shō and Sheng by Western Composers', *The World of Music*, 47 (2005), 113–34.
- ⁵³ Thrasher, 'The Chinese Sheng', p. 15.
- ⁵⁴ Thrasher, 'The Chinese Sheng', p. 3.
- ⁵⁵ On these issues, see Timothy Lane Brace, 'Modernization and Music in Contemporary China: Crisis, Identity, and the Politics of Style' (unpublished doctoral dissertation, University of Texas at Austin, 1992); Frederick Lau, 'Forever Red: The Invention of Solo Dizi Music in Post-1949 China', *British Journal of Ethnomusicology*, 5 (1996), 113–31; Barbara Mittler, 'Cultural Revolution Model Works and the Politics of Modernization in China: An Analysis of "Taking Tiger Mountain by Strategy"', *The World of Music*, 45 (2003), 53–81; Yiwen Ouyang, 'Westernisation, Ideology and National Identity in 20th-Century Chinese Music' (unpublished doctoral thesis, Royal Holloway, University of London, 2012); and various contributions to *Locating East Asia in Western Art Music*, ed. by Yayoi Uno Everett and Frederick Lau (Middletown, CT: Wesleyan University Press, 2004), in particular Yayoi Uno Everett's chapter 'Intercultural Synthesis in Postwar Western Art Music: Historical Contexts, Perspectives, and Taxonomy' (pp. 1–21), Frederick Lau's chapter 'Fusion or Fission: The Paradox and Politics of Contemporary Chinese Avant-Garde Music' (pp. 22–39), and Everett and Lau's co-authored 'Introduction' to the volume (pp. xv–xx).
- ⁵⁶ Paula Rae performs Lim, *bioluminescence*, <https://youtu.be/wZi5L0HVnBI>
- ⁵⁷ Haraway, *Staying with the Trouble*, p. 66.
- ⁵⁸ Alf Hornborg, 'Dithering While the Planet Burns: Anthropologists' Approaches to the Anthropocene', *Reviews in Anthropology*, 46 (2017), 61–77 (p. 75; original emphasis).
- ⁵⁹ Haraway, *Staying with the Trouble*, p. 64.
- ⁶⁰ Deborah Kayser and ELISION Ensemble, conducted by Manuel Nawri, perform 'Angel of History' aria from Lim's *The Navigator* (2008), <https://www.youtube.com/watch?v=DvnAwCcDI6U>

- ⁶¹ Walter Benjamin, *Illuminations: Essays and Reflections*, ed. by Hannah Arendt, trans. by Harry Zohn (Boston, 2019 [1968]), p. 201.
- ⁶² See also Deborah Bird Rose, 'What If the Angel of History Were a Dog?', *Cultural Studies Review*, 12 (2013), 67–78, which likewise draws on Benjamin's essay.
- ⁶³ See, respectively, Thom van Dooren, Eben Kirksey and Ursula Münster, 'Multispecies Studies: Cultivating Arts of Attentiveness', *Environmental Humanities*, 8 (2016), 1–23, and Anna Tsing, 'Arts of Inclusion, or How to Love a Mushroom', *Manoa*, 22 (2010), 191–203.
- ⁶⁴ Georgina Born and Andrew Barry, 'Music, Mediation Theories and Actor-Network Theory', *Contemporary Music Review*, 37 (2018), 443–87 (p. 478).
- ⁶⁵ Models for dialogic work around musical, cultural and environmental knowledge include, respectively, Richard Widdess, 'Involving the Performers in Transcription and Analysis: A Collaborative Approach to Dhrupad', *Ethnomusicology*, 38 (1994), 59–79; Steven Feld, 'Dialogic Editing: Interpreting How Kaluli Read Sound and Sentiment', *Cultural Anthropology*, 2 (1987), 190–210; and the chapter "'This earth, this island Borneo" [Biodiversity assessment as a multicultural exercise]' in Anna Lowenhaupt Tsing, *Friction: An Ethnography of Global Connection* (Princeton, NJ: Princeton University Press, 2005) pp. 155–70.
- ⁶⁶ Our thanks to Freya Jarman for drawing our attention to this example. For a hypertext version and explanation, see Eliezer Segal, 'A Page from the Babylonian Talmud', <<https://web.ics.purdue.edu/~akantor/readings/TalmudPage.html>> [accessed 25 May 2023].
- ⁶⁷ See Jorge Luis Borges, *Other Inquisitions: 1937-1952* (Austin: University of Texas Press, 2000 [1952]) and Michel Foucault, *The Order of Things* (New York: Routledge, 2005 [1970]), pp. xvi–xxvi.
- ⁶⁸ See *Arts of Living on a Damaged Planet*, ed. by Tsing, Swanson, Gan and Bubandt.
- ⁶⁹ Experiments in reformatting are much rarer in musicology, but see Anahid Kassabian, 'For New Musicology: A Farewell', 'Critical Musicology' (special issue), ed. by Richard Middleton, *Radical Musicology*, 5 (2010–11), <http://www.radical-musicology.org.uk/special_critmus/kassabian.htm> [accessed 25 May 2023], and, more modestly, Joseph Browning, 'Involving Experiences: Audiencing and Co-reception in *Pleasure Garden*', *Journal of the Royal Musical Association*, 145 (2020), 191–227.
- ⁷⁰ The seminal critique is Lydia Goehr, *The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music* (Oxford: Oxford University Press, 2008 [1992]). Arguing that Goehr stops short of 'a radically revised conception of music's ontology', Born offers an updated account of music's varied ontologies. See Georgina Born, 'On Musical Mediation: Ontology, Technology and Creativity', *Twentieth-Century Music*, 2 (2005), 7–36 (p. 10); also Georgina Born, 'Music: Ontology, Agency and Creativity', *Distributed Objects: Meaning and Mattering after Alfred Gell*, ed. by Liana Chua and Mark Elliott (New York: Berghahn Books, 2013), pp. 130–54, and Bohlman, 'Ontologies of Music'.
- ⁷¹ See Eric Clarke, Mark Doffman and Liza Lim, 'Distributed Creativity and Ecological Dynamics: A Case Study of Liza Lim's "Tongue of the Invisible"', *Music and Letters*, 94 (2013), 628–63. We also draw here on recent work linking organology with actor-network theory and musicology with new materialism, new vitalism and 'thing theory'. See, for example, Eliot Bates, 'The Social Life of Musical Instruments', *Ethnomusicology* 56 (2012), 363–95, and the special issue of *Contemporary Music Review*, 39 (2020) on 'Musical Materialisms', ed. by Matthew Sergeant, Isabella van Elferen and Samuel Wilson.
- ⁷² Haraway, *Staying with the Trouble*, p. 58.
- ⁷³ See Eben Kirksey, Craig Schuetze and Stefan Helmreich, 'Introduction: Tactics of Multispecies Ethnography', *The Multispecies Salon*, ed. by Eben Kirksey (Durham, NC: Duke University Press, 2014), pp. 1–24 (pp. 2–4).
- ⁷⁴ Donna J. Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), *The Companion Species Manifesto, Staying with the Trouble*, chapter 1, and *Modest_Witness@Second_Millennium*.
- ⁷⁵ For example, Tom Tyler, *Ciferae: A Bestiary in Five Fingers* (Minneapolis: University of Minnesota Press, 2012).
- ⁷⁶ Jorge Luis Borges, *The Book of Imaginary Beings*, trans. by Norman Thomas Di Giovanni (London: Dutton, 1967) and Caspar Henderson, *The Book of Barely Imagined Beings: A 21st Century Bestiary* (London: Granta, 2012).
- ⁷⁷ J. Martin Daughtry's article 'Did Music Cause the End of the World?' offers a provocative discussion of related issues, including music's role in the emergence of the Anthropocene. Because 'Music as an

- environmental force remains slow; [and] climate no longer is', he writes, 'there can be no musical strategy for combatting climate change'. This realisation has prompted Daughtry's turn to 'senseless, Quixotic musical undertakings' such as composing half-second long operas for mayflies and a decade-long song for Siberian actinobacteria – globally 'ineffectual' yet locally meaningful responses to the 'slow violence' of environmental destruction. See J. Martin Daughtry, 'Did Music Cause the End of the World?', *Transposition*, Hors-série 2 (2020), 1–31 (p. 20; emphasis removed).
- ⁷⁸ Connor, *Dumbstruck*.
- ⁷⁹ As we wrote this, images suffused with red light circulated on social media of people huddled on the beach overnight to avoid bushfires in Malua Bay, New South Wales: tragic scenes became epic and aestheticized, prompting comparisons with Breughel, Dante and Hieronymus Bosch. This was the case, for example, in a now-defunct tweet by Mireille Juchau (beginning 'When Brueghel meets the anthropocene'), a response to a striking photograph by Alex Coppel, as well as the many comments the tweet and photo prompted <<https://twitter.com/mireillejuchau/status/1212657401679114240>> (link no longer active as of 25 May 2023).
- ⁸⁰ Tsing, Swanson, Gan and Bubandt, *Arts of Living on a Damaged Planet*, M176.
- ⁸¹ See, respectively, Heather Swanson, Anna Lowenhaupt Tsing, Nils Bubandt and Elaine Gan, 'Introduction: Bodies Tumbled into Bodies', in *Arts of Living on a Damaged Planet*, M2, and Gan, Tsing, Swanson and Bubandt, 'Introduction', in *Arts of Living on a Damaged Planet*, G1.
- ⁸² See Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge, 1990).
- ⁸³ See Eve Kosofsky Sedgwick, *Touching Feeling: Affect, Pedagogy, Performativity* (Durham, NC: Duke University Press, 2003), pp. 123–51, and William Cheng, *Just Vibrations: The Purpose of Sounding Good* (Ann Arbor: University of Michigan Press, 2016).
- ⁸⁴ For further background see Rutherford-Johnson, 'Patterns of Shimmer'.
- ⁸⁵ For a discussion and associated literature, see Laudan Nooshin, 'Introduction to the Special Issue: The Ethnomusicology of Western Art Music', *Ethnomusicology Forum*, 20 (2011), 294–96.
- ⁸⁶ George E. Lewis, 'Improvised Music after 1950: Afrological and Eurological Perspectives', *Black Music Research Journal*, 16.1 (1996), 91–122 (p. 93).
- ⁸⁷ A key recent intervention was the study day on 'Cultural Imperialism and the New "Yellow Peril" in Western Classical Music' held at Royal Holloway, University of London, on 10 June 2019, organized by Maiko Kawabata and Shzr Ee Tan <https://cdn-cms.f-static.com/uploads/1266233/normal_5dff210667377.pdf> [accessed 25 May 2023].
- ⁸⁸ See Déborah Danowski and Eduardo Viveiros de Castro, *The Ends of the World*, trans. by Rodrigo Nunes (Cambridge: Polity Press, 2017), p. 8.
- ⁸⁹ Sophia Roosth, 'Screaming Yeast: Sonocytology, Cytoplasmic Milieus, and Cellular Subjectivities', *Critical Inquiry*, 35 (2009), 332–50 (p. 350).
- ⁹⁰ Morton, *The Ecological Thought*, p. 74 (emphasis removed).
- ⁹¹ See 'More than One Billion Animals Killed in Australian Bushfires' <<https://sydney.edu.au/news-opinion/news/2020/01/08/australian-bushfires-more-than-one-billion-animals-impacted.html>> and Amy Gunia and Tara Law, 'At Least 24 People and Millions of Animals Have Been Killed by Australia's Bushfires', *Time*, 3 January 2020 <<https://time.com/5758186/australia-bushfire-size/>> [both accessed 25 May 2023].