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Sonic Worlding, Posthuman Listening, and Cyborgian Entanglements:
Towards a Theory–Practice Cartography of Electroacoustic Composition

A dissertation submitted in partial satisfaction of
the requirements for the degree Doctor of Philosophy

in

Music

by

Steven “Ess” Whiteley

Committee in charge:

Professor Michelle Lou, Chair
Professor Amy Alexander
Professor Marcos Balter
Professor Amy Cimini
Professor Roger Reynolds

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University of California San Diego

2026

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ABSTRACT OF THE DISSERTATION

Sonic Worlding, Posthuman Listening, and Cyborgian Entanglements:
Towards a Theory–Practice Cartography of Electroacoustic Composition

by

Steven “Ess” Whiteley

Doctor of Philosophy in Music

University of California San Diego, 2026

Professor Michelle Lou, Chair

This dissertation presents three works composed during my six years as a PhD student in Composition at the University of California, San Diego, and lays out a theoretical and philosophical groundwork for understanding my electroacoustic and electronic sonic practice. I specifically unpack *sonic worlding*, *posthuman listening*, and *cyborgian entanglements* as analytical and theoretical lenses for understanding my compositional work, and as a roadmap for

future creative engagements and further development of these ideas. All three use Rosi Braidotti's notion of posthumanism, which I seek to demonstrate is fertile ontological and aesthetic framework for grounding my creative practice, analyzing my works, and situating them in dialogue with current discourse. The theory–practice cartography I develop here contextualizes three electroacoustic pieces: *Machine Spectre*, for chamber orchestra and electronics; *INTRA* for cello, live electronics and lights; and *noocambriidæ*, for multichannel electronics and video. Each piece engages with the entanglements between humans and more-than-human others, using posthumanism as a lens for theorizing what these pieces seek to achieve.

INTRODUCTION

This dissertation presents three works composed during my six years as a PhD student in Composition at the University of California, San Diego, and lays out a theoretical and philosophical groundwork for understanding my electroacoustic and electronic sonic practice. *“Sonic Worlding, Posthuman Listening, and Cyborgian Entanglements”* uses Rosi Braidotti’s notion of posthumanism as an analytical and theoretical lens for my past composition work, but also charts out a roadmap for future creative engagements and for my approach to creative practice more broadly. As I will show, posthumanism offers a rich ontological and aesthetic framework for artistic research and sonic practice that situates it within dialogue with current discourse, and sonic practice is particularly well suited for addressing key posthuman concerns.

Made up of hybridized synthetic-organic, electroacoustic, and repurposed sonic materials, my work explores how sound behaves as a cultural artifact mediated by history and technology. I am interested in the agency of technological objects, how technology extends the human into unfamiliar territories and posthuman forms, and the strange mutations of what Braidotti calls the “posthuman convergence”: the simultaneous convergence of technological acceleration, ecological collapse, and advanced capitalism. The result is a historical threshold marked by shifting configurations of subjectivity, with humanist frameworks for understanding the self, knowledge, and the world becoming fundamentally destabilized. My work proposes a posthuman listening space where subjectivity is distributed, and the boundaries between human and non human, organic and synthetic, past and present, become unstable, porous, and fluid—seeking to render sonorous and make sense of the strange mutations of the posthuman convergence. With

the use of technologically-aided instruments and electronics, I propose that material and technological objects are—far from neutral tools—deeply material, embodied, embedded, and active contributors to human subject formations. In doing so, I seek to illuminate subtly present yet unnoticed habits of perception and calcified patterns of relation, while activating generative possible worlds that put forth speculative futures, alternative narratives, and new mechanisms of perceiving and being-with nonhuman “techno-zoo-geo”¹ others. I suggest, with the ideas of “sonic worlding” and “posthuman listening,” that electroacoustic sound has the capacity to generate temporary vibrational architectures and sonic worlds that allow the ideas presented here to be inhabited and felt rather than understood conceptually, disrupting the listening body’s habituated sense of where “self” and “other,” human and more-than-human, synthetic and organic, material and immaterial, past and present begin and end. Through this disruption, a posthuman listening space becomes possible: one in which becoming is understood as relational flows, forces, and material processes amongst living and non-living systems, and subjectivity is experienced as expanded, collaborative, and ecologically situated, rather than isolated, dominating, and anthropocentrically self-centered.

The theory–practice cartography I develop here contextualizes three electroacoustic pieces: *Machine Spectre*, for chamber orchestra and electronics; *INTRA* for cello, live electronics and lights; and *noocambriidæ*, for multichannel electronics and video. Each piece engages with the entanglements between humans and more-than-human others, and my analysis uses posthumanism as a lens for theorizing what these pieces seek to achieve. Part One

¹ “Techno-zoo-geo others” is Rosi Braidotti’s term for the non-human beings and forces—machines, animals, and the earth itself—that classical humanism excluded from moral and political consideration, but which posthumanism argues actually co-constitute the human subject. Rather than standing apart from technology, animal life, and the environment, we are always already entangled with them.

introduces the philosophical and critical perspectives of posthumanism and new materialism, and a posthuman ontology of sonic practice, tracing their genealogies and foundations in dialogue with Gilles Deleuze, Félix Guattari and Donna Haraway. Part Two introduces the concepts of sonic worlding and posthuman listening, and explores “cyborgian entanglements,” or the ways in which subjectivity is deeply entangled with technological systems, drawing on the critical media theories of Marshall McLuhan, Neil Postman, and Theodor Adorno. Part Three offers close analyses of the three compositions, examining the sonic techniques and ideas each piece engages with, how the theoretical perspectives developed in Parts One and Two are realized in compositional praxis, and their relationships to Mark Fisher’s development of the concept of hauntology.

Each analysis presents the focal piece as proposing a posthuman and new materialist listening space and perceptual shift that views technology and matter not as passive or lifeless objects, but as lively, active subjects that contribute to the shaping of events and formations of identity. *Machine Spectre* centers on the materiality of technology, seeking to make perceptible the invisible agency, autonomy, and imagined ghostly subjectivity of outdated technological devices and their entanglement with human performers. *INTRA* uses sound and interactive lights to create an audiovisual world in which the memories and unconscious inner life of the cello come to life, and a resonant intersubjectivity between performer and instrument becomes animate. *noocambriidæ* brings into being a speculative cyborgian Cambrian explosion within the virtual sphere, in which monstrous digital-organic entities emerge as autonomous creatures from the fusion of cyberspace with collective human thought.

At the threshold of the posthuman convergence, we require not only new theories but new perceptual capacities—expanded imaginations, ways of sensing, relating, and envisioning what we are in the process of becoming. But to navigate unmapped territory, we need to trace the unseen contours of its landscapes as well as the visible ones—listening deeply and imaginatively, and orienting towards the sonic with an expanded sensibility as a “relational means affording [escape] routes and new social formations beyond the strictly verbal and visible.... unsettle[ing] and exceed[ing] arenas of visibility by relating us to the unseen, the non-represented, or the not-yet-apparent.”² This theory–practice cartography marks the beginning of a roadmap for a sonic practice oriented towards these questions, one that turns to electroacoustic sound as a means of sensing into the texture of our posthuman moment, listening for what emerges at the threshold where human and machine, organic and synthetic, online and offline, virtual and actual blur into something still emerging and not yet named.

PART ONE: Posthumanism and New Materialism

“It matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with.” – Donna Haraway³

Posthumanism as a sonic artistic-research and creative approach is about grounding creative practice in an embedded, embodied, and relational ontology that rebuilds perceptual life-worlds through sound, as a means of inciting alternative configurations of becoming. It is about

² Brandon LaBelle, *Poetics of Listening: Inner Life, Social Transformation, Planetary Practices* (Bloomsbury 2 Publishing, 2025), 2.

³ Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Duke University Press, 2016), Chapter 1. Haraway attributes this formulation to Marilyn Strathern, *Reproducing the Future* (Manchester University Press, 1992).

using sound as a means of “staying with the trouble”⁴ and listening imaginatively to the continuous becoming and still-forming, emergent subjectivities occurring within the strange mutations of the posthuman convergence.

Rosi Braidotti’s notion of the posthuman offers a helpful frame for approaching not only technological entanglements, but more-than-human relationality more broadly.⁵ The posthuman offers a rich framework for situating artistic research in dialogue with contemporary predicaments and for generating creative practice. Instead of regarding technology and non-human others as objects to be dominated and controlled by the superior, isolated, human subject, posthumanism thinks in terms of relational flows, forces, and material processes amongst living and nonliving systems. From this perspective, subjectivity is collaborative, rather than dominating and isolated, and is planetary and ecologically minded, rather than anthropocentrically self-centered. Posthumanism challenges humanism and anthropocentrism, reconceptualizing life itself (“*zoe*”) as distributed across assemblages that include human and more-than-human actors, and systems made up of living and non-living beings.

Posthumanism offers a twofold critique: of the liberal Enlightenment subject and of anthropocentric species hierarchy. The liberal humanist model of ‘man’ is based on the project of the Enlightenment and expresses the “Eurocentric, masculinist, universalism that is still operative in most knowledge production scientific systems.”⁶ In contrast, posthumanism offers perspectival “situated knowledges,” which take into account feminism, gender theory,

⁴ Ibid.

⁵ Rosi Braidotti and Simone Bignall, eds., *Posthuman Ecologies: Complexity and Process after Deleuze* (Rowan & Littlefield, 2019).

⁶ Ibid., 2.

postcolonialism, decolonial theory, indigenous philosophies, and epistemologies rooted in artistic practice. Posthumanism also critiques anthropocentrism and human exceptionalism, based on species hierarchy and the subjection and exclusion of living and non-living, more-than-human others. It understands technology not as an external tool wielded by autonomous humans, but as an integral part of the material and relational conditions through which subjectivity emerges.

A proposed epoch marked by the massive scale of human influence on the Earth as a dominant feature of the planet's geology, the Anthropocene highlights rapid planetary changes like climate crisis, ecocide, and plastic pollution due to human activity. As opposed to the term Anthropocene, Rosi Braidotti proposes a more nuanced diagnosis of the present moment with the concept of the "posthuman convergence," emphasizing the simultaneous co-evolution of technological acceleration, ecological collapse, advanced capitalism, and shifting forms of subjectivity that unsettle anthropocentric notions. The posthuman convergence, for Braidotti, is the intersection of the Sixth Extinction, where as a result of human activity, vast amounts of species are becoming extinct at accelerated rates,⁷ and the Fourth Industrial Revolution, referring to the rapidly increasing abundance of profound technological shifts occurring in the 21st Century, creating the fusion of digital, biological, and physical worlds.⁸ This convergence is a site that results in strange mutations, fertile grounds, and rich opportunities for artistic exploration and illumination, "[with] huge opportunities for both humans and nonhuman agents,

⁷ Elizabeth Kolbert, "Why Facts Don't Change Our Minds," *The New Yorker*, Feb 19, 2017, www.newyorker.com/magazine/2017/02/27/why-facts-dont-change-our-minds.

⁸ Klaus Schwab, *The Fourth Industrial Revolution* (Crown Currency, 2017).

as well as for the Humanities, to reinvent themselves. Like all transitions, however, it requires some vision of experimental energy.”⁹

Rejecting transhumanist narratives that frame technology as a techno-utopian means of mastery, enhancement, or transcendence, Braidotti emphasizes the material, embodied, and relational qualities of technology. Drawing attention to the ways in which it reconfigures rather than dissolves embodiment, technology reshapes affects, perception, and agency as well as labor, surveillance, biopolitical control, and the forces of capitalism. Her posthumanism therefore calls for an affirmative ethics of attention, planetary responsibility, collective care and sustainability that is grounded in a new materialist ontology—a theoretical framework that shifts focus toward the active “vibrant” agency of matter itself, rather than viewing it as passive or socially constructed.¹⁰

New materialist ontology reconceives matter as dynamic, relational, and self-organizing rather than static, inert or passive. Matter is not just a resource for human use, rather it exerts its own dynamic force, actively participating in the unfolding of the world. In this way, agency is understood as not exclusively grounded in human intent, but an emergent process with human and nonhuman forces that arises within networks of material entanglement. New Materialism thus situates the human as a distributed subjectivity within a broader field of vibrant material processes and assemblages of nonhuman forces—biological, technological, and ecological—that

⁹ Rosi Braidotti, *Posthuman Knowledge* (Polity Press, 2019), 4.

¹⁰ Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Duke University Press, 2010). Bennett argues that matter itself possesses a kind of agency or “thing-power”—a capacity to act, produce effects, and resist human will that cannot be reduced to the intentions or designs of human actors.

continually shape and reshape the conditions of life. Diane Coole and Samantha Frost write that “always something more than ‘mere matter,’” materiality is:

An excess, force, vitality, relationality, or difference that renders matter active, self-creative, productive, unpredictable.... Conceiving of matter as possessing its own modes of self-transformation, self-organization, and directness, and thus no longer simply as passive or inert, disturbs the conventional sense that agents are exclusively humans...the human species is being relocated within a natural environment whose material forces themselves manifest certain agentic capacities...there is no definitive break between sentient and consentient entities or between material and spiritual phenomena.¹¹

In dialogue with quantum physics, new materialism argues that reality emerges through relational processes rather than fixed, independent entities, and that matter is not a static substance but an ongoing field of entanglements in which observer and observed, subject and object, co-emerge through interaction. Coole and Frost note that theoretical physics scholarship similarly suggests that “[M]atter is now a long way from the material world we inhabit.... [F]orces, charges, waves, virtual particles and [dark matter] suggest an ontology...very different from the substantialist Cartesian or mechanistic Newtonian accounts of matter.”¹² Rethinking humanist, Enlightenment paradigms rooted in Descartes’ “I think therefore I am” subject/object anthropocentrism—as well as the determinate cosmos of Newtonian physics—new materialism lays the grounds for a posthumanist ontology where the human is decentered within networks of ecological, technological intra-active¹³ material encounters and affective forces, with the sonic a vital dimension.

¹¹ Diane Coole and Samantha Frost, eds., *New Materialisms: Ontology, Agency, and Politics* (Duke University Press, 2010), 9.

¹² Coole and Frost, *New Materialisms*, 12–13.

¹³ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Duke University Press, 2007). Barad’s concept of intra-action challenges the conventional philosophical notion of interaction: whereas interaction presupposes two or more pre-existing, discrete entities that come into contact, intra-action proposes that entities do not precede their relations but emerge through them.

The point of a Posthuman position is that it envisages the subject as transversal, trans-individual, trans-species...in movement. This kind of subjectivity obviously includes non-human others, of both the organic and the technological kind.... This entails an open eye to the virtual possibilities about what one, or a collective “we,” is capable of becoming.¹⁴

Even as she asks how we bring the digital and the ecological into dialogue, Braidotti is insistent that “the Posthuman convergence challenges both the melancholia and the sense of doom that has marked so many recent discussions about the contemporary Humanities...far from being a crisis—let alone an indicator of extinction—it marks a rich and complex historical transition.”¹⁵

The posthuman brings forth a cartography for a way of working that revolves around creative thinking and speculation, utilizing aesthetic experience as a method of knowledge production beyond the realm of the conceptual. Opposing mind/body dualities, posthuman subjectivity, for Braidotti, is ecologically situated, technologically mediated, and collective. In other words, no subject exists alone; subjectivity is distributed across human and nonhuman agents, transforming systems in states of flux and constantly shifting assemblages. Rather than being located within discrete subjects, agency emerges from dynamic, rhizomatic relations entangled with material, technological, ecological, and politico-economic systems of power and labor.

The sonic aesthetic experience rests upon the “in-betweenness” of subjects: the sounds themselves existing as beings that arise co-dependently with the subjects that participate actively and give rise to their being-there. The act of listening involves being contaminated by sounds in their various physical properties and affective histories, as well as simultaneously co-producing and giving rise to their presence through the co-becoming of resonant bodies. A Posthuman

¹⁴ Braidotti, *Posthuman Knowledge*, 21.

¹⁵ *Ibid.*, 4.

approach to sonic practice is thus considered to be collective, energetic, and inter-material, with enormous potential for allowing subjects to extend beyond themselves and their human boundaries, opening them onto a plane of inter-material vibrational becoming, movements of “organs without bodies,” and “machines of desire” without centralized subjects.¹⁶ It thus has the power to allow one to reconsider formations of subjecthood, configurations of identity, and relationships to other subjects and reality more broadly.

As Salomé Voegelin puts it, “Listening works from a psychological phenomenology that explores the possibility of the world through the equivalent participation of subjects and things in the building, trashing, and rebuilding of perceptual life-worlds...Listening reinvigorates ideas about reality, actuality, possibility, and truth.”¹⁷ Sound, in its powerful invisibility, ephemerality, and inter-subjective, connective nature, is particularly well-suited for unsettling habituated, humanist modes of thinking and being. It can make temporary vibrational architectures and alternative social formations actual, where all participants are not simply taking part passively, but are rather inhabiting and resonating *as*, or being inhabited or resonated *by* these alternative architectural formations that consume the air.

¹⁶ Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (University of Minnesota Press, 1987).

¹⁷ Salomé Voegelin, “Sonic Materialism: Hearing the Arche-sonic,” in *The Oxford Handbook of Sound and Imagination, Volume 2*, edited by Mark Grimshaw Aagaard, Mads Walther-Hansen, and Martin Knakkergaard (Oxford University Press, 2019), 7 and 117.

Posthuman Ontology of Sonic Practice

In the Deleuzian tradition that informs Braidotti's work, art plays a central role in undoing the human as the privileged center of perception and meaning. For Deleuze, art creates non-human percepts and affects that deterritorialize habitual modes of sensation, allowing experience to emerge from distributed assemblages of forces rather than individuated subjects.¹⁸ Art thus becomes a key posthuman practice: not a representation of the world, but a material and affective process through which new modes of subjectivity, responsibility, and relationality can emerge. Co-existing alongside theory and philosophy, artistic production can help envision new ideas experientially and through the senses.

Braidotti emphasizes the power, potential, and importance of creative thinking and aesthetic experience, with respect to escaping logocentric systems of thought:

Critical and creative cartographies focus on the issue of defining what “we” could become as a species and a set of technologically inter-linked material cultures... Thinking—in [art]—is the counterpart of the ability to enter modes of relation, to affect and be affected... Escaping the gravitational pull of logocentric systems of thought, critical/creative nomadic thought pursues the actualization of transversal relations.¹⁹

For Deleuze, art is a complex nexus of percepts and affects, forming “blocks of sensation” that are not representational of the real, but actively participate in the production of the real as a process of continual becoming. Peter Hallward explains, in summarizing Deleuze's position, that rather than representing something external to itself, a work of art functions as “a machine that generates its own reality.”²⁰ Art, for Deleuze, does not represent reality, but creates reality itself

¹⁸ Deleuze and Guattari, *What Is Philosophy?*

¹⁹ Braidotti, *Posthuman Knowledge*, 7.

²⁰ Peter Hallward, *Out of This World: Deleuze and the Philosophy of Creation* (Verso, 2006), 104.

—it acts through the forces and intensities of sensuous experience, as pure “beings of sensation,” and he famously stated that “the work of art is a being of sensation and nothing else.”²¹ In Deleuze’s univocal ontology, being itself is creation: life is an expressive, productive, immanent process of continuous differentiation. Thus, the creative drive and the practice of art is life force in its most intense form. Art, then, is “the ultimate goal of life, which life cannot realize by itself.”²²

Music in Deleuze’s philosophy of immanence proposes a non-representational epistemology that differs from traditional modes of thought grounded in reference and conceptual abstraction. Rather than functioning as representations that point beyond themselves to an external meaning, music operates immanently, producing relations, intensities, and modes of experience in real time. From this perspective, the sonic does not stand in for something else; it actively participates in the construction of reality by shaping how bodies, forces, and temporalities come into relation. In this sense, music can be understood as producing ontological interventions rather than operating as a representational medium. Sonic events intervene directly in the field of experience, generating new configurations of perception and affect that cannot be reduced entirely to symbolic interpretation or theory. Knowledge produced through sound and music is therefore not discursive or conceptual but experiential, relational, and emergent.

A sonic aesthetic experience can produce knowledge not in the form of concepts, but through percepts and affects, which derive from everyday lived experience. Through production of creative work, these percepts and affects are rendered as autonomous, real entities that endure

²¹ Deleuze and Guattari, *What Is Philosophy?*, 164.

²² Ibid.

beyond individual perception. Rather than existing as subjective states, they have the capacity of opening listeners to the *plane of immanence*, a field of continuous becoming in which distinctions between subject and object, material and form, or human and nonhuman are destabilized.²³ Sound and music can thus function as modes of thinking that operate alongside philosophy, not by explaining reality, but by creating new possibilities for sensing, relating, and existing within it. From this Deleuzean standpoint, music and sound, as creative practice, thus function as an ontological intervention that actively contributes to the construction of reality. However, for Deleuze, art that deterritorializes established forms has a particular intensive force because of its ability to disrupt habitual perception, forcing new percepts and affects into existence.

It is for this reason that experimentalism and the avant-garde are crucial not because of their historical novelty, but because through deterritorializing established aesthetic forms, new intensities and novel lines of becoming can be generated, thereby participating directly in the ontological production of difference as part of the ongoing creation of reality itself. In other words, in breaking free from established artistic conventions, new possibilities can emerge, helping bring new forms and qualities of experience into existence. Deleuze's ontological project seeks specifically to:

reconceive of beings in terms of becomings and events, actual existents in terms of virtual potentialities, fixed forms in terms of mobile particles and flows, homogeneous structures in terms of heterogeneous aggregates and connections, and hierarchical organizations in terms of smooth surfaces populated solely by dynamic singularities, affects, intensities, speeds, and haecceities.²⁴

²³ Ibid.

²⁴ Christoph Cox, "How Do You Make Music a Body without Organs? Gilles Deleuze and Experimental Electronica," 1. <https://faculty.hampshire.edu/ccox/Cox-Soundcultures.pdf>.

Opposing the transcendent plane of Platonist, Kantian, and Christian philosophy, Deleuze asserts a materialist vitalist position that, rather than existing beyond or outside of material reality, one *plane of immanence* underlies every moment of reality, a pre-conceptual field of pure becoming and flux, on which all beings, forces, and events unfold. Experimental practices, for example in music, art, or philosophy, according to Deleuze, can reconfigure bodies and create openings onto the plane of immanence:

Certain modern musicians oppose the transcendent plane of organization, which is said to have dominated all of Western classical music, to the immanent sound plane, which is always given along with that to which it gives rise, brings the imperceptible to perception, and carries only differential speeds and slownesses in a kind of molecular lapping.... It is a question of freeing time, Aeon, a non-pulsed time for a floating music, as Boulez says, an electronic music in which forms are replaced by pure modifications of speed.²⁵

New and experimental music that breaks free from its traditional, melodic, metrical, and harmonic structures has the capacity to disrupt stale, sedimented forms. It can thereby reveal sound as pure intensive flux, becoming, or difference, characterized by flows, vibrations, and thresholds. Experiencing sound in this way—through new, experimental, and avant-garde electronic music practices—can reorganize perception and produce new capacities for feeling, thinking, and inhabiting time. Moreover, music has the power to either open new pathways or “lines of flight” through sonic deterritorialization, or it can reinforce existing regimes of order.

One of the ways the Western classical music tradition establishes a hierarchical and transcendent mode of governance is through tonality and functional harmony.

The tonal system ensures that musical unfolding is always tied to the tonic, from which it emerges, to which it returns, and which governs its selection of pitches along the way.

²⁵ Deleuze and Guattari, *A Thousand Plateaus*, 267.

Thus is musical becoming tied to being in the form of origin and telos... [into] a mere passage between those two fixed points.²⁶

The tonal system's logic of departure, development, and return, resonates with broader teleological narratives in Western thought, from Platonic ascent to Christian eschatology to Hegelian dialectic, even if individual tonal works may complicate or resist such logics, echoing "transcendent planes of organization" as Deleuze describes, rather than an immanent one.

In the Western canon, traditional modes of musical organization are central; there are often linear motivic developments and melodic subject lines that undergo various journeys and transformations through processes of harmonic tension and release, revolving around a centralized tonic or musical "home" to which the subject usually returns. These musical traditions echo the anthropocentric, transcendental teleologies of the European Humanist perspectives that they came from. In contrast to transcendental narratives, Posthuman sonic practice:

- is deeply material and grounded in the embodied, embedded, relational and material present; and
- suggests a mode of sonic organization grounded in materialism and immanence—sound understood not as a representation of human emotions or way to transcend the human experience, but as vital, autonomous, material forces that produce worlds of relations and affects, occurring within and drawing one deeper into the present moment from which they emerge.

As such, posthumanism orients toward the creative act as a setting in motion of various processes and fields of relation that possess degrees of agency apart from the composer. Moreover, this

²⁶ Cox, "How Do You Make Music a Body," 4.

approach seeks to enact and give rise to relationships between sounding bodies at varying levels of intensity, existing on a single, immanent, material plane of univocal sonic flux as interactions between resonant human and more-than-human subjects.

A few notable figures, in the long lineage of 20th-century composers, sought to break free from the Western canon and deterritorialize the classical work. One was Edgard Varèse, who foretold the possibilities of electronic music for boundary-pushing, experimental purposes in 1936:

When new instruments will allow me to write music as I conceive it, the movement of sound-masses, of shifting planes, will be clearly perceived in my work, taking the place of the linear counterpoint.... Certain transmutations taking place on certain planes will seem to be projected onto other planes, moving at different speeds and at different angles. There will no longer be the old conception of melody or interplay of melodies. The entire work will be a melodic totality. The entire work will flow as a river flows.²⁷

Varèse points to a vision of musical practice that uses technology, or “new instruments” as he says, to conceive of a sonic universe made up of new possibilities of organizing sound that do not rely on “old conception[s]” of melodic interplay and functional harmony. Existing as one “melodic totality,” his vision of music opposes melodies, harmonies, rhythmic regularities, and other structures of hierarchical organization of sound in favour of movements of “sound-masses,” “shifting planes,” and “flow[s]” in time.

Luigi Russolo proposed a similar sentiment in 1913, declaring the importance of mechanically generated noise-based sounds for the future of music.²⁸ Surpassing the “boring” traditional timbral, harmonic, melodic, and formal designations that have defined the music of the Western canon for hundreds of years, Russolo and the Italian Futurists similarly sought to

²⁷ Edgard Varèse and Chou Wen-chung, “The Liberation of Sound,” *Perspectives of New Music* 5, No. 1 (1966): 11.

²⁸ Luigi Russolo, “The Art of Noises: Futurist Manifesto” (Edizioni Futuriste di “Poesia,” 1916).

detrterritorialize the classical work with the use of technology. According to him, the embrace of newly developing technologies arising from the industrial revolution could “enlarge and enrich the field of sound” within the tired traditions of music:

Musical sound is too limited in its variety of timbres.... We must break out of this limited circle of sounds and conquer the infinite variety of noise-sounds. Everyone will recognize that each sound carries with it a tangle of sensations, already well-known and exhausted, which predispose the listener to boredom, in spite of the efforts of all musical innovators. We futurists have all deeply loved and enjoyed the harmonies of the great masters. Beethoven and Wagner have stirred our nerves and hearts for many years. Now we have had enough of them.²⁹

Russolo had a vision of embracing technology for the purposes of widening the sonic imagination and extending the vocabulary of the sonic aesthetic experience. He was interested in exploring and embracing the machine not as simply a tool for industrial production, but a site for aesthetic investigation and pushing the boundaries of possibility.

Most technological advancements that developed throughout the twentieth century, particularly in audio and sound, emerged from military intelligence, warfare, and surveillance infrastructures. The pressures of war demanded rapid innovation in acoustics, signal processing, and communications, producing technologies designed to locate enemies, encode information, and extend perception beyond human limits. Composers repurposed military and industrial audio technologies like tape machines, oscillators, filters, and computers as sites of experimentation for creative ends. They were interested in detrterritorializing these technologies, aiming to undo the logics of domination, surveillance, and standardization that produced them, yet in doing so, many remained entangled in, and at times complicit or closely aligned with, the very militaristic and political structures that produced them.

²⁹ Ibid., 24–25.

The Art of Noises was published in Italy in 1913, a time of intense political tension and rapid industrialization, where avant-garde artists and thinkers were challenging the established norms, embracing modernity, and embracing noise and rupture as defining conditions of contemporary life. Published just months after the conclusion of the Italo-Turkish War and barely a year before the outbreak of World War I, *The Art of Noise* emerged amid rapid technological transformation and an intensifying climate of militarization that would soon culminate in global conflict and the rise of Mussolini's regime. Italian Futurism had close ties to the fascist movement; key Futurist founder Filippo Tommaso Marinetti co-authored the *Fascist Manifesto* and Russolo himself was a member of the Fascist Party and fought in WWI. Futurism and fascism shared deep ideological roots, celebrating violence, nationalism, anti-parliamentarianism, and the worship of speed, technology, and masculine force. Marinetti's 1909 Futurist Manifesto, which famously glorified war as "the world's only hygiene," called for the destruction of museums, libraries, and academies, and was staunchly misogynistic and anti-feminist. Futurism's entanglement with the rise of Italian fascism represents precisely the kind of hierarchical, anthropocentric, and exclusionary ideology that posthumanism seeks to dismantle. Where posthumanism calls for affirmative ethics of attention, collective care and sustainability, Italian Futurism weaponized similar rhetoric around rupture, speed, and technological force in service of an authoritarian and violent political project.

Despite Russolo and Italian Futurism's deeply troubling political alignments, their sonic vision paradoxically contains a kernel of something useful for a posthuman sonic practice. Russolo's core sonic insight retains a certain generative value when carefully extricated from its ideological origins: that the inherited timbral and formal conventions of Western music had

exhausted their possibilities, and that noise, technology, and mechanically generated sound could radically expand the field of aesthetic experience. Russolo's experimental, visionary impulse is productive and resonant with a posthuman approach: to take seriously technology as not simply a tool, but a site for aesthetic exploration and expression, and to deterritorialize sound by pushing beyond the sanctioned boundaries of musical tradition. Stripped of its fascist ideology, Russolo's core sonic intuition that the boundaries of musical possibility must be radically expanded beyond inherited tonal and timbral conventions, and that technology offers a means of doing so, retains a certain productive force. It is not the politics of rupture that is borrowed here, but the rupture itself: the insistence that established sonic forms can and must be broken open and redirected toward ends Russolo himself could never have imagined nor intended. Sonic deterritorialization through technology—widening the sonic imagination and extending the vocabulary of aesthetic experience—offers generative and fertile ground for sensing, envisioning, and experimentally thinking through what we are in the process of becoming within the posthuman convergence.

Music technology arose as a means of extending perception beyond human limits within a military context, and as such has always been entangled with material, historical, and politically conditioned modes of listening. Though existing in a vastly different context and for entirely opposite aims, my work seeks to explore how technology can be used to extend perception beyond human limits and into posthuman listening spaces, while listening through audio technology's historicity by bringing the medium itself into awareness. Rather than treating audio technology as the invisible conduit for sonic experience, I embrace the medium itself as part of my music. In this way, the history of music technology is not incidental but constitutive: the tools we use to shape sound carry within them the traces of the systems of power and

violence from which they emerged. In this sense, the posthuman sonic practice proposed here does not simply use technology, but works through and against its histories, transforming inherited instruments of control into vehicles for creating new possibilities of becoming. Composing with these technologies consciously—to foreground the medium, deterritorialize its inherited logics, and open it onto new relational and perceptual possibilities—is itself a posthuman gesture that refuses to let the apparatus disappear into transparency and immaterial fantasy and instead insists on listening to the conditions of listening itself.

PART TWO: Posthuman Sonic Practice

Posthuman Listening

*“[Listening] always reaches slightly ahead of itself. It touches the most fragile shapes and invisible beings...leans into the still-forming, the unspoken, and unsayable, the not-yet. In listening, we allow space for futures we cannot name, for truths we have not yet grown into. We enter a mode of being that gently loosens the past – its routines, identities, certainties – to make space for new companions, voices, and relations that might touch us.”*³⁰

– Brandon LaBelle

Electroacoustic composition—the mixing of electronic and acoustic, synthetic and organic sound worlds—is an ideal space in which new visions endowed with experimental energy can be made audible within this “rich and complex historical transition... [with] huge opportunities for both humans and nonhuman agents.”³¹ Sonic experience in its distributed

³⁰ Brandon LaBelle, *Poetics of Listening: Inner Life, Social Transformation, Planetary Practices* (Bloomsbury Publishing, 2025), 13.

³¹ Braidotti, *Posthuman Knowledge*.

resonance amongst listening subjects has the capacity to inhabit those that listen, making alternative maps of posthuman becoming not understood conceptually, but *felt* on multi-sensory levels. Sonic aesthetic experience simultaneously activates the tactile, physical, and cochlear as well as stimulates imagination, memory, and cognition.

Sound, in its powerful invisibility, ephemerality, and inter-subjective, connective nature, is particularly well-suited for unsettling habituated, humanist modes of thinking and being. The sonic aesthetic experience can make temporary vibrational architectures and alternative social formations actual, where all participants are not simply taking part passively, but are rather inhabiting and resonating *as*, or being inhabited or resonated *by* these alternative architectural formations that consume the air. The listening act has a powerful capacity to render perceptible invisible dynamics, systems, and flows of matter-energy, giving sound the unique potential to offer alternative forms of being, sensing, and relating. Through sonic practice and listening, systems of control become perceptible beneath the threshold of visibility, exposing both the mechanisms of domination and alternative possibilities of resistance. Brandon LaBelle conceives of sound and audition as:

an expansive relational means affording dialogical exchange, the plays of recognition and the affective processes intrinsic to finding place, as well as escape routes and new social formations beyond the strictly verbal and visible... Sound works to unsettle and exceed arenas of visibility by relating us to the unseen, the non-represented, or the not-yet-apparent.³²

A posthuman approach to sonic practice orients to sound and listening as a means of rendering sonorous the emergent, inter-material subjectivities arising in response to technologically mediated life and the strange mutations of the contemporary moment of the posthuman

³² LaBelle, *Poetics of Listening*, 2.

convergence. A posthuman approach to sonic practice—characterized by embodied, embedded, and relational ethics and ontology—proposes ways of reality participation that are post-anthropocentric and critical of post-Enlightenment European humanism through sound. It aims to create sensory architectures and sonic worlds that, when inhabited, can encourage posthuman listening spaces and modes perception. Salomé Voegelin writes:

The sonic materiality of things [brings] us into their invisible depth to suspend the habitual, anthropocentric view of the objects in a reflection of their primary perception. This effort leans not back in history but must forever lean into the present to hear an alternative materiality in the plurality of its possibilities, whose diversity evokes not human control but responsibility.³³

Here, Voegelin points to an approach to sonic practice that recognizes sound's capacity to bring the listener into the unseen, vibrant world of things and entangled, blurred boundaries between the human and non-human, providing openings and modes of perception that generate sensory openings that move beyond humanist orientations. It likewise understands composition as a practice of becoming-with emergent relational forces in which the human (composer, performer, audience, etc.) is but one strand among an assemblage of arising human and non-human forces such as technology, instruments, and historical flows, informed by new materialist perspectives of distributed agencies, subjects, and matter.

By complicating conventional teleologies and hierarchies, a posthuman approach enacts alternative structures by giving rise to sound worlds that challenge traditional modes of musical governance and organization. A posthuman approach challenges, for example, the *hero's journey* within the Western musical canon, which manifests teleologically in formal, harmonic, and melodic structures that encode narratives of the human individual's struggle, transformation, and

³³ Voegelin, "Sonic Materialism," 99.

triumphant return: exposition, development, crisis, and resolution. My pieces, which will be discussed in Part Three, rework such teleologies through material and form by generating sonic trajectories that arrive at dissolution, entropy, and questioning, rather than a resolution.

A posthuman approach likewise negates the frequently reinforced *tortured-genius archetype*, which frames the composer as an exceptional figure who transcends the human condition through the creation of the grand “masterwork.” This can be especially seen with the notion of the “work concept” that emerged around 1800 during the Romantic era, an idea that a composed piece of music was a fixed, autonomous work of art with its own inherent integrity and as a product of individual creative genius.³⁴ Thus, the written score became a kind of sacred, authoritative document that performers were expected to faithfully reproduce to execute the composer’s supreme vision. The pervasiveness of this attitude transformed how music was practiced, valued, and preserved, laying the groundwork for how much of Western musical works are still understood today.

A posthuman view of sonic practice deliberately resists this attitude to music and compositional process and the ingrained anthropocentrism and individualism, and would instead understand music not as a fixed, static “thing,” but an emergent process arising from networks of relationships between humans, environments, instruments, technologies, and more-than-human beings. As such, the composer is one node within a networked assemblage of performers, listeners, instruments, sonic behaviours, technologies, environments, social architectures, etc., making the composing act inherently and deeply collaborative and relational. In a posthuman

³⁴ Lydia Goehr, *The Imaginary Museum of Musical Works: An Essay in the Philosophy of Music* (Oxford University Press, 1992). Goehr offers a historical and philosophical account of how the notion of the musical work as a fixed, autonomous, and self-contained object came to dominate Western musical practice and thought.

approach, sounds are not considered as isolated things to be organized hierarchically, controlled, tamed and mastered by the composer for the goal of solely expressing human emotional narratives. Rather, they are conceived as movements, flows, intensities, and temporary contractions of energy which are channeled, shaped, and collaborated with in collective participation with human and non-human actants, that then dissolve back into the state of motion, flux, and becoming from which they arose.

Such an approach recognizes the musicking³⁵ act as a highly participatory, intersubjective, collective aesthetic experience that harnesses sound's ability to reconfigure bodies, energies/vibrations and affective inner landscapes as well as outer material actualities. This is not to claim that my own practice escapes the work concept entirely. My pieces are notated, given to performers to play, and performed in concert halls and music institutional spaces—the inherited institutional conditions of Western art music remain operative. The tension between posthuman compositional values and the structures through which they are necessarily delivered is one I do not seek to resolve so much as to hold open and work within. What I attempt, rather, is to introduce distributed agencies, non-hierarchical sonic organization, and relational modes of listening at the levels of material and form, treating the score not as a sacred and authoritative document, but as a set of invitations through which collaborative relationships can arise, and emergent, more-than-human forces can be summoned, channeled, and made perceptible by the performers and listeners who bring the piece into being.

³⁵ Christopher Small, *Musicking: The Meanings of Performing and Listening* (Wesleyan University Press, 1998). Small proposes a fundamental reconceptualization of music not as a thing or object but as an activity, a verb rather than a noun.

Sonic Worlding

Sound is an inter-material, intersubjective force that has the capacity to make perceptible invisible dynamics, relationships, and human and more-than-human entanglements. In turn, sound can enact alternative configurations of bodies and subjects and different possible worlds, having the capacity to actualize alternative potentialities of being, becoming, and relationality. I conceive of sound as being a kind of vibrational prosthesis to the human subject; It extends the self beyond the boundaries of the body, reaching and resonating other beings: human, nonhuman, living and nonliving. Thus, sound allows the edges of selfhood to expand and dissolve, reaching across material boundaries to touch and be touched by beings and things beyond the human. Electronic sound furthers the capacity of the vibrational prosthesis, where instead of relying on the constraints of a physical, resonant instrumental object, electricity allows for both the instrument and human performer to extend beyond themselves. In the electroacoustic and acoustmatic listening experience, subjectivity is stretched beyond the constraints of the physical world of instrumental and human bodies, instead inhabiting an invisible architecture made up of disembodied forces and vibrational presences, where the boundaries between self and sound, visible and invisible, instrument and spectral energy collapse into a single resonant field of inter-material becoming. In this way, the electroacoustic vibrational prosthesis has the capacity to allow for the temporary inhabitation of expanded subjecthoods and experimental posthuman forms.

When sound is diffused through loudspeakers and fills an entire room, it can become impossible to locate its origin within any single body, object, or subject; it inhabits the listener as much as the listener inhabits it. Electronic and electroacoustic sound allows the human and

instrumental body's edges dissolve into a resonant field, and subjectivity, rather than being located within the discrete boundaries of skin, bone, wood, or metal, becomes distributed across the sonic environment itself. In this way, electronics do not just extend human and instrumental bodies, but alters what counts as a body by disrupting the stable boundaries between physical and intangible, real and imaginary, visible and invisible, self and environment, organic and synthetic.

This is what Donna Haraway gestures toward in her insistence that “we have always been cyborgs”: not that technology has recently invaded the body from outside, but that the boundary between body and world has never been as stable or as clean as humanist thought required it to be. Electronic sound makes this instability perceptible and visceral. It does not simply augment human perception but temporarily reorganizes it, producing something I consider to be a posthuman sonic cyborg: a listening subject whose boundaries have been opened onto a broader field of vibrational, inter-material becoming via technology. The vibrational prosthetic, in this sense, is not an addition to a pre-existing body but a conduit for the reconfiguration of what embodiment itself can mean, making audible the posthuman condition as a present, audible and felt reality.

Donna Haraway's term *worlding* is the active, collective process of “making worlds together” (sympoiesis³⁶) with both human and non-human entities, inspired by the question *what kinds of worlds are needed at this time of ecological crisis?* This idea emerges directly from Haraway's long engagement with feminist science fiction. For Haraway, the boundary between science fiction and social reality is an optical illusion; fiction is not separate from real but is one

³⁶ “Sympoiesis,” meaning “making-together” or “collectively-producing”—in contrast to “autopoiesis,” or self-making—was originally coined by Beth Dempster in her 1998 master's thesis, “A Self-Organizing Systems Perspective on Planning for Sustainability.”

of the primary means through which realities are constructed and contested. Her work toys between the known and the intuitive in a way that appeals to the imagination, somewhere between storytelling and science fiction, producing stories that have the possibility of becoming future worlds. The feminist dimensions of this are crucial: worlding for Haraway is always a situated, partial, and politically committed act, rooted in her concept of situated knowledges and her rejection of the pretense of universal, disembodied objectivity that has long defined Western scientific and humanist thought.

Extending Haraway's notion, I put forth the idea of *sonic worlding* as being a focal point of my creative practice; Worlding is a helpful approach when applied to compositional praxis because it offers a framework for understanding experimental, exploratory sonic practices, modes of listening, and temporary reconfigurations of relations amongst sonic ecosystems and bodies. Sonic worlding takes Haraway's concept further, where instead of working within the realms of conceptual abstraction of storytelling towards the creation of alternative realities and possible future worlds, the sonic has the capacity to bypass the rational sense, enacting vibrational architectures which enter the body, resonating through tissue and bone with an immediacy that can make alternative realities directly inhabited, felt, and lived. Through listening act, we are always inter-implicated with sound; Sonic worlding allows for the possibility for worlds to inhabit us just as we listen to and inhabit them, alternative realities resonate in and as us just as we attend towards them. Inner and outer collapses such that there is only a singular co-created vibrational world or reality, which does not merely present itself to us from a distance but *vibrates in and as us*, such that the act of attending *toward* and being inhabited *by* a sonic world become indistinguishable. What emerges from this reciprocal process

is a co-created field of vibrational becoming, a temporary actualization of possible worlds that could not have existed without the encounter between sound and listening subject. In this sense, sonic worlding does not represent fictions or stories which contribute to the creation of imagined possible worlds, but rather intersubjectively reconfigures relations amongst bodies that allows such worlds to be temporarily inhabited, actualized, and lived. In this way, rather than representing worlds, sonic worlding actively composes them using sonorous forces, intensities, and “beings of sensation.”³⁷

The idea of sonic worlding is indebted to, but distinct from, two significant predecessors amongst others. R. Murray Schafer’s *soundscape* positions the human as a steward of a pre-existing sonic environment. Pauline Oliveros’s *Deep Listening* positions the human as a practitioner who cultivates expanded perceptual capacity. Sonic worlding adds the understanding that the worlds produced in the sonic experience are not representations of a prior reality, or expansions of individual human consciousness, but temporary actualizations of possible realities that emerge from the entangled encounter between human and nonhuman forces. Schafer’s listener observes and tends to a pre-existing world. Oliveros’ listener deepens their individual capacity to attend to it, while sonic worlding proposes a co-produced world that could not have existed without the encounter, and in doing so is temporarily reconstituted by it. What sonic worlding adds is the notion that the worlds produced through sonic experience are not representations of a prior reality, nor expansions of individual human consciousness, but temporary actualizations of possible worlds that emerge from entangled encounters between

³⁷ Gilles Deleuze and Félix Guattari, *What is Philosophy?*, trans. Hugh Tomlinson and Graham Burchell (Columbia University Press, 1994). It’s in this work that the coauthors most extensively develop the concept of “beings of sensation,” a cornerstone of their philosophy of art.

human and nonhuman forces, carrying ethical and political stakes within the conditions of the posthuman convergence.

Cyborgian Entanglements and Listening Through Technology

“We are all...theorized and fabricated hybrids of machine and organism...we are cyborgs.”

– Donna Haraway³⁸

“We have always been cyborgs.” – Stefan Lorenz Sorgner³⁹

A key feature of my music is the concern with how sound moves through technologically mediated environments, making perceptible the subtle shadows and unnoticed fingerprints of the media themselves. By rendering perceptible the media’s exertion of agency on human subjects, my pieces put forth “counter situations,”⁴⁰ sonic worlds, or beings of sensation that propose different visions of becoming or alternative stories in which usual modes of interacting with technology are temporarily dismantled. In doing so, they aim toward an experience of “truth content”⁴¹: a moment in which the reified relation between subject and digital apparatus is suspended, and the possibility of an experience *not* administered by the forces of mass culture and capitalist modernity becomes temporarily audible. The overarching questions that my practice seeks to address are: *In the post-Internet and post-digital world, where we are rarely offline or severed from digital mediation, what kinds of subjects are we in the process of*

³⁸ Donna Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (Routledge, 1991), 150.

³⁹ Stefan Lorenz Sorgner, *We Have Always Been Cyborgs. Digital Data, Gene Technologies, and an Ethics of Transhumanism* (Bristol University Press, 2023).

⁴⁰ Marshall McLuhan and Quentin Fiore, *The Medium is the Massage: An Inventory of Effects* (Gingko Press, 1967).

⁴¹ Theodor Adorno, *Aesthetic Theory*, trans. by Robert Hullor-Kentor (University of Minnesota Press, 1997).

becoming? How can we understand the tensions that exist between the embodied, biological body and the virtual, cyber-body? What new and more generative ways of relating to more-than-human others are possible?

My music draws attention to the act of listening *through* technology and seeks to make apparent the subtle ways in which technological objects exert agency and shape the way sound is listened to, received, and understood. In this way, I am concerned with how sounds behave as cultural artifacts mediated by technology and history. Technological objects have always built upon themselves, becoming refashioned and improving on their previous shortcomings. As such, they contain shadows of their pasts built into their design—their innovation or newness within the marketplace depends on consumer memory and a frame of reference for the obsolete and outdated. Building on McLuhan’s theories, Jay Bolter and Richard Grusin posit that “remediation” is the defining logic of new digital media, where all technologies define themselves in relationship to earlier technologies:

It would seem, then, that *all* mediation is remediation.... Our culture conceives of each medium or constellation of media as it responds to, redeploys, competes with, and reforms other media.... No medium, it seems, can function independently and establish its own separate and purified space of cultural meaning.⁴²

Listening to technologically mediated sounds, or listening to sounds through technology, orients towards the long and complex history that is carried through and colors our reception of that sound. Technologically mediated sounds carry with them a distinct history of marketplace relations, production, memory, and self-referentiality—precisely the affects I seek to draw out in my music. My pieces attend to the ways sounds move through technological objects, bearing

⁴² Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (MIT Press, 1999), 55.

traces of the material and historical conditions that shape them, as well as the cultural and personal memories they hold.

Neil Postman spoke about the prescriptive nature of technology in *Technopoly: The Surrender of Culture to Technology*.⁴³ Far from being a neutral tool, technology's built-in agenda alters the structure of our thinking, redefines culture, and redefines truth and meaning. While tools were once used to serve culture, in a "technopoly" culture becomes subservient to the needs and logics of technology itself. Culture surrenders its values, meaning, and authority to technology as a means of becoming dominated by efficiency, measurement, and technosolutionism, and older sources of wisdom—ethics, religion, human judgment—are replaced by motivations driven by algorithms, metrics, and modes of desire informed by engagement, accumulation, and informational excess. As such, technological change should not be overlooked as merely additive tools that aid and supplement human productivity, but rather as forces of profound influence, invisibly shaping the psyche and contaminating the nature-cultural entanglements we are inextricably a part of on localized and planetary levels. "Technological change is not additive; it is ecological," Postman writes, "A new technology does not merely add something; it changes everything."⁴⁴

Marshall McLuhan also insists on technology's non-neutrality, discussing how media shapes perception and social formations. Rather than solely the content being transmitted, the medium of technology itself is what quietly yet profoundly restructures thought, sense, and relationality.

⁴³ Neil Postman, *Technopoly: The Surrender of Culture to Technology* (Vintage Books, 1993).

⁴⁴ *Ibid.*, 7.

All media work us over completely...pervasive in their personal, political, economic, aesthetic, psychological, moral, ethical, and social consequences...they leave no part of us untouched, unaffected, unaltered. The medium is the message. Any understanding of social and cultural change is impossible without a knowledge of the way media work as environments.⁴⁵

McLuhan proposes that artists can enable “direct attention,” allowing us to “see and understand more clearly” such invisible, pervasive conditions that constitute our media-saturated, technologically mediated environments:

Environments are not passive wrappings, but are, rather, active processes which are invisible. The ground rules, pervasive structure, and overall patterns of environments elude easy perception. Anti-environments, or counter situations made by artists, provide means of direct attention and enable us to see and understand more clearly.⁴⁶

McLuhan points to the ways in which art can enable us to understand the pervasive, yet hardly visible workings of technological environments that consume everyday activity. The artist, by making “anti-environments” or “counter situations” is then able to draw direct and critical attention to the unnoticed workings of the forces and influences exerted by technology. Moreover, art can make apparent the embedded motivations driven by capitalism, and the resultant capitalist logics that mediate user engagement and exchange. These motivations and built-in agendas of digital technologies—driven by maximizing shareholder value and increasing user engagement as much as possible—contribute to the shaping of relationships, desires, actions, and “political, economic, aesthetic, psychological, moral, ethical” sensibilities, leaving “no part of us untouched, unaffected, unaltered.”⁴⁷ In the context of contemporary new media and digital devices, we can see this manifest as:

⁴⁵ McLuhan and Fiore, *Medium is the Message*, 26.

⁴⁶ Ibid., 68.

⁴⁷ Ibid., 26.

- “Content creator economies,” where the content that creators produce are strongly influenced by what is successfully privileged by the algorithm and yields the highest numbers of engagement (often shortform “click-bait” sensationalism);
- The extractive workings of data harvesting, where users’ attention, behavior, and identity are used for algorithmically targeted ads and content, making newsfeeds into a precisely customized “echo chamber” based on careful analysis of engagement patterns;
- Engineered compulsiveness and screen addiction where interface design encourages infinite scrolling and reward mechanisms designed to spike dopamine, turning human attention into a monetizable resource;
- Planned obsolescence built into consumer electronics engineers devices to intentionally fail or depreciate driven by cycles not based on human need but by the rhythms of capital and market expansion;
- The erosion of truth and outsourcing of human thought by AI-generated content, which floods informational ecosystems with text, image, and voice at massive scales, problematizing the conditions under which the distinctions between true and false remain meaningful, giving rise to the “Post-Truth” era;
- AI models presenting as neutral, authoritative, or even conversational while concealing the vast asymmetries of power, labor, and data ownership embedded in their construction; etc.

Theodor Adorno is well known for his poignant and severe analyses of how the forces of capitalist modernity shape mass culture, and the role of art in providing forms of resistance and preserving, however fragile, the possibility of experience untouched by the logics of capitalism.⁴⁸ While Adorno's humanist commitments sit in friction with the Posthuman and New Materialist frameworks that ground this dissertation, his diagnoses of the culture industry and the function of art nonetheless retain considerable resources for thinking through technologically mediated sonic practice. His insistence on art's capacity to make visible the hidden conditions of social life—the reified structures and calcified habits of perception that capitalist modernity renders invisible by making them feel normalized or inevitable—remains a productive framework for understanding what experimental sonic practice can do to a listening body, even if the subject that body belongs to has been fundamentally reconceived.

Adorno claims that art's "truth content" (*wahrheitsgehalt*) exists insofar as it makes visible the internal contradictions and reified forms of social life, thereby revealing the conditions of society's "unfreedom." The authentic work of art is thus, for Adorno, a project of producing a negative dialectic of form and content, engaging critically with history, and maintaining a resistant distance from mass culture, or what he calls the "culture industry." Such moments of experiencing "counter situations made by artists" that "enable us to see and understand more clearly" that McLuhan speaks of can be likened to Adorno's recognition of "unfreedom" and "truth content" via the autonomous artwork. Truth content in artwork, for Adorno, makes itself felt somatically before being understood conceptually, an experience he refers to as "the shudder" (*erschütterung*).

⁴⁸ Adorno, *Aesthetic Theory*.

The shudder, as the felt experience of truth content, reveals unfreedom by momentarily loosening the grip of socially normalized, habitual perception, giving rise to an experience where subjectivity is momentarily dissolved, yielding a kind of ego-disillusionment. “The shudder, in which subjectivity stores without yet being subject, is the moment in which art becomes aware of its own truth.”⁴⁹ For Adorno, the shudder within the aesthetic experience can disrupt sedimented patterns of perception. His analysis extends naturally to those that are calcified by technologically mediated digital capitalism and virtual spaces that dominate much of contemporary life. The value systems that are encouraged in such spaces—algorithmic stimulation, fast-paced high-volume content consumption, shortened attention spans, engagement maximization—reinforce standardization and passivity in ways Adorno diagnosed with the culture industry. The artwork, by successfully revealing its truth content, can interrupt these patterns, opening an alternative relation to experience that resists the logic of exchange and utility.

My work uses technology in such a way that closely aligns with Postman, McLuhan, and Adorno’s diagnoses. I seek to reveal the conditions or truth content of our cyborgian entanglements by using sound to create aesthetic experiences that disrupt habituated patterns of perception enforced by mass culture. Sound is an assemblage of invisible matter that unsettles static perception and makes palpable what would otherwise remain tacit or unseen. It thus has a unique capacity to render perceptible unseen and unarticulated dynamics and un-manifested potential futures in powerful and visceral ways. In a cultural ecosystem dominated by algorithms designed to lure and sustain attention, prescriptive consumerism, etc., the sonic aesthetic

⁴⁹ Ibid., 245.

experience can offer different possibilities made up of alternative affects, percepts, intensities, and flows of vibration—alternate realities we are able to inhabit for a time.

I seek to use technology to think through emergent cyborgian subject formations and to try and make sense of the reality that we are all already cyborgs. Our bodies and selves are already entangled with technology in ways that make a clean distinction between “natural,” “human,” and “machine” impossible to sustain. Technology can no longer be seen as a passive tool that humans use but has become more like an appendage that shapes thoughts, behaviors, actions, and subject formations. Aesthetic experience can provide truth content, mirrors, alternative visions, or road maps for the navigation of trying to understand our cyborgian entanglements with technological objects. In particular, sonic practice has the ability to re-envision modes of becoming through the act of listening—a deeply psychological yet intersubjective, participatory act that connects humans with one another as well as with more-than-human subjects, bridging the spaces between virtual and actual, imaginary and reality, possibility and truth, human and more-than-human.

My works make explicitly perceptible the invisible and strange sense of agency and enchantment that technology possesses, and asks, *what is the role of the human in this?* The answers I put forth through my pieces are audible aesthetic experiences of entangled Posthuman subjects—not isolated, individual, fragmented human beings who use technology, but assemblages of human with other objects, environments, and beings whose subjectivities are shaped by their entanglements with “techno-zoo-geo others.”⁵⁰ Part Three offers analysis of how these ideas are put forth through three of my creative works.

⁵⁰ Braidotti, *Posthuman Knowledge...Critical Posthumanities*.

PART THREE: Analysis of Works

Hauntology, Repurposing, and Temporal Multiplicity

My work with repurposing old recordings, outdated media, and aesthetics of hauntedness and nostalgia seeks to articulate a poignant cultural sentiment—felt collectively and personally—aligned closely with Fredric Jameson’s ideas of the “nostalgia mode”⁵¹ of the postmodern condition, and Mark Fisher’s development of the concept of “hauntology.”⁵²

Jameson argued that postmodern culture is defined by a pervasive but ultimately hollow nostalgia—not a genuine longing for the past, but a recycling of its surfaces and styles.⁵³ In place of real historical consciousness, postmodern culture produces retrospection and pastiche, the imitation of dead styles stripped of any critical or satirical edge, a kind of blank cannibalism of aesthetic history. What makes this more than just an aesthetic observation is Jameson’s claim that nostalgia mode reflects our inability to produce genuine historical representations of the present: that time is currently out of joint or “broken.” We reach for the past’s styles because we’ve lost confidence in our ability to narrate where we actually are; late capitalism and digital culture has so thoroughly saturated the logics of contemporary life that we can only gesture sideways, into simulated pasts, rather than forward into imagined futures. Nostalgia mode, in that sense, is less

⁵¹ Frederic Jameson, “Nostalgia for the Present,” *South Atlantic Quarterly* 88, no. 2 (1989): 517–537.

⁵² Mark Fisher, *Ghosts of My Life: Writings on Depression, Hauntology and Lost Futures* (Zer0 Books, 2014).

⁵³ Jameson, “Nostalgia.”

a sentimental indulgence than the expression of the felt symptoms of a deeper political and temporal disorientation. This, Jameson argued, reflects a deeper crisis: we have lost the capacity to think historically and situate ourselves within a meaningful temporal arc. Aesthetics of nostalgia fill that void for the historical imagination which consumer culture has eroded, functioning as a critique, symptom, and reflection of the crisis of history that has rendered genuine cultural and political movement increasingly unimaginable.

Mark Fisher further develops Jameson's notions of nostalgia by applying Derrida's concept of "hauntology"⁵⁴ to music and popular culture, specifically. For Fisher, hauntology describes a culture haunted by promised futures and utopian cultural movements throughout the 20th century that never arrived.⁵⁵ Hauntology is not a sentimental backward glance but a politically charged mourning for the alternative futures audible in postwar modernism, early electronic music, and the utopian energies of countercultural movements—futures neoliberalism foreclosed before they could be realized, leaving only their ghostly traces to haunt a present that has settled for the perpetual reproduction and stagnation of the existing order.

One of Fisher's most striking arguments was that popular culture had entered a condition of stasis; he pointed out that while music from 1950, 1960, 1970, and 1980 sounds markedly different, music from 1990, 2000, 2010, and 2020 sounds surprisingly similar. The rate of genuine cultural mutation had slowed dramatically. Since the 1990s and early 2000s, rather than producing new sounds and new futures, culture was endlessly recycling, sampling, and re-presenting its own recent past. He called this the "slow cancellation of the future"—not a sudden

⁵⁴ Jacques Derrida, *Spectres of Marx: The State of the Debt, the Work of Mourning and the New International*, trans. Peggy Kamuf (Routledge, 1994).

⁵⁵ Fisher, *Ghosts*.

rupture but a gradual draining away of the sense that tomorrow could be radically different from today, noting that: “The ‘jumbling up of time,’ the montaging of earlier eras, has ceased to be worthy of comment; it is now so prevalent that is no longer even noticed.”⁵⁶ The resultant anachronism and paradox being that the “blurring of official contemporaneity” and “waning of historicity” is increasingly typical of our experience of cultural products.⁵⁷

For Fisher, the most fundamental explanation for this was the victory of neoliberalism in the late 1970s and 1980s, compounded with the rise of digital culture. Thatcher(ism) and Reagan(ism) did not just change economic policy, they conducted massive social, political, and cultural transformations that destroyed the institutional and imaginative infrastructure through which alternatives to capitalism had been thinkable. Fisher argued that capitalism had proven extraordinarily adept at absorbing and neutralizing cultural resistance. The rebellious energy of rock and roll, punk, rave culture, and the early internet had each carried genuine utopian charge, a sense of opening onto something new, but each was relatively quickly incorporated into the market, stripped of its oppositional content and sold back as lifestyle and aesthetic:

What should haunt us is not the *no longer* of actually existing social democracy but the *not yet* of the futures that popular modernism trained us to expect, but which never materialized. These spectres – the spectres of lost futures – reproach the formal nostalgia of the capitalist realist world.⁵⁸

Increased dominance of, and reliance on, cyberspaces has intensified this effect by burying culture in an endlessly recyclable archive of the past. Rather than creating openings to genuine novelty, digital culture produced a condition of infinite choice with boundless access to historical

⁵⁶ Ibid., 6.

⁵⁷ Ibid., 12.

⁵⁸ Ibid., 27.

documentations of older media, paradoxically narrowing, rather than expanding, the imaginative horizon.

My work—particularly *Machine Spectre*, and *INTRA* —seeks to create affects and percepts that articulate and mirror this cultural sentiment by capturing the strange sense of broken, jumbled time; temporal disjuncture; nostalgia mode; and the hauntological. I seek to create a felt sense of temporal truth within our present moment via vibrational architectures that generate momentary experiences of the multiplicity of time and disjointed historicity of the present. As such, I see my pieces as drawing out the “truth content”⁵⁹ of our experiences of time, creating musical depictions of how temporality is felt in the present moment—blurred, jumbled, and disjunct—rendering it directly and viscerally perceptible through sound. By experiencing a kind of temporal truth content through sensuous and aesthetic experience, my work tries to better understand the conditions of our present moment and arrive at a felt sense of truth within our current, cyborgian entangled, technologically mediated existence.

To achieve this, I repurpose recordings, media artifacts, and outdated hardware electronic devices that carry the sense of a referenced past. For example, the use of sampled vinyl crackling and cassette tape player clicking, rewinding, and tape degradation makes listeners aware—consciously or unconsciously—that they are listening to a time out of joint with the post-digital present, an era of clean, lossless audio fidelity and compressed mp3 files. As such, the listener is not only made aware that the sounds were recorded and are being repurposed; they are also made conscious of the playback systems used to reproduce the recordings and their ties to specific moments in history. In my pieces, the antiquated recordings, though they might be unfamiliar to

⁵⁹ Adorno, *Aesthetic Theory*.

the listener in the sense of having been heard before, create clear reference and signal to an older era through their recording quality, idiomatic genre conventions, and singing style. Juxtaposing these recordings with electronic sound worlds that signify distinctly contemporary sonic qualities—using synthesizer VSTs, modern modular synthesizers, Max/MSP patches, and fragmented samples from the Internet and social media—the composite sonic affect is blurred, jumbled, and disjunct temporality. The temporal multiplicity of the present, crisis of historicity, and hauntological are rendered audible as the sonic space is populated by spectres and invisible sonic presences that take on ghostly forms from different time periods. This affect of ghostly, haunted, and invisible looming spectral presences I further by using sleight-of-hand “auditory phantom” techniques that I describe in the coming pages.

Fisher invites us to “Think of hauntology as *the agency of the virtual*, with the spectre understood not as anything supernatural but as that which acts without (physically) existing.”⁶⁰ In this very way, my music tries to render perceptible the invisible, immaterial agency of virtual forces exerted by technology, more-than-human entanglements, cultural memory, and history. These forces, crafted out of referential, outdated, and repurposed sonic materials, shape my music’s affects and evocations, much as history itself operates on the present not as something visible or tangible but as an unseen weight that conditions what can be heard, felt, and imagined. My work does not represent these forces so much as it creates conditions under which their agency becomes perceptible, allowing listeners to inhabit, however briefly, the unstable and haunted temporality Fisher has diagnosed as the defining condition of our present moment.

⁶⁰ Fisher, *Ghosts*, 18.

***Machine Spectre* for Chamber Orchestra and Electronics: The Auditory Phantom and the Materiality of Technology**

Machine Spectre, for chamber orchestra and electronics, blends acoustic instruments with fixed media electronics emanating from loudspeakers alongside pieces of outdated hardware technology that the performers operate on stage: a cassette tape player, CD player, and old computer keyboard. The piece obscures sound source identification, creating a composite, heterogeneous flow of electroacoustic sonic activity unified from perceived material sounds (acoustic instruments and hardware electronics) and immaterial ones (fixed media electronics from loudspeakers). The affect I sought to invoke was that of a *cyborg chamber orchestra*, where acoustic instruments and electronic sounds are seamlessly unified and entangled, locating the piece's sonic agency as a distributed force amongst human and more-than-human actants. By repurposing a fragmented 1928 recording, *Song of Songs*, alongside the outdated technological devices, I also sought to create affects suggestive of memory, nostalgia, ghostliness, and hauntedness. Through these materials and specific techniques, I sought to create a sonic fiction in which the ghosts of forgotten technologies and their vibrant, material inner lives were manifest, haunting the present. In the program notes I write:

Machine Spectre [meditates] on the material vitality and fallibility of technological devices. The piece unfolds as a complex assemblage of myriad sonic histories, inter-material identities and fragmented interwoven selfhoods. Its poly-temporal musical body is made up of bits and pieces of technological sounds from the past, present and future as well as earthly sounds of acoustic instruments and human performers – hence, giving it a cyborgian identity. While the material nature of technology is often overlooked, computers, smartphones, etc. are made up of countless raw materials that are extracted from the earth; Plastic, is derived from cellulose, coal, and crude oil amongst numerous other things, and microprocessors are comprised of copper, cobalt, iron, and quartz, as well as dozens more elements. *Machine Spectre* imagines a musical cyborg where the spectre of these earthly organic materials are animate and autonomous. The “illegitimate

offspring” of its technological origins, origins which it is “exceedingly unfaithful to” (Haraway), this cyborgian being is in a constant state of chaotic emergence, seeking to re-wild itself beyond anthropocentered conceptions and towards its earthly, material genesis.

I sought to highlight the materiality of the technological, creating an electroacoustic sound world suggestive of technology's material vitality and agency coexisting with that of the human performer. The subjectivity made sonorous through the piece is an amalgam of forces, interactions, and intensities, coexisting on a singular electroacoustic sonic plane. What this piece proposes, then, is a perception of technology not as a simply inert tool, but as an agential force with enormous and, in the case of outdated technology, “haunting” effects on consciousness. Though often invisibilized, the force of technologically mediated relations gives rise to our subjectivities and co-defines our sense of self. As such, this piece seeks to use sound to configure relationships amongst sounding bodies in ways that make perceptible the invisible forces of material-technological-human intra-actions.

All technology is material. Whether in a landfill, data farm, data center, or held in one's hand behind a veil of clean perfection and sleekness, digital technologies have bodies. Their forms are built out of cellulose, cobalt, copper, iron, quartz, and other rare earth minerals. Digital technological devices require water and the labor of human bodies. Engaging with them materially alters the subjects who engage with them—their behaviors, social formations, patterns of thought. The manufacture, circulation, consumption, and disposal of digital technologies have material impact on the human and more-than-human world. The digital is material.

An electronic device—in particular a branded one, like a dirty old Apple computer—being dismembered by the same people who made them in some faraway land, with the lithium batteries exposed and all their toxic elements pouring out, is not a desirable image. You will not find many of those. And yet, we need to think. And reconnect the ethereal culture of data, algorithms, and bytes to the thick, dirty materiality of the mineral

components that compose it—wires and dust. There is no such thing as clean technology because it is all embedded and grounded in specific material locations, labor relations, and geopolitical forces.⁶¹

This piece challenges the fantasy of technological immateriality. Technology, far from being a simple tool, shapes human subjectivity not only on the individual scale but also at wider planetary scales across geopolitical forces, labor relations, and environmental conditions that determine the livability of the planet. By drawing attention to technology's often overlooked and invisibilized materiality and ecological impact, *Machine Spectre* seeks to propose a Posthuman listening space and a vision of “becoming-with” technology rooted in an embedded, embodied, and relational ontology. The piece creates a sonic fiction in which forgotten technologies are animate, haunting the present with a strange, ghostly sense of aliveness and agency deeply interconnected with the human performers. In this audible imaginary world, an alternative way of “being-with” technology is made temporarily perceptible.

By using specific sounds of technology that evoke their materiality—computer keyboard typing, vinyl crackling, CD player inner electronics, cassette tape player starting, stopping, and glitching—the material vitality and inner lives of the technological objects are centered. The sonic artifacts of *Machine Spectre* resound with the shadow of their inextricable associations, which loom and haunt the auditory space throughout the piece. Prior to picking up his instrument, the bassoonist generates sound by pressing start/stop and fast-forward/rewind on a CD player—not playing audio from the CD, but rather amplifying the peculiar motor squeals, clicks, hums, and buzzes generated by the device's inner electronics. Captured through an affixed electromagnetic microphone, the CD player's hidden, sonorous inner workings are made audible,

⁶¹ Rosi Braidotti, *Posthuman Knowledge*, 21.

rendering its materiality and inner world of noisy, glitchy electronic sounds explicit.

Additionally, the oboist produces typing sounds from an early 2000s-era computer keyboard, adding to the highly associative technological-device amalgam of sonic activity.

My approach inherits from the musique concrète lineage, while inverting one of its methodologies. Diverging from Pierre Schaeffer's *Objets Sonores*, rather than separating sound from source in order to promote a mode of listening that focuses on sound "in itself," I seek to draw out its technologically mediated nature, cultural references, and historical evocations, conjuring broad affective associations of memory, nostalgia, and poly-temporality. By invoking past historical periods through sound, a blurring of time is introduced; by repurposing old recordings in this way, the past is made present and the present somehow becomes the past.

After the performers put down the cassette tape player, CD player, and computer keyboard, and pick up their instruments, the sounds continue to loom, filling the air from an invisible source, now emanating from the loudspeakers. The sounds are first "summoned" by the devices and by the sight of the performers activating them on stage. After this summoning, the devices are put away, yet their sonic presence persists in their physical absence, producing an affect suggestive of ghostly presence. Arising from the cassette tape player held by the violinist on stage are repurposed fragments of the 1928 recording by Richard Crooks, *Song of Songs*. From the single record *Ah, Sweet Mystery of Life*, the ballad references the biblical *Song of Songs*. Crooks' romantic version, however, concerns earthly expressions of enduring love, devotion, and passion, rather than the divine. The song and the voice with which Crooks sings evoke longing for something: the transcendent, reached through the arms of a lover.

Song of songs, song of memory

*And broken melody of love and life
Nevermore for me can that melody
Fill the heart with the joy once we knew
Oh night of bliss, night of June and love
Beneath the stars, amid the roses
Oh dream of delight that's faded and gone
Song of songs when you were my whole world of love.*

In these lyrics, melody and song serve as metaphors for the energy of passionate love. Melody brings to life memories of love and gives voice to longing; the “broken” melody is the broken heart, which can be relived to remind one of “the joy once we knew.” The metaphor of song, sung within a song itself—a kind of meta reference—functions as a vehicle for revival, transcending time and preserving or reliving the past.

Audio as a tool for preserving memories of loved ones has been embedded in recording technology since its very inception. Thomas Edison, in an 1878 essay, “The Phonograph and Its Future,” published a year after the invention, envisioned that the new technology’s foremost usage would be for “the purpose of preserving the sayings, the voices, and the last words of the dying member of the family.”⁶² Moving forward, “it would be possible to preserve the voices of the dead, to conjure up their sonorous presence after they had turned to dust.”⁶³ The fragmented repurposing of *Song of Songs* in *Machine Spectre* embraces the 1928 ballad’s historicity and transmutes its themes into an entirely different contemporary context. The ghostly affect of the antiquated song sounding from the outdated cassette tape player—its button clicks, rewinds, and fast-forwards intentionally audible—is fully embraced as a powerful and evocative compositional tool. Repurposing this old recording yields not only affects of haunted-ness and

⁶² Thomas A. Edison, “The Phonograph and Its Future,” *The North American Review* 126, no. 262 (1878): 534.

⁶³ Shelley Trower, *Senses of Vibration: A History of the Pleasure and Pain of Sound* (Continuum, 2012), 65.

ghostliness, but a kind of disorientation that uses the evocation of memory to disrupt one's perception of time. Rather than longing for a lover, the quality of transcendental yearning here belongs to the ghostly audio recording itself, reaching for its own material manifestation through the sonic. The cassette tape player recording of *Song of Songs* is thus treated as a ghost, eager to materialize. The piece's affect of longing is displaced from the human singer onto the technology, and as such *the recording itself is yearning*.

A central technique in my work is the exploration of tensions inherent in the acousmatic and electroacoustic listening experience, wherein sound is disembodied from its source through the distribution of loudspeakers. This can be likened to the cinematic effect of the *acousmètre*, a sound severed from a specific source that creates “a shadowy figure whose voice can be heard, but whose body cannot be located.... It makes a sound that comes from no particular location.”⁶⁴ My work leans into the phantom effect and treats it as a powerful aesthetic tool that disrupts expectation and destabilizes perceptual orientation. Complicating the linkage between sound and source with the presence of live performers, the acousmatic and *acousmètre* give the illusion of ghostly auditory presence, evoking questions in the listener: *Did I really hear that? What sound is coming from where?* Brian Kane writes:

According to Michel Chion, “the *acousmètre* has four main powers: the ability to be everywhere, to see all, to know all, and to have complete power. In other words: ubiquity, panopticism, omniscience, and omnipotence.” It is precisely the spacing of the auditory effect from its source or cause that grants the *acousmètre* and acousmatic sound their strange power.⁶⁵

⁶⁴ Brian Kane, *Sound Unseen: Acousmatic Sound in Theory and Practice* (Oxford University Press, 2014), 149.

⁶⁵ *Ibid.*, 150.

This “strange power” is conditioned by a sense of distance that is suggestive of enchantment and a haunting affect where invisible presences loom, only making themselves known through sound. While these presences are perceived and felt by the body, their sources remain obscured and unseen.

Source-bonded sonic material (action corresponding with a resultant sound)



Source-severed material (disembodied sample coming from loudspeakers)



Ambiguous cause-effect relationships (similar materials coming from both live instrument and loudspeakers, resultant sonic sources are obfuscated)

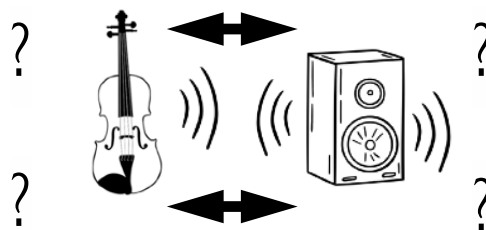


Figure 1. Obscuring of live vs. pre-recorded sound sources.

Mixing live instruments with electronics diffused through loudspeakers in ways that intentionally obscure source-bonding relationships can create the affect that the instruments are

summoning or channeling invisible forces—that the instruments themselves are vehicles for conjuring and making perceptible unseen worlds. My music seeks to exploit relationships between source-bonded⁶⁶ sonic material (action corresponding with a resultant sound), source-severed material (sample playback from loudspeakers), and ambiguous cause-effect relationships (sonic sources obfuscated between live instruments and loudspeakers) (see Figure 1).

In *Machine Spectre*, electronic sounds emanate from both the loudspeakers and the performers on stage using the hardware electronic devices. Likewise, the fixed media includes samples of acoustic instruments—recordings of slap tongue, col legno battuto, and pizzicato string attacks—so that acoustic instrument sounds appear alongside electronic sounds from the loudspeakers. This creates ambiguous cause-effect relationships within the listening experience, proposing a phantom effect and evoking questions in the listener: *What is live and what is pre-recorded? What is coming from where?* The result is an affect in which the chamber orchestra and electronics are unified as a single sound world, and the human performers are haunted by the spectral presence of invisible, partially obscured human and more-than-human sound sources.

Starting, stopping, and glitching continuously, the refrain produced by the cassette tape player fills the air and resounds from an invisible source. The persistently glitching, “broken” sound of the recording causes the audio to refuse its own development. The instruments and electronics tumble forward with a gestural unfolding that similarly resists motivic development, harmonic centrality, and rhythmic regularity. Instead, listeners are oriented toward a mode of listening focused on gestures made up of non-hierarchical, non-teleological morphologies laid

⁶⁶ Denis Smalley, “Spectromorphology: Explaining Sound-Shapes,” *Organised Sound* 2, no. 2 (Aug 1997). Smalley’s concept of “source-bonding” refers to the natural tendency of listeners to relate sounds to supposed sources and causes, drawing on their accumulated experience of the physical and social world to assign meaning and identity to sonic events.

out over time. The intensities, shapes, and forces set in motion can be likened to Deleuze's "smooth space," where traditional melodic, harmonic, and rhythmic elements are deterritorialized into fluid, continuous, "nomadic" trajectories or "lines of flight."⁶⁷ Over time, the recording takes on a deterritorialized role: one sonic flow among others on a singular plane of sonic becoming, not occupying a traditional role that emphasizes melodic, harmonic, and rhythmic qualities. An assemblage of acoustically and electronically melded gestures and fragmented movements, *Machine Spectre*'s sound world is heterogeneous: electronics and acoustic instruments coexist on a single sonic plane, mimicking and subtly interacting with one another. The piece resists traditional hierarchies of sonic organization, proceeding through glitches, bursts, and fragments. Yet the occasional synchronicities and coordinated silences make apparent that the sound-body remains in control of itself, never fully succumbing to chaos or complete brokenness.

This quality of starting, stopping, and glitching is integral to the sample's sonic presence throughout the piece. Amanda K. Greene discusses the potency of the glitch as an aesthetic tool:

In the face of glitch, the machine momentarily stalls in ways that allow the working of the machine to become visible... Glitches are particularly helpful in re-placing materiality within abstract fantasies of technological progress in digital culture by revealing the thingness of familiar technologies that usually recede into the background. In performance studies scholar Rebecca Schneider's words, "A glitch is an interruption of materiality into the fantasy of immaterial flow." ...Glitches don't just expose new technologies' contours but also reveal the edges and seams of the human body as it evolves through quotidian contact with these technologies.⁶⁸

When a technological glitch occurs, one's relationship with the device shifts, transforming it from a mere tool into an object that seems to possess its own agency, fallibility,

⁶⁷ Deleuze and Guattari, *What is Philosophy?*

⁶⁸ Amanda K. Greene, *Glitchy Vision: A Feminist History of the Social Photo* (MIT Press, 2024), 8.

and complex inner life. Musical techniques that evoke a technological glitch can produce this same affect. These include skipping, stuttering, repeating, granulation, bit-crushing, rhythmic irregularity, distortion, abrupt cuts that disrupt listener expectation, and unexpected silences. This treatment of *Song of Songs* in *Machine Spectre* creates the affect of the recording's autonomy and material presence. The glitch reveals the material fallibility and latent possibility of failure inherent in technology, disrupting the expectation of smooth functioning and, with it, the illusory impression of immateriality and near-transcendent character that underlies popular technoutopian sentiment. The glitch pierces this veil, returning technology to its earthly, material actuality.

Amidst the unfolding of pointillistic forces made up of short gestures and attacks, one-bar fragments of the melody from *Song of Songs* appear in the violins, with the consequent phrase

The figure displays two musical score excerpts. The left excerpt includes staves for Percussion (Perc.), Piano (Pno.), Tape, Violin 1 (Vln. 1), Violin 2 (Vln. 2), Viola (Vla.), Violoncello (Vc.), and Double Bass (Db.). A red box highlights a one-bar fragment in Violin 1 and Violin 2 with the instruction 'Arco: Molto espressivo Sul Pont. As close to bridge as possible'. The right excerpt includes staves for Piano (Pno.), Tape, Violin 1 (Vln. 1), Violin 2 (Vln. 2), Viola (Vla.), Violoncello (Vc.), and Double Bass (Db.). A red box highlights a one-bar fragment in Viola and Violoncello with the instruction 'Molto espressivo Arco Sul Pont. As close to bridge as possible'.

Figure 2. One-bar fragments of the melody from *Song of Songs* appear in the violins with the consequent phrase continued in the cellos and violas.

continued in the cellos and violas (see Figure 2). Short snippets of clicks, pops, and erratic synthesizer noises in the electronics are simultaneously mimicked by instruments that play pitches and rhythms closely resembling them. In this way, similar materials appear in both the instrumental and electronics parts, creating a thoroughly enmeshed electroacoustic sound world in which electronic and acoustic sounds flow as one body.

As energy and textural density accumulates, short, disjointed, and irregular patterns in the percussion one part are introduced. Moving between snare drum, high hat, and bass drum, the phrases are suggestive of a “broken drum set” moving awkwardly, yet with extreme precision—made evident with the occasional synchronicity with other instruments (see Figure 3) and synchronized silences. The “broken drum set” foreshadows and builds to what is to come at section D, wherein it reaches a striated,⁶⁹ rhythmic “groove-like” section. The piece thus “assembles” itself from a smooth space into a striated one, reaching a kind of organized, metered sense of musical time that still maintains a sense of its own interruption, glitching and breaking by changing time signature every bar, and refusing any predictable sense of regularity. Section D introduces repeated machine-like materials and tight robotic rhythmic phrases altered over changing time signatures (see Figure 4).

The rhythmic periodicity of Section D reaches peak intensity with the strings and trombone doubling the triplet phrases with marcato accents in mm. 157-158, before an abrupt, sustained cluster in the lowest register of the piano erupts alongside a suspended cymbal roll, providing a release from metered into unmetered time. Rising above the sustained cymbal and

⁶⁹ Deleuze and Guattari, *What is Philosophy?*

The musical score is arranged in a system of staves. The instruments listed on the left are: A. Fl., Ob., Cl., B. Cl., Bon., Hn in F, Tpt., B. Trn., Perc., Vibraphone, Pno., Tape, Vln. 1, Vln. 2, Vla., Vc., and Db. The Percussion staff (Perc.) is highlighted with a red box and contains a red line labeled "Snare drum" and "Hi hat (closed)". The Vibraphone staff (Vibraphone) is also highlighted with a red box and contains a red line labeled "vibraphone" and "Simile". The Pno. staff (Pno.) contains a red line labeled "Pizz.". The Vln. 1 staff (Vln. 1) contains a red line labeled "pizz." and "mf". The Vln. 2 staff (Vln. 2) contains a red line labeled "pizz." and "mf". The Vla. staff (Vla.) contains a red line labeled "pizz.". The Vc. staff (Vc.) contains a red line labeled "mf". The Db. staff (Db.) contains a red line labeled "mf". The B. Trn. staff (B. Trn.) contains a red line labeled "mf". The Hn in F staff (Hn in F) contains a red line labeled "mf". The Tpt. staff (Tpt.) contains a red line labeled "mf". The Cl. staff (Cl.) contains a red line labeled "mf". The Ob. staff (Ob.) contains a red line labeled "mf". The A. Fl. staff (A. Fl.) contains a red line labeled "mf". The Bon. staff (Bon.) contains a red line labeled "mf". The B. Cl. staff (B. Cl.) contains a red line labeled "mf". The Perc. staff (Perc.) contains a red line labeled "mf". The Vibraphone staff (Vibraphone) contains a red line labeled "mf". The Pno. staff (Pno.) contains a red line labeled "mf". The Tape staff (Tape) contains a red line labeled "mf". The Vln. 1 staff (Vln. 1) contains a red line labeled "mf". The Vln. 2 staff (Vln. 2) contains a red line labeled "mf". The Vla. staff (Vla.) contains a red line labeled "mf". The Vc. staff (Vc.) contains a red line labeled "mf". The Db. staff (Db.) contains a red line labeled "mf".

Figure 3. “Broken drum-set” occasional synchronous alignments with other instruments in the ensemble.

piano cluster, the voice of Richard Crooks comes to the fore, taking the spotlight for approximately for a brief “cadenza-like” passage, while the rest of the instruments fall silent. In this moment, the recording of *Song of Songs* is freed from its fragmentation, singing sustained notes and syllables that remain nonetheless undecipherable. The voice soon begins to glitch, skipping continuously, before being joined by a tutti section in which the brass and woodwinds hold a D major triad, the strings play upward and downward harmonic glissandi, and the percussion plays a slow, jazz-like groove with brushes. The arrival at the D major triad signals an ironic, temporary victory—a brief tonal interruption of the piece’s prior, expected atonal harmonic language—and ultimately an unexpected momentary release and capitulation that gets quickly dismantled. After this culmination, the sound world begins to crumble as the woodwinds and brass gradually begin to degrade the pitch content of the sustained notes they produce, and the strings slowly glissando downwards matching the descent of the voice in the electronics. All the instruments together with the voice in the electronics gradually fade into silence together, leaving nothing but the quiet presence of vinyl crackling and static coming from the speakers. The use of vinyl crackle is not only an aesthetic choice or nostalgic gesture, but in Mark Fisher’s terms, a hauntological one. Vinyl crackle is what Fisher might call an “anachronic phenomenon”: a sonic event in which different moments in time collide, producing the affect of a present haunted by what it has failed to become. The crackle insists on its own materiality and historicity, functioning less as a signifier of the past and more as what Fisher calls a *spectre*—something that acts without physically existing, exerting pressure on the present from a time that has not entirely passed. The Deleuzian smooth/striated dialectic is central to *Machine Spectre*’s very form; The act of assembly and eventual dis-assembly is its teleological development. Yet,

the piece resists humanist narratives of exposition, development, crisis and resolution, as mentioned in Part One, and never achieving an assembled state as a kind of conclusion. By reaching a striated space and period of relative rhythmic stability, the piece falls backwards again into a smooth space, yet with a sense of unified culmination and climax during the tutti section. After reaching this point where the recording has seemed to finally materialize and transcend itself, it falls back apart, degrading and dissolving into nothing but noisy crackling from which it emerged. As such, the piece has a directive without destination, arrival, and resolution, as its materials and form self-negate throughout.

***INTRA* for Cello, Live Electronics, and Lights**

INTRA, written for cello, live electronics, and interactive lights, takes its title from the Latin prefix meaning “inside” or “within” and Karen Barad’s idea of “intra-action.” Intra-action proposes that entities do not pre-exist their relations, but emerge through and within their entanglement. As such, it is the relationship itself that produces distinct entities. No prior “self” then enters in(to) relation; the self is constituted by and through the relationality itself. *INTRA* seeks to imagine a sonorous and visual world giving voice to this intra-active relational subjectivity. Resounding as the liminal space existing as the in-between-ness of performer and instrument, the piece meditates on the intersubjective entanglement shared between cellist and cello, the inner life of the cello as an autonomous subject, and an imagined shared unconscious between performer and instrument. It imagines: *What memories, thoughts, and desires does the human-material, instrument performer assemblage hold?* As such, the piece explores a shared

human-object intersubjectivity, exploring agency, absence, and presence within human and more-than-human entanglements, as well as performer and electronic interaction.

INTRA uses interactive lights to cast shapeshifting shadows behind and around the performer, animating the invisible presence of the electronics and evoking the affect of the cellist being haunted by a looming, supernatural force. The lights and shadows function simultaneously as theatrical device and conceptual metaphor for the unconscious, with reference to Carl Jung.⁷⁰ In Jungian terms, the Shadow is the spectral underside of conscious life, an archive of repressed desires, forgotten memories, and unintegrated forces that haunt the self from within, never fully visible yet always exerting its presence. The Shadow, when unacknowledged or unintegrated, exerts its agency in subtle and unconscious ways, surfacing through projection, irrational impulse, and the return of repressed desires and drives that the conscious self cannot account for.

Drawing on similar techniques to those used in *Machine Spectre*, *INTRA* obscures the boundary between live and pre-recorded sound sources, with similar cello sounds coming from both the pre-recorded elements in the electronics and the live performer on stage. The lights are specifically choreographed to compound this effect, generating rapid movements between total darkness and shifting angles of light that heighten the sense of mystery and perceptual disorientation. When combined with the ambiguous cause–effect relationships of the sonic material, the result is an intensified, multi-sensory sleight-of-hand that operates not only sonically but visually and theatrically. In this way, it is never clear to the audience from whom or what is sounding the music: *Is it the cellist? The loudspeakers? The shadows? Another invisible presence?*

⁷⁰ Carl G. Jung, *Aion: Researches into the Phenomenology of the Self*, trans. R. F. C. Hull (Princeton University Press).

During a moment of total darkness, the cellist places their instrument on a stand and slips offstage, hiding behind a screen. When the lights return, they appear to have vanished, leaving the cello alone on stage while Camille Saint-Saëns's *The Swan* plays from the loudspeakers (see Figure 5). The lights, cast directly on the instrument, shift to the tempo of *The Swan*, creating shadows that dance behind the instrument, giving the affect that the cello, or the shadows themselves, are the sources of the music. This evokes the sense that the instrument is nostalgically recalling *The Swan*—a common student repertoire piece—as though reminiscing on forgotten memories held in the shadows of the unconscious.

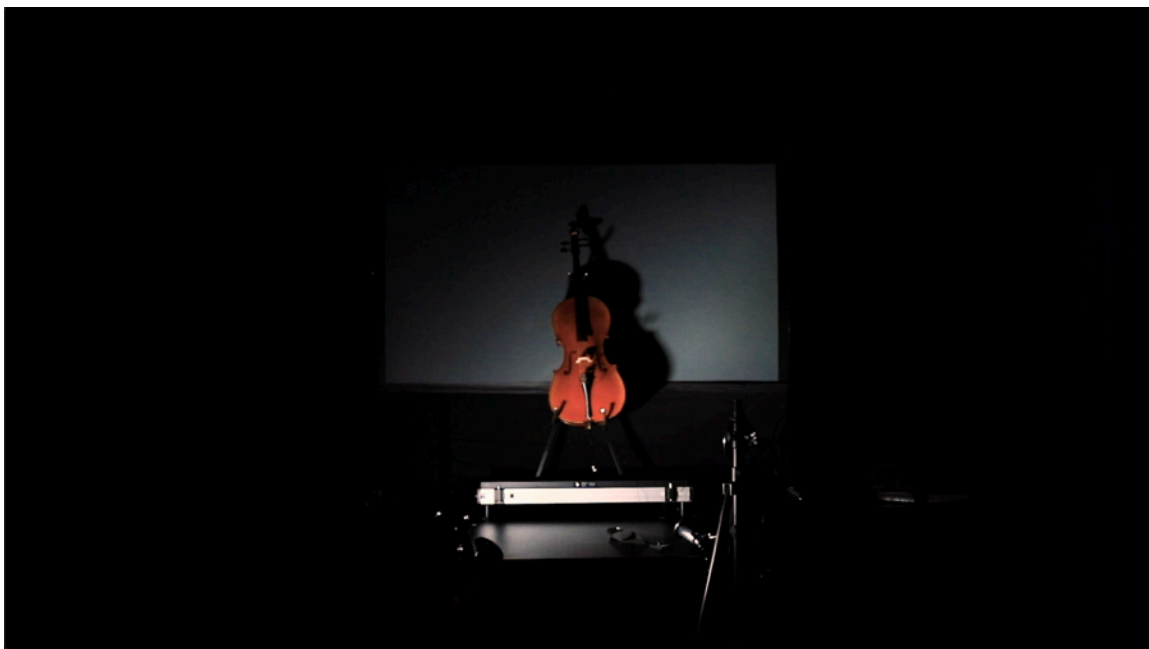


Figure 5. Cello alone on stage after the cellist vanishes behind screen.

Heavily reverberant applause sound effects play in between each phrase of the melody, further conjuring the affect of nostalgia and memory of a concert experience. At another moment of blackout, the cellist suddenly reappears on the stage, joining the electronics by playing along to *The Swan* as it builds up to a climax where the melody soon fall apart. Elsewhere, the

instrument reaches further back into its own memory: sampled recordings of cello lessons emanate from the loudspeakers, evoking the earliest stages of the instrument's shared life with the humans who have played it. At approximately the 9:00 mark, the cellist vanishes again, leaving the instrument alone on stage with elementary cello instructions coming from the loudspeakers: *Here in some very basic steps is how to get you started on playing the cello. The bow is always in my right hand, whether you are right- or left-handed, it's always the same way around.* With approximately every syllable, different lights flash and cast shadows on the instrument, again giving the affect that it is the cello or shadows producing the sound—and in this case that the cello is speaking.

I see *INTRA*'s musical form as resembling processes of hypnosis, wherein slow cumulations of repetitive gestures result in climactic peaks of intensity and the sound space gradually reaches a high level of saturation. The hypnotic structure of *INTRA*'s musical form relates to the unconscious in that repetition, a fundamental mechanism of both hypnosis and the piece, causes material to accumulate slowly and cyclically, drawing conscious experience downward into the unconscious until one's inner world becomes more vivid, present, and all-consuming. The climactic peaks of saturation then function not as moments of conscious revelation but something closer to what Freud called the return of the repressed⁷¹—an overwhelming accumulation of unconscious material that has been quietly accumulating beneath the threshold of awareness, rendering audible what ordinarily remains invisible and unfelt to conscious experience. These two climaxes of peak intensity, where the storms of the unconscious have accumulated to their maximum degree, at the 5:30 and 8:30 marks, are saturated with

⁷¹ Sigmund Freud, "Repression," in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, vol 14, trans. James Strachey (London: Hogarth Press, 1957), 141–158.

flashing lights, fast-moving shadows, a high density of sonic activity in the electronics, and intense, loud, and energetic gestures in the live cello. Both climaxes are then abruptly interrupted by absence, both sonic and visual: the density and volume collapse suddenly into a low-pitched sustained drone, corresponding with a complete blackout of the lights. These sudden breaks of intensity—which I consider momentary re-awakenings to conscious experience, blurring the lines between the waking and dream states—quickly descend back into the depths of the unconscious. After the two hypnotic, cumulative descents into the unconscious, a third abbreviated section builds slightly but then plateaus into a kind of repetitive stasis. In this concluding section, the cellist mimes bow strokes, putting his arm in the air following the rudimentary cello lesson instructions sounding in the electronics. At this point, it becomes increasingly clear to the audience that the live performer is playing nothing at all, unapologetically revealing sleight-of-hand trickery and calling into question the cellist's role and agency as a performer throughout the piece.

INTRA, through its sustained engagement with absence, memory, and the agency of invisible presences, enacts the hauntological. The piece quite literally stages the condition Fisher described as spectral: entities that act without physically existing, forces that exert their pressure on the present from elsewhere in time.⁷² The cello's apparent autonomous recall of Saint-Saëns's *The Swan*—a ghost of student repertoire and the instrument's shared history with the humans who have played it—generates precisely the hauntological dynamic in which the past haunts the present, an active agentic presence in the moment. The sampled cello lessons that emanate from the loudspeakers deepen this, conjuring the earliest layers of the instrument's memory and

⁷² Fisher, *Ghosts*.

populating the sonic space with voices and instructions from another time, presences that are audible but source-less, real in their affect but absent in their origin. The deliberate obscuring of sound sources and audiovisual sleight-of-hand effects further create the hauntological condition of a present haunted by forces it cannot locate or name. In this way, *INTRA* does not merely reference hauntology as a concept but performs it as a lived perceptual experience. Collapsing the distance between past and present, memory and immediacy, virtual and actual, the sonic space becomes a site of temporal multiplicity, where different moments in time coexist simultaneously. The audience is thus suspended in a haunted, disjointed present, dynamically alive with audible spectres, living memories, and a sense of multidimensional temporality that has been cracked open to reveal other times that have always been latent within the present.

INTRA stages a sonic and visual world in which the humanist assumption that time is experienced from a singular, continuous, and centered human subjects is problematized. Western humanist conceptions of temporality privilege a linear, progressive arc—a coherent narrative of past, present, and future organized around the experiencing “I.” *INTRA* refuses this structure entirely, proposing instead a temporality that is multiple, distributed, and decenters the human’s understanding of linear time. The cello’s apparent autonomous recall of its own history, the sourceless voices of past teachers emanating from loudspeakers, and the performer’s sudden absences and reappearances together produce a temporal experience that belongs to no single subject—one that is shared across the human-instrument assemblage, dispersed through memory, technology, and a shared unconscious. Time, in *INTRA*, is not something a human subject moves through, but something that a constellation of entangled human and nonhuman forces moves through simultaneously. This intersubjective field thus opens onto a temporality no longer

organized around anthropocentric agendas or the coherent arc of a single human subject but dispersed across a multiplicity of time. In temporarily inhabiting this decentered, multi-directional, and spectrally layered experience of temporality, the listener is offered a sensory experience of posthuman time: not a linear unfolding revolving around a sovereign human subject, but a field of coexisting durations, distributed perspectives, technologically haunted presents, and living pasts that press upon the now from multiple directions at once, dissolving the boundaries between then and now, self and other, subject and object.

***noocambriidæ* for Multichannel Audio and Video:
Synthetic-organic Becomings and Speculative Creatures**

In *noocambriidæ* for 10.1 channel audio and single channel video, the synthetic and organic are brought together in an audiovisual world that combines spatialized sound and 3D animations. The piece, in collaboration with visual artist Andrew Wharton, was designed to be playable on loop as an installation the audience can walk in and out of, or lie on pillows and cushions and immerse themselves in. It can also be played from start to finish on a concert program. *noocambriidæ* imagines a speculative second Cambrian explosion taking place within the virtual realms of digitally-merging, cyborgian consciousness. The resulting emergent entities are cyber-organic mixtures and monstrous synthetic-organic entities that shape-shift and undergo various stages of metamorphic development and evolution. The Cambrian explosion, a period of rapid evolutionary diversification that occurred approximately 538 million years ago, represents one of the most significant events in the history of life on Earth, producing the ancestors of most modern animal phyla and transforming the biosphere from one dominated by simple

multicellular organisms to one of complex, differentiated animal life. In the context of the posthuman convergence, marked by the rapid emergence and diversification of digital life and accelerating development of artificial intelligence, *noocambriidæ* imagines a speculative second Cambrian explosion taking place within the virtual realms of technologically entangled human thought. The program note states:

Synthetic/Organic, digital/biological, virtual/actual, *noocambriidæ* brings into being monstrous entities that are born out of the compost pile of the collective unconscious as it operates through cyberspace. Though the exact date and attribution are uncertain, the term ‘noosphere’ is commonly linked to Vladimir Vernadsky, Teilhard de Chardin and Edouard Le Roy, as early as the mid-1920s. This concept refers to the third stage in the earth’s development, where the emergence of human cognition will fundamentally alter the geosphere and biosphere of the earth. *noocambriidæ* positions the noosphere not just as an emergent field, but as a substrate where entities can come into being. Through 3D animation and 10.1-channel spatialized sound, *noocambriidæ* acts as a nooscope into this realm of more-than-human behaviors, speculating on a second cambrian explosion of autonomous creatural forms born out of primordial cyborg potentials.

As its conceptual foundation, this piece draws on “the noosphere,” a concept developed by the French philosopher and Jesuit priest Pierre Teilhard de Chardin, and independently by the Russian geochemist Vladimir Vernadsky in the 1920s. The noosphere refers to the sphere of human thought and consciousness understood as a distinct layer of the Earth’s development, analogous to the geosphere, biosphere, and atmosphere. Extending this concept into the present, we understand the noosphere as increasingly defined by technologically augmented consciousness, wherein digital networks, artificial intelligence, and reliance on technological objects have intensified and transformed the reach, implications, and qualities of collective human thought.

Starting from this theorized sphere of planetary evolution, we sought to imagine monstrous, alien-like creatural emergences composed of sonic and visual materials that signal

both synthetic and organic worlds. Conceiving of human thought as a planetary sphere, almost like a physical place, allowed us to envision what an explosion of posthuman creatures might look and sound like—beings that have evolved within and in response to the cyborgian ecosystems of the noosphere, constituted by both organic and digital materials. As stated in the program note, the noospheric realm of human consciousness was conceived as a “compost pile” wherein/whereby diverse heaps of heterogeneous materials blend and decompose together, imagined creatures forming out of the new, unified mixture. These speculative creatures embody the fusion of fragmented logics in contemporary existence: we think and respond in terms of organic bodily needs, desires, and processes—and equally in terms of digital environments, data metrics, notifications, and the compulsive logics of scrolling. It is in the tension between these two registers that these creatures emerge, taking on a strange, hybrid form.

Half of the sonic materials were drawn from modular synthesizers, VST instruments, and Max/MSP patches, all purely synthetic, sculpted from oscillators and white noise generators. The remaining sound sources came from recordings of organic and acoustic material: field recordings of birds, frogs, insects, and human breath; instruments such as tubas, trumpets, didgeridoos, and percussion; and contact microphone recordings of water being poured into a glass. These samples then underwent significant processing: granulation, time stretching, pitch shifting, glitching, and stochastic delay, to name just a few. I then tried to make the synthesizers sound organic and the organic sounds sound synthetic, in turn creating the affect of synthesized/organic heterogeneous yet unified singular mixtures. The affect I sought to create was where the listener could not exactly place what was synthetic and what was organic: at certain moments the synthesizers produce sounds similar to organisms and insects, at others they resemble water,

wind, storms, volcanic eruptions and magma, as well as bodily processes like eating, drinking, stomach rumbling, etc. Simultaneously mixed with the synthesized sounds, the field recordings of organic/acoustic materials were processed to the degree that they sounded somewhat unrecognizable but still maintained a degree of resemblance to and evocation of organicity. I also tried to create an obscured sonic affect of these sounds being just barely noticeable: *this sounds like a creature, but I'm not exactly sure what... this sounds organism-like but I can't quite place which.*

The visual materials essentially sought to do the same thing as the sound, using visual signifiers of organic materials—shapes and surfaces that realistically resemble animals, insects, water, and organs—as well as cybernetic/digital materials—primitive 3D shapes, low-poly surfaces, and angular, unrealistic-looking forms resembling those found in virtual environments. In this way, visual and sonic materials alike evoke and have ties to the organic world, while simultaneously remaining alien with clear references to the digital world. The resultant affect is such that the audience perceives the shape-shifting creatures as simultaneously biological and digital, actual and virtual, recognizable and alien.

noocambriidæ begins with the “primordial sea,” a reference to the mythological motif of a cosmic ocean representing the vast, silent waters of the Precambrian era, the pre-creation from which all life and order on the planet emerged. Coming from the audio are drones made up of stretched field recordings and low pulsing sine tones, with beating that slowly undulates and changes speed. The camera pans upward from the ocean into the endless expanse of the black sky, and with the resonant impact of a low drum, a creature begins assembling itself out of basic primitive cube shapes, briefly self-referencing the medium of 3D animation itself. Clearly

synthesized, digital sounds begin introducing themselves as the creature assembles itself out of the cubes, eventually forming into an organ-like form, with surface texture resembling a brain (see Figure 6).

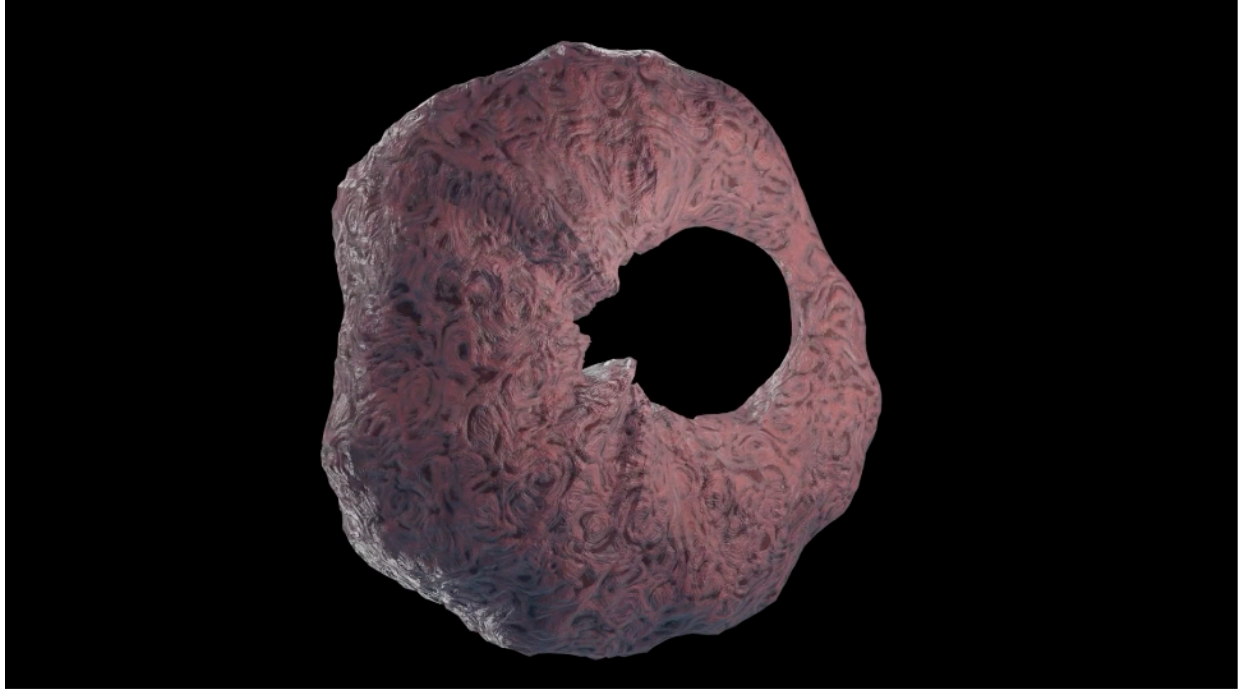


Figure 6. The creature's first organ-like form.

Breathing sounds mixed with tubas and didgeridoos enter as the organ expands and contracts, and the camera zooms in to show the slowly changing details of the mysterious shape. A golden metallic goo-like substance appears in the center of the organ, and its morphing movements are accompanied by a sticky, slimy-sounding synthesizer patch with similar processed animal and insect sounds in the electronics. A snake-like figure emerges, wrapping itself around the organ and plunging inside of the goo substance, as the first process of metamorphosis begins.

The brain-like organ becomes gradually consumed by the snake figure as the audio thickens and climbs in pitch. The snake then begins to unravel itself, descending in register,

revealing that the organ has vanished entirely, digested, leaving nothing but the golden goo. The electronic sounds grow erratic, flailing alongside the substance's increasingly frenzied, lurching movements as it swells in both size and speed (see Figure 7).

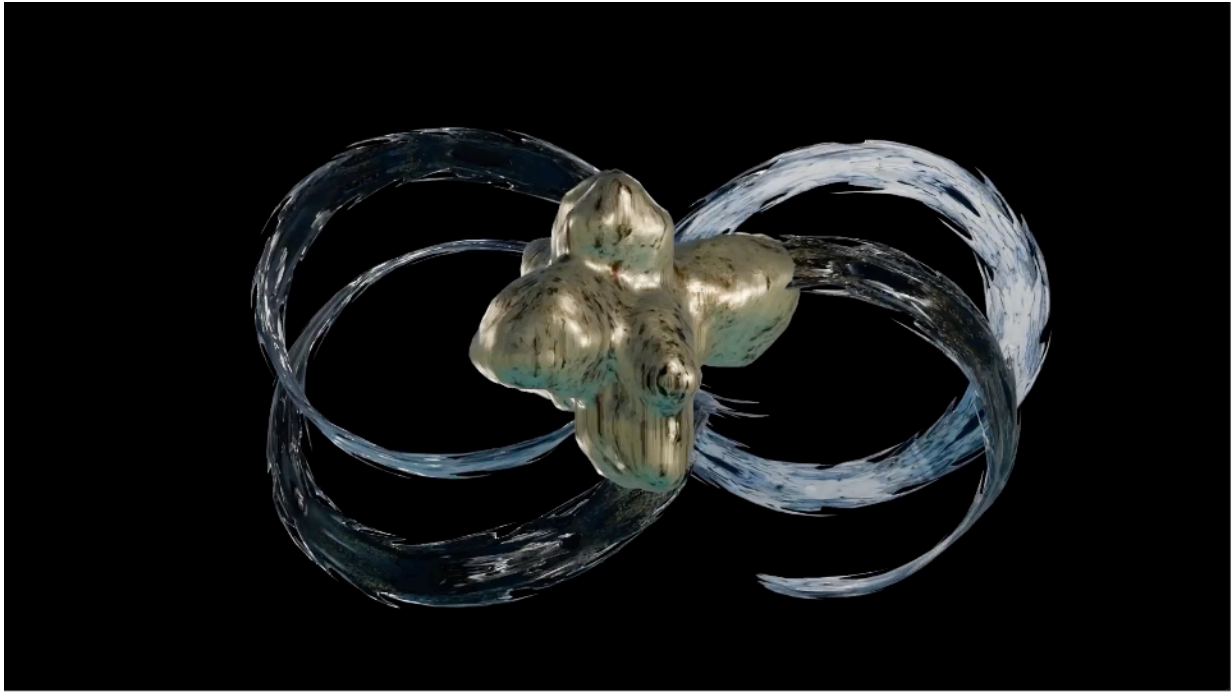


Figure 7. First process of metamorphosis with golden goo-like substance and snake-like figure.

Around 5:50 marks the piece's major climax: the snake and organ figures have both dissolved away, leaving only the golden substance, which drifts closer to the camera until it swallows the entire frame. The viewer is pulled inside, where something like the substance's inner soul is laid bare. Coming off the prior sections' climactic peak, the musical and visual material settle into a momentary plateau. The audio finds harmonic stability through sustained drones that revolve around a tonic, while a golden-bronze set of rings with a silver crown-like shape in the center emerges, rotating slowly. The rings' textures resemble that of snakeskin, yet also have a glistening metallic quality to them, almost resembling a halo—suggesting a spiritual

or transcendental quality. The sustained tones at this section are made up of time-stretched bells and singing bowls, which resemble the metallic quality of the rings as well as the spiritual connotations that bowls, bells, and drones have, for those familiar. The rotating rings begin to increase in speed and width, reaching another process of metamorphosis and eventually consuming the silver crown in the center completely. During this metamorphic process, the audio becomes more active and intense with synthesizer pulses and drones increasing in speed and pitch register. After the process reaches peak intensity, the rings unravel themselves to show the crown-like shape has disappeared and reveal the final stage of the creature's development. What remains is a kind of digital insect with a glassy, reflective translucent body and innards made up of a moving red organ-like substance that resembles the brain-like organ from the beginning of the piece (Fig. 9). Electronic sounds mimic the visual behaviors of the insect's outer shining, crystalline body and inner guts with a dense amalgam of rapid, short, glitchy, sharp, and high

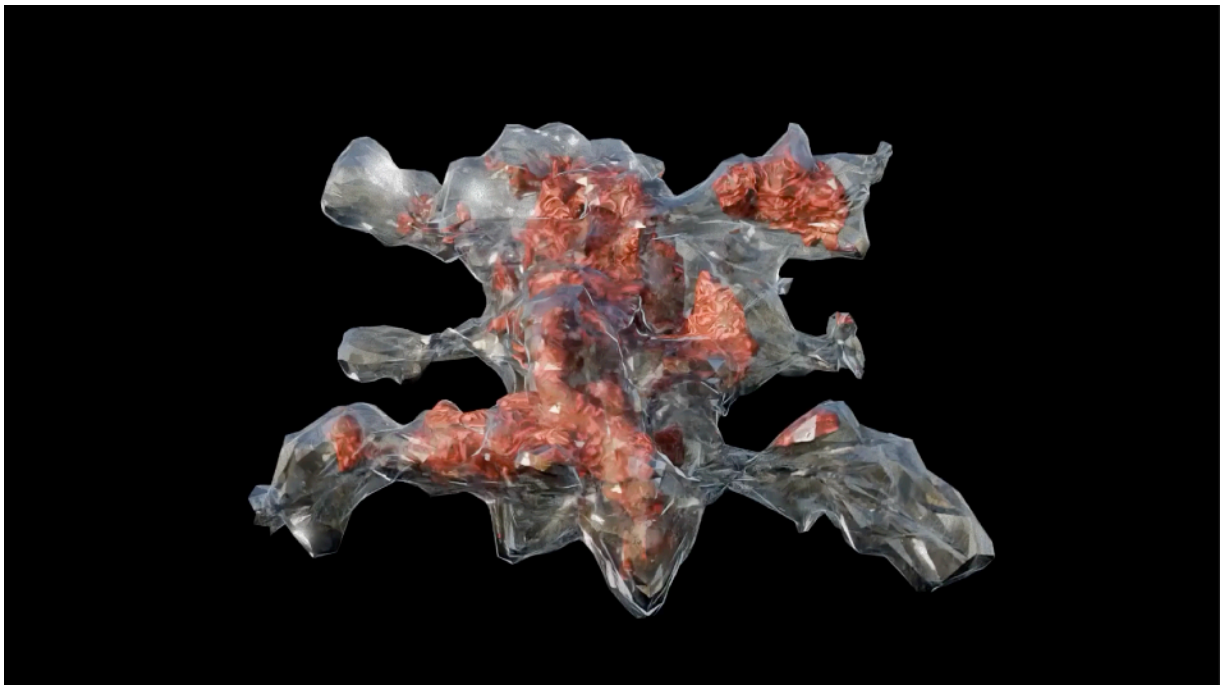


Figure 8. Digital insect and final stage of metamorphic development.

register sonic activity. The insect's movements grow in pace, eventually reaching grotesque, exaggerated gestures as the camera zooms in closer until the creature's insides consume the entire frame, eventually dissolving into darkness.

The musical form of *noocambriidæ* resists the teleological arc of traditional Western compositional structures, unfolding instead as a series of metamorphic processes and thresholds of intensity that mirror more-than-human autonomy, evolutionary emergence and creatural becoming. Rather than progressing through exposition, development, and resolution, the piece moves through successive stages of assemblage, dissolution, and re-formation, each section giving rise to the next through processes of gradual accumulation and collapse rather than through any conventional sense of narrative logic. The form is closer to biological or geological time than to humanist musical time: slow, undulant, and metamorphic. From the quiet primordial drones of the opening through to the frenzied, grotesque climax of the final insect creature, the piece's trajectory traces not a journey with a destination but a process of continuous mutation, where each stable moment of arrival continuously dissolves into another process of transformation.

noocambriidæ enacts Braidotti's insistence that the posthuman convergence is not only a site of crisis but of generative mutation and rich possibility, giving that possibility a concrete audiovisual form, making it not only perceptible but inhabitable through the immersive installation format that Andrew and I sought to create. It also carries forward sonic and visual strategies central to my practice: the blurring of organic and synthetic materials, the creation of ambiguous and unlocatable sound sources, and the use of electronic sound to dissolve stable categorical boundaries between self and world, actual and virtual, known and alien. In this sense,

noocambriidæ functions as a speculative sonic worlding that reaches into an imagined future already taking shape within the noosphere, giving form to the monstrous, generative, and emergent creatural forms of the posthuman.

CONCLUSION

“If a cartography is the record of both what we are ceasing to be and what we are in the process of becoming, then critical thinking is about the creation of new concepts, or navigational tools to help us through the complexities of the present, with special focus on the project of actualizing the virtual.” – Rosi Braidotti⁷³

“A cartography is a theoretically-based and politically-informed account of the present that aims at tracking the production of knowledge and subjectivity and to expose power both as entrapment (potestas) and as empowerment (potentia).” – Rosi Braidotti⁷⁴

The theory–practice cartography and pieces discussed in this dissertation represent nodes within an ongoing rhizomatic investigation that is my creative practice. *Machine Spectre*, *INTRA*, and *noocambriidæ* each propose, in their own way, a posthuman listening space where the boundaries between human and nonhuman, organic and synthetic, past and present, become unstable, porous, and generative. They are attempts to use sound to make perceptible what typically remains beneath the threshold of visibility: the agency of technological objects, the strange mutations of the posthuman convergence, the nature of our cyborgian entanglements, and the haunted temporality of a present saturated by its own technological past. As I have argued,

⁷³ Rosi Braidotti, “A Theoretical Framework for the Critical Posthumanities,” *Theory, Culture & Society* 36, no. 6 (2019): 37.

⁷⁴ *Ibid.*, 33.

my pieces complicate conventional teleologies and hierarchies; a posthuman approach enacts alternative structures by giving rise to sound worlds that challenge traditional modes of musical governance and organization, challenging the formal, harmonic, and melodic structures that encode narratives of the human individual's struggle. My pieces rework such teleologies through material and form, generating sonic trajectories that arrive at dissolution, entropy, openings, and questioning, rather than resolution. As such, I posit that these pieces can be understood as distinctly posthumanist, given that:

- Heterogeneous mixtures of sonic sources blend, obscuring what's what, creating a composite that complicates foreground vs. background and live vs. fixed dichotomies through use of sleight-of-hand and obscured live vs. pre-recorded sound sources.
- Combinations of electronic and acoustic/organic sonic materials dissolve the perceptual boundary between them, with synthetic-organic blending used to enact a unified field of sound where the technological is interwoven with and constitutive of subjectivity, rather than a tool that exists apart from the subject.
- Goal-oriented narrative arcs and teleologies of transcendence on the level of form are negated by creating formal climaxes that rupture and develop into periods of stasis, rather than reaching resolution.
- Repurposed melodic fragments are used in ways that are deterritorialized, collapsing back into a singularity of sonic flow and treated as another layer of sonic activity, rather than act hierarchically, as the musical subject.

- No tonal center hierarchically governs these pieces' harmonic organization—the few moments where harmony is introduced, it soon falls apart and/or is contextualized in a way that is ironic, deconstructed, or disillusioning.
- Reappropriated sonic materials conjure affects of memory and the hauntological, animating and making the agentic force of technological objects perceptible, and creating a sense of temporal multiplicity that disrupts anthropocentric orientations to time.

Across these works, a consistent compositional perspective reworks hierarchy, resolution, and the fiction of a stable, bounded subject. Together, they propose a sonic practice of immanence, where boundaries dissolve, teleologies are undone, and the field of sound becomes a site of open, rhizomatic becoming, rather than a goal-oriented, arrival at a destination. Sound and technology are understood not as neutral tools or transparent conduits, but as agentic, historically conditioned forces through which alternative modes of subjectivity, perception, and relationality made up of vibrational architectures can be temporarily inhabitable. What connects these three pieces, beyond their shared theoretical grounding in the concern for relationships with the more-than-human world, is sustained preoccupation with what remains unseen: the ghostly inner lives and hidden agencies of technological objects, shared intersubjectivity between performer and instrument, and monstrous cyborgian emergences within the virtual spaces of human thought.

Rather than representing the nature of our present cyborgian, inter-material, and interspecies entanglements, electroacoustic sound can make this a felt, experiential reality by disrupting the listening body's sense of where "self" ends and "other" begins. In this way, a posthuman listening space and perceptual shift can be made possible; where becoming is made up of relational flows, forces, and material processes amongst living and non-living systems, and

subjectivity is collaborative, rather than dominating and isolated, and planetary and ecologically minded, rather than anthropocentrically self-centered.

Posthuman convergence demands not only new theories but new perceptual capacities—expanded imaginations, ways of sensing, relating, and envisioning what we are in the process of becoming. Looking ahead, I seek to use the cartography put forth in this dissertation as a guide for exploring these types of fertile space with greater nuance and depth in future creative work, generating pieces that push these techniques further and inhabit these questions more fully. Together, these works and the theoretical framework surrounding them constitute not a finished map, but a set of coordinates for navigating what continues to unfold and questions I seek to address, going forward. This is a beginning, an opening onto a rhizomatic field of becoming: an orientation toward the work that lies ahead, rather than a conclusive endpoint or resolute culmination. Holding these questions open is a leaning into the still-forming—posthuman listening toward the not-yet and the possible. *What kinds of worlds do we need? What kinds of listening are we capable of? What forms of becoming are still possible?*

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ess whiteley

Machine Spectre

For Chamber Orchestra and Electronics

Written for Alarm Will Sound

Commissioned by the Mizzou International Composers Festival

2024

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Technical Notes



- There is a part for CD Walkman and Electromagnetic Microphone. The microphone picks up sounds of the electronics on the inside of the device, creating a variety of sputters, hums, crackles, and other noises. The electromagnetic microphone should go directly into the board via a DI box. These items can be provided upon request.



- There is a cassette tape player part with a pre-recorded cassette tape. The cassette tape player should be mic'd so as to capture the sounds of the buttons being pressed and the electronics as the tape rewinds, fast forwards, starts and stops. Cassette tape player and tape can be provided upon request.



- There is a computer keyboard part. The computer keyboard should be loud and "clacky" with plastic keys and should be mic'd.

Technical Notes (Continued)

- This piece is to be performed with fixed media electronics diffused on a stereo speaker system with optional quadraphonic multiplication.
- Seamless blend between the fixed media and live performers should be achieved. Levels between the electronics/acoustic instruments should be balanced equally. Each acoustic instrument should be amplified and all inputs, including the fixed media should be sent through a single reverb bus, wetness set to approximately 10-20% depending on venue.
- Fixed media should be triggered using a MIDI keyboard which the pianist will play. The cues are set up in an Ableton session which can be provided upon request.

Notes for Performers

Alto flute

- + = slap tongue

Oboe

- Double on computer keyboard part

Bass Clarinet

- + = slap tongue

Piano

- Double on “tape” part using a MIDI keyboard (see technical notes)
- + = play pitch on keys with strings dampened by using sticky tack placed on the string. If it is not possible to place tack on the string then use your hand to dampen.



Violin 1

- Doubles on Cassette Tape Player part (see technical notes)

Doublebass

- Doubles on CD Walkman and Electromagnetic Microphone part (see technical notes)

Percussion Instruments needed

- Perc 1: Stop watch (for conductor, if needed), suspended kick drum or bass drum with short decay, snare drum, hi-hat, low wood block, suspended cymbal, rubber mallets, sticks, and brushes.
- Perc 2: Vibraphone with tremolo motor control, bow, rubber mallets, sticks, slap stick, and metal cowbell.

Score Graphics by Jono Currier

81

6 4 8 12

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hr in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Vc.

Db.

Mouthpiece out/
air sound 'shh'

Tongue slap /
Tongue ram

mf

Simile

15 16 20

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hn in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Vc.

Db.

(If no C-Extension then low E instead)

23 24 24 28

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hn in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Vc.

Db.

85

50

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hn in F

Tpt.

B. Tbn.

Perc.

Perc.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Vc.

Db.

pizz.

mf

pizz.

mf

Molto espressivo

Arco

mp

Molto espressivo

Arco

mp

Approx. 3 sec

74

Accel.

15

A. Fl. *mf* *mf*

Ob. *mf*

Cl. *mf* *mp < mf*

B. Cl. *mf*

Bsn. *mf* *mp* *f* *mf*

Hr in F

Tpt. *mf*

B. Tbn. Tongue slap / Tongue ram Simile

Perc. *mf*

Perc. *mf*

Pno. *mf*

Electronics

Vln. 1 *mp* *mp* *pizz.* *p* *f*

Vln. 2 *mp* *mp* *pizz.* *p* *f*

Vla. *mp* *mp* *pizz.* *p* *f*

Vc. *mp* *mp* *pizz.* *p* *f*

Db. *mp* *mp* *pizz.* *p* *f*

89

Accel.

A. Fl. *mf*

Ob. *mp* *< mf*

Cl. *mp* *< mf*

B. Cl. *mf*

Bsn. *mf*

Hn in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1 *mp* *Molto Vibrato* *Arco* *Accel.* *pizz.* *Arco* *pizz.*

Vln. 2 *mp* *Molto Vibrato* *Arco* *Accel.* *pizz.* *Arco* *pizz.*

Vla. *mp* *Arco* *Accel.* *pizz.* *mf*

Vc. *mf*

Db.

Simile

Simile

95

107

4/4 1/8 2/4 3/4 3/8 3/4 3/8 4/4 2/8 3/4 2/8 4/4 3/8

A. Fl.

Ob.

Cl.

Ord.

B. Cl.

Bsn.

Hr in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Pizz.

Vc.

Pizz.

Db.

f

20

3/8 4/4 2/8 4/4 1/8 2/4 3/4 4/8 3/8 4/4 2/8 3/4 2/8

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hn in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Vc.

Db.

Pizz.

Pizz.

Pizz.

Pizz.

Pizz.

143

4/4 2/8 3/4 2/8 4/4 3/8 4/4 2/8 4/4 1/8 2/4

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hn in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Vc.

Db.

pizz.

Pizz.

153

Hold for 45 seconds
as the fixed media plays

23

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hr in F

Tpt.

B. Tbn.

Perc.

Vib.

Pno.

Electronics

Vln. 1

Vln. 2

Vla.

Vcl.

Db.

To Cymbal

Suspended cymbal roll

mp

f

L.v.

Cue #7 Trigger

Pizz.

Ord. Arco

Arco

24

Slower approx. ♩ = 65

E Choose a pitch from a concert D major triad. Hold for 30 seconds

After 30 sec. conductor gives cue to start slow glissandi lasting approx. 1 minute

After 1 min. conductor gives cue to decrescendo into silence matching the fixed media

Wait for crackling in fixed media to fade out completely

A. Fl.

Ob.

Cl.

B. Cl.

Bsn.

Hn in F

Tpt.

B. Tbn.

Perc.

Dr.

Pno.

E Cue #8 Trigger

Electronics

Slower approx. ♩ = 65

Repeat for 30 seconds

E Slow natural harmonic glissandi up & down the G string. Flexible, inexact tempo

After 30 sec. conductor gives cue to start slow glissandi lasting approx. 1 minute

After 1 min. conductor gives cue to decrescendo into silence matching the fixed media

Wait for crackling in fixed media to fade out completely

Vln. 1

Vln. 2

Vla.

Vc.

Db.

Ess Whiteley

INTRA

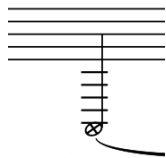
for cello, live electronics and lights (2023 - 2026)

INTRA explores the inner life of the cello, its intersubjective entanglement with the performer, and an imagined shared unconscious between cellist and cello. What memories, thoughts, and desires does the human-material, instrument-performer entanglement hold? The piece seeks to imagine the inner world of a shared human-object intersubjectivity and to animate the cello as an autonomous “living” subject. INTRA explores agency, absence, and presence within human/more-than-human entanglements and performer/electronic interaction. Co-mingled with the instrument, both the human body and instrumental body share a complex collective unconscious, represented by the shape-shifting shadows cast behind the performer, à la the Jungian shadow (a metaphor for the subconscious). INTRA moves through a sea of dreams, memories, thoughts, and emotions within this shared psychological space between instrument and performer, meditating on the performative body, the performativity of the cello as an artifact-object, and the trauma, ecstasy, and dramatism of musical performance and traditional classical pedagogies.

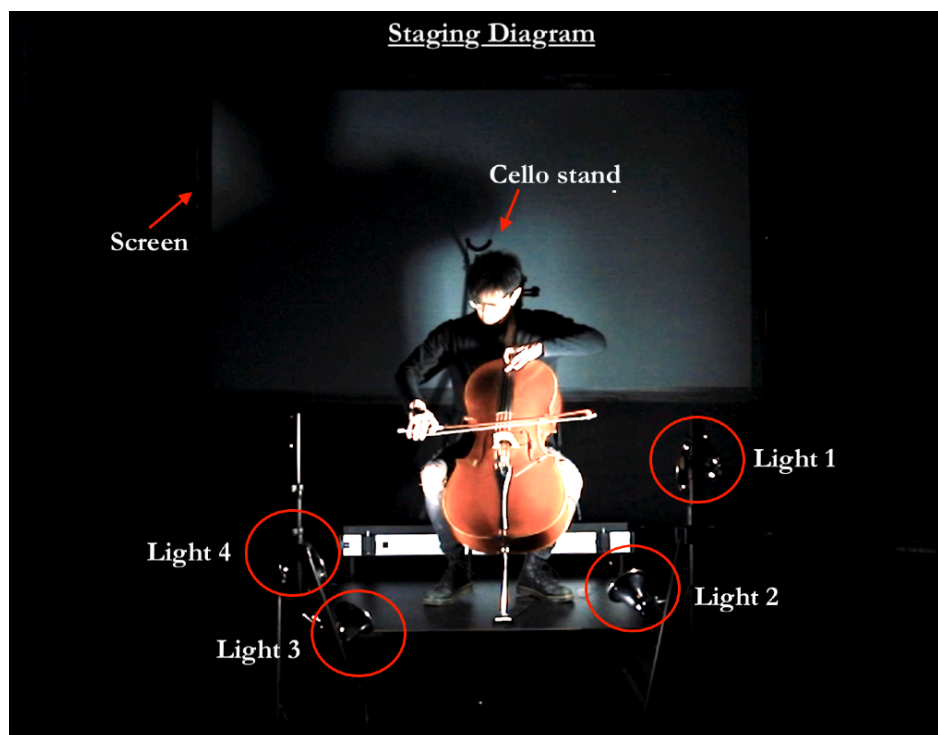
Technical notes

- Performer must be situated in front of a large screen or other white or light coloured surface that will project shadows and also that performer can swiftly walk behind.
- The house lights on the stage must be able to be near full black out, if not entire black out. The performer should be mostly invisible during times where the live-controlled lights are turned off.
- There must be a cello stand on stage that can hold the cello while the endpin is fully extended.
- Performer wears an earpiece that contains audio cues.*
- 4 Lights are to be set up, 2 on each side of the performer. Position in a way where the biggest possible shadows are able to be cast behind performer.
- Live electronics and lights are to be controlled by another person live via a lighting control console such as a Enttec DMX 512 controlled with EMU (pre-programmed session provided upon request), or other DMX controller that must have at least 4 faders* and a DAW such as Ableton.*
- Stereo electronics should be projected and multiplied in quadrophonic if not more. If this is not possible, then use stereo.
- Lights should be performed to match the cellist's playing, casting a variety of different shadows that shapeshift between one another.*

* = Materials and more details can be provided upon request.



Scordatura tuning: Tune low C string approximately one octave lower. Should be low enough so that it creates a distorted string flapping.



To see how the lights should be performed and for general direction refer to [this recording](#).

Don't hesitate to reach out to me by email for questions on the staging, sound, and performance: esswhiteley@gmail.com.

INTRA

for Cello, Electronics and Lights

for Robbie Bui

Ess Whiteley
2023-2026

A ♩ = 67
Spacious

III Sul Pont

L.v.

Ord.

sub. *f*

Cello

Cellist off stage or behind screen

Cellist walk on stage, picks up cello and sit down during black out

Cello on stage on cello stand, lights illuminating it casting shadows from different angles

Black out

mp

Start from center slowly turn head left

Start from center slowly turn head right

Electronics

Start fixed media cue 1

Footsteps 10x

Chair creaking and adjustments

Lights

Lights on/off with each footstep (pre-programmed cues)

10x

OFF

1

2

3

Abrupt off

2

II Sul Pont

5

Vc.

mp

Start from center slowly turn head right

Start from center slowly turn head left

Ord.

sub. f

I Sul Pont 9°

mp

Slowly turn head left

Slowly turn head right

Ord.

sub. f

Elec

Lights

OFF

ON

OFF

ON

OFF

Abrupt off

OFF

ON

OFF

ON

OFF

Abrupt off

9

Vc.

mp

f

Pizz.

Rit.

f

o

mp

Start fixed media cue 2

Slight overpressure
Allow string flapping

Elec

Lights

ON

ON

ON

Flickering

OFF

OFF

ON

OFF

ON

Alternate between different lights and combinations of shadows morphing into each other

B Flexible tempo
l.v.

Gradually and subtly start circular bowing

13

Vc.

mp

Gradually increase bow pressure

sul tasto

sul pont

simile

Accel. poco a poco

f

Elec

Lights

OFF ON OFF ON

Approximately match pace of the cello

Repeat

4

17

Vc.

gliss.

Elec

f

Lights

Speed up and slow down at will, listen to fixed media and respond to pacing of the lights

Repeat until audio cue for section C

C Trills above fingerboard with low scort. C string doublestop. Improvise upwards and downwards glissandi staying above fingerboard

19 8 v.e.

Vc.

Elec

Lights

8

Repeat until audio cue for section D

D

21 Molto vibrato ----- Senza vibrato ----- Molto vibrato ----- Senza vibrato -----

Vc.

ff

Elec

Lights

12

ff

Repeat until audio cue signals abrupt stop and section E

25 **E** During black out, place cello on stand and walk off stage / behind the screen

Vc. 

Elec. *sub. p*

Lights *Black out* 

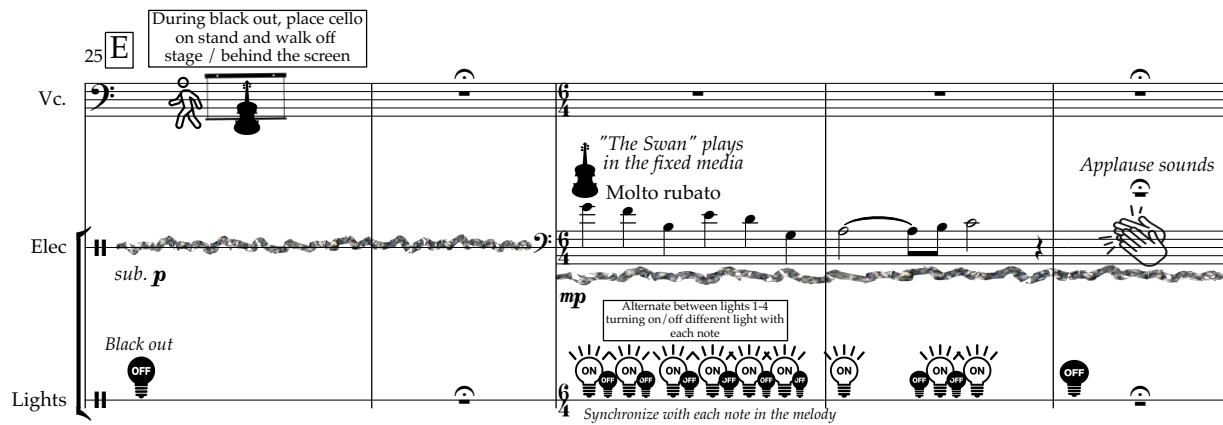
"The Swan" plays in the fixed media
Molto rubato

mp

Alternate between lights 1-4 turning on / off different light with each note

Applause sounds 

Synchronize with each note in the melody



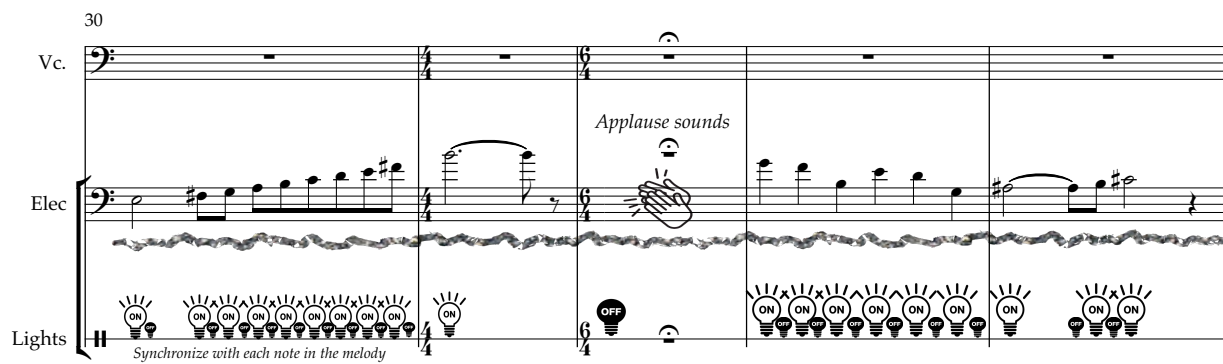
30

Vc. 

Elec. 

Lights *Synchronize with each note in the melody*

Applause sounds



During black out, walk back on stage and sit down, ready to play

Listen for the melody in the fixed media and join in whenever ready

Molto espressivo

Extra long applause & cheering sounds

mp *f* *mf*

35

Vc.

Elec

Lights

39

Vc.

Elec

Lights

Flickering

Alternate between different pairs of lights.
Start with "bursts" of flickering movements and gradually increase in speed and activity following the Cello

Accel.
Gradually increase the tremelo speed and intensity

43 (Approximate rhythms)

Vc.

Elec

Lights

Gradually increase speed and intensity

ff

Simile

Keep increasing in speed, volume and intensity

46

Vc.

Elec

Lights

ff

Maximum intensity and speed

Repeat until audio cue signals abrupt stop and section F

8

During black out, place cello on stand and walk off stage / behind the screen

47

Vc.

Elec

Lights

sub. *pp*

mf

Voice in the fixed media: "Here in some very basic steps is how to get you started on playing the Cello.... The bow always goes in my right hand whether you're right or left-handed it is always the same way around... Shoulder, elbow and wrist. The shoulder..."

Stay off stage until cue to come back on stage

Lights on/off shining on the Cello with each word (pre-programmed cues)

Walk back on stage and sit down at Cello at audio cue and black out

52

Vc.

Elec

Lights

Mime / fake play above string slow bow strokes across not producing any sound

Switch between specific gestures when the audio cue tells you

Hold right arm up until fixed media fades out then slowly put your arm down after fade to silence

Alternate each time between turning head left vs. right

Slowly turn head left

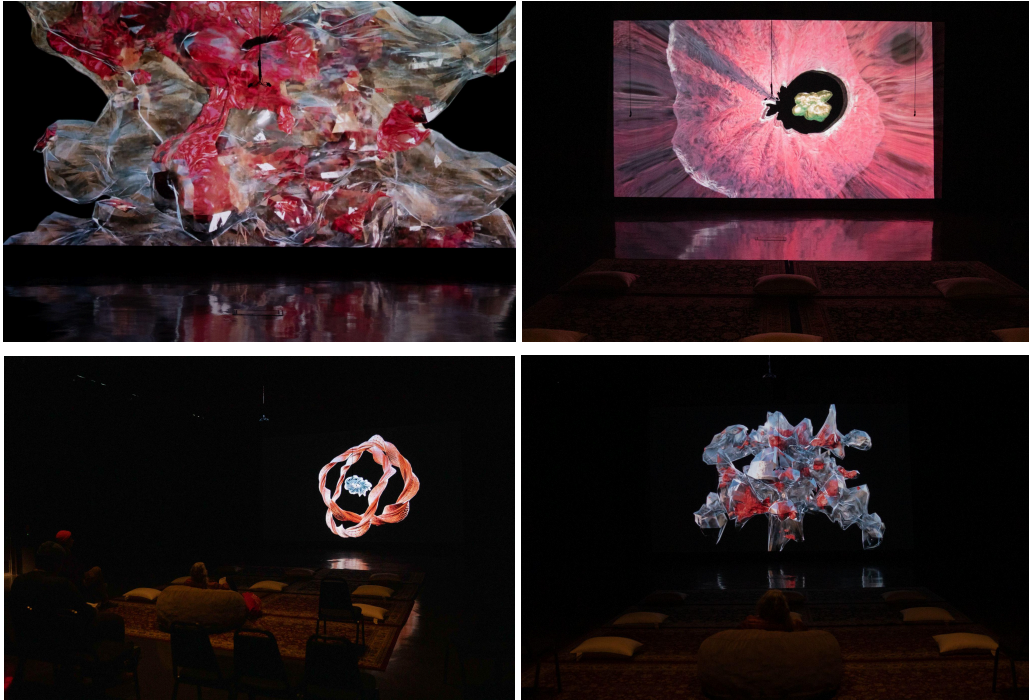
Slowly turn head right

Hold arm up with bow in right hand

Lights on/off illuminating performer at different times (pre-programmed cues)

.noocambriidæ. for Multichannel Audio and Video

Ess Whiteley & Andrew Wharton



Synthetic/Organic, digital/biological, virtual/actual, noocambriidæ brings into being monstrous entities that are born out of the compost pile of the collective unconscious as it operates through cyberspace. Though the exact date and attribution are uncertain, the term ‘noosphere’ is commonly linked to Vladimir Vernadsky, Teilhard de Chardin and Edouard Le Roy, as early as the mid-1920s. This concept refers to the third stage in the earth’s development, where the emergence of human cognition will fundamentally alter the geosphere and biosphere of the earth. noocambriidæ positions the noosphere not just as an emergent field, but as a substrate where entities can come into being. Through 3D animation and 10-channel spatialized sound, noocambriidæ acts as a nooscope into this realm of more-than-human behaviors, speculating on a second cambrian explosion of autonomous creatural forms born out of primordial cyborg potentials.

Link to video file of .noocambriidæ.: <https://vimeo.com/1052637788/00763006c3>

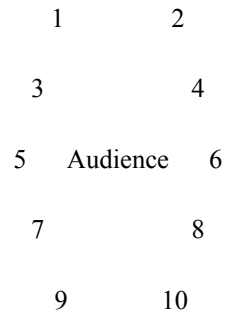
Description:

noocambriidæ for single channel video with spatialized sound, is a piece that is suitable for being played on loop as an installation for audience members to walk in and out of, or can be performed from start to finish in a concert setting.

Technical Requirements and Setup Specifications:

Video projector, projector screen, and laptop to route 10.1 or 8.1-channel audio. Audio can also be done in 6.1, 4.1 or stereo. The routing of the speakers should look like the following:

Screen



Or

Screen

