SOUND PHANTOMS

THE HIDDEN SONIC SIGNATURES RESIDENT IN OBJECTS WITH PARTICULAR REFERENCE TO THAT OF THE TREE

BY

MATTHEW LAMBOURN

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Contents

ABSTRACT

This exegesis informs the ten accompanying audiovisual artworks which express the concept of the *sound phantom*. The sound phantom is a speculative entity, enjoying persistence, and harboured by all objects. It consists of every sound, real or conceptual, that the object has made or could make, past and future, time-condensed and folded into spatial form. Once this form, or field, is entered by a listener, various sonic representations of the object can be experienced. The object chosen for this paper is that of the tree.

There is a possibility that the sound phantom is an ancient idea in both academia and cultural fora, though it has not necessarily enjoyed the scrutiny and artistic response presented here. Given that the actual sound of an object is only part of the sound phantom, the phantom encompasses sonic representation of its other sensual properties (such as visual and textural) as well as conceptual (such as human and non-human perceptions of the object, and its own memories and goals). The sound phantom can be imagined as a zone straddling the boundary of scientific/philosophical understanding and the unknown.

There is support from existing academic research for the existence of such a concept, not least in that conceptual and sensory objects enjoy the same status as objects, even if their 'realness' is what is in question. This also implies that at some level these objects have experience and even agency, even if it is far from human understanding. Once we accept that different life forms exist on vastly different timescales, it becomes easier to accept the notion that slowly-moving organisms like trees may be able to sense, remember, communicate and make decisions. If we could somehow perceive the object's 'sonic self', that may re-encourage an idea that has been in decline over the last few hundred years: that of inter-entity empathy. At least in practice, it is undeniable that the environment and its non-human inhabitants have been severely disrespected and damaged to a critical point in modern times. If we are able to empathise with other things through art, we might yet rekindle enough action to avert disaster to both the world and ourselves.

I have chosen established media to portray the idea of the sound phantom, using 2D projection of biaxial 360º video material as a visual guide to the immersive 7.1-surround sonic material. There are other artists that have approached various aspects of the idea of the sound phantom, if not necessarily the political reasons for doing so. Even though our perception of the sound phantom can only be partial, through this paper and our powers of cognition, we might yet be able to grasp the concept and remember that we are not seperate from the world, but of it, and would do well to realise that through our individual and collective actions. This exegesis and the works are a first a step along that pathway.

Introduction

Q: How do you catch a monkey?
A: Hang upside-down in a tree and make a noise like a banana.
- Anonymous joke in a long-lost children's joke book

I first read the above joke at age seven or eight. My memory is hazy now, but I imagine myself reacting much the same way that perhaps you do now: a fleeting smile, a cursory thought about how the technical truth intersects with the logical absurdity; followed by an elusive wisp of dissatisfaction. It is one of the few childhood jokes I remember. I sensed a challenge hiding within it, for the joke's premise assumed a world that exists within a very rigid set of criteria (in this case that some, and by extension *all,* animals are attracted to their diet by means of sound, as might be a carnivore). We who are able to stand outside this imagined, dimensionally-reduced premise, find humour in the monkey-catcher's externalising of their other senses from their situation. The monkey-catcher has such surety in their assumptions that we, standing outside them, recognise that they are doomed to failure. I wondered, and continue to wonder, whether we are in a similar, blissfully unaware situation ourselves.

Why has this simple joke haunted me so for all these decades? Is it because the innocuous phrase "a noise like a banana" takes for granted that bananas don't make a noise? Therein lies the seed of my dissatisfaction, because: who says?

"A noise *like* a banana." I wondered, what is this noise that bananas don't make? A curved noise? A yellow noise? A faintly sweet, fruity noise? A fragrant, bunched, tropical, ubiquitous-yet-rare, wild-yet-cultivated, exploited-yet-desired noise, a noise that inspires industries, republics, splits, cakes, bread, boats, songs, pratfalls, smut, turns-of-phrase, metaphors? The joke opens a door to an infinitude of synaesthetic interpretation.

And actually, bananas *do* make a noise, many noises, when interacted with. There is nothing quite like the sound of a banana being peeled, bitten, chewed and swallowed. Who couldn't appreciate witnessing the exquisite squelch of an infant mashing banana through their fingers? Indeed, I have yet to experience hearing a whole plantation of bananas responding sonically to the monsoon rain or shuddering gently in a summer breeze, a chorus of banana-ese.[1]

Furthermore, I regret that I don't exist on the right physical or temporal scale to be able to hear the sound of a banana pollinating, budding, growing, ripening, maturing, decaying, drying, shrivelling, disintegrating, dispersing. I do not exist on a physical scale to observe a banana millions of times my size, my age, it being – for all I know – my entire universe. What would the sound be were I to condense the humble banana's entire evolutionary timescale down to my own experiential present, or expand its spatial dimensions far beyond my own?

How might sound the tension that bonds the various parts of the banana to the others? The softness of the hidden core juxtaposed to the firm, sinuous skin? The unmistakeable texture of the edible flesh, hiding the tiny, potent seeds promising reproduction and renewal? Do these sounds

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[1] The term is borrowed from Timothy Morton, who coined the term "bamboo-ese" in *Hyperobjects*, 81. Timothy Morton, *Hyperobjects* (Minnesota Press, 2013).

come into existence *only* when acted on by a stimulant and heard by a ripe ear? What closets would be opened if the question were reframed from "does a banana *make* a sound" to "does a banana *have* a sound"? Do all things harbour their own sound?

In Greg Milner's history of recorded music, *Perfecting Sound Forever*,[2] Guglielmo Marconi is said to have had a revelation that "no sound ever dies", but just becomes fainter and fainter until it is no longer perceptible, even with current technology. We may be able to "comb the ether" with future microphones, hearing ancient echoes of every sound ever made (Milner: ix-x). Or perhaps, as the urban myth suggests, every surface is a recording surface, and records the imprint of every vibration, however subtle. Like the remarkable and recently rediscovered phonautogram[3] – Édouard-Léon Scott de Martinville's ingenious tracings of soundwaves in smoked paper that were only replayable some 140 years after he made them – we may indeed yet hear Julius Caesar's voice etched long ago in ancient pottery.[4] Both concepts are perfectly conceivable, however far-fetched.

As recently as the 17th Century, writes Yuval Noah Harari in *Homo Deus*,[5] his speculation on the evolution and future of humanity, scientists were convinced that animals were purely algorithmic; patterns without feelings, agency or will (107). Amazingly, even today there are persistent reports of the 'discovery' that fish indeed have sensory feelings.[6] I've even had long, exasperating conversations with vegan friends who insist that shellfish – 'the vegetables of the ocean' as they called them – can't feel pain (or sense anything for that matter), despite being able to respond to stimuli. After reading Peter Wohleben,[7] whom I discuss later in this exegesis, I find even my own convictions about vegetal insensateness wavering. Proponents of 'Object-Oriented Ontology' (OOO) take this stance even further. In *The Quadruple Object*,[8] Graham Harman argues for the existence of conceptual objects and their enjoying the same status of reality as sensory ones; while in *Vibrant Matter*,[9] Jane Bennet proposes that experience and agency are not limited to living matter, both of whose ideas I expand on later.

Informed by the suggestions outlined above, I hypothesise that perhaps all things harbour some living 'shadow' of sonic forms and possibilities; some 'aural spirit' through which one could roam and explore at will. The following chapters explore the potential existence of such an entity, and

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[2] Greg Milner, *Perfecting Sound Forever: The Story of Recorded Music*, (Granta, 2009), Liner Notes.

[3] Patrick Feaster, 'Édouard-Léon Scott de Martinville: An Annotated Discography, *ARSC Journal XLI* / i 2010. https://www.firstsounds.org/research/articles/scott-discography.pdf (20 May 2018).

[4] Christer Hamp, 'Archeoacoustics: pipe Dream or Possibility?' *Phonograph Makers Pages,* 1999. http://www.christerhamp.se/phono/archaeo/archaeo.html (10 August 2018).

[5] Yuval Noah Harare, *Homo Deus* (Harvil Secker 2015).

[6] Ferris Jabr, 'It's Official: Fish Feel Pain', *Hakai Magazine*, 2 January 2018. https://www.smithsonianmag.com/science-nature/fish-feel-pain-180967764/ (3 March 2018).

[7] Peter Wohleben, *The Hidden Life of Trees* (Ludwig Verlag, Munich, 2015).

[8] Graham Harman, *The Quadruple Object* (Zero Books, 2011).

[9] Jane Bennet, *Vibrant Matter* (Duke University Press, 2010).

how we might access it. Several of my sources support the necessity to listen interactively, rather than have music and sound art played 'at' us, which I will argue is not only necessary but more rewarding than taking the more comfortable and familiar passive stance. As I explore the literature on this 'weird' (in the sense of unknown and barely knowable) concept, the term I will employ for it is *sound phantom*.

Sound, in this sense, I deliberately use as a noun, rather than adjective terms like 'sonic', 'aural', 'otic' or 'cochlear'. I reference Casey O'Callaghan[10] who, in *Sounds*, elaborates on sounds as 'things', as opposed to sound *waves* which are actions. Furthering Pierre Schaeffer's *objet sonore*[11] – which I understand to be more of a psychological transmutation of a temporary event into a thing – I propose the concept of a much more persistent field that can be perceived sonically when interacted with. I wish to delineate between a sound as merely a function of brain activity produced by molecular pressure and as a presence with its own sovereign existence.

The word *phantom* has been chosen with deliberate reference to its metaphysical and historical loading, as well as its innate allusion to intangible, visible/perceptible, shapely form. Much as the words *spectre* and *spectrum* have common roots in the sense of an apparition or visual representation, a 'phantom' exists in concept and, through imagination, can be perceived in the physical world. Analogies abound, from the idea of a 'spirit', a disembodied soul that inhabits objects; to a fuzzy idea hovering on the edge of perception and comprehension; to a disk-image, a 'soft', virtual representation of a tangible object exisiting under certain conditions for a certain purpose. As I will explain in detail, I aim to mitigate *sound*'s evanescence by fusing the Schaefferian sound object to a more persistent and shapely *phantom* which is conjured through a combination of visual imagery and sound-proper. Another favourable aspect of the word "phantom" is its association with the ethereal, being somehow just out of reach of scientific study, yet nevertheless persistent in society and culture. As Graham Harman argues in *The Quadruple Object*, objects are equally as 'real', whether they are perceived through the senses or through the mind. Artistic inquiry into sound phantoms can therefore venture where science can't, necessitating the artworks that accompany this exegesis. My intention is not to prove or argue the existence of the sound phantom. I'll leave that to scientists and philosophers. As an artist, that the *concept* exists is ample foundation on which to base an artistic response, as I discuss further in Chapter 2 under the "Speculation" heading.

The corresponding artwork portfolio to this exegesis aims to represent the idea of the sound phantom through a series of audio-visual pieces. Through them I hope to explore and even induce what Denis Smalley terms, in *The Listening Imagination*, "associative synaesthesia",[12] a kind of voluntary blurring of the sensory information (90) – here consisting of the vision-field, listening/hearing field, and corporeal listening – with the added phenomenon of encouraging what Herman

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[10] Casey O'Callaghan, *Sounds* (Oxford University Press, 2007).

[11] Encyclopaedia Universalis France SAS. 'Sound Object'. https://www.universalis.fr/encyclopedie/objet-sonore/. (18 Sept 2018).

[12] Denis Smalley, 'The Listening Imagination: Listening in the electroacoustic era', *Contemporary Musical Thought* (Routledge, 1992),

Schmitz, cited in Gernot Böhme's *Atmospheric Architectures*,[13] terms "encorporation". Böhme himself describes encorporation as "the displacement of the pole of tension within one's body towards the outside" (102), the exporting of one's sense of self outside the bounds of the body and into a space or situation. My work intends to encourage encorporation through the use of immersive media, and to provide a sense of interacting with, exploring the idea of one's consciousness entering and 'activating' a particular sound phantom, in which our usual assumptions of sound's utilitarian status, its ephemerality, intangibility and its temporal linearity are challenged and distorted. All pieces were composed in 7.1 surround with imagery shot on a bi-axial (i.e. horizontally and vertically) 360° camera, but presented on a traditional flat rectangular screen. Several of these pieces, such as the *Cavity* quartet, follow a temporally linear, somewhat narrative, structure with the intention of being experienced in a concert setting. Longer ones such as *Water Source* and *The Sapling Struggle* deliberately evolve much more slowly, which I believe may work in more of a gallery setting where time and attention is much more at the discretion of the listener. I have also folded them down to stereo for the internet and built a site where they can be heard and viewed more widely: www.soundphantom.blogspot.com.

The first section explores whether the concept of the sound phantom is actually as weird and novel as I had imagined when I embarked on this research. If not, is it a form of knowledge innate to humans? If so, have we forgotten something that we once took for granted? Given that the concept is relatively simple to understand, are there similarities hidden in plain sight, and why are they hiding at all? Are we in an epoch in which 'invisible forces' aim to suppress such ideas, and what could those motivations be? I suspect I have not so much invented as 're-remembered' something long forgotten in the modern industrialised world, and suggest that with a zealous unquestioning belief in mechanistic science coupled with a savage thirst for commerce, our current society has

succeeded in pushing such ideas to the margins. I believe that for the health of our souls, as well as that of the entire planet, such concepts could benefit from a kind of resurgence. George Monbiot propounds in *Feral*[14] that a "rewilding" (allowing nature to take its course free from human interference) and "re-enchantment" (appreciating our place within the natural world without trying to dominate and over-taxonomise it) are necessary concepts to adopt if we are to avoid ecological catastrophe. No one credible could deny that extremely serious ecological and social problems face us today, and a wealth of political writing exists on this subject. I believe that to change the current behaviour that leads to these dire circumstances, we need also to change the way we think about the world and those we share it with. This portfolio of artwork aims to encourage a small step towards reinvigorating that empathy, even love, of the natural world that is quite clearly lacking on a global scale. I explore some existing pieces from other artists that come close to expressing the idea of the sound

[13] Gernot Böhme, *Atmospheric Architectures* (Wilhelm Fink GnbH & Co., 2013), trans. A. Chr. Engels-Schwartzpaul (Bloomsbury, 2017).

[14] George Monbiot, *Feral: Searching for Enchantment on the Frontiers of Rewilding* (Penguin, 2013).

phantom. As Ma Lin's painting, *Quietly Listening to Wind in the Pines*, (C13)[15] illustrates, we are all capable of the sense of wonder that the child possesses; but do we carry that appreciation and respect for nature into adulthood as does the old man?

The second section proposes a definition for the sound phantom in more detail. I unpack this definition with supporting material from a range of academic (and some popular) literature. Perhaps most crucially, I stress the point that the literal truth of whether something like a sound phantom can exist is *less* important than the concept being understood and appreciated, and hopefully interacted with and learned from. I therefore make the distinction between accepted fictions and false beliefs. Sound phantoms are *not* phantom sounds – audio hallucinations, falsehoods mistaken for something real. The word 'phantom' should be dissociated from anything 'spooky'. They are not "infrasonic hauntings", very low-frequency standing waves, discussed in Paul C. Jasen's book, *Low End Theory*,[16] that cause the mistaken belief that one is assailed by some malign supernatural entity (43-51).

Even so, such a shaky grip have we on so-called 'reality' that it is left to our powers of deduction to fill in the gaps from the sparse sensory evidence we have. In Section 3, I argue that the portfolio of artworks that corresponds to this exegesis presents a series of "adumbrations", to use the term proposed by Edmund Husserl[17] (Harman: 24), sketches of perception which only when pieced together in the mind begin to comprise a coherent whole. As Graham Harman (among others) has argued, these adumbrations are actually all we have in regard to our perception of anything. Alva Noë's article 'Experience of the world in time' in the journal *Analysis*[18] uses the example of a tomato: we can only ever see less than half of the whole, and indeed only the surface of that half. Through the accumulation of evolving viewpoints, coupled with other sensory information (such as weight, density, smell) we can determine that it is whole, solid and juicy. The representation of the whole tomato only exists in our minds, as direct sensory information can only ever show us fragments. This being the case, I explain why and how I use the medium I have. I detail, in this first attempt at representing a sound phantom artistically, how I have approached the task and briefly explain what it is we hear and see in the pieces. In particular the sound phantom affords exploration of what Jasen terms "spectral catalysis" (17): the zone where human perceptual understanding begins to dissolve and mingle with uncertainties, alternative realities and supra-scientific ontologies. I briefly cite some informal discussions with colleagues in my professional life which suggest that commercial cinema owes its success to at least partial understanding of the sound phantom concept. I also suggest ways in which the portfolio can be built upon in future works.

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[15] Taiwan National Palace Museum. http://www.npm.gov.tw/exh92/treasure/english/selection-main9.htm. (31 October 2018). Image public domain.

[16] Paul C. Jasen, *Low End Theory: Bass, Bodies and the Materiality of Sound* (Bloomsbury Academic, 2016).

[17] Internet Encyclopedia of Philosophy. 'Edmund Husserl (1859−1938)' https://www.iep.utm.edu/husserl/. (31 October 2108).

[18] Alva Noë, 'Experience of the world in time', *Analysis*, Volume 66, Issue 1, p26–32, 1 January 2006.

One of my central goals, throughout this exegesis and the creative works, is to encourage thinking of sounds as persistent entities residing within all things, quietly waiting to be accessed. And through our exploration of these phantoms, to help rekindle an inter-entity empathy between ourselves and the world.

Further Definition

"Architecture is frozen music."
- sentiment expressed by Goethe, among others[19]

This section expands on the definition of the sound phantom, and proposes how we might incorporate the concept into our appreciation of visual and sonic art and indeed the environment. The further I have researched this concept, the more my feeling has grown that I am not inventing anything new, but rather rediscovering something that may be as old as art itself. It is almost as if the idea could be something that is so intrinsic that it has become embedded into the fabric of our (or at least some cultures') understanding; so much so that even though the concept seems a bit 'wacky' when we give it considered attention, we nevertheless have no trouble understanding it. By analogy, to 'see' the tesseract,[20] we must employ the more active tools of imagination and abstract reasoning than merely receptive, passive senses. It nevertheless coexists in *our* world alongside us. Likewise, the sound phantom concept may exist innately as part of our basic understanding of the world and art, even if it requires a little more attention and consideration to understand it.

I. The Sound is *not* the Phantom

It may be easier to start with some ideas of what a sound phantom is not. Most crucially, it is *not* the sound of a thing, or the sound a thing makes. The sound phantom of a bell is not the clang we hear. The sound phantom of a dog is not a bark. The sound phantom of a musical instrument is not the sound of the instrument playing. It is the sonic representation of the *meaning* or meanings of the object and all that this entails; including either or both of Harman's conceptual objects/qualities and Bennet's vibrancy and agency of matter.

Taking the bell as an example, its meaning has several aspects including its material, its construction, its use and usage, its history and its cultural employment. Its sound phantom might include sonic representations of the eons of constituent ore underground, the high energy used in its ore extraction and founding. It may include its great physical weight and density, or the immense tension that holds it together (or otherwise). It may include its unique and specific shape. It may include the great emotional weight bestowed upon it if it is a religious or sacred artefact, or its vital importance as a warning device or communication system. In this sense, the entire *hyperobject*[21] of everything 'bell-y' about it is condensed into spatial, if phantomic, form. As I detail later, there are specific listening modes (including those proposed by Schaeffer, Chion, Peters and Small) which enable us to access and 'wander

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[19] Johann Peter Eckermann, and Johann Wolfgang von Goethe,. 'Conversations with Goethe in the Last Years of His Life', *Foreign Standard Literature,* vol 4, 1839.
https://books.google.com.br/books?id=pN1M2653ViAC&pg=PA282#v=onepage&q&f=false. (30 September 2018).

[20] A theoretical, four-dimensional analogue of the cube, which cannot be seen in its entirety by us since we only exist in three spatial dimensions. https://en.wikipedia.org/wiki/Tesseract. (28 May 2018).

[21] Timothy Morton's term *hyperobject* is something that is so interconnected with other things, that is is difficult for us to observe in its entirety, such as global warming. I discuss the sound phantom as a hyperobject in section 2.

about' in the sound phantom. While the clang of a bell arguably encapsulates all of the above (some might say the association with the above is an unescapable truism), the clang is transient – as are most sounds; the sound phantom enjoys a continuous existence. The sound is the finite[22] vibrational energy of air (or other) molecules; the sound phantom is weirder – it is a *potential* force waiting to be unlocked and translated into imagery, feeling and sound-proper.

The dog phantom should include all things doggy: Dog's history including its long relationship with humankind; Dog's gradual foregoing of its wild instincts to become spiritually subservient to humans (Aesop's fat slavery as opposed to lean freedom),[23] and the occasional ancient genetic memories that rouse it from this state; its shagginess or otherwise; its protectiveness or playfulness or slobberiness or delight in all things foul and smelly; its sacred place in various cultures from Ancient Egyptian Anubis to Tibetan Mastiffs; and of course, its mammalian constitution of watery organs, bones, teeth, nails, tails, keen sense of smell and distinctive vocals. The dog's sound phantom may involve the bark along with panting, growls, yelps, sniffs and other typically doggy sonic elements, but to represent descriptively – even poetically – the entire essence of "dog" would necessarily involve far more than dog noises. That it is even possible to think, "what means 'dog' and how does 'dog' sound?" conjures the global dog sound phantom. A specific dog anchors the sound phantom in space and allows us to scale down to, "what means *this* dog, and how does *its* meaning sound?".

As for the sound phantom of an instrument, while we cannot exclude the sound it makes as it was intended, these intentions themselves and its construction also comprise its sound phantom. A violin's phantom would sound woody, gluey, horse-hairy, tension-y, Bach-y, orchestra-y, fiddle-y, jig-y, stringy, bow-y, f-hole-y, peg-y. It would encompass its history, its fragility, its cheesiness and solemnity. Resin, case and polish may feature; difficulty and discipline; the politics involved in exploiting living things for human pleasure such as the spruces and horses that died for our enjoyment. The phantoms of other instruments, such as pianos which use ivory and drums which use calfskin, invite even more politically sinister and uncomfortable concepts into their sonic palettes. Indeed, a greater (re)awareness of of environmental concerns has led to research the ethics and ecology of musical instruments. Authors such as anthropologist James B. Greenberg in his paper *Good Vibrations, Strings Attached: The Political Ecology of the Guitar* critiques the environmental impacts and legislation around guitar-making, and poses this against the rights of indigenous peoples to continue with these cultural practices from which many make a living.[24] In 'Towards a New Organology: Instruments of Music and Science'[25] the authors suggest a purely virtual

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[22] Notwithstanding Marconi's revelation, finitude here applies to the interaction of the sound with us.

[23] Aesop, https://en.wikisource.org/wiki/The_Wolf_and_the_Housedog. (July 2018).

[24] James B. Greenberg, *Good Vibrations, Strings Attached: The Political Ecology of the Guitar* (2016), Department of Anthropology, University of Arizona, US, Sociology and Anthropology 4(5): 431-438, 2016.

[25] John Tresch and Emily I. Dolan, 'Towards a New Organology: Instruments of Music and Science' in *Osiris*, Vol. 28, No. 1, Music, Sound, and the Laboratory from 1750–1980, p278-298. (January 2013).

instrument may in future hold the same status as a physical one. They point to a claim by Apple that its virtual, software versions of instruments – such as organs, pianos, drum-kits, violas – *are* said instruments, rather than mere virtual representations of them. That the user can only contact them virtually rather than tactually – through 'soft' graphical representations of the playable parts (like keys, strings, knobs and switches) controlled by computer mouse – suggests that the instrument itself exists in a virtual, 'non-real' place, and is hence purely phantomic:

> Within this world, a guitar is no longer a physical prosthesis for the performer … In Logic Pro, the instrument becomes synonymous with its effects; it becomes, as it were, purely aesthetic — a particular texture, a timbre, as well as a cultural resonance that can be conjured up with a few clicks. (280)

As far as musical instruments are concerned, commercial software has purportedly made steps towards realising their sound phantoms, if only inasmuch as that of their original intended musical use. My research applies this 'thought experiment' to objects other than musical instruments, and to aspects beyond their intended use by humans.

A literary description describes a thing using written words, blocks of information. A composer's interpretation of a sound phantom expresses it using artistic (as opposed to utilitarian) sounds. Taking Michel Chion's[26] "reduced listening" mode (29) or even Jasen's "sonic body" (Jasen: Ch.1), the body as an "acoustic event" (23) a step further, the composition allows us a sonic window into the 'essence' of the object. If a thing has a 'meaning' at all, and this is comprised of sound-led rather than information-led 'material', we have the sound phantom. At the risk of oversimplifying, it is the sonic meaning of an object.

A recent film directed by John Krasinsky is *A Quiet Place.*[27] The premise portrays a world under invasion by a predatory creature with hyper-acute hearing. As a consequence, all human speech and physical movement must be almost silent. It is as if the creature 'sees' sound, much like a bat may see using sonar. Evolving research into how humans are able to 'see' using sound in a similar way has been made with the help of the blind echolocation practitioners such as Daniel Kish:[28]

> Kish makes clicking noises with his tongue. The flashes of sound reflect from surfaces around him, forming a pattern in his mind…the research shows that the visual cortex of his brain, even though he has no eyesight, functions as if he is seeing when he is using echolocation.

In a purely scientific sense, and without even needing to extend into the liminal or artistic, a completely practical version of a sound phantom has been proven. Sound creates a virtual physical form of a location in space accurately enough to be 'seen' and interacted with. Such is the cognitive resolution of echolocation that "something solid which has gaps in it – such

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[26] Michel Chion, *Audio-Vision - Sound On Screen*, Columbia University Press, 1990.

[27] John Krasinsky, *A Quiet Place, (2018).* https://www.imdb.com/title/tt6644200/

[28] http://www.radionz.co.nz/national/programmes/afternoons/audio/201754974/feature-interview-daniel-kish

as a shopping trolley" – is perceptible.[29] In this case, the use of sound is purely functional, but it is only the slightest step away from the world of the artistic. We can cross the rubicon from purely functional-navigational sonic formations of *locations* into the world of actual *objects* and their accompanying aesthetics and meanings. I suspect that anyone proficient in echolocation (whether blind or sighted) would understand the basic concept of conjuring the sound phantom to the point of it being self-evident and unremarkable. If we hear it, we see it and vice versa. Surely if we employ reduced listening, we can also employ reduced seeing and reductively "hear/see" (Chion: xxi) it: visually and aurally experience the meaning of the object in question. This suggests then that the *realising* of the sound phantom – making it visually and sonically accessible, eliciting it from its hidden, dormant state within the object – requires the agency of a composer and appreciation by an audience.

Echolocative art exists, such as the piece by Mike Rijnierse & Bob Bothof titled *RELIEF (2017),* described as an "echo sculpture". Using a visual sculpture in conjunction with a moving parametric, ultrasonic speaker array, the audience is "able to experience the sculpture in audio in very much the same 'tangible' way as experiencing it in physical space. It is very close to how blind people are able to navigate the world around them".[30] François Bayle might also say that a kind of sound phantom is conjured whenever a sound sounds.[31] In his discussion of his concept of i-sound (i-son, image-of-sound) he suggests that all sounds have metaphorical or cultural properties associated with them that can be investigated, at least philosophically. It is the *persistence* of a non-sounding, sonic entity, consisting of such properties as Bayle mentions, as well as the hidden, and even unknown, unknowable and imperceptible-to-human properties which Graham Harman proposes all objects possess (Harman: Ch. 2,3), that I here propose exist within objects, that is ripe for artistic exploration.

II. What need for the Sound Phantom?
In my nearly two decades of professional work in the commercial film sound-design industry, I have noticed a kind of belief system evolve that many of my professional colleagues seem to subscribe to (at least in part), but has received little academic scrutiny. It is almost as if a kind of sound phantom exists in relation to fictional, onscreen objects. My accompanying works focus on this idea and while using familiar cinematic media, free the idea from the competing sensory and cognitive stimulation of story, commerce, 'celebrities', and other factors of commercial film.

Harman's conceptual object is easily locatable in the world of commercial cinema. There is no 'actual' boogeyman; that spaceship isn't 'real'. Yet we have no trouble suspending our disbelief in purely fictional, virtual entities. For the object or character to be completely 'real'-

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[29] https://www.radionz.co.nz/national/programmes/ninetonoon/audio/201849440/julee-anne-bell-seeing-with-sound

[30] http://www.everydaylistening.com/articles/2017/9/24/relief.html (September 24, 2017). October 4 2018.

[31] eOREMA Journal, http://www.orema.dmu.ac.uk/analytical_toolbox/i-son. 12 September 2018.

ised once the visual artwork is done, the sound team needs to find what my friend, colleague and celebrated sound designer, Dave Whitehead, calls its 'voice'. Why would he phrase it this way - "we need to *find* its voice"? Why not "we need to *make* a voice for it"? Several other of my colleagues have recently started saying they have "found" a good sound for this or that rather than "made" it, even though it has been laboriously processed, sculpted and refined in the studio. I think there is more going on here than simple modesty. The implication is that the perfect "voice" – or "signature sound", both terms having strong connotations with the sense of identity of a person or thing – *already exists* somewhere within it, and needs to be coaxed 'out' by the designer. This voice sonically carries the weight of all the backstory, visual design, director's intent and character of the object. If done well, my supposition is that the audience receives great satisfaction in being able to share in this discovery. As Walter Murch says, in his essay on film picture editing *In the Blink of an Eye,*[32] the audience will engage with a film much more if they feel they are participants rather than spectators (15). A beautiful piece of sound design may be praised as being highly *creative*; but I think so-called 'creatives' have a deeper, if not altogether acknowledged, insight into what makes a good sound work so well: there is something to be *discovered* and appreciated, and a good designer will find it. This turns the challenge into how, in conjunction with the other parameters of the film, to reveal it tastefully and rewardingly.

From my experience in the film-sound industry, it has become increasingly apparent that with such a rapidly developing art-form as cinema (i.e. one that quickly builds on and evolves techniques) many films are packed with so many hours of careful work that they can be seen as distillations of various art forms. With the thousands of takes, to the construction of sets and costumes, to the colour grading, the exacting composition of sound effects and music, as well as the acting, story and pacing all condensed into a 90-minute sound and light show, there is naturally so much information competing for the viewer's attention that much of this work becomes imperceptible. Most people I talk to, unless they are 'soundies' as well, will only ever notice a few key sound effects, if any. I suspect that this is partly from a lack of understanding of the area, and partly because of so many other aspects saturating the senses that sound can, and often must, take a back seat in the consciousness. Indeed, this device is used by myself, and colleagues, in the sound design industry to great advantage in creepy scenes - we can 'sneak' unsettling emotive sonic material into the brains of the listeners without them bing fully aware of – or psychologically guarded against – it. The technique is indeed powerful. Chion, among others, has invited viewers to assess how a film's emotive effect changes when the sound is removed (Ch. 1). Conversely, it can often be a sign of an unengaging film if one's mind drifts to the particulars of the soundtrack. In creating works that explicitly invite the audience to listen reductively, and access and create meaning primarily through sound, I encourage a more active stance on their part. Stripping out many of the elements in cinematic film that compete for attention (plot, picture edits, colour grading, dialogue, overt comments or statements) I hope will allow room for attention to be more receptive to the sound itself, while still retaining enough of a visual guide for the

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[32] Walter Murch, *In the Blink of and Eye: A Perspective on Film Editing*, 2nd Ed*.* Silman-James Press, 2001.

audience to be drawn intermodally into the elusive sonic 'meaning' of the subject of the works.

As art grapples with commercial forces, the dichotomy between passive[33] and active art appreciation rages on. Nowhere is this more evident than in entertainment film. The tropes are well understood: strong supporting or opposing opinions notwithstanding, 'Art' vs 'Hollywood' cinema is an ongoing debate about something many have at least some awareness of, as critiqued throughout Robert McKee's screenwriting handbook, *Story*.[34] (This linguistic distinction has even been mocked in pop culture as 'film' vs 'movies'.[35]) The Motion Picture Academy has even introduced a new category of "Popular Film", which seems to have worsened the dichotomy rather than bridge it.[36]

I posit that a facet of this binarism can be further reduced to the issue of the amount of active participation on the part the audience. The 'movie' category is often associated with advanced visual effects, complex and dynamic sound effects, scores that are either orchestral or composed by firmly established musicians, well-known actors and/or directors, unapologetically enormous production and advertising budgets, and predictable plot – often at the expense of an engaging cerebral experience. The result is that with the optical stimulation of the VFX, the aural and somatic stimulation of the soundtrack, and the familiarity of the actors and music; the opportunity for active, cognitive participation on the part of the audience is reduced. The sensory overload combined with the preconceived expectations of the ability of the 'stars' leaves little scope for the audience to consider character motivation, second-guess the plot development, and engage critically in real time. I think of movies such as Michael Bay's *Transformers*[37] as being in this category. The model remains wildly successful. For valid commercial reasons, the audience has *paid* to be entertained, they shouldn't have to do all or even any of the work for it. Simply marvelling at impossibilities,[38] from *Charlie Chaplin*[39] to *Star Wars*,[40] remains a cornerstone of the cinematic art form.

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[33] "Passive" is meant here merely as enjoying something such as art without employing the sharp focus of intellectual analysis. Much art, including cinema, can be and is appreciated without any intention by the audience to investigate, justify or elaborate on the 'feel' they get from it.

[34] Robert McKee, *Story* (It Books, 1997), p59-61.

[35] *The Simpsons*, Season 19 Episode 2 "The Homer Of Seville", 20th Century Fox. http://simpsons.wikia.com/wiki/Homer_Strangles_Bart_(or_Someone). (4 October 2018).

[36] Variety, https://variety.com/2018/film/features/oscars-popular-film-category-ratings-academy-1202903865/ (August 14, 2018). 17 Sept. 2018.

[37] Michael Bay, *Transformers* (2007). https://www.imdb.com/title/tt0418279/?ref_=nv_sr_3.

[38] All cinema, with the possible exceptions like *cinéma vérité* and the found-footage genre employ impossibility, even those without flashy VFX. From first-person POV shots, to wide shots to the picture cuts themselves, they aim to offer perspectives unavailable in real life.

[39] Charles Chaplin (1889–1977), https://www.imdb.com/name/nm0000122/, https://www.britannica.com/biography/Charlie-Chaplin. (30 October 2018).

[40] George Lucas, *Star Wars: A New Hope* (1977). https://www.imdb.com/title/tt0076759/. And the rest.

Toward the other end of the spectrum, so-called 'art' films are appreciated (and just as much derided) for their tendency to insist on a higher level of intellectual engagement from the audience; we might say to invite them 'into' the plot, rather than push it 'at' them. Many of these films involve storytelling that leave questions unanswered, motivations unclear or contradictory. I think of this as inviting the audience to do some of the thinking, somewhat democratising the storytelling, rather than straight didacticism. Although cultural and critical perception remains a strong influence on whether something deserves to be elevated – or relegated – to the 'art' bin, for me David Lynch's works remain extreme examples, along with the somewhat more accessible Cohen Brothers films and many that might be bundled under the 'festival' banner.

I should clarify at this point that I celebrate both extremes; and also state that there are few examples, if any, that do not contain elements of both (Ang Lee's *Life of Pi*[41] sits somewhere comfortably between the extremes for me). My point is that I want to push back against an *overall* shift toward the non-participatory, passive consumption of the cinematic art form (the grim endpoint being something akin to the cinema-as-weapon torture scenes in Stanley Kubrick's *A Clockwork Orange*[42]) and maintain a comfortable balance. Because this is my first set of works on the subject of the sound phantom, I have no personal reference points to compare it against, though I do explore a few related examples by other artists in the following section. Even so, I am confident that subsequent pieces of mine will evolve in the direction of Works to Texts, in the sense of Roland Barthes' definitions, where the latter depend on more participation by the reader/audience, and do not rely so heavily on control by the author; and even more so to "writerly" rather than "readerly" Texts, in which the active interpretation and even control of it by the reader/audience is key.[43] That this will necessarily involve more active involvement on the part of the audience, the challenge will be in discovering that 'sweet spot' of being engaging without being artless and intriguing without being inaccessible.

For this reason I accept that there may be little appreciation to be found in my works from a purely passive audience. The works themselves will never be shown in a multiplex cinema and it is hard at present to imagine a society driven by the thirst for mental and physical engagement with art rather than by commercial (or other religious) forces; but I live in hope.

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[41] Ang Lee, *Life of Pi* (2012). https://www.imdb.com/title/tt0454876/?ref_=fn_al_tt_1

[42] Stanley Kubrick, *A Clockwork Orange* (1971). https://www.imdb.com/title/tt0066921/?ref_=nv_sr_3

[43] Roland Barthes: Understanding Texts. http://www.arts.uwaterloo.ca/~raha/700_701_web/BarthesLO/intro.html. (09 September 2018).

III. Similar examples in the repertoire

Several sound artists have explored the concept of an immersive, static sonic object, with many involving intermodal means of access. Though the repertoire is extensive, I have outlined a few particularly pertinent pieces and organisations, as well as some precursory international, historical and domestic examples below.

In what she termed "Perceptual Geographies", US artist Maryanne Amacher created what she called "sound shapes". These were "highly localized 'presences' … that would be encountered by moving about the installation space, and perceived synaesthetically, as masses to move through or around" (Jasen: 140-1). The immersive and spatial aspects of Amacher's works have notable similarities with my idea of the sound phantom and how I have chosen to represent it in my accompanying works. Similar immersive sound shapes can be found in UK-based Nye Parry's *Exploded Sound* (2011).[44] Parry's works construct a similar 'static' sound existing in space, where the listener provides the (temporal and spatial) motion. Both artists' works come close to my interpretation of the Tree's sound phantom, but are more abstract, being not necessarily representative of a sound field 'harboured' by a certain object. Likewise, Austrian artist Gerhard Eckel's projects have explored the idea of interactivity in sonic spatial forms. *Among* (2012) and *Random Access Lattice* (2011)[45] both invite the listener to move about within a sound-object. This democratising of the artist-audience relationship is an idea I intend to explore in future works.

Looking into the historical record, Robert Morris' *Box With the Sound of its own Making* (1961)[46] comes tantalisingly close to the interpretation of a sound phantom, perhaps without even intending to. The work consists of a wooden box on a pedestal with replayed recordings of its construction. WikiArt states that:

> …the audio component of the piece denies the air of romantic mystery surrounding the creation of the art object, presenting it as a time-consuming and perhaps even tedious endeavor. In so doing, the piece also combines the resulting artwork with the process of artmaking, transferring the focus from one to the other.

Clear examples of the induced synaesthesia I have attempted to provoke exist in the oeuvre of one of New Zealand's most celebrated artists. Len Lye's sculptural work contains perhaps unique examples of imagery and sound having equal weight. While *Blade* (1959)*, Universe* (1963) or *Flip and Two Twisters* (1977) are visually spectacular, the sound is of such value that there has been interest in the works as sonic objects, with audio-only recordings of the works being produced. The idea of vibrant matter is inescapable in these pieces, especially in regard to the pains Lye took in search of material with such particular properties.[47] Long before my 360° camera works were able

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[44] Nye Parry, *The Exploded Sound*, 2011. http://www.nyeparry.com/exploded/ (30 October 2018).

[45] Gerhard Eckel. http://iem.at/%7Eeckel/art/art.html. (31 October 2018).

[46] Wikiart: Visual Art Encyclopedia, 'Robert Morris: Box with the Sound of Its Own Making', 4 Jan, 2013. https://www.wikiart.org/en/robert-morris/box-with-the-sound-of-its-own-making-1961. (20 May 2017).

[47] Ed. Tyler Cann and Wystan Curnow. *Len Lye*, Govett-Brewster Gallery and Len Lye Foundation 2009.

to express movement within stasis, as described earlier (and observable in *Water Source* and *Tensile Trunk)*, Lye was exploring exactly this idea. The Govett-Brewster gallery publication *Len Lye* states that he made it a central aspect of much of his canon to "compose motion" (43) either through static or kinetic pieces. Lye also produced copious film works driven by the energy and freedom of modern (for the time) jazz, such as *Tusalava* (1929), depicting a kind of phantomic being evolving from a single cell (67-70).

Similarly, Oskar Fischinger was integral to the epoch of composing colour via the film medium, and was one of the main pioneers of the Visual Music movement. Fischinger saw the visual and aural senses as particularly intertwined in one's perception of art. The book *Oskar Fischinger 1900-1967*[48] cites a translated essay he published in 1933 in which he describes what he terms *Gesamtfunktion*:

> The eye seizes the exterior, surface, form, and color. The ear seizes through sound, which is particular to each body, the internal structure which the eye spies outwardly. This mutual and supplementary orthogonal composite function [Gesamtfunktion] of the eye and ear is comparable to the front view of a house … and a technical cross-section of the house. (96)

Today, as well as enjoying a thriving global presence within the Centre for Visual Music (CVM),[49] intermodal work has a healthy existence in New Zealand. Composers such as John Coulter have continued this research in events that deliberately reference intermodal perception such as the video/music pieces in *Seeing With Ears* (2009).[50] Coulter's research into the intermodality of audiovisual art provides informative analysis on the way the two senses influence each other and work together. In his article in *Organised Sound*, 'Electroacoustic Music with Moving Images',[51] Coulter raises the possibility of sound and imagery distracting from, rather than complementing, each other in audiovisual works. He discusses artworks which lie in the "middle ground" between the planes of the heterogeneous (independent visual and audio material that demands simultaneous, divided attention) and homogeneous (where the materials of both media are "perfectly integrated" in terms of sensory reception); works which "disrupt the involuntary process of integration" towards being received as fully homogeneous (33). While seeking to keep my works sound-led, I have also experimented with this "paradox" (26) of distraction vs complementation between sound and image. Moreover, I have used imagery in a such way that it serves as a kind of simulacra[52] – Jean Baudrillard's term for the sheen of perceptible qualities between observer and the real object, the *simulacrum* – to the deeper, more immersive sonic material. In addition, the

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[48] Ed. Cindy Keefer and Jaap Guldemond, *Oskar Fischinger 1900-1967: Experiment in Cinematic Abstraction*, EYE Filmmuseum, 2012.

[49] Centre for Visual Music, http://www.centerforvisualmusic.org/. (30 October 2018).

[50] *Seeing With Ears: Video Works by John Coulter* (2009), Composers Association of New Zealand, https://canz.net.nz/uncategorized/the-new-zealand-electroacoustic-music-symposium-nzems/. (10 October 2018.)

[51] John Coulter, 'Electroacoustic Music with Moving Images: the art of media pairing', *Organised Sound,* Vol. 15, Issue 1 (Sonic Imagery), (2010), p26-34. Cambridge University Press.

[52] Stanford Encyclopedia of Philosophy. 'Jean Baudrillard', https://plato.stanford.edu/entries/baudrillard/. (19 October 2018).

Sound Dome Organisation, which Coulter leads,[53] shares much of the ethos that underpins my work:

> A 30-loudspeaker 8m diameter dome with acoustic treatment, computer and specialist software (permanently erected). Ideal 3D ambisonic sound projection, with near anechoic uniform reflections.

With principles including "learn[ing] from and car[ing] for the natural environment", Sound Dome is closely aligned to my own values of using physically immersive visual and sonic music to further (or regain) our understanding and empathy with the natural world.

Another notable piece for its reference to entering the liminal zone I mentioned earlier is Anita Dykes' *Into the Underscore* (2017).[54] As a contributing sculpture in various city-council-funded light shows throughout NZ, this sculptural work is noteworthy for having a corresponding sound-art score. The work describes itself as:

> A series of concentric circles dropping into space drawing the viewer into the Underscore … Once inside the zone of the Underscore you will be pulled upward, possibly to another dimension as the sculpture reacts to your presence.

The neon rings are arranged above the viewer resembling something in the shape of a horn-of-plenty. As they slowly change colour and flicker, the score evokes something of a warping, pulling vortex. The interplay between the senses of vision and hearing, and the somatic suggestion of being 'drawn into' the work is strongly resonant with my own ideas of crossing the boundary into the realm of the conceptual.

Though this more abstract style of intermodal work is something I intend to explore in future pieces, for this current research I have remained anchored in the natural world. My current work owes much to the *Acoustic Ecology*[55] movement and its main pioneers such as Hildegard Westerkamp and R. Murray Schafer, in that they align particularly to the study of "ecological aspects of the sonic environment across the world".

My term "sound phantom" incorporates elements of many of these concepts and philosophies. A sound phantom is not just a spatial exploration of static sound but an experiential one (of memories and hopes) and an ecological one in a *hylecratic*,[56] or at least zoocratic, way. Building on what André G. Pinto has proposed in *Towards a Rewilding of the Ear*,[57] I believe there are valid reasons for (re)discovering non-human and even non-animal (and indeed non-organic) musical palettes and including them in our wider understanding of music. If I can encourage some form of attention on non-animal life and non-living objects through artwork, this may lead to an increase in empathy

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[53] SoundDome Organisation. https://www.sounddome.org/. (31 October 2018).

[54] LUMA 2017, Anita Dykes, *Into the Underscore* (2017), http://luma.nz/luma-2017/. (31 October 2018).

[55] World Forum for Acoustic Ecology, https://www.wfae.net/. (29 October 2018.)

[56] hyle- matter, -kratia will, power. I haven't seen this term coined yet, even if Bennet's "thing-power" has been.

[57] André Pinto, 'Towards a Rewilding of the Ear', *Organised Sound* 22/01 (2017), 51-60. Cambridge University Press.

with them and, in time, a step toward their regaining some of the 'sacredness' that has been eroded as many of us have become so individualised and focussed on the 'self'.

2. The Sound Phantom in Detail: Evidence from the Literature

"Where should this music be? I' th' air or th' earth?"
- The Tempest, Shakespeare

The sound phantom:

A speculative, quasi-somatic, inherently vibrant, temporally undulant sonic form existing within the spatial bounds of every real object and partially accessible to appreciators via its qualities through the adumbrative agency of a composer.

For my pieces to be fully 'realised', in the broad sense of encompassing their composition and their informed appreciation by an audience, I feel it is necessary to propose new concepts; or rather, to consolidate those that may have existed since antiquity but are only recently being explored academically. The following paragraphs unpack the above definition in detail, with the underlying theme being a decoupling from the relatively modern idea of the self 'as an island':[58] an individual where one's physical presence and consciousness have defined boundaries. This idea is central to Morton's *Hyperobjects*, as in the chapter on "Interobjectivity" (Part 1, Ch. 6). A particularly resonant example is that of waste: it can't be thrown away, because there is no "away" (121). Similarly, Donna J. Hathaway has observed in *Staying With the Trouble*,[59] "bounded individualism in its many flavors in science, politics, and philosophy has finally become unavailable to think with". She proposes that philosophical (and artistic) enquiry needs to include the fantastic and weird, and suggests our era ought to be called the "Chthulhuscene" in recognition of this. Even limiting such a broad topic to the area of musical art provides abundant examples of the sound phantom concept being not only understood but celebrated in both intellectual and multi-sensory musical arenas. A clue that this idea of people explicitly seeking and entering a kind of liminal entity or zone is found in an English colloquialism: it is common to ask after someone's artistic tastes by asking what they are 'into'.

I would like to shine a light on this concept of sounds potentially existing as *entities*, able to be 'entered' and explored both conceptually and physically, through Paul C. Jasen's *sonic body* (Jasen: 23). The sonic body is the idea of the human body becoming 'part of' the sound it is reacting to, either through dancing, swaying, pulsing or otherwise responding. This "cymatic" (re)action (from *kymatia*, meaning matter pertaining to waves, Jasen: 115) is the body physically harmonising with the modal structure of the existing music/sound. Similarly, Denis Smalley in *The Listening Imagination* proposes an "interactive" listening mode – "appreciation of sounds outside musical contexts [with] no particular purpose in mind and no

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[58] This term is has entered common use and is from poet John Donne's work *Devotions Upon Emergent Occasions*, Meditation XVII, 1624. https://www.gutenberg.org/files/23772/23772-h/23772-h.htm, p108. University of Michigan Press, 1959. (4 November 2018).

[59] Donna J. Hathaway, *Staying with the Trouble: Making Kin in the Chthulhuscene*, (Duke University Press), 2016.

primary goal of basic gratification".[60] This interactive mode then means listening *musically* to sounds that are not intended to be musical, or even functional – or even what we may understand as 'audible'. This invites the listener to *seek* the music rather than have it presented 'at' them. With sufficient priming of what, in *Musicking*,[61] Christopher Small has termed the musically "prepared mind" (112), we have far more freedom to traverse the "continuum between reaching outwards and being drawn inwards" (Smalley: 80). In my sense, the video is the primer, reaching 'out' to draw our consciousness 'in' to the sound phantom.

When taken in conjunction with the sonic body, this interactive mode is of course not restricted to aural listening: when the mode is applied to the somatic and visual senses, we are able to enter a sensory and cognitive liminal zone, where our sense of self and surety of our own reality become blurred. I wouldn't be the first to suggest that it is in this zone that we, in some sense, 'become' the music. Anyone who has enjoyed the induced trance of dancefloor electronic music will be familiar with this.[62] In *Six Views of Embodied Cognition*,[63] Margaret Wilson supports the theory that we store "offline" cognitive information in the body (and not just the brain); in other words, our embodiment of external information, including music, is essential to our understanding and appreciation of it.

I. Speculation

I have mentioned that there is a gap, that artistic enquiry can fill, between the rigid requirements of the scientific method of enquiry and the philosophical search for wisdom through cognitive logic. Adorno's "nonidentity" (Bennet: 13), the unbridgeable gap between concept and thing, may prove somewhat less chimeric through this set of art works presented in this exegesis. Graham Harman in *The Quadruple Object* is a strong proponent of there being layers of reality (15) and that "objects and reality do not entirely overlap" (20). If trying to access any object is something of a Zeno's paradox, and what Michel Foucault called "frivolous simulacra" (39) are all we are privy to, then the way to gain access to these "hidden qualities" (42) is through artwork. As Harman argues in *On Vicarious Realism*,[64] aesthetics is "first philosophy". I have chosen not to pursue the research scientifically because given that science relies heavily on measurement, I can't measure something that is not 'quite there'. Conversely, philosophy is more than happy to mentally investigate ideas, whether or not there is any iota of measurable evidence for them. Art, at least in my case of the sound phantom, bridges this chasm by producing a resulting piece of work from speculation without the need for measurement.

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[60] Denis Smalley, 'The Listening Imagination: Listening in the electroacoustic era', *Contemporary Musical Thought* (Routledge, 1992), p81-2.

[61] Christopher Small, *Musicking* (Wesleyan, 1998).

[62] Even without the aid of mind-altering substances.

[63] Margaret Wilson, *Six Views of Embodied Cognition*, Psychonomic Bulletin & Review (2002), 9 (4), 625-636.

[64] Graham Harman, 'On Vicarious Causation', *Collapse Volume II,* 171–206, 2007.

The sense of appreciation for strangeness possessed by children and abandoned by adults (Harman, *Quadruple Object*: 98) is one aspect of the lately popular (136) Speculative Realism movement that I hope to convey through the accompanying works: that a conceptual thing is as valid as a real thing (142). Such a perspective is essential to the appreciation of my work. I would even happily describe my work as fiction in the Le Guinuin sense outlined in in *Boccherini's Body*:[65] as invention or metaphor or as a means toward truth, rather than simple deception or "falsehood" (12-13). Christopher Small supports the idea of myth and metaphor as an important part of our relationship to the world and points to eras where art and science were more or less the same concept. In his words, "Whether or not it is…true is beside the point; its value lies…in its present usefulness as a guide to values" (Small: 99, 143, 106, 100). Values in my case are the artistic as well as the ecological.

In *Homo Deus*[66] Noah Yuval Harari goes one step further:

> Fiction isn't bad. It is vital. Without commonly accepted stories about things like money, states or corporations, no complex human society can function. We can't play football unless everyone believes in the same made-up rules, we can't enjoy the benefits of markets and courts without similar make-believe stories. (177)

For example, we work with money, which is an agreed illusion of value, and employ concepts like negative numbers all the time (but when was the last time you ate -1 apples?). Even numbers themselves are perfect only unto themselves, despite us trying to impose them on a world that doesn't fit their rigid logic: 1 = 1, but a orange ≠ another orange. I think of them simply as our way of *describing* the world; clearly little groups of πs, 27s and 5346¾s don't gambol about outside your window on their own. People can be billionaires, even though the figure is too high to fully appreciate: there simply aren't enough practical waking seconds in a human life to even *think* of every whole number between 1 and 1,000,000,000. Acknowledging this utilisation of 'fiction' in many, perhaps most, aspects of our lives fashions strong foundations on which to build the concept, and more importantly the appreciation, of the exisiting and ecologically respect-worthy sound phantom.

Harari cautions against using the "tools" of fiction as if they were "our goals or our yardsticks", in case we lose touch with reality. Necessary though fictions are, if we forget their nature it can lead to catastrophic consequences such as war to make "money" for "corporation[s]" (177). Naturally I have little anticipation that accepting my artworks on the terms I have proposed will have any such consequences. What interests me is the benign idea of accepting that a sound phantom could exist, and what it might mean for us to be able to interact with it; and in turn, the hope that through this interaction, our inter-entity empathy will improve.

In this sense then, this set of musical works is my *interpretation* of how the given sound phantom in this exegesis – that of a tree – *might* sound. They are by no means exhaustive; quite the opposite – the pieces are but a few of perhaps an infinitude of possible sonic paths to be experienced.

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[65] Elisabeth Le Guin, 'Boccherini's Body: An Essay in Carnal Musicology', (University of California Press, 2005).

[66] Yuval Noah Harare, *Homo Deus: A Brief history of Tomorrow* (Harvill Secker, 2015).

II. Somatic

In addition to Smalley's proposition of intermodal, interactive listening, Michel Chion (among others) suggests that a sort of natural synaesthesia occurs while experiencing film when we hear/ see it. This intermodal bleeding between the senses seems not restricted to sight and hearing. Deniz Peters submits that all sounds can also be felt as if they were a physical shape occupying space. In *Haptic Illusions and Imagined Agency*[67] he states that "[s]ounds appear to hold a resistance within themselves" perceptible through the act of listening. Quite separate from the perceived bodily, performative resistance of a human gesture on an instrument, this resistance "turns the experience of *any* sound ... into the touching of a thing or being" (151).

Peters' research into the EGM Spheres Non-Physical Instrument,[68] argues that sounds harbour a "felt resistance or tactility" that can be experienced cross-modally, generated by sound and felt haptically. The resistance of this "phantom tactility" feels as if the air is "somewhat thicker", and there is even a "membrane" at the spatial bounds of the sound-form that is perceptible. Further, the form "has a body" and different sounds have different feels (155-159). This feeling has as much to do with timbre and location (which I discuss in the section "Sound Proper") rather than just the physical pressure of bass and sub vibrations. This tactility, and the membrane effect, is a strong element in my works, as I outline in a later section.

Though Peters straddles the line between actual and illusory tactility, I can only *suggest* actuality ("reality") and respond artistically through illusion. In *Touch: Real, Apparent and Absent,*[69] Peters proposes another angle: that hearing itself "includes a felt dimension" (20-21). He uses the term "feeling in" as a sister-term to "hearing in", the act of our hearing extending from the bounds of our bodies 'into' the sound source. His assertions that we "listen as if touching", that music and sound is "literally felt" and that we can actually "grasp" them, is unequivocally summed up:

> I propose that is it precisely by virtue of our lived bodies, and in particular our everyday experience of the touch-sound correlation which has been with us all our lives, that we are able to extend into sounds. When making sounds ourselves, this experience always incorporates haptic quality along with sonic qualities. (22)

Naturally one assumes that an audiovisual piece would not incorporate tactility, but it can certainly respond to and express it through the media of sound, image and their "synchresis". Synchresis is Michel Chion's term for the association of sound and image in film, crucial for the believability of the sound attaching to the image; it is a portmanteau of "synchronicity" and "synthesis" (Chion: 5). It can be tight or loose (meaning acute and noticeable or flexible toward the point of disintegration), as explored in the accompanying artworks. My works involve a degree of this synthesis occurring between sight/sound *and* touch. I do not mean ultrahaptics, sound-wave-generated ultrasound air pressure nodes which can undeniably produce tactile virtual objects (which I will also discuss

[67] Deniz Peters, 'Haptic Illusions and Imagined Agency: Felt Resistances in Sonic Experience', *Contemporary Music Review, 2013. Vol. 32, Nos. 2-3.*

[68] *Spheres* is is a gallery installation involving motion trackers which track sensors attached to the human body. The body's motion through space triggers responding timbral colour generated by FM synthesis. The areas of sonic response are organised into three invisible spherical shapes within the space (153).

[69] Deniz Peters, 'Touch: Real, Apparent, and Absent', *Bodily Expression in Electronic Music* (Routledge 2012).

later), but that sounds *themselves* may also have the ability to create somatically detectable spatial forms.

Kendall Walton in *Two Kinds of Physicality in Electronic and Traditional Music*[70] proposes that: "What we think of as hearing is actually feeling, experiencing sound somatically" (124). Audible – and hopefully 'feelable' – elements in my work are examples of the physicality proposed by Walton. While I have some reservations about the idea that violent actions necessarily produce violent sounds, and gentle actions gentle sounds (115) – meaning the violence/gentleness of sounds are the result of similar actions – my work does not seek to *completely* subvert these conventions we have come to understand. So-called 'violent' sounds these days can be produced with no more than a gentle computer mouse movement or button click (I do this on a daily basis at work when designing complex explosions or fight sequences). And it is often surprising how little sound can be generated from the very energy-intensive and 'violent' action of arm-swinging or kicking, to produce actual punch or kick swishes, which is why in films violence is often overlaid with less realistic but more satisfying sound effects.[71] I believe there is enough media around (especially commercial film and sound design) to create general rules, e.g. loud, sudden, distorted and bassy sounds still convey violence and shock (the mechanics behind the 'jump-scare' trope),[72] while soft, airy and sustained sounds convey actions more gentle. I employ several such conventions in my pieces, while subverting others. *Tensile Trunk* uses loud, bassy, distorted cracking, ripping sound material to evoke strength and solidity; *Sapling Struggle* employs quieter, trebly, shimmery material to suggest sunlight. However, in the climactic centre of *Water Source*, some of the sound material would be quite frightening against a darker, 'scarier' image; but to me (and hopefully the listener), the uncoupling from this convention invites a more contemplative and querying frame of mind.

Nestled somewhere between the psycho-somatic nature of Peters' "resistance" and the purely bodily ultrahaptics is Paul C Jasen's investigation into infrasonic 'haunting' sounds. Studies on these vibrations between 15 and 20 Hz have found correlations to:

> …dizziness and refusals to re-enter the afflicted rooms…bouts of shivering, perspiration and inexplicable fear…respiratory disruptions, nystagmus (ocular vibration), visual anomalies, piloerection (goosebumps), sudden chills…ranging form the barely perceived to the intensely painful and psychologically distressing. (45)

Research and exploration into this area is still ongoing, not least on dancefloors and in subculture bass-cults (Jasen: Ch. 5). These extreme examples validate the reconsideration of the idea that music affects the body *after* it is heard and mentally processed. Music based on these ominous frequencies affects the body quite profoundly which *then* affects the mind, possibly without sound even being consciously heard. Following Jasen, I agree that it is the case that this bodily effect has

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[70] Kendall Walton, 'Two Kinds of Physicality in Electronic and Traditional Music', in *Bodily Expression in Electronic Music* (Routledge 2012).

[71] For particularly vivid examples see *Fight Club*, David Fincher (1999), *The Matrix*, The Wachowski Brothers (1999) and *Enter the Dragon*, Robert Clouse (1973).

[72] A common filmic device in which a quiet, tense scene is punctuated with a sudden, loud, percussive sound effect 'sting' on the reveal of an image https://tvtropes.org/pmwiki/pmwiki.php/Main/JumpScare.

been embraced in bass cultures such as reggae and certain electronic genres and that it has precedents throughout history.[73] Hence while I have not sought to empirically investigate this particular aspect of the sound phantom through the works here presented, I am intuitively employing it through much of the low-end material I use. For example, in *Cavity 4* the infrasonic material suggests weight and size to the bassy groans and creaks. Though not particularly frightening, they seem to me to lend a sense of tension or intensity to the sound palette.

While purely scientific examples into virtual entities having any kind of somatic effect are harder to find, one is the supra-scientist (to coin more diplomatic term than some I have seen levelled at him) Rupert Sheldrake. In *Seven Experiments That Could Change the World*, and later in *The Science Delusion*,[74] he has suggested that similar extensions of both the consciousness and the "postural schema" – the virtual body-image (*Seven Experiments*, 134) – beyond the physical bounds of the body, are scientifically observable and detectable by both the subject and an observer. He cites examples of his own research that he says prove that phantom limbs can sense and be sensed, and that people and animals can 'feel' the effects of being looked at. As somewhat of an esoteric, I suspect Sheldrake takes a kind of devilish delight in bringing such philosophical, speculative ideas into the hallowed halls of Science (and enraging the scientific community). But, as mentioned, rather than proving the reality or otherwise of such a concept, the artworks I present use suppositions such as these to engender the idea of the sound phantom in order to encourage our appreciation of the world – particularly the natural world – and more importantly, to encourage further artistic exploration into it.

III. Vibrancy

Further hypotheses that inform the concept of the sound phantom come from Jane Bennet's *Vibrant Matter*. Bennet proposes that matter has a 'force', a vibrancy in its own right, and is able to experience and interact with other inanimate matter. This "thing-power" is an energy that resides in the "out-side" of human experience. She makes the association with "absolute" existence, in the literal sense of an existence "absolved" or "loosened-off" (Bennet: 3) from the constraints of human perception. To broaden this concept, I would expect 'absolute music'[75] to suggest a music which not only is loosened off from subject matter or narrative, but also from the rigidity of time, perception and indeed any external reason for existing: music for music's sake. Freed from any human implications or expectations, and any obligation to hear Roger Scruton's human "subject

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[73] Jasen cites the pipe organ by way of example (90-95): that the harmonic pitch of the deepest note playable was often unpredictable due to the instrument's mechanical construction, the auditorium environment and even the weather, suggests that the harmonic pitch was less important than the awesome somatic effect of the rumbling infrasonic pressure. I believe that similar claims of somatic gratification can be made of the cannons and fireworks in Tchaikovski's *1812 Overture*, and the 'warmth' of bass instruments from orchestras to drum circles to pipe bands, to reggae.

[74] Rupert Sheldrake, *Seven Experiments That Could Change the World*, (Fourth Estate, 1996). *The Science Delusion: Freeing the Spirit of Enquiry*, (Coronet 2012).

[75] Stanford Encyclopedia of Philosophy. 'Schopenhauer's Aesthetics', https://plato.stanford.edu/entries/schopenhauer-aesthetics/. (19 Oct 2018).

behind the object",[76] we can celebrate this autonomy, this 'selfness', of non-human objects. At least, this suggests rich area for artistic exploration and could help steer humanity away from the most toxic elements of anthropocentrism, such as "hyper consumption" (Bennet: 5), anthropo-chauvinism (toward the environment and other life forms), malignant individualism (among humans) and many other examples of undeniably dangerous behaviour present in the world today. The existence of UNESCO and similar institutions exemplifies the belief that artworks can have a value worth protecting aside from their purely economic value. Bennet states that matter is as important as the person made of it (13) in the sense that this *Bildungstreib*, this impersonal vibrancy, is evenly distributed across all objects. She makes a distinction *between* objects, implying edges or membranes, rather than a blanket *Star Wars* 'force' that pervades everything at once: "Vitality flowing through matter *contained* [my emphasis] by the physical form" (66-7). With this idea of separate entities of vibrancy in mind, it is not too far a mental leap to suggest that every object would have its own sonic signature in sound phantom form. A tree would have a different sound phantom to a sink, to a car, to a rock, to a spanner to a horizon, to a colour, to a formula. For the purposes of my own works, I have chosen the tree as an object in which to explore the concept. This has restricted me to a certain sound-palette, namely tree-y sounds. Not only the physical, but the tree-emotional, "pan-psychis[t]" (Harman: 120) sonic material as well.

For political and ecological reasons, I believe the time is well upon us to regain our respect for "vegetal vitality" (Bennet: 97) among other things. Movements around the world and across New Zealand seem to agree on the need for a re-equalising of the importance of the vibrancy disparity, such as the recent granting of legal personhood to Mt. Taranaki[77] and the Whanganui River,[78] various global land, forest and water protests, and increasing attention on marine sanctuaries; all of which which imply ecological rights to existence *over and above* their use to humans.

Bennet extends the concept of material vitality into material agency, or "clinamen". Though the idea that rocks or reflections have "impetus, conatus" (21) may be hard to swallow, the idea that all life forms – and in particular trees – have at least some form of conscious agency is reemerging. The idea of trees and sacred objects or areas harbouring mauri is well understood in New Zealand. Though there is still some resistance to the idea e.g. Harman suggesting there is no evidence that trees learn from their mistakes (Harman: 119), others such as Peter Wohleben[79] and David George Haskell[80] would disagree. Wohleben argues that trees help each other (Wohleben: Ch. 1, 3, 4, 7, 20, 25), have friends (Ch. 1, 3, 9, 20), can decide whether to make risky or stupid decisions or play it safe (Ch. 8, 9), can sense time (Ch. 23) and possess all the senses of sight (148-9), hearing, smell (222) touch and taste (9), albeit it in more rudimentary ways than animals; Haskell states that

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[76] Roger Scruton, *Understanding Music: German Idealism and the Philosophy of Music*. http://www.roger-scruton.com/about/music/understanding-music/184-german-idealism-and-the-philosophy-of-music. Accessed 15 October 2018.

[77] https://www.beehive.govt.nz/release/landmark-day-taranaki-maunga. 6 October 2018.

[78] https://www.parliament.nz/en/get-involved/features/innovative-bill-protects-whanganui-river-with-legal-personhood/. 6 October 2018.

[79] Peter Wohleben, *The Hidden Life of Trees* (Ludwig Verlag, Munich, 2015). Ch. 1, 3, 4, 7, 20, 25.

[80] David George Haskell, *The Songs of Trees: Stories from Nature's Great Connectors* (Black Inc., 2017).

they scream in thirst and drink and murmur audibly (Haskell: 128-130). Wohleben further suggests that trees' brains may reside in the root system and harbour memories that enable them to retain, react to and pass on information (Wohleben: 82-3). Both he and Timothy Morton, whose ideas I detail below, propose that since trees' timescales are vastly longer than our own, once we adjust for this discrepancy, it is much easier to comprehend and observe this idea of vegetal 'will'. Such reconceptualisation of vegetal (and non-living) agency again provides a rich vein to tap for artistic response. Pieces described below, such as *Water Source* and *Rooty Cavity*, explore this idea of vegetal will and all that this implies; for example, sonic representation of what we might understand as a tree's fears, rivalry, love, the seeking of community and solitude. Bennet's employed term for this "non-mechanical agency responsible for the phenomena of life" is "entelechy". With the idea of this "immanent vitality flowing across all bodies" (Bennet: 73-5), the concept of a kind of 'sonic entelechy' should not be too hard to grasp. In this respect, the sound phantom, as I have hypothesised it, should be artistically represented so as to display some of this agency. The audiovisual works comprising my portfolio I consider a first step into the artistic exploration of sound phantoms and as such the only agency within them is provided by the composer. Once the concept of the sound phantom is established, future works would become more interactive and 'provoke' some of this agency into revealing itself. In this respect, rather than including sensor-activated digital algorithmic elements, where much of the programming has been pre-ordained, a much more hylecratic model is surely possible in any number of ways. I explore some existing and potential examples in the "Future Concepts" section.

IV. Temporality

As mentioned above, another aspect of vegetal-, and non-organic material-, vibrancy is that of timescales which differ from human ones. Since my artwork, as perhaps with all artworks, is the distillation and solidifying of countless hours of intended and accidental action (or time 'bent' into space if you like), naturally the sound phantom would consist of what Timothy Morton in *Hyperobjects* terms "temporal undulation" (55-68). The idea that time flows universally, continually

Cinematic Model

Retentional Model

Extensional Model

at a set rate must be examined and, for the purposes of gaining access to the sound phantom concept, challenged.
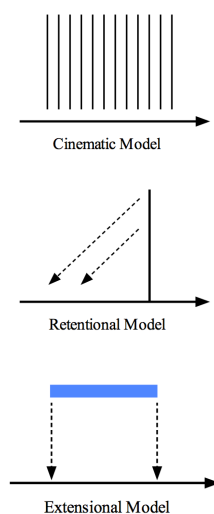
The *Stanford Encyclopaedia of Philosophy* proposes three hypothetical models of temporal consciousness: the Cinematic, Retention and Extension models.[81] The cinematic model, as the name implies, proposes that we are conscious of recurring instances of static frames, creating the illusion of change and therefore movement through time. The retention model proposes that the frames, though static themselves, contain *representations* of small temporally-extended intervals in which we are able to perceive small changes, like mini video clips, which successively add up to larger perceptible changes through time. The extension model suggests that frames of time are temporally extended – they

[81] Stanford Encyclopedia of Philosophy, "Temporal Consciousness", 2017. https://plato.stanford.edu/entries/consciousness-temporal/, including Cinematic, Retentional and Extensional Model diagrams. (3 March 2018). Diagrams © Barry Dainton, reproduced with permission.

have temporal depth – and that we are able to directly experience "these extended 'chunks' of experience", not unlike Michel Chion's "brief slices" (12) of aural perception, while still remaining in the present.

Building on this third hypothesis, we can employ Heraclitus' river aphorism, which encapsulates his theory on the ever-changing nature of objects that exist in time,[82] as a useful metaphor for how we experience the sound phantom. If the listener, like Heraclitus – or a rock – is an object in the river, and the water rushing by represents time, we are limited in what we can portray artistically. The metaphor suggests that time flows 'at' us and we experience only the immediate present; like a flat cardboard cutout facing the water. But the rock has depth – the water (time) flows past the front of the rock before it flows past the back. At any one instant, the rock is conscious of an instant of time from more than one reference point. And looking closer: not only does this temporal particle take a measure of time to flow through the consciousness of the object, but many small eddies and widdershins – or undulations – are occurring. This suggests that *time does not flow at a constant rate through the consciousness of an object.* This implies that a 'moment' of consciousness is not an instant, but more of a window. During the time this temporal particle takes to trickle and meander through my sphere of observation to when it exits, I have a small window in which I can 'wander about', albeit in a limited way, less bound by the rigidity of time's constancy. A simple thought experiment may be to ask oneself 'how long is now?' Is it an instant? A second? A few
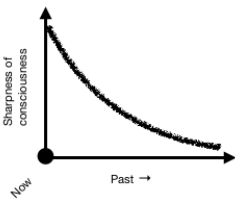
seconds or minutes? The extensional hypothesis argues that our perception of 'now' is less like a line dividing the future and past, and more like like the shape of a (de)crescendo mark: starkly apparent at the present, *tapering off* into the past, as per my crude diagram (left). As you are reading this sentence, each word is the 'present' and the previous words taper off into the past. The section heading you read is in the recent past, while the title is unequivocally in the past (not to mention yesterday's and last decade's events). This implies that the sound phantom, like the many existing examples of 'frozen music' (including those of Maryanne Amacher and Nye Parry, both of whom I discussed in the section "Similar Examples in the Repertoire") can exist spatially rather than – or as well as – purely as action. Furthermore, as we begin to access to the sound phantom, the synchresis is disrupted. We hear events that do not necessarily correspond to visual action. We hear not just actions but states, which for human beings are often understood as emotions. Perhaps we hear colours and shapes.

In some of my sonic vignettes we cross the phantomic membrane. As we enter the metaphoric black hole – Morton's "ultimate hyperobject" (52) where the physics of our expectation and understanding break down – we are compelled to engage in what David George Haskell calls, in a term borrowed from Iris Murdoch, "unselfing" (Haskell: 149-152). Compare this to the dreaded, ubiquitous 'selfie' that pervades modern popular culture. When unselfing, as hopefully occurs in some form when experiencing these pieces, the boundaries between real and conceptual objects blur. We can see in 360° at once. Sensations that existed long in the past, and hopes for the future are perceptible aurally. We experience movement and stasis at the same time. We straddle the

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[82] Encyclopaedia Britannica. 'Heraclitus', https://www.britannica.com/biography/Heraclitus. (18 Sept. 2018).

membrane between looking (or hearing) 'at' something and being 'of' it. This is apparent in all ten accompanying works, but particularly in those in which the perspective shifts by 180°, including *Water* Source, *Tensile Trunk*, *Sapling Struggle* and *Forest Environs*. Given that the audience is still able to see the 360° image projected onto the screen, but – without moving – eventually come to view it from the opposite perspective, the impression is that our conscious perception has shifted in space. Likewise, the sound (at least when listened to in 7.1) envelops us spatially. Quite literally we are inside a sound-image.

The art of cinema sound design has honed these techniques well. The booming, enveloping voice of Smaug the dragon in *The Hobbit II*,[83] designed by Dave Farmer and mixed by Christopher Boyes, makes full-use of 7.1 surround, and even its modern extension, Dolby Atmos, to immerse us in his immense size. The hypnotic effect felt by Bilbo is transferred to us, by the big screen and more by the enveloping 'huge' sound, and in a particularly effective way we are invited to empathetically 'inhabit' Bilbo's character. Another example of this kind of perspective-distortion occurs in one of my favourite scenes in cinema, in *El Orfanato*.[84] In it, a desperate mother hires a group of paranormal investigators to search for her missing son within her spooky old ex-orphanage house. They set up their old analogue equipment in the ground-floor living room, while in the floor above, a medium regresses into the past by way of trance to witness the ghosts of children. As the investigators watch her through their screen, the medium begins to walk around and they (and we) hear her footsteps above them echoing through the floor. Synchresis has already been disrupted. When the medium finally sees the ghosts, the group is able to witness them through the screen and speakers, through her reactions. Their audio equipment picks up and relays shrieks of the ghosts, but they remain invisible. Of course, we as the audience are witnessing all of this through the cinema screen and speakers. This creates a four-level, nested state of embodiment (us-group-medium-ghosts), passing through multiple layers of characters, technological equipment and reality (or super-nature). The careful manipulation of these various layers (such as the emotional states of the characters, and the low fidelity of the gear they use, which adds a layer of uncertainty, perfectly establishes an environment in which we are able to empathise with the tormented spirits.

In regard to my own work then, are we embodying the phantom or unselfing into *it*? Or, on more abject lines, are we becoming enveloped, no longer easily able to distinguish ourselves from it in an uncanny state in which subject and object distinctions begin to blur but are not yet dissolved? The boundaries between the two great pillars of physics, time and space, and that of philosophy, thought, become blurry and uncertain. We take one small step toward the giant cliché of coming to be 'at one with' something *other*.

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[83] Peter Jackson, *The Hobbit: The Desolation of Smaug* (2013). https://www.imdb.com/title/tt1170358/?ref_=nm_knf_i2

[84] J. A. Bayona, *El Orfanato* (2007). https://www.imdb.com/title/tt0464141/?ref_=nv_sr_1

V. Sound proper

Casey O'Callaghan in *Sounds* treats a 'sound' as something of a Harmanesque object "encrusted" (Harman: 100) with audible qualities. Whereas a colour is a quality "stuck on" (O'Callaghan: 5) to an object, sounds are "*particular individuals* that possess the audible qualities of pitch, timbre, and loudness, possibly along with other inaudible qualities [O'Callaghan's emphasis]" (17). O'Callaghan also suggests that sounds are encrusted with properties from their environment (43): perhaps spatial properties such as size through reverb, texture through filtration (both physical and emotional),[85] and perhaps also ecologically contextual properties such as affective states and experiences from surrounding flora and fauna.

Sounds also "enjoy lifetimes [note the temporality] and bear similarity and difference relations to each other". O'Callaghan differentiates sounds themselves from sound *waves* (69). Though the latter travel through space, the former do not. Already a picture is emerging of some kind of spatial object with mysterious, as well as audible, properties, however fleeting these may be. I suggest that some of these qualities include non-audible ones such as colour, despite O'Callaghan's rejection of the synaesthetic.[86] (O'Callaghan's sound-proper would still need to to have temporally-undulate qualities described in the previous section to time-bind it into truly phantomic form.) O'Callaghan also neatly solves a problem in my sound phantom representation in that if the phantom has *exactly* the same form as the object, we would not be able to 'enter' it artistically; my solid 360° camera would not be able to pass into the solid wood trunk. O'Callaghan states that sounds exist "at or near their sources" (46), conjuring an image somewhat *Blade Runner 2049-*like[87] when the virtual girlfriend of the protagonist hires the 'meat-puppet' prostitute so she can possess her and commune physically with her 'meat' (human) boyfriend. The virtual hologram-girlfriend has trouble keeping in sync with actions of the meat-woman, and provides an exquisitely disturbing portrayal of possession, the occupying of a single space by two competing conscious entities. Likewise, if the sound phantom exists not only within the form of the object (as Jane Bennet's vibrancy suggests) but extends past its bounds (as per O'Callaghan's understanding of sound), my portrayal of the sound phantom exisiting, and being entered, at or near the object of the tree remains plausible.

Could these sounds-as-individuals possess "viscosity" in the sense given by Morton (Morton: 27-387)? Hyperobjects, according to Morton, stick to us – the more we notice them, the more we notice we are 'of' them. As we travel from one area to the next, the hyperobject follows us like the proverbial bad smell. I propose a similar (non-olfactory but more interesting) effect can occur with the sound phantom. It drags not only properties from its environment, but properties from *other sounds*. Naturally these properties would be distorted and warped as they are dragged into the time-undulate confines of the sound phantom proper. I explore this in detail in *Cavity 2* where sonic

85 Jean-François Augoyard and Henry Torgue, *Sonic Experience: A Guide to Everyday Sounds*, trans. Andra McCartney and Davis Parquette, (McGill-Queen's University Press, 2005). p48-49.

86 O'Callaghan: 72. "colors cannot be tasted and the tastes cannot be seen, pitches cannot be smelled and timbres cannot be seen".

87 Denis Villeneuve, *Blade Runner 2049*, (2017). https://www.imdb.com/title/tt1856101/ (20 July 2018).

material foreign to the sound phantom in question, in this case birdsong, 'leaks' in from the outside. Once inside the time-undulate, perspective-warped phantom, the sound is much slower and more reverberant. I haven't intended it to be completely *dendromorphic*, trying to portray the material as a tree would hear it, but as contributing aliment to the existing and evolving phantom. In this case it provides harmonic – almost diatonic – material. A long history of using New Zealand birdsong in music (including such noted composers as Douglas Lilburn and Hirini Melbourne) is celebrated here. The ambience before and after the breaching of the membrane serves as a clue to what this sonic material may be.

The effect of this viscosity can produce what Augoyard and Torgue, in *Sonic Experience*, term "anamnesis" (21):

> [A]n evocation of the past, refer[ring] to situations in which a sound or sonic context revives a situation or an atmosphere of the past.

Augoyard et al go on to describe how a particular sound can remain evocative to the listener over short or long periods of time (such as within the span of a film or that of an entire lifetime). The more distant in memory and unexpected to occur in the present consciousness the sounds are, they propose, the more overwhelming the emotion can be for the listener. In the next chapter I discuss how this emotional catalyst can be represented spatially, as well as sonically, through the construction and employment of certain *atmospheres*.

VI. Emotion made spatial

The mentioned artworks of sound artist Nye Parry[88] realise the idea of the sound phantom in several pieces by working with:

> …a notion of music in which the listener is an active participant, the explorer of a musical landscape rather than the stationary observer of a musical journey undertaken by an unacknowledged protagonist who is embodied in the musical material itself.

Parry's work in "freezing" sound in a space, by suspending 60 loudspeakers each of which contribute a tiny proportion of the sound of the installation and letting the listener wander about in these "navigable sonic structures", provides excellent context for my introducing of the 'felt' meaning of a given object. Gernot Böhme in *Atmospheric Architectures*[89] discusses the use of light (which, like sound, needs to be continually generated to exist) to create spatial forms.

Böhme's argument that "space is…created by light" (148) is, in my view, equally applicable to sound. Indeed, Böhme even states that "Soundscape…[is] the discovery of…the acoustic

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[88] Nye Parry, *Exploded sounds: spatialised partials in two recent multi-channel installations*, (Divergence Press, 2014), http://divergencepress.net/articles/2014/12/1/exploded-sounds-spatialised-partials-in-two-recent-multi-channel-installations (December 2017).

[89] Gernot Böhme, *Atmospheric Architectures: The Aesthetics of Felt Spaces* (Wilhelm Fink GnbH & Co., 2013), trans. A. Chr. Engels-Schwartzpaul (Bloomsbury, 2017), p148.

form of living environments". It may be that my idea of the sound phantom is merely a more object-specific version of the soundscape: "condensation and composition [are] required…for the documentation of such worlds" (128). In this sense a soundscape would be the sound phantom of a place rather than a particular object.

Böhme acknowledges that the term 'atmosphere' is hazy and undefined, "something that is aesthetically relevant but whose elaboration and articulation is still pending":

> One does not quite know whether to attribute them [atmospheres] to the objects or the subjects who experience them. One also does not quite know where they are. They seem to fill the space with a Gefühlston, (feeling-tone), like a haze, as it were. (14)

Already similarities between atmospheres and sound phantoms emerge: something that is somewhat hazy or shadowy (phantomic), residing somewhere between subject and object; something that occupies some some kind of spatial form; something comprised not only of light/shadow and sound, but *Gefühlston* – the emotional content that is exuded by the space and felt by the perceiver.

Furthermore, Böhme states that "to treat light and sound as objects would be to underestimate their spatial significance. They actually create spaces with a character of their own" (76). Since the subject of his work is architecture, the physical bounds of the space (the walls or façades or lack of them) are what would create the physical *sonic* from. Likewise "light creates space, and can be seen as a building material" (143), though it can only ever be the light *reflecting* off a pre-existing solid structure that can create any shape other than a sphere (say from a candle flame), as light and sound "still have to manifest themselves on something real" (171). Using the medium of 7.1 sound plus a visual material to serve as both a guide to the sound and furthering the surround-ness with the use of the 360º footage, my works aim to come as close as possible to manifest the object in the audience space, as if we were inside the object itself.

Primarily discussing light, Böhme does not branch out further to speculate on a sonic form existing without the confines of physical boundaries (126-127). The inventor, engineer and scholar Dr. Barry Blesser and interdisciplinary scientist Dr. Linda-Ruth Salter have recently produced a book on the subject of "aural architecture", *Spaces Speak,*[90] arguing that emotional as well as physical spaces can be created according to their aural acoustics. The authors make the distinction between "spatial acoustics" (purely physical, data-driven interpretation of the sonic qualities of a space) and "aural acoustics" in which the focus is on the way listeners experience the space:

> As with all sensory aspects of architecture, cultural values and social functions determine the experiential consequences of spatial attributes. In different social settings, the same acoustic features have different meanings, which then influence the mood and behavior of the people in those settings. (3)

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[90] Barry Blesser and Ruth Salter, *Spaces Speak, Are You Listening? Experiencing Aural Architecture* (MIT Press, 2009).

Both Böhme and Blesser et al diverge slightly from the path of hard, mechanistic science in the aspect of 'feeling' playing a crucial role in how we experience spaces, Böhme in particular suggesting that the senses are by no means restricted to the bounds of the physical body:

> Bodily existence is certainly poured out in space, atmospherically affected and in bodily communication with other beings. (44)

As Rupert Sheldrake might say, the universe is not confined within our skulls;[91] when we experience the world through seeing or hearing, part of our self literally extends outward from us and into it.

This leads to the question of whether abstract 'objects' such as emotions and intent can exist without a consciousness to harbour them. Gernot Böhme (somewhat confusingly, given the name) cites the 17th Century mystic and philosopher Jakob Böhme discussing what may pass for the sound phantom of a musical instrument (J. Böhme, as cited by G. Böhme: 45):

> A thing has a nature or an essence which is, however, not perceptible of itself as such. On the other hand, the thing's whole structure is oriented towards the revelation of essence. The body is a sounding board, and it has an attunement, resulting from its cut, covering or cavities. Böhme calls this attunement a signature [which] originates with the excitation of essence by the *spirit*.

What is being articulated here is the notion of an essence which inhabits an object that, while not conscious of itself, nevertheless expresses itself. Further, the instrument has a particular spatial quality (attunement) – or a persistent potential-sound, derived from its shape (cut) – which is conjured by excitation of its essence. With this interpretation of the "essence" of a sounding instrument in mind, perhaps the only difference between it and my tree sound phantom is that the tree was not manufactured by someone for the purpose of sounding!

As Elizabeth Grosz has proposed in *Eight Deleuzian Theses on Art*,[92] the case for the existence of art outside of human influence is currently enjoying re-examination. Interpreting the philosophical and psychoanalytical work of Gilles Deleuze and Félix Guatarri, Grosz suggests that all arts "from architecture to music, poetry, painting, sculpture, dance are the indirect products or effects of [behaviour oriented towards] some kind of sexual encounter" (47). Fascinated as I am to learn that this is what's driving me to produce the accompanying works, the more pertinent point for me is the re-taxonomising of humans *within* the animal Kingdom, rather than over and above it. My work focuses on the obvious next step, that of repositioning ourselves within the Domain which includes Animalia and Plantae including, of course, trees. Grosz states that:

> Art and especially the first and primordial of all of the arts, architecture, is … the direct connection between the forces of the living body and the forces of the earth, formed above all through rhythm. Architecture is the first art, the art that is the

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[91] Rupert Sheldrake, *The Science Delusion*, (Coronet, 2012); S*even Experiments That Could Change the World*, (Fourth Estate Ltd, 1994).

[92] Elizabeth Grosz, 'Eight Deleuzian Theses on Art' in *An [Un]Likely Alliance: Thinking Environment[s] with Deleuze, Guattari*, Ed. Bernd Herzogenrath. Cambridge Scholars Publishing, 2008.

condition for the emergence of all the other arts, for without some cordoning off of territory from a more generically conceived earth, no qualities or properties can be extracted, no properties can resonate, intensify, effect and transform bodies. (49)

Firstly, a tree is certainly a "living body", and quite literally has a direct connection to the earth. Second, if architecture exists as an art form in nature, independent of human activity, the suggestion that trees harbour their own artistic secrets becomes too tantalising to ignore. Clearly this raises a question of whether the phantoms I am proposing could exist *despite* human intention – I suggest that at the least, there is no reason why not.[93] As such, I have presented the accompanying artworks as speculative. However, the much more serious and crucial point I make is that the works offer a reconfiguration of the human/non-human relationship, which will hopefully help lead to an arrest in the destructive behaviour we currently wreak.

VII. Summary

From the positions of the authors and artists discussed above, I have sought to convey an understanding of why I have pursued this research. If objects can be both real (physical, sensual) or conceptual; and sound is an object that exists in space and time, and like all objects has some form of vibrancy or even consciousness; and we are able to physically internalise them as well as unself into them; then this suggests that we are on some level communicating and indeed communing with something alien, or rather non-human. Like early peoples that learned to trust and learn from, rather than fight, each other when meeting at a common watering hole,[94] we have the chance, through artistic activity and experience, to regain our respect and compassion for the vast world outside the commercially-indoctrinated self; an understanding that may come naturally to many other cultures, but is relentlessly being driven from the so-called 'developed' world. Our active engagement with – that is to say, our musicking – of a sound phantom is a powerful way to counter the forces that seek to isolate us from each other and the world, for the benefit of an 'elite' few. Naturally we are required to be active participants, hence we need to be armed with a certain level of knowledge. My artworks and this accompanying exegesis aim to continue the conversation on how we can listen and think in a way that reclaims this empathy with that out-side, that is the world beyond the human. Though acknowledge that I can't entirely claim to escape the bounds of the self, in that I am essentially the composer and author of this MMA, I aim go a step further than ego-centric anthropomorphism ('trees are more or less like us, so better be good to them'). I suggest that where spatial, temporal and conscious/emotional boundaries are uncertain, we have more chance to honour, in the words of Carl Sagan, "our responsibility to deal more kindly with one another, and to preserve and cherish the pale blue dot."[95]

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[93] While zoomusicology and non-human music are recognised fields of study, I have yet to see "dendromusicology" offered as a tertiary course. I have, however, found artists who explore tree communication musically such as Lucie Strecker; river-oriented sound artists such as Leah Barclay; fauna-focused artists such as Gordon Hempton and several human-structure-based sound artists who contribute to the book *Environmental Sound Artists: In Their Own Words*, Oxford University Press, 2016. Ed. Frederick W. Bianchi.

[94] Steven Pinker, *The Better Angels of Our Nature: Why Violence Has Declined*, Penguin 2012.

[95] Carl Sagan, *Pale Blue Dot: A Vision of the Human Future in Space*, Ballantine Books 1997.

On The Accompanying Works

> *"I spend more than half my waking hours trying to instil character into inanimate objects."*
> *- Tim Prebble, Film Sound Designer, Colleague, Mentor*

I. Partial Access / Adumbration

I hope now a picture – albeit cross-modal – has emerged of the sound phantom as an independent spatial object with its own histories and agency. How do we access it? In *The Quadruple Object* Harman makes the argument for there being "more to things than our representations of them" (30). Baudrillard's simulacra are then all we have access to. Alva Noë, following phenomenological philosophy, reminds us that according to the scientific theory of vision, adumbrative sketches are in reality all we see when we look at an object. We can never see the back of a solid object, we leave it to our brain to extrapolate that for us from a maximum of two 2D reflections on our retina. Similarly with hearing, we can only hear 'chunks' of time and must internalise and construct a whole with our protensive and retensive cognition.

The pieces submitted in this exegesis are hence a similar series of adumbrations in the sense proposed by Husserl and detailed by Harman; sketches of qualities, and parts of qualities, that overall contribute to a whole. Like Zeno, we will never get to the zero-point of total understanding of the object nor its sound phantom. I see this as a positive, as it implies an infinite wellspring from which to draw artistic inspiration.

I must also reiterate that the artworks submitted with this exegesis are speculative *recordings* of the speculative sound phantom. In other words, rather than simple capture or documentary recording, the pieces convey several hypotheses on what various paths through a given sound phantom might sound like. Greg Milner defines recordings as a means to "keep in touch with ghosts", being not just the dead but "the lingering ideas of who we are and what we want" (Milner: 25). He alludes the phenomenon of absolute music when he cites a story about Thomas Edison sinking his teeth into a phonograph, so that the music therein might "'come almost direct to my brain'…unencumbered by the clutter of the world" (40-41). Since sounds "cannot be trapped" (25) they must be reproduced. A further positive of recorded sound is that it enables us to hear more than reality can grant us; with the principles of temporal (and emotional, clinamenic, spatial) undulation clearly recognised, this hyperobjective, supra-dimensional sound phantom makes possible a hyper-real sound art. Though the artwork itself is what Dugal McKinnon describes in *Spectral Memories: the Aesthetics of the Phonographic Recording*[96] as a "time-binding medium" (McKinnon: 1), part of what the work is portraying is speculative undulations through the time-flow frozen into the virtual object of the sound phantom. In this sense, it does not aim to be a "veridical" (ibid.) record as much as to stimulate empathy with another entity thorough "kinaesthetic empathy", cross-modal "mimetic -motor-imagery" (terms I unpack and attribute in following

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[96] Dugal McKinnon, *Spectral Memories: the Aesthetics of the Phonographic Recording* (HZ-Journal 2008). http://www.hz-journal.org/n12/mckinnon.html. (September 2017).

sections), embodiment and its counterpart unselfing, and questioning of the conventions of synchresis.

II. The A/V Media

The media I have employed are the well-established formats of video and surround sound. I have exclusively used 360º video footage, and a library of purpose-recorded, high resolution (48, 96 and even 192k) digital sound recordings, augmented by recordings from my professional sound library and various sound processing software and plugins. I have elected to avoid commenting directly on the media itself within the artwork – the 360º and 7.1 formats are not so much particular to the work as an easily accessed means to an end (that 'end' being the expression of the sound-phantom concept). Much like the audience 'suspension of disbelief', on which commercial cinema is dependent, this work asks the same of the listener-viewer.

360º photography and videography is in its early stages at present. Through the use of two 180º fish-eye lenses and automatic 'stitching' software', the 360º camera shoots in every direction at once. The footage can then be extrapolated onto a rectangular aspect ratio of the user's choice, in my case widescreen format. One double-edged-sword of this visual medium is its newness. The internet abounds with 360º video that can be manipulated by the viewer, plentiful 'little planet' photos and videos, and VR-content apps are increasing. However, the resolution is naturally greatly diminished when shooting in 360º – 4k is great for a tiny section of visible field (the size of a TV or even movie screen), but for 360 degrees vertically and horizontally, full-resolution cameras do not yet exist in an affordable form.

Given that the artistic point I aim to make is primarily aural (and at composition stage have used mostly 96k/32bit sound) I have accepted this visual drawback. As prices reduce for 360º cameras, and my work evolves, there will be plenty more opportunity to overcome these technical limitations. For this reason, I have had to compromise video quality for affordability. As my intention has always been to lead with sound, the video material assumes the role of a guide to what one is hearing. While I certainly intend to explore higher visual quality in future works, resolution is not a crucial issue for me in this particular body of work.

An unexpected, but in hindsight entirely predictable, quirk of 360º photography is that the photographer will necessarily be in shot. Ways to avoid this are to hide behind something; to put the camera on timer or rolling continuously and move far away; or to use a video plugin to manipulate the 360º image in such a way that the intruding object (that is, me) is panned to the edge of the image where it is invisible; or to zoom the image to exclude some of the 360º field (the bit with me in it). I have used all these methods to keep myself out of frame. I even invented and employed a rudimentary crane resembling a fishing rod bent into a right angle, with the camera on the end. This enabled me to film around corners, up high and into crevices and hence remain obscured. My reason for keeping out of the frame is implied by my above discussion of unselfing, and the research around OOO. The sound phantom of a given object exists within that object alone – not for the benefit, or by the presence, of human experience and can be considered a form of

non-human music (Bennet: Ch. 7). Safely within Hathaway's Chthulhuscene, the artwork is not, or shouldn't be, about me – it just *is*.

With use of software plugins, I can then 'navigate' a path through the 360º shot and record that as a linear video. For example, *Roots to Canopy* is a single static shot; the movement is a slow trace from one perspective to the polar opposite – the camera itself does not move. This provides a kind of motion within stasis, a continuous adumbration of a single spatial field, which I have discussed above (both within time and within space).

The sound material involves investigating what the phantom *might* sound like, if one were to follow the path of the camera through it. Given that not just real-time, physical sounds comprise the sound phantom, but time-undulate, emotional and 'entelechal'[97] ones as well, I have used an extensive range of sound material. To me the source of the recordings is not as important as the final effect. If the works convey the material, as well as the 'vibrant', aspect of the object, I can claim success. The unavoidable tension here is that I'm trying to take myself out of the picture, and propose something that exists independently from humans, yet still trying to represent them artistically and claim authorship as a composer of the pieces. Further study will therefore involve the investigation of how to further remove traces of my influence from the work while still presenting something worthwhile and interesting. The holy grail would be essentially 'curating' rather than 'composing' sound phantoms. As I've said though, these are early days, and there is significant scope for further development of this concept and approach.

I have also elected to straddle the boundary between synchresis and non-synchresis. My professional life is filled with creating sound effects for film, and exact synchronisation is one of the most rudimentary skills to master in this job. Film and TV audiences are conditioned to tolerate such low levels of drift that conventions have evolved that run counter to the real world, such as realistic time-lag between the visual and the aural of 'distant' events seeming like errors when viewed on the 2D movie screen. In terms of synchronising sound to picture, I feel no need to prove my abilities in this area; any critique of this elementary skill can easily be made in my professional repertoire. What I find much more interesting to explore is the threshold at which asynchronicity breaks the synthesis of picture and sound, as in *Water Source*. I suspect this is particular to each viewer/listener, and as the idea develops, this is a relationship I will be further exploring, in part through online presentation of my work and feedback via the audience my work finds online via platforms such as Vimeo and YouTube.

To complement the immersiveness I've sought by shooting in 360º, I've chosen a sound format that provides this while still remaining practicable. The 7.1 surround format is purely a result of the conditioning we as cinephiles have had over the evolving past century-plus of film. 7.1 is a format that 'radiates' from the central point of the onscreen image. The horizontal 360º plane invites the listener to extrapolate from the relatively narrow visual field. I believe that this standard has evolved as the best affordable method to present and distribute sound work for static, screen-based video material.

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97 Entelechy – as defined earlier this is Jane Bennet's term for the "non-mechanical agency responsible for the phenomena of life".

As I discuss in the "Future Concepts" section, there is no reason to stick with this convention and format – screen imagery with surround sound. As a starting point, and as proof that the idea of the sound phantom can be realised and expressed artistically, I find this AV method to be an appropriate balance between an easily understood and accessible medium and an unfamiliar concept.

III. The Sound Palette

As with most musical series, my pieces have a finite framework, or palette, of sonic materials from which to draw. Here the parallel is with ensembles and bands which restrict themselves to certain instruments, just as genres are restricted to particular cultural or philosophical approaches, or sub-genres are restricted to certain harmonic modes or tempo ranges.

For the purposes of the Tree sound phantom, I have begun to develop a 'genre' from the palette I have established. When outside the boundary of the phantom, we hear only the surrounding ambience, in this case the wind, birds, air, perhaps water. The membrane of the sound phantom is portrayed by static-pitch material: resonant tones that form a kind of chordal 'skin' to the phantom. This is only audible at or very near the boundary, and in some cases is audibly breached.

The interiors of each phantom are more diverse, as the phantom comprises the *meaning* of the image not just 'what the image would sound like'. The phantom interior is the phantom-proper and as such is where the opportunity to explore the 'weird science' is strongest. In some cases sonic material suggestive of air flow and respiration is audible. The source material for this includes air on the perceptual edge of how a human might experience it, with breaths, wind gusts and sounds that approach vocal groans and exhalations. The balance to be struck here, that the listener can judge for themselves, is to create a sense of relatability, what Haraway refers to "making kin" (Haraway: Ch.4), without anthropomorphising the tree into fantastical 'ents' as per *Lord of the Rings*.[98] I concede that what for one listener might feel 'OTT' or 'cheesy', for another might be more subliminally affective, and to yet another unaccessible; but of course, if there exists any piece of art of which this variation in reception is not true, I can't think of it. Other pieces sonically depict the rough wood surfaces of the visible roots and trunk. The source material for this is of actual recorded caresses of various kinds of bark from different trees in my neighbourhood.[99] Phantomic representation of the high tension of mature trees in several pieces uses various breaking wood, rocks and other materials that sonically convey a sense of great force.

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[98] Peter Jackson, *The Lord of the Rings: The Two Towers* (2002). https://www.imdb.com/title/tt0120737/?ref_=nv_sr_1. And the others.

[99] While I celebrate the sensual aspect involved in music-making in this respect, I am glad I had the opportunity to do this unobserved. My commitment to art aside, I would hate to have to explain to an onlooker why, in the middle of the night, I was going about stroking the trunks of trees, with such assiduous attention, for several hours.

The result is a palette of sound material that hopefully captures enough elementally thematic (such as woody, earthy, airy, watery and leafy) variation as well as conceptually thematic variation (such as viscosity, anamnesis, temporal undulation) while retaining a vocabulary that is relatable, or at least recognisable, in respect to the visual imagery.

IV. Future Concepts

Notwithstanding the above discussion around commercial film, I am open to exploring ways to present a sound phantom in a more accessible physical sense, at least as a point of entry into the broader philosophical and speculative entity I have described in this paper.

The holy grail of the next step in media technology is surely 3D holographic projection. Quite apart from the huge disruption it would cause in decoration and entertainment, an intangible, three-dimensional light-object would have endless applications in the art world. The idea is surely as old as cinema – perhaps older – and has been portrayed in countless science fiction films; but as yet the physics to realise it has not been solved. Various illusory methods exist such as Pepper's Ghost,[100] and its modern variant, Augmented Reality (AR). However, the necessity of the audience to be quite literally 'screened off' from the object renders these ultimately unsatisfying. Some workarounds have been explored, such as projecting onto water vapour or smoke, but these media remain uncontrollable and somewhat unwieldy. The means to create a true luminous 'phantom' in the sense of an ethereal, standalone, diaphanous object is yet to be invented. I am yet to fully investigate the area of printed holograms which have been novelty pieces in museums and galleries for several decades. The illusion of an image extending out of the surface of a material (rather than receding in) has been proven.

In contrast, sound has made significant progress in recent years. Parabolic reflectors are capable of broadcasting fairly localised sound, although as with light there is no way to make the sound wave suddenly 'stop' in mid-air. Likewise, the *Soundlazer*[101] highly directional speaker is now affordable, but like a light laser it can not make a sound stop at, and remain static in, a point in space (like a sonic version of the fictional light sabre from *Star Wars*). The sound beam is still 'endless' in the direction of broadcast until it encounters a solid surface. Nevertheless, with an array of such speakers, under controlled conditions (such as those described in the discussion on Nye Parry's works) 3D sonic 'objects' are conceivable. Research by Bridget Johnson has used speaker positioning and careful analysis of spatial diffusion of sound and how location and objects influence it. Directly referencing sound in spatial form, her work "focuses on the musicians aesthetic engagement with space in its many forms". Audience engagement through gesture and tactility are integral aspects to much of her work.[102]

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[100] Pepper's Ghost. A popular C19th stage illusion where a pane of glass reflects an actor unseen by the audience, the image of which appears to be onstage and can 'interact' with a live actor. https://en.wikipedia.org/wiki/Pepper's_ghost. (31October 2018).

[101] Soundlazer. https://www.soundlazer.com/. (31 Oct 2018).

[102] Bridget Johnson https://bridgetdjohnson.com/bio. (31 October 2018).

The advent of "ultrahaptics"[103] brings the concept of a sound phantom a step closer to the literal sense. Ultrahaptics is a recent technology that uses ultrasound to create tactile nodes of air pressure, purportedly in any shape the designer wishes. This unequivocally somatic aspect brings yet another layer to experiment with in sound phantom realisation. And given that these virtual yet tangible objects are merely air molecule vibration, it seems that true sound objects, existing in a specific location in space, are imminent technologically.

With these technologies in mind, further research into how to create a true sound phantom becomes a rich topic indeed. To create a visual sculpture, with accompanying localisable sound phantom, which can be approached and traversed by any number of audience members is my long-term artistic goal. Staying with the object of the tree, imagine a 3D holographic projection of a life-size tree, complete with textured trunk, individual leaves which move as if in a gentle breeze. As one walks up to, around and *through* it, various aspects of the tree's sound phantom are audible, and even "feelable" to some degree. Feasibility of expense, practicality and effectiveness are further factors which will determine how far my research can proceed.

Of course with the exception of being able to enter the visual object, a real tree (or sculpture of one) instead of a hologram would serve as ample visual stimulation for the sonic material. Such a piece consisting of sculpture with associated localised sound could be a bridging step toward the realisation of my goal proper. There is also a caveat that comes to mind, this being how much I want to deliver to the observer on plate. As several musicologists have discussed, there is much value in *participatory* rather than purely receptive experience. Andrew Mead has suggested that part of the practice of listening to live music involves "kinaesthetic empathy",[104] in that the listener imagines (or rather feels) within them the muscle-motion of the player. Since music(king) is already something that we do (according to Christopher Small), as opposed to something we have done to us, to literalise and over-deliver the sound phantom concept risks robbing a listener of their physical and interpretive engagement with the artwork. In a paper on his theory of "Mimetic Motor Imagery"[105] Arnie Cox asks us to:

> …consider the massive architecture of H. H. Richardson…with their characteristic "crushed columns." The height-width ratios are out of proportion compared to traditional, classical columns, and they appear as one might imagine a column would appear if it were crushed vertically and made squat. One can focus on this objectively, but one also has the opportunity to embrace an affective response: they not only look crushed, they also *feel* crushed [my emphasis].

As with film, arguably music, and possibly all art, part of an audience's enjoyment stems from their level of involvement including embodiment of "imagery related to the exertions and movements of our skeletal-motor system" (Cox: Part I:2) in empathy with the action we see or sound we hear. Labouring the point, creating a work that is too 'on-the-nose' or didactic in

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[103] Ultrahaptics. https://www.ultrahaptics.com/. (31 October 2018).

[104] Andrew Mead. 'Bodily Hearing: Physiological Metaphors and Musical Understanding'. *Journal of Music Theory* Vol. 43 No. 1 (1999), pp1-19.

[105] Arnie Cox. 'Embodying Music: Principles of the Mimetic Hypothesis. *Music Theory Online* Vol. 17, No. 2. 5, 2011. (September 2015).

terms of artistic aims could easily become gimmicky and unsatisfying. I look forward to the many failures I will necessarily have in finding a balance that allows enough participation to enjoy, embody and unself into the work without needing to absorb the entire bibliography of this exegesis to do so.

Concluding remarks

> *Q: What's red and invisible?*
> *A: No tomatoes.*
> *- Anon.*

The above joke resonates with my claim that humans clearly appreciate the possible existence of a liminal zone, an area where the realms of concept and physical reality blur and blend. Far from the authoritarian and ominous notion of Orwellian "doublethink",[106] when the frames of reference are sufficiently broad, we are comfortably able to appreciate two or more ostensibly contradictory simultaneous states of reality. Hence there seems little doubt to me that the notion of a *sound phantom* is something that can be instinctively, if subtly, grasped. Like water to a fish, or gravity before Newton's *Principia Mathematica*, it is something we can interact with and appreciate long before the light of intellectual and scientific enquiry has been shone directly on it. I mean to collate and harness these disparate wisdoms in the hope of adding my iota of weight to the scales which balance fearful and toxic capitalistic individualism on one side and a benevolent *ünheimlich* on the other. Notwithstanding some rare hyper-commercial exceptions in the world of industrialised art, including film and music, it might be said that one of the fundamental goals of music is ever thus.

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[106] The term is from George Orwell's apocalyptic novel *1984.*

List software and equipment in detail

Pro Tools (successive versions from 12 to Ultimate)

Zynaptiq Morph

Avid Compressor, Subharmonic Synth, Limiter, Multiband dynamics

Phoenix Surround Reverb

R2 Surround Reverb
Slapper
Spanner
Waves RBass
Waves Doppler
Waves Soundshifter

Sennheiser 8040
DPA

Theta S horizontally and vertically 360º, omnidirectional camera

Red Giant Upscaler plugin
FX Factory 360 plugin

Adobe Premiere Pro

JBL 4300 series speakers 7.1 format (L C R Lss Rss Ls Rs LFE)

Sony Bravia 50" 2k screen

Technical compositional and playback notes

All pieces were composed and output at *POW Studios*, Miramar, Wellington, Aotearoa New Zealand, at the below configuration. Playback of pieces by arrangement most welcome: matt@powpost.co.nz

Speaker setup: Film 7. 1 L, C, R, Lss, Rss, Lsr, Rsr, LFE. Side-surrounds halfway, rear-surrounds full back. LFE front, centre.
Levels: L, C, R @ 82dB; Lss, Rss, Lsr, Rsr @ 79dB. LFE at ~90dB.

Screen setup: Front, eye-height.

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Notes to the works

1. Fragile Seed

This is the most synchretic of the series. Time-compressed to the extent that we are able to witness the rapid movement of a seed, from its point of view, as it seeks the relative safety of the undergrowth. The seed ever keeping an 'eye' on the sun, its rays a critical catalyst in its germination, we hear this shrill, piercing light pinpointed ahead. Monstrous groans and growls from the multitude of predators surround us. After a short pause the seed springs forth as a sapling, developing its sound phantom for the first time, which we hear as a halo of life. As it strives for light, it finds it must contend with bullies of the forest who will try to hinder its growth in their own lust for sunlight.

2. Sapling Struggle

A young tree, healthy and established, reaches toward the light. We are within its crown, directly in its path toward the sunlight it seeks. We hear the circulatory liquids working furiously to convert the light into matter and life. The tension in the branches and the evaporation of fluids is suggested sonically. As we move away from the centre of the sound phantom, the vital importance of the warmth and light cast by the sun becomes apparent. This tension increases as we move away from the tree, seeing it surrounded by the essential light and hearing the beginnings of the enormity of the light source. Like the myths of gods, the life-giving source is at once benevolent and terrifying, continuing long after the image of the tree has faded.

3. Roots to Canopy

This adumbration of the phantom focusses on the roots of the adult tree. Some believe the roots are where the tree stores its memories and thoughts if it has them, like a brain. As such it must control the vital functions as well as convey nourishment and information to and from the leaves. The immense energy resources necessary to accomplish this are audible.

This piece explores 'static motion'. While the camera does not move, the perspective changes so that we become aware of the tremendous distance between the canopy and the roots. By the time the image begins to fade it is as if the two are so far apart they might almost be distant, distinct worlds. Being deep within the sound phantom, we hear distorted, filtered sound of surrounding fauna.

4. Cavity 1

With almost aggressive force, we breach the phantomic membrane. The ambient sounds of the forest are closed off from us, and we hear the liquid, organ-like circulatory system. Fluids gorge and bubble through the wooded tubes and capillaries. Bulbous branches and strands are visible and grinding peristaltic movement is audible. It is almost as if we are in the gurgling 'guts' of the tree. Breaching the membrane once more, we are suddenly free of the phantom, once again in the ambient forest.

5. Cavity 2

We continue the adumbration of being deep inside the sound phantom. This time though, the ambient fauna has permeated the membrane. It is audible in ostensibly diatonic harmonic tones. Just as these sonic tones have 'stuck' to us, we are aurally aware of the surfaces of the phantom around us. Derived from multiple recordings of caressed bark, we hear dense layers of the textures we see.

6. Cavity 3

This adumbration becomes now somewhat uncomfortable as the 'wet'-ness reminds us of the tree's dependance on water and our own dependance on it. Rather than using water, like this tree, water *becomes* us in all its sticky, squelchy, drippy, gushy ways. We don't need to imagine becoming enmeshed with the 'other'. We are inherently, inextricably so.

7. Cavity 4

We are now approaching 'invasive' as we hear the most vulnerable and private facets of the tree's sound phantom. Crucial respiratory air is suggested, as are the slumbering groans of the tree's sighs and possible thoughts. The scarcity of light makes us wonder whether we are deep inside another entity, and how it might react if it knew of our presence.

8. Tensile Trunk

This adumbration focusses on the mature tree's immense strength and the huge tension involved in maintaining its sturdy trunk – this being the means of keeping its leaves high up in the sunlight. A 180º pan from looking at the base to looking at its crown employs the most violent sonic material in the series. As with Adumbration 3, the visual motion is 'static'. Nothing changes but our perspective within the 360º field but what it shows is the polar opposite from start to finish.

9. Water Source

This very slow pan is another 'static' one. We begin looking 'at' the phantom, become 'of' it and return to 'at'. With barely perceptible progress both aurally and sonically we perform a 180º turn. The focus here is on the tree's water source, its lifeblood. Having had the relative fortune of germinating next to a stream, it must now develop strategies to defend against rot, fungus and other water-borne vermin. Being such a slow adumbration, it gives us time to explore the concerns and desires of the tree. We leave the sonic material of the stream and by the time we are completely 'of' the sound phantom, we can hear a vastly different world. Bolts of stimulant pain shoot along the tree's length. A summoning of ancient memories passed down through countless ancestors informs the tree on how to respond to threats. It must take care, as it moves on a timescale immeasurably different to its attackers. Because it can only respond relatively slowly, it must plan its defences and strategies with utmost care.

We have now touched the very heart of the sound phantom. If we have given the time, we are now well aware of the vibrancy and agency of the tree. Just as slowly we exit the phantom, hopefully the wiser and more empathetic.

10. Forest Environs

We now witness the tree in the context of the forest and hint at a forest phantom. Confident, sturdy, secure, we are able to see and hear the forest as a greater whole, for which the tree is a mere part. Extrapolating from this could only lead to the entire world being understood as such - not a thing apart from us, to be mined and exploited, but 'of' us and we 'of' it.