Towards Respiratory Aesthetics: a Situated Model of Compositional Practice

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Abstract

‘Towards a Respiratory Aesthetics: a situated model of compositional practice’

This research describes a compositional practice informed by a respiratory philosophy. Following a range of thinkers including Henri Bergson (1965), Luce Irigaray (1999), Tim Ingold (2015) Karen Barad (2003), and Emanuele Coccia (2018) the project proposes a perspective that emphasizes our immersion in the air and a relationship of attentiveness and openness to the world. The project marks a shift of emphasis, away from the primacy of the aesthetic concerns of the human composer, towards an eco-systemic model that recognizes compositional agency as distributed.

An eco-systemic, or situated, compositional practice is one that enables processes of composition to emerge through dialogue with materials, environments, and bodies. Such practices move beyond binary notions of human ‘subjects’ and material ‘objects’ to embrace relational approaches to composition. These relational exchanges take place iteratively creating flows of agency. I develop the idea of Respiratory Aesthetics through awareness of these flows, and the intention to follow and work with them.

Researcher perspective and background

The choice to include some biographical background is necessitated by the need to provide some context for the orientation of the research practice. My practice as a flute player has provided the inspiration for me to re-consider breathing as a metaphor for sound composition. However, my background as a performer and researcher in more than one musical tradition is also essential to the orientation of this project. The experiences of embodying the roles of interpreter, improvisor, and composer, which are not clearly delineated or separated in many musical traditions, has provided much of the impetus to reconsider the philosophical and practical frameworks that have predominated in Western art-music.

My training as a western classical flute-player took place within an educational context that drew clear ontological distictions between performer and composer. As someone training to be a performer the educational focus was on how, rather than why, we perform. In flute-playing terms, a sonorous purity of tone was always encouraged at the expense of breathy, idiosyncratic, or 'extra-musical' sounds. This aesthetic orientation tends to suppress the 'noise' of the breath. My curiosity about the avoidance of this component of the friction sound of air in the flute has been an important factor in motivating this research project. On completion of my studies, I found that the process of establishing a musical practice that felt truthful to my body and my experience of the world had not yet begun. The expressive and technical capacities I had painstakingly acquired still felt borrowed, like a smart but slightly ill-fitting suit of clothes. My response was to immerse myself in improvisation and creative workshop leading, and then to undertake my first trip to West Africa to explore music in a new context.

Since early adulthood, I have of suffered from Asthma since early adulthood, which provides a direct phenomenological experience of air as being essential to existence. This

has, at times, affected my ability to play the flute. The extent to which the struggle for air can dominate conscious awareness is an experience that serves to underline our dependence upon this invisible medium.

The philosophical orientation of the project emerges from a growing awareness of the ways that essentialist thinking can be pervasive in academic musical discourse. Essentialism has provided the philosophical basis for taxonomies, according to which categories of things can be separated by their attributes or essential differences. Perhaps the most obvious example of this essentializing tendency is what Lydia Goehr refers to as the 'regulative concept of a musical work' (Goehr 2007, p. 284) This concept, according to which musical works can be considered to have an essence, separate from their embodied experience, still informs much of how we think about music. This leads to the idea that categories and taxonomies are somehow universal, rather than having been created in specific cultural and historical contexts. My practice-based research seeks to resist some of this inherited ontology and offers some different perspectives for understanding composition in sound.

My several years spent studying, performing, and touring with musicians from a range of different musical traditions are relevant to this history, as they were motivated, in part, by an exploration of music's diverse contexts and its mediation of identity. As the son of an immigrant to the UK, escaping Apartheid South Africa, the question of the fluidity of cultural and racial identities has always been present. The Cape 'Coloured' community, to which my South African family belong, were an inconvenient fact to the Apartheid government of the time. As the Apartheid system was based on the (essentialist) illusion that racial classification is possible and desirable. The large, mixed communities were the direct result of the Dutch colonists intermarrying with Indigenous people as well as bringing indentured labourers from Indonesia, Sri Lanka, India, and other colonies of the Dutch East India Company. This resulted in stories about the ways in which people were 'identified' as black, white, Indian, or

coloured. One of these was ‘the pencil test’, whereby if a pencil could be withdrawn vertically from a person’s hair then they were not considered Black.

In the process of examining the motivations and values that underlie this research project, I have realized that hybridity and associated ideas of blurring, contradiction, and ontological instability, have always been important to both my musical and political thinking. This will become clear throughout the commentary on practice, where disciplinary boundaries and hierarchies of agency are often brought into question.

Essentialist categorizations within the field of music therefore tend to strike me as politically suspect. Interestingly, George E. Lewis has commented on this anti-essentialist impulse, referring to ‘genre instability’ as as ‘aesthetic strategy’ (2017, p. 140), within the work of the AACM (the Association for the Advancement of Creative Musicians) group of composer-improvisors.

> Such hybridity, with its element of the contradictory, is itself theorized to be grounded in the affirmation of multiple identities by many black artists, itself seen as a product of colonialism, and to operate as a critique of essentialist racist discourse (2017, pp. 140-141).

My perspective as a researcher is therefore one of a practitioner attempting to recognize their situated-ness within relational, material and historical flows of agency and affect. Hence, I try not to reduce this complex and dynamic ecology of events and affects to a singular narrative or chain of causal events.

My involvement in many of the projects discussed in this thesis, has required me to undertake activities that might not conventionally be understood as composition. These include, event curation, event promotion, instrument building and performing. Within the research instrument building and performing are critical to some of the projects. In other words, my research in composition is not concerned solely with manipulating sound in a ‘top-down’ manner, but rather with being in dialogue with complex situations at all stages of their creative development. The attempt to retain the complexity of the total making situation

(including instrument and score-making) is necessarily messy and will always involve choices about which elements should be discussed or highlighted. This process of representation and selection inevitably results in simplification and reduction of complexity. However, I have also attempted to show the diversity and hybridity of the practice, as well as the complex ways in which the different projects intersect. The aim is to provide some insight into the situated compositional model that emerges.

Prologue : Introducing the Context of Air Studies

Air has suddenly become very important. In writing this thesis I have been immersed in studying the cultural significance and philosophy of air and breathing. My interest has been such that I have engaged with publications from a wide range of disciplinary perspectives that make reference to these subjects. Clearly, the air does not respect disciplinary boundaries, but at times, it has seemed as if authors from a range of fields have simultaneously published fascinating books of poems, cultural theory, and philosophy with exactly this focus. The importance of air and breathing in the current cultural moment seems difficult to ignore and has intensified, particularly during the COVID pandemic.

It is often difficult to tell whether our focused attention on any subject is revealing something that we previously did not see, or whether we have become attentive because something is happening for which the word zeitgeist is perhaps the most relevant expression.

In 2018 alone at least three books were published which piqued my interest. *Atmospheric things,* by Derek P. McCormack (2018), explores the relation between feeling and knowing through the metaphor of a balloon. Discussing dynamic relation between the processes of inflation and envelopment, McCormack says

> These processes are neither willed nor the product of human intentionality. We did not develop our lungs, nor do we determine the fact of our breathing, even if we can modify it. However, inflation can become a technical and aesthetic process for experimenting with the relations between devices, bodies and their atmospheric surrounds. (2018, p. 31)

This way of thinking about the relations between elements, employing analogical thinking related to breathing, underpins the development of the practice-based thinking found in the current research. It can be thought of as a process of exploring the reconnection, or re-animation, of the static 'entities' of compositional thought. McCormack's writing suggests a way that 'devices, bodies and atmospheric surrounds' might be rethought in a dynamic relation of expansion and contraction.

Atmospheres of Breathing (2018), edited by Lenart Skof and Petri Berndtson, presents a collection of essays exploring the intercultural roots of respiratory philosophy. This book provides a useful overview of the complexity of the relations between breathing and philosophy in a number of different traditions. The significance of the breath is explored in traditional knowledge systems, including Pre-Socratic thought, Yoga and Daoism. Most importantly perhaps, knowledge in these contexts often refers to 'knowing how' and not simply to conceptual knowledge. Hence, breathing practices are central to Martial Arts systems, music, dance and theatre performance, health and medicine as well as esoteric religious practice. In these epistemic systems there is often a continuity between the physical and the supra-physical worlds. The breath can therefore be understood as a meeting point, or mediation, between these worlds. The current research project explores how the respiratory is related to the embodied practices of sound composition, and how these relationships exist at multiple registers of meaning.

Breathing (2018), by 'Bifo' Berardi, which draws together poetics and cultural theory to comment on the current political and cultural climate. In discussing the possibility of political change he says, 'In *Breathing*, I retrace the problem in terms of respiration: rhythm, spasm, suffocation, and death.' At the start of this book Berardi (an asthmatic like myself) cites the occupy movement, the killing by suffocation of Eric Garner, widespread pollution, and climate crisis. In 2017, Emmanuele Coccia published *The Life of Plants* focusing on plants as the creators of our atmosphere. He argues that from this standpoint 'we can no longer perceive the world as a simple collection of objects… but as the site of a veritable metaphysical mixture.' Coccia's radical metaphysical perspective redefines the relations between things in the world as one of immersion 'everything is in everything'.

Peter Sloterdijk' who describes himself as a 'student of the air' published his book *Bubbles* in 2011. It is described as reinterpreting 'the history of Western metaphysics as a spatial and immunological project.' These recent publications alone suggest that the very relations between thought and feeling and our perceptions of ourselves and the world seem to be in flux. Other books showing how breathing is entangled with our understandings of culture include *Breathless: Sound Recording, Disembodiment, and The Transformation of Lyrical Nostalgia* (Weiss 2012). Weiss explores our relationship with recorded sound as a merging of the human and the technological. The idea that technology has a symbolic role, and not simply a material facticity has been important to my project. Gaston Bachelard's *Air and Dreams* (Bachelard 2011), traces the complex interplays between air, imagination, and poetics, and Peter Sloterdijk's *Terror From* the Air (Sloterdijk 2009) shows how air as a commons has been exploited as the medium for atmoterrorism. Acknowledging the dept to these writers, the current project aims to explore these perspectives in the field of compositional practice.

In thinking about the practices and practitioners that form the context for the current research, there are some specific artists and works that are mentioned in the commentaries. However, it is significant that many of the practices that have influenced this research are associated with artist collectives. The nature of collectives of practitioners is that there is an implicit acknowledgement of reciprocal influence. Work takes place within a community of practice, through which aesthetic and philosophical trends can often be traced across the work of several artists. As will be seen, the practices described in this thesis emerge out of social situations and processes. The groups mentioned below represent communities of practice that create an important part of the context for this work.

The Association for the Advancement of Creative Musicians (AACM) is an organisation founded in the mid-1960s in Chicago. It is organised around a collectivist ethos

that supports the development of creative music making stemming from the jazz tradition. Their work continues to this day and George Lewis, a prominent member of AACM, has written of ‘Afrological' and ‘Eurological' perspectives (Lewis 1996). Important features of the Afrological perspective being a critique of the binary division of improvisation and composition, as well as the community-building focus of music-making.

The relevance for this work is that it provides a coherent model for avoiding an ‘othering’ of improvisation within musical practice. It is notable that Cage and some others from the ‘Eurological’ tradition studiously avoided the use of the word improvisation. AACM collectively adopt an approach to spontaneous music making that embraces the importance of memory and narrative in music-making.

The second group is Fluxus, including Group Ongaku, many of whose members were directly or indirectly influenced by John Cage. The significance of Fluxus for this research are the links with visual art and performance, as well as the use of text and event scores. These scores employed economical mothods of working capable of producing diverse and unpredictable outcomes. Mieko Shiomi, composer of ‘Boundary Music’, a realisation of which is included in the current portfolio, has been associated with both Fluxus and Group Ongaku. The strategic use of scores to initiate new activities and relationships is clearly relevant to the respiratory project under discussion here. Other characteristics of the works that are relevant include a focus on indeterminacy, process, social relations, hybridity and post-conceptual approaches to composition.

The composer Michael Pisaro introduced me to the thinking of Gernot Boehme, who has written about atmosphere (Böhme 1993) as an important fundamental concept in the development of a new aesthetics. Pisaro himself is a member of the Wandelweiser collective, A post-Cageian group based in Germany. Their work is diverse, but characterised by an economy of means and a focus upon silence as a creative component within composition.

Many of the works display open scoring techniques and a relationship to the performance context. Emerging through this work is a conception of sound as being related to atmospheric and environmental thinking, rather than thinking of 'the music itself' in isolation. This shifts the focus from sound as a humanly constructed object (organised sound) towards its relational nature. Their approach tends to be anti-virtuosic, in both composition and performance.

The echtzeitmusik (real-time music) scene describes a network of informal musical activities taking place in Berlin after the fall of the Berlin wall. Too diffuse perhaps to be described as a collective, there nevertheless seems to be a shared ethos of experimentalism and improvisation. The book *echtzeitmusik berlin* (Beins, Kesten and Nauck 2011) documents the range of practices and the development of their work. Several UK-based musicians were part of this scene and they have had a significant impact on improvised music in the UK. The recognition of the emergent properties of collective music making, non-heirarchical working methods and communitarian ethos of this group offers another perspective upon the development of coherent musical languages. The emergence of this scene is also related to specific social conditions, and a response to existing practices of improvisation.

In summary, there are some important commonalities to the movements and collectives that I have mentioned here. The work is often initiated by the artists themselves, and a DIY ethos is an important part of this activity. There are many individual practitioners within these groups whose work has been influential for me. However, in situating my own work I have chosen to describe the networks, rather than the individual artists and composers, as this foregrounds the importance of the social, collaborative and often improvisatory nature of these endeavours.

Themes and structure

This thesis consists of eight chapters, the first of which creates some context for the practice commentary, which begins at Chapter 2. Each of the following chapters from Chapters 2 to 8 deal with an individual project in the submission portfolio. The first chapter synthesizes ideas from a wide range of sources and outlines the focus of the research.

The research investigates an approach to to compositional practice that I describe as respiratory. The respiratory approach develops out of 'movements between' ontologies, entities, bodies and environments. It is characterized by non-object based, and non-representational, models of compositional work. The term 'non-object-based' refers to a compositional practice that does not aim to produce a compositional object defined by a set of formal relationships. Such a compositional object may have a score that represents these relationships in visual form. A performance can generally be considered representational if it can be described as a performance 'of' something. This (non-object based) conception of composition is not simply a restatement of established process-product or improvisation-composition binaries, but a more fundamental reconsideration of the purpose of, and methodological approaches to, compositional practice. This has several implications for the research.

Implication 1: Functional

Composition becomes non-teleological and participatory. Its aim is not (only) to produce an object, but to initiate experimental dialogues between elements of a system and investigate these relationships.

Implication 2: Ontological

The commonly understood shorthand of musical compositional practice in which we refer to entities (such as works and structures) is not taken for granted. In other words, a new ontology is being sought, involving new entities (situations, for example). The 'situation'

describes a network or system in which the composer is immersed rather than being removed or standing outside.

Implication 3: Methodological

The composer, being immersed in the situation, will often work directly with materials, performers, and environments. The processes of development will often be cyclical and iterative and may result in multiple possible outputs.

The theoretical model that I propose has emerged in rethinking experiences of compositional making through the experience of breath and breathing. This model reframes compositional process as a situation characterized by ongoing dynamic exchanges. This can be understood as an ecosystem of making in which the various elements or nodes of the system intra-act[1] in ways that can be said to be creative or generative. According to this theoretical model, an important part of compositional process consists of forming and/or gathering elements into an ecosystem or situation. This creative situation must be allowed to remain open for long enough to enable elements to intra-act and re-form in new ways. This open phase of the process represents an *expansion* of possibilities. This phase inevitably gives way to processes of selection and refinement that are *contractive*. In this phase, the work is one of reducing the number of possibilities and refining outcomes. Within a given project, these phases often continue iteratively in order to develop the work. According to this model, therefore, the generative situation is the work, and the various outcomes are understood to be emergent properties of the situation. Whereas the idea of composition-as-object implies an outcome with stable properties that are generally not responsive to context, an eco-systemic model such as I am proposing depends upon continual internal and external

[1] A neologism developed by Karen Barad (2003, p. 815) to illustrate the ontological primacy of relationships, rather than entities. Barad contrasts this with 'interaction' in which the identities are pre-existing. Through intra-action the bodies concerned are undergoing a dynamic mutual determination. This is an important term, which will be returned to in the context of the research. "The notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action" (Barad 2007, p. 33).

intra-actions. Hence, this model can be understood to function metaphorically as an organism or ecosystem. Its eco-systemic properties are those of mutually intra-acting elements in a constant dynamic relationship.

This theoretical framework has emerged through practice and has come into focus through the various research projects discussed here. The projects each reflect a different focus for thinking about the ways that a compositional situation participates in these organic processes. Some tendencies of the situated composition model, as they can be observed within the projects, include the following features. (It should be noted that these are not mutually exclusive categories but related and overlapping principles.)

- Circularity – concerned with the shape and nature of processes that take place in compositional making and performance. Examples include iterative development, feedback, recursion, and non-linearity.
- Permeability – concerned with the contingent nature of boundaries between all agencies, identities, ontologies, and ideas of internal and external. Examples include open compositional systems, fluid ontologies, human/non-human flows of agency, blurrings between work and environment, composer and performer, etc.
- Expansion and contraction – concerned with the principles of creative development and movement between states. Examples include the generation and selection of information, iterative processes of development and refinement, and conceptions of improvisation and composition.

Although these tendencies occur in the portfolio projects in many different ways, they are not intended to represent a fixed methodology or manifesto. Instead, they are understood as the emergent properties of actions that facilitate dialogic processes. These practices are designed

to create open, experimental spaces in which outcomes can remain unknown or undetermined. The acknowledgement of unknown elements, and the emergence of new possibilities that could not have been foreseen, are the basis on which the research can be said to be experimental. This dimension of practice is therefore one that does not attribute sole agency to the action and subjectivity of the composer.

In Figure 1 below, the seven projects in the portfolio are represented as circles, whereas the main themes and methods are elliptical shapes. This simple diagram indicates the ways in which the various projects relate and how they collectively explore the agency of materials and scores.

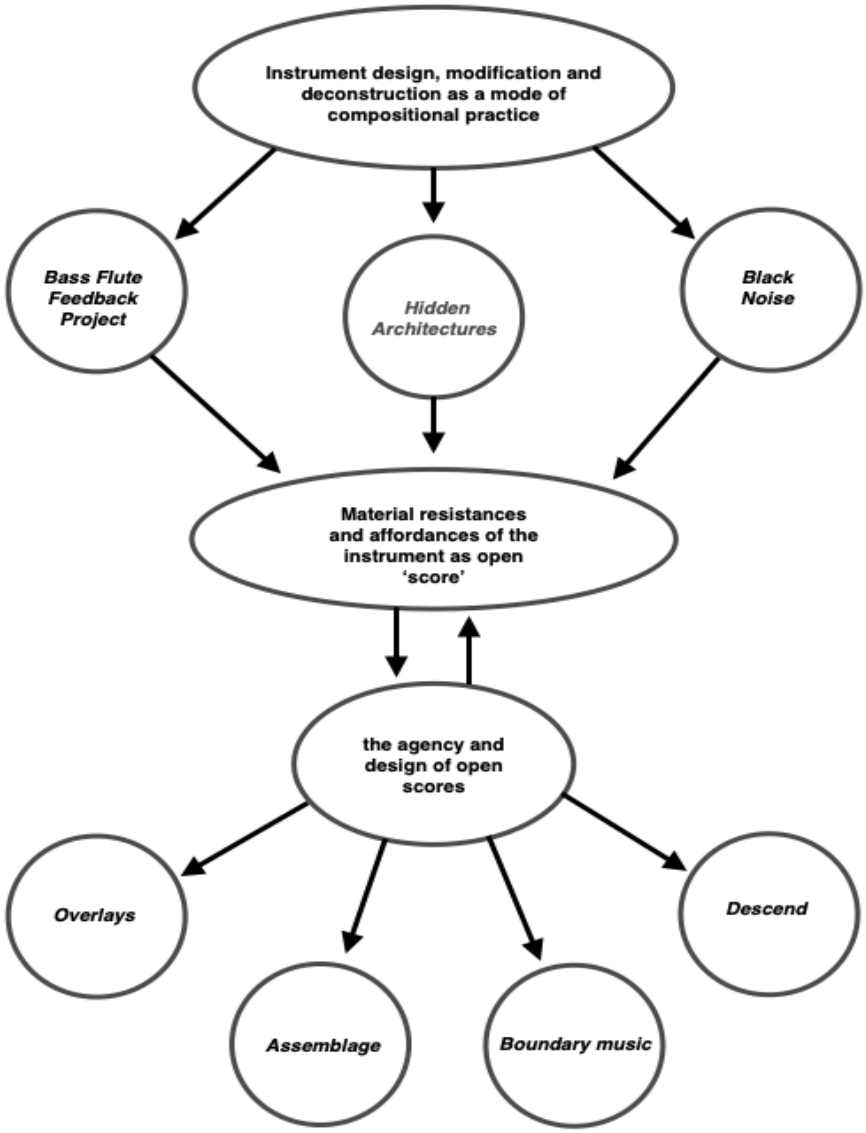

Figure 1. Relationship between the portfolio projects

Ethical dimensions

This research proceeds from the position that, due to our state of immersion, maintaining a dualistic view that the world consists of material things in an environment that is 'out there' over which we maintain some control from 'in here' can only ever be a very incomplete description. The research considers what happens to creative practice if we

remember to think and act 'with' the flows and energetic exchanges rather than attempting to situate ourselves outside them or to exert control over them. The ethical implications of this repositioning are considerable, as it entails a practical rethinking of the ways that we understand human agency in compositional processes. Through this line of thought, I have increasingly come to see my compositional practice as situated and emergent. Karen Barad states that

> … what we need is something like an ethico-onto-epistemology—an appreciation of the intertwining of ethics, knowing and being—since each intra-action matters, since the possibilities for what the world may become call out in the pause that precedes each breath before a moment comes into being and the world is remade again, because the becoming of the world is a deeply ethical matter (Barad 2007, p. 185).

This statement brings together some of the central concerns of this research, namely the inseparability of processes of 'knowing' and 'being' and their implications for the continual re-making of the world. According to this view, aesthetic concerns cannot be implicitly distinct from ethical, or hence from social and political, concerns. Actions in social or political domains might also be described as beautiful or ugly. Therefore, the claim that art-making is emancipated and free from social and ethical dimensions and thus 'purely' aesthetic[2] would, in itself, have many ethical and political implications. The perspective adopted in this research is that art-making can be seen as a semi-autonomous, porous, and interpenetrated field. It can be considered a (relatively) safe space for experimenting with qualities and intensities of social and ethical relations. What and how we think we know—our epistemologies, ontologies, histories, and hierarchies—can be explored and examined through the practice.

In the commentary, I refer to a respiratory aesthetic model. However, 'aesthetics' in this formulation does not simply refer to a stylistic approach or formal grammar that results

[2] Kant's theory of aesthetic judgement was designed to be abstract and universal for all persons. Lydia Goehr writes that '…he intended to give to aesthetic judgement […] an autonomy and uniqueness that would separate it from cognitive and moral reasoning…' (Goehr 2007, p. 168).

in a sonic surface. It proposes a philosophical approach to composition that includes consideration of social and ethical dimensions of practice. It is an aesthetic approach characterized by the processes described above. These two elements (the respiratory aesthetic sensibility leading to a situated practice) are aspects of the same approach. However, it should be noted that these notional theoretical positions have been arrived at through practice, in active dialogue with materials, environments, and bodies, so a respiratory aesthetic model does not indicate the primacy of the theoretical over the practical. The characteristics of this aesthetic approach will emerge through the descriptions of practice that follow. They are guided by Barad's idea of an ethico-onto-epistemology, and recognises that these three aspects (doing, being and knowing) cannot be considered in isolation. This position maintains that both practice and theory have ethical implications. How we act is related at all times to who we are, and how and what we know. Doing, being and knowing are also understood as constantly developing in relation to each other. Hence, they cannot easily be defined by static taxonomies or measurable quantities. It is precisely this constant interchange between states that I understand as respiratory, and this foms the basis of the Respiratory Aesthetics that emerges through the research. The projects in the portfolio are descriptions of processes through which my understanding of knowing and being undergoes transformation. These transformations affect how I perform and understand future practices. The reciprocal and iterative processes can be thought of as the metaphorical inhalations and exhalations of the respiratory aesthetic approach that I consider to be the main contribution of this research.

Describing an approach to practice that tends to disrupt subject-object binaries and distinctions between linguistic categories clearly makes discussion much more difficult. Therefore, providing a fixed definition of Respiratory Aesthetics would be antithetical to the

project itself. Perhaps the closest I dare venture towards this is the idea of an ever-evolving awareness of, and sensitivity to, the aliveness and creative potential of entities and situations.

Chapter 1: Situating the Research

The broader context for this research is one that acknowledges the discourse of compositional practices within a predominantly Eurocentric art music perspective. This tradition is naturally grounded in the epistemic and ontological perspectives of the post-enlightenment European context. However, more recently, critical scholarly movements in a range of disciplines have questioned the epistemic assumptions of modernity in the light of a number of factors that include environmental crisis and a growing understanding of the relationship between coloniality and knowledge-production.[3] Whilst a detailed exploration of these broader disciplinary perspectives is beyond the scope of this project, this research is located within a wider trans-disciplinary context of decolonial thought and practice.

Perspectives such as Walter Mignolo's decolonial thinking, and associated processes such as epistemic disobedience (2009) and epistemic de-linking (2007), address the need for a greater diversity of Indigenous, and 'other' systems of knowledge not linked to modernity or, therefore, to coloniality. The 'ontological turn' in anthropology and sociology associated with scholars such as Marilyn Strathern and Eduardo Viveiros de Castro seeks to interrogate ideas about nature and culture, often making visible the structures of Western thought and its tendency to reduce knowledges to a binary choice of 'fact' or 'belief'. The approaches of thinkers and scholars such as Tim Ingold (2015) and Donna Haraway (2016) also tend to decentre the human subject in order to understand the entangled nature of human and non-human intra-actions. The intersection point of these diverse perspectives is a critique of the tendency of modernity to reinforce ontological distinctions between humanity and the world, culture and nature, and inside and outside. It is at this intersection that I locate my research in music. The very word 'music' would normally situate the project within the context of human

[3] See Mignolo 'Border Thinking and The Colonial Difference' (Chapter 1 from *Local Histories-Global Designs*, Princeton University Press, 2012).

culture. However, the significant critical orientation of this research is that it aims not to assume an easy distinction between nature and culture. Hence, the practice is understood to emerge out of a dialogue with the world and uses breathing, often understood as a process of 'nature', to interrogate 'culture'. Arguing for a 'nature-culture continuum', Brian Massumi points out that '[n]ature and culture are in mutual movement into and through each other. Their continuum is a dynamic unity of reciprocal variation' (2002, p. 11).

The re-evaluation of the centrality of human agency in the world has implications for all areas of human activity, and particularly for the way we understand the 'self'. The very concept of expressivity, which is enshrined in our understanding of musical making, is called into question. The observation that human-centred theories of the self often focus upon the activity of expression, but not so much upon what we might refer to as 'impression', is particularly relevant to an account of musical making. Then we must ask what is being expressed and how did it get there? This circular model, linking expression to impression, provides us with an insight into the significance of breathing as a relational ontology and a metaphorical framework for thinking about making and human-material relationships. The breath that a flute-player exhales must first be inhaled, and the exhalation creates the necessity for inhaling again. The flow of ideas and impressions experienced within human consciousness (often referred to by the respiratory term 'inspiration') partakes of a similar process of expansion and contraction as do the lungs, the heart and the pupils of the eyes within the constant dilations and contractions of the human body.

It should be noted that music is not conceived of as being human-centred in all musical traditions. The following quote from David Chai makes it clear that the metaphorical-symbolic function of human music-making, from a Daoist perspective, is one of participation in the 'heavenly piping' that blows through the whole of creation in the form of *Qi*.

> What agitates the Qi 氣 blowing through the pipes of humanity, earth, and heaven, is Dao. As this Qi also arises from Dao, it remains homogeneous no matter the environment it passes through. […] [W]e can thus think of it as the soundless piping of Dao (2017, p. 358).

As *Qi* is understood to flow through the human body, and to be closely related to breathing, it is clear that musical practices are here being understood as participation in larger cosmic processes. This description, connecting musical practices, and specifically blowing or breathing practices, with an ongoing cosmic expansion and contraction is not uncommon in a number of musical traditions.[4] Chai goes on to say that

> [h]umanity is thus relegated to the role of spectator, nothing more. Indeed, if we wish to partake in the transformative experiences […] we should avoid thinking of music as a creative act wholly of our own doing and accept the fact that Dao is the true originator of music (2017, p. 359).

George E. Lewis, in discussing the creative aims of the AACM musicians, recounts that

> [i]n this way, the focus of expressive articulation shifts from the commodificatory construction of the heroic individual instrumentalist to primordial forms of sound, rhythm and movement, which are given life through 'breath' (2008, p.363).

Summarizing, he says that '[i]n the end, the goal and outcome is the attainment of mobility as a spiritual resource' (2008, p. 363).

Research by Siragusa, Westman and Moritz with Indigenous groups in Russia and Canada introduced the idea of shared breath as a relational ontology that creates new ways of understanding a range of practices. They point out that

> [t]hese data illustrate vividly how the underused metaphor of shared breath sheds light on active participation in life by, and respectful relations with, nonhuman beings, thus surpassing other overly used spatial, physical, and spiritual metaphors. We move beyond the physical aspects of discrete spaces and materials in extending consideration to pertinent metaphorical and tangible aspects of the verbal, sonorous, and ritual performances undertaken by humans in order to negotiate and reinforce relations with other beings. Relationality is continuously accommodated and regenerated by human and nonhuman agencies through ritual acts that include blowing, chants, breathing, drumming, visualizing, and smoking (2020, p. 471).

[4] Examples include 'Nafas ar-Rahman' or 'the breath of the compassionate' as the source of creation and manifestation within Islam, as well as the concept of *Prana* in the Hindu tradition.

It is important to note that the Indigenous groups Siragusa, Westman and Moritz interacted with (Veps, Western Woods Cree and Interior Salish St'át'imc) are locationally distinct, and each has its own linguistic terms that refer to the metaphor of shared breath. It is critical to this mode of inquiry that Western categories (such as music or chanting) are not automatically used to replace Indigenous understandings of the practices concerned. The significance of these findings for the current research is that the metaphor of shared breath represents an unfamiliar ontological framework linking a range of practices that function to mediate relationships or 'reinforce relations with other beings.' Siragusa, Westman and Moritz point out that

> …our relational theory and the concept of shared breath show how transformation and innovation can be brought about when both human and nonhuman agencies are conjoined and become consubstantial (2020, p. 473).

This statement is extremely close to an articulation of my research perspective. Hence, the current project can be located at an intersection of critical thought within conventional academic discourse as well as with traditions that are currently outside of these frameworks.

Becoming conscious of our immersion in the world makes us more aware of the inherent reciprocality in all our interactions with the world. The acknowledgement of this continual exchange radically restructures our thinking about self and other and raises questions about how we might reimagine composition in the light of a focus upon our condition of immersion. These research questions operate on multiple registers because the implications of establishing something we might call respiratory understanding, or a respiratory aesthetics, affects all dimensions of practice. Consequently, there are several strands of enquiry that run through the portfolio and commentary,

- How does respiratory awareness affect our understanding of creative agency and our relations with 'others', in particular more-than-human others? Does it alter

power relations and flows of agency between the human and more-than-human world?

- How does respiratory awareness restructure ontologies? How could it affect or destabilize our categories of thought and practice?
- How are respiratory patterns of expansion and contraction, or negation and affirmation, reflected in patterns of creative practice, in iterative and dialogic processes and through permeability of boundaries of all kinds?

These themes constitute the main questions guiding an investigation that has led to a series of 'situated' compositional processes. Through these various situations, I have sought to expand my understanding of the ways that sound-making practices can be seen to participate in, and illuminate, the continuous flows of exchange that characterize our existence.

Notes on the situated composition paradigm

During the discussion of the various projects in this research, I refer to a 'situated composition paradigm'. This term is one that has been necessitated, by the practical research, to enable discussion of a compositional methodology that does not focus solely on an individual whose role is to determine the parameters of the work. Where this role is evident in the projects discussed here, it is always understood as embedded within a complex and dynamic situation. The aim of this model is to allow space for the various factors within a compositional ecology to be understood as important drivers of the creative process. This approach is situated in a wider discourse of situated and embodied cognition. Scott L. Marratto has described situated cognition in the following way.

> Recently, a number of researchers in the fields of cognitive science, psychology, artificial intelligence, and neuroscience, some of them directly inspired by Merleau-Ponty's challenge to recognize the 'embodied dialectic' underlying mental life, have begun to advocate alternative accounts of cognition as, variously, 'embedded,' 'enactive,' 'embodied,' 'situated,' 'sensorimotor,' 'existential,' or 'ecological.' I will use the term 'situated cognition' when I am speaking of these approaches (in terms of what they have in common) because whether the emphasis is placed on embodiment, on the environment construed as a meaningful ecology, or on intersubjectivity, all of these

> approaches hold that cognition necessarily occurs in some kind of meaningful 'situation' (2012, p.19).

Identifying a need for such a term in my composition practice was arrived at through the observation that my work adopts relational approaches to materials, environments and collaborators. However, the term 'situated practice' is also derived from theoretical perspectives such as those of phenomenology and embodied cognition. The situated model proposes that a composer has a role in creating a situation that is organic and complex and may present contradictions or other problems to be overcome. The composition process then progresses as a result of a complex intra-activity of all the elements in this ecosystem. The idea that the composer does not necessarily make all the decisions about what is heard is not, of course, a new idea. Christian Wolff's version of this perspective is expressed in his statement that

> We had to liberate ourselves from the direct and peremptory consequence of intention and effect, because the intention would always be our own and would be circumscribed, when so many other forces are evidently in action in the final effect (2017, p. 46).

Establishing a theoretical context for musical composition as situated practice is, in part, due to my ongoing interest in the nature and politics of subjectivity. At the start of *Situated Aesthetics: Art beyond the Skin,* Riccardo Manzotti succinctly describes the link between the idea of the transcendental subject and aesthetics.

> Since its alleged beginning in the eighteenth century, aesthetics has been deeply interwoven with the assumed model of the subject. It is not by chance that the Kantian notion of aesthetics stemmed out after he developed his model of the transcendental subject. After all, aesthetics is the branch of philosophy devoted to conceptual and theoretical enquiry into art and aesthetic experience (2012, p. 23).

Later in the same book, Le Groux and Verschure go on to describe how an internalist or cognitive model in which behaviour is controlled by internal (neurological) representations of action (2012, p. 244), has recently come into conflict with embodied and enactive ways of understanding human subjectivity. They then point out that

> …a parallel can be drawn between classical cognitive science and the development of classical music which also heavily relies on the use of formal structures. It puts the emphasis

> on internal processes (composition theory) to the detriment of the environment or the body, with a centralized control of the performance (the conductor) (2012, p. 246).

They go on to explain how disembodiment is often manifested within classical music production methods, from composing in the mind to symbolic representation via notation to the role of the conductor. Linking models of cognition to composition is striking in that it enables us to think about the relationship between models of centralized control in sound composition and theoretical cognitive models. In rethinking this process through practice, and recognizing that important processes of composition take place externally to the mind of the composer-subject, new strategies and ontologies have to be considered.[5]

For the purposes of this research, it is important to note that the debates between the predominantly internalist and externalist models of action, or cognitive vs embodied models, are predicated on different views of human subjectivity. Clearly, there are many creative practices that tend to conform to one or the other model. In this research, I am consciously discussing embodied or enactive models of compositional practice. One implication of this is that the practice-research explores the extent to which situated compositional methods can function as creative strategies. In other words, rather than beginning with formal structures, abstractions or even sounds, processes of composition might begin with materials,

[5] In indicating the ways in which musical works have become more situated, Le Groux and Verschure cite the example of *In C* by Terry Riley:

> The piece is formed by the combination of decisions of each independent musician that makes her decision based on the collective musical output that emerges from all the possible variations. Following recent evolution of our understanding of cognitive systems, we want to emphasize the crucial role of emergence, distributed processes and situatedness (as opposed to rule-based, serial, central, internal models) in the design of interactive music composition systems.

This description is central to understanding the situated composition idea, especially the concepts of emergence, distributed processes and situatedness. However, despite the fact that *In C* uses minimal internal rules (the 53 phrases that constitute the score) and the fact that the instrumentation is left open, there is still a very strong authored internal direction to the piece, making it clearly a compositional work, which is radically different from, for example, an improvisation. In this respect, *In C* could be described as making use of situated thinking whilst retaining an internally controlled structure.

environments, or collaborators. The second implication is that the questioning of human autonomy also applies to the ongoing musical work. In other words, if we adopt a view of human cognition as situated, and part of the ongoing processes of the world rather than separate from them, this will have implications for the idea of a work. The concept of the work-as-object, as examined by Lydia Goehr, is linked to the idea of human-as-transcendental-subject. In viewing the composer's role as constituted intra-actively, the work inevitably becomes less objectified, more porous, and more open to the world.

The portfolio accompanying this commentary explores a number of different approaches to situated practice. Situated practice is therefore, in one sense, a broader and less precise term, indicating that the artist's attitude towards the world is one of being situated within the material and energetic flows of the world. It also points to an ethical and political orientation that views artistic work as taking place within the entangled nature of the human situation. Therefore, the significance of the situated compositional project is that it is explicitly ethico-aesthetic. It begins from an acknowledgement of the fact that 'the artist' is already entangled in social, political, material, ethical, and aesthetic fields.[6]

In discussing the series of works *Audible Ecosystemics* by Di Scipio, Luc Dobereiner makes the following observation.

> One of the most fundamental and far-reaching aspects of the 'self-feeding loop design' (Di Scipio, 2003, p. 272) of Di Scipio's Audible Ecosystemics is their characteristic relation between parts and whole. While the sound transforming system in Background noise study, for example, is composed of parts such as filters, samplers, microphones, loudspeakers, delays, switches, and so on, the functioning of these parts, their roles or operations, cannot be determined in isolation from the whole in which they operate. The ideal for this form of connection is the living organism, as opposed to an artificial machine, which can be analytically decomposed and whose parts can be understood in isolation (2014, p. 21).

[6] The history of work within musical creativity that uses the terminologies, or methodologies, of participatory work, collaboration or site-specificity is very much less established than it is in fine art fields. In this respect, it possible to see composition as a field that views itself as individualist almost by definition. It is still somewhat unusual within compositional practice to consider a work to be a process, or a space, through which modes of connectedness can be reimagined.

This analogical relationship between the work and the living organism is a central feature of the situated compositional modality. The body, like the composition process, is always immersed and always, therefore, part of its environment. The links between musical interactions, or intra-actions, and ecosystems has been made by a number of practitioners and theorists, notably in the fields of electronic music, sonic art and improvisation. The connection is not new and can be traced at least as far back as David Tudor's *Rainforest*, particularly *Rainforest IV* (1973). Tudor's implicit understanding of the complexity of intra-actions between the spatial, material, and social elements of the work make this an important artistic statement about sonic ecosystems. More recently John Bowers (Bowers 2002), Agostino Di Scipio (Di Scipio 2003), and Simon Waters (Waters 2007) are amongst those who have made significant practical and theoretical contributions to the discourse relating to the performance ecosystem in music.

The figure below shows a conceptual map of a hypothetical compositional ecosystem. The size of the various entities within the ecosystem, as represented here, is not significant, but the porous nature of the boundaries between the entities is important. The connecting lines show the various ongoing intra-active relationships. In different situations, and at different times, these connections might be more, or less, active. The double-ended arrow indicates the porous relationship between the creative ecosystem and the wider context, which will include, for example, cultural, social and political forces.

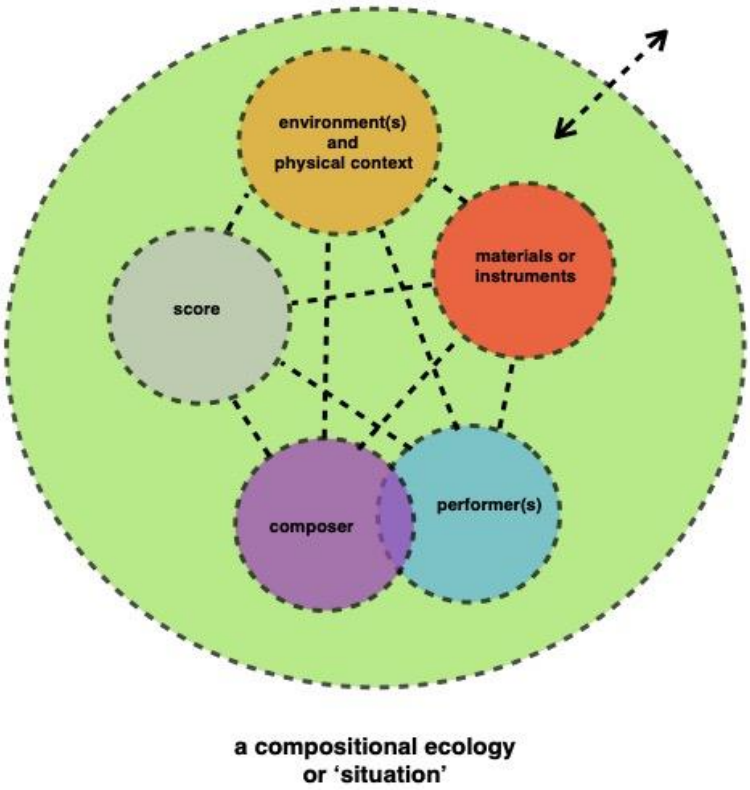

Figure 2. Diagram of a compositional ecosystem

Respiratory Philosophy: Air and Its Metaphysical Implications.

I like living, breathing better than working...my art is that of living. Each second, each breath is a work which is inscribed nowhere, which is neither visual nor cerebral, it's a sort of constant euphoria (Marcel Duchamp).

This section articulates in more detail the context that generated the research focus. It outlines the connections between breathing and sound, and introduces the phenomenology of wind instrument performance.

Breathing is essential to being alive. It is part of the rhythm of living and demonstrates to us that being alive is a rhythmic experience consisting of ebbs and flows across all areas of experience. We participate in complex poly-rhythmic and poly-temporal flows, along with everything else in existence. Hence, as a human activity, making and experiencing music cannot but participate in this same phenomenological ebb and flow. Significantly, however, breathing addresses more than frequency, temporality, or duration, it

is also spatial and embodied. It is a site of our openness to the outside world as well as to our own internal worlds, and it has a role in mediating this relationship.

It is partly for this reason that breath and air are so difficult to conceptualize and theorize. The air tends to escape much of our categorical thinking by virtue of it being the very condition of our immersion in the world. Words themselves emerge through our bodily engagement with air as our medium of communication. Emanuele Coccia writes of his own metaphysical model of immersion that

> [t]his approach to the world as immersion seems to be a surreal cosmological model, yet we experience it […] each time we listen to music. If […] we deduced the structure of the world based on our musical experience, we would have to describe the world as something composed not of objects but of fluxes that penetrate us and that we ourselves penetrate, of waves of variable intensity and in permanent movement (2017, pp. 32-33).

Coccia's conception is that the nature of music (or sound) reveals to us the true nature of our physical existence more accurately than our reliance upon our visual modality. He says

> … the first, most paradoxical attribute of breath is its very lack of substance, its insubstantiality: it is not an object detached from others, but the vibration through which everything opens up to life and mixes with the rest of the objects, the oscillation that, for an instant, animates the matter of the world (2017, p. 55).

These words could be a description of sound, but they go beyond the idea that air is simply the invisible medium through which we communicate; it is a reminder of our permanent condition of immersion in the world.

Luce Irigaray has argued that that we forget about air precisely because it is so difficult, or even dangerous, to think about or in terms of air. In her book The Forgetting of Air in Martin Heidegger, Irigaray writes:

> To recall that air is at the groundless foundation of metaphysics amounts to ruining metaphysics through and through. To conning it out of everything. To rendering ever fleeting and expandable, compressible and elastic… its properties. Nothing maintains itself in the same way any longer in air (1999. pp. 5-6).

She goes on to explain that thinking about air, is like thinking about the origin of thought.

> Is a fluid truth thinkable? What becomes of the essential truths fashioned, until the present day, by man? What becomes of this very 'man'? And is it not today the task of thinking to question itself about that reality that lives in it, and in which it lives as mortal? Wishing itself immortal. There remains air, from which thought draws its subsistence (1999, pp.12-13).

It is as true to say that we inhabit the air as that we inhabit the earth, and yet so much of our world view and thinking is informed by the experience of standing on the earth and relating to solid materiality. We often talk about what is fundamental, or perhaps what our theories and practice are 'built upon', without acknowledging that these metaphors relate to processes and experiences that may not have much to do with our experience of sound. Like air, sound is difficult to think about using conventional subject-object binaries. Like air, sound is not 'here' or 'there'; it contradicts this dualism by being a property of both the sounding object and the perceiving subject. Given that we mostly perceive sound through the medium of air, it seems strange that metaphors of solidity persist in our thinking about music. The inherent fluidity and relational nature of both sound and air require us to rely upon reifications and abstractions in order give us some conceptual control over the 'material' that we hope to work with. The resulting 'objects' include the notes, rhythms, software interfaces, works, events, and other conceptual frameworks that we construct in order to stabilize, name, and control sound. However, these abstractions often obscure the reality of sonic flow as well as the flows of agency. They lure us into thinking through solid structural, rather than fluid or gaseous, metaphors. This research is an attempt to rethink these metaphorical frameworks and to understand how we might begin to rethink our relationship to sound through our immersion in air.

Phenomenologies of wind-instrument playing

As I have indicated, my research perspective arises from the embodied experience of playing wind instruments. The awareness of interaction between performer and instrument takes place, for a wind player, through the use of the breath to activate an air column within the instrument. The particular nature of this activity seems to produce a specific relationship with the instrument. There are similarities with speaking and singing in the use of controlled exhalation and therefore perhaps an intimacy or immediacy to the sensations of the listener

and player. It could be described as functioning like a prosthetic extension of the body, of the mouth and airway specifically.

When a player stops providing energy to the instrument in the form of air, sound will immediately cease, unlike a resonating body such as a string or membrane that continues to resonate after the human input of energy has stopped. This conditions a specific attitude towards sound production because, as when speaking or singing, controlled exhalation sustains the sound. Another important observation is that conscious control of the breath is able to effect changes in psychological and physiological states. Controlled exhalation is known to activate the parasympathetic nervous system and helps us to regulate stress. Physical exertion, heightened emotional states, and intense concentration can all bring about changes in breathing patterns. In the context of performance, often characterized by a combination of intense concentration and adrenaline, the breath can become the site of conflict and struggle. The performance situation can therefore be a very good illustration of the ways in which the body-mind dualism is disrupted or problematized by the breath. Under certain conditions, emotional, physiological, and mental states all affect breathing, and breathing affects all of these states in turn.

The use of 'extended' breathing techniques such as circular breathing reveals and emphasizes the physicality of the instrumental music-making experience. Circular breathing provides a rhythmic impetus to the sound emerging from the interaction between the physiological needs of the player (for sufficient oxygen to the body) and the needs of the music-making situation. In this respect, the phenomenological sensation approaches that of 'embodying the music' rather than 'playing the music'. This is a subtle shift that I have noticed can take place in improvising contexts also. The observation of an altered relationship to the process of sound production related to breathing is subtle but significant. All instrumental performance can be intensely physical, but the observation here is not about

the quantity of effort expended but rather the phenomenological sensation of temporal-musical-physical blurring that can take place. Evan Parker, the celebrated saxophonist known for his extensive use of circular breathing, responded to a question about whether he goes into a trance when he plays in the following way:

> ...[Y]ou go into an altered state of feeling sometimes and you have all kinds of, I don't know what they are, delusions probably, but sometimes I have the feeling that I can breathe music, breathe in, inhale the music, and it's a very specific feeling. I suppose you have to be more or less on the edge of some special state to be able to think you can breathe music. After all you can't breathe music, it's a nonsense, so when you've got that feeling maybe you're already in an altered state (cited by Molitor 2015, p. 75).

In an attempt to describe an Aboriginal experience of time, as embodied in didjeridu performance, which also makes use of circular breathing, Rose offers a model that similarly aligns with this shift from 'geometric time' to embodied and geographic time.

> The poetics of time, its patterns, waves, and interlocking rhythms work with the politics of correct performances, to transform cosmogonic potential into living action. [. . .] Time, rather than being rendered static or absent, becomes experientially and overwhelmingly focussed, present and shared. The person flips from being an actor in time to becoming a heartbeat of time (2000, p. 295).

The phenomenological repositioning of the self in relation to the music and, by extension, to the experience of time is part of the central motivation of this research. I am not claiming that this phenomenological experience is exclusively caused by breathing techniques, although they can perhaps induce this feeling, but rather I am observing that the sense that 'the music' is external to us, or that it exists as an object, is not universal or common to all traditions. Conceptions and orientations of the self in relation to the music being made are subject to cultural and historical perspectives. This relationship to time can be experienced and described as 'flowing through' rather than 'passing by'. As Evan Parker suggests above, this experience of music and time 'flowing through' may be conditioned, to some degree, by the experience of air 'flowing though' the body in circular breathing. If we can experience time, and therefore ourselves, differently when undertaking specific musical

practices, this suggests that conventional linear perceptions of time and self may be induced, produced, or influenced by specific kinds of somatic practices also.

My current research has its origins in the experience of using a range of different instrument technologies. Questions about the nature of air and breathing unquestionably have emerged though working with various blowing techniques that have formed the basis of my musical practice for many years. Having explored the significance of breathing in a number of flute-playing traditions, I have become aware that there are many ways of thinking about various breathing and blowing practices that differ considerably from the predominantly utilitarian approaches that tend to be adopted in Western flute teaching. The roughness of the noise component of the Sawari technique when playing Shakuhachi (Japanese Bamboo flute) is a good example. Zachary Wallmark observes that

> …in shakuhachi music, no ontological distinction is made between the sound of humans and the sound of nature. The "noisy" sawari sound—the outcome of material encounter between the player's body and the bamboo—represents the sonic unification of music (the organized sound of people) and environmental sound (2015, p. 3).

This explicit recognition of the importance of non-human or environmental elements within the practice is a significant shift of emphasis from a Western classical tradition that often understands the sound of the breath as unwanted noise. Despite the antiquity and simplicity of a vibrating air column, there are many musical results (sounds, timbres, and tunings) that can only be accessed by using specific kinds of instrument with specific material properties and affordances. It is still surprising to me that an instrument will seem to push, pull, and resist my physical efforts in ways that produce very specific musical outcomes. It is in this sense that materials can be said to be a 'doing' as much as a 'thing'. Here, both the material properties of the instrument and my own history of intra-action with the particular instrument are in play. These two factors seem so entangled that it feels impossible to separate them. If our intra-actions with materials are an important part of the music that is produced, then how

confidently can we assert the primacy of the musical idea (originating in the human mind alone) as being the origin of a composition?

The significance of these various perspectives is that they offer an expanded framework for understanding musical processes. They also reintegrate performing and composing bodies into our narratives of musical and compositional making. These observations can be interpreted as running somewhat contrary to the idea of the individual 'voice'. If the individual actions and outcomes can be mediated so strongly by the use, for example, of a specific material configuration, this raises questions about the attribution of creative agency. This question of how we might identify and attribute agency in composition has become central to my research. In this case, the analogy of flutes is used to illustrate the idea that, for me, all musical practices are closely linked to a range of intra-actions and that the significance of these is often overlooked. Karen Barad is at pains to point out that apparatuses are not simply objects, or even assemblages, of humans and non-humans. They are open-ended practices. She observes that

> [h]uman bodies, like all other bodies, are not entities with inherent boundaries and properties, but phenomena that acquire specific boundaries through the open-ended dynamics of intra-activity. Humans are part of the world-body space in its dynamic structuration (2007, p. 172).

This is a conclusion that can be intuited, to a degree, though thinking about breathing and the body's relationship to the world. Breathing is a practice that enables us to think about the 'world-body space' that Barad refers to, but it is also one which is often overlooked.

Breathing and Being

In the course of this research, I have been able to contextualize my phenomenological experience of breathing by exploring some of the literature that links breath with a range of philosophical questions. These questions constitute an important part of the current practice-based enquiry. Perhaps foremost among these problems are questions of ontology and agency. Petri Berndtson (2018), in his chapter on respiratory ontology in 'Atmospheres of

Breathing', offers a trans-cultural as well as phenomenologically-inspired approach that explores the relationship between breathing and being . Although inspired by Merleau-Ponty and Heidegger (Berndtson credits them with making the important distinction between Being and beings), Berndtson also points out that 'thing-oriented' ontologies remain 'the starting point of Philosophizing' (2018, p. 40). He makes the case that the two philosophers give only 'fragmentary hints' (2018, p. 40) of an atmospheric (or respiratory) ontology. He argues that

> [i]t might be that only an ontology that takes its starting point from respiration as a relation to the atmosphere of open and free air can become really and truly an atmosphere-oriented ontology in which all relations to things are primordially constituted by the respiratory atmospheric experience that has always already a priority over thing-relations (2018, pp. 40-41).

The prospect of moving towards an atmospheric/respiratory ontology underlies much of the practice-based investigation referred to in this commentary. Berndtson's observations also serve to make the point that a focus upon respiration tends to lead us towards an understanding of the world as constituted in a fluid rather than thing-oriented way. This has been important for me in considering the development of a respiratory aesthetics or a more fluidly-constituted understanding of musical intra-actions.

The idea of breathing as the site of our openness to the world, emphasizing human entanglement and immersion, is an idea that has become important in un-thinking the boundaries of the body. It is this property of breathing to blur between entities that offers the potential for new ontologies. This raises the question of the nature of the human perception of self, given the intimate intermingling of mind, matter and being that respiration seems to imply. Can we assume that we know where 'human' ends and the 'more-than-human' begins? What are the parallels between the atmosphere and the 'sono-sphere' in which we are continually immersed? David Borgo has written a paper entitled 'Semi-Permeable Musicking Membranes' describing this phenomenon of continual exchange between ontological boundaries and categories.

> Musickers continually engage with boundaries—both spatial and organisational— emanating from the physical, biological, social, and cultural domains, and impacted by geographic, institutional, economic, political, and technological concerns, among others. Even within a given performance this process of boundary engagement—an openness-from-closure—is apparent in the interactions between a musician and an instrument, between a musician and her fellow musicians, between musicians and a shared history or tradition, and between musicians, listeners, and a broader community (2010, p. 131).

The fluidity implied by this description points to the ontological complexity of music-making situations. David Borgo has elsewhere also made observations about Evan Parker's very personal and virtuosic saxophone style, which 'draws attention to the bodily aspects of his performance just as it denatures—at times with the assistance of modern technologies—the very idea of a grounded or objective sense of self' (2005, p. 58). Parker himself says that the saxophone

> has been for me a rather specialized biofeedback instrument for studying and expanding my control over my hearing and the motor mechanics of parts of my skeleto-muscular system. ... [S]ometimes the body leads the imagination, sometimes the imagination leads the body (2005, p. 58).

In this context, Parker's description of the dialectical relationship between body and imagination is particularly striking. It suggests that, at least in Evan Parker's case, there is a feedback loop between the effects of the playing upon the body, and that which is performed by the body. This account from improvisor, composer, and writer Bennett Hogg describes the relationship with the instrument in similar but more atmospheric terms: 'I have imagined my violin as a scientific device, almost, a seismograph of my inner state, a weather station tracing fluctuations in my body's chaotic systems...' (2009, p. 9). The sensation in both cases seems to be of a merging, or submerging, of the physical energies required to produce sound. Cornelius Cardew observes that

> the realization of your own body as part of that environment is an even stronger dissociative factor... [because] often what we do is what tells us what we have in mind (cited by Borgo 2005, p. 40).

Through our 'openness to the world', breathing effectively blurs boundaries between inner and outer, self and other. Tim Ingold describes the situation in simple terms. 'We do not live

inside our bodies, but—in breathing and eating—continually and alternately gather the world into ourselves and release ourselves into the world (2015, p. 42).

Air, as the medium which carries the sound wave, is, as Ingold observes, '…not an interactant so much as the very condition of interaction' (2015, p. 70). This 'condition of interaction' could also be offered as a very useful description of the human use of sound. Spoken language, as the primary real-time medium of communication between people, requires both breath and sound. So, if air and breathing represent the very condition of interaction, respiratory aesthetic practices are those that develop our awareness of this intra-activity. The process of thinking about music and sound from this perspective suggests that the linear and object-based paradigms that support our standard descriptions of musical composition might need to be re-examined in the light of these much more fluid, situated, and intra-active perspectives.

Chapter 2: *Bass Flute Feedback Project* – Proximity Studies

The development of the *Bass Flute Feedback Project* took place over a period of several years from 2015 to 2019. This happened in the context of ongoing improvisational practice with two improvising-composing groups, one of which focused upon the use of feedback, and one of which worked predominantly with acoustic sound. Significantly, the members of these ensembles could all be described as performer/composer/improvisors and, in some cases, instrument builders. The project has therefore been refined through the process of practical experimentation.

Construction of the instrument

The basic instrument consists of a standard bass flute with the open end blocked. A small DPA[7] microphone is held in place by the material blocking the end of the flute. This microphone amplifies all key movement and breath sound as well as creating feedback when the flute is close enough to the speaker. This arrangement means that all of these sound-making factors conspire to produce sound. For example, the instrument may not be feeding back until the player closes a key producing an input to the microphone, which then triggers the feedback process. The addition of the mixing desk enables additional control over the frequencies that are emphasized in the feedback. It has also been set up as a 'no-input' mixing desk,[8] enabling additional mixer-feedback to be added to the overall sound palette. The pieces in the submission do not make use of this feature, however.

[7] Originally Danish Pro Audio.
[8] A conventional mixing desk can be turned into a 'no-input' mixer by routing outputs to input channels to create a feedback loop. This is a form of hardware feedback that turns the desk into an instrument.

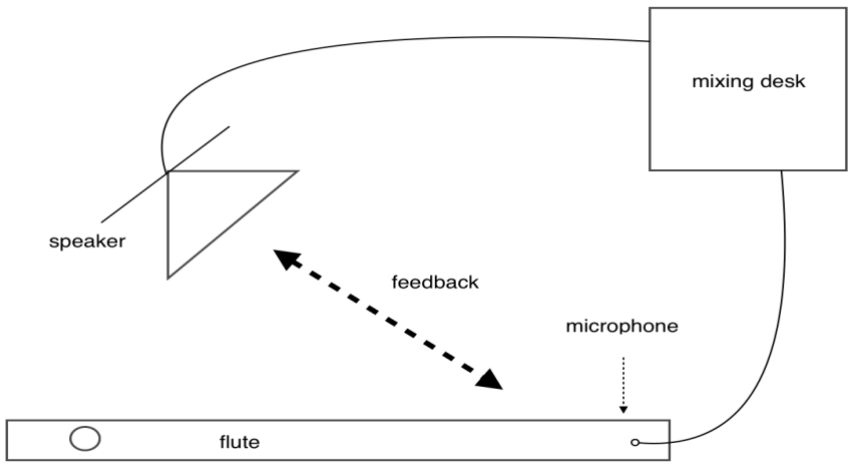

Figure 3. Simple diagram of the bass flute feedback set-up

The genesis of the project was, in part, a dissatisfaction with the properties of acoustic flute sounds in some creative musical contexts. Strangely, given that the genesis of my research is thinking about breathing, part of my dissatisfaction stems from the very intimacy that breathing brings to the relationship with the instrument. The flute has evolved to function almost as a prosthetic extension of vocal expression. In these improvising contexts, I was increasingly finding that the technical control that I had spent so many years acquiring sometimes exerted too much influence over the musical language. Another way of describing this is that the developed technical 'facility' too easily overcomes the inherent material resistances of the instrument, enabling an outcome that can be described as overly human-centred. This is in marked contrast to the conventional classical idea that 'mastery' over an instrument is what confers musical freedom. I found, instead, that remaining in dialogue with the material constraints of the instrument seems , paradoxically, to offer greater access to creative thinking. Zachary Wallmark, in his discussion of the aesthetics of Japanese shakuhachi playing, describes this very well. He quotes the shakuhachi player Hisamatsu Fuyo from the 1820s as saying that it is 'despicable, if someone loves to produce a splendid

tone'[9] (2015, p.1) and maintains that the total eradication of noise and emphasis on the 'purely musical' is indicative of an overemphasis on human intentionality and skill, observing that the shakuhachi 'plays at the borders of music and noise, and human intentionality…' (2015, p. 3). The repositioning of the relative importance of human intentionality is, of course, central to the respiratory project. In this sense, the development of the feedback instrument functioned as an experimental negation of control whilst still enabling me to retain, adapt, and recontextualize some of my technical facility with the instrument. In Baradian terms to 'constrain' rather than 'determine'.

I describe the instrumental resource as a prepared flute in the way that we might think of the prepared piano. This description is partly accurate in the sense that the preparation alters the established sound of the instrument. However, the prepared piano is still reliant upon the keyboard mechanism as the means of striking the strings, which sound differently due to the addition of preparations. In the case of this prepared flute, the key mechanism still enables the tube to have a variable sounding-length, but the flute will sound without any blowing being required. The tube of the flute becomes an empty vessel, with a microphone inside it, that can be modified (via the key mechanism) to mediate the feedback tones between the microphone and a speaker. In this way, the arrangement can negate the human breath as the only source of sound production.

In the context of the wider research project, then, this project explores the agency of material assemblages in compositional practice. This particular assemblage is also peculiarly relational, in that the flute becomes a vessel for mediating sound caused by intra-actions between the microphone and the speaker. The feedback flute system extends from experiments of adding preparations to a flute. One of the simplest early adaptations was to

[9] It is important to note that, prior to the late nineteenth century, there was no term in Japanese equivalent to the word 'music', to refer to anthropogenic sound. The word 'ongaku' was subsequently introduced by the Japanese state.

block the end of the flute, creating a new lowest tone an octave below the original lowest note. I first encountered this modification in a flute I bought in Mali in West Africa, and I was intrigued by its low bottom note. This preparation effectively doubles the sounding length of the tube but affects only the bottom note.

Having made this adaptation on a conventional bass flute, I realized that the blockage at the end of the flute could hold a small microphone. I tried this and discovered a range of possibilities for sound-making that had not existed before. Rather than simply amplifying the 'intended' sounds of the instrument, it was mainly amplifying conventionally unwanted key noise and breath sound. As a microphone inside a chamber, I discovered it was also perfectly positioned to produce interesting feedback possibilities.

Here, it is important to acknowledge that this modest discovery emerged through what can only be described as practical experimentation or 'tinkering'. In using the lid of a 35mm film canister to seal the end of a bass flute, I had no clear idea where the experiments would lead. I certainly did not have the conception that I was going to be working with acoustic feedback. It is very easy to retrospectively understand our actions as 'leading to' an outcome, whereas we may be less conscious of the experiments that do not seem to result in anything useful. The deliberate element of 'malfunction' subverts the intended uses of microphones and loudspeakers resulting in a non-hierarchical system with what can feel like a mind of its own. This places the human user in a position of constant enquiry and heightened responsiveness. It requires a focused attention to play, and yet it remains difficult to predict or control outcomes. Hence, it can be thought of as an interactive system as much as an instrument.

Acoustic feedback

Acoustic feedback in general performance contexts is an undesirable effect produced when the acoustic signal from a microphone is amplified by a speaker, 'feeds back' into the

microphone and is amplified repeatedly, producing a sustained pitch. The frequency of this pitch is highly context-dependent and is determined by a range of factors. These can include the resonant frequency of the equipment and environmental factors such as the nature of the microphone, speaker, and the dimensions of the room. In the case of the microphone inside the flute, a major determining factor is the resonant frequency of the tube, which is determined by the keys that are held open or closed. Distance, or proximity, between microphone and speaker is also critically important.

The history of compositional engagement with feedback systems dates from the middle of the twentieth century. The microphone starts to be used to allow musicians to exert control over the creation of new timbres as well as parameters such as pitch and rhythm. However, the modernist paradigm that prevailed in art music of the time tended to maintain that the composer should retain control. This implied that the instruments would be obedient and that the chain of causality would remain rooted in the composer's intentions. According to Richard Toop, composers such as Stockhausen 'wanted absolutely pure, controllable sounds without the subjective emotional influence of "interpreters"' (1979, p. 380). Cathy van Eck also points out that timbre is a very difficult parameter to invent notational systems for. Unlike loudness, pitch, or duration, it cannot be defined in a hierarchy from soft to loud, for example. Hence, timbre, or sound colour, emerges as a complex parameter that often defies control by the composer of instrumental music. Part of the fascination of working with feedback is the element of indeterminacy. I have come to think that the precise distinction between terms such as, for example, indeterminacy, improvisation, and contingency is often ideological as much as actual.

The process of composing for a system that is highly context-dependent presents some specific challenges. A conventional score, which determines actions on the part of the player using agreed codes, should enable a composer to predict some important parameters of the output, such as pitches, durations, etc. In the case of a system in which control is highly attenuated, the most relevant 'instructions' might be those that determine a performer's actions, but these may or may not have predictable sound results. The sound may be contingent upon variables that are difficult to control. This almost negates any teleological approach to determining sounds.

Creative 'Malfunction'

The unpredictability being referred to here is partly a product of the way functionality tends to be understood, specifically within music compositional practices. Tools are designed to behave in certain ways when used within the parameters of their design. (They are generally designed to function as reliable links in a linear, causal chain of intentional actions.) The *Bass Feedback Flute Project* can be understood as part of a lineage of practices that deliberately employ tools in ways that were probably not foreseen by their designers. A wide range of practices, including all work making use of feedback, turntabling techniques, experimental electronics, circuit-bending, and prepared string instruments can be understood as creative 'misuses' of technology. In the case of the feedback flute, each main element of the system (the flute, microphone, speaker and mixing desk) is being subjected to some kind of creative repurposing.

In the pursuit of progress, our music-making has tended to become highly technologized, so that a return to various lo-fi, hands-on approaches to sound-making and experimentation is perhaps understandable. However, in many of these practices the artefact is still used in a way that depend upon relatively stable predictability, even if the user is creatively 'misusing' the technology. In the case of the feedback flute system, local

conditions can mean that the level of predictable behaviour is very low compared to conventional musical tools. This very unpredictability is capable of producing variation in many parameters including pitch, amplitude, timing, and degree of attack and decay. This unpredictability within the system lends the instrument a score-like property, in that it can determine sonic outcomes. Rediscovering the behaviours of the instrument in every new performing context requires a deliberately circumspect approach that cannot be led by the performer's desire to make a certain type of sound.

Instrument as interactive system

> An acoustic feedback set-up is an interactive system in which no single parameter can be changed without also bringing about changes in other parameters (Cathy van Eck 2020, p. 85).

The *Bass Flute Feedback Project* is specifically designed to connect the performer to the temporal and processual dimensions of practice. Because it does not make use of an explicit score, it requires the performer-composer to be sensitive and responsive to material agency. It is a system that encourages or induces an absorbed and attentive approach to playing due to its inherent fragility and instability. In this sense, it can be considered a meta-practice as much as a system, but equally could be theorized as an instrument or a score. For me, its 'practice-like', 'instrument-like', and 'score-like' properties need to be held in balance in this discussion in order to refrain from lapsing into familiar definitions. These three properties can be conceptualized as existing on a continuum. The practice-like elements of the project are those that engage the human elements: habitual behaviour, memory, technique, attention etc. The instrument-like elements of the project are those that concern its properties as a material assemblage with specific sonic properties, and the score-like elements are those properties of material assemblage that link back to the human. These are the resistances and material affordances that 'push back' against human agency. These elements exert considerable influence over timbral properties, durations, amplitudes, and pitches, but

do not determine them entirely. Keeping these properties in balance enables the project to remain open to the ways that they flow together, without attempting to isolate, separate, or abstract the elements to construct a hierarchical narrative of causes.

These three properties of the project are not fixed. This is another way to describe the fact that the 'score-like' dimensions could be extended or developed using text or verbal instruction. The same is true of the other two properties (instrumental and practical), which can also be developed in various ways whilst still remaining part of the project. The project can therefore be considered to have a paradigmatic research focus from which other lines of thinking and practice have emerged and continue to emerge. The project frames an encounter with the sonic flux that emerges through, and between, nodes in a complex system. It is an investigation of human-instrument-system relations theorized from the perspective that the human and the non-human are part of a continuum. The project is therefore, in part, a strategy for rethinking, or re-programming', the human tendency to seek stability, solidity, and objectivity and reduce complexity. The process of working with the system involves being part of a situation in which the human performer engages with complex phenomena rather than needing to impose form upon matter. In some ways, this project can be thought of as the archetypal research vehicle for investigating the idea of an eco-systemic or situated compositional practice. Working with this system has been a major contributor to the development of these theoretical perspectives.

Context and history

> Are microphones and loudspeakers instruments? (Cathy van Eck 2020, p. 1).

In this project, the microphone is incorporated into a system or assemblage that does not enable the microphone to function according to the 'transparent' paradigm that it is generally assigned to it. Microphones are very often used and designed in ways that aim to amplify sound or faithfully record sound without imparting their own colour or agency to the

system. In this case, however, the microphone functions to amplify intentional sound but also to open the system to 'nonintentional' sounds, including feedback from already amplified sound. Here, then, is an example of the way that the experimental engagement with technology disrupts conventional ontologies. The distinctions that we routinely make between 'technology' and 'instrument' are already blurring because instruments are revealed to be technology, and technology has musical-instrumental properties. Assembling the microphone and the flute in a specific relationship changes the properties and affordances of both devices as well as the ways in which the human user will interact with them. The classical chain of causal relationships from composer's intention to the performer's realization and the microphone-speaker amplification has broken down. Feedback loops are occurring in the sound, and this is causing feedback within the theoretical 'chain of command'. Due to the non-linear behaviours of the system, the performer-composer cannot sustain a teleological intention, and so engagement with the instrument becomes more like a direction of enquiry. This realization creates a sense of collaborative engagement with the system. Factors such as microphone-speaker distance can affect timbre, amplitude, and pitch simultaneously. It is important to note that the whilst the influence of the elements of a feedback system (for example, the performance space) are evident, they also affect the performance of acoustic music in important ways. The difference is that we do not tend to think of these elements as having agency in the composition of music when the primary focus is placed on 'controllable' factors.

The compositional situation

> Since we do not connect a very specific sound with microphones or loudspeakers, as would be the case with conventional instruments, their identity depends on the context. This context is formed by playing them and therefore creating or strengthening an identity (Cathy van Eck 2020, p. 167).

In this statement, Van Eck gives a very good indication of why working with loudspeakers and microphones might be relevant to respiratory thinking and a situated, or

context-dependent, compositional practice. In an almost perfect analogy of the situated cognition paradigm, the 'identity' of the objects in the system depends upon context, and that context is formed through practice. This is an example of ontologies being determined by practices, or relations, to borrow Barad's term. In establishing that outcomes cannot be specified in detail when working with feedback, and that elements of the system vary their behaviour or function according to how they are used, it seems contradictory to continue to situate the composer outside of the system. In this project, therefore, the most successful strategies were those that enabled the composer to be part of the system, allowing the compositional actions to emerge in real time. The performer-composer's actions cannot easily be extracted from the situation retrospectively and described as ideas. However, behavioural strategies do emerge. An example is slowly moving the flute and microphone closer to the speaker to find out where a feedback sound will be initiated. This will tend to result in a gradual increase in loudness once the sound is perceived. The point at which the sound begins cannot be precisely predicted, but the gradual loudness can. These strategies do have a quality of reliability or stability and can be modified or developed. They also lend the system an idiomatic quality. This relative stability can be disrupted dramatically when the compositional situation becomes more complex. In the performance group that worked mostly with feedback, feedback sounds from other instruments would be picked up by my microphone and initiate feedback within my system which, in turn, affected other systems. In this context, it was often impossible to tell where any sound had been initiated. This created complex and highly non-linear situations in which the performer-composer could only attempt to respond with the evolving situation by developing new strategies, for example, by reducing volume levels and going in search of sound once again.

Linearity and circularity

Within my broader conception of respiratory aesthetics, the idea of circularity has become an important theme. Circularity invites us to become aware of the fact that chains of causality, as generally conceived, do not always start with an idea inside a human brain and end with an outcome in the world. The principle of circularity enables us to experience the fact that we are continually affected by the world as we act within it. It is an inevitable implication of our condition of immersion; hence, all actions have implications for 'others' and for ourselves. A feedback system embodies this principle in its set-up and mode of operation at every level. None of the elements of the system (in this case, flute, microphone, speaker, human) can be considered a starting or end point. If there is a purpose to working with this system, it is, at least in part, to enable intra-action and not simply to produce an outcome. As the American experimental composer David Dunn says of his work,

> I'm interested in understanding a sound and its context as part of purposeful, living system with attributes of mind. … The compositions then become a process of setting up an interactive situation in order to create a collaborative work that is evocative and representative of a larger system of mind inclusive of myself and other living systems. (1989, pp. 99-100).

The idea of the compositional ecology being reflective of a 'larger system of mind' is something that strongly resonates with the practices I am exploring here. The intentional use of feedback begins to reposition the composer as a participant in the system rather than a creator. Cathy van Eck describes this very concisely.

> The set-up is a 'circle' in which every element influences the next element: from loudspeaker output to performance space, to microphone input, to (processed) electrical signal sent back to the loudspeaker again. … The sound has no recognisable starting point in this set-up, nor does the shaping of the sound have a clear end point (2020, p. 86).

It is difficult to conceive of a better embodiment of a non-linear, non-teleological system. The microphone is generally seen as the beginning of a linear signal chain, just as the speaker is the end point. In this context, the microphone receives sound, and the speaker projects it into the world. These relatively active and passive roles are subverted in the case of the

creative use of feedback; the speaker and microphone are coupled to become a sound-generating system. This dialogic, or intra-active, relationship can be seen to reflect many of the other concerns in the current research. The non-linearity of the relationship can be seen to apply, within the research, to the role of the composer or the score or any other component of the overall compositional ecology.

Composer-performer paradigms

Performing a compositional instruction is an active process, and one that may have considerable physiological consequences, especially if the instruction requires, for example, rapid or large exhalations of breath . This raises the question of how we might frame a compositional practice that avoids the reductive dualisms between mind and body, composer and performer, and recognizes the fluid, multi-layered and distributed complexity of embodied sound-making. Hence, developing a practice that avoids some of these problematic dualisms is, for me, one step towards a respiratory aesthetic model. Barad might describe these ontological divisions, for example, between composer and performer or performer and instrument, as 'agential cuts'.

> Agential intra-actions are causal enactments. Recall that an agential cut effects a local separability of different 'component parts' of the phenomenon, one of which ('the cause') expresses itself in effecting and marking the other ('the effect') (2003, p. 824)

Hence, the phenomenon is being retrospectively understood as, or divided into, cause and effect, but phenomena are always intra-active. A compositional practice that breathes 'between' activities that can be understood as, for example, composing and improvising is one that, to me, bears some striking similarities to Barad's thinking.

Cathy Van Eck describes a category of instruments that are in a fluid state of development, and thus are difficult to control, as 'open' musical instruments. This category of instruments suggests a composition process in which the composer is working with 'relationships between' elements such as performer, object, and sound. 'Open' instruments

clearly remind us of a category of compositional score, often described as an 'open' score. These instruments and scores are 'open' to the performer, and to the world, in ways that conventional 'closed' instruments and scores are not. Instrument and score tend to be more open to the decision-making of the performer. (Caution is required here, in the habitual framing of actions in this context as 'human decisions', as this ignores the intra-active dynamics of the system.) The potential of open scores, combined with an 'open' design of instrument, makes it clear that we are shifting into a new kind of compositional paradigm that must include the agency and subjectivity of the performer *and* instrument. In this case, the performer cannot act as a functionary who carries out instructions, just as the instrument does not necessarily obey the performer, but they are both intimately involved and engaged with the moment-to-moment development of the work. In this case, the word 'work' can be used not as a noun but as a verb. The work becomes the making-through-doing, or the 'musicking',[10] that emerges through intra-action within a system. In more conventional terms, this might simply be described as improvisation. However, the emphasis here is on the creation of a live ecology. The term improvisation tends to gloss over the complexities of the intra-actions taking place and to create another hierarchy that places the performer's skill at the centre of the process. The paradigm of compositional practice that we are discussing here could perhaps best be described as one that creates 'nonhierarchical, collaborative, and conversational musical spaces'[11] to quote George E. Lewis.

Freely improvised music is often based in well-established, honed practices that can produce recognizably similar sonic outcomes. This often leads to the criticism that the music is not 'free' at all. Here, some of the most important aspects of the current research seem to

[10] A term coined by Christopher Small in *Musicking* (1998).
[11] From an abstract for a University of Pennsylvania colloquium in 2013. See https://music.sas.upenn.edu/music/events/colloquium-george-e-lewis-why-do-we-want-our-computers-improvise

converge. In resisting some of the hierarchies of compositional practice, it could be argued that the 'free' improvisor is collapsing the roles of composer, performer, and sometimes, instrument designer into one role. However, instrumental systems such as some computer programming environments or feedback systems make use of non-linearity and complexity, thus blurring the lines of causal agency and disrupting hierarchies of control. It ceases to be clear that these traditional specialist roles are always meaningfully distinct, or at least the distinctions may be highly contingent and constantly shifting. Conventional distinctions between composer and performer or composition and improvisation are thus revealed as being predicated on our ability to control sound events in linear time. Events are either predetermined (by a composer) or 'free' (indeterminate or undetermined). According to this binary distinction, however, important functional elements such as memory, time, materials and relations, and corresponding ecologies of sociality and agency that have not yet been fully theorized, are left out of the picture.

The *Bass Feedback Flute Project* can be described as an infinitely open artwork. Within fine art discourse and practice, it is possible to observe a shift of attention away from a singular object towards spaces that can be inhabited by the viewer. (Olafur Eliasson is a well-known contemporary exemplar of this tendency.) Arguably, some experimental musical practices shift attention away from the precise morphology of sound outcomes towards qualities of relationality and intra-action. Experimental systems such as the *Bass Feedback Flute Project* enable us to reflect upon our categorical assumptions and our habitual explanations of causality and agency. These practices can lead to an increased sensitivity to, and different understandings of, our situated-ness and coexistence with the more-than-human world.

Peter Goodyear (2021) writes about sailing in terms that are a good analogy for working with feedback environments. A sailor also deals with high levels of unpredictability

and a wide a range of variables. Skilled sailing is about being responsive to the changing conditions. This requires a form of embodied presence and attention. Clearly, there is an important 'productive' dimension to sailing just as there is in musical practice. However, Goodyear points out that we can also consider the boat to be an instrument that provides us with information.

> One can use the boat and its sails as an epistemic device. One stops, for a moment, using the boat as a productive device—whose purpose is to move us through the water as quickly as possible, to get to our destination—and converts it into an epistemic device—whose purpose is to answer the question: where is the wind? One edges the boat up into the wind, closer to the direction from which the wind appears to blow, and watches closely for the luff of the sail to start shaking.[12] (2021, p. 1603)

This description brings to mind the descriptions of instrumental improvising practices by Evan Parker and Bennett Hogg quoted earlier in this thesis. The shift between the idea of an instrument as productive device, and the instrument as epistemic device is profound and often overlooked. The use of an instrument as an epistemic device necessitates that the user is able to ask a question or at least be receptive to the information that might be available. In the case of the sailor, Goodyear frames the question as 'where is the wind?' A musical epistemic device might be used to provide information about the user's somatic state, as exemplified by Parker ('studying and expanding my control over… parts of my skeleto-muscular system') and Hogg ('tracing fluctuations in my body's chaotic systems'). In the case of the *Bass Flute Feedback Project*, the question might be framed as 'where is the feedback?' This question is answered by engaging in strategies that can be both a searching for, and an inducing of, feedback sound. This raises the possibility that compositional process might be framed as a question rather than an answer. As with the sailing metaphor, the consequences of a small miscalculation can be dramatic, in sonic terms. Uncontrolled feedback is an extremely

[12] also available at https://petergoodyear.net/category/new-publications/ Accessed 14. Nov 2021 16.09

unpleasant experience, and it is this constant risk that induces the state of 'absorbed attention' in the performer.

A process of making or performance that begins or proceeds by asking a question through action can be both an epistemic act and also somewhat subversive from the perspective of established narratives of performance and composition. The notion that composition is a process that begins in the mind is deeply embedded in our culture. The conception that mind might be a property of (that is, enfolded or immersed in) the environment is therefore a radical idea. Music-making, according to this paradigm, is not simply a process of production but a profound method of engaging with, and sensing, our physical immersion.

Returning to Dobereiner's writing on Di Scipio, there are illuminating descriptions of the relationship, in Di Scipio's work, between the feedback and an immersive model of subjectivity. This echoes Tim Ingold's observation that creative practice is ontogenetic, or a self-constituting becoming, taking place between self and non-self. Dobereiner writes of Di Scipio's work

> The Audible Ecosystemics present an idea of subjectivity and its emergence, not as a metaphor or an image; it is not a matter of representation, but of its very way of operating. It is an artistic thinking, taking place immanently in the engagement with the material (2014, p. 28).

It is difficult to convey, through language or even sound recording, the phenomenological experience of working with feedback. One seems to be constantly searching for tipping-points or edges where a very small change in the proximity to the speaker or the most minute turn of a dial can produce big changes in the sound. Between these moments, there can be periods of relative stability in which the system can feel more like an instrument. The *Bass Feedback Flute Project* is an ongoing experiment in the creation of live ecologies that often require the composer to respond to events as they emerge. Ontological categories of self,

score, and instrument are constantly destabilized, and the usual causal chains of events are disrupted.

Chapter 3: *Hidden Architectures*

> To live, every being must put out a line, and in life these lines tangle with one another. (Tim Ingold 2015, n.p.)[13]

The project *Hidden Architectures* is a durational and immersive work that exists in several configurations. It started life as a duet between two dance performers alone and without sound. It now exists as a work for six dance performers (using amplified nylon lines stretched between their mouths), an improvising guitarist, multi-speaker sound, and lighting design. It also exists as a two-screen video installation made by me after the performance project was completed. I was invited to become involved with this project after the choreographer, Saffy Setohy, had made a duet work involving a nylon line stretched between her mouth and that of Luke Birch, her collaborator. They had developed a choreographic language around this unusual connection and had noticed that the line, when it was under tension, produced a range of resonant frequencies that only the performers could hear. We explored ways to resonate the line using purely acoustic means by changing the shape of the mouth cavity. This led to a realization of the extent to which the internal structures of the body function as invisible resonators for both sound production and hearing.

Figure 4. Performers connected by an amplified line

[13] This quote has no page number, as it appears even before the preface.

The development of *Hidden Architectures* took place over a period of nearly two years, and the length of the project meant that it became a formative experience in both my thinking and making. During this time, I was also reading Tim Ingold's two books on lines, which contributed to the development of the work whilst helping me to understand and contextualize what we were trying to do. Tim Ingold summarizes this ongoing process of 'change-through-doing' very well.

> It is… right to say that what we do depends on who we are, but it is necessary to add that we are, to a certain extent, what we do, and that we are creating ourselves endlessly (2015, p. 126).

The project proceeds from an exploration of the body and its entanglements. However, the focus is also upon the spaces within the body as well as between other bodies. Whereas, conventionally, we might understand the space between two bodies as 'empty' or negative space, the investigation within *Hidden Architectures* concerns the animation of tension between bodies and the activation of spaces within the body. This activation could be understood as a sonification, as the role for compositional interventions became unusually constrained once the human-material assemblage of amplified lines had been designed. The project can therefore be described as an exploration of entanglement because so many elements of compositional process were bound up with the choreographic, technical, and social dimensions of the project. In this sense, the project serves as an investigation of the way that sound emerges from a nexus of entanglements. However, in this case, the creation and maintenance of tension between the two bodies for sound production also produces a choreographic form, just as the choreographic process produces sound.

This connection between the elements of the system I identify as a form of 'sympoiesis', or 'making-with.' 'Sympoiesis' is a term that Donna Haraway identifies with some natural systems and contrasts with 'autopoiesis'. It describes 'collectively-producing systems that do not have self-defined spatial or temporal boundaries' (2016, p. 33). Thus,

‘information and control are distributed among components. The systems are evolutionary and have the potential for surprising change’ (2016, p. 33). She goes on to describe how ‘tentacularity’ is an important principle in the development of the process of ‘making-with’: ‘Spider is a much better figure for sympoiesis than any inadequately leggy vertebrate of whatever pantheon’ (2016, p. 33). Somehow, by inventing a ‘tentacular’ performance system we found ourselves dealing with the problems of networked performers whose movements were no longer simply their own but had become movements within a networked system. This proved to be a defining factor in the way the creative process was able to proceed.

Figure 5. Connectedness and sympoiesis

Choreographic processes

The process of creative development in contemporary choreographic work is often markedly different from the way that composers tend to approach their work. In the projects that I have been involved in, the dancer-choreographer relationship has tended to be less hierarchical than the performer-composer relationship in processes of music-making and composition. The idea of 'making with' performers is a much more familiar concept. The use of improvisation as a tool for the exploration of ideas and relationships, followed by processes of iterative development and refinement, also seems much more common. Improvisation, in musical contexts, seems to be understood as a radical 'other' to composition, and vice versa. In this sense, I would go so far as to say that I probably think more like a choreographer than a composer. The compositional situation that emerged in the development of this project was therefore shaped by the conventions and constraints of a choreographic development process. Intense weeks of all-day rehearsals, followed by long breaks and planning for the next rehearsal period, produced a very different pattern of relationships to the emerging work. The absence of a precise notational system also meant that a large-scale work of almost an hour's duration relied heavily on the embodied memory of the performers. The process and evolution of the work could only be done from the 'inside', with larger-scale structures emerging from smaller-scale interactions, rather than being designed ahead of time and subsequently imposed upon the performers. The process of 'following' material constraints, agential flows, and creative opportunities as they emerge can be described as improvisation, but Tim Ingold goes further, suggesting it is a fundamentally different way to understand the creative process. To understand creativity, he writes,

> is to read it forwards, in the unfolding of the relations and processes that actually give rise to worldly beings, rather than backwards, in the retrospective attribution of final products to initial designs. It is to recognise, with Bergson, that ontogenesis takes time (Ingold 2015, p. 126).

Thus, rather than starting with a formal idea in the mind, this process could only begin with a range of questions and a willingness to participate in this 'unfolding of relations and processes' that Ingold describes.

Processes of composition in *Hidden Architectures*

The title *Hidden Architectures* is a reference to the mouth and the internal structures of the body that amplify the sound of a line connecting one person to another in this piece. However, it is also an allusion to the social and material architectures that have contributed to the shaping of this piece. In this work, the social architecture and its relationship to the bodies of the performers is the primary subject matter. Therefore, to discuss the work in terms of sound morphology or temporal structure seems to miss the point of the project. The anthropologist John Blacking describes this perfectly.

> Analyses of music are essentially descriptions of sequences of different kinds of creative act. At the surface level, creativity in music is expressed in organising new relationships between sounds or new ways of producing them, that is, in musical composition and in performance. The two aspects of musical creativity cannot be separated, and both seem to be present in all societies; whether the emphasis is on humanly organized sound or soundly organized humanity, on a tonal experience related to people, or a shared experience related to tones, the function of music is to reinforce, or relate people more closely to, certain experiences which have come to have meaning in their social life (1995, p. 58).

Due to the fact that this project had the character of a technical research-and-development process at the start, the only way to proceed was iterative, step-by-step experimentation and problem-solving followed by cycles of analysis and modification. This process of instrument design made me conscious of the extent to which the design of conventional classical instruments, along with the ways of playing that have emerged with them, can be viewed as constituting a ready-made material onto which notational convention impresses a formal design provided by the composer. Working with very basic materials to develop a primitive sound-making device simultaneously opens up enormous creative potential. It also removes all the advantages and technical developments in manufacture and performance that are found in more conventional instruments. It is starting from the very

beginning, unable to know or predict anything except that which the basic physics of sound production might allow.

The compositional approach therefore emerges as an ongoing gathering of elements and a continual playing with resources and ideas until something is recognized as being close to a usefully stable object or method of working. Or something that articulated the aesthetic properties of which we were only dimly conscious. This process, in retrospect, was not aimless, in that we were actively searching for our materials within the complex intersection of constraints and opportunities which presented themselves. The most obvious example of this is the construction of the mouthpieces for the performers. As every mouth-shape is unique and some of the mouthpieces needed to contain microphones, this was not a simple development process. It is not necessary to describe the process in detail except to say that a new type of instrument was being developed. This instrument could be described as being distributed across the bodies of two performers and perhaps also as consisting of the two bodies. Inevitably, the nature of this process meant that it resulted in many 'failures'. Arguably, this is a condition of any genuinely practice-based experimentation. However, while many of these experiments did not find their way into the final version of the work, they can be considered part of its 'Hidden Architecture'. In this sense, the work as it is experienced by an audience is a fragment within which many alternative possibilities, or threads, to use Ingold's analogy, inhere.

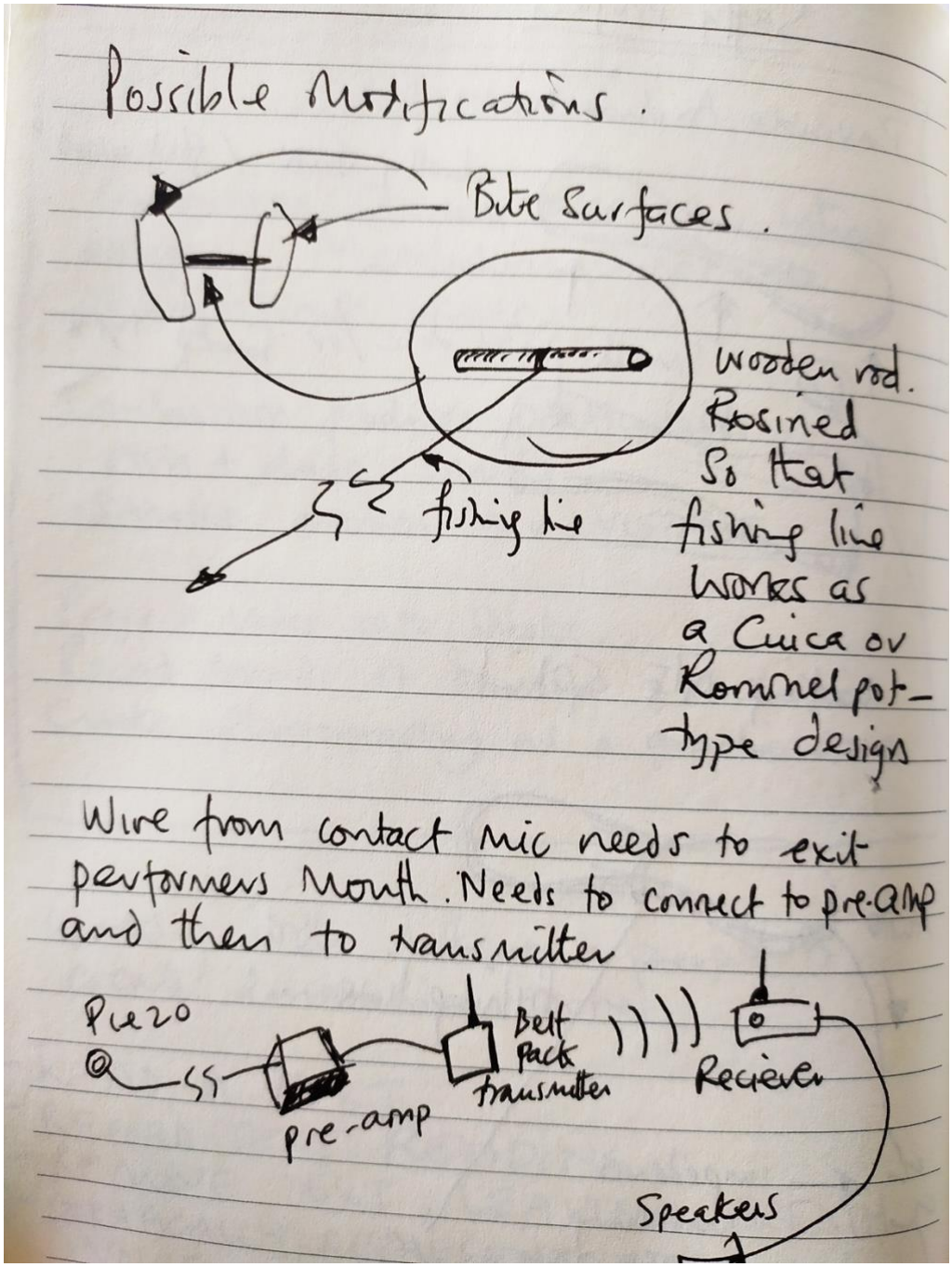

Figure 6. Sketch of possible modifications (from notebook)

Naturally, the question arises as to why certain elements became part of the final performance and others did not. Despite the collaborative nature of this work, there was a sense of economy or simplicity that the work was striving towards. Perhaps this is best exemplified by the directness of the filament connecting the performers' bodies. This could be described as an intuitive sense of the work that, in retrospect, was always present yet continually and intra-actively modified itself. In trying to write about this dimension of the

work, verbal descriptions become problematic, as it would have been difficult to know how to articulate this internal regulation at any stage of the process. It could best be described as a gestalt or a respiratory aesthetic tendency that the work inhabited when it was working well.

This aesthetic tendency might also be described as the manner through which a tension between elements can be maintained, given that the most fundamental structure in the work might be described as 'two bodies connected by line'. The line is amplified and produces sound as long as tension is maintained between the two 'polarities'. Any movement that takes place in this state of tension can be understood as choreography, but absolutely equally, it can be understood as the performance of sound. The tension between these points produces what appears to be a straight line but also produces corresponding lines of movement and gesture that are constantly curving around this straight line.

This tension between points has a range of resonances. In sharing this work during the development period (a practice that is common in choreography but less so in music composition), several unexpected perspectives and readings emerged from audiences. One of these was the connection of the forces and tensions within matter at the atomic and sub-atomic levels. At an early stage, in an attempt to develop a score that might work for choreography and music at the same time, I had been working with animated scores that used extremely elemental shapes, just lines and circles. This scoring system proved unworkable at some stage, but it became interesting to reflect upon these sketches in the light of this reading of the work.

Figure 7. Early scoring idea

This score could potentially be read in any number of different ways, and part of the work was to find ways to read the score that might be productive. Initially, it was animated by a 'zero' point scrolling from left to right, and this score has ended up forming a part of other works in the portfolio of this research.

In reflecting on the implications of this focus upon tensions, it seems relevant to consider what the lines and circles might refer to in this context. Interestingly, Tim Ingold used the terms 'blobs' and 'lines in *The Life of Lines* as a way to discuss the complex relationships between the individual and the collective. The dots, lines, and circles can be thought of in terms of the dimensional fields they might inhabit. A dot or point can be thought of as existing in a single dimension that can then be extended across a flat plane in two dimensions, or rotated in space to produce a third dimension. From the variety of verbal responses to the work,[14] it seems that these constellations of meaning—the forces inherent in matter, the dimensional geometries, the complexities of human relationships and the individuals' relationship to the social—are all part of a polysemic field of meanings generated by the idea of a state of tension existing between bodies. For me, the respiratory implications of this state of tension between polarities are inescapable. Respiration a process by which we inhale oxygen and exhale carbon dioxide. The maintenance of oxygen levels in the body can be understood as a balance between states and respiratory actions are responsible for maintaining this balance.

Inherent within this construct, the tension 'between' is an extreme limitation for performers but also for the composer-choreographers. It immediately brings into question the reason or intention for any given movement. If the intention is simply to 'perform' choreographically, this will produce some sort of corresponding music, and intentions to

[14] Derived from informal sharing of the work in progress.

make sound will also produce choreographic form. When the intention behind either of these two modes (sound or movement) become too explicit, however, the overall integrity of the work suffers, producing a self-conscious quality. The entire sonic and choreographic palette therefore became increasingly constrained, and increasingly focused on the 'becoming sensitive' to vibration and tension. This minimal quality enhanced the sense of the 'hidden' or internal dimension of the work, emphasized by the fact that the lines between performers are intermittently visible in the performance conditions. They become a partially visible, partially audible, medium of communication (see Figure 3). Hence, the maintenance of an optimal tension using the most economical means emerges as a respiratory characteristic of the work.

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Figure 8. The performers rehearse keeping the line under tension

Figure 9. Visibility and invisibility

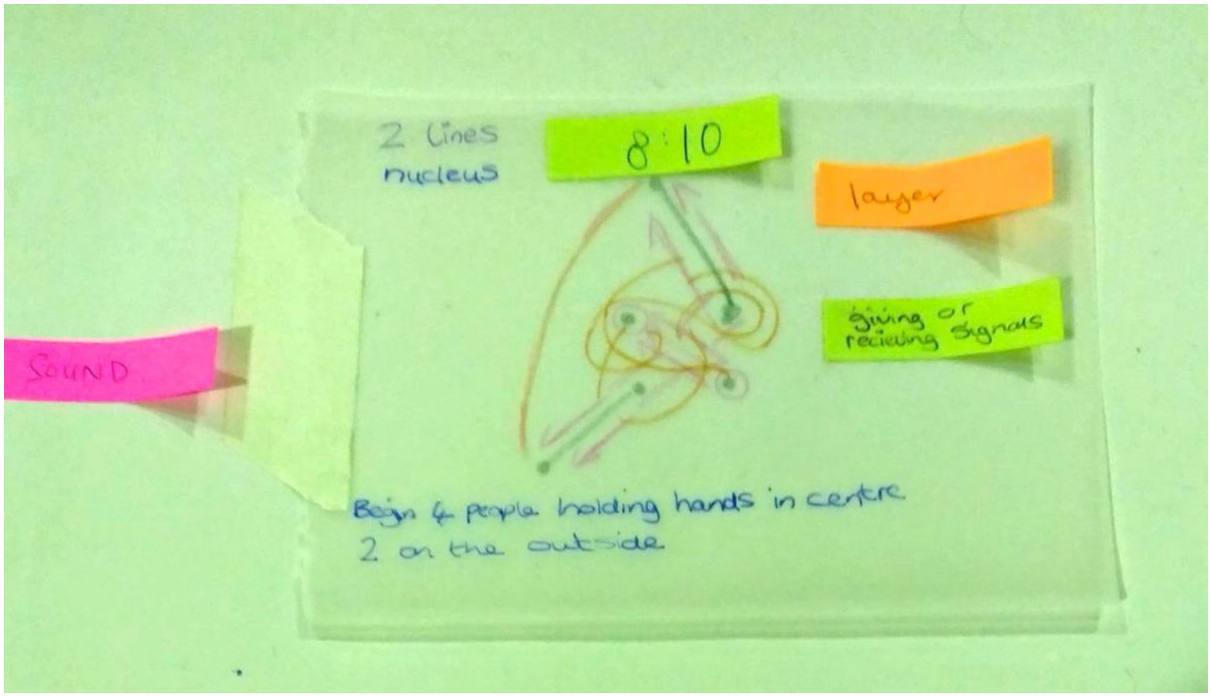


Figure 10. The 'Nucleus' choreography in development

The expanded field and 'absolute music'

The idea to sonify the connection between two bodies suggested an approach that was part performance art, part instrument design, and did not seem initially very connected to conventional understandings of music-making. In *After Sound*, G. Douglas Barrett insists that

> …music is a historically mutable, contingent, and ultimately revisable art form that, when radically conceived, exceeds any strict adherence to specific mediums or material forms including sound itself' (2016, p. 6).

Within his proposal that radical conceptions of music are not defined by sound, Barrett rejects previous conceptions of absolute music and even sound art as being aspects of the same idea, suggesting that 'Sound Art is, essentially, absolute music' (2016, p. 5). He goes on to propose 'a conception of music as an expanded field of artistic practice encompassing a range of different media and symbolic relationships' (2016, pp. 7-8).

These statements are relevant here in that they succinctly set out the way that music was understood in this project. In referring to the 'expanded field' of artistic practice Barrett is referencing Rosalind Krauss and her 1978 text 'Sculpture in the Expanded Field'. Recent developments in music (for example, Peter Ablinger's Darmstadt summer course bearing this title) suggest that a conception of music that embraces the expanded field is gaining significant legitimation and momentum. This conception of music as a critical practice aims to escape the idea of a 'medium-specific' art form based on sound. This is the important dimension shared by the seemingly very different categories of sound art and music. Although sound art, in Barrett's words, 'escapes the metaphysical pretensions of absolute music', Barrett, along with other practitioner-theorists such as Max Neuhaus, maintains that sound art is a form of New Music.

Social agency and ontology

When sound and choreography are tethered in this way, viewed from the perspective of each individual discipline, there is a corresponding loss of autonomy. Every movement

generates sound, and every sound requires a movement. Even the performers themselves could never be certain that a movement they perform would initiate sound due to the necessity that a corresponding movement by their partner is required to keep the line under tension. This required a great deal of technical development for the pairs of performers to develop the necessary complicity in their movement. Hence, in every area of the work nobody could be sure what the outcome of any given intention or movement might be.

Questions arising at this point in the physical and conceptual process were often to do with autonomy and how to understand what we were making. Given that the amplified line produces sound by virtue of tension exerted between two people, we had to ask ourselves such questions as:

- Can we consider the line-microphone assemblage to be an instrument?
- Does the assemblage of people and materials constitute an instrument?
- Who is playing the instrument?

The question ‘what is an instrument?’ is uncontroversial in the context of standard instruments and notions of human agency and causality as they are generally applied to music. It may seem, therefore, that the designation of the equipment as an instrument or otherwise is a trivial subject. However, the question here concerns where in the system control can be exerted. Such questions are not unfamiliar in the context of networked performance systems in computer music, and theoretical approaches such as Actor Network Theory have been advanced to think about exactly these kinds of questions. In fact, the apparatus described above could be said to be more like a connection than an instrument. It generates sound, but the idea of individual agency as it might be understood in relation to a conventional instrument is severely compromised.

Perhaps the most apt theoretical model is Karen Barad's agential realism. An in-depth description of Barad's theoretical position is beyond the scope of this research; however her work develops the ideas of Niels Bohr and applies many of the insights from research in particle physics to the social and material realms. In *Meeting the Universe Halfway*, she writes:

> The notion of intra-action is a key element of my agential realist framework. The neologism 'intra-action' signifies the mutual constitution of entangled agencies. That is, in contrast to the usual 'interaction,' which assumes that there are separate individual agencies that precede their interaction, the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action. It is important to note that the 'distinct' agencies are only distinct in a relational, not an absolute, sense, that is, agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements (2007, p. 33).

This entirely restructures our classical understanding of agency and causality as we might apply it in musical contexts. If the pairs of entangled bodies that make up the *Hidden Architectures* project can be thought of as contextual agencies that emerge through their intra-action, then we arrive at an understanding of agency emerging through a compositional situation. This supports a conception of the compositional situation as something approximating an organic structure, which, in turn, would have its own intra-actions with wider contexts. We might then describe this compositional situation as an entanglement through which agency emerges. This very entanglement is also an important part of the 'Hidden Architecture' referred to in the title.

Figure 11. An experiment in entanglement

While I have occasionally used the term ‘assemblage’ in the course of this research to refer to an agency that is constituted of both human and non-human elements, Tim Ingold takes issue with the term at the start of *The Life of Lines*. Discussing the famous painting ‘Dance’ by Matisse which, significantly, is also a representation of a choreographic ‘togetherness’, he writes, in a manner that is strikingly relevant to the *Hidden Architectures* project,

> For the dancers, caught up in each other’s flexion, the stronger the pull, the tighter the grasp. In their blob-like appearance, Matisse gives us the materiality of the human form; but in their linear entanglement, he gives us the quintessence of their social life. How, then, should the social be described? (2015, p. 6).

Ingold seems to be enquiring into the ways in which we might understand this social phenomena of the collective dance. However, he cautions that the word ‘assemblage’ is based on, what he refers to as, the ‘blob’. The term ‘blob’ here refers to an entity or being that is joined (by a line) to another thing and, in his words, is therefore ‘too static’ (2015, p. 7) as a model for such a dynamic intra-action. This critique of the ‘blob’ is, in part, a critique of aspects of the Durkheimian social model, according to which

> the mind of the individual can be understood as an externally bounded entity, closed in on itself, and divided off both from other such minds and from the wider world in which they are situated (2015, p. 10).

Ingold offers an alternative ontology based on the line.

> The principle of the line, by contrast, allows us to bring the social back to life. In the life of lines, parts are not components; they are movements (2015, p. 7).

What Ingold seems to be alerting us to is an understanding of 'the line' going beyond its purely material facticity and moving towards its identity as a symbol that might operate in a number of different registers. Referring to Marcel Mauss, who, significantly, emphasized the element of interpenetration in Durkheim's thinking, Ingold says:

> Real-life human beings, … [Mauss] insisted, inhabit a fluid reality in which nothing is ever the same from one moment to the next and in which nothing ever repeats. In this oceanic world, every being has to find a place for itself by sending out tendrils which can bind it to others (2015, p. 11).

This project is therefore situated at a number of boundaries, or interstices, through which it makes evident, visibly, and audibly, our mutual entanglement. Implicitly, through the development of a 'tentacular' performance mechanism, it moves beyond the idea of a bounded individualism, much as respiratory philosophy does. It inhabits spaces that are not entirely individual or collective and highlights the entangled and emergent nature of all phenomena. The 'fluid reality' referred to by Mauss is reminiscent of Coccia's ideas of mutual immersion and of 'conspiring' or breathing together. The concepts of 'line' and 'meshwork' (2015, p. 3) as developed by Ingold remind us of the idea of the tentacular as proposed by Haraway and Dempster. These concepts undermine the idea of supremacy of the individual in favour of an eco-systemic model.

Maintaining a fluid tension between disciplinary boundaries, as well as the boundaries between human bodies, requires a process in which the makers are situated in the work at all times. This maintenance of a fluid tension through real-time iterative exchanges is both a technical skill and an aesthetic priority that derives from the respiratory philosophical approach. This project resisted almost all forms of preconceived planning, demanding that

ideas and possibilities emerge through doing and playing. This planning and 'pre-composing', I realized, situated me (as the composer) outside the work in an unhelpful way. Whenever I removed myself to this 'zero point' of conceptual thinking, the ideas would fail to take root. Once again, the situated participatory and real-time relational model of compositional practice became the only way to work in this context. This collaboration has thus been an important challenge to my thinking about sound composition in relation to our notions of expressive freedom (arguably closely related to wider conceptions of individual freedoms), compositional agency and disciplinary autonomy in sound practice. The situating of sound as an emergent property of both tension and entanglement, the parallels between lines, sound, and air as the relational conditions or the 'betweens' within which life is enacted, has prompted much of the theoretical framing of this thesis. The project was ambitious in the sense that it set out to create an alternative world through which we can reflect on our quotidian world.

This project was reworked as a video installation for Glasgow University's 'Being Human' festival, which took place online during the 2020 lockdown. The re-working presents the video documentation of the work as a two-screen installation, both screens starting from the same mid-point frame roughly 25 minutes into the work. The two screens then proceed in opposite temporal directions, one playing forwards, the other playing in reverse, mirroring the idea of a tension between two spatial locations. This temporal arrangement is also an enactment of the idea of an expansion from a mid-point, so the work can be seen to embody a respiratory process in its structure. This produces a visual and sonic counterpoint that seemed appropriate for the nature of the project, a juxtaposition producing complex emergent intra-actions of its own and revealing structural resonances and tensions of which we had not been aware previously. The other reality that emerged clearly, and possibly why the work was considered for this festival, was the way in which the new reality of social

distancing at that time was producing an increased awareness of our mutual immersion in the air. It seems odd in retrospect that the lines we worked were almost always around two metres in length, as this was determined to be optimum for their ability to sound and for the performers' ability to keep the tension engaged.

Chapter 4: *Black Noise*

Black Noise is a project exploring the idea that an irreversible change in the materiality of the instrument becomes the work. There are several historical precedents for this approach. Robert Morris's 'Box with the Sound of its own making[15]' (1961) is an important reference point, but so too is the tradition of auto-destructive work within fine art that has had an equivalent development within music and sound. Annea Lockwood's 1968 piece 'Piano Burning' is an important reference also. Lockwood says this of the piece: 'all the Piano Transplants should be done with defunct pianos – still standing, but not really repairable' (n.d). However, the symbolism of the piano is unavoidably that of traditions associated with Western art music. In a similar way, the 'auto-destructive' processes of Gustav Metzger can be understood as an attack on other dominant ideological structures including capitalism and commercialism. The *Black Noise* project begins from a different position. The instrument being destroyed in this piece is a flute made of bamboo, and the form of the natural bamboo is very visible in the appearance of the instrument. Hence, it has an obvious relationship to the natural world and lacks the high degree of mechanization of design and manufacture evident in an instrument like a piano. In this respect, burning a length of natural bamboo might not appear to possess any particular affective properties as an artwork. However, destroying something that refers to the natural world is perhaps more suggestive of the act of

[15] A wooden box containing a soundtrack of the sounds produced during its construction. It is notable for the way that it incorporates process into an object.

human environmental destruction than destruction of human ideological or aesthetic constructs.

Figure 12. Black Noise *performance*

This project is part of one research focus that considers the nature and function of an instrument within compositional processes, specifically, the preparation, modification, or alteration of the character of an instrument. This enquiry, which also includes the *Bass Feedback Flute Project* as well as *Hidden Architectures*, looks at the extent to which

instrument modification and design can be considered to be an integral part of compositional practice.

Background to the work

This piece was commissioned for the City University symposium ‘Land Music’. The publicity for the symposium includes this description: ‘Ecological thinking, beyond the conventional understanding of environment, asks us to consider new ways of imagining how we conceive of and consider the world.’ The commission came at a time of great personal crisis for me, while the symposium was clearly responding to the ongoing threat of environmental crisis. The title *Black Noise*, therefore, refers to a number of things simultaneously. As a technical term in signal processing, black noise (as opposed to white noise) refers to an absence of perceptible sound. This silencing seemed relevant to the threat of human extinction that is always implied in thinking about environmental crisis. Blackening also refers to a stage in the medieval philosophy of Alchemy referred to as ‘Nigredo’. This stage in the process means ‘putrefaction’ or ‘decomposition’, in which the human self, or subject, is radically decomposed. Some elements of this work had been in my mind for some time, but my intention had been to make a work that destroyed a flute by reducing its length incrementally, thereby altering its pitch. The minimalist work by Robert Morris, ‘Box with the Sound of its Own Making’ (1961), incorporates the sound of its construction into its objectified outcome. The early idea for my flute piece was to make a sound work that incorporated the sounds of the alteration and eventual destruction of the instrument. The plan had been to reduce the length of the tube according to the proportions of the human body, thereby identifying the flutes, and the emergent pitch structure, with the body. These resulting pitches, and the sound of cutting the pipe, would have constituted the sound material for the work. However, many elements of this idea remained unresolved, and I could not decide how both the sounding of the pipe, as well as the cutting of the pipe, could be

integrated into the work. I had previously (2009) made a series of steel instruments that were designed to be played with blowtorches as a sculptural installation (*Sound Structures*). That project took advantage of the way that heat can excite the static air inside a tube to make it sound. In response to the 'Land Music' commission, I saw that these two project ideas could be brought together to create a performance work that framed the destruction of an instrument as a performance.

Structure of the work

Black Noise 'is a project in which a performer uses an acetylene blowtorch to burn a flute made from bamboo. The performer plays the flute at the start of the performance, then places the flute in a workbench stand and proceeds to blacken the outside of the instrument. The blackening process continues until the instrument is burning on its own and its entire exterior is blackened. Two microphones above the bamboo capture the sound of the torch burning the flute, along with the sounds of the environment in which the performance is taking place. The mingling of 'intentional' sound and environmental sound is significant in this work, which consists of an instrument gradually becoming part of its environment through combustion. The microphones provide a sonic account of the destructive transformation of the flute from a usable instrument, to a burned-out husk. The process of burning produces sound, but also drives moisture from the bamboo in the form of water vapour mingled with burning particles of the material itself. This smoke creates a smell which is perceptible to the audience of the performance. The smoke is quite intense for the performer, necessitating the use of a respirator to protect them from its toxic effects.

One of the interesting properties of tubes is that the air inside them can be excited by blowing (as happens when you play a flute) or by heat (as happens in the case of a pyrophone). The sounds produced are very similar and are determined to a large extent by the proportions and bore of the tube. When the performer applies the torch to the interior of the

tube, the air inside the tube starts to vibrate just as it would if it were being played by breath. There is something uncanny about this phenomenon, as the sound which would normally be associated with the flute's close contact with a human body, is being emitted mysteriously by the action of heat.

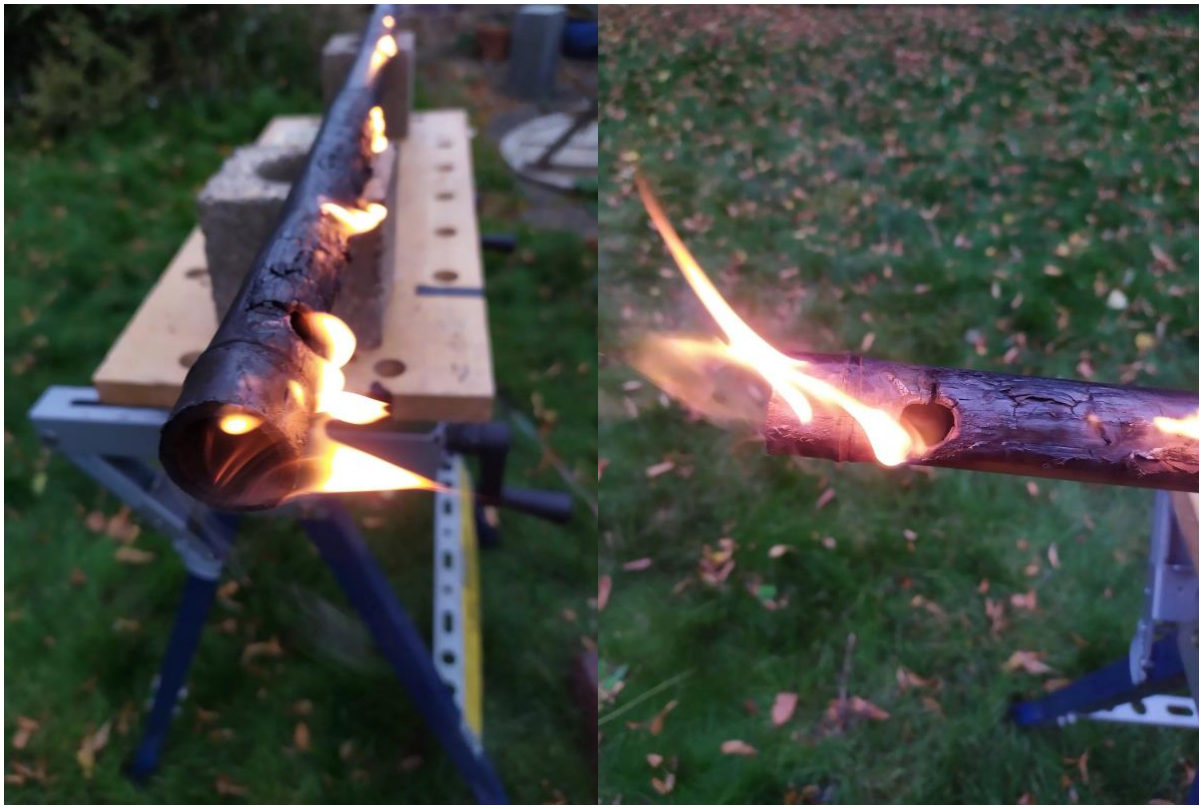


Figure 13. Black Noise *performance test images*

Commentary

The combustion of the flute using a blowtorch, with its associations of human mechanization, seemed to emphasize the brutal nature of the process. Building a wood fire and burning the flute in this way would have created very different sonic and conceptual resonances, and the work would have been received very differently. The sound from the burning of the flute and the sound of the environment constitute the sonic component of the work. In terms that Cage might have used, the environmental component of the work is indeterminate. Or perhaps is contingent upon the time and place of performance. The sound of the burning is less difficult to determine but will certainly vary according to the properties

of the bamboo that is used and the performer's choices in the moment. These sounds, picked up by the microphones, are projected in an inside space on a stereo PA system so that they can be heard or experienced, as 'pure sound'. The physical performance of the task of burning is performed outdoors and the audience for this hears the sound un-amplified. Before the performance, the audience is offered the choice of remaining inside and hearing the amplified sound, going outside and seeing the performance, or moving between the two experiences. Hence, the structure of the work is both temporal and spatial.

The choice to create two possible perspectives from which to experience the piece emerged partly out of thinking about the site where the piece was to be performed. The venue had a conventional indoor concert space with an adjacent outdoor space. The use of both of these spaces enabled the audience to be mobile and appropriated the conventions of both electro-acoustic concert listening and elements of performance art. Situating the work between categories of sound art, composition, and performance art is an important dimension of the work. Attempting to listen to the sound component of the work alone is almost impossible without experiencing it as the outcome of a destructive act. Various other stagings of the work were considered, including not giving the audience access to the live event and just projecting the sound component. I considered the possibility of live digital processing of the sound inside the concert space. However, the idea of aestheticizing the sound of destruction seemed to work against the nature of the performance. How would I decide which sound processes to apply and why?

In considering the relationship of the work to the development of a respiratory aesthetic, several themes emerge. The work is multisensory in that it makes use of sound, but visual, tactile, and olfactory dimensions of the performance are also important. It also attempts to blur easy distinctions between environmental sound work and concert performance or performance art and composition. The work intentionally incorporates the

environmental sound of the site in which the piece is being performed as an integral part of the work while simultaneously releasing the gaseous products of combustion into the atmosphere.

It is important to note that this work has several sensory registers. Its affective properties engage the bodies of the audience in a number of ways. These include the visual performance dimension of the work, the sound of the destruction of the instrument, and the fact that the audience feels the heat and inhales the gases produced by the piece. The sound in the open air is perceived along with the ambient sound of the performance location just as the gases produced are seen diffusing into the atmosphere. The idea that the work dissolves into the environment is central to its concerns of the work in the sense it does not have an easy conceptual boundary. Like a respiring body, it is engaged with, and immersed in, its context. Several audience members at the first performance commented upon the multisensory nature of the work and the fact that it was difficult to reduce it to a sound work. The smell of the bamboo and the heat produced by the combustion seemed to provide another affective dimension that problematized its perception as purely a sound work.

However, perhaps most importantly for my own conception of a respiratory aesthetic, the work can be read in a number of ways. It is clearly a straightforward demonstration of combustion, with plumes of black smoke billowing upwards from the performance. The necessity for the performer to wear respiratory protection perhaps suggests a reading of the work as symbolic of the dangers of environmental destruction. However, there are also discernible themes of individual transformation and mortality that clearly relate mainly to individual concerns rather than environmental ones. The extent to which the work is able to keep these possible readings in balance is the dimension that has been most surprising to me. This refers back to the concept of circularity that emerged in the discussion of the *Bass Flute Feedback Project*. Both projects, in different ways, explore correspondences between human

subjectivities and our connections with that which surrounds us. This idea was expressed very well by David Dunn in a 1989 article.

> This idea of environmental language isn't really language in the sense that there's a code that needs to be broken. I'm referring to language in the sense that we're engaged in a coevolutionary scenario. We need to compose processes of interaction which will help re-establish a saner balance of humanity within the biosphere. The language I'm envisioning is an experiential, dynamic process that explores whatever tools and metaphors are available in that direction.' (1989, p. 105)

A possible development of this work that I have considered is to stage a simultaneous performance of several flutes being burned at the same time. This would contribute to a composite sound collage that could be heard in a multi-speaker auditorium. Whilst this is something that I would very much like to pursue, I also wonder whether the multiplication of the performance would make it less easy to access the dimension that refers to the individual.

Flute and body

There are interesting parallels to be drawn in this context between the flute and the human body. In several existing flute traditions, the flute is thought of as having anthropomorphic associations.[16] Certainly all musical instruments, by means of their close associations with human bodies, seem to carry a trace of some kind of vitality or 'aliveness'. The decision for the performer to play the flute at the start of the piece was one that I struggled with for some time. This act demonstrates the sound qualities of the instrument and creates a visible and audible connection to the human performer. It has the effect, within the work, of making an abrupt contrast in the relationship between the human performer and instrument. The human performer appears to begin in the conventional role of a musician and then proceeds to destroy the instrument. As a flute maker and player, destroying a flute that I have made does not have quite the same political resonances as some of the works already mentioned, for example by Gustav Metzger. Anecdotally, his work inspired musician Pete

[16] In the Turkish Ney tradition, for example, the instrument is often seen as a metaphor for the human being's 'reception' of the breath of the Divine, which enlivens it and makes it sound. This is referred to at the start of Rumi's epic poem *The Masnavi*.

Townsend to smash his guitar on stage. The focus of the action in this case is more introspective. The action feels intentional and considered, focused inward towards the self as much as outwardly as an act of theatre, resistance, or activism. The horizontal orientation of the flute in the performance perhaps also retains resonances of a human cremation. In its transformation from one physical state to another, the flute is producing, or 'expressing', sound, heat, and smoke. This process of destruction, or transformation, is also the temporal map of the piece. The time taken for the heat to blacken the flute is the duration of the work. At the end of the piece, the torch is switched off and the flute is left to burn.

There are three identifiable sections of the work corresponding to actions of the performer. These are playing the flute, applying heat to the flute, and leaving the flute to burn. By the end of the piece, the burning flute is producing sound and heat on its own. The work is in some ways a very simple task. The nature of the task and the functionality of the performance language is an attempt to remove the idea that this performance is in some way expressive. At least, it is not about the expression of some aspect of a unique human subjectivity. It is framed more as a demonstration of a process of transformation.

Chapter 5: Discussion of open scores and *Descend* Video Score

This project is the first of four projects that explore open scores as components of the compositional situation. These four projects each use scores in very different compositional situations. *Descend* and *Assemblage* are both designed to be realized live by an ensemble, whereas *Overlays* is a recording project that uses multi-tracking to investigate the ways that an animated open score can be realized using different instruments. *Boundary Music* investigates the creative process of working with a text score by Mieko Shiomi.

The *Descend* video score was made during a 2014 residency on the Greek island of Syros. The residency was designed as an opportunity for collaboration between film-makers and composers. In order to investigate the relationships between sound and moving image, I created a film that is designed to function as a score. The traditional three-screen video installation format was adapted to ensure that each of the three performers could focus on one of the screens while being able to follow the others, in peripheral vision, at the same time.

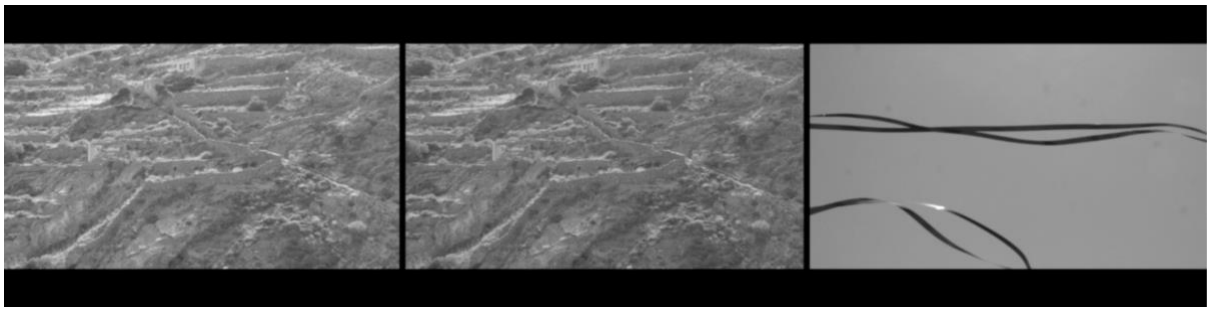


Figure 14. Descend *video score screen layout*

Karen Barad describes intra-activity in terms that suggest the ways that open scores function in composition.

> …[I]ntra-actions are constraining but not determining. That is, intra-activity is neither a matter of strict determinism nor unconstrained freedom. The future is radically open at every turn (2003, p. 826).

The ability of open scores to 'constrain rather than determine' is one of the reasons that they form an important part of the research and the situated compositional model. They embody

an intra-active function that links the work of the composer and performer in a very different way to that of a conventional score. In the open scores presented in this research, the actions of the performer are not specified by the composer but emerge through the performer's intra-action with the score. Ideally, something emerges that could not have been imagined by either composer or performer. This is understood as an emergent property of the compositional situation.

The term 'open' score is widely understood to be a score that is, to some degree, open to a variety of interpretive approaches and realizations. However, it is important to describe the way that it is conceived in the context of the current research. For my purposes, the open score is a score that is open to the flows of agency that are part of the wider creative situation. (The compositional situation in this case is not necessarily considered to be intrinsically separate from the performance situation) Hence, the score is not solely a vehicle designed to communicate a composer's intentions and ideas; it is also a node in a complex network of agencies. It may, for example, have no more direct overall effect on a sonic outcome than an instrument, a performer, or a venue, and it cannot be identified as the essence of the work. According to the situated composition model, the compositional 'situation' functions like a virtual organism with complex and unique characteristics and histories. The score can be perhaps be understood metaphorically as an organ within this body. Understanding the score in the context of a performance is therefore about understanding its particular functions in relation to the many connections and correspondences that may emerge in performance. To construct a score in which all the composer's ideas about the realization of the work are inscribed in detail would be to follow too closely a Cartesian model in which the 'knowing' and 'being' are held to be distinct. In the accompanying portfolio of work, the open scores are intended to have a very much more entangled relationship to the overall compositional situation.

The following works in the portfolio use various types of open score:

- *Descend* (video score)

- *Assemblage* (animated score)

- *Overlays* (animated score)

- *Boundary Music* (realization of text score by Mieko Shiomi)

Together these works constitute a multi-perspective investigation into open-scoring and realization processes. Although they have individual commentaries, it is important to delineate some of the intertextual connections between them.

The *Assemblage* animated score and the *Overlays* score use the same digital platform to construct an animated score that flows past the performer with a designated 'now-point' indicating what may be played at any given time. These two projects, despite the innovative software used, are the closest to a conventional score in that they determine, to some degree, what might happen at a given point in time. They position the performer outside a flow of time that moves past the player's vision from left to right. This appropriates a temporal convention from standard musical notation, but which is also used in Digital Audio Workstation software. The ubiquitous use of the convention of time 'flowing' from left to right mirrors writing and reading practices in European languages and is therefore widely and intuitively understood. These characteristics (i.e., the performer being situated apart from the flow of time, the precise now-point and time 'flowing' from left to right) are all characteristics that I was interested to retain from more conventional scoring systems in order to explore how improvising musicians would navigate these conventions.

The *Descend* video score also uses a form of moving image as a score, but positions the performers as if they are within the flow of time; the future is represented as unfolding ahead rather than to the right of the screen. Once again, this appropriates a modelling of time that we are familiar with from film and video. The three discrete frames that the score adopts

could be understood to represent alternative worlds, or realities, that intersect in complex ways. This form of scoring is somewhat less deterministic and more complex, carrying more associative potential due to its use of representations of the world and environments. Both the video and animated scoring systems are open in that their relationship to the sonic outcomes is not deterministic. *Assemblage* does use some notated pitches, partly in order to explore a wide range of visual scoring conventions within one project, hence the title. It is unlikely that any conclusion about causal relationships between sound and symbol can be drawn, certainly not from just one realization of the score. However, it is clear that the different visual characteristics do have a significant impact upon the choices of the performers and the sound outcomes. I included myself as a performer in this performance to better reflect upon the realization of the score as well as its construction.

It is also important to mention the developmental relationship between the *Overlays* score and the *Assemblage* score. *Overlays* was designed to test the ways that individual performers, using very different instruments (in this case, cello and glass harp) would navigate exactly the same open score. Unsurprisingly, there are significant parallels between the performances especially in the areas that the score was designed to influence: primarily temporal events, dynamics, and pitch profile. *Assemblage* can therefore be seen as a development of *Overlays* on a larger scale, with more players and a greater diversity of imagery.

'Boundary Music' is a well-known text score, made by Mieko Shiomi, which I have realized in the form of a recording and included in the portfolio. This has some research implications. As researcher, I am placing myself in the role of an interpreter/performer realizing an open score in order to better understand this creative process. This emphasizes the fact that the model of the open score displaces or decentres creative responsibility and control away from the 'composer' to other nodes in the creative network. My realization

makes use of a wind harp that I built in the same location that the *Descend* score was made, and it also makes use of the bass flute feedback instrument.

Taken together, these works form an investigation into several different modes of compositional making that use open-scoring techniques. I am proposing an understanding of these scores through the notion of situated composition. An analogy would be the idea of a visual artwork that is site-relative, or designed to be understood in relation to its context. In a similar way, these open scores reflect and diffract the complexities of the contexts in which they are applied. This is not to say that we cannot point to properties that may be intrinsic to the score, but that, like a living organism, these properties may appear more or less evident in any given context or realization. This creates something akin to Coccia's idea of 'mutual immersion' in which 'everything is in everything'. (2018, p. 66)

The conception of the score as defining the boundaries of the work is not assumed in this context, and more complex notions of causality are inherent due to the complexity of the system. An important feature of the open-scoring processes investigated here is that the scores are designed to focus upon qualitative methods through the various media of video, graphics, and text. Scores that use more conventional notation may be open or indeterminate in various ways but still mainly focus upon determining quantities such as frequency, duration, loudness, etc. The scores that are being considered here do not proceed by attempting to determine quantities but instead focus upon the qualitative dimensions that are naturally more difficult to analyze in language. The emergent sound patterns are formed through the specific embodied intra-actions of scores, performers, and material resources.[17]

[17] One way of thinking about the difference of qualitative and quantitative approaches is according to Bergson's temporal concepts of duration and qualitative multiplicity. Bergson's concept of time as duration is explained in *Time and Free Will*. Here, he says that 'pure duration might well be nothing but a succession of qualitative changes, which melt into and permeate one another, without precise outlines, without any tendency to externalize themselves in relation to one another, without any affiliation with number: it would be pure heterogeneity (2001, p. 116).

Experimental scoring methods

Experimental music, by definition, tends to be concerned with the unpredictable dimensions of practice, and graphic scoring methods have been one way of opening the process of composition to produce a radically different relationship between composer and performer. By way of providing some context the following quote from Michael Pisaro, discussing *Treatise* by Cornelius Cardew, suggests one way of viewing the intra-actions between composer, score, and performer.

> *Treatise* functions as something like a screen or filter through which a musical intention passes into performance. In the best performances it will have transformed in some subtle, but important way, the music that might otherwise have been created. ... [but] something more directly musical can also happen, even if it is rare: a situation in which someone has been driven to make a more direct or less self-centred, less style-conscious music than they would have dared to make as an improviser or composer. The images can, in such cases, release a desire in a performer they would not have known otherwise (2009, pp. 45-47).

Another prominent composer-performer, Rhodri Davies offers a broader perspective on the motivations that might lie behind his practice in a discussion with Bill Shoemaker.

> I'm interested in social interaction and notions of sensitivity, vulnerability, and contradiction. I try to disrupt definitions of, and assumptions about, music or sound and question the conventional roles of the performer, composer, and audience. I'm concerned with exploring and offering alternatives to dominant modes of making music or sound: music that is used purely to make money, for competition, self-promotion, virtuosity, or entertainment (2010, n.p).

The perspectives mentioned here are useful ways of contextualizing the graphic scoring processes undertaken in this research project. The idea of a score as a filter or membrane rather than the complete teleological articulation of musical intention is one that underlines the importance of permeability between the elements within the compositional situation.

Descend video score

The film partially documents a walk, undertaken daily, down to the town from the monastery where the residency took place. The second part of the film references the twists and turns of the small streets as well as the steps and physical obstacles the body encounters in making this walk. The built environment and its history is very much part of the motion of

the film, shot using a simple hand-held method. I was interested in the ways that video can record the motions of the body holding the camera. This introduced visual movement and avoided the possibility that structure consisted purely of video-editing decisions.

The early part of the film includes footage taken at the top of the hill in and around the monastery. This spot was extremely windy, and I spent a lot of time studying the ways in which the air moved around and through the building where we were staying. I did this sonically by installing a wind harp out of fishing line and visually by using video to record anything that was moved by the wind. Giovanni Lami, one of the composers on the residency, had been working outdoors, and his reel-to-reel tape machine and the tape had been left blowing in the wind. I began to study the moving forms produced by the tape and this became part of the first sequence of the film. In this sense then, the media (video and audio recording) were used to try to create a phenomenological description of the uniqueness of the place. This process connected the work to the environmental properties of the spaces we were inhabiting and highlights elemental dimensions of the work such as ‘air’ and ‘earth’.

Figure 15. Descend *video score – forms made by the wind*

Video as an open scoring technique

Using representations of the world as a component of a scoring method also raises some interesting correlations between the alphabet and musical notation. In *The Spell of the Sensuous,* David Abram makes connections between the act of reading and ‘reading’ the world in the sense of understanding the significance of the tracks of animals or the flight

paths of birds, for example. Hence, listening can be understood as a mode of reading also. Abram makes the point that alphabetic writing systems replaced systems that were representational (pictograms). These pictograms encompassed and represented the 'more-than-human'[18] lifeworld. The progression from pictogram to alphabetical systems is one that moves from holistic representations of the world (for example a pictogram derived from a representation of an animal) to one that inscribes only the instructions for human sound-actions (alphabetic systems notate the sounds that form words). In this sense, conventional musical notation can be seen as analogous to an alphabet, in that it instructs human sound actions but the notational form does not contain or refer to the symbolic content that is part the world beyond the human. Musical notation is therefore intrinsically anthropocentric. Graphic and video scores can be understood as reinstating some of the symbolic content of early writing systems, and with it the potential for more complex and contested meanings. References and symbols can be reinterpreted according to the reading of the performer. So, there is an intuitive, real-time hermeneutic process taking place in creating live sound to moving image. Graphic scores arguably 're-include' the world rather than being focused on the abstractions of sound-making instruction. In this sense, then, the performer is both primary creator and interpreter, reader and writer, and these practices reintegrate the intuitive and sensory faculties of the performer. Abram also makes the point that it is human breath that 'brings to life' the early semitic aleph-beth that notates the consonants of the word, but leaves the vowels to be supplied by the reader. The human, therefore, can be said to breathe life, or meaning, into the sounds of the consonants. As Abram explains, the morphemes that form words in ancient Semitic languages almost always consisted of

[18] This phrase was adopted by Abram in the subtitle of *The Spell of the Sensuous*: 'Perception and Language in a more-than-human world'. He uses the phrase throughout the book to refer to the natural world in order to point to an anthropocentric bias and a binary distinction between nature and culture.

> one or more silent consonantal elements plus an element of sounded breath— that which we would today call a vowel. The silent consonants provided, as it were, the bodily framework or shape through which the sounded breath must flow ([1996] 2017, p.99).

The original aleph-beth of the Semitic scribes used a letter for each consonant but left the vowels to be added in the performance of speech. As Abram notes,

> …the sounded breath that must be added to the written consonants in order to make them come alive and to speak, had to be chosen by the reader, who would vary the sounded breath according to the written context ([1996] 2017, p.99).

In the context of the research, the use of graphic notation systems opens up the score to refer to a wider context than human culture. It immerses the performers in a polysemic flow of impressions that connects their sound-making to meanings beyond those formed with the other sounds being made. Each performer naturally has to consider the sound environment being created by the other performers as well as the fact that they may be looking at an image of the sky. These constant juxtapositions create a series of creative situations that have to be resolved by the performer through action or, perhaps, inaction. In this way, the rich creative potential of a compositional situation can be understood as being beyond the control of a composer. The composer's role is confined to creating the potential for the creative juxtapositions and intra-actions. This intra-active potential extends to the meanings created as these collisions of events meet an audience, and another hermeneutic process begins. Thinking of this network of relationships in respiratory terms helps to conceive of the creative compositional situation as being immersed in the wider physical and semiotic contexts with which it is constantly intra-acting.

Representation of temporality

The video editing in *Descend* juxtaposes almost static video with sections that include movement, specifically movement caused by air. The landscape around the monastery suggests a long history of human settlement in the place, so the film plays with the suggestion

of geological time juxtaposed with the fleeting movements of air. In this sense, it enfolds long durations into brief moments. The content of the video material is also mediated by its function as a score that represents time in a specific way. Whereas conventional musical notation takes a quantitative view in which time is presented metrically according to equal divisions in its flow, the video score represents time as it is experienced by the body. This model of time is non-linear and is influenced by factors such as attention and memory. Elements of the video that recur refer inevitably to this form of temporal experience, and the intense concentration required in the realization of the score will affect the performers' experience of the flow of time. In this respect, Bergson's idea of 'duration' is relevant. In his discussion of time, he articulates the difference between qualitative and quantitative multiplicities. Quantitative multiplicity enables the distinction of things, one from another, in the same space (symbols, numbers, organizational systems etc) whereas qualitative multiplicity is related to the idea that conscious states are organized into a whole such that they interpenetrate and permeate one another. Examples might be emotional states or weather. In this way, a being can be considered as a 'thing' but is also a process of becoming. Symbols and numbers are abstractions in that they cannot accurately represent the fluid nature of reality. This undifferentiated flow, which Bergson refers to as duration, is precisely the temporal model that is being employed in the video score. The conventional notational model takes notational abstractions, (things) and the performer 'reassembles' them as temporal flow. In video scoring, the notational system is already in a state of flow, and so the process of realization is one of 'inhabiting' this constant mobility. Process ontology is concerned with 'becoming' rather than 'being' and is therefore relevant to theorizing the musical experience of time.

Time is enfolded in the composition in other ways too. In making the score, I realized that a decision would have to be made (either by myself or the performers) as to how, and to

what extent, their response to the score should be prepared. A detailed, individual preparation might familiarize the player with the score in ways that would enable a faster, more fluent response in performance, but also might run the risk of negating their moment-to-moment responsiveness to the sounds of the other performers. A spontaneous performance might miss a lot of detail in the score and produce a superficial reading in which the grain and texture of the visual material might not have as much effect. A detailed group preparation might result in a teleological process that fixed the sound surface of the piece rather than remaining within the mindset of spontaneous creation in performance. In the end, I chose to alert the players to these possibilities and dangers and leave the decision of how best to prepare, or not, to them.

I was concerned that the work might put the performers in a situation that would result in an information overload. However, I realized from other visual score experiences that decisions would have to be made in the moment, and that different performers would prioritize different elements according to their preferences. The instructions therefore allow the performer to ignore the score or to work against it unpredictable ways. Despite this, it can be demonstrated that the score did exert significant influence upon what was played in the performance. This approach, as with other experimental scores, somewhat disrupts the historical hierarchy within compositional practice that positions the score (and therefore the composer's intention) as the most important element within the compositional situation. In the case of this video score, Barad's description of constraining rather than determining is hard to improve upon. The score constrains the performers, particularly obviously in relation to parameters such as temporality, but does not seek to determine the emergent properties of the sound.[19]

[19] Previous video scores I have made had worked with more abstract visual material. This was because I was not sure that recognizable 'real world 'visual references would substantially alter what was played as much as abstracted parameters such as colour, brightness, duration, etc. What is undoubtedly true, however, is that references to place in the visual material influence the way that the sound material is received by the audience if they see the score projected during the performance.

Performance considerations

I have referred briefly to the complexity of the situation confronting the performers of this piece. The expression 'flows of agency' is apt due to the multi-layered nature of the process. The performer is intra-acting in real time to a variety of different kinds of events. They respond to the visual information coming from the score, the sonic information emerging from other performers, and the material resistances and responses of the instrument they are working with. In the moment of performance, all of these flows of agency are intertwined in complex ways that make clear distinctions between the elements very difficult. It is also challenging to assign clear causes and outcomes. What might be a sound output for one performer may affect the choices of another a moment later. This is another example of the non-linear or circular properties of the creative situation. These three levels of agency (the score, the actions and sounds of other performers, and the instrument) have different properties and intra-act with each other in complex ways. The attention of the performer therefore needs to be diffused between three different levels of information: visual, sonic, and tactile.

The visual score itself is a fixed-media composition, whereas it could have been designed in software to produce randomised visual and/or temporal variations in each iteration. However, this would introduce yet another level of instability. The score is therefore relatively stable as an element within the overall compositional situation. This stability allows performers to prepare themselves either individually or as an ensemble. In this case, the performers were not an existing trio with an established performance history, but three individual artists who agreed to perform the work for a concert. They prepared individually and had minimal rehearsal time together. Thus, the second level of agency (the other performers' sonic responses to the score) were relatively unfamiliar and could not have been predicted by any of the performers in advance. Here, the interaction of sounds is heavily

mediated by the score through techniques such as cutting to black and fade-in /fade-out. These techniques suggest but do not determine silences and moderations of the amplitude of the sound. Hence, some of the ways in which sounds are juxtaposed temporally is 'written into' the score, but some of it is indeterminate. The third level of mediation relates to the physical and material properties of the instrumental resources employed, in this case, modular synths, tape loops, and prepared piano.

Figure 16. Descend *performers Danae Stefanou (prepared piano), Matt Carlson (modular synths), and Giovanni Lami (tape recorder and tape loops)*

The approach of the performers is influenced by the material constraints and affordances of their instruments. These affordances are ones that the performers are familiar with and that are stable to some degree. Despite the non-linear potential of both the modular synth set-up and the tape loops, the performers have an intimate understanding of the range of possibilities available within their performance set-ups. In this respect, the instrumental actants can be understood as a relatively stable element within the performance situation, at least to the individual performer concerned. Hence, by reviewing the relative stability or instability of the three elements of the performance (visual, sonic, and tactile), there emerges a surprisingly high degree of stability, or determinism, built into the compositional-performance situation. Significantly, however, this determinism is not located in the score in the way it might be in a more conventional notation system. It is distributed between the score, the performers, and the instruments. This might suggest that successive performances

of this work by this ensemble would be recognizably similar due to the similarity of the entire performance 'situation'. However, substituting different individual performers or instrumental set-ups might produce starkly different results. This produces an approach to performance and composition that can be understood as 'situation-specific'. The situation can also be conceptualized in terms of a Deleuzian assemblage, which Deleuze describes in the following way:

> What is an assemblage? It is a multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them, across ages, sexes, and reigns – different natures. Thus, the assemblage's only unity is that of a co-functioning: it is a symbiosis, a 'sympathy'. It is never filiations which are important, but alliances, alloys; these are not successions, lines of descent, but contagions, epidemics, the wind. ([1977] 1987, p. 69).

One of the important aspects of an assemblage is that it exhibits emergent properties that could not be achieved by the elements of the assemblage individually. In this case, one of these properties is the emergent sound produced by the ensemble. This model of composition, in which the agency is distributed across a number of agents, or nodes, in a complex performance situation, is one which is highly dynamic. The 'work' in this case cannot assume the property of an object in the same way as a score or sound work that fixes and predetermines relationships of duration, pitch, and timbre. Its properties are much more that of a non-hierarchical social interaction between visual, sonic, human, and non-human elements.

Thus, the *Descend* score suggests a process whilst leaving the outcomes indeterminate. This contrasts with a more conventionally notated work in which the notational symbol has a stable meaning and therefore can be used to transmit instructions to the performer. The openness and complexity of the real-time performance situation in this work is important precisely because it exhibits the unpredictability and inter-relatedness of other complex systems. This complexity is not, however, limited to the 'external' behaviours of the performers, as the work makes use of the conceptual function of a score but not the

deterministic elements. In other words, for those performers trained to use conventional notation, there is an acquired technical facility that functions as a form of agency or a set of existing responses to real-time conversion of visual information into sound. The work purposefully intends to make use of this agency as part of its design. For many of the reasons cited above, this work is open to the entire creative being of the performer in a very demanding way. Conceptual decision-making is required alongside moment-to-moment improvisatory response. A realization of the work must be spontaneous but also informed by preparation to some degree. Preparation in this context may involve physical preparation of an instrument or performance set-up as well as watching and performing with the score and considering the possible relations between sound and image. The process should make demands on the performer that encourage creative decision-making and individual-collective responsibility. Just as the score has been created to offer a starting-point for creative engagement, so the decisions of each performer offer something to their co-performers as well as to the audience's perception of the work.

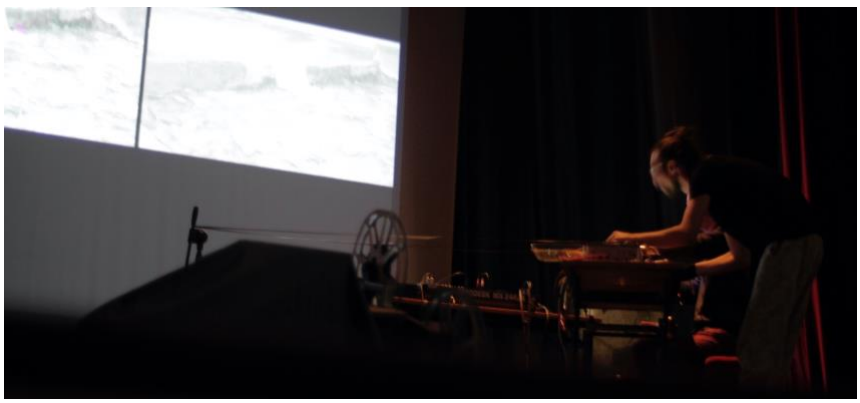
Figure 17. Giovanni Lami prepares tape loops with Descend *video score*

The work draws upon the performers' performance styles and histories in complex ways as well as engaging their experiences and awareness of sound-to-picture composition.

Hence, the traditional hierarchical relationships of visual and sonic information are also in play. Film sound very often provides supplementary or contextual information that enables us to interpret images. This visual-centric hierarchy is partially undone here by the use of film as a score. Nevertheless, performers are aware that they are performing a score and creating a spontaneous soundtrack to a film. This adds a further layer of complexity, as there are clearly pitfalls and cliches to be avoided in such a context. The 'mickey-mousing'[20] of visual material reduces the complexity of the overall result and creates a sense of the visual leading the sound in ways that are too obvious. This sets up an interesting inter-textual relationship between this kind of project and more conventional sound and film contexts. Here, there are many competing flows of agency in the production of the emergent experience. The sound is

Figure 18. Giovanni Lami responding to flows of events in real time

not designed to serve the visual image, as can often happen in film. It can be described as an intersemiotic[21] space in which translations between different kinds of information are made spontaneously. In the process of 'translation', new meanings are made and unforeseen collisions and juxtapositions occur. It can therefore be thought of as a potentially disruptive process that creates a multiplicity of meanings, perceptions, and connections.



[20] A term often used in sound-to-picture contexts when too much agreement or complicity is created between the visuals and the sound, making the sound overly illustrative.
[21] Intersemiotics is generally understood as a 'circulation of meaning between different sign systems' (A.-C. Gignoux, *Initiation à l'intertextualité*, Ellipses, 2005, p. 98).

In the case of the performance of a video-score, the translation is being made instantaneously (unlike the case of a composer who sets a text to music.) This process necessarily involves a degree of reduction of the semiotic potential of an image in order to extract information that is useful to the context. This process, which happens simultaneously within all three performers, is not unified. In other words, the basis upon which this reduction, association, or translation is happening may be different according to the individual performer or the performance set-up they are using. Hence, there is no ‘right’ way to interpret the flow of images. Some approaches may feel more appropriate in a given context, and the appearance of the images to both performers and audience is being continually re-mediated by the sounds being made. Hence, the circularity that has been observed in other projects in this portfolio is a major feature of this process as well.

Chapter 6: *Overlays* and *Assemblage*

Overlays – Graphic score

The *Overlays* and *Assemblage* projects extend the investigation into graphic scores, animated scores, and other open scoring methods. These works differ from the *Descend* video score in that they represent time in a more conventional left-right flow. However, they share the concern with developing scoring methods that allow the work to remain open to the aesthetic priorities and embodied knowledge of the performers. The process also incorporates the performers' memories of previous performances or rehearsals of the piece. Using this approach, therefore, embodied memory becomes a structural element within the work.

Both of these scores were made using the Decibel Score Player software,[22] which enables digital graphics to be turned into a scrolling score. The software also allows pre-recorded audio to be embedded and an ensemble of musicians to network devices together to make a synchronized performance of a graphic score. Precise temporal alignments are possible as well as the ability to combine graphic and conventional notational systems. The animated score enables the composer to specify precise temporal values and experiment with various designs for graphic notation. The two projects discussed here (*Overlays* and *Assemblage*) take deliberately different approaches to the creation of a graphic score in an attempt to understand more clearly how the scores affect the overall compositional situation and outcome.

The *Overlays* project was designed as a recording project that could also be performed live on networked devices. It consists of a score which is recorded several times by each performer. These layers are then superimposed to produce an emergent composition. The reason for designing the process in this way was to explore the differing responses to the

[22] Developed by Cat Hope and the Decibel New Music Ensemble. (https://decibelnewmusic.com/decibel-scoreplayer/)

graphic score by performers on successive takes but also to see how the score exerted an influence despite the use of ergonomically different instrumental resources. *Overlays* explores the interpretation of very simple, abstract forms, comparing a range of interpretations between different instrumental resources and the ways in which players respond to different visual designs and cues. It uses a reduced palette of images, confining the design to circular shapes, dots, and connective lines. This approach to graphic scoring came from thinking about expansion and contraction as components of breathing as well as the ideas of lines of movement, extension, and connection. There are layers of density and opacity in the visual design, which are related to the layering of their sonic realizations.

In comparison, the *Assemblage* score takes a more hybrid approach using a range of graphics and scoring conventions in order to present the performers with creative challenges in the course of a longer work. This method is designed to explore the ways that switching between different scoring protocols and designs influences the ensemble sound in real-time performance. Elements of the *Overlays* score formed part of an experimental score that was used in the *Hidden Architectures* devising process. The aim, there, was to use simple shapes that could be interpreted in any number of ways by dance performers or musicians. In adapting these scores for use by musicians alone, I was aware that these visual forms would produce a choreographic result when interpreted by musicians. This sound-making choreography emerges through the affordances of the score alongside the performers knowledge of the properties of their particular instrumental set-up. (In the case of the recording presented in the portfolio, these are a glass harmonica and a cello.)[23] Thus, there is a translation being performed, from visible movement in the score to the physical movement of the performers and then to movement in sound. In the example included in the portfolio, the two instruments concerned (cello and glass harp) were very different in terms of the

[23] Performed by Simon Allen (Glass Harmonica) and Sandro Mussida (cello).

mechanics by which sound is produced. They did not share a tuning system, as the glasses made use of microtonal tunings. The performances intersected mainly though their phrasing and a conscious approach to playing quietly, while allowing the various friction sounds and surface noises to be an integral part of the music.

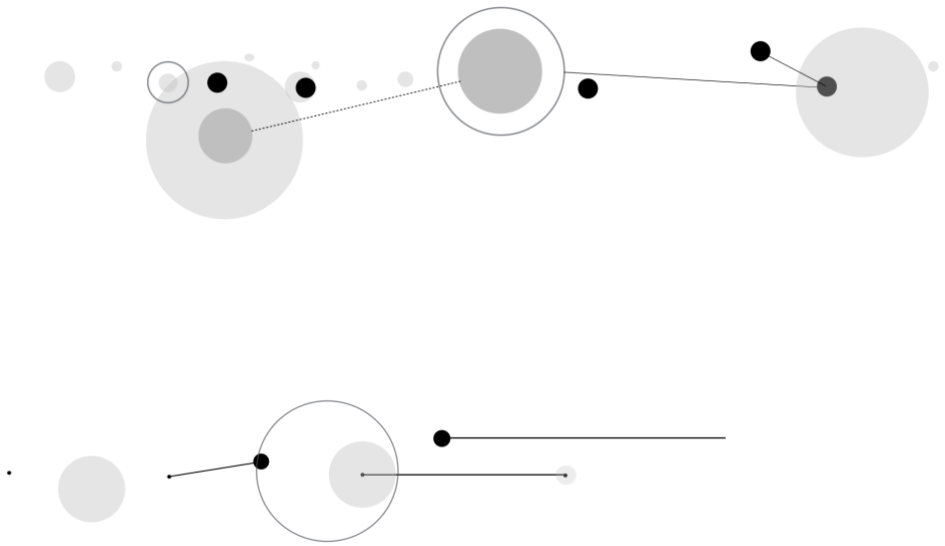


Figure 19. Scoring examples from the Overlays *project*

As performers, we inscribe patterns of movement into our bodies by repeated actions. The traditional paradigm of composition is often one in which these patterns are rewritten, reconfigured, or altered to enable the performance of a new music. This is done by the composer, with the performer learning to adapt their body to the new patterns of movement. In working with musicians who improvise, the reconfiguring of physical approaches to sound production is part of an ongoing process of accommodating the body to the creative situation. This development often happens from moment to moment and may involve changes to the configuration of the instrument. Many improvisors also develop their own unique instrumental resources and personally distinctive performance techniques.

I saw the possibility of using scrolling score software to create some temporal limitations for the players while allowing other elements of the piece to remain largely

undetermined. Exploring these ideas with the players led to a process in which successive interpretations of a graphic score were superimposed upon one another, enabling a comparison of successive realizations of the score. We can listen 'through' the layers to see how the parts intra-act. These layers reminded me of a palimpsest, a manuscript, usually of vellum or parchment, that still reveals the previously erased texts that had been written there. Thomas de Quincey, in 1871, was already making connections to human consciousness and the workings of the mind through this metaphor.

> A palimpsest, then, is a membrane or roll cleansed of its manuscript by reiterated successions. [. . .] What else than a natural and mighty palimpsest is the human brain? Such a palimpsest is my brain; such a palimpsest, oh reader! is yours. Everlasting layers of ideas, images, feelings, have fallen upon your brain softly as light. Each succession has seemed to bury all that went before. And yet, in reality, not one has been extinguished (cited by Dillon 2005, p. 245).

For this principle to work, the graphic notation needs to be relatively indeterminate and free of too many associations. This directly contrasts with the approach taken in the *Descend* score, in which the material for the score was intentionally referential. The individual parts in *Descend* were also designed to be independent, so that some counterpoint is 'written into' the score. In *Overlays*, the performers are responding to exactly the same information, and variation is emerging through their responses to the score and instrument. In order to limit the referential properties of the score, I used combinations of simple primary shapes, resulting in something that has echoes of Cardew's constructivist-influenced *Treatise*. Since making these scores, I have also noticed some similarities to Anthony Braxton's graphic scores, of which I had also been aware previously. Both of these systems make use of relatively simple design elements, but neither of them are animated.

The *Overlays* score instructions ask the individual player to perform successive interpretations of the score without listening to previous iterations. Each layer ideally is intended to have a transparent quality, resulting in an accretion of layered sonic gestures that carry something of the performer's physical gestures. There is considerable, and intentional, self-similarity within the score. This means that by the time the performer has recorded the

score three times, it becomes difficult to remember whether gestures were repeated during or between each recording. The aim for the performer is not to consciously repeat anything but to reinterpret the score each time. If repetition occurs, this should not be avoided, but the aim is to respond in the moment. This strategy embeds the performer's short-term memory as an agent in the process of composition alongside their performance technique, which might be understood as a form of long-term memory. Rather than aiming at a faithful performance of a composer's intention, the performers finds themselves immersed in a process through which sound emerges out of a complex set of initial conditions.

Diffractive methods

The apparent opposition between the ideas of free will and determinism as a philosophical problem can also be mapped onto overly polarized notions of improvisation and composition. In their most paradigmatic or ideological forms, they can be seen as reflections of, or possibly inversions of, each other. In attempting to move away from these binaries, the open score sets up the possibility of a 'diffractive'[24] creative situation, generating heterogenous possibilities inherent within a field of situational intra-actions but not teleologically pre-determined. The terminology of diffraction is borrowed from observation of what happens to light when it passes a diffraction grating and can be observed to exhibit both 'wave-like' and 'particle-like' properties. According to classical physics, the 'wave-particle' duality is an unresolvable paradox. However, Barad explains this, following Nils Bohr, as 'the phenomenon of light 'intra-acting' with the apparatus (2003, p. 815). Adopting this thinking as a metaphor, the 'apparatus' of a compositional situation produces a range of possible effects that can be read in different ways according to the positions of the performers or listeners. Compositional ecologies that have the potential to produce a diverse

[24] Here, I am borrowing the idea of diffractive, rather than reflective, thinking from theorists Donna Haraway and Karen Barad. This idea has been proposed, in part, as a way of subverting 'the binary of stale choices between determinism and free will, past and future' (Barad 2010, p. 254).

range of emergent properties (or diffractions) can be understood as inherently generative and sympoietic.[25] They facilitate multiple processes of 'making-with' in which agency is distributed and outcomes are recognised as collaborative.

Several recorded versions of the *Overlays* score now exist for cello, flute, and glass harp. The versions included in the portfolio are designed to enable an understanding of the ways that the iterations differed between and within the various performances. The recordings also highlight the potential for the work to produce intra-actions by overlaying instrumental timbres or contrasting very different embodied approaches. They also reveal how the score, despite being very open and indeterminate, produced a defined characteristic response from the musicians who engaged with it.

The score is structured as four phases of activity interspersed with silences. The performers have the freedom to 'disobey' the score and perform in the silences or to create silence within the periods of activity. The performances showed a creative engagement with the score and a high degree of temporal accuracy. As I had hoped, the diversity of physical mechanisms for sound production produces a correspondingly high degree of variation in the way that even very precise indicators (such as a dot) might be sounded. This produces an emergent sound-layering that has a strong feeling of compositional structure while retaining the fluidity, simplicity, and flexibility of improvised performance. Having performed the score myself, I was able to experience that the score design provides the freedom to engage with the specific affordances of an instrument without being overloaded by instructions. The emergent sound suggests a unified gestural intention with a wide range of timbral and microtonal variation. This level of micro-detail would be very difficult to achieve by scoring methods that specify each tiny movement, and conceivably the amount of information required would be overwhelming for the performer. The interpretation of open circles and

[25] Sympoiesis, or the concept of making-with, is discussed extensively in Haraway (2016, p. 22).

transparent shapes with quieter dynamics and denser visual symbols with louder dynamics produces a range of phrasing and emphasis patterns that is largely coherent across the different instruments. Where the interpretations differ markedly, the counterpoint between the layers produces interest. The differences between iterations on one instrument results in variation without each version feeling like a different piece of music. The studio environment enabled us to record with close microphones at relatively low volume levels, which enables the friction sound and contact noise with the instruments to be audible. This was a conscious part of the design and brings the material affordances of the instruments to forefront of the sound picture.

The approach to temporality within the score is not designed to produce any sense of development towards a main event or climax. The structure emerges at a lower level, in the tensions between voices, and between motion and stillness, as well as in the emergent harmonic and timbral counterpoints between the pairs of voices. The current method of construction of the score has produced phrases that are similar in length. A further development of this work could be to integrate more expansion and contraction of these phrase lengths.

The choice of recorded versions for submission was influenced by a number of factors. The interpretations shown in the submission recordings were ones that seemed to most fully integrate the structural implications of the scoring method to the unique sound properties of the instruments and the aesthetic priorities of the performer. The portfolio submission therefore includes versions of overlaid performances from each performer, showing how these variations between iterations produce an internal dialogue. Then there is a combined version that shows how the various sound sources can be combined to produce a counterpoint between the abrasive qualities of the cello's sibilant surface noise and the sinusoidal properties of the glass harp. Both instruments produce a range of incidental sound,

including movement noise, friction noise, and water sounds. These are considered to be important components of the compositional situation.

Assemblage

The *Assemblage* animated score places a different emphasis on elements of the compositional process. It was designed for live performance and adopts a deliberately heterogenous approach to scoring. It integrates several approaches to animated scores that I had been working with. These include a few elements of conventional notation, abstract photographic textures, geometrical constructions, and listening scores that direct the players' aural attention to certain elements of the compositional sound. In contrast to the *Overlays* score, which uses a very reduced visual palette, the *Assemblage* score was constructed intuitively, while also consciously employing juxtaposition and hybridity. The approach is always one of suggestion, which implies a faith that the musicians working with the score will exercise restraint and bring a necessary critical perspective in their realizations of it.

Although this work was performed only once, this event incorporated the responses of a group of experienced improvisors to a score to which they had not previously had much exposure. Like the *Overlays* project, the score generates almost infinite possibilities for potential realisations and functions both as a filter and a 'diffraction grating' for emergent possibilities. Given the live nature of the performance and recording, the compositional situation is correspondingly wider and more complex. The various parts are performed in real time, with no opportunity for retakes or edits. The audience and the performance space are essential components of the compositional ecology. The rest of the performance featured graphic scores made by each of the performer-composers. The contrasts between these diverse creative challenges in the course of one evening must also have had an influence on the way *Assemblage* was performed. Performers are always concerned with producing a sufficiently diverse programme for the audience. The danger of every piece sounding the

same, a criticism that is often made of improvisors, is a reason for the use of scores to subvert and filter the various habitual musical tendencies. What can be observed in the contrasts between the *Overlays* project and the *Assemblage* project is that despite clear similarities, due to the fact that two of the performers performed both works, there are also significant differences between the two recordings. These can be attributed, in part, to the different scores but also to the differences between the overall creative situations.

Role of text instructions in the projects

It is worth noting that despite my having described these works as animated graphic scores, both projects also rely on texts to clarify the interpretative possibilities and limit performance options. The scores' texts adopt a tone that tends to suggest options and tendencies and also make it clear that the scores preclude the possibility of a definitive realization. There are, however, clear indications and priorities, some of which were adhered to in the performances recorded, but not all. It will be evident from the *Overlays* text reproduced below that the compositional intention is quite specific. However, the areas where the performers departed from the text were some of the most creatively productive, even though all the 'rules' were not followed.

Overlays

performance / recording instructions

Performance Requirements

A range of pitched sound resources which can produce sustained sounds.

The facility to record performances and subsequently multitrack them. This can be done either in a room or open-air environment, or a recording studio. If the piece is not recorded under controlled conditions, the environment chosen should not be such that the incidental sound completely obscures the performance. The choice of site for recording can be chosen freely for its acoustic properties, the presence of specific incidental or

environmental sounds, and/or its geographical, personal, or historical significance.

The score can be performed using pitched or un-pitched sound. The performer should not attempt to play the entire score but rather select those visual elements that suggest themselves in the moment of playing. Synchronicity with the score should be maintained as far as possible.

The circles represent fields of possible activity. These fields may, or may not, be connected either by overlapping other fields, or by lines. Areas connected by lines should be performed using similar kinds of performance approaches. The lines themselves may also be played and interpreted freely within the sound palette of the piece. There are three dynamic fields each representing a range of possibilities. These are

- white space - silence or near silence

- lines circumscribing white areas - closest to silence, or *ppp* dynamic

- light grey - *pp*

- dark grey - *p*

- black - *mp*

The overall dynamic should be quiet.

For each subsequent performance it is essential that the performer should not listen to the previous versions. The aim of the overlay process is to produce levels of variation based only upon the memory of the previous performance. The performer should not aim to replicate what has been done but to produce another complementary interpretation of the previous reading.
Sequence of actions for performance

- select a recording location

- record at least three performances of the score. This can be done in mono, or in stereo.

- overlay the three recordings synchronizing them as far as possible so that the first sound of each recording is simultaneous.

- if the piece is performed live it can be performed alongside a multi-tracked version embedded into the Decibel Score Player app, or audio synced to a video version of the score.

The *Assemblage* project uses an instructional text at the start, followed by text interspersed within the imagery. This score is more flexible in some ways, in that the instructions are often open to interpretation. The degree of openness of the various instructions is critical to the character of the score. As is clear from Figure 20 below, there is a lot of information distributed around the page, and players have freedom in many places to choose what they respond to. The last line of the instructional text reads as follows: 'Visual cures can be played with literal accuracy, altered, displaced, or ignored. All these strategies are useful.'

Hence, working against the instructional meaning of the score is framed as a strategy that is, somewhat paradoxically, part of the score. This element of creative interpretation is an important part of all three graphic score projects in the portfolio. It derives from a belief that the truth of the performance moment and the sound-making impulse take primacy over the pre-conceived text. From the perspective of a score that is designed to specify every detail of a performance, this appears to be a self-defeating strategy. However, seen in the context of a distributed ecology of agency, in which a score is another embedded element, it allows the performers to 'make-with' the score. It alters conventional hierarchies of information flow and immerses the performer in a compositional environment. Every moment in the unfolding performance is therefore mobile, and sounds and intentions are constantly being altered in response to every other decision in the emergent situation. Every action is simultaneously a 'composition-performance' action, so that performers carry a responsibility not simply to 'the composer' or 'the work' but to the entire collective endeavour. This demands a high degree

of creative maturity in order to be successful and requires practitioners who are committed to their role as composer-performers.

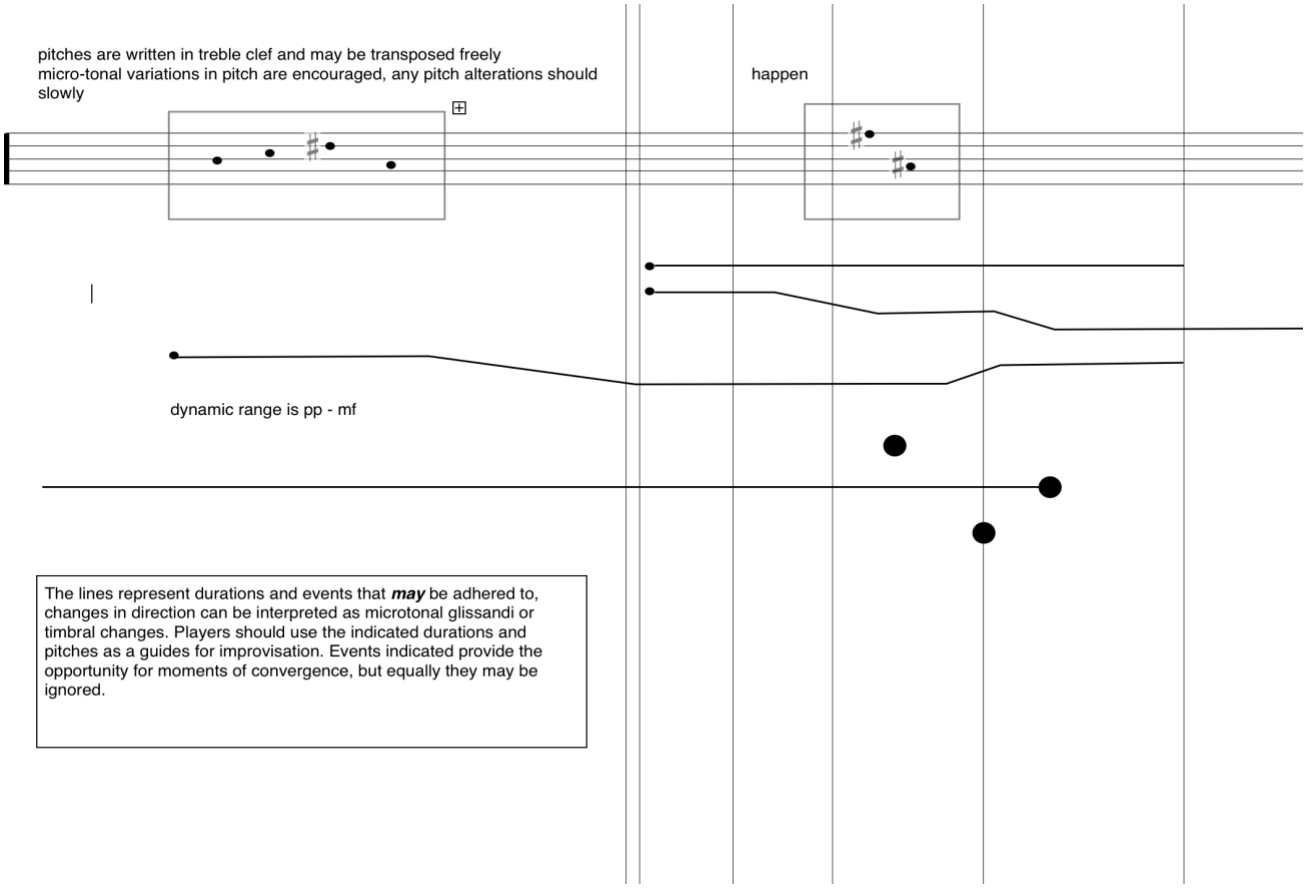


Figure 20. Score excerpt from Assemblage

As can be seen from the excerpt above, some elements of the technologized language of conventional visual scoring have been retained. This strategy can be understood in a number of ways. It can be seen as a functional way to lay out information that needs to be understood clearly in real-time performance. However, much of the thinking behind this mode of scoring is implicitly critically of a functionalist approach. This hybridity of meaning and visual language was not entirely a conscious decision. It emerged through an implicitly hybrid and playful compositional perspective. The visual language itself can be seen to be in

a process of perpetual emergence and development throughout the projects included in the portfolio. This is not a process that is necessarily seeking a resolution. It is part of the dynamic intra-agency in which sounds and visual forms co-determine, and sometimes conflict with, each other.

Chapter 7: Boundary music

Throughout this thesis, the idea of boundaries has played a defining role in the enquiry. The entire project investigates the idea that boundaries are inherently permeable and often based in perception or habitual processes. Within the research framework, I, as researcher, am intentionally positioned in differing relationships to the compositional situation. In *Hidden Architectures*, I guided the work but without any form of notation, in *Assemblage*, I created a score but also participated as a performer-researcher, and in *Overlays*, I have made the score but do not perform. In the *Bass Flute Feedback Project*, I have developed a sound-resource that guides my compositional and improvisational practice. My intention, then, is to examine compositional agency from a variety of perspectives. This multi-perspectival approach enables me to understand the different elements of the complex ecology that make up the compositional situation. Whereas a conventional practice-based research approach might situate the practitioner in a similar relation to the work within each project, the multi-perspectival approach is based on the conviction that 'knowing' emerges relationally, and hence, the position of the observer is a critical determinant of what is able to be known.[26] Barad describes this from the perspective of quantum mechanics.

> On an agential realist account of technoscientific practices, the 'knower' does not stand in a relation of absolute externality to the natural world being investigated—there is no such exterior observational point. It is therefore not absolute exteriority that is the condition of possibility for objectivity but rather agential separability—exteriority within phenomena (2003, p. 828).

Walter Mignolo makes a similar point, but from an explicitly macro-political perspective.

> Once upon a time, scholars assumed that the knowing subject in the disciplines is transparent, disincorporated from the known and untouched by the geo-political configuration of the world in which people are racially ranked and regions are racially configured. From a detached and neutral point of observation (that Colombian philosopher Santiago Castro-Gómez describes as the hubris of the zero point), the knowing subject maps the world and its problems, classifies people and projects into what is good for them (2009, p. 160).

[26] Karen Barad gives the following example in *Posthuman Performativity* when discussing the wave-particle paradox.

To address the ‘problem’ of the composer viewing the world of composition from an external zero point, I have attempted to show that there are multiple agencies in the compositional situation and that any human agent is always situated and immersed within this world of complex intra-action. It is for this reason that I have included the recorded sound work entitled ‘Boundary Music’ in this portfolio.

Alongside David Toop, I was commissioned to make a recording of the well-known text score, made by Mieko Shiomi in 1963, for a release on the Multi Modal label. To my knowledge, this text score exists in at least two versions, which effectively defies any notion of a ‘definitive’ version. The original version that I used for the recording reads as follows:

> Make your sound faintest possible to a boundary condition whether the sound is given birth to as a sound or not. At the performance, instruments, human bodies, electronic apparatuses and all the other things may be used (Shiomi 1963).

For me, this version, which reads slightly awkwardly, has a quality of simplicity and also ambiguity. Its two-sentence construction refers to what may only be a single sound. The first sentence refers to the way in which the sound should be made, the second sentence to the resources or potential instrumentation that could be used. The wording seems to leave scope for a very wide range of interpretation whilst appearing to be very straightforward. In general, this score has been interpreted as referring to the making of sounds that are almost inaudible. However, what might the word ‘performance’ mean in the context of a recording? Is it the replaying of, and listening to, the recording of a performance? Or is the recording of the sounds a performance? In theory, any recording could be replayed at an extremely low volume, and this act could be understood to be a very exact realization of Shiomi’s score. Where are the boundaries between composition, performance, and listening in this context? Like the score itself, the boundaries seem to collapse as you approach them.

The process of making this recording highlights these questions of the boundary between composition and realization of open scores. The score itself could not be more open;

almost nothing is specified other than the faint approach to a boundary condition. The option not to make any sound is explicit in the score. Nevertheless, the short text does contribute a significant impetus to begin a creative process. It provides a conceptual framework and an almost poetic openness and vagueness. So, many questions immediately emerge.

What should the sound(s) be?

What is a boundary condition?

Why is the 'sound' apparently singular and yet the 'instruments, human bodies' and 'electronic apparatuses' are plural?

These questions and many others have the effect of leading the mind towards possible answers that might provide a sympathetic sonic or conceptual rhyming with Shiomi's text.

In approaching this project, I knew that I wanted to find a different way to work with the idea of the 'boundary condition'. In considering sounds or materials that might be used, I tried to find processes in which the idea of a boundary is relevant in some way. The first process that came to mind was the feedback flute, in which the proximity of the flute and microphone to the speaker produces the feedback response. This creates an invisible zone of proximity within which sounds are produced. These sounds may vary from being sub-audible to being extremely loud, and the unpredictability of this seemed to fit with the phrase 'whether the sound is given birth to as a sound or not'. Accordingly I made a series of studies in which I played with this boundary to see how micro-adjustments of distance and angle made changes to the response of the feedback system.

The second sound source that I identified was a series of recording made during the Syros sound residency in Greece. The *Descend* video score was made in this location, and I had been exploring the properties of wind on the hill where we stayed. Using fishing line and contact microphones, I made a wind harp that responded well to the constantly changing

wind conditions. This instrument, although simple, provided me with a tangible way to document the flows of air around the monastery where we were staying.

Figure 21. Wind harp set-up on the roof of the monastery

The harp used the building as anchor points, and the contact microphone signals were recorded straight into the computer. These recordings document a huge range of sounds that were created by the wind interacting with the strings. I experimented with preparations and ways to modify the string's vibrations to produce different pitches and to emphasize harmonics. Some of the recordings were activated by the wind alone, and others were duets between myself and the wind. My actions were limited to applying and removing the preparations and occasionally activating the strings.

Figure 22. Wind harp preparations

As with the *Hidden Architectures* project, questions concerning boundaries and ontologies become relevant immediately. The strings of the wind harp suggest both an instrument and a 'sound sculpture'. Its activation by the forces in the environment suggests a documentary approach as much as a compositional one. The responsiveness to the sound potential of the 'compositional situation' once again becomes the critical element in this work. All of the distinctions and boundaries between the performance environment, human composer, performer, and instrument maker have been collapsed into a compositional situation that could perhaps best be described as an investigation into the properties of an environment. Once again, the human subject is immersed, physically and psychologically, in the properties of their environment.

As with previous projects, many aesthetic and compositional questions arise such as the extent to which I should alter, modify, play with, or digitally process the materials with which I am working. All of the experiments I made in this direction suggested that whenever the sense of balance was disrupted and too much control was exerted, the uniqueness of the situation was diminished. Autonomous human agency is immediately detected in the sound and appears imposed and self-conscious. In this case, then, the state of immersion is evident in the way that decision-making is guided in response to environmental intra-actions. Rather than an active human designer imposing form upon passive materials according to the

Aristotelian hylomorphic model, these practices require a growing awareness of, and an appreciation for, the grain of the materials.

What is heard in the recording released under the ‘Boundary Music’ title is a short track combining wind-harp recordings with bass flute feedback. The mixing of these sound sources, both of which play with the boundaries of human agency, is also a blurred boundary in itself, since the two sound sources have been created in very different environments using very different kinds of materials. The project thus reveals itself to be an almost paradigmatic example of situated composition. The intra-actions between score, performer-composer, and instruments are intertwined in ways that are virtually impossible to disentangle at any moment in the process. The sense of not-knowing that pervades the making process is often a humbling experience and does not enable a sense of being in control at any point. Correspondingly, many opportunities are missed, and many experiments fail, but becoming more alive to the creative moment as and when it presents itself feels like an ongoing practice of attentiveness.

Chapter 8: Conclusion

> Finally, if sound is like the wind, then it will not stay put, nor does it put persons or things in their place. Sound flows, as wind blows, along irregular, winding paths, and the places it describes are like eddies, formed by a circular movement *around* rather than a fixed location *within*. To follow sound, that is to *listen*, is to wander the same paths (Tim Ingold 2011, p. 139).

The portfolio of works that accompany this thesis represent a range of perspectives on compositional situations. The inclusion of each of the various projects is designed to illuminate different aspects of the idea of a compositional ecology. The diversity of sonic outcomes testifies to the fact that compositional situations can produce a range of emergent possibilities and that compositional agency is deeply embedded in, and distributed throughout, the complexity of each situation. Here, it is necessary to remind ourselves of the questions outlined at the start of this commentary. These refer to the ways that a respiratory sensibility affects our understanding of creative agency and our relations with 'others', how respiratory awareness restructures ontologies, and how respiratory patterns of expansion and contraction are reflected in patterns of creative practice.

The *Bass Feedback Flute Project* is based upon a phenomenon (acoustic feedback) that exhibits non-linear behaviours that place a composer in a different relationship to the material. It demonstrates some of the ways in which experimental instrumental resources can produce responsive and dialogic approaches to compositional practice. The traditional specialisms, or the ontology of musical production, which include instrument design, composition, improvisation, and performance, can be seen to be enfolded into a practice that emerges through engagement with a specific material assemblage. *Hidden Architectures* addresses the interdisciplinary, collaborative, and iterative aspects of experimental practices. Focusing on the hidden dimensions and tensions within human social intra-action, it shows how composition and choreography can emerge through the complex entanglements of making processes. *Black Noise* focuses on composition as decomposition and the multi-

sensory dimensions of practice. The project enables a deliberately destructive action to become the frame for experiencing the behaviours of air through sound-making and combustion. Once again, the importance of materials and environments are seen to be central to creative agency, and the instrument takes on a 'score-like' function. The four score-based projects facilitate a range of theoretical reflections on open scoring methods and explore intra-actions between textual or visual cues and musical creativity. Inevitably, these are, once again, dialogic processes emerging through openness to the sonic potential inscribed within the compositional situation.

What unites these apparently diverse approaches is the idea that applying a respiratory philosophy to creative practice raises ethico-aesthetic questions that suggest specific approaches to practice. Understanding and evaluating our practices in terms of these questions pushes us towards solutions that move away from the musical object as the end point of a linear process of production and towards the relational aspects of musical making and its function as 'shared breath'. Enabling a compositional process to be a 'breathing space' requires a radical reappraisal of our human-centred assumptions in the discourse around creative practices. This research is concerned with enquiring into the ways that we might refocus practice towards the creation of open spaces for a sympoietic 'making-with' rather than the creation of objectified sonic forms. This shift away from what is finished, bounded, and defined recognises that sound is relational and processual. It is the medium that best enables us to experience our mutual immersion directly through our bodies. Musical composition as a space for experimentally reordering or reorienting our relationship to the wider world may seem like a bold claim. However, the creation of compositional spaces or situations for experiencing and responding has, for me, brought about changes in doing, thinking, and relating. Thought of in this way, compositional practices can become fluid spaces for exploring our mutual immersion.

Some features of a respiratory compositional approach.

This thesis proposes that processes of thinking-through-making, and making-through-thinking, are part of an ongoing and emergent 'breathing-between' different modes of knowing. However, the projects in the portfolio do consistently return to themes that can be considered important to the idea of respiratory thinking. These can be summarized as follows:

1. Respiratory practices emphasize participative rather than object-based thinking.

A respiratory approach considers musical activities to be spaces for collaborative sense-making. Those who may be assigned to be listeners, performers, and composers are all immersed in the field of activity. Hence, a respiratory aesthetic approach emphasizes participation in sound rather than employing metaphors of construction and manipulation. This perspective can result in non-hierarchical processes by virtue of the fact that agency is understood to be distributed, with the various actors equally immersed in a creative situation.

2. Respiratory approaches reconfigure the relationship between 'abstract' thought and bodily practices.

Respiration is impossible without a body, so classical conceptions of composition as abstract form move towards an emphasis upon intra-actions between bodies and materials. Moreover, the material realm is not understood as dead materiality but as a participant in the ongoing respiratory processes of being. Specifically, the respiratory idea is extended to the iterative process of dialogue in the human dimension as well as to the processes of resistance and accommodation in the more-than-human. Metaphors such as flows of agency describe this process more accurately than reductive descriptions of active human composer giving form to passive material.

3. Respiratory thinking and immersion constitute the ‘back and forth’ nature of creative practice.

The processes of resistance and accommodation that give rise to endless iterative creative developments reflect the fundamental processes of the physical world. Breathing participates in this resistance and accommodation, resulting in expansion and contraction, negation and affirmation. These processes do not derive from subject-object binaries but arise from a more fundamental property of existence, that of reciprocal intra-action. Coccia observes that

> subject and environment act on each other and define themselves starting from this reciprocal action. … [T]his simplicity is expressed as the formal identity between passivity and activity: to penetrate the surrounding environment is to be penetrated by it. Thus, in all spaces of immersion, to act and to be acted upon are formally indistinguishable (2018, p. 37).

In a similar vein, writing about embodiment, Ben Spatz says,

> I take embodiment to be the zone of ontological engagement in which the dynamic interplays mentioned above—between perception and action, resistance and accommodation, and problem-solving and problem-finding—occur in the absence of any clear physical distinction between agent and substrate (2017, p. 261).

The embodied nature of both music-making and breathing blur the ontological boundaries between, for example, body and environment. These blurrings or interpenetrations are characteristic features of the respiratory aesthetic position. These principles are not abstract or formal characteristics; they arise from embodied understandings that have real implications for our actions as participants in creativity and knowledge. Respiratory thinking implies intimacy and proximity

To breathe the same air as another person and to share the same environment is a form of intimate physical exchange. Air carries odours and chemical signals that bring us information about other living bodies, whether plant, animal, or human. In order to breathe, or to eat, we must bring something ‘other’ into our bodies, and this can feel threatening. This sense of threat has been heightened during the recent COVID pandemic. A respiratory

aesthetic perspective needs to acknowledge that this mutual immersion and the intimacy of the exchange inevitably involve trust and an acknowledgement of mutual responsibility.

Ontological blurrings

Through these themes, a radically altered musical-compositional landscape emerges in which we are better able to connect our physical processes of existence to our creative practices. In a respiratory aesthetic, musical practices can no longer be thought of as occupying an autonomous abstract realm. They are recognized as part of situating ourselves as immersed beings in the world. Whilst clear categorical distinctions and roles tend to promise a model of stability and causal logic, the respiratory model embraces openness, uncertainty, and contingency.

Breathings-between composition and improvisation

Relations between the contested categories of improvisation and composition is also subject to respiratory thinking. Improvisation, as experienced in my own practice, is understood as an expansive principle, with composition implying contraction, an ordering or limiting of ideas and possibilities. The movement between these tendencies is critical to the idea of a situated model of compositional making, and this blurring can be considered one of the most important aesthetic principles of a respiratory modality.[27] The blurring of perceived boundaries and edges produces instability, which is inherent in any dynamic environment. This principle of blurring necessarily operates at every register, from macro-conceptions of the composer-performer to micro-temporal and micro-tonal blurring, timbral transformations, structural blurrings, and the 'invasions' of environmental sound.

[27] Ecosystems and organisms do not seem to function entirely according to top-down or bottom-up rules, but maintain ambiguous, complex relationships between 'nature and nurture' or 'free will and determinism' that result in constant uncertainty and constant diversity.

Breathings-between the work and the world

The breathing metaphor also relates to the content of the work, very much in the way that Cage might describe as ‘interpenetration’ between composition and the sound of the world. The composition does not either stand in or apart from its physical and metaphorical contexts; it intra-acts with it in a variety of ways. As creative strategies, these might include uses of environmental sound, either spontaneous or recorded, and interactions between sounds and the acoustic space. In this way, intentional sound creates a dialogue with its wider situation, and the complexities of these intra-actions are part of the work. The work can then be understood as a metaphorical body in a state of continual exchange with its environment. The work will also have intertextual correspondences that link it conceptually, aesthetically, or formally to other works, events, or situations.

Breathings between the body and the world

Musical practices can be thought of as extending in two directions. Usually, we think of performing bodies as directing sound towards the world to mix and merge with the other sounds and bodies in the world. However, the practice of sound-making also extends inwardly and affects change within the bodies making sounds. These changes affect the body on many levels. They can be understood, depending upon the tradition concerned, to be measurable and physical (for example, adaptations of muscles and tendons) neurological, emotional, psychological, or spiritual. The composing-performing musician is therefore both acting upon the world and also upon themselves. These two domains of action articulate another movement between internal and external, one of expansion and contraction, the outward ‘performative’ mode reciprocally altering the inward, subjective self-model and vice versa. This is another way of restating the relationship between ‘doing and being’. Hence, we could describe the reflexive dimension of music, after Foucault, as a ‘technology of the self’ that brings about change in the ‘being’ of the performing subject.

In our current culture, this latent, reflexive dimension of music-making tends to be de-emphasized, and priority is given to paradigms of musical 'production' that mirror those of material production and the creation of more objects in the world. Hence, we tend, instinctively, to associate composition with an idea that exists in the mind of a composer and is then realized in the form they designed. Following Ingold, however, we can see that music-making is an ontogenetic practice, a process of (shared) self-making. According to this perspective, or indeed Barad's agential realist view, making practices are relational and therefore can be understood to be making us as much as we make them. My research cannot, therefore, be confined to an explication of sound 'works' that now exist in the world. If we take seriously the idea that making is ontogenetic, then our making processes (what and how we make something) will affect our being (what and how we are) and knowing (what and how we know). These practices will therefore extend both 'outwards' into the world but also 'inwards' towards our being. These internal and external dimensions of practice are acknowledged in many musical traditions, and this observation connects musicking (or becoming musical) to the practice of breathing. Like musicking, breathing is a continual intra-action between bodies and the world and, like musicking, breathing both mediates states of being and is affected by them.

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