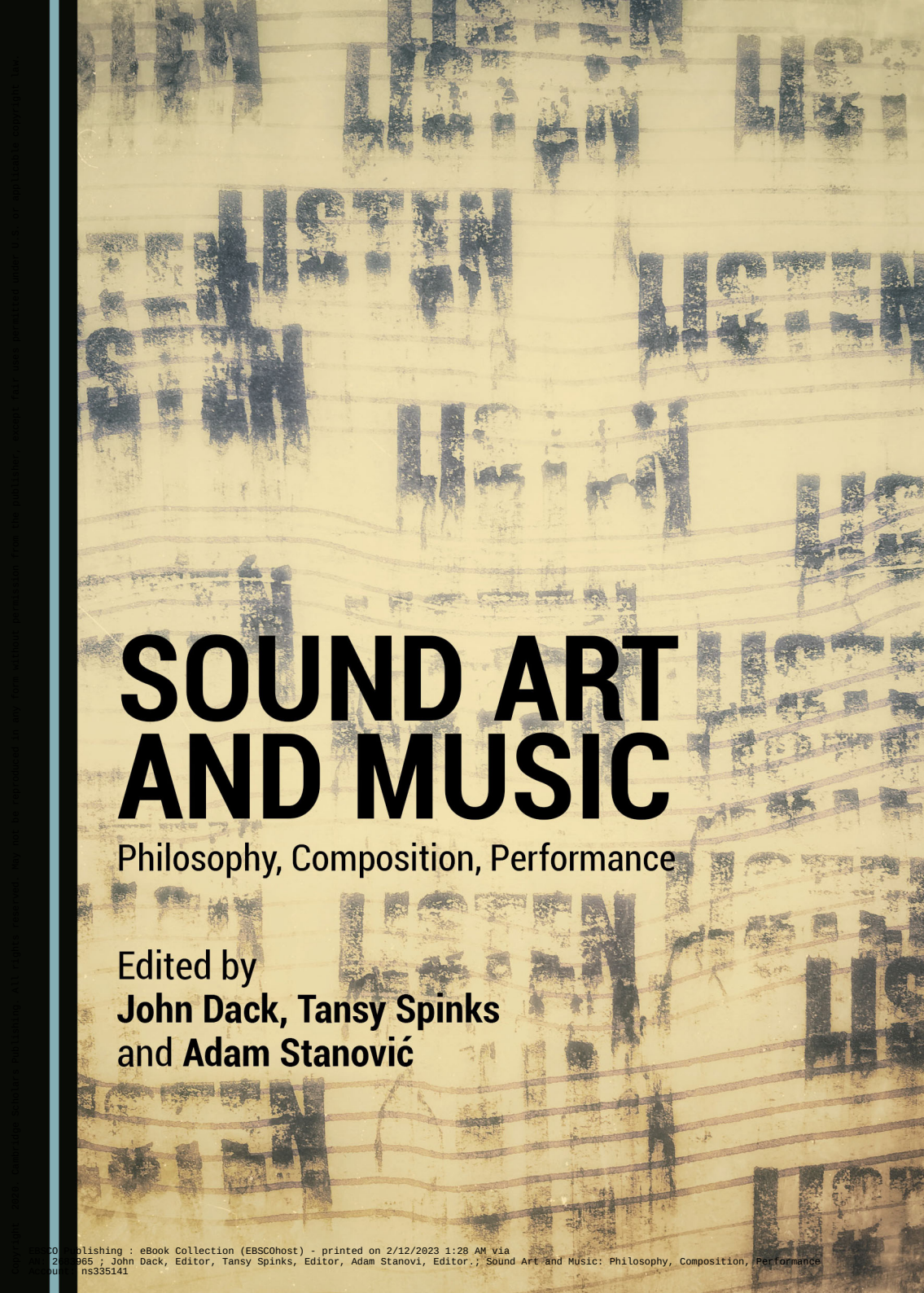

Sound Art and Music

Sound Art and Music:

Philosophy, Composition, Performance

Edited by

John Dack,
Tansy Spinks
and Adam Stanović

Cambridge
Scholars
Publishing

Sound Art and Music: Philosophy, Composition, Performance

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This book first published 2020

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-5781-2
ISBN (13): 978-1-5275-5781-9

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FOREWORD

This book is not an attempt to define terms, parameters, or disciplinary borders. Instead it seeks to celebrate the many and varied interests that make the fields of Sound Art and Music such intriguing ones. It is increasingly difficult, and perhaps even of questionable value, to differentiate between these two subject areas. Many Sound Artists celebrate their origins in Fine Art practices and assert their right to work with sound as a material without the weight of music history bearing down on them. On the other hand, composers have demonstrated beyond any doubt that they know how to choose, organise and transform sound as material for their works. That such knowledge can be applied to sounds that are not traditionally associated with music speaks volumes to the scope and breadth of the fields under discussion. The truth is, of course, that Sound Art and Music have much in common. They encompass sound forms stemming from artistic practices to new ways of thinking about the qualitative nature of sound within musical objects and contexts, developing extended modes of devising compositions and showcasing experimental approaches to performance.

The contributors to this volume are composers, performers, artists and writers who have, through differing means, become especially intrigued by particular aspects of our engagement with the sonic, or as John Cage has put, the 'activity' of sound itself. The chapters have their origins in the Music and Sonic Art Conferences held in 2014 and 2015 at the Institut für Musikinformatik und Musikwissenschaft in Karlsruhe, Germany. Each of the twelve chapters reflect the broad range of approaches adopted by practitioners and researchers. Indeed, it is a recurring theme of this book that theory and practice (like Sound Art and Music) are frequently indistinguishable.

The authors therefore consider the body, as a transitional, multisensory space (Lamounier), explored through the analysis of interactivity and gesture, embodiment and auto-choreography in relation to the solo instrument (Ho). The voices of objects (Hochherz), through practices and codes of behaviour in sound receiving spaces, leads to the musical instrument as a tool for thinking (Schmidt), collapsing the distinctions between theory and practice, and investigating the unique qualities of digital musical instruments and new timbres achieved. Collaboration is seen as a means of

moving away from and questioning established compositional principles. What may be gained by such an approach (Williams), is then highlighted in the role of prior research within a live, site-specific performance model (Spinks). In terms of means and methods, (Stanovic) questions the validity of compositional rhetoric within acousmatic music. When considering the constitution of the sounds themselves, however, Warde investigates the field of spectromorphology, devised by Denis Smalley, to reveal new ways of listening, detecting and dissecting sounds. Referencing the phenomenon of ASMR, or the audio tactile, Spencer reflects on materialities, agencies and 'intra-action', (as opposed to inter-action) whilst Sergeant, influenced by Barad, opens up possibilities of the non-passive object in relation to the instrument. The very spaces of performance itself is investigated by Rodrigues in keyboard recitals and through the sounds of Western-art jazz piano (Benetti).

Taken as a whole, the authors address the many ways in which composed or devised Sound Art and Music can be experienced: from concept, to the form taken, the means of conveyance and, ultimately, to its affect and significance. Far from offering any kind of finite statement on these practices, this book offers a timely snapshot of the bewildering and diverse fields that constitute Sound Art and Music, demonstrating the seemingly infinite ways in which they are pursued by practitioners and theorists alike.

CHAPTER ONE

INTRODUCING A COMPOSITIONAL MODEL FOR LIVE, SITE-SPECIFIC, SOUND ART PERFORMANCE

TANSY SPINKS

"Take a space, make a sound in it…"
—Cornelius Cardew[1]

In this chapter I shall introduce a new way of approaching site specific sound art practices, by offering practitioners a strategic model to approach and expand the parameters of the compositional process. In introducing this concept, I will allude to a number of my own sound works, undertaken over the six-year period 2008 to 2014, that have been informed by my accumulated experiences as a practitioner of site-specific, sound-making in live performance.

The practitioner, in the sense of this essay, is taken to be a multi-disciplinary artist, a sound artist, a composer, an improvising musician or simply someone who experiments with the possibilities of live, performed sound in an art context. The site, can be considered as a place, a building, a social space perhaps, in which to encounter sounds heard, almost in passing: an abandoned or derelict space, an outdoors space, a liminal (un-prescribed), or 'guerrilla' space, (used without permission), an unorthodox place, in other words, to find art or performance.

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[1] A quotation from Cornelius Cardew's *Improvisation Rites* from *Nature Study Notes* of 1969, written whilst working with the Scratch Orchestra at Morley College. (The author interpreted a small selection of these rites for *The Engine Room* festival, Morley College, December 9th 2011, mapping the space of the working canteen by pacing out the dimensions whilst using an electric violin and (school) hoops for bows. http://www.tansyspinks.com/sound-performance/ or https://vimeo.com/45501052)

The site itself might be ‘found’, presented or offered; as an inspiration, by invitation or by commission for an event. It may be deliberately selected by the practitioner, as a site to explore, to respond to and in which to provide sounds to be experienced by others. However, it is not a ‘white cube’ gallery space, a ‘black box’ rehearsal space or a ‘shoe box’ concert hall, with all the expectations that each venue might engender. This chosen site is another place altogether, encompassing aspects of social use, histories and narratives whose connotations are intangible and ephemeral.

How can this challenge be usefully approached? What are the essential elements to consider and how can a methodology of interrogation be best established to develop and steer the sound-making practices?

Arrived at through my own experiences, I now introduce a new tripartite model, to be employed as an aid or driver of this compositional process. This model identifies and clarifies the site-specific elements and opportunities within the given space, to enable a means of distinguishing between the distinct sonic and potential sonic properties of any site, and to establish the active role of the performer(s).

The model identifies three specific terms of engagement (referred to in this document as the three ‘*A*’s), and asks what we should work at in identifying the *actual*, the *activated* and the *associative* sounds of the site. I will expand on this in due course.

In addressing the proposed project, the practitioner will arrange an initial site visit, where possible. This not only gives a physical impression in identifying a certain spirit of place, but provides an opportunity to listen, make sound recordings, test the acoustic properties, walk around, photograph, sketch, list the sounds heard and talk to any of those people involved with the place; as custodians, workers or temporary occupants. It gives an opportunity to consider what happens in the space now and what has occurred in the past. The building or host site then becomes the locus and the source of the enquiry. By taking stock of the sonic properties and the materiality of these surroundings, possibilities for devising a performance begin to be formulated.

Time will be spent walking around the place and its environs. Aspects of the emerging discoveries may now require, beyond the inevitable google search, a visit to a local museum or a specific library. Materials forming the fabric of the site or objects from the site, may be identified as sound producers or as having sonic potential. Speculative emails will be sent out - following a hunch - wanting to know more from a conservation group perhaps, or a local historian, an amateur enthusiast or an expert in the field. Conversations may evolve – taking trains of thought into hitherto unexpected regions: with a librarian, sociologist, historian, geographer and

perhaps with the work of other artists or composers. Contextual references are raided. Have any other artist-musicians produced something like this before? If so, how, and can this be built on?

There are several notable precedents to be cited in relation to sounds in space. For pioneering American artist-musician, Max Neuhaus[2], sounds should emanate, and the affect, for the audience-listener, is contingent on being in the space itself to experience both the unseen addition and, in some cases, the mysterious removal, of his recorded sounds – made from material gained and recorded at source. His site-specific installations, such as *Time Square*, 1977, helped define our sense of place, through sound.

Installation artist Maryanne Amacher[3] plays with our experiences of sounds in similar but differing spaces, by manipulating our expectations of their acoustics and challenging our psychological responses. Janet Cardiff, working with G. Bures Miller[4], takes a more sociological approach by inviting us to engage with closely recorded binaural recordings that have an often uneasy, implied and manipulative narrative. John Cage of course drew our attention to the very notion of 'silence' in his piece 4'33" of 1952/3, during which our expectant role as an audience member is undermined and extended, into the spaces beyond the concert venue.

In the late 1960s, Meredith Monk[5] used staged versions of site-specific works to inhabit atmospheric, liminal locations in New York, whilst Susan Phillipsz's Artangel commission of 2010[6] explored locations in the City of London in order to play out a lone voice or instrument – used to evoke the ghosts of presences past. David Byrne's[7] 2009 work devised for the Roundhouse in London, is of particular significance as an example of building-as-instrument, for which he encouraged the audience to individually 'play' the building by attaching motors to the fabric of the building itself, linked to an organ keyboard.

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[2] https://www.diaart.org/program/exhibitions-projects/max-neuhaus-collection-display (accessed 20.09.18)

[3] As referenced in Stefani & Lauke (2010)

[4] Cardiff, Janet and Miller, G. Bures, http://www.cardiffmiller.com, (accessed 20.09.18)

[5] Monk, Meredith, http://www.meredithmonk.org, (accessed 20.09.18)

[6] Phillipsz, Susan, *Surround Me*, a song cycle for the City of London, (sound work) an Artangel commission, https://www.artangel.org.uk/project/surround-me/ (accessed 20.09.18)

[7] Byrne, David: https://www.telegraph.co.uk/culture/music/rockandpopfeatures/6004403/David-Byrne-on-playing-the-building-at-the-Roundhouse.html, (accessed 20.09.18)

On considering the site for which to devise the possible sound work, the practitioner may identify a number of inherent sounds. For example – the ongoing sound of traffic, the whine of an internal light-fitting or fan, the wind through the crack of a window, distant birdsong, the acoustic property of the space, distinct voices, running water, distant traffic. Sociological implications then become apparent as the human presence surfaces, (perhaps virtually or metaphorically) and as possible collaborators come to mind. Contexts expand and narratives begin to develop as ideas coalesce.

Dates and times of performances approach, timings and durations are considered. Initial impressions have become lines of inquiry with firmer intentions. Technical and physical means of sound making become more tangible as specific technical requirements, requiring testing. Extra performers are brought in as required. A plan has now been formulated, if a little circuitously and discursively.

To expand on the model offered, I suggest that:
the *actual*, sounds of the site, are those one could describe as inherent to the place. The *actual*, is perhaps self-evident as being those sounds particular to the site, which can be defined differently of course according to how and when one listens, (according to time of day, in a market, for example). Can we distinguish between foreground and background sounds? These *actual* sounds heard, and their sources, can then be further identified as having specific characteristics in the way of mechanical, natural, human, or animal elements with rhythmic qualities which are continuous, have a pattern or are intermittent. Can the volume, pitch, grain and timbre be described? Identifying *actual* sounds, could in some way be considered analogous to how we approach what composer and writer, Michel Chion calls the *reduced* form of listening (Chion 1994).

The *activated* element, which introduces a less passive role than that of listener, asks the performer(s) to intervene in some way, in order to engage with the physicality of the space. This second 'A', deals more specifically with allowing the objects of the site to have a sonic voice through manual activation by the performer(s). Where this differs from Chion's second listening stage, of the *reduced*, is in the agency of the performer: no longer a passive listener but now an active participant within the space. It is in the physical, gestural actions, or oral 'soundings,' made *as* activations, that the sounds occur. Again – a rhythmic pattern may be established or a drone-like sound built up which can be explored further with the use of contact microphones in direct contact with physical objects, (hit percussively), materials or the fabric of the building. Aleatory methods and improvisation,

a key element in its own right – (but not within the scope of this essay) - are important components. In noticing, identifying and experimenting with these, the activator becomes a composer of sorts, able to 'play' the site, or an aspect of the site, to others.

The third so-called 'A' element, the *associative,* offers a more expansive and particularly leading strategy by informing the content of the sounds to be heard. The term I use here, the *associative,* reflects in part Michel Chion's notion of *semantic* listening, or listening *for* meaning. However, more proactively, it defines and describes how research into the site, undertaken previously in the run up to the event, as a kind of sonic 'mining', can now convey to the listeners, something historical, sociological and even musical about the site, through the act of compositional transcription in the context of a live performance. The *associative* allows for a truly site-responsive approach.

The *associative* is the most extensive and open-ended term of the three, encompassing sounds that have come about through research into the site itself. These might engage metaphorical, or indeed remembered triggers as references. Even sounds that could well have occurred on the site in the past, may be imagined and evoked. Chion's *semantic* listening is perhaps recalled, in this context, as a kind of Peircian *interpretant,* but here my development takes the *associative* into a more expanded form. This category can be sub divided again into the following:

associative-historical
associative-sociological

associative-musical
associative-mimetic

associative-metaphorical
associative-remembered
associative-imagined

The terms have been developed through the experience of devising sound works for what might be deemed 'alternative' sites. I have considered many different given spaces and how the materiality of each might be activated whilst also reflecting on what could be brought to the site additionally, through this *associative* term which can be expanded further to describe what I have come to call the unique, physical and conceptual *material of the site,* to be explored later with reference to specific works.

Michel Chion continues to be influential to this way of thinking. Inspired by the earlier theories of Pierre Schaeffer, in his *Traite des objets musicaux*, (Schaeffer 1966) Chion's own definitions, of the *causal*, *reduced* and *semantic* modes of listening are perhaps not dissimilar to Peirce's[8] concept of the semiotic triad in terms of meaning. In the *causal*, Chion introduces the notion of what it is that is making the sound and reassures us that this may not always be specifically definable or located. By encouraging a *reduced* form of listening, he then suggests that the listener should put aside consideration of the sound source and attend rather to objective definitions of the nature and the state of the sounds heard in and of themselves, whether natural, man-made or machine made. When dwelling on the *semantic* however, the listener is encouraged to think beyond the accumulation of information provided by these causal and reduced forms of listening and to consider the connotations of the sounds heard. This may of course, include language, but could also invoke personal, sonic material, triggered through the evocation of memories.

It may be useful here, to consider advice given to the art student on how to 'read' an art object, in terms of ways of looking and thinking. This is an encouragement to think *from, around* and *into* the object, or art work. In other words, to notice what the object initially suggests or conveys, (as in my *actual)*; to notice what you, the viewer and listener, (but also in this context, the performer), actively and consciously bring to it, (as in my *activated)*, and to consider the meaning of other contextual material surrounding it, (as in my *associative)*. The notion of 'site' could be substituted here as a form of 'art object,' of course.

To summarise: in this exercise there are three stages of awareness and action, involving for the creator, crucial elements of preparation, involvement and reflection, including the use of documentation, regarding the sound-as-art-event, in performance:

'from'- 'causal' –	identifying the *actual* within the site
'around' – 'reduced' –	identifying the *activated, or activate-able,* as performer
'into' – 'semantic' -	identifying the *associative* as the contextual *material of the site.*

[8] Peirce's semiotic triad defines a relationship between signs, signification and meaning, summarised as: the sign, the object and the interpretant: https://plato.stanford.edu/entries/peirce-semiotics/ (accessed 05.02.18)

The first in my series of twenty sound works cited, was performed on a gantry above Deptford Creek, South London. *Henry's Ballad at Harold's Wharf*, (2008)[9], alluded to the use of a building, previously standing on the site, as a slaughterhouse. The imagined sounds of distressed, braying animals were conjured mimetically on the instrument, (a violin) and combined with the fragment of a rediscovered melody, *Pastime in Good Companye*, written in the early sixteenth century by Henry VIII, whose palace had dominated the waterside at Deptford. In this work, the *associative-imagined* is tackled through *associative-mimesis* which then evokes an *associative-historical* reference combined with an *associative-musical* one. The sounds, played out on a violin through an amplifier and a looping device, mingled with the layers of *actual* sounds at the site, provided by passing docklands trains, water sounds from boats on the creek and a hubbub of voices on site. The *activated* element in this work deals, not so much with the fabric of the site itself, but in how the played sounds mingled with voices and the site's unique outdoor acoustic properties of complex brick walls, concrete pillars and water surfaces.

As an aside, I wonder; can the *associative-imagined* approach be feasible? Can one 'mimic' something imagined? If 'to mimic' suggests an attempt at mirroring, how can this be regarded as possible if the 'original' is only projected or envisaged? Research, but also experience and memory come into play here in our ability to build and retain a bank of images (as described poetically by artist John Baldessari in relation to his own work) but equally, a kind of 'audiobank' of sounds. The mimetic can be considered in the wider sense as an act of simulation in the form of sonic evocation.

A distant memory of an aural event has triggered two of the later works in the series. *Leeds, Leeds, Leeds,* 2013[10] and *Echo Lake*, 2013[11]. Both recall the sounds and physical sites of events and incidents in my own aural history. The sound of thousands of voices in a football crowd, impinging on a small domestic space in a back-to-back house in Leeds in the early 1980s, prompted the making of a contemporary sound work in which a lone, singing female voice is heard recreating and layering forty football chants. *Echo Lake* revisited a childhood game exploring the phenomenon of a haunting echo of a returning 'shout', experienced across

[9] *Henry's Ballad at Harold's Wharf*, 2008. Author's work can be seen/heard at: https://vimeo.com/17884431

[10] *Leeds!, Leeds!, Leed!s,* 2013. See article in Nparadoxa Vo37, Jan 2016, http://www.ktpress.co.uk/article-abstract.asp. Author's work can be seen/heard at: https://vimeo.com/98810940

[11] *Echo Lake*, 2013. (Author's work).

an expanse of water beneath a mountain, in Snowdonia, North Wales. In both works, the female voice travels across space and time to re-imagine and represent past sonic memories of place.

"A sound imagined but not actually heard" is the description of the term phonomnesis, described by Augoyard, in *The Sonic Experience, a Guide to Everyday Sounds,* as a mental activity recalling sounds from memory, not through stimulation of the memory to prompt a past sonic event, but as a means of conjuring up internally heard sounds stimulated by the imagination. The device of evocation forms an important part of my *associative-imagined* approach to a sound work that delves into the personally interpreted realms of the *associative-historical*. Janet Cardiff and G. Bures Miller's work is often notable in employing this method.

The parallel concept to the common notion of envisaging, is the notion of 'audiation', which is dependent on experience and memory of sounds. Defined by music educationalist, Edwin Gordon in 1975, as both a term and a process, the concept is similar to composer and educationalist Kodaly's description of 'inner hearing,' suggestive of a means of envisaging sounds internally.

Imagination was employed in the sound work *Seaforts* (2010)[12] (see: Figure 1-1 and Figure 2-2). A live performance was enacted eight nautical miles off the North Kent Coast, on one of the historic structure's gun platforms; the sonic characteristics of surfaces and objects offering rewarding sonic material. By using contact microphones applied directly to the Seafort's iron structure, a metal ordnance container betrayed its rusty iron properties, a pile of seagull bones was manipulated to make a dusty rattle whilst a steel pylon was tapped to give a taut metallic ring. Looped, the circling rhythms began to suggest distant guns. In this work, the instrument (violin) was added, to bring in another, mimetic sound layer to the proceedings. By introducing a rhythmic 'scurrying' sound as a jumble of fast, sotto-voce notes, a suggestion of past human presences on the gun platform was conjured.

Here, the method acknowledges the *actual* and the *activated* in combination with the *associative-historical,* the *associative-imagined* and the *associative-mimetic*, simultaneously attempting to form three layers of the real (or actual, as the sounds of wind, waves and gulls), the evoked (or activated, by the two performers), and the imagined (rapid action gunfire). The hazardous nature of the site and rapidly encroaching tides, introduced a certain urgency to the setting up of equipment and the segue into

[12] *Seaforts* (2010)*,* devised for the Whitstable Biennale Fringe, performed with Antoine Bertin. Author's work at https://vimeo.com/17884661

performance. The piece was devoid of an audience, aside from two participants, a fisherman and numerous seagulls and was consequently only ever experienced through documentation.

Brixton Market (2010)[13], performed live within the arcades of a large, multi-cultural South London market, set out to suggest once more, the bustling element of a site as an actual, not imagined one. As a form of 'affrettando' perhaps, in combination with mimetically referenced sounds, the banter and cries of the street traders, the inflections of voices, the squeak of the trolleys, the chopping of meat and fish, distant beat-boxes, the drone of a forklift truck – all coalesced into one received soundscape. The emphasis here tended to feature more prominently what I have called *associative-sociological* mimesis, by which I mean a direct listening and evocation made in situ on the instrument (looped violin), of the many different human voices and presences in the daily situation of the market. As Walter Benjamin noted:

> "These arcades… are glass-roofed, marble-panelled corridors extending through whole blocks of buildings, whose owners have joined together for such enterprises. Lining both sides of the corridors, which get their light from above, are the most elegant shops, so that the arcade is a city, a world in miniature, in which customers will find everything they need." (Benjamin 2002)

The Laboratory of Sonic Possibility, 2014[14], undertaken as part of *Acts ReActs*, took place in a large performance space at Wimbledon College of Art and brought the environment into the space by referring to a local figure of historic significance, Joseph Toynbee, an English otologist and philanthropist, who specialised in diseases of the ear. The final work invited the participatory audience to get involved in their own sound making and sound questioning activities by amplifying objects that would normally be considered to have no intrinsic sound. Large cardboard 'ear trumpet' cones were provided, to enhance the act of listening.

Other sites explored in the author's practice have included such extremes as a goods lift, an art school library, a canteen, the top of a windmill, a

[13] *Brixton Market*, 2010. (Author's work)

[14] *The Laboratory of Sonic Possibility*, 2014, a collaboration with Iris Garrelfs. The residency took place at Wimbledon College of Art, UAL as part of *ActsReacts 1, Performance Lab*. Author's work can be seen/heard at: https://vimeo.com/91650127.

beach and a Masonic chamber. Sound making devices have included objects and surfaces 'played' using contact microphones or vocal microphones, an electric violin, amplified pens and wires, and a multi-layered voice. Later works include *Sonic Activations of The Rake*, 2014 [15]- a version of Hogarth's Rake's Progress told through objects and contact microphones, performed at Pitzhanger Manor in Ealing, the house of the collector of the works, John Soane. The work embraced liveness, in performance, as a form of embodied activation whilst the activation of 'stand in' objects themselves, (metal chains, crumpled paper, a dice in a cup, a wine bottle and glass, a dance master's small pochette violin, a metal bucket), gave a visual focus to the significance and potential sound of the objects seen in the paintings. The audience stood around and within the performer's space, who then 'activated' the objects before them.

What defines this process of composition? Within all the sound works in the series, the act of transcription is key: the act of turning one thing into another, with information becoming sound, in a new act of 'setting down'. In all the sound works, the 'existing motifs' here could be regarded as the physicality and the historiography of a site, whilst the 'arrangements,' to borrow the musical sense of a transcription, or the devised sounds heard, lead to a different or new understanding of place, through a heightened awareness of experiential listening.

To reiterate, sounds can be devised and performed in numerous ways, including the use of conventionally notated musical composition, but in this context, overwhelmingly prompted by the site itself: location is key as instigator and host.

Where does this strategic *AAA* model fit, for practitioners? Why should anyone use it? Can it be treated as a set of guidelines or even as some kind of loose, instructional score perhaps? Does this new tripartite model offer an inter-disciplinary or trans-disciplinary practice, free from the constraints of established disciplines, or does it suggest perhaps a wholly new mode of practice? I suggest that this unique fusion, borrowing from and building on the many affordances of art, site-specificity, site-responsiveness, music, composition, improvisation, sound art, acoustics, architecture, studio and performance practices, allows for a new and vital mode of experiencing performed sounds; as both material and compositional events, in alternative, egalitarian spaces.

[15] *Sonic Activations of The Rake*, 2014, at Pitzhanger Manor. Author's work can be seen/heard at: https://vimeo.com/121158054

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CHAPTER TWO

THE METHODOLOGY MYTHOLOGY: RECONSIDERING COMPOSITIONAL PRACTICE IN ACOUSMATIC MUSIC

ADAM STANOVIĆ

Experimentation, *serendipity*, *intuition*, and *emergence* were the four most common terms in my recent literature review on the topic of compositional methods in acousmatic music. Admittedly, my review was brief. After all, very little has been written about methods in the acousmatic field and, aside from a few dedicated monographs[1], most of what I discovered was found in either transcribed interviews with practitioners or taken from the programme notes accompanying their works. Despite this relatively limited set of sources, I observed an overall tone, and use of terminology, so suspiciously uniform that I initially suspected a degree of collusion. Upon further inspection, however, it became clear that these similarities have more to do with the fact that this monolithic field has a single point of origin; the development of *musique concrète* by Pierre Schaeffer around the middle of the twentieth century. Employing electronic technologies of the age, Schaeffer developed a bespoke method for the creation of music, through which the transformation or manipulation of recorded sound encouraged musical form to emerge through acts of discovery, rather than predetermination[2]. This approach was evidenced through Schaeffer's various

[1] Curtis Roads' *Composing Electronic Music* (2015), Trevor Wishart's *Sound Composition* (2012), and Adrian Moore's *Sonic Art: an Introduction to Electroacoustic Music* (2015) are the only major texts that deal with specific methods. Despite offering extremely valuable and meaningful insights into the working practices of these three very different composers, these texts rarely present their composition in the form of a method.

[2] More specifically, Schaeffer was responding to the serialised instrumental music of the same era, believing that the adherence to tone rows and the subsequent

studies in, and works of, musique concrète, along with a wealth of written texts, including a diary charting his search for a concrete music (Schaeffer 1952, trans. North and Dack 2012) and a lengthy philosophical treatise on this new art (Schaeffer 1966, trans. North and Dack 2017). Within the pages of those texts, we find the very first sense of how *experimentation*, *serendipity*, *intuition*, and *emergence* are located at the heart of this method.

The term *musique concrète* was ultimately abandoned, and we are now accustomed to referring to this kind of music as *acousmatic*[3]. Despite the passage of almost seventy years, however, the method of producing this kind of music continues to be described using exactly the same terms and ideas. For example, in an interview about his music, Denis Smalley provided the following answer to a question about his method of composition, providing a direct and unambiguous reference to Schaeffer's approach:

> When I started out I followed the basic French, musique concrète method, as taught at the GRM[4], and in principle this has stayed with me. First discover and then record your source sounds; sort and catalogue them using pertinent criteria (I keep card indexes), which may be spectromorphological[5] or refer to source bonded[6] qualities; experiment with transformations to create families; along the way try out combinations and sequences through mixing, to see if relationships are going to work; constantly assess whether there is sufficient variety and contrast in the nature of the sounds and in the ways they are developing. Then gradually the piece emerges: form grows out of materials. (Smalley, quoted in Gayou 2010: 15).

Smalley is not alone in his references to Schaefferian ideas, but others express similar ideas without such a direct reference. For example, in a

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manipulation of such rows moved music away from the concrete nature of sound towards an ever abstract system of communication (Dack 2002).

[3] In recent years, the term acousmatic has been used to describe a listening situation in which the source or cause of a sound is not presented (visually) to a listener. When used in this context, the term acousmatic suggests an aesthetic stance in which an acousmatic listening situation is essential to both the presentation and the reception of music (Harrison, 1999: 1).

[4] The Groupe de Recherches Musicales (GRM) is a research group established by Pierre Schaeffer in 1958.

[5] The term *spectromorphology* was invented by Denis Smalley in order to describe the way in which sound spectra changes over time (Smalley 1997).

[6] *Source bonding* is another term invented by Smalley. It refers to our innate tendency to search for, or assume, a real-world origin for what we hear; we intuitively bond the content of our listening, Smalley argues, to ostensible sources (Smalley 1997).

special edition of the *Journal of Music, Technology and Education* dedicated to compositional methods in acousmatic music, Jonty Harrison set out *The Harrison Method* which, despite using his own name, exhibits clear similarities with the Schaefferian method described above:

> I am aware that I may be guilty of being a bit coy about my own composition, so I think the time has come to reveal in all its complexity my method of composing with 'sounds related only one to another' – and here it is: 1. Record some interesting sounds (usually real, but could be synthetic); 2. Process and develop them in the studio; 3. Put them together with some others, adjusting as required. (Harrison 2013: 318).

Harrison goes on to use exactly same terms listed above, telling the reader that "I encourage exploration, experimentation and critical assessment" (Harrison 2013: 318), that "serendipity certainly plays a part in my method" (Harrison, 2013: 320), and that: "I have no notion of the overall temporal structure of the finished work. That emerges progressively" (Harrison 2013: 319).

In other cases, we find similar ideas without any use of either the specific terms listed above or references to the Schaefferian approach. For example, composer Andrew Lewis provides a highly personal account of his practice using quite different terms:

> I try not to be too intentional too soon. In choosing and recording sounds, and in transforming them, I aim to have a completely open mind, and just go with the flow. I see what I can find, almost by accident, without worrying too much what I am going to do with it. I stumble across things, and allow myself to be surprised by unexpected revelations. This is 'finding'. […] Then comes 'seeking': this means I start actively looking for specific things, trying to realise certain kinds of ideas, exploring and developing the latent possibilities of the stuff that I have 'found'. (Lewis, in Moore 2015: 222).

In many respects, it is easy to understand how and why acousmatic compositional practice is described in this way; most acousmatic composers *are* following the Schaefferian method in-so-far as they record sounds, develop them in a studio, and allow form to emerge gradually. This is most certainly the case for Smalley, Harrison and Lewis and, in this sense, direct or indirect references to Schaeffer seem entirely justifiable[7]. There are other

[7] This chapter does not intend to criticise those composers quoted above; Smalley, Harrison and Lewis are all known to, and highly respected by, the author of this chapter and references to their writings were chosen on the assumption (or perhaps

good reasons to retain this overall sense of what the practice involves; since Schaeffer's work is extremely well-known, for example, a simple reference or statement is often sufficient to communicate compositional methods to others without lengthy explanation.

Despite these positives, there are also issues with the evocation of Schaefferian methods. Firstly, Schaeffer's terms and ideas were both extraordinarily detailed and numerous, and a brief mention does little to communicate what, exactly, is being referenced; although there is no space within this short chapter to provide a detailed summary of Schaeffer's writings, readers might be able to assume their overall complexity upon hearing that Michel Chion's *condensed* summary of Schaefferian writings comes to some 210 pages of A4, with an alphabet table of some 136 key terms (Chion, 1983, trans. North and Dack 2009). Secondly, it is often the details of *how* Schaeffer's method is adapted that are of interest, and such details are often overlooked. Take, for example, Smalley's statement above; although we must not forget that this was said in the context of a spoken interview, the acousmatic community would greatly benefit from additional clarifications: What, for example, does 'discover' mean to Smalley? How does he know or decide when a discovery is worthwhile keeping? How does he approach recording in this context? How does he decide upon what to record? What does the process of sorting and cataloguing entail? Is there some overarching agenda or strategy in which certain materials are prioritised and others rejected? Does the mere fact of sorting determine the ultimate form or the piece? If not, at what level is sorting meaningful in the compositional process? How does Smalley begin to find appropriate terms in order to start the process of sorting sound materials? What does experimentation actually entail? and so on.

It might be possible to counter both of the above points by suggesting that Schaeffer has already done the hard work in producing these various terms and ideas, and this allows contemporary practitioners to use them without producing their own. Here, however, we get to a third reason why a reliance on these terms is problematic (and, in fact, we arrive at the crux of the matter in hand); although references to Schaeffer's method may well retain their overall relevance to the field, we should not forget the fact that his terms and ideas were developed in quite a different era, and there are certain key differences between compositional practice in Schaeffer's day

hope) that they would agree with the central aim of this chapter: to highlight the many changes that have occurred in the field, and call for clarification over the various ways in which contemporary practitioners now work. Others references might very well have been selected, since just about every mention of a method discovered during the writing of this chapter revealed the same terms and ideas.

and his contemporary acousmatic counterparts. At the time, the above terms and ideas were unquestionably justifiable; his search for a concrete music clearly involved the painstaking development of a new method that lacked precedents, systems, models, and established technologies. Understandably, therefore, Schaeffer's work required a high degree of experimentation and serendipity, in which he was needed to follow his intuition from start to finish; Schaeffer's diary testifies to the fact that his musical outcomes could not be determined in advance, and his personal sense of failure (which he describes on an almost daily basis from the outset of his diary) was regularly accompanied by a clear sense of personal guilt if he were ever found to be wasting the time and money of his small research team. Thankfully, his research bore fruit, and among Schaeffer's numerous achievements was the elaboration of a method of composition quite unlike anything previously seen in the Western classical tradition. Today, by contrast, we have reached a point in which the acousmatic field has spread around the globe and is known in a wide range of both musical and academic contexts. This, as we shall discover below, makes it far more likely for contemporary compositional methods to involve precisely the kind of planning or predetermination that Schaeffer once sought to reject.

Given what is said above, the purpose of this chapter is to present and explain the following point: continued use of the terms such as *experimentation*, *serendipity*, *intuition*, and *emergence* will ultimately perpetuate a *mythological*, as opposed to *methodological*, account of the compositional process. To demonstrate this point, the remainder of this chapter presents a list of reasons why these terms are no longer fit-for-purpose. The list is certainly not exhaustive, and much of what is written relies upon anecdote, debate and conjecture. It is hoped, however, that the reader might forgive such things, since the ultimate aim of this chapter is to inspire much-needed debate within the acousmatic community about the *actual* methods that composers now employ. Failure to do so risks misunderstanding and marginalisation of a field that has long since coveted, but often failed to achieve, both audience and academic attention. Now is the time to rethink compositional methods in acousmatic music.

The Choice of Sound Materials

Adrian Moore's *Sonic Art: an introduction to electroacoustic music composition* is pitched as a text book for undergraduate students learning electroacoustic music. It is largely instructional, providing a wide range of insightful and valuable suggestions of how to approach the creation of a work from start to finish. The opening chapter, for example, is dedicated to

sound, and provides many different ways in which one might select, approach, record, and respond to a wide range of different sounds. By following one or more of the many suggestions listed in this chapter, Moore hopes that the reader will be able to make an informed decision about what they want to capture and why, and begin the act of composition. It is notable that Moore emphasises the importance of this stage, since he is effectively calling for his readers to: 1) preselect materials *prior* to recording, 2) consider what exactly those materials might suggest or imply, and 3) formulate a plan about how such sounds might ultimately be used in composition. In a sense, then, Moore advocates a strategy of pre-selection, in the knowledge that a thoughtful decision undertaken at the outset will have considerable bearing on the compositional process from then on.

One might suggest that Moore's personal approach bears little resemblance to the field of practice at large. This does not seem to be the case, however, as even the quotations from Smalley, Harrison and Lewis (listed above) imply a degree of pre-selection. For example, Smalley's tells us that one should "First discover and *then* record your source sounds" (Smalley, quoted in Gayou 2010: 15). Harrison's idea of "recording some *interesting* sounds" (Harrison 2013: 318) implies pre-selection of the "interesting", and Lewis tells the reader that he starts by "choosing and recording sounds" (Lewis, in Moore 2015: 222), giving the impression that he makes a decision about what to capture, before capturing. It seems, therefore, that common practice does not involve some kind of chance happening while recording. Instead, composers are making decisions, in advance, about what might be interesting or suitable for a particular piece. In this sense, we immediately start to erode the idea of experimentation and serendipity; a key aspect of the compositional approach is pre-determined.

It is not simply the written text that communicates pre-selection; many pieces in the acousmatic field have a central theme, or topic, around which sound materials have clearly been chosen. Smalley's *Wind Chimes* (1987), Harrison's *Internal Combustion* (2005-2006), and Lewis' *Lexicon* (2012) are wonderful examples of pieces for which materials were selected in relation to a specific theme or topic. Indeed, this is a very common approach in acousmatic music which, as Curtis Roads points out, frequently relies upon an evocation of context:

> Today, the term "acousmatic" refers to compositions in which external reference – or the hiding of it – is central to the meaning of the work. […] Acousmatic works tell stories. The sound of a door opening or closing, for example, might signal a new musical scene about to unfold. People whisper, storms gather, a train passes by. The meaning is sometimes veiled by various strategies such as familiar sounds place in unusual contexts. Acousmatic

> works play with recognisability, mimesis, reference, meaning and semantic allusion. (Roads 2015: 85)

Returning to Moore's text book, we find something very pertinent to this topic; the notion of *originality* (Moore 2015: 102-104). Moore suggests that the prevalence of water sounds, in the field of acousmatic music is not a reason to avoid their use, but that one must remain *original;* overuse leads to cliché.

Leaving aside the somewhat thorny issue of what originality means in this context, we may take something useful from Moore's observation; the choice of what to record is not simply a matter of selecting from all of the available sounds around us. Rather, it is conditioned (at least, to some extent) by the existence of other pieces of acousmatic music. This should come as little surprise, for creative practice does not exist in a vacuum, and knowledge of the various different sounds that have been used in the past necessarily helps to inform decisions about what to use in the present and future. The choice of sound materials is, therefore, less serendipitous and experimental than first thought.

Listening

The most common piece of advice given to students of acousmatic composition is to *listen* as much as possible to existing works. The fact that there is so much acousmatic music to listen *to*, however, demonstrates just how much the field has evolved and developed; in 1948, when Schaeffer first started composing concrete music, there were no works that he could listen to, and therefore no way in which Schaeffer's approach to composition could have been informed by the work of peers. This is not to suggest that the thriving contemporary music scene of Paris and elsewhere was without influence, nor that Schaeffer was without artistic influence more generally. Rather, it is to note that that there were no compositional precedents in the field of musique concrète, and therefore no possibility of direct influence from others in the field.

In one sense, we might dismiss this clear contrast (between now and then) as an irrelevance; aside from pieces including an homage, pastiche or reference to other composers, most ostensibly strive for a degree of originality. Whether they achieve this or not, it seems reasonable to suggest that it is only by listening to existing works that one can develop a concept of originality; how else would one know what is, or is not, original? In another sense, the fact that there is so much existing music is of critical importance to the field today; we have already seen how listening informs

the choice of sound materials and, as this chapter develops, we start to build a much clearer sense of how every aspect of contemporary compositional practice is informed by the presence of existing works.

The proposal above has certainly been made elsewhere, with many practitioners and theorists agreeing that creativity is not a singular activity; even those who work alone are invariably influenced, inspired and informed by the vast machinery of their field. Pamela Burnard, for example, has written an entire book on this topic; *Musical Creativities in Practice* (Burnard 2012) makes the following statement of intent in the opening pages:

> This book offers a powerful corrective to mythological and historical conceptions focused exclusively on notions of creation as a singular activity. It argues for the need for conceptual expansion of musical creativity, to become a plural expression of musical creativities as being distributed and relayed between subjects and objects across cultural-historical time (Burnard 2012: 2)

Burnard goes on to present her evidence in the form of manifold interviews with practitioners, each of whom elaborate ways in which their practice has been informed by others, irrespective of whether they compose, or create, alone. Unlike Burnard's book, which is filled with interviews, acousmatic composers face a complete lack of supporting evidence from contemporary composers. Without any explicit statements on how, exactly, previous listenings have informed contemporary practice, there is little more to write. It seems reasonable to conclude this section, however, by noting that only a brave composer would claim that his or her practice had *not* been influenced by the existence of other music in the field. Indeed, the mere ability to group such music into a field is evidence enough that there are known commonalities between the acts of composers, old and new. Such commonalities cannot be coincidence, and one must therefore agree that composers draw influence from their peers.

The Acousmatic Canon

Although not presenting them as influences on his own music, Adrian Moore's *Sonic Art: an introduction to electroacoustic music* includes an entire chapter dedicated to 'Examples from the Repertoire' (Moore 2015: 121 – 153). Since it is written for undergraduate students, the inclusion of this chapter functions as a kind of signpost, directing readers to the important or central works in the field (as determined by Moore). The selection of works is international, reflecting the contemporary nature of the

field, and includes pieces from every decade stretching all the way back to the 1940s. Taken as a whole, this might be viewed as the explication of an acousmatic canon.

There are certainly alternative versions of the canon. Take, for instance, *The Essentials* found on *electrothèque*[8]; a collection of 13 pieces, streamed online, that are deemed important to the field and offered as a starting-point for anyone interested in electroacoustic music. Just about all of the composers listed feature in Moore's 'Examples from the Repertoire' are also found in *The Essentials*. Half of the pieces are common to both lists.

The idea of an acousmatic canon is probably contentious, particularly when it comes to deciding which works are to be included. It cannot be denied, however, that some works are cited, referenced, analysed, and discussed a lot more than others. Take, for example, Smalley's *Pentes* (1974), Harrison's *Klang* (1982), and Lewis' *Penmon Point* (2002-2003). Despite their respective ages, these three pieces continue to be performed in concert, and are regularly discussed within scholarly papers and articles on the topic of acousmatic music. Thus, it seems reasonable to suggest that these works have attained a status which marks them out as being distinctive and important to the field. Given what was said under the earlier subheading, *Listening*, it seems that some works have more influence than others, and one might refer to these works, when collected, as a canon.

The idea that certain works are more influential than others is particularly interesting in the context of this chapter, since it implies something about the overarching aesthetic tendencies, or interests, of the field at large. We know, from the writings of Smalley (1986; 1991; 1996; 1997; 2007), that a collective sense of appreciation is not haphazard. Rather, it is a consequence of the myriad musical (and extra-musical) factors that Smalley has painstakingly explained and discussed, inventing bespoke terminology where appropriate terms did not exist. His writings are certainly not exhaustive, and listeners may well claim that they find aesthetic value elsewhere. The fact remains, however, that the acousmatic community has tended to promote certain works beyond certain others, and the aesthetic values that we derive from these works suggest that the acousmatic community is united. Thus, reminiscent of David Hume (Hume 1754, reprinted 1965), there appears to be a standard of taste that applies in the field of acousmatic music. This has not, surely, escaped the attention of the contemporary acousmatic composer, and it seems highly likely that creative

[8] Electrothèque is a streaming service for acousmatic music which collects together composers and works from around the world and, for a subscription, allows endless listening. Electrothèque is hosted at: https://electrotheque.com/

practice is not simply informed by the existence of other works in the field, but by those works that are deemed most important.

Schools and Communities of Practice

When Pierre Schaeffer established the GRM, it was the first research group dedicated to concrete music, and one of the world's first studios dedicated to electronic music more generally. Schaeffer was working in an age that was entirely without pre-existing schools or communities of practice. Nowadays, the situation is very different. Acousmatic music is a truly international field with activities and research centres spread around the globe. In addition to its presence within such centres[9], a substantial portion of acousmatic music-making now takes place within academia. In the United Kingdom, for example, almost all of the prominent composers are employed as academics (or emeritus professors), and the vast majority of acousmatic-related activities happen within institutions.

It is not worth devoting too much time to the likely influence of these communities of practice, but they surely impact composition in ways that were previously unimaginable. Unlike Schaeffer, for example, who was venturing into the vast unknown, contemporary music students are now introduced to the history, aesthetic, technologies and methods of acousmatic composition during their undergraduate studies. In this context, there is no possibility that their employing the same sense of experimentation that characterised Schaeffer's work; the terrain is well-trod and many students are encouraged to start off by listening to those that have gone before, particularly those works from the canon.

The above point should not signal anything negative; the existence of schools and communities of practice is enormously valuable to the field. For example, students clearly benefit from having established practitioners share their compositional techniques and ideas, and are much more likely to continue composing acousmatic music if they have a community around them. It would be quite incorrect, however, not to attribute some kind of influence to those communities. Indeed, other forms of music are much further ahead in terms of identifying recognisable groupings, such as the city *sound* outlined by Mason in relation to Manchester bands (Mason 2017: 65). Irrespective of whether this applies to acousmatic music, it is beyond question that the positive influence of schools and communities helps to create environments where learning, sharing and discussion may take place. Although this must be welcomed and encouraged, it again seems an uneasy

[9] The GRM still exists, for example, and is arguably more active than ever before.

fit with notions of experimentation and serendipity, implying instead the establishment, formalisation and presentation of collective knowledge and agreed action.

Gatekeepers

Before we return to the practical side of composition, it is worth briefly highlighting another form of influence that did not exist during the early days of musique concrète. As noted above, the acousmatic tradition developed gradually, becoming increasingly widespread throughout its seventy year history. Nowadays, there are festivals and events throughout the world, studios dedicated to acousmatic music, radio programmes that regularly perform acousmatic music, international composition competitions, performance competitions, and various commissioning organisations that support the creation of new works. These institutions are keeping acousmatic music alive, and each performs a crucial role in promoting the music and educating audiences. At the same, these various institutions, and the people involved in their running, may be viewed as *gatekeepers*[10] of the field; by engaging in selective and evaluative activities that determine which works are included and excluded, these institutions, and individuals, contribute to what Bourdieu describes as the "production of the *value* of the work or, what amounts to the same thing, of the *belief* in the value of the work" (Bourdieu 2010: 229).

Following Bourdieu's ideas, one might argue that acousmatic gatekeepers maintain, or even construct, certain aspects of creative practice in the field. Take, for example, the fact that most calls for acousmatic works, from festivals and competitions, have a durational limit attached[11]. It is, of course, impossible to prove that there is a robust link that connects these durational limits in competitions with specific acousmatic works; composers may well claim that there is no influence whatsoever, and there is no available

[10] A term discussed, at length, by Pierre Bourdieu that describes those involved in the mediation between the production of cultural goods and the production of consumer tastes (Bourdieu 1984, 2010).

[11] In term of competitions, for example, *musica Viva*, based in Portugal, calls for works between 5 and 15 minutes; *Musica Nova*, a competition based in the Czech Republic, requests that pieces are below 20 minutes in duration; the biennial acousmatic composition competition, *Metamorphoses,* organised by Musiques & Recherches calls for pieces between 8 and 15 minutes; The International Competition of creative work in the field of Electroacoustic Music and Multimedia, *SYNC*, run by the Yekaterinburg ElectroAcoustic Music Studios (YEAMS), Russia, calls for pieces under 15 minutes in duration; and so on.

information on the average duration of existing works to highlight a trend. Anecdotally, however, one might note that the vast majority of acousmatic pieces fit into this durational limit. Whatever the case, entry to those competitions is conditional on meeting the durational limit, and this determines what may, and may not, be entered; since these competitions are seen, by some, as a means of identifying and rewarding the most important and successful works in the field, this durational criterion achieves a degree of significance, irrespective of whether it influences practice. That duration is but *one* of the many requirements stipulated in competitions and calls for works tells us a great deal about the likely significance of the acousmatic gatekeepers, and their potential to influence aspects of compositional activity.

Selecting a Recording Method

We previously observed that the choice of sound materials rests on a degree of predetermination. This may well be true, but there is no reason to think that the act of recording materials will not involve some degree of serendipity and experimentation. Of course, recording technologies and methods are widely known, and relatively standard, and composers are rarely in the process of developing bespoke methods to capture sounds. This largely misses the point, however, since composers of acousmatic music commonly talk about the ways in which they have experimented *with* microphones in an effort to enhance specific details that they are trying to capture, or to discover new sonic details that are otherwise inaudible, rather than invent new methods for recording. As Roads points out: "Even for a single source, differences in microphones and positions can yield a multiplicity of different audio images. Like different lenses and camera angles, these variables can be played with creatively." (Roads 2015: 80)

In many cases, acousmatic composers describe how things crop up during the act of recording, often noting that these could not have been anticipated, or predetermined, in advance. Thus, it would certainly seem that the act of recording does, indeed, involve the kind of experimental approach outlined in the introduction; composers may well make decisions about what to record, but many will hope for unexpected things to crop up during the act of recording, and will allow themselves the freedom and flexibility to pursue these new sonic possibilities as and when they emerge. Before moving on, however, it is worth tempering this claim by pointing out that recording, no matter how experimental it may be, remains unlikely to involve the same degree of experimentation required by Schaeffer. In the early days of musique concrète, for instance, Schaeffer was recording using

in mono. Stereo recording and playback was developed soon after, but there was a huge period of time in which stereo microphone techniques were gradually discovered and refined. Schaeffer therefore worked in a period of great uncertainty, particularly in the context of stereo recording, and this presumably influenced his sense of experimentation. Contemporary acousmatic composers may be unable to predetermine everything that appears during the act of recording, of course, but they will have a pretty clear idea of what they are likely to find, being able to research and select a microphone and recording method, with their chosen sound(s) in mind. Once again, serendipity and experimentation appear to exist in degrees.

Tools and Technologies

When Schaeffer started composing musique concrète, he was based in the Radiodiffusion-Télévision Française (RTF) in Paris. As a result, accessible technologies had been designed for broadcast media. Much has been written of his early use of lacquer disks and magnetic tape, famously closing a groove on a revolving disk to create an endless loop of sound, and removing the attack portion of a sound (a recording of a tolling bell) to disguise its origins. In both of these examples, Schaeffer was required to engage with technologies in ways that were highly inventive and creative, often trying things for which the technologies were neither designed nor intended. Between 1951 and 1958, Schaeffer, along with his main technician Jacques Poullin, designed and built many wonderful technologies for processing and exploring sounds, and found novel ways in which they might use those machines to compose. This approach, which combined technology and creative practice, established itself as the central driver of musique concrète and demonstrated ways in which others might approach technologies for composition.

Nowadays, we have a seemingly endless range of hardware and software technologies, some of which were designed exclusively to aid the composition of acousmatic music. The GRM, for example, produces an excellent range of software tools, modelled on Schaefferian ideas. These sit in a global market alongside many other pieces of software that are sold for the purpose of music-making. Further to this, the rapid growth of online sharing and open-source software has seen the rise of DIY composers building and sharing their own tools for composition, and has further diversified the amount of available software, leading to a point at which Trevor Wishart's famous declaration (now some twenty five years ago) is more timely than ever: "The ways in which […] sound may be transformed are limited only by the imagination of the composer" (Wishart 1994: 1).

Given this explosion of available technologies, it is possible for a composer to use a different piece of technology for each new act of composition, and thus work with a genuine sense of experimentation. Perhaps, therefore, the constant development of new technologies has, in effect, kept the Schaefferian method alive. This certainly seems to correlate with how composers describe their practice[12]. Take, for instance, the following description of practice by composer Louise Rossiter:

> I personally think that play is a crucial part of the compositional process. I improvise with the sound object and mine it for every conceivable sound. Quite often I am surprised by the sounds that come out. I make sure I record all my improvisations. I find this stage of the composition is rather like an onion, peeling back the layers to reveal new sounds that can then be used later on. (Rossiter, quoted in Moore 2015: 225).

We find a very similar notion from Annette Vande Gorne, who describes *play-sequences* as a: "[…] simple and effective means to immediately enter into the heart of musicality" (Vande Gorne 2018: 10). Pete Stollery invokes notions of *improvisation*, telling readers that they should "always spend time improvising with sounds within plugins to create new sounds" (Stollery quoted in Moore 2015, 227). Jonty Harrison talks of "[…] "performing" in the studio" (Harrison 1999).

The sheer number of composers that invoke notions of play make this part of the compositional process impossible to ignore. We must recognise, therefore, that a significant part of the acousmatic compositional process involves a degree of playful experimentation, in which outcomes are not planned in advance, and composers are willing to accept and follow what emerges. This is clearly consistent with the broader method under discussion and is, in many respects, precisely what Schaeffer described in reference to musique concrète.

Despite what is said above, it is interesting to note that listeners of acousmatic music often engage in *technological listening*; a term invited by Denis Smalley to describe what happens: "[…] when a listener 'perceives' the technology or technique behind the music rather than the music itself, perhaps to such an extent that true musical meaning is blocked" (Smalley 2001: 109). Smalley goes on to say:

[12] Although I could find no written reference to support this, many composers have told me that each developmental stage in their compositional journey has coincided with a discovery of a new technology.

> Many methods and devices easily impose their own spectromorphological character and clichés on the music. Ideally the technology should be transparent, or at least the music needs to be composed in such a way that the qualities of its invention override any tendency to listen primarily in a technological manner. (Smalley 2001: 109).

One might disagree with Smalley, perhaps by arguing that technological listening can be extremely rewarding[13]. In order to make this argument, however, one must first acknowledge that technological listening has taken place, and this seems at odds with the notions of experimentation and serendipity. If there really are so many different tools and technologies that provide endless possibilities for experimentation and serendipity, then why do we still manage to spot technologies through listening?

There are several answers to the above question. Firstly, many tools are designed to achieve a specific outcome, and this forecloses both their use and the possibilities for experimentation; as Moore points out: "One might assume that software is creatively 'transparent', that it is the user that sculpts the software to their needs. However, some software (in particular third part tools with very closed interfaces) will only allow you to do what the software engineer has decided can be done" (Moore 2015: 77-78). Secondly, as Moore goes on to suggest, although there are many technologies in existence, many of them do more-or-less the same thing: "[…] as you probe each tool, not only will you find the similarities quite reassuring but you will realise that there are aspects of each which will speed your workflow and potentially bring order and structure into your transformation operations" (Moore 2015: 78). Thirdly, as implied by this final point, composers do not endlessly search for new tools. Instead, they discover tools that they find useful, and then use those tools over and over again. Thus, despite seemingly endless technological possibilities, composers often rely on a specific set or selection, making it much more likely that similar sounds will be found throughout their pieces, as Moore acknowledges: "Ever since I used convolution and spectral cross-synthesis in Junky these techniques have been essential in developing my works" (Moore 2015: 224).

Given what has been said above, it seems reasonable to suggest that composers are not *always* experimenting with technologies. Often, they follow ideas worked out in advance, and this is precisely what Rossiter and Moore advise acousmatic composers to do; Rossiter says: "You have no idea when you will want to go back to that recipe for the epic drone you

[13] The author of this chapter, for instance, has frequently enjoyed listening to Trevor Wishart's music *because* he is able to hear the various ways in which technologies have been used to process sound.

made three years ago so it is always a good idea to keep some sort of record of your work" (Rossiter quoted in Moore, 2015: 226). Moore tells his readers: "I have tried almost every technique under the sun, and if I had one piece of sound advice it would be that as soon as you think you have happened on a sound that is particular to you (to the best of your knowledge this is currently your 'signature' sound), write down how you made it" (Moore 2015: 224).

Form and Structure

In *The Textility of Making*, anthropologist Tim Ingold suggests that contemporary discussions regarding art and technology mistakenly invoke a *hylomorphic* model, in which creative practice involves the imposition of a predetermined form onto materials or objects (Ingold 2009). In rejecting this idea, Ingold proposes an alternative account of practice, in which form emerges through an intervention in fields of force and flow; rather than imposing form, practitioners follow the lines and contours of materials in anticipation of what might arise. This alternative account, which Ingold terms *textility*, chimes perfectly with the ideas set out in the introduction to this chapter, in which compositional practice is described using the terms *experimentation*, *serendipity*, *intuition*, and *emergence*. It would seem that the compositional methods of acousmatic music are a paradigmatic example of textility. Discussions under the previous subheadings may well have weakened the notion of acousmatic composition as a form of textility. Whether this results in the predetermination of form, however, is far from clear, and it is worth considering some of the things that composers have said about form within their practice.

Perhaps the most striking example of hylomorphic thinking comes from Trevor Wishart who, when discussing his work *Imago* (2002), draws attention to how his initial aims were shaped:

> […] I was challenged by a composer friend, a sophisticated listener to instrumental music, who claimed he found it impossible to follow the logic of sound compositions […]. I have subsequently heard related comments from other traditional instrumental/vocal composers e.g. that all electro-acoustic music appears to them to be monophonic (i.e. having just one musical line, as opposed to polyphonic, carrying several musical lines simultaneously). *Imago* was partly a musical riposte to this challenge – to make an electro-acoustic piece whose musical logic is extremely clear (just as, say, the unfolding of a Fugue is very clear) (Wishart 2012:101).

Wishart goes on to describe how he created such a form, describing the development of various different themes, motifs, repetitions, variations and meta-events, before suggesting that the entire piece is divided into a range of sections, or paragraphs, explaining where one paragraph starts and the other stops. The result, drawn out over some 12 pages, is extremely rare in the field of acousmatic music; clear evidence of pre-determination of a form, in which the composer acknowledges that his intention was predetermined and then fulfilled.

Although the discussion of *Imago* is, perhaps, the clearest example of how Wishart has predetermined form in his music, he provides many other examples that describe when form was determined *during* the compositional process. For example, when discussing his large-scale work *Encounters in the Republic of Heaven* (2006-2009), Wishart explains how he spent two years recording, cleaning, and cataloguing interviews with people in the North East of England. Despite not processing sounds during this period, he goes on to say that "The final form of the piece gradually crystallised around the extracted narratives in the 2nd year" (Wishart 2012: 136). At this time, Wishart was mid-way into the composition of this work when the final form was determined. Since no particular processing or transformation of materials had taken place, however, form cannot be said to have emerged out of the act of manipulating or processing sounds in the studio.

It is possible, of course, that Wishart is a special case[14]. Looking elsewhere, however, one finds something quite surprising. Rather than adhering to either textility or hylomorphology, most are located between two. Composer Curtis Roads explains this mid-way point by outlining three broad approaches to the development of form. In the first approach, he describes *top-down planning* which "starts by predefining a macroform, a template whose details are filled in at later stages of composition" (Roads 2015: 292). In the second approach, he describes *bottom-up planning* which: "constructs form as the final result of a process of internal development produced by interactions on low levels of structure – like a seed growing into a mature plant" (Roads 2015: 294). In the third case, Roads describes *multi-scale planning*:

> Both top-down and bottom-up planning privilege early decisions in the compositional process. In order to remain consistent, they mandate a commitment to the initial plan. In contrast, multiscale planning circumvents

[14] This highly idiosyncratic composer, who even described himself as "possibly slightly eccentric" (Wishart 2012: 131), rarely follows the status quo when it comes to his creative practice and has, in many respects, created his own, unique approach to acousmatic composition.

> the preset and inflexible nature of strict top-down and bottom-up strategies" (Roads 2015: 298).

Roads goes on to provide several examples from his own works, all of which adhere to multi-scale planning, clarifying his approach as follows:

> Multiscale planning can begin from either a top-down or bottom-up starting point. For example, one might start from a high-level conception and then modify it as specific sounds are mapped onto it. Here the composer makes local decisions that take advantage of idiosyncratic or unexpected features that arise in building lower-level structures. Another top-down starting point would be a piece that is constructed by editing an existing sound file, for example, a long granulation. In this case, it is possible that major chunks of form are already built into the material. The construction of my piece *Tenth vortex* (2001), for example, began with subtractive carving and rearrangement of material from a long granulated sound file originally performed in real time. (Roads 2015: 200).

Personally, I was very excited to read Roads' description of this mid-way point, since this most clearly corresponds with my own compositional method. To my surprise, however, I subsequently discovered that others have described a very similar combination of top-down and bottom-up. Take, for example, the writings of Annette Vande Gorne (who at the start of her text that she studied with Pierre Schaeffer at the GRM in 1977-1980) (Vande Gorne 2018: 9). I had always assumed that Vande Gorne would adhere precisely to the idea of form emerging gradually out of the manipulation of recorded materials. However, this is far from correct. Instead, we find something very similar to Roads' notion of multi-stage planning, in which Vande Gorne promotes experimentation and transformation on an equal footing with predetermination of form and materials. The various subheadings in the later chapters of the book (where she turns her attention to the building of form) are particularly revealing in this context, including: *Working with a Predetermined Track: Temporal Template*; *Combining by Theme and Variation*; *Construction of Composite Objects; Combining Two Sequences: Mixture of Three or More Chains;* and so on. In these examples, Vande Gorne is presenting a method of working in which materials fit in with a predetermined idea, or structural plan. This seems remarkably similar to what Roads suggests, using bottom-up approaches for part of the compositional process and top-down for the rest.

Returning to the composers quoted in the introduction to this chapter, I was surprised to find a similar sensibility; despite articulating their practice in terms of experimentation, serendipity, intuition and emergence, Smalley, Harrison and Lewis give indications that they also employ multi-scale

planning. For example, when describing stage 3 of *The Harrison Method*, Harrison says:

> I may need to step back once again to stage 2 (processing) to develop more variants that offer more compositional options; I may even need to revisit stage 1 and record some completely new material that stages 2 and 3 have suddenly suggested that I need!. [Ultimately,] 'form' is a resultant of the sounds, the processing applied to them and the decisions taken about their shaping and placement. Very often I have to adjust my original ideas, such as they were, during the course of composition because the sound materials refuse to yield what I had hoped for or, alternatively, suddenly offer me something interesting that I had not foreseen. (Harrison 2013: 318).

In this description, it is clear that initial bottom-up ideas, involving the processing and shaping of materials, are in a dialogue with top-down ideas about predetermination of form or content. Lewis says something very similar:

> Then comes 'seeking': this means I start actively looking for specific things, trying to realise certain kinds of ideas, exploring and developing the latent possibilities of the stuff that I have 'found'. This applies to transformation, but is also when the real composing begins, in the sense of trying to shape a whole piece. Of course, 'finding' can also continue in this stage, as unexpected possibilities present themselves. If they do, I try to be prepared to abandon my previous plans, and even material that I spent a long time on, and instead let this new 'finding' take my 'seeking' in a new direction (Lewis, in Moore 2016: 222).

Although far from comprehensive, it appears that form is not always emergent; sometimes it is pre-planned, and at other times it is a consequence of both top-down and bottom-up approaches employed during the act of composition. Form is not the result of one thing, therefore, and one might argue that most descriptions lean toward hylomorphology rather than textility, or Roads' notion of multi-scale than emergence.

Performance practice

In *Musical Performance: a philosophical study*, Stan Godlovitch describes a performance *telos* at the heart of composition practice (Godlovitch 1998). In echoing what many others have pointed out, Godlovitch is drawing attention to the fact that composition is directed *at* a specific context – acts of live performance. For Godlovitch, music is composed specifically *for* such a context and thus decisions are made with this in mind. When

Schaeffer started making musique concrète, however, there was no equivalent context for the performance of fixed media music[15]. Today, however, sound diffusion is so widespread that (providing the ongoing debate as to whether this practice constitutes a form of performance has been resolved Dack 2001; Harrison 1988, 1999, 2000, 2010; Stansbie 2010, 2011; Stanović 2018)) the same kind of telos applies; acousmatic composers create their works with a specific context in mind – sound diffusion as a form of live performance – in-so-far as they shape materials, and determine certain aspects of their creative practice, in order to make the most of diffusion possibilities when ultimately presenting their work.

This approach has been most clearly articulated by Harrison, who notes that "much electroacoustic music, particularly that in the musique concrète and acousmatic tradition is intended to be diffused, has the variability of performance underlying its aesthetic base" (Harrison 1999: 124). In this context, the term variability is particularly significant, since it implies that acousmatic works are not somehow fixed during the act of composition, but leave open certain options for a performer to deal with in various different concert scenarios. With this in mind, it would appear that acousmatic works (or at the very least, acousmatic works that have been created with diffusion in mind) appear to be very similar to their scored, instrumental counterparts; both encourage a degree of variability in performance that has been fundamentally established in advance (Stansbie 2013).

Elsewhere, Harrison provides a wonderful example of how he made a compositional decision that was unequivocally based upon performance practice. When discussing his piece, Hot Air (1995), Harrison created two versions, one for performance and the other for publication on a CD:

> I knew that the work would be premiered on the GRM's Acousmonium on the deep stage of the Salle Olivier Messiaen. The piece contains a very long 'Mediterranean nightscape' section which recedes very slowly into the distance, to the vanishing point [...]. I knew that I would be able to sustain this structural effect in diffusion, but when I came to release the work on CD, I shortened this section, feeling it was too long for a personal or domestic listening context, without the benefits of diffusion and real loudspeakers in distant positions. (Harrison 2011: 6)

[15] Despite Christian Clozier building the first substantial diffusion system (Clozier, 1998), it is the work of Bayle, at the GRM in the 1970s, that takes most credit for establishing sound diffusion as a form of live performance practice.

Here, we have clear evidence of how a composer adjusted his compositional ideas and intentions with performance *in mind*. In short, a compositional decision intentionally exploits a performance context.

Not all composers will work in the same way as Harrison, of course, and very few have his level of experience in the art of sound diffusion. We might, therefore, agree with Smalley when he notes that many composers fail to account for performance practice during composition: "both because they lack sufficient direct comparative experience, but more seriously because they possess a fixed «image» [sic] of their music as conceived and perceived within the composed space of recorded formats" (Smalley, 1991: 124). Although insufficient research has been conducted in this area, the awareness (or otherwise) of a given composer is fairly incidental to the broader field of practice; since the entire acousmatic field has a long-standing design of works for diffusion, it is clear that certain aesthetic tendencies have developed in order to maximise the possibilities in diffusion. A contemporary composer cannot, therefore, escape these aesthetic tendencies, developed with practice of sound diffusion in mind, even if they choose not to perform.

One might speculate that certain differences between the French and British schools of composition have a great deal to do with the fact that the French diffusion typically uses an acousmonium[16] whereas British have used homogenised systems (in which loudspeakers are generally of the same make, and often the same model) (Savouret 1998: 347). Although a generalisation, one does find a lot more fragmentation and splicing of materials in the French school, which would suit the more iterative nature of the acousmonium; splices allow the performer to make quick 'reset' transitions between sets of loudspeakers. It is equally true that British composers have favoured materials that evolve, shape and grow gradually over time, suiting the more homogenous systems since the evolution of material may then pass seamlessly, from point to point, in the concert hall.

Although this section has been extremely brief, the point raised was that acousmatic composition is contingent on the machinery of performance practice, in exactly the same way as it is contingent on schools and communities, past listening experiences, the broader canon with its aesthetic

[16] The Acousmonium, a system devised by François Bayle and Jean-Claude Lallemand at the GRM, may include up to eighty loudspeakers in a single performance. This system is often referred to as an orchestra of loudspeakers in response to the (partially) asymmetrical distribution of non-homogenous loudspeakers resembling the groupings of instruments found in an orchestra. The distinct characteristics of the various loudspeakers are central to the Acousmonium and differentiate this system from certain other systems which have symmetrical, homogenised loudspeakers.

tendencies, and the many technologies designed specifically for the purpose of acousmatic music-making. Although certain aspects of that practice rely upon serendipity, experimentation, intuition and emergence, others involve preplanning, predetermination and intentionality on the part of composers.

Conclusions

The topics introduced and discussed throughout this chapter are far from exhaustive, and more work is needed if we are to more clearly understand the methods employed by contemporary acousmatic composers. Even so, the chapter has drawn attention to the fact that we now have an established, international tradition of acousmatic music, a detailed and documented history of the field, a cannon of significant works, countless schools and communities of practice, technologies designed for the specific purpose of composing acousmatic music, concerts, festivals and competitions dedicated to acousmatic music, record labels dedicated to acousmatic music, online access to the catalogues and releases of acousmatic music, and access to knowledge and music that was surely inconceivable at the point when Schaeffer invented musique concrète. Clearly, these developments are going to exert an influence on the ways in which composers select, record and manipulate sound materials and this, in turn, determines musical form. In pointing this out, one reaffirms the core method proposed by Pierre Schaeffer, but questions the various terms commonly associated with this core, particularly notions of *experimentation*, *serendipity*, *intuition*, and *emergence*. Such terms, which typically downplay a given composer's decision-making and pre-determination over certain aspects of their works, might have been appropriate in Schaeffer's day, but seem out of place in the current age. The relative failure to explain, rethink or replace such terms risks generalising the entire compositional process and, by extension, the many positive things that contemporary acousmatic composers are striving to achieve. Thus, as the title of this chapter suggests, now is the time to rethink compositional practice in acousmatic music and in doing so prevent the construction of a methodology mythology.

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CHAPTER THREE

ANTIPHONAL AUTHORITIES: EXCHANGES OF CONTROL AND CREATIVITY IN COLLABORATIVE ELECTROACOUSTIC PERFORMANCE

JAMES WILLIAMS

Overview

In the concluding remarks of a paper published in 2017, the author wrote:

> [Collaboration can be used] as a means to move away from [compositional] principles. Collaboration *enforces* [composers] to move away, [and] an argument for these being *creative* departures can and has been made in [two] cases. (Williams 2017b: 105)

The author is referring to a specific case study called *Endings* (2012), where two composers collaborated through compositional discussions, rehearsals and performances to produce a programme of minimalist theatrical music fused with undulating electroacoustic soundscapes. The conclusions alluded to the notion that at the start of the project, each composer had their own typical approach to composition and performance. However, through collaboration, not only were each of the two typical practices broken down by the other, but actually each composer, at specific moments, inadvertently ended up *swapping* their typical practice for that of the other. This chapter explores this thesis further by proposing that when exchanging typical *practices,* collaborating composers (as seen in this example) also trade 'control' or 'authority' during performance. This proposal is explored by interrogating audio-visual footage from rehearsals and performances, which were ethnographically documented as part of the author's doctoral studies completed at the University of Wolverhampton in

2017. This chapter explores the material in a way that extends the thesis to propose that via swapping typical practices in composition and performance, collaborators also trade control: the capacity to control is bound to its practice.

Collaborating Composers: Jeremy Peyton Jones and Kaffe Matthews

Historically, composers for theatre have a rather rich, often interdisciplinary collaborative background, working with directors, producers, and stage crew, for example, in addition to the musicians/performers and other music-based professions involved in a production. This is certainly true for the British minimalist and theatrical composer Jeremy Peyton Jones (b. 1955), currently based at Goldsmiths College, University of London (as of 2017). Peyton Jones's work combines minimalist structures with the live amplified styles of theatre music. *Time Out* magazine (2007) says his music draws 'equally on minimalism, jazz, post-punk thrash and English irony – Jones's music is vibrantly theatrical', whilst *Live Art* magazine describe his music as 'utterly seductive and absorbing' (2007). His Goldsmiths' biography states that he has 'a particular interest in the intersection between music, theatre, performance, live art and other time-based media […] experimental live art (and) theatre' working collaboratively with both theatre companies and individuals. These reviews tell of a hybridized style of contemporary music composition, however, despite these modern fusions, Peyton Jones's music is particularly traditional with regards to compositional method. His creative practice preserves conventional approaches in composition: his works retain traditional Western notation and are rehearsed and realised from the resultant scores by his house band/ensemble, Regular Music II, of which Peyton Jones also conducts.

The diverse collaborative repertoire of a theatre composer is not always reflected in the typical practices of electroacoustic composers. Generally, electroacoustic artists seem comparatively individualist with their work. Andrew Hugill discusses *virtuosity* (as 'advanced reflective practice') when considering the *solo* electroacoustic artist (2008: 128). In terms of practice, he states 'creativity and innovation to be the hallmarks of their [a digital musician's] virtuosity' – he relates the 'new' to the virtuoso, the virtuoso to the gestural, and the gestural to reveal the 'live.' However, *solo* virtuosity, is not necessarily so true for London-based electronics artist Kaffe Matthews (b.1961), who, similarly to Peyton Jones, has quite a diverse collaborative history. Although Matthews's background in music

stems from a classical training on the violin (which later developed into work with an electronic *reconstruction* of the violin), discovering electricity and exploring multiples ways of listening through the use of electricity began to form the core process of her creative practice: Matthews works in a realm of listening to sound(s) and reacting and responding to her sonic environment. Her work rests on live experimental electroacoustic composition and site-specific sound, and in this respect, is recognized as a 'pioneer in the field of electronic improvisation and live composition' (Matthews 2015a). In an interview with Hugill, published in *The Digital Musician* (2008: 211), she says, 'I compose on the fly in live performances, improvising and working with software to create chance events to which I respond there and then (Matthews, in Hugill 2008: 211). Cultural music historian Piero Scaruffi writes, 'her music is fundamentally "live" as it relies on her manipulating the music itself at her laptop" (2003). Matthews considers herself both as a composer and as a performer, but although she performs her own work in a somewhat individualist manner when compared to more traditional composer-performer setups, she does have an assorted history of collaboration. Her work is so often created spontaneously in an improvisational manner alongside other art forms:

> Her extensive list of previous collaborations range from working with individuals and groups of musicians, programmers, technologists, scientists and production companies. Notable examples include the BBC Scottish Symphony Orchestra, interdisciplinary work on the research project *Music for Bodies* (2006), which has on going outputs originating from Matthews's *Sonic Armchair* (1997) and a BAFTA award-winning project *Weightless Animals* (2004) – 'an impressionistic exploration into the sonic environments experiences through space travel (Matthews, 2015b), with film director Mandy McIntosh and performer of electronic instruments Zeena Parkins. More recently Matthews has collaborated with a number of scientists and marine biologists at the Migramar Biotelemetry Laboratory on a project titled *SHARKS – You might come out of the water every time singing* (2012). (Williams, 2017a)

In another project, *The swamp that was… a bicycle opera* (2012) Matthews collaborates with Timelab, the Ghent (Belgium) Flemish community, livecoding artist and designer David Griffiths, Flemish sound artist Els Viaene, and 'mapman' Peter Edwards (Matthews, 2015a). She says:

> I'm working with people and places to make music for outside spaces. Reconsidering time through building non-linear works that hover invisible

> in the air until they are triggered to play by a passing visitor. […] (*The Swamp that was*) [is] a work of sonic archaeology that knits together the spirits of the living and the dead […] to be performed by you as you pedal the streets on a satellite linked *audio bicycle*. […] Enveloped by the music that will change as you move, you can find your own narrative. Electronic and acoustic, real and processed, an enveloping cloud of sonic newness. Action, reflection, adventure, accompaniment. Rediscover your city. (Matthews 2015a)

These examples do demonstrate Matthews's use of notation, however the collaborations often rest on increasingly modern or contemporary styles of notation, especially when compared with Peyton Jones's conventional style.

Case Study: *Endings* (2012)

Endings is a project that unites the creative practices of Peyton Jones, Matthews and Regular Music II, initiated by Peyton Jones in early 2012. He invited Matthews to work with him on a selection of works from his composition portfolio, whereby she would contribute new layers of electronics and electroacoustics to each piece. Additionally, Peyton Jones asked Matthews to create solo improvised electroacoustic 'interludes' between the pieces: this would effectively stitch Peyton Jones's composition together, resulting in a constant programme of music. Their project aimed to explore collaboration both as product and as process. Ultimately, Peyton Jones's aim was to experiment with electronics within his compositions: how they could transform his work, and how they could add to his work. The concept was explored through a pre-rehearsal meeting with Matthews, and four days of rehearsal. These resulted in three performances across the South and Southwest in Bexhill, London and Bristol (Table 3-1).

Performance	Date	Venue
1	24 May 2012	De La Warr Pavillion, Bexhill East Sussex
2	26 May 2012	Queen Elizabeth Hall, Southbank Centre, London
3	31 May 2012	The Arnolfini, Bristol

Table 3-1 *List of Performances*

Because *Endings* was Peyton Jones's concept, and because he specifically approached Matthews with the idea, the collaboration (in terms of control) immediately places a level of authorship (or at least

directorship) with Peyton Jones. This notion is strengthened whereby at the core of Peyton Jones's plan sits a pre-composed set of his own works from the past three decades. This drastically informed the nature of the project: Peyton Jones and Matthews never met with the intention to start from a blank canvas. The project rested on 11 compositions: *And The Days Are Long* (1999)*; The Valley* (2007)*; Stunde Null: Running* (2012)*; So In America* (2007)*; Lulu Suite: Part I* (1984)*; Stunde Null: Time* (2012)*; Going Down* (1990)*; Alturas de Macchu Picchu* (1995)*; And Then He Asked Me* (1999)*; White Noise* (2009)*;* and *Will I Live Again?* (2009). Table 3-2 illustrates the culmination of these pieces in *Endings,* as drawn from Peyton Jones's professional timeline.

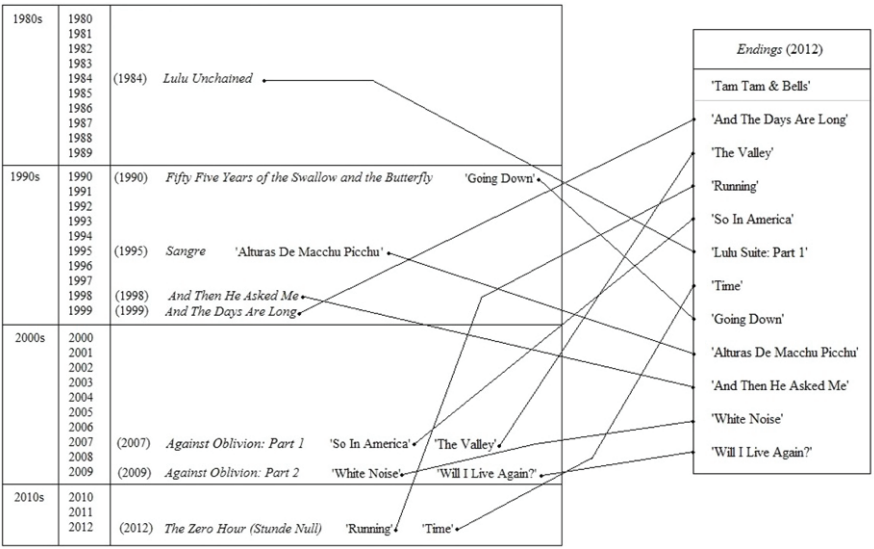

Table 3-2 *Pieces featuring in Endings (2012)*

Peyton Jones's contributions to *Endings* were realized by Regular Music II – an ensemble of performers composed for and conducted by Peyton Jones (in essence his house band):

> The ensemble, Regular Music II is the name used by me nowadays as a kind of umbrella for the musical projects that I do. It started out as an original ensemble many years ago called Regular Music. It reformed [as] Regular Music II with the addition of singers, and since then I've done several projects which use loosely the same kind of line up. […] I'm

> working with several of the same musicians usually for example Melanie Pappenheim, one of the singers I work with and have worked with for years, Charles Hayward is again a regular member of Regular Music II, Ashley Slater etc., but then other musicians I bring in as and when. (Peyton Jones [Interview Material] November 2012)

The original Regular Music ensemble was a collective of performers who were 'early instigators of the UK post-systems movement, [and] whose work straddles the spheres of rock, minimalism and post-punk' (DLWP, 2012). The revamped Regular Music II comprises a varying number of performers from rock, jazz and classical backgrounds. The diversity of performer backgrounds is representative of Peyton Jones's 'fusion' style of composition. For *Endings*, the ensemble comprised the following 11 musicians: Rebecca Askew (voice); Melanie Pappenheim (voice); Jono Harrison (keyboards); Chan Chan (piano); Charles Hayward (drum kit); Ruth Elder (violin); Benedict Taylor (viola); Mick Foster (clarinets and saxophones); Tom Jackson (clarinets and saxophones); Ashley Slater (trombone); and Steve Smith (electric guitar and bass electric guitar). Table 3-3 shows both the frequent performers and collaborators (with instrument counterpart) who feature in the Regular Music II collective, and also the 11 performers involved in the *Endings* project. The juxtaposition of the *Endings* ensemble with the full collective also illustrates the instrumental capacity in which Peyton Jones can work.

Method

The analysis in this chapter stems from the methodological design found in the author's PhD (Williams, 2017a). The chapter rests on a comparative analysis between Performance 1 (Bexhill) and Performance 3 (Bristol). Extracts from the performances are analysed by viewing video footage filmed by Colin Still of Optic Nerve Production Company. The camera was placed in the performance venues, capturing both the musical and communicative/interactive processes. Care was taken to ensure participants were not (or minimally) influenced by the researcher or research, as the method takes an entirely observational approach (etic over emic): the project was not participatory (or 'action-research'). Due to recording restrictions in the Purcell Room at Queen Elizabeth Hall, Southbank (London) the second performance was not recorded. For this reason the performance does not feature as part of the analysis, neither as a core example for analysis, or an interim example as a reference point.

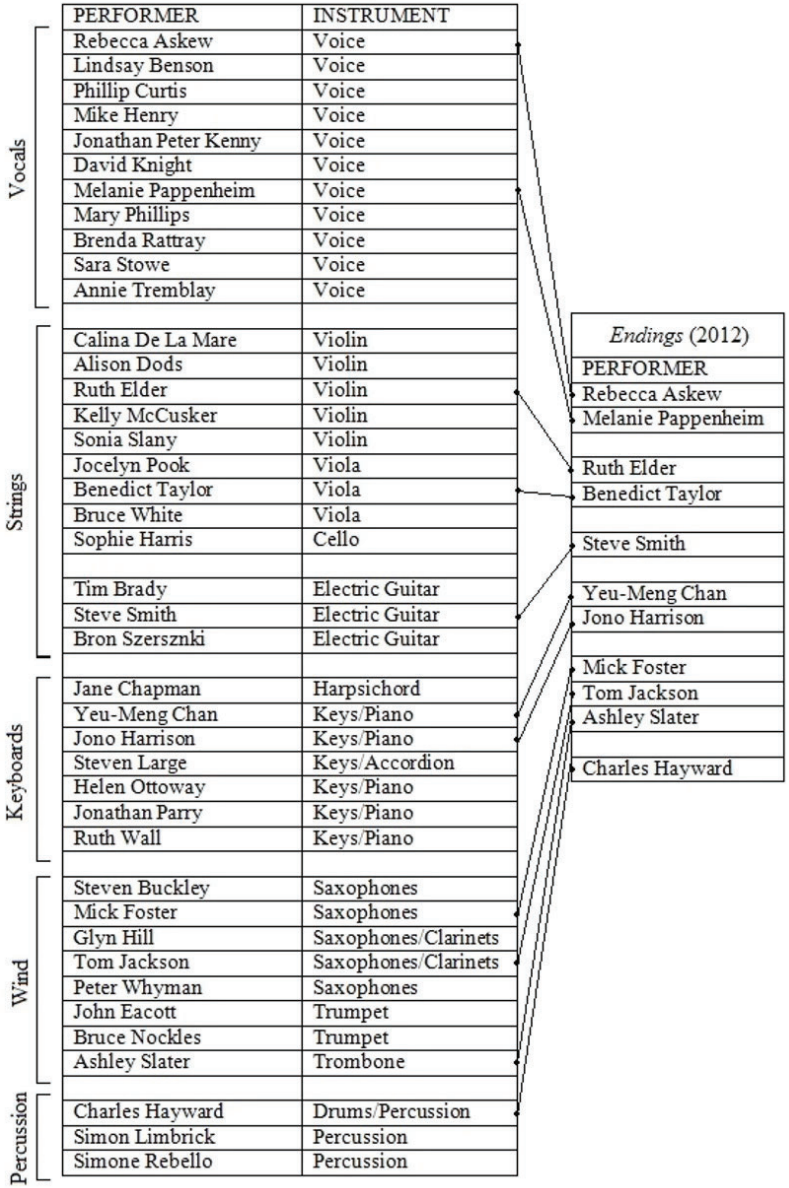

Table 3-3 *Frequent Performers and Collaborators in Regular Music II*

Additionally, other ethnographic methods underpin the discussion. Interviews with the composing collaborators, and transcribed extracts from the rehearsal footage over the four practice days support the analysis. Transcriptions of conversation help to expose the creative and collaboration negotiations that occurring during rehearsal, not only just between Peyton Jones and Matthews, but also within and between the performers of Regular Music II. This itself is a particularly dense network to interrogate: Figure 3-1 illustrates the potential pathways of discourse between composers, and performers during rehearsal.

Figure 3-1 *Pathways for Discourse during Rehearsal – see colour centrefold*

Analysis

The subsequent analysis explores the two trades of performance practice, and thus to expose the two trades of control between the collaborating composers. For Peyton Jones, this is expressed through Regular Music II; for Matthews, this is expressed through herself. Analysis of exchanges of control are discussed within the same example, called *Tam Tam and Handbells.*

The initial stages of the performance process of *Tam Tam and Handbells* explore a process whereby Peyton Jones adopts Matthews's typical performance practice: he turns to listening to the surrounding sonic environment, reacting, responding and improvising to the sound. However, more significantly, the adoption process within this part of the performance reveals Peyton Jones to take *control* of such sound *through* the practice. Preceding the first composition in the programme ('And the Days are Long'), Peyton Jones discusses (with Matthews) the idea of a 'mesh' of introductory sonorities. From their pre-rehearsal conversation, he says,

> There is something before this (the first piece, and the days are long), that I want to try… it's not a piece particularly, but it is an introduction. I want to do something with 'Tam Tam And Bells'… with a big gong and some hand bells and that is simply introductory, and that will be Charles, start with a very, very long slow tam tam roll from absolute nothing from pianissimo to double forte, and as it gets pretty loud, the performers are all going to have a pair of hand bells and they're going to join with that sound so that there's a big large ringing sound in the space, and out of that will come the first piece. I'm imagining you Kaffe, should join in with that sound and [move it around] It's quite an experiment – I want to try it in rehearsal. I don't know exactly how it's going to work (Peyton Jones 2012)

Following this, Matthews asks, "how long do you imagine this going on for?", to which Peyton Jones responds "around 2 minutes/a minute and a half – I don't know – I think we've got to try it." So here, there are two core points of concern: *firstly*, the creative and logistical interaction(s) between Matthews and Regular Music II (via Peyton Jones) (i.e. the integration between acoustics and electronics); and *secondly*, the negotiations regarding the duration of the introduction before the first piece (i.e. who controls this duration: is it improvised; is it fixed; how will this work in performance?)

Before trialing this in rehearsal with combined electronics and acoustics, Peyton Jones first rehearses solely with the ensemble. Because there is no score for this work, Peyton Jones's direction rests on verbal and gestural communication (rather than notational). He explains what the performers should do, and demonstrates the use of handbells in rehearsal. Here, the rehearsal process is a form of experimentation: the performers are not asked to improvise individually nor to improvise with each other. Instead they take instructions from Peyton Jones, who additionally establishes a performer's role – his conducting changes. Typical right hand movement is replaced with a circular gesture required to use the handbell. This has two roles: **to conduct** (the performers follow him); and **to perform**. This dual role is not so different from a harpsichordist's or violinist's role when directing a Baroque concerto grosso.

Consultation between composers in rehearsal initially centers on issues regarding logistics and control. After, creative decisions on the timing and shaping of the transition are made: Matthews is clear in verbal and gestural communication about requiring a substantial amount of time to allow the shape of the transition to evolve spatially and texturally. Additionally, it is negotiated between the collaborators that Peyton Jones will communicate (to the ensemble) the start of 'And The Days Are Long' on hearing a gentle decrease in dynamic in Matthews's soundscape: a slight diminuendo will act as a cue for Peyton Jones to bring the ensemble back in for 'And The Days Are Long'. This begins to reveal how the transitional elements of the programme (between each composition) require revised approaches to conducting in performance: 'typical structures for 'entries' and 'closes' in conducting are challenged where electronic interludes adjoin endings and beginnings of material' (Williams 2017a). As conductor, Peyton Jones is no longer in control: he must wait and respond to Matthews's cue (the diminuendo), and significantly, this cue is only audible: Peyton Jones cannot see Matthews as she is positioned behind him within the audience, in order to be in central to the speaker layout. By the close of the rehearsal period, three concluding remarks can be made: *firstly*, the duration remains

improvised; s*econdly*, the conductor takes on an instrumental performance role, leading the ensemble with the hand bell, but not 'in' control; and *thirdly*, the electronics intersect the acoustic sound, granting Matthews full control, and only a diminuendo in Matthews's own time can act as an audible cue for Peyton Jones to begin the next piece, 'And The Days Are Long' (i.e. passing back control to the conductor). These rehearsal decisions are illustrated/transcribed in Figure 3-2.[1]

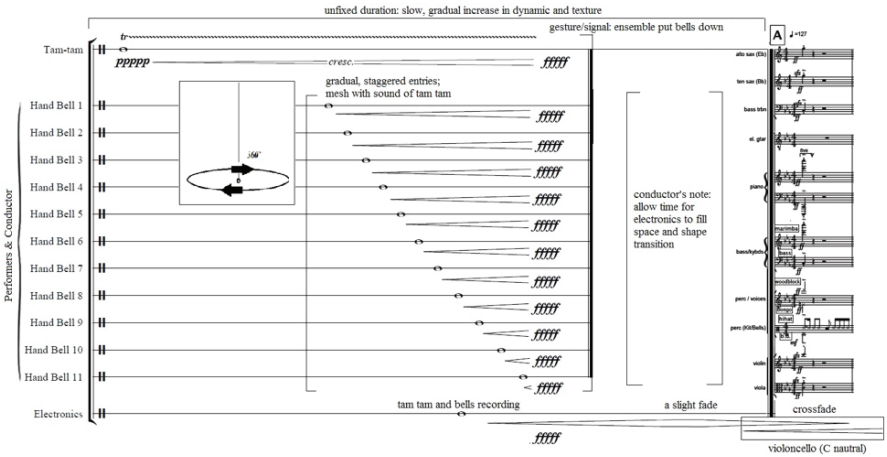

Figure 3-2 *Transcription of Tam Tam and Handbells & Transition into And The Days Are Long*

Due to its improvised structure the duration of the *Tam Tam and Bells* introduction differs vastly between performances. The introduction in Performance A lasts for a total of 3 minutes and 12 seconds. This is broken down into the following substructures by duration (Figure 3-3 illustrates these timings, showing how structure and duration coincide):

Tam Tam only (crescendo): 1 minute, 45 seconds
Hand bells enter, Tam Tam continues: 52 seconds
<electronics intersect gradually>
Ensemble stop, electronic continue: 35 seconds

[1] Figure 3-2 is for analysis purposes only: the notation is *de*scriptive (as opposed to *pre*scriptive)

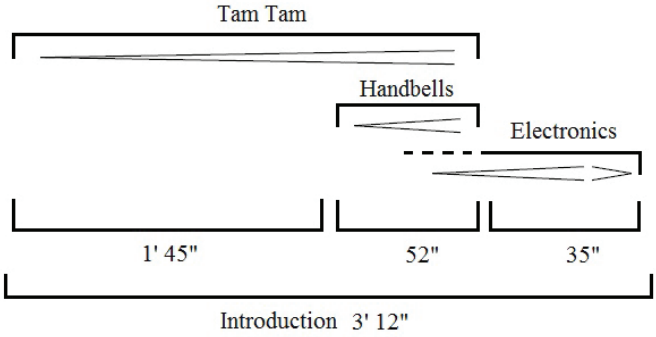

Figure 3-3 *Duration(s) and Structure of Tam Tam and Handbells in Performance A*

However, in Performance B the introduction lasts for 5 minutes and 38 seconds, now broken down as follows (similarly, a transcription, Figure 3-4, of the durations in Performance B illustrates the structural partitions and relations):

Tam Tam only (crescendo): 2 minutes, 47 seconds
Hand bells enter, Tam tam continues: 1 minute, 22 seconds
<electronics intersect gradually>
Ensemble stop, electronic continue: 1 minute

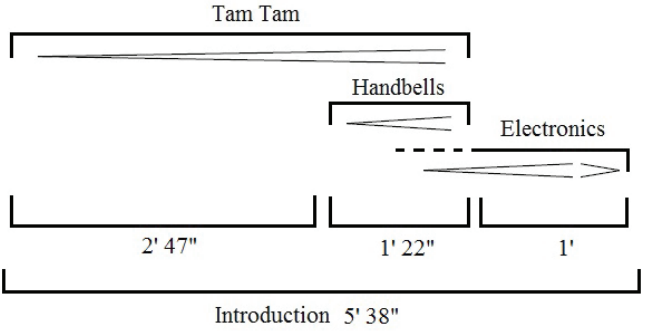

Figure 3-4 *Duration(s) and Structure of Tam Tam and Handbells in Performance B*

Viewing these diagrams side-by-side (Figure 3-5) helps to draw statistical differentiations: Performance B is 76% longer than A, where the variation in duration of the sub-structures between A and B are as follows:

Tam Tam only: 59% increase
Handbells and Tam Tam: 58% increase
Electronics only: 71% increase

Figure 3-5 *Percentage Duration Differentiations between Performance A and Performance B – see colour centrefold*

'The differences in durations between Performance A and Performance B are the results of the prior compositional and rehearsal processes, where an unfixed improvisatory process presides over fixed notation' (Williams 2017). In both performances Peyton Jones gives a cue (nod) to the percussionist on the tam tam (Charles Hayward) to begin the concert (tam tam only).

Peyton Jones performs in both concerts: when he feels the tam tam is loud enough he begins circling the handbell, giving the cue to the instrumentalists to follow suit. For this duration, Peyton Jones is in control. After, Matthews's electronics intersect, and the performers stop playing when Peyton Jones stops playing. It is here where control is passed to Matthews: she is now a solo virtuoso, in control. Matthews's decrease in volume acts as a cue to Peyton Jones, reinforcing her control of determining the duration of the introduction. The duration also varies because of the spatial differences between the venues at Performance A and Performance B. When speaking with Matthews, she also stated that the performance atmosphere and the tension between performers and audience additionally contribute to the introduction's duration – the significant point, though, is that although these factors all contribute to her feelings in performance, she remains in actively control of its duration. Matthews says,

> The duration is not predetermined. And that's essential in the understanding of what this process is, it's about knowing when the time is, when the moment to stop is right. And you can only do that through actually doing it. And it's not just the space, it's the atmosphere and how you're feeling. (Matthews [Interview Material], 2012)

Working closely with Matthews in her studio not only reveals her process in performance during the *Tam Tam and Handbells* opening and its transition into 'And The Days Are Long', but also (and more

importantly) the extent to which how her own notation (in notebook form) is used as a prescribed reference/guide in performance. When interviewing Matthews, asking about the importance of her notebook score in performance, she says 'it's essential – I wouldn't be able to do it without this book. […] My performance score is really pinned down – it's like instructions' (Matthews 2013)

Matthews's and Peyton Jones's negotiated decisions on the electronics in both the pre-rehearsal conversation and during rehearsal resulted in a set of prescribed, predetermined musical actions for Matthews to perform.

Working with prescribed instructions is not Matthews's typical approach, thus for Matthews, bringing a notebook to the pre-rehearsal conversation and to the rehearsal (in order write down her instructions for performance), is her method of creating prescriptive notation. This enables/facilitates Matthews to work accurately with the established ideas in performance. This is seen clear at the transition from the *Tam Tam and Handbells* into 'And The Days are Long'. Peyton Jones says,

> this is the bit where I imagine the electronics having a layer right from the top here where the cellist's playing […] it comes out of that held (Tam Tam & Bells) […] there's some kind of […] shaped, constant sound here that you're (Matthews) providing. (Peyton Jones, Pre-rehearsal discussion, 2012)

He suggests that Matthews should replace the cello part that was in the original score:

> what the cello is doing is a very long held note and it's very… it's full of overtones because it's right near the bridge […] it's a kind of scratchy, rich sort of sound […] We don't have a cellist in this, and it's because I wanted to leave space for you to do something there […] in a similar, but a different sort of sound […] that you might think about and decide on. I was thinking I would like you to replace that cello (Peyton Jones, Pre-rehearsal discussion 2012)

The part is a bass C natural pedal note (drone). Regarding her own thoughts when listening to a recording of work, Matthews says, 'the cello is doing something lovely […] that cello needs fattening out, it's lovely, it's beautiful'. During rehearsals the transition into 'And The Days Are Long' is discussed and practised mostly on the final day. It is clear in rehearsal that Matthews has recreated the pedal note from the original score, beginning at bar 1. However in practice, this enters consistently late (around bar 12). Peyton Jones directs to Matthews that the recreated cello

needs to enter exactly at bar 1. Throughout this time, Matthews writes in her notebook score, to detail and prescribe her work in performance (Figure 3-6)

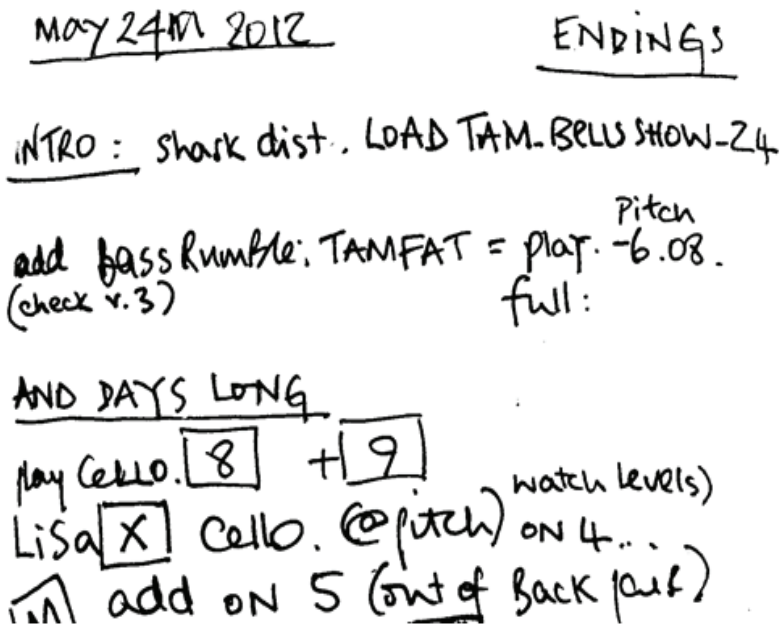

Figure 3-6 *Matthews's notation for Tam Tam and Handbells and Cello*

Concluding Remarks

This chapter has revealed the following process from *Endings*:

1. At the height of acoustic bells, Peyton Jones passes control to Matthews.
2. Matthews takes control (electronics only)
3. Matthews fades shortly, after an undetermined duration.
4. Peyton Jones works improvisationally, listening for that moment.
5. At this point, Matthews passes the control back to Peyton Jones.
6. Onwards, Matthews moves from improvising the duration, to working from notation: her prescribed directions with the cello sample.

This example demonstrates one case of many: such a process happens at the majority of transitional interludes between pieces in the programme. Matthews works 'Jeremy-style' and Peyton Jones works 'Kaffe-style', but ultimately (with the occasional exception) this is only during the exchanges of control of the transition between interludes and compositions. Such exchanges continue in an antiphonal manner throughout the performance. So, what does this show, and what does this mean for practice? The case study shows that precedents of control in music-making are not restricted by tradition. It has been illustrated that conventional methods are applicable to contemporary practice, and contemporary methods are applicable to conventional practice. However, significantly, the chapter has illustrated such a cross-application in a collaborative environment: thus, the core conclusion, is not that conventional methods can be mapped onto contemporary practice, and that contemporary methods can be mapped onto conventional practice, but rather, that these exchanges can happen collaboratively and simultaneously, and not only just simultaneously, but simultaneously in a fluid way, where such 'swaps' of methods and practice are actually used to exchange control in performance.

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CHAPTER FOUR

SPECTROMORPHOLOGY, ANIMAL VOICES, DYNAMIC SOUNDSCAPES: INVESTIGATIVE LISTENING

ANN M. WARDE

Introduction

The science of bioacoustics is concerned with the identification of sounds made by specific species and the functional use of those sounds in the life-cycles of those species. Analysis of the acoustic structures underlying these sounds is central to this work, and the delineation of patterned activity, at multiple scales, lies at its heart. At the scale of single, continuous sounds, patterns of acoustic variability range from the upswept, mostly uniform "contact calls" of right whales announcing their individual presence, to the highly variable syllables of the male Black-capped vireo, whose repertoire can include up to 1700 different sounds, about half of which are unique to any individual bird (Grzybowski 1995). Patterns of acoustic activity function within the categories of frequency, amplitude, and timbral quality, as sources of a sound's overall shape through time. These patterns contribute to the sound as simultaneous sonic layers, sculpting it throughout its duration. At the scale of sound sequences, often referred to as "song", acoustic structure is found also in the relationships (similarities and differences) among individual sounds, and in the comparison of sound sequences to one another.

Because the scientific study of sounds made by animals precludes their interpretation from a human perspective (for instance, we cannot assume that they are directly analogous to specific forms of human speech or music), these sounds must be considered on their own terms, as abstract and distinctly different from any human musical or linguistic utterances. As a result, quantitative analytical approaches have been found to be most useful

as the primary tools for describing, distinguishing, and investigating these sounds and sound sequences.

Qualitative observations and analytical techniques, however, often form an initial impetus for many of these investigations.[1] When information is obtained via listening, although we need to avoid interpreting these sounds in ways analogous to human music, we might nonetheless consider using techniques belonging to musical analysis. To do this effectively, we need approaches that are not intrinsically bound to human music-making but rather that treat the sound, at least to some extent, as a non-referential entity. That is, instrumental and vocal music performance clearly links the sources of its sound to performance by human musicians. However, sounds obtained via field recordings, which often include sounds of the surrounding environment in addition to the animal vocalizations that may be their focus, are not so easily linked to their sources. This is particularly the case with the increasingly common use of techniques in which recording equipment is left unattended for long periods of time. In this approach, known as passive acoustic monitoring, direct visual links to sound sources are missing, so we cannot know absolutely what the source of a sound is.[2] This listening experience is perhaps analogous to that of electronic and electroacoustic music—that music which exists only as recorded or electronically generated sound and is intended to be heard through loudspeakers or headphones. Because it is not rooted in visually observable instrumental or vocal sources, this music is also not always easily linked to specific sound-making sources.

As an instance of a way to observe and describe this "abstracted" music, Denis Smalley's "spectromorphology" (Smalley 1997) is particularly detailed and carefully constructed. It provides a means to articulate relationships among characteristic sound qualities through identifying acoustic and perceptual features that delineate and distinguish sound structures and continuities. While the language and measurements of acoustics include concepts of amplitude and frequency, the timbral distinctions of noisy, tonal, and pulsed sounds, and the gestural indications of upsweep and downsweep, spectromorphology extends this language to embrace and suggest specific relationships among sounds that may be identified and articulated through close listening. As such it can perhaps

[1] See Kuhn, *Structure of Scientific Revolutions*; Steinle, *Entering New Fields*; Waters, *The Nature and Context of Exploratory Experimentation*. See Payne and Payne, "Large Scale Changes over 19 Years in Songs of Humpback Whales" for an instance of bioacoustic research based on qualitative observations as well as quantitative methods.

[2] Haver et al, "The not-so-silent world"; Gibb, Browning, Glover-Kapfer, and Jones, "Emerging opportunities and challenges for passive acoustics."

serve as an evocative and useful complement to the quantitative acoustic methodologies of bioacoustics.

In addition, spectromorphology, as a qualitative tool, might be effective in the more recently developed (and developing) research areas of ecoacoustics and soundscape ecology, whose focus includes the assessment of biodiversity. These two avenues of investigation view the sounding environment holistically as encompassing all the sounds within a specific region over some length of time. One of the most well-known concepts related to this focus on the soundscape as a dynamic sound structure is Bernard ["Bernie"] Krause's acoustic niche hypothesis (Krause 1987, 1993). This and other theories pointing to underlying systems and structural organizations of environmental sound bring to mind the large-scale structures underlying musical compositions. And in this respect, Smalley's extension of his spectromorphology to include the spatial components of sound (i.e. his concept of "spatiomorphology" [Smalley 1997]) may prove particularly fruitful as a means for investigating these structures and systems from alternative viewpoints.

Abstracted music, abstracted sound

Both bioacoustics and electroacoustic music developed with the assistance of electronic recording (and processing) technologies, and they both, as a result, to some extent adopted (for different reasons) an idea of sound as an abstracted, even conceptual, entity—in particular, sound not tied to a specific sound-making source. Both adopted recording technologies for use in research. While it might seem that the essential interest of bioacousticians would in fact be to tie sounds directly to their sources, in practice an element of abstraction is integral to this work. From a scientific standpoint, for confirmed positive identification of the source of an animal's acoustic signal, observations must include simultaneous visual and acoustic data. Obtaining these kinds of connected data in the field is often logistically difficult. Therefore, inferences based on sound and listening alone, while not in themselves definitive, are crucial in working towards obtaining verified identification.

In the case of music, early recording technology was also used for making compositions. Recorded sound, as a musical component, can be understood as an entity separate from the context of the human voice and from human interaction with musical instruments. It can also be understood as separate from mechanical sound sources that are specifically intended to imitate human-produced or other familiar sounds (such as attempts to mechanically imitate birdsong). Early electroacoustic compositions, for

instance Pierre Henry's *Variations for a Door and a Sigh* (*Variations pour une porte et un soupir,* 1963), in which recorded sounds, including a creaking door and a human voice—sighing—comprise most of the musical materials, reflect the ideas of *musique concrète*.[3] *Musique concrète* is a compositional approach, described by Henry's mentor and collaborator Pierre Schaeffer in his *Treatise on Musical Objects* (*Traité des objets musicaux*, 1966), which uses "*concrete sound material*, sound heard for the purpose of trying to abstract musical values from it" (Chion 2009: 37). This and many other works of *musique concrète* specifically draw on this kind of de-contextualized, abstracted, use of sound.

From this perspective, alongside our listening for its identity as a specific utterance, we might consider an animal vocalization (which in some sense is analogous to the person's "sigh" in this composition) to be heard (as above), "for the purpose of trying to abstract musical values from it". That is, although we recognize the sigh as being made by a person, we nonetheless perceive it also musically, as a sound incorporated into the composition based on its inherent qualities (apart from its reference). I suggest that this kind of dual approach to listening might offer complementary information regarding the specific qualities and inter-relationships among sounds.

At that time (with its origins earlier in the 1940s and 50s) avant-garde composers—as experimenters—developed interests related to the science of sound and acoustics. Sound as an independent entity, able to be understood on its own terms, separate from human production—in short, musical sound heard as separate from direct human physical activity—was an idea not so distant from a scientific understanding of sound. This scientific conceptualization encompasses an understanding of sound in terms of its measurable acoustic characteristics, and is thus necessarily separate from the at-that-time unmeasurable, physical and emotional aspects of familiar music making and performance. Much current research in music psychology has focused on measurement of these aspects, illustrating the continuing exploration of overlapping interests and aims.[4]

Might this shared beginning of bioacoustics and electroacoustic music, through their use of audio recording technology, characterize a kind of historical precedent, or a complex of historical roots, for considering the notion of sound used in scientific inquiry as connected to what was then an emerging notion of musical sound as an entity that could be separated from human music-makers? And, specifically in connection with Henry's composition and the many others that made use of recorded sound as their primary material, perhaps that time saw also the spark of a nascent interest

[3] Henry, Limelight Records LS 86059, 1963.
[4] See, for instance, Tuuri and Eerola, "Formulating a Revised Taxonomy."

in the unfamiliar activity of listening to the sounds of one's environment, and, by extension, of listening to them qua music, that is, as being music.[5]

Developments in bioacoustics

The early history of bioacoustic research includes recordings of the calls of capuchin and rhesus monkeys, made in 1890 using an Edison phonograph recorder, as part of an early primatology experiment (Fischer et al 2013). In 1929, some of the first recordings of wild birds were undertaken by Arthur Allen at Cornell University (The Cornell Lab of Ornithology 2019). The beginnings of marine bioacoustics lie in a Dictaphone cassette recording of beluga whales made by William Schevill in 1949.[6] Other important means of marine data collection have historically included United States Navy hydrophone installations, from which humpback whale song sequences first came to be known by the scientific community. More recently, the U.S. Navy Sound Surveillance System (SOSUS), a widely distributed array of hydrophones in the North Atlantic Ocean, has been used for the collection of marine mammal vocalizations (Mellinger and Clark 2003). Broadly distributed recording apparatus, somewhat similar in concept to the SOSUS installation but installed temporarily, has more recently become available. On smaller scales, this approach is an effective data collection method particularly due to recently developed audio recording hardware that facilitates the accumulation of long-term recordings over months and years.

Sound recordings of specific species for use in bioacoustics and conservation research have thus proliferated abundantly. The Cornell Lab of Ornithology's Macaulay Library contains more than 400,000 audio recordings and the British Library's collection of wildlife and environmental sounds has more than 240,000 recordings. These are only two of the largest and most well-known repositories. Other online collections abound, including the open source website Xeno-Canto, to which any recordist may freely contribute and from which any interested sound-user may freely download. It currently maintains a collection of over 440,000 recordings.[7]

This explosion of data collection has led to the development of computer-based algorithms for extracting animal sounds and acoustic

[5] John Cage's 1952 *William's Mix*, for instance—though it springs from compositional interests different from those of *musique concrète* per se, is another instance of music employing recorded sound as its primary material. See: https://johncage.org/pp/John-Cage-Work-Detail.cfm?work_ID=246

[6] Woods Hole Oceanographic Institution, "Historic Marine Mammal Sound Archive Now Online."

[7] Xeno-Canto. https://www.xeno-canto.org/explore

metrics from audio recordings, including instances of specific animal calls and call sequences (Kershenbaum et al 2014). In addition, the last ten years has seen increasing interest in extracting relevant information from recordings of the entire soundscape. This focus has arisen primarily because of the relatively low cost, and low environmental impact, of audio data collection, as well as its potential for gathering information from challenging environments (underwater locations in winter for instance). A goal of this work is to develop specific metrics for evaluating biodiversity and assessing the "health" of habitats and environments as a whole from an ecological standpoint.

In identifying useful ways to analyze both call sequences and specific aspects of the whole soundscape, qualitative observation plays an important role. Current issues of interest to researchers studying animal song and sound patterns include questions about ways in which call sequences might be subdivided into individual calls, and how to extract meaning from these sequences. Importantly, these questions must be asked from the point of view of multiple disciplines, each of which requires a specific definition of "meaning" pertaining to its own interests and research methodologies. This requirement provides an opportunity for the investigation and sharing of research approaches, in concert with a need to find common sound analysis methodologies that intersect and usefully represent diverse interests. It also points to a need for language that can effectively represent ideas and principles from multiple perspectives, without tying them rigidly to any specific viewpoint. The non-specific conceptualizations of sound articulated by Smalley's spectromorphology may facilitate the convergence of different outlooks and interpretations.

Spectromorphology's language facilitates the description, and thus the conceptualization, of relationships among sounds, and of specific sound structures and continuities. It is a language that fosters precise explanations of the dynamic change though time of multiple aspects and layers of sound, and thus it might engender—through "spectromorphological listening"—qualitative insights and questions integral to these research topics. In this way it could complement and further the aims of quantitative bioacoustics and soundscape-related research. Indeed, this link has already begun to be realized: in a landscape research project involving sound, some field recordists were identified as "electroacoustic music experts" (Mazaris et al 2009).

Let us take a look more closely at Smalley's language and, most importantly, its musical [i.e. sonic] conceptualizations. To do this I will rely mostly on his initial 1997 paper "Spectromorphology: explaining sound shapes" and the extension of these concepts in his 2007 paper "Sound-form

and the acousmatic image". I will also mention some ideas from his 1994 article "Defining timbre—refining timbre".

Listening spectromorphologically

Regarding qualitative analysis focused on extracting information from the entire soundscape, the previously mentioned acoustic niche hypothesis of Bernie Krause engenders a useful concept. Its focus on the idea that slices of the frequency spectrum are each distinctly occupied, in any sounding environment, by a specific sound-making species, is suggestive. Can we "take apart" the sonic space in terms of the ways in which particular aspects of it are being used by sound-makers, and connect that information to some measure of fitness and well-being?

Another potentially extremely effective approach involves a simple, first-step computation based on the observation that the source of continuous, long-duration sounds, with stable frequencies, is often machinery, e.g. vehicle motors (cars, trains, trucks, airplanes, motorboats), while biological sounds, including animal vocalizations, are often observed to be discontinuous, with variable frequencies. It is quite straightforward to construct numerical filters to remove the continuous machinery sounds from a recording, and to then compute a metric that reflects the amount of variability that remains. Matching this variability metric to measures of environmental fitness is one potential way to use soundscape recordings in assessing the well-being of specific environments (Pieretti et al 2011).

At this point the acoustic niche hypothesis is just that: a useful and intriguing theory that invites questions and motivates research. The acoustic complexity index, and the many related indices that are currently under development, are first steps in a much larger project that aims to measure environmental fitness efficiently and non-invasively on large scales (Gasdc et al 2015). Soundscape ecology's roots lie in landscape ecology. Both share an intrinsic multifaceted outlook focused on evaluating levels of diversity with respect to specific research questions.[8] It is clear that an apprehension of relationships among the sounds present in any specific location is central to these larger-scale approaches. This is another place where qualitative, perceptive listening, and a means of articulating what is heard, can likely point to fruitful ways in which quantitative analytical methodologies may be developed and applied.

[8] Gasc, Pavoine, Lellouch, Grandcolas, and Sueur, "Future Directions for Soundscape Ecology," 216. Paraphrase of "Landscape is an ecological criterion whose essence is not its absolute spatial scale but rather its heterogeneity relevant to a particular research question." See also Truax and Barrett, "Soundscape."

Electroacoustic music has throughout most of its history engaged in the intricate efforts of developing tools and methodologies with which to generate and process sound. This ground-breaking work has resulted in a multifaceted array of applications, equipment, and available compositional techniques. Composers are now able to step back from constructing implements, devices, and basic algorithms and instead focus their attention on constructing music and sound art that directly addresses their cultural sensibilities, ideas, and inclinations.

Smalley's spectromorphology is both a product and a representative of this trajectory, inviting listeners to expand their appreciation of a very different music through identifying characteristics that convey meaning within the abstracted sounds they encounter. Its basis lies in the notion of gesture—in fact, the word spectromorphology can be understood as a gestural shape in time (morphology means shape) whose content is the entire spectral material of a sound. We know gesture intimately from our experience with the physical motions and processes of our bodies, and based on our individual histories of this human-felt/experienced gesture and our level of familiarity with specific sounds, we may experience spectromorphologies (sound gestures) as more, or less, familiar. This continuum between familiarity and unfamiliarity informs our sense of ambiguity and uncertainty towards the sounds we encounter.

To explore this way of experiencing sound more concretely, we might imagine a sequence of birdsong—a stream of sounds made by a Black-capped vireo. As an approximation of the sound we use a visual representation, a spectrogram accompanied by a visualization of the sound's loudness over time (Figure 4-1). The spectrogram itself shows, vertically, the spectral frequency (pitch) components of the sound. Time is shown horizontally, and the lightness or darkness of the image corresponds to the degree of loudness in the sound. It is important to clarify that the spectrogram image is a necessarily incomplete model of the sound—the result of a mathematical analysis which can only be an approximation—and that this particular spectrogram represents only one of many possible spectrographic visualizations. Importantly, this limitation points to the intrinsic focus of Smalley's spectromorphology on the psychology of human acoustic perception, as distinct from mathematical and scientific analytical approaches.

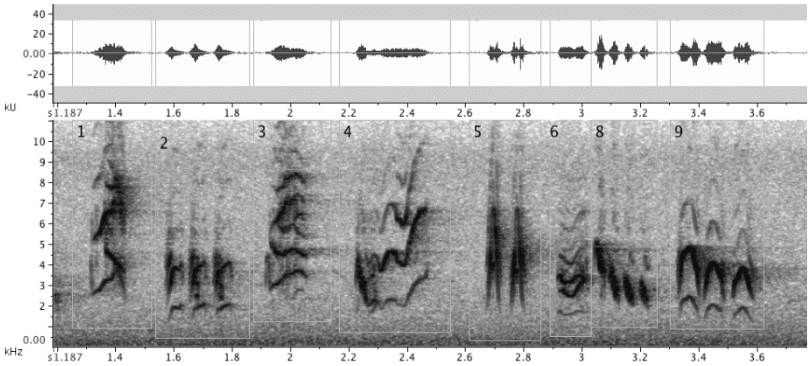

Figure 4-1. A sequence of calls made by a Black-capped vireo (*Vireo atricapilla*).[9] A graph of the changes in the loudness of the sound is above; below is a spectrogram visualization.

We hear each of the sounds represented by these images as complete events. Their different shapes are gestures over time, that is, they are spectromorphologies. Sound 9, for instance, contains three shorter sounds. Sound 2 also contains three shorter sounds. However, the quality of Sound 2's sounds is different from the quality of Sound 9's sounds because the spectral energy components of the three sounds in Sound 9 are organized differently from the spectral energy components of the three sounds in Sound 2. These differences are represented by differences in the visual representations of the sound shapes: the spectral energy components of each of Sound 9's sounds move downward, while the spectral energy components of each of Sound 2's sounds remain stable.

Common to the terminologies of bioacoustics, music, and spectromorphology is the concept of "note". Spectromorphology's note is a unit of gesture that encompasses its own "spectral history". It is a spectral/morphological shape through time, a spectral gesture (which we see visualized approximately in the spectrogram).

Spectromorphology is concerned with spectral change over time. In the spectrogram it is represented by the visual gestures comprising each note I have identified, that is, by the growth and the shape of each gesture's motion over time. We may also consider the growth and shape of the motion over the entire sequence of sounds. Spectromorphology uses the concepts of motion and growth to elucidate processes that shape these structures.

[9] This sound file is a segment from an example file freely distributed with *Raven Interactive Sound Analysis Software*, Bioacoustics Research Program, 2014.

Smalley suggests that both moving sound and growing sound have changing spectral contours. We can imagine this by observing the growth patterns of Sound 4 in the spectrogram. It begins with a sharp downward attack, out of which grows a wavy, warbling gesture that moves upward. Smalley identifies processes of motion that move in one direction, that move away and return, and that move cyclically. He also identifies growth processes that dissipate or diverge, and that cluster together or converge. Within these overall directional processes of motion and growth, a specific motion may take one of many different pathways: it may remain "earthbound", but more often it will be found to rise, drift, float, or fly.

One major reason why spectromorphology may be very useful for our qualitative investigations of structures present in animal vocalizations and environmental sounds is that it is *not* based on structures commonly found in many kinds of human musics. It is based instead on structures existing as gestures, and as sound textures (a sound texture is a general pattern of spectral energy which is not necessarily shaped by a gesture). However, nonetheless, spectromorphology recognizes patterns, and degrees, of expectation in terms of the ways in which sounds grow and change. A sound may begin with an abrupt attack, or it may emerge gently. Its beginning may be followed by a changing, transitional segment, or the initial beginning sound may be prolonged. The sound may then simply disappear, or it may arrive at a textural/gestural shape that was implied by its previous changes and transitions. Spectromorphology facilitates a qualitative investigation of how sounds change, how sequences and multiple patterns of sounds are interrelated, and what kinds of structures might underlie these changes and relationships.

Spectromorphology's language facilitates the description of multiple different kinds of simultaneously sounding patterns. A moving and/or growing texture might be a set of distinct, streaming layers, or it might consist of flocking patterns of sound (i.e. sound patterns analogous to the visual flocking activity of groups of birds). Insightfully, Smalley notes that "we apprehend identity as the consequence of change" (Smalley 1994: 41). This suggests that the ways in which a sequence of sounds changes over time may reveal the identity of its sound sources, and may thereby suggest a pattern of segmentation into utterances or notes. However, it may also reveal a kind of identity of the pattern itself. How might the changes of sonic characteristics, from one note to the next, and among a collection of notes, be themselves understood as identifiers of the species, or of the individual itself? And what might the process underlying the changes indicate regarding the surrounding environment within which the vocalizing animal is interactively embedded?

Changes in spatial perspective are another means suggested by Smalley for delineating musical [i.e. sonic] structure. This may point to connections between spatial location (or perceived spatial location) and sequence segmentation. Clearly, we are listening from a human perspective, but might our spatial perceptions suggest questions about how a specific animal perceives sound? We might consider the role played by spatial location in an animal's perceptual system, or the role it might play within the sound sequence as a communication signal. Might we perhaps consider designing experiments based on careful qualitative observations assisted by spectromorphological language?

Sound articulates space[10]

In his 1997 article, "Spectromorphology: explaining sound-shapes", Smalley's discussion of the spatial characteristics of sound is titled "Spatiomorphology". His later 2007 paper extends and deepens this focus and is called "Space-form and the acousmatic image". In addition to emphasizing the concept of spatial location as an essential aspect of sound, through his linking of form to space, and his focus on an acousmatic image (which conceptually disconnects sound from any physical source), he heads towards dissolving boundaries between the concepts of sound and space. His fascinating perspective is that the characteristics of a sound themselves define its apparent location and spatial qualities. Rather than a sound finding itself placed in a specific location, instead it is the sound's properties themselves that construct and articulate its spatial attributes.

[10] This phrase is a conflation of ideas from Smalley's discussion in "Sound-forms and the acousmatic image," 54. He first states that "we cannot separate space itself from what produces it", which is, we assume, in this case, spectromorphology, and we understand that the content of spectromorphology is sound. He then talks about (when listening) first identifying a kind of spatial distribution of the sounds he hears, and then attending to ways in which "time articulates space" with regard to the segmentation of sound over time. Therefore, the sound, as it is organized in time, could be said to itself articulate the space. However, if these assumptions are incorrect, it could be that what is meant is simply that space is produced by time, in which case my statement "sound articulates space" is simply suggestive.

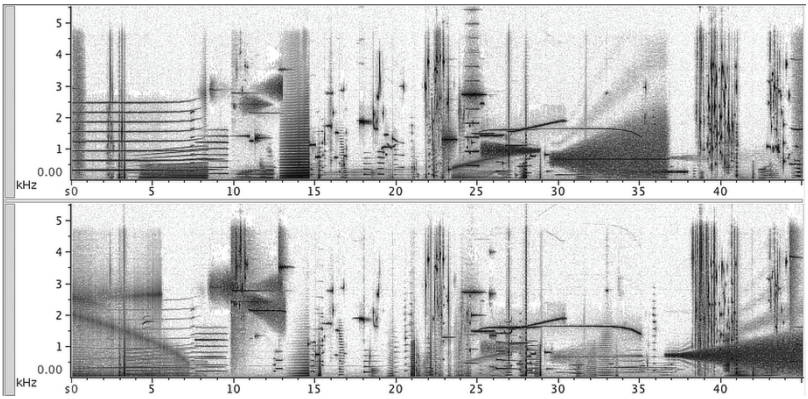

Figure 4-2. A segment from James Tenney's 1964 computer-generated electroacoustic composition *Ergodos II (for John Cage)*. Spatial information is evident in this stereo spectrogram: note how the left (upper) and right (lower) stereo channels contain different sound patterns and densities.[11]

Smalley's spectromorphology concepts can be applied also to sounding environments in which we are interested to observe the interaction of all the sounds that are present. Such a situation may, for instance, arise in conjunction with questions regarding the structures of perceptual environments of animals that experience acoustic masking. This is a particular area of interest from the perspective of conservation bioacoustics, one which arises when anthropogenic sound sources are found to interfere with animal acoustic signalling (Rosa and Koper 2018). In connection with this kind of perceptual situation, Smalley identifies degrees of spectral density, i.e. a packed, compressed, and filled spectral density masks other spectromorphologies. Let us compare characteristics of a scene in which acoustic masking might take place with the description of a soundscape experienced and described by Smalley, by focusing on several topic areas common to both:

1. Spectromorphology's concepts may be useful in the *exploration of dynamic, changing soundscapes*.
2. They facilitate a qualitative *assessment of the relationships* among multiple sonic aspects of sounds within the whole acoustic scene.
3. The concepts also suggest the *role and function of specific sonic aspects.*

[11] James Tenney, *Ergodos II (for John Cage).* New World Records – 80570-2, 2003.

4. Most particularly, spectromorphology's concepts facilitate the *investigation of systems (and their structures) that underlie the totality of sound* within that environment.

Smalley begins "Space-form and the acousmatic image" with an inviting description of an acoustic scene. He uses this narrative to introduce a plethora of concepts that define multiple specific types of space, from which we will focus on only several which happen to be pertinent to acoustic masking.[12]

While listening to a soundscape in southern France, Smalley was able to observe the interrelationships among the positions, movements, and relative sizes of sounds by combining his perceptions of noticeably different regions within the soundscape. These regions were each defined by distinct collections of sounds exhibiting common textural and spectromorphological characteristics and an apparent level of interactivity that suggested group communication. The spatial organization of these regions was structured in a way that indicated that some of these regions were encompassed by others. The resulting experience was an observation of a structured acoustic scene, organized in terms of a combined set of spatial viewpoints: an expanded view of the space in front of the listener that included the entire range of what could be seen visually; the space in the immediate vicinity of the listener; the space some distance away from the listener; and multiple, shorter term, temporary spaces containing moving sounds.

In the much more concise language of spectromorphology, Smalley summarizes his experience this way: "As I listened to the Orbieu soundscape I accumulated perspectival information from combining the zones of signal/behavioural space, and their partial nesting, as they produced the relations among panoramic, proximate, distal, and vectorial space" (Smalley 2007: 48).

Smalley mentions *perspectival space* in his opening narrative with respect to his observation of bird calls, and we might ask, "To what extent might the calls of these birds be subject to acoustic masking?" Perspectival space encompasses the interrelationships among spectromorphologies via their positions, movements, and relative scales (apparent sizes). This is a basic viewpoint from which to observe a dynamic acoustic scene in action, the *exploration of dynamic, changing soundscapes.* To investigate our question, we may then follow his practice by dividing this interrelated, time-dependent, perspectival space into three viewpoints, examining the potential

[12] Smalley, "Space-form and the acousmatic image," 35-37. Smalley's description is deep and enlightening, and it is crucial to read in order grasp his detailed, precise listening strategy.

for acoustic masking of these bird calls within each one through careful, attentive listening: 1) a view (we might think of using our ears as we use our eyes) of the space directly in front of us, 2) an expanded view of the space in front of us that includes the entire range of what we can see visually, and 3) a view of the surrounding space, within which we are effectively embedded and encompassed: sounds may move past, towards, away, around and over us from this viewpoint. Addressing the *relationships* among multiple sonic aspects of sounds within the whole acoustic scene, these viewpoints—taken together—will give us a qualitative assessment of interrelationships among spectromorphologies within this dynamic soundscape, and its potential (from this perspective) for acoustic masking of bird calls.

Regarding the *role and function* of specific sonic aspects, Smalley points out three aspects of the total sounding environment: a) sounds with similar or overlapping textural features, b) sounds with similar or overlapping spectromorphological features, and c) sounds that possess interactive features which suggest some kind of group communication among the sounds (as it were)—although to be clear Smalley defines this type of feature in terms of the ways in which sound are produced.[13] The specific role and function of each of these three sonic aspects is their contribution to the delineation of a noticeable region—some segmentation of the acoustic scene. Listening for these kinds of features within the acoustic scene can help us (from a second perspective) to qualitatively assess its potential for acoustic masking.

Finally, we may focus our listening to arrive at information about potential systems (and their structures) that underlie the totality of the sound scene. Here, one structuring principle is the observation that some of the regions defined by the soundscape's sonic aspects were found to lie within others. This "nested" structure applies to regions defined by similar textures, gestures, and group activity. Together these partially intersecting, dynamic regions combine to form an underlying process, which in this case connects

[13] This third sonic aspect is described by Smalley as signal/behavioural space. Signal space he defines as: "A type of behavioural space produced by the signal calls of the participants, either to communicate with each other, or to communicate their presence to other inhabitants. See also 'behavioural space'." Behavioural space is defined as: "A zone of perspectival space produced by the interaction of sounds which, spectromorphologically and texturally, indicate collaborative, group identity. See also 'signal space'." These definitions are found in Smalley, "Space-form and the acousmatic image," 55-56. Individual terms are also discussed in detail within the text.

directly to underlying structures that may cause the masking of specific acoustic signals.

Conclusion

Due to its precise, evocative, and perceptive language, Denis Smalley's spectromorphology may be useful as a qualitative complement to current work in animal bioacoustics and soundscape ecology. Its recognition of the inherent dynamics of sound, and the inextricably shared characteristics of sound and space, encourages thinking about, and listening to, sound as an interactive, changing, interrelated entity. Observations made from this kind of an energetic, yet careful and comprehensive viewpoint may have the capacity to both articulate and encourage the development of novel quantitative methods which fruitfully further investigations of animal communication structures and of the environments which serve as our shared habitat.

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CHAPTER FIVE

TOUCHING SOUNDS: RE-EXAMINING AUDIOTACTILE AFFECT WITH REFERENCE TO ASMR YOUTUBE CONTENT AND MUSICAL PRODUCTION PRACTICES

EDWARD K. SPENCER

Reader Notice: this chapter contains sexually explicit social web material and strong language

> *Tones can directly arouse pain and they can also give pleasure directly by way of the senses, without reference to harmony or melody. The sense of touch is still more subject to this direct influence on the will, since touch is one with the whole body's feeling; yet there is still a kind of touch without either pain or pleasure.* Schopenhauer [1819] in Dahlhaus (1982: 43)

> *Sometimes sounds have an almost 'touch' like sensation to them. Hard to explain.* Participant 268 in Barratt and Davies (2015)

A smiling young woman is seated before a binaural microphone in her bedroom. I am sitting in front of a laptop screen at my desk wearing headphones. My ears and her microphone are one and the same. She leans forward slowly and whispers "hey" in my left ear, before shifting her weight to utter "it's me" in my right ear. The smoothness of her voice is intended as a comforting caress. She explains what is going to happen: "ten triggers just for you to help you fall asleep and to help you relax". Over the next twenty-five minutes, she strokes my ears with a make-up brush (she also brushes her own face, musing "I love the way this feels – it's very soft"); she taps a plastic container of drawing pins with her nails; taps and blows into a small clay vase; taps and flicks through the pages of an old book (slowly and deliberately); unravels and crinkles sticky masking tape; plays with a flask of water (using a hair-band as a sponge to make dripping sounds

before pouring the liquid into another container); taps a box of matches before striking one and extinguishing it in the water; cuts the air next to my ears with a pair of scissors (as if trimming my hair); fondles coins in a ceramic bowl; and scrapes the wooden base of a fake potted cactus plant.

Although these actions are performed 'just for me', they have been experienced by tens of millions of others via YouTube (watch ASMR Darling 2016). The audiotactile triggers are supposed to induce an electrostatic-like tingling sensation in the scalp that spreads downwards to the shoulders and possibly also to the lower back or limbs (Barratt & Davies 2015: 8). Earlier terms for the phenomenon such as 'brain orgasm' have been largely superseded by a pseudoscientific neologism that is common parlance online: Autonomous Sensory Meridian Response (ASMR). This epithet was coined by Jennifer Allen in 2009 as a way of warding off connotations of sexual fetish. As is clear from the aforementioned video, ASMR practitioners (known as 'ASMRtists') aim to cause soporific relaxation and a sense of wellbeing rather than energy arousal. ASMR is typically differentiated from frisson, which refers to the experience of goosebumps, chills, or shivers during particularly touching encounters with music or other stimuli (e.g. Colver & El-Alayli 2016; Sloboda 1991), although it should be noted that this distinction warrants further inquiry. Moreover, notwithstanding the recent surge of interest in ASMRtistry among psychologists (Barratt & Davies 2015; Barratt, Spence, & Davies 2017; Fredborg, Clark, & Smith 2017) and Screen Studies and Internet Studies scholars (Andersen 2015; Gallagher 2016; Waldron 2017), it is important to highlight the long history of this new medium and to examine it in relation to musical production practices for the first time. In crude terms, the viral nature of the contemporary ASMR phenomenon encourages a re-examination of audiotactile affect and the different means by which sound can touch us in touching ways.

This short chapter outlines several ways of conceptualising the experience of audiotactility by way of reference to three case studies. These are ASMRtistry on YouTube, my own haptic practice as a classical hand-horn player, and the online consumption of future bass, a genre of electronic dance music (EDM). In the concluding remarks following these case studies, I propose that audiotactile affect is not only a somatic sensation and a form of feeling, but also operates as a key discursive component in auditory cultures of all kinds. Reflecting critically on touching sounds in three contrasting spheres of practice helps foster a reappraisal of audiotactile affect generally and the contemporary ASMR phenomenon in particular.

ASMRtistry and Problems with Affect

One of the most notable aspects of ASMRtistry for those familiar with the history of electronic music and sound art is the manner in which it exploits 'found sounds' and granularity in a similar fashion to musique concrète of the mid-twentieth century and today's electroacoustic composition. In the subreddit r/ASMRmusic, a "place for sharing music that triggers your ASMR", a revealing post from 2.12.17 is headed "Musique concrete [*sic*] with lots of whispering and pleasant sounds". The message reads "Idk [I don't know] how familiar this board is with musique concrete but its [*sic*] definitely the best asmr music out there imo [in my opinion]" (retrieved at 12:44 GMT on 9.12.17). Several days a later, the Redditor (Reddit user) added a link to the YouTube upload of *La Distanza* by Valerio Tricoli, a producer and sound artist known for his 'live concrete' performances, along with the pointer "good stuff starts around 3:00 in" (retrieved at 09:32 GMT on 15.12.17). To return to the case of *10 triggers to help you sleep*, it could be said that the sonic properties of the materials in ASMR Darling's top video hearken back to Pierre Schaeffer's *objets musicaux* and his ideas about *types et genres de grains* (Schaeffer, North, & Dack 2017). There is a close focus on (or even fetishisation of) the microstructure of sound in this upload as well as an emphasis on the capacity of the various triggers to specify contact. It could even be said that the make-up brush stroking exemplifies Schaeffer's *frottements* – a category associated with friction – whilst the tapping of the plastic container and other objects constitutes *frappements* since they are a series of discrete impacts (cf. Garcia 2015: 69).

Despite this, there is perhaps a crucial difference between ASMRtistry and Schaefferian granularity. In Schaeffer's orthodox mode of *écoute réduite* (reduced listening, see Windsor 2000), the poïetic pole (the sound itself) is privileged.[1] With this kind of attitude, we would attune ourselves to the detailed properties and qualities of the sound, to its *en-soi* or 'in-itselfness' rather than to its possible source and cause. On the other hand, ASMR listening often appears to be exclusively concerned with the æsthesic pole – the very tingling feeling itself, a peculiar sensation that exceeds or is almost detached from the sound at hand. To put it another way, there is often a curious gap between the acoustic properties of the triggers and the response, such that the YouTube user finds it difficult to know why a particular stimulus is successful. ASMR is an unintentional anomaly that

[1] It should be remembered, however, that *écoute réduite* was but one of Schaeffer's proposed listening strategies, and certainly not the way that one was supposed to listen to the whole of musique concrète's many and varied works.

ASMRtists aspire to activate intentionally. Having surveyed r/ASMR, the main subreddit forum for sharing ASMR content, Gallagher (2016: 9) notes that 'only one question matters' in this online community: "does it trigger you or not?". The 'A' (for 'autonomous') and the 'M' (for 'meridian', which connotes a peak or high point) in ASMR appear to define the phenomenon as a powerful, *purely* corporal response that thwarts any kind of embodied cognition or bodily consciousness. Such a sentiment shifts ASMRtistry away from Schaeffer and brings it into contact with an idea that haunts twenty-first century sound studies and the post-millennial humanities generally, namely Brian Massumi's conception of affect (Massumi 1995, 2002).

Although the term has been used in different and at times seemingly irreconcilable ways by various theorists, it must be stressed that affect is synonymous with 'intensity' in Massumi's original work, and he ultimately casts it as a "nonconscious, never-to-be-conscious autonomic remainder" (Massumi 2002: 25). Affect is quantitative rather than qualitative, singular rather than plural (it never diverges into affect*s*), and it is incompatible with distinct, recognisable emotions or feelings. As Andersen (2015) argues, by way of reference to Leys (2011), Massumian affect severs body from mind and disregards the feeling of feeling in an especially unhelpful way. Moreover, although ASMR might seem like a Massumian dream on first impression as a purely 'physiological charge', Andersen argues that ASMR's affect exists hand in hand with emotion and is mediated by "intentionality, memory, and nostalgia" (Andersen 2015: 685). Critically, ASMR is predicated on close personal attention or even a kind of nonstandard, 'distant intimacy' (Andersen 2015: 697) between the ASMRtist and a particular YouTube user, one that might be coloured by familial or clinical overtones. In a digital environment of care, virtual connection, and role-play,[2] sounds that ordinarily give rise to indifference and perhaps also mild annoyance become overwhelmingly pleasant and reassuring (Andersen 2015: 686). One might add that it is important to think about the use of specific perceptual ordering devices in ASMR media (cf. DeNora 2013). When ASMR Darling strokes her own face with the make-up brush and whispers "I love the way this feels – it's very soft", the viewer is primed for both heightened audiotactile sensitivity and a positively valenced experience once she returns her attention to the ears of the user. As this moment demonstrates, it is often productive to reconsider affect in terms of

[2] Typical ASMR role-play scenarios (featuring costumed ASMRtists) include quasi-medical 'ear exams' and clinical ear and head 'massages'.

suggestion, a much earlier twentieth century idea to which contemporary theory owes a genealogical debt (Blackman 2012).

Despite Andersen's insights on the interpersonal nature of ASMR-mediated affect, she fails to acknowledge that it is possible that these YouTube uploads are consumed by users who are incapable of experiencing ASMR as well as by those who respond to it in unintended ways. The viral popularity of this seemingly new media phenomenon begs an important question. Is user-generated ASMR content really so immune from more conventional perceptual experiences that are predicated on contrast and contingency? Rather than focussing on the uniform singularity of the autonomous sensory meridian response (as with Massumi's monist conception of affect) and its supposedly therapeutic, sleep-inducing nature, it is important to entertain the possibility that experiencing this phenomenon could feel variously weird, liberating, creepy, profound, or even shocking. It is also worth pondering the manner in which different sounds might afford different kinds of felt responses depending on microphone technique and other factors. One of the YouTube comments on *10 triggers to help you sleep* simply reads '8:40 Heart attack', referring to a moment when ASMR Darling knocks the microphone abruptly with the clay vase. Having been lulled into a sense of security over the preceding eight and a half minutes (possibly having turned up the volume of the video for the hushed whispering and gentle tapping), we are suddenly struck by a jarring and perhaps even distressing sonic sensation. This sudden loud sound has the potential to trigger what Juslin and Vjästfjäll (2008) call a Brain Stem Reflex, which is commonly triggered by sudden perceptual contrasts – such as sounds that are loud, dissonant, or have strong attacks. In more straightforward terms, the microphone accident might well cause a kind of lurch or perhaps a *fight-or-flight flinching feeling* (FFFF), to coin an acronym.

Crucially, though the FFFF is an intensely affective physiological experience, it is qualitatively different from ASMR and is painful rather than pleasant. This basic but important distinction encourages an abandonment of affect in its guise as a singular intensity. Furthermore, it could be argued that the microphone mistake is actually one of the most arresting moments of the video due to its audiotactile contrast. Whereas the rest of the sounds we hear are mostly granular and produced by exploiting the natural sonic properties of various objects, the microphone peaking is an

unexpected and seemingly unnatural intervention.[3] Although the FFFF would be the result of accidental audiotactile contrast in this instance, elsewhere the leading UK YouTuber KSI (2019) has trolled the ASMR community by intentionally subverting its established microphone techniques and modes of interpersonal engagement. Having reacted to a series of sexually suggestive ASMR videos in the first part of this upload, titled *The New Youtube Trend?*, KSI then plays at being an ASMRtist himself (KSI 2019: 7.05 ff.). From 7.19–7.21, he leans forwards towards the right-hand side of the binaural microphone. We hear lip-smacking and a gentle intake of breath, sounds that fit comfortably within ASMRtistry's repertoire through their specification of intimacy. But then, after a short pause, KSI yells 'AM I DOING IT RIGHT?' into the microphone before bursting into remorseless laughter.

Through this masquerading and subsequent audiotactile assault, KSI exploits and disrupts the spell of the ASMR YouTube phenomenon. The microphone distortion can potentially elicit divergent or contradictory feelings, some of which might be predicated on other kinds of Internet-mediated perceptual learning that have been cultivated outside the ASMR audiovisual assemblage. For example, although many YouTube users may well experience FFFF, the assault might also *tickle* those who are acquainted with the cultural logic of trolling that underscores KSI's channel and its following. In this case, the audiotactile assault would perform a semantic function and it would also give rise to a bodily feeling that was more ambivalent in its affective profile, oscillating between alarm and laughter. KSI's performance is just one example of the way in which audiotactile affect can be explicitly choreographed through trickery and shock tactics, and it points towards the role of audiotactile contrast in musical production practices old and new, practices that can serve to catalyse new perspectives and ruminations on ASMRtistry.

Audiotactile Contrast in Classical Hand-Horn Playing

Having re-examined ASMR and the antithetical affect of FFFF, it is useful to consider the crossmodal basis of audiotactile perception in greater detail. In this section, a discussion of recent empirical research on multisensory

[3] Elsewhere on YouTube, in the genre of user-generated content known as "montage parodies", video creators deliberately deploy sudden and unexpected distortion from audio peaking as a shock tactic. In YouTube comment sections and the related subreddit for these videos (r/montageparodies), the audiotactile device is commonly referred to as "ear rape" (Spencer 2017a).

integration and crossmodal correspondences rubs shoulders with some reflections on production practices in classical hand-horn playing. Though this may seem to move between seemingly unrelated realms, the case study seeks to develop a more nuanced perspective on audiotactile contrast by focusing on a peculiar stinging sensation that can be produced on the horn.

Research on crossmodal correspondences has been growing rapidly over the last couple of decades, providing fertile background for recent empirical work on the integration of sight and sound in the perception and experience of musical performance (Vuoskoski et al. 2016). In a seminal review paper, Spence (2011: 972) explains that there are 'many nonarbitrary associations that appear to exist between different basic physical stimulus attributes, or features, in different sensory modalities'. A classic and influential experiment that laid the foundation for contemporary research on crossmodal correspondences concerns phonetic sound symbolism. Köhler (1929) was the first to demonstrate that most people match globular, rounded shapes with the non-word "Baluma" and straight-edged, angular, pointy shapes with the non-word "Takete". Ramachandran and Hubbard (2001) prompted renewed interest in this phenomenon by running a similar sound-shape test using the non-words "Bouba" and "Kiki" and the shapes shown in Figure 5-1 overleaf.[4] The rounded shape on the right-hand side of Figure 5-1 was matched with the non-word "Bouba", while the angular shape on the left-hand side was matched with the non-word "Kiki". The /uw/ vowel of "Bouba" and the /iy/ vowel of "Kiki" are of significance to the graphical representation of sound and electronic music production: smooth, sinusoidal waves are Bouba-like; jagged saw waves are Kiki-like. However, it must be stressed that the Bouba-Kiki phenomenon is of great relevance to audiotactile crossmodal perception as well as in terms of audiovisual correspondences. In a more recent study, Etzi et al. (2016) explored the associations between tactile sensations, the sound of non-words (including Bouba and Kiki), and people's emotional states. 10x10cm samples of cotton, satin, tinfoil, and abrasive sponge were stroked against the bare forearms of their participants (who were blindfolded and wore earplugs) at a speed of approximately 5cm/second for a distance of 10cm. The participants were asked to rate the various materials using adjective pairings (including Rough-Smooth, Loud-Quiet, Beautiful-Ugly, and Light-Heavy among others), and emotions (including Sadness, Happiness, Anger, and Disgust among others) as well as with the non-word scales (including Kiki-Bouba). Revealingly, they found significant correlations between sandpaper, roughness, loudness, Kiki, and ugliness on the one hand, and

[4] Image reproduced with kind permission from Springer Nature.

satin, smoothness, Bouba, and beauty on the other. A major limitation of the study is that the non-words were presented as written text rather than as recorded audio clips – the visual appearance of the lettering could well be responsible for the results. Nonetheless, the authors suggest that a crossmodal correspondence between the internalised sound of the non-words and the tactile qualities of the materials might have occurred and that this encourages further investigation.

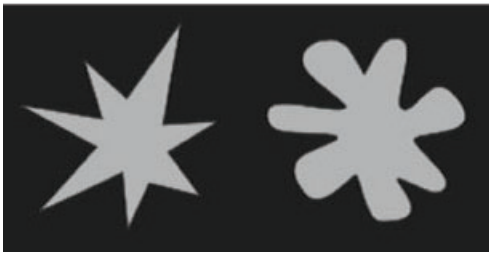


Figure 5-1: “Kiki” and “Bouba”

Although many working at the intersection of music and sound art might respond to this empirical research with scepticism (complaining of its inbuilt deterministic bias, reductionism, essentialism, and so on), a Bouba-Kiki continuum can certainly be said to underpin my practice as a horn player. The modern valved instrument, in its romanticised, Hollywood guise, is perhaps best known for its round, smooth, Bouba-like audiotactile feel (with the solo from the slow movement of Tchaikovsky’s *Symphony No. 5* being the canonical example of its haunting /uw/ vowel). When asked the recurrent question of why horn players perform with their right hand in the bell, I often find myself saying something about intonation before offering the more digestible remark that it *takes the edge off the sound*. In its default “open” position, the hand acts as a subtle low-pass filter, but something remarkable occurs when it is ‘closed’ over the bell throat (see Figures 5-2 & 5-3). The technique, known as hand-stopping, shifts the horn’s pitch upwards by a semitone and causes a noisy and nasal /iy/ sound that has a sizzling, stinging feel. It is imperative that the hand forms a tight seal so that the size and shape of the bore is altered in a radical way. The traditional psychoacoustic perspective on hand-stopping presented by Backus (1976: 479), who claims that during hand-stopping the right hand becomes an input impedance, meaning that “the channels between the fingers act as high-pass filters and increase the amplitudes of the high harmonics relative to the low harmonics”. This is true to a certain extent. I recorded a concert C-sharp just

above Middle C, firstly with an "open" default hand position and then again as a hand-stopped version. Using AudioSculpt software, I then analysed the frequency content. The open tone was characterised by spectral integration since the highest prominent frequency shown on a non-normalized sonogram was F_6 (see Figure 5-4). Although the hand-stopped version had a weak F_4 and was 'missing' F_5 and F_6, there was significant frequency content higher up, especially during the attack phase (see Figure 5-5).

More recently, Ebihara and Yoshikawa (2013) have critiqued Backus's theory and presented evidence that the Kiki-like quality of hand-stopped notes is due to the propagation of a nonlinear shockwave along the bore of the horn and a greater degree of pressure inside the mouthpiece. Their second assertion rings true from a playing perspective. The horn seems to 'bite back' somewhat during hand-stopping and needs a greater degree of abdominal support. Additionally, zooming in on the waveforms of my open and stopped notes using Sonic Visualiser software revealed an interesting difference. The waveform of the open note was more sinusoidal and characterised by regularity with its well-defined curved peaks. Conversely, the stopped note's waveform was more sawtooth-like and displayed rapid corrugation, almost as if it has 'buckled' under the squashing pressure of the bore's enclosure (see Figure 5-6). Lastly, aside from the waveform's character, it must be stressed that this distortion is coupled with inharmonicity. Normalizing the sonogram of my stopped note revealed some messy sub-harmonic content (or "grit") in between the harmonic partials. Perceptually, this means that the hand-stopped note has a lower harmonic-to-noise ratio (HNR) than the open note and feels much rougher.

It is important to consider how this audiotactile contrast can be exploited for affective purposes in a performance context by turning to Mozart's *Quintet for Horn and Strings in E-flat Major K407* (1782). Mozart was writing for a natural 'hand-horn', a forerunner of the modern horn that was bereft of valves. When performing on this instrument, hand-stopping technique is used to play chromatic notes that lie outside the harmonic series and haptic micro-adjustments are made to temper naturally sharp or flat harmonics. In the first movement of *K407*, we are privy to a passage in the Recapitulation during which the harmony shifts to the supertonic minor (see Example 5-1):

Figure 5-2: ‘Open’ hand position in the bell
Figure 5-3: ‘Closed’ hand position in the bell

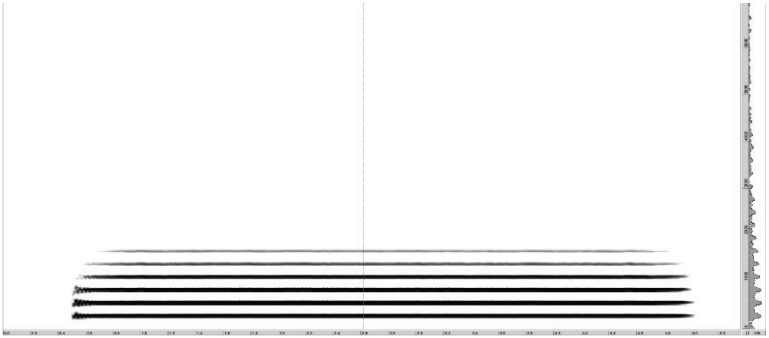


Figure 5-4: Sonogram for open tone

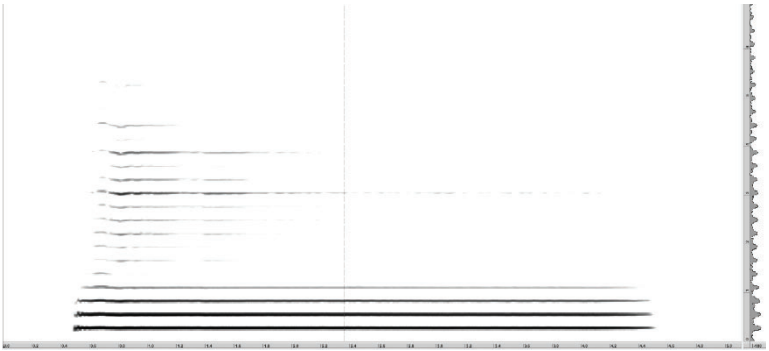


Figure 5-5: Sonogram for hand-stopped tone

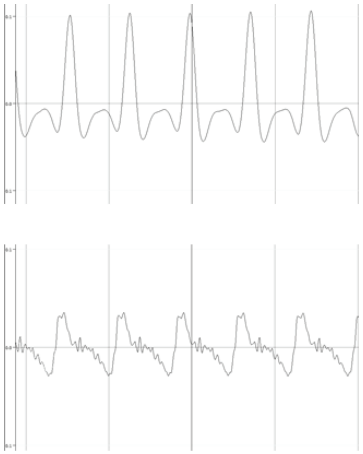
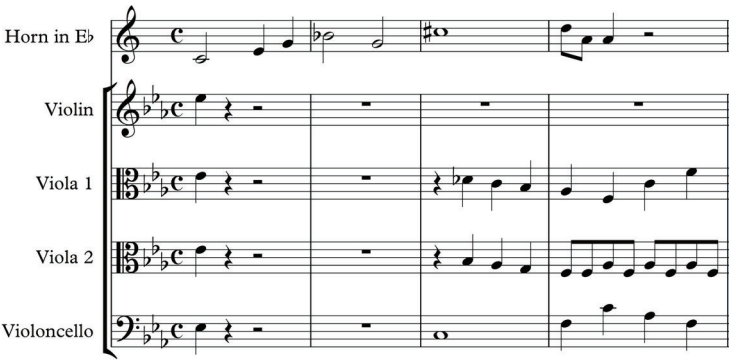


Figure 5-6: Waveforms for the open tone (above) and hand-stopped tone (below)



Example 5-1: Excerpt from Mozart's *Quintet for Horn and Strings* (first movement, bars 88-91)

During the first bar of the solo horn call (bar 88), I am particularly concerned with light-heavy and warm-cold audiotactile continua. A key aim is producing a sound that is at once warm and weighty, with a kind of resonant /ah/ vowel not unlike exhaling upon one's hands on a chilly morning. The fact that these three notes are relatively low in pitch helps matters. Eitan and Rothschild (2010: 457) have shown that higher pitches are typically perceived as lighter and colder than lower pitches. The written B-flat (bar 89) is a pivot point in this excerpt and I want it to sound robust

and hard, yet the note is a naturally flat harmonic on the hand-horn which might make it feel soft or limp. To counteract this, I increase the dynamic from *mp* to *f* and take my right hand completely out of the bell to sharpen the pitch. This adjustment is as much an artistic decision as a practical necessity. I raise my hand to about shoulder height and clench it into a tight fist as a perceptual ordering device. The trick is also a way of grabbing the audience's attention in preparation for the tactile tremor of bar 90. This C-sharp lies outside the harmonic series and is played hand-stopped – I try to make it as rough, ugly, sharp, and Kiki-like as possible. I use a particularly plosive tonguing action during the attack phase and aim to make the sound loud and piercing. My right hand is literally strangling and squeezing the sound into a nonlinear shockwave and filing its edge by accentuating higher frequency content. The C-sharp should sting the listener like a nettle or a wasp, although a sharp icicle is perhaps a better metaphor because there is also something cold, brittle, and bitter about it, feelings which are compounded by the way that the strings pull me into the supertonic minor. For the resolution in bar 91, I tentatively cover over the bell throat with my hand during the written D (it is a slightly sharp harmonic) and then the A is played half-stopped (a technique that produces a more cushiony feel than fully hand-stopped tones). Since this is coupled with a *diminuendo*, I am literally smoothing over, softening, blunting, and *dampening* the sound here. I want the crisp, dry, icy Kiki of the previous bar to dissolve into a beautiful, Bouba-shaped puddle.[5]

Notwithstanding the previous description, in the real-time circumstances of live performance the audience may just experience an unpleasant wincing sensation in bar 90 during the C-sharp followed by an immediate return to padded Mozartian pleasantness (or perhaps *Gemütlichkeit*). In fact to a certain extent, I hope that the listener just experiences the C-sharp as a moment when *something somehow touched them* – my greatest wish is that someone might experience retrospective frisson. Forgetting the semantic function of the hand-stopped C-sharp, I want the bar to arouse a felt sensation that bypasses any kind of hermeneutic or symbolic comprehension during its real-time unfolding. Although it would not be entirely inaccurate to call it a moment of sheer intensity or impression, as Massumi might, it is important to realise that this apparently autonomic sensation is actually conjured through salient audiotactile contrast. Much like ASMRtistry, this

[5] Although the participants in Eitan and Rothschild (2010: 458) found the Wet-Dry category the most difficult one to use for their ratings, this audiotactile continuum should not be dismissed entirely and is worthy of further investigation. In reverb plugins for Digital Audio Workstations (DAWs), Wet-Dry is a common crossmodal metaphor, for instance.

audiotactile affect would be affected and intentional. Yet unlike the orthodox perspective on ASMRtistry, it would not be a mere matter of positive valence – the passage should be pleasurable and painful *at the same time* in order to be maximally touching, something hinted at in this chapter's first epigraph. The moment should be high in energy arousal but *ambivalent* in its affective profile. It can be felt as the moment when Mozart the manic depressive Harlequin pinches us by the ear in a grotesque act of humorous violence. In the final section, we will see that it is this very audiotactile ambivalence and perversity that continues to grip the Western world in the digital age.

Touching Sounds in Flume's *Quirk*

Quirk is the final track from *Skin Companion EP I* (2016) by the Australian music producer Flume (Harley Edward Streten). This EP was the first of two follow-up records featuring previously unreleased music created around the time of the full-length *Skin* LP, which won best dance/electronic album at the 59th GRAMMY awards in February 2017. Flume is known both for his sensational rise to award-winning prominence and as a key catalyst for the highly sensual electronic dance music genre known as future bass. In this final case study, I explore the audiotactile attributes of *Quirk* and its related YouTube comments concurrently (see FlumeAUS 2016b).[6] The hybrid method (Spencer 2017b) enables a consideration of different ways of listening (Clarke 2005) and elucidates the contingencies and contradictions that cling to touching sounds in Internet-mediated music (cf. Born & Haworth 2018).

The track begins with sounds that are akin to small pebbles being dropped on a hard surface: they are grouped into a pulsed loop with a kind of triple time swing. Within each loop there is also another sharp-transient sound that feels qualitatively different – it is much smaller and finer, a grain of sand in comparison to the pebbles. Just before the six second mark, the pebbles loop is interrupted for a short-lived instant by some sort of jam jar lid rattling on a hard plastic kitchen surface, and then at 0.09 we hear something very like a spinning bike wheel before the vocal anacrusis at 0.11. *Quirk*'s intro features the first kind of touching sounds covered in this

[6] The data were collected in two different stages. The initial comment scrape of FlumeAUS (2016b) was carried out at 16.30 GMT on 28.11.16. The YouTube counter was at 520 comments for the first scrape. The second comment scrape was performed at 10.30 GMT on 11.12.17. The counter was at 831 comments for this scrape.

chapter, namely granular sounds that we feel by way of the material properties they specify. Although the specific identity of each sound source might vary from listener to listener (a wire coat-hanger rather than a jam jar lid, for instance)[7] it is likely that these first sounds specify hard solid objects rather than aerodynamic or liquid entities (Gaver 1993: 26). However, we may well get a feel for these sounds without letting them really touch us, which is to say that the pebbles loop might afford disinterested close listening or even a kind of *écoute réduite*. The intro may also be something of a stumbling block for certain listeners acquainted with other types of popular music, prompting confusion as to why these scratchy, non-musical sounds are in a setting that is supposed to be emotionally weighty. The following YouTube comment is a case in point:

> *Is the intro a joke?*

On the other hand, since the pebbles loop is relatively low in the mix and characterised by a novel, unconventional feel, it could serve as a perceptual ordering device that affords heightened audiotactile awareness (laying the groundwork for sensitivity during the main part of the track). The YouTube user may well turn up the volume or rewind in order to work out what is going on.

> *Just wow, on how,* [sic] *this song was inspired by the bounce of a marble! Anyone hear it?*

Finally, it should be noted that the intro sounds are comparable to those in *10 triggers to help you sleep* and that the detailed stereo panning is similar to the strategy used by ASMR Darling at the start of her video. The sharp-transient 'sandy' grain and the jam jar lid are both panned to the far right-hand side of the stereo image and we may feel them as discrete touches on one ear. To ASMR-capable individuals, the intro might trigger the intensely pleasurable head tingling with which they are familiar, but many other YouTube users might just experience it as an uncomfortable or perverse tickling sensation:

> *This gave me ASMR*
>
> *deeewds! that first part like tickles my ears it feels freaking weirrrd!!!!!*

[7] The YouTube user might also hear the opening sounds as the metallic clinking of chains due to the moving visuals used for the upload.

The falsetto vocal entry at 0.11 heralds a syncopated bass part, a shimmering synth pad, and offbeat hand claps, while the bike wheel continues spinning with dynamic swells. There is a steady 'half-step' pulse (that feels like 80 BPM) and the harmony alternates between D Major and B Minor sonorities. Is the music sharp or blunt, smooth or rough, soft or hard, light or heavy, warm or cold, wet or dry? Despite (or perhaps due to) the richness of this audiotactile environment, these kinds of judgements are problematic and they are also unlikely to occur under the spotlight of conscious perception. We may well feel warm and cold sensations from the oscillations between major and minor (cf. Korsakova-Kreyn & Dowling 2014). The sharp and hard Kiki hand claps, however, are offset by the blunt and soft Bouba bass, while the here-and-now solidity of the bike wheel contrasts with the vaporous or aqueous vocals – they are distant, indecipherable and awash with reverb. Moreover, the visuals used for the *Quirk* upload feature a strange mixture of soft-looking, Bouba-like orange flowers and clinking, Kiki-like metal chains. Critically, this contrast-mediated ambivalence can be the most touching aspect of crossmodal perception. The abstraction to an indeterminate feeling can be profound:

> *It sounds very melancholic to my ears*
>
> *This song is the epitome of beauty, confusion, happiness, sadness, and hopefulness all in one song. Holy moly this one is good. Hella love for Flume* ☺

The remarkable aspect of this last comment for those familiar with the aesthetics of music is the way that it clings so closely to Schopenhauer's conception of a Beethoven symphony, one in which "all human passions and affections speak at once: joy, sorrow, love, hate, fear, hope, etc., in countless nuances, yet all as if in the abstract without any particularizing" (cited in Dahlhaus 1982: 42). There is a subtle difference, however. Whereas Schopenhauer casts these musical affections as "pure form without matter, like a world of spirits without material" (ibid.), it could be said that the tactile feel of Flume's groove itself is what bleeds with feeling – the affective ambivalence is gushy rather than disembodied or architectural. Streten's production name fuels this notion of a sensual flood by paratextual means and there is also a feeling that his *Skin* music is an epidermal transducer, one that converts sensations into emotions and brings everyday phenomena into contact with lofty, higher-order noumena. On the YouTube upload for *Depth Charge*, a track from Flume's *Skin Companion EP II* (see FlumeAUS 2017), the Top Comment reads as follows (with 625 likes and 28 replies at 13.39 GMT on 19.12.17):

He creates liquid sound that pours into my ears like broken flood gates then the liquid enters my mind to get dispersed throughout my entire body creating an uplifting, soothing feeling of content.

As is typical in YouTube comment sections, there are several disapproving users in the reply chain ("wow lot of unrealistic fantasy", "makes me giggle when people on youtube try to get all poetic ^^") but there are many more agreements and statements of solidarity ("Ooh nice comment. The metaphor is right on point.", "on fucking point brother", "you just explained what I felt", "ESPECIALLY at 0.35", "Flume's music envelops us in a warm, pulsating bubble of warbling synths and glitch clicks. Flume has said he wants to strike a balance between organic and synthetic sounds, and he's got it fucking ON POINT.").

Without disregarding the reference to warmth in this last comment, Flume's music is also renowned for being 'chill' (as in chilled out) and for reliably inducing the not-hot-and-not-cold chills of frisson. To return to *Quirk*, there is a palpable feeling of relaxation at 1.00, whereupon the bass part drops out and delicate melodic bubbles float above new synth pad sonorities, while the hand claps now shuffle around the head due to panned 'ping-pong' delay. Two electric guitar licks (at 1.06 and 1.18) outline a rising minor second followed by a rising major seventh (C-sharp, D, C-sharp) as a pre-echo of the striking shift at 1.24. Crucially, this shift could be understood as a SHIFT (Shimmering/Shivering/Shaking Intentional Frisson Topic). In a first sense, the SHIFT holds tremendous potential for frisson due to its unexpected entrance (Colver & El-Alayli 2016: 414) but it also feels like the music at 1.24 ff. is itself shivering in a spasmodic manner. Due to stochastic filtering or sidechaining, the SHIFT sounds as though it is chattering its teeth and shaking uncontrollably. But despite this trembling, we are also anchored down by the music's gravitational bass weight, which affords a feeling of depth and emotional gravitas. The syncopated bass line begins on F#3 during the first loop of the SHIFT passage, falls to F#2 for the second iteration (at 1.36), and then becomes an immensely heavy, lower-than-low 808 sub-bass kick from the third repeat onwards (F#1 at 1.48). The following YouTube comments seem to underline the touching power of the SHIFT passage and *Quirk*'s ability to cause frisson:

1:24….chills behind my neck

cue goosebumps

oh shit! when the chords start flowing in at 1:24, and that 808 kick comes in at 1.47! Holy smokes! My jaw dropped! This track is so chill and sick! Favorite track!

the raw emotion in this song is amazing, especially at 1.23

Have been listening to this on repeat purely for 1.24 it puts me in such a chill trance!

1.25 And On Is Just So Fucking Kandicjsmfielgosw

Yeah, this is definitely my favorite from this EP. When it hits 1.24, oh man.. So many feels

1.23 is when my life finds meaning

the transition at 1.24 remains one of my all time favourite parts to listen to in a song

1.24 to 2.11 is my favourite part, I don't know what it is about it but it makes me feel some type of way

I got the chills listening to this!

I'm like…dwamn. Do you people feel the same shivers as me, running quickly through your bodies, making you shudder, the shiver ending on your fingertips and nipples? Yeah…

From Sensation to Sociality, From Affect to Affectation

There is another dimension to audiotactile affect that haunts this case study, however. During the qualitative content analysis of *Quirk* comments, another major theme emerged, one just as prominent as the discourse centred on 'feels' and frisson. It takes the form of a dirty meme:

I will not masturbate anymore, this caused me an orgasm

Well this makes me masturbate

get laid to flume

totally about to have some hot gay sex to this lol

Did you just assumed the music gender? smh [shaking my head] -_-

> *haha no, I'm saying I'm gay and me and my boyfriend may or may not have just had sex to this lol* :-P
>
> *i just got an eargasm*
>
> *everytime he drops a beat it is an orgasmmmmmm*
>
> *all of flume's music is ear porn*

Similarly, the most liked comment on the Skin LP Preview upload (FlumeAUS 2016a) reads "Flume called this album Skin because I touch myself when I hear it" (1.2K likes). The longest reply chain for this video (161 replies) was triggered by the comment "flume is the only man who can get me cumming." (retrieved at 16.57 GMT on 19.12.17). Just as sexual touch lingers behind ASMR media (Waldron 2017),[8] so too do coitus clichés proliferate around Internet-mediated bass music. This metagenre (comprising dubstep, trap, future bass, and other bass-orientated EDM genres) foregrounds 'filth' and a fetishized musical conceit: 'the drop'. The drop is a cathartic moment and often specifies bodily discharge or the act of intercourse itself: one of the most common samples used in future bass drops is a rhythmic creaking bedspring loop. More broadly, it is important to consider the way that bass music is *used* by Internet *users* to feed audiotactile cravings, satisfy emotional desires, and perhaps even as mood music for sexual acts IRL ('in real life') (see also DeNora 1999 after Foucault). Bass music serves a particular purpose in a similar way to ASMR. In this regard, the more explicit (and perhaps accurate) title for this chapter might have been 'ear porn' rather than 'touching sounds'.

Zooming out further still, we have seen that preoccupations with audiotactile affect embody the human need to feel or create some kind of social connection, and it should be remembered that the very concept of touch requires the meeting of two entities and implies interpersonal relationships (Clarke 2017). Whether it features in subreddit discussions of ASMR triggers, in classical hand-horn pedagogy and performance, or in YouTube comments on Flume tracks, audiotactile affect is "woven…into a mesh or network of practices that communities of listeners participate in when they hear relevant features of the auditory world, communicate them

[8] Waldron (2017: online) presents the compelling argument that ASMRtistry is a fundamentally sexual practice, but qualifies this by stressing that her suggestion "relies on a radical redefinition of the very category of 'sex' itself". In doing so, Waldron attempts to protect ASMR content from the male gaze and conventional notions of filth and fetishism. This pornographic mode of engagement persists, however, as evidenced by the first part of the KSI (2019) upload.

to others, and pass them on through training" (Kane 2015: 15). Although the Mozart case study suggested that touching sounds have been at the heart of musical production practices for a very long time, it could also be argued that audiotactility is more highly valued now than at any other time in human history. In an era of networked individualism (Rainie & Wellman 2012) or what might be termed digital (dis)connection, touching sounds assume a special socio-somatic significance. They bind isolated bodies together: YouTube users are spatially and temporally separated but somehow touch each other and may even come to feel or 'know' each other through a shared feeling for bass music. Frisson figures as an important point of contact in comment sections, whether faked or truly felt, and as we have seen it occasionally appears as a rhetorical device in the form of "do you feel it too?"

Discursive technologies of shared feeling such as this one encourage a reappraisal of the way that sound is capable of touching us. As we saw in the first part of the chapter, affect theory in its original Massumian guise is wholly out of touch with the way in which "*the capacities of the body are cultivated at the same time that cultures become embodied*" (Kane 2015: 8, original emphasis). Indeed, touching sounds are not necessarily as mysterious and ungraspable as some recent work would have us believe. The touching sounds encountered in this chapter have not always been defined by a "paradoxical im/materiality" and the "aporia of being drawn into a void which appears to be real" (van Elferen 2017: 616). Nor have these touching sounds "gain[ed] corporeality through the poetry of the invisible" (Voegelin 2019: 133). Instead, audiotactile affect has been experienced through and predicated on encultured and embodied *affectations*. Affectations are bundles of recursive affective experience and become established through multiple perceptual encounters with a specific kind of stimulus. They are developed not only through repeated exposure or pedagogical training, however, but also through contagious kinds of descriptive discourse. Without dismissing the importance of perceptual learning, then, one might reason that audiotactile affectations are profoundly fetishistic. They figure as sensationalised placeholders within particular cults of feeling and play an administrative role. Prominent participants within these cults strive to embody or channel its principal audiotactile affectation through affected performances that police members and fend off naysayers who demonstrate insufficient faith in the fetish at hand. Therefore, by effecting a move from affect to affectation I am suggesting that the power of touching sounds is partially derived from pretence and suggestion – from DeNora's notion of perceptual ordering devices understood in the broadest possible sense. We have encountered the

audiotactile *affectation* of hearing nails on a plastic container as comforting and sleep-inducing rather than creepy or cringeworthy; we have considered the audiotactile *affectation* of hearing a hand-stopped hand-horn note as the moment when Mozart the manic depressive Harlequin pinches us; and we have surveyed the audiotactile *affectation* of hearing Flume's *Skin* project as ear porn that affords masturbation. As a result, one might reason that the contemporary ASMR phenomenon should be regarded as both a specific physiological sensation and as a sensational Internet meme, one that both cultivates and is cultivated by an affected following of whisperers.

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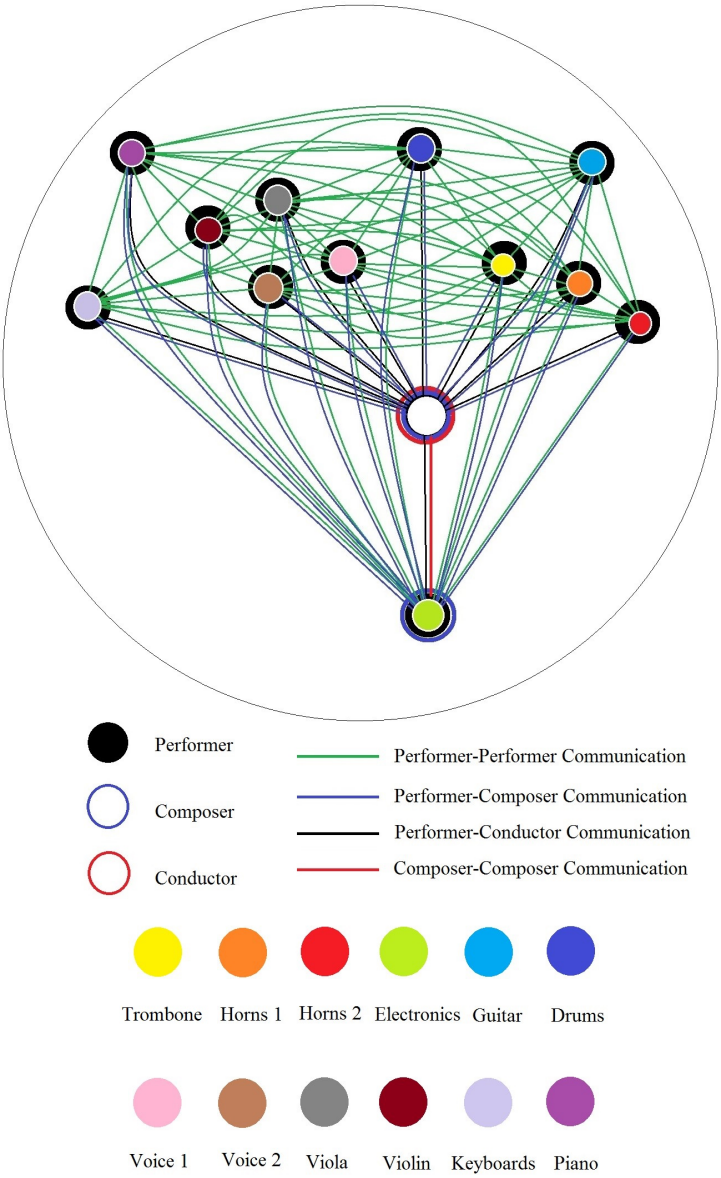
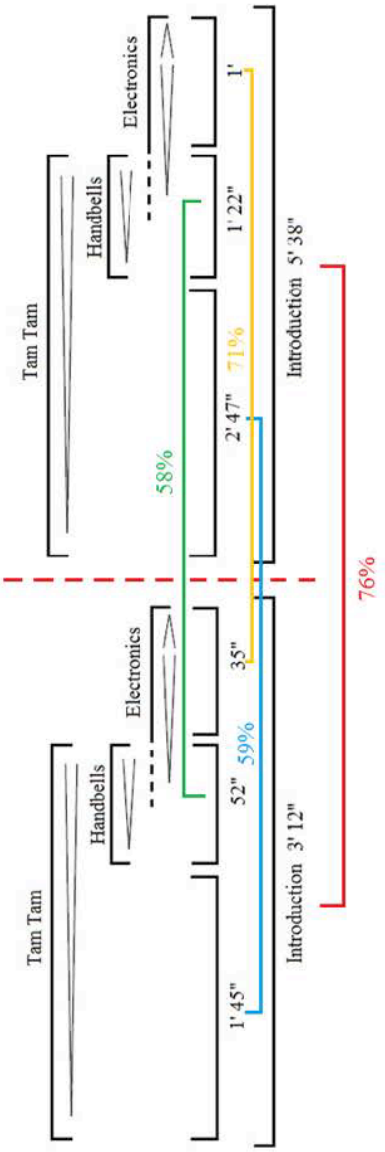
1-1 Seafort, North Kent Coast

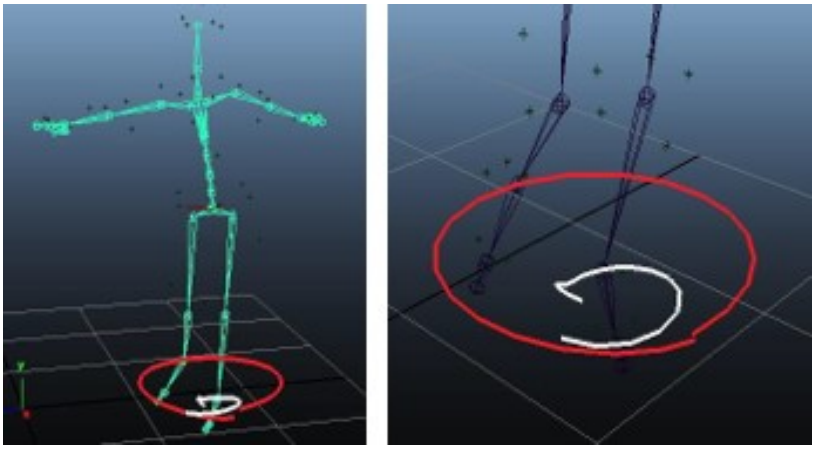
1-2 Seafort, North Kent Coast



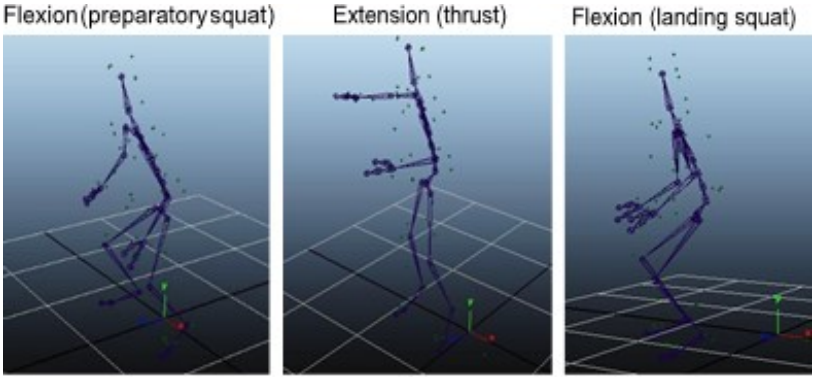
3-1 Pathways for Discourse during Rehearsal



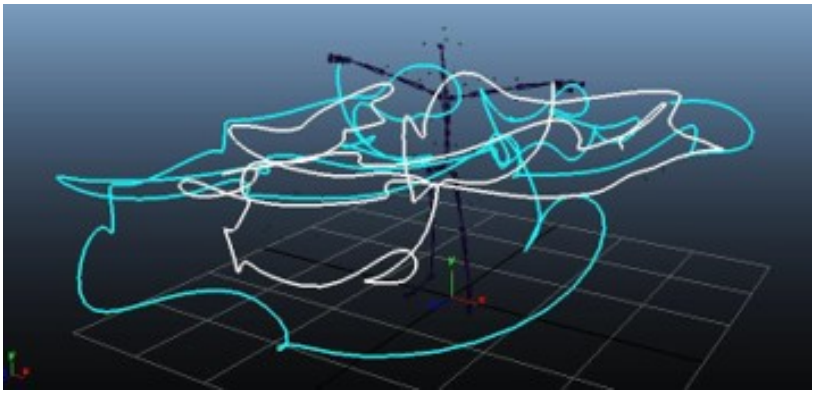
3-5 Percentage Duration Differentiations between Performance A and Performance B



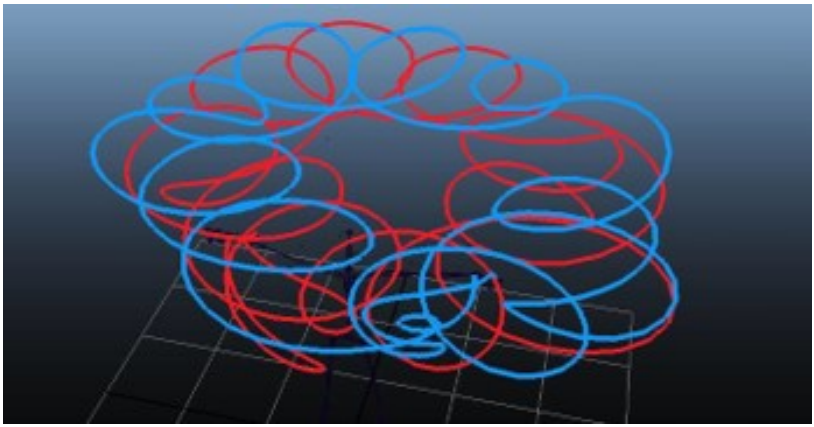
11-1 Objective Intentional Movement - Rotate Circumduction



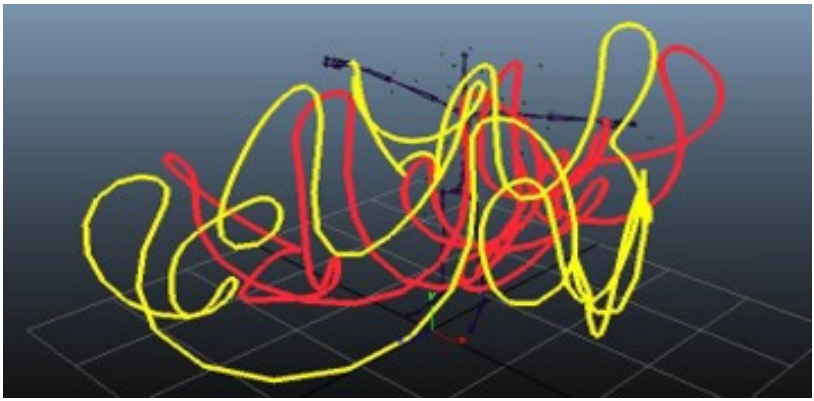
11-2 Objective Intentional Movement – Jump



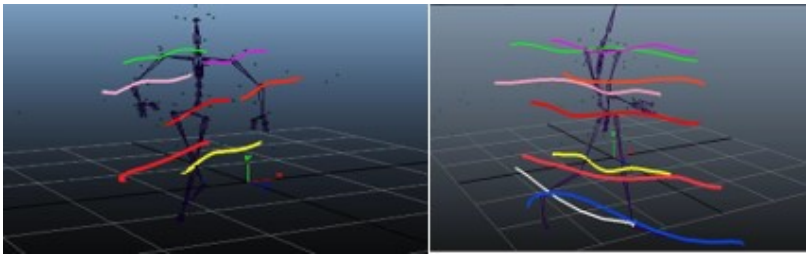
11-3 Intentional Complementary Movement - Walking Movement of arms/hands



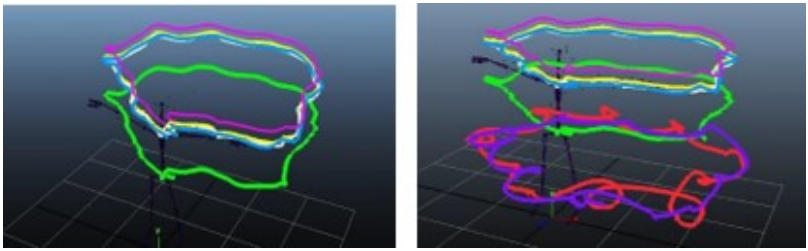
11-4 Intentional Complementary Movement - Rotating Movement of arms/hands



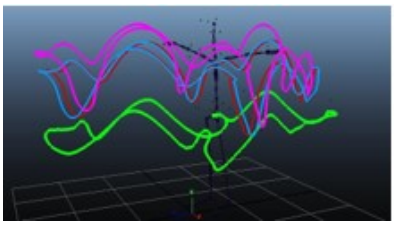
11-5 Intentional Complementary Movement - Jumping Movement of arms/hands

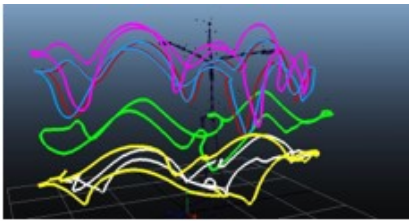


11-6 (left) Intentional Movement Auxiliary - Walking Movement of elbows, shoulders, hips and knees
11-7 (right) Intentional Movement Auxiliary - Walking Movement of elbows, shoulders, hips and knees



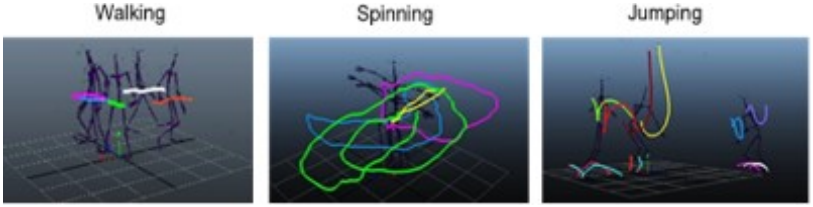
11-8 (left) Auxiliary Intentional Motion – Rotating Movement of head, neck, shoulders and hips
11-9 (right) Auxiliary Intentional Motion - Rotating Movement of the head, neck, shoulders and hips compared to the footpath - REGULARITY





11-10 (left) Intentional Auxiliary Movement Jumping Movement of head, shoulders and hips

11-11 (right) Auxiliary Intentional Movement - Jumping Movement of the head, shoulders and hips compared to the path taken by the knees – REGULARITY



11-12 Significant Gesture

CHAPTER SIX

AGENTIAL INSTRUMENTS: RE-THINKING MATERIALITY THROUGH MY RECENT COMPOSITIONAL PRACTICE

MATTHEW SERGEANT

In the summer of 2016, I returned home from a trip to the Dordogne valley with two small bowls. Humble though these little objects might appear in themselves, they serve as an aperture into the world inhabited by this chapter proper.

Figure 6-1: Two Small Bowls (purchased Mopazier, France, June 2016)

I was drawn to the glazed finish of the bowls. In this regard, the fact that I acquired two is far from insignificant. Built up of various coats of various veneers, the final form of the finish is effected by the so-called breaking or flowing qualities of these glazes – that is that they move, bleed or alter in transparency as they are fired. Minute differences in the internal composition, relative location and method of application of each coat or

colour leads to radically different interactions in the kiln and, as even my smallest of collections illustrates, the result is that no two bowls are the same.

But perhaps more revealing is the conversation I had with the potter as I purchased the bowls. As I remarked how it would be difficult for me to buy just one, he replied that he prepared them all the same, they just *chose* to be different. The potter's remark leads me to that which I wish to articulate more fully here.

My own recent compositions for musical instruments can be set against the backdrop of the twenty-first century 'material turn' in critical theory (Barrett & Bolt, 2010), the impact of which has already been felt in contemporary scholarship surrounding a wide array of disciplines, including anthropology, environmentalism, feminism, geopolitics, political science, postcolonial studies and queer theory (Coole & Frost, 2010). Holding a diverse group of influential contemporary thinkers together, if this 'new materialism' (Van de Turin, 2011) holds any internal consistency, it is that

> [m]atter is no longer imagined […] as a massive, opaque plenitude but is recognized instead as indeterminate, constantly forming and reforming in unexpected ways. One could conclude accordingly that matter "becomes" rather than matter "is". (Coole & Frost, 2010: 10).

Borrowing terms from philosopher Jane Bennett, I am working within a perspective where the world is comprised from a *vibrant matter*, 'by [which], I mean the capacity of things – edibles, commodities, storms, metals – not only to impede or block the will and designs of humans but also to act as quasi agents […]' (Bennett, 2010: viii).

For clarity, it must be remembered that the materiality of sound can be considered, at the very least, from multiple perspectives. To name but three, one could consider the materiality of that which makes the sound, the materiality of the medium through which the sound travels, the materiality of the hearing mechanism (and, indeed, audial cognition). The work discussed in this chapter is primarily concerned with the first context, although this is not to dismiss the creative potential of the others. In my recent acoustic work, I have become preoccupied with foregrounding the agency of nonhuman things to make, edit, and transform sounds.

As a composer, I have found it creatively fruitful to consider the materiality of sound-making things (I temporarily withhold the term *instrument* for the time being) from this agential perspective. Being convinced of the ability of a musical instrument to alter or otherwise

agential effect the sound which it is making independently of other agencies (the agency of the performer, for example) may be hard to initially accept. We generally hold an assumption that an instrument is a passive vessel, through which the agency of its human operator flows. As such, the sonic output of an instrument seems deterministically tethered to an input action – I *do* X and I will *get* Z.

But such a tether can be witnessed as considerably slacker if we start considering work featuring unconventional or found instruments. Michael Piscaro's *ricefall* (2004, for sixteen performers) and *ricefall(2)* (2007, for sixteen performers) both use the dropping of dried rice as an instrumental context. The sonic nature of each micro impact of each grain on a particular surface (metal, stone, wood, etc.) is dependent on a huge number of parameters, including its proximity and interaction with other micro impacts from other grains; the elasticity and size of the material surface with which it is impacting; the size and weight of each grain; the *relative* size and weight of grains; and so on. Whilst the sonic output lies within a bandwidth of general tendency, the moment to moment event structure (on the granular level) is 'decided' by the materiality of the rice and the surface.

Music for Western classical instruments has also witnessed a rise in practices within which the relationship between input action and sonic output has been problematised and/or slackened. Such dislocations are often discussed in relation to the tablature-based work of the so-called 'American Choreographic School' (Lorenzo, 2016), which includes composers such as Aaron Cassidy and Timothy McCormack. Cassidy has himself noted the distinction between 'determinate action and indeterminate output' in his own writings (e.g. Cassidy, 2008). In work of this nature, it is often the physical motions of a performer's body across and in relation to an instrument that is notated (often in considerable detail), rather than the output sound. The execution of these motions constitutes a performance of a piece, although the motions themselves may produce radically different sonic outputs when compared across different instances. However, it must be acknowledged that the agency of nonhuman things is, in itself, rarely, if ever, cited as a direct point of reference for this kind of work.

I wish to exposit an understanding of musical instruments based on considering their agential materiality. The text begins by outlining how the agency of material things has come to be activated in my work to date and then moves to demonstrate how, using ideas from philosopher Karen Barad, such a line of enquiry can offer new insights into the ontology (or *onto-epistemology* to pre-empt Barad's own terms) of musical instruments

themselves. In essence, this chapter serves to illustrate how *thinking like this* has helped me *make music like that* and then, perhaps more interestingly, how *making music like that* has helped me *think like this*.

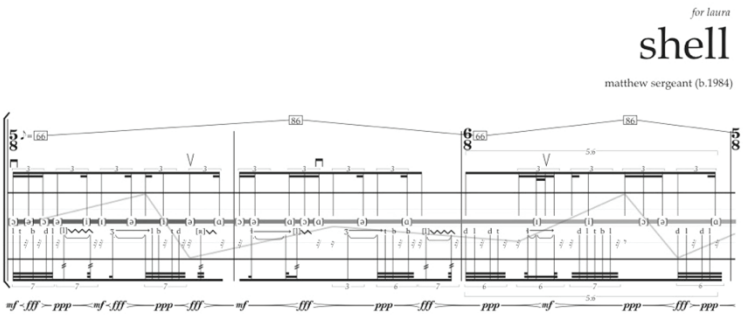
In my recent creative work, I have become preoccupied with foregrounding the material agency of nonhuman things within acoustic instrumental performance. Whilst this takes many forms in my practice, for the purposes of clarity and space, I will focus on work which applies such thought to the treatment of Western classical instruments, although such ideas can be extended into more unconventional domains.

In this way, many of my recent pieces feature instruments set up in such a way so as to permit access to more destabilized states regarding the relationship between input action and sonic output. Radically de-tuned strings, for example, 'fail' to hold pitches in consistent ways. They bend and glitch when performed upon in certain ways. Employing such strings within pitch-based compositional frameworks, then, allows the agency of these strings (for example) to be rendered audible – they edit and transform the pitch contents of the music independently of the agency of both the composer and the performing body – and do so *differently* upon each instance of the work in performance.

My recent piece *Terrains* (2016, for solo prepared quarter-tone flugelhorn) is indicative of this kind of operational space. The brass instrument is set up with certain tuning slides removed and replaced with alternatives made of tin foil (see figure 6-2, below). As a result, pitches that require fingerings that utilize these prepared valves are thrown into a highly unpredictable state, beyond the control of both myself as composer and the player as performer. Minute changes in the construction of the tin foil substitutes drastically effects that which occurs sonically in performance. Just as with the potter's bowls, even if made the same, the preparations *choose* to be different.

Figure 6-2: Flugelhorn as prepared for performance of *Terrains* (2017)

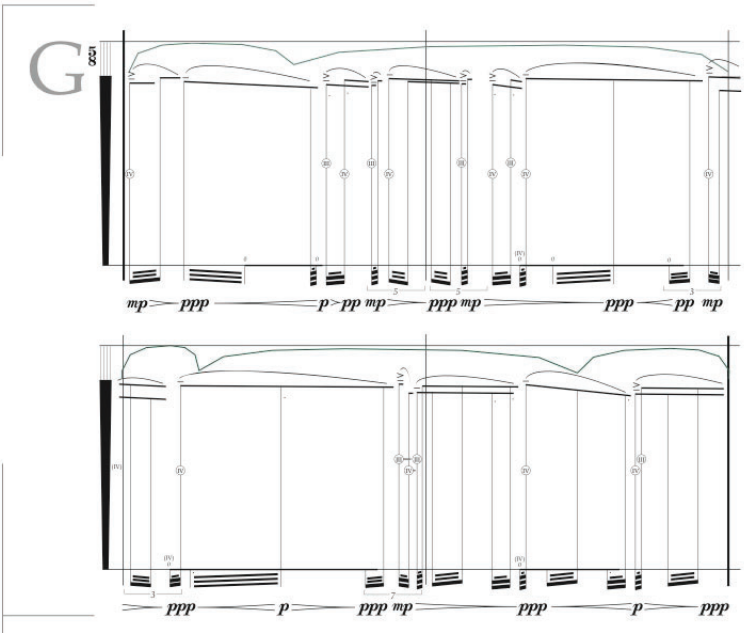
The human voice has not escaped such scrutiny, although within this context I often replace more overt material preparations with other alternate strategies. My recent miniature *Shell* (2014, for unspecified voice), an extract of which is shown in Example 6-1, below, serves as a humble additional example. Here, the voice is deconstructed into various simultaneously operating layers of activity, each associated with a different material part of the vocal mechanism. Tongue-to-teeth interaction (consonants), tongue-to-throat (vowels), and tensions in the tissues of the glottis and larynx are all assigned different musical behaviours. In performance, all of these strata are executed simultaneously and allowed to infect one another. Certain glottal tensions, for example, might involuntary effect vowel sound, etc.



Example 6-1: Matthew Sergeant - *Shell* (2014) - for unspecified voice – b.1-3

Other examples of my work have come to foreground the agency of the instrument's agential materiality in additional ways. In my ensemble work *Place* (2015, premiered under the title of *bet golgotha*), the relationship between abstracted musical gesture and materially agential instrument is subject to creative scrutiny.

The notational strategy employed in this third example provides an efficient conduit for discussion. The notation specifies gestural *shapes* in great detail, but allows the performers to choose the *notes* with which to execute them themselves (seen in Example 6-2, below), a strategy derived from that employed by Louis Andriessen in *Workers Union* (1975), for example. Register, relative to the instrument's range, is notated vertically (instead of absolute pitch), whereas rhythm is notated in the conventional (meter/beam/stem/flag) manner.



Example 6-2: Matthew Sergeant - *Place* (2015) - for unspecified ensemble – module G

Following from *Workers Union*, in *Place* all performers read from the same single score regardless of their instrumental family. Similarly, both

pieces are also ultimately open-scored, leaving the number of instruments, the choice of instrumentation and, indeed, the duration of the work unspecified.

In composing *Place*, particular care was taken to make gestural and registral choices that would create wildly divergent sonic outputs when performed on different instruments. Wide trills performed *pianississimo* in the extreme highest register of a bass flute, for example, will crack and falter in way that the same gesture on a violin might not. As an aside, if resonances between that which is being exposited here and the so-called 'Glitch Aesthetic' as outlined by, for example, Kim Cascone (Cascone 2000) are beginning to be felt by the reader, then this is not unintended. Perhaps glitch could be better understood in general as a revealed agential materiality, but this larger discussion must be saved for another occasion.

The particular entwinement of the materials of the instrument and body in *Place* will grossly effect the choice of pitches/fingerings of each performer. What constitutes an idiomatic choice of pitches/intervals for a wide trill in the low double bass are not what may be chosen for a low oboe, etc. The physical materiality of the instruments can here be understood as agentially effecting the choice of pitch input, and, once again, the sonic realisation of the work varies considerably depending on the performance context within which it is situated.

Place is presented as a series of interconnected modules, forming a matrix through which the players travel independently in performance (one may travel from module-A to module-C via module-B, for example, but not from module-A directly to C). Such a format allows the notated musics to overlap and return through and across time, permitting the listener to experience gestural ideas returning, altered by different instruments – or compare the results of two gestural contexts simultaneously superimposed.

In all three of these examples, then, the material agency of instruments is rendered active – is compositionally *harnessed* – in the work's performative context. In different ways, the material instruments can be understood as co-performers, contributing to the realisation of the pieces *with* their human counterparts.

This co-operative perspective on the performative aspect of my work has also come to be extended into the domain of composing and making. Indeed, if one is hesitant about assigning notions of agency to aspects of the material world that are traditionally considered inert, it is perhaps easier to be convinced by the proposition if we examine it in relation to making in a physical domain. Tim Ingold's position serves as a particularly illustrative example.

> 'I want to think of making […] as a process of *growth*. This is to place the maker from the outset as a participant in and amongst a world of active materials. These materials are what he has to work with, and in the process of making he 'joins forces' with them […]. Far from standing aloof, imposing his designs on a world that is ready and waiting to receive them, the most he can do is to intervene in worldly processes that are already going on […].' (Ingold, 2013: 21)

To consider a non-musical example, the 'flint-ness' of flint can be said to contribute to the final form of the hand-axe that is then made out of it (Ingold himself uses this specific example). By 'flint-ness', I mean the propensity of the flint to behave or act as flint – to be soft enough to chip with a blunt impact; to naturally chip into sharp shards, for example. Such a post-anthropocentric perspective on the co-operation between maker and material allows Ingold to consider the act of making as an *intransitive* action (Ingold, 2011: 6), as a subject acting without a fixed object. Making, then, is not an act of superimposing conceptual ideas on to inert materials 'ready and willing to receive them' (what is known as the hylomorphic position), but is instead an entangled dialogue between agencies already active in the world.

Moving beyond the hand-axe, it might be possible to imagine a notion of 'cello-ness', the materiality of the cello as a propensity or behaviour – the response of the strings to agitation, the weight of body and the bow, the fricative qualities of its surfaces, etc. It is difficult to imagine 'cello-ness' not in some way contributing to the final form of BWV 1007, for example. In a similar way to the co-operative performative position outlined above, I consider my work to be co-composed with the materiality of the instruments themselves (although, as with the Bach example, this could be applied transhistorically to the work of many others).

Arriving at such a co-operative position has rendered tangible further questions for more philosophical scrutiny. What is a musical instrument in the first instance? Offering a full outline of the history of such a question is, of course, well beyond the scope of this short chapter. What constitutes an instrument within the context of a digital audio workstation might be different from that encountered in the orchestral percussion store, for example. That said, quite possibly one of the most pluralistic definitions comes from composer Timothy McCormack.

McCormack says 'an instrument must first be held by a human being before it *is* that instrument' (McCormack, 2010: 5, emphasis added). From this perspective, it seems musical instruments *become* through and of the act of *holding*, itself a kind of meeting or entwining of nonhuman and

human bodies. After all, beyond the embrace of a violinist to their violin, even software instruments require the click of a finger on a mouse.

It is interesting how McCormack's perspective contrasts with more socio-cultural modes of defining musical instruments, where instruments earn themselves value as instruments through a social consensus, like some kind of musical fiat currency. In McCormack's model, just as the holding of a clarinet is permitted to become the clarinet-as-instrument, so too can the holding of stones permit the stone-as-instrument (as in Christian Wolff's *Stones*, 1968-71), or even jars of salt (as in Hanna Hartmann's *Dust Devil*, 2017).

That said, any position that maintains a binary human/nonhuman distinction in our understanding of musical instruments proves problematic. Issues arising from this can be rendered more tangible if we consider, for example, a player piano, or the air-conditioning system of a concert hall in a performance of John Cage's *4'33"* (1952). Indeed, considering the human voice as a musical instrument (it is often described as such in common parlance, after all) in these terms is also problematic. Where are the human/nonhuman partners here? Or, to put it another way, how is the voice *held* in the same way as the jar of salt?

The situation becomes further complicated when we remember that contemporary scholarship tells us that human/nonhuman distinctions are highly porous. Philosopher Timothy Norton helps develop this perspective yet further. 'Fully one-third of human milk, for instance, is not digestible by the baby; instead it feeds the bacteria that coat the intestines with an immunity-bestowing film. When a child is born vaginally, it gains all kinds of immunities from bacteria in the mother's microbiome. In the human genome, there is symbiont retrovirus called ERV-3 that codes for immunosuppressive properties of the placental barrier. You are reading this because a virus in your mother's DNA prevented her body from spontaneously aborting you' (Morton, 2017: 10). Through such a lens, the boundary between the human and nonhuman is therefore porous to the point of indistinguishability. Such a position is particularly amplified if, following Jane Bennett, agency is considered a facet of both the human and nonhuman domains.

In addition to this, binary nonhuman/human oppositions within notions of instruments always carry an implicit directionality and hierarchy. In McCormack's model, for example, only the human can do the holding. Extrapolating further, through such a perspective, only the human has the agency to hold and to make the instrument 'that instrument' (McCormack 2010 ibid). Can this therefore be a genuine co-operation?

Ideas from philosopher Karen Barad's agential realism (2007) become useful in overcoming such problems and reconceptualising the materiality of musical instruments in a new way. The first of two useful terminologies is that of her notion of *intra-action*.

> '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.' (Barad, 2007: 33, emphasis retained)

To unpack, for Barad, all that the material world can be said to be comprised of is boundless agency. The singular is important. This boundless agency is completely undelineated, bifurcations and oppositions (of types, tropes, and classes) do not exist here. Even to think of this as an entanglement would be wrong – there are no differentiated parties to dis/entangle.

For Barad, the delineable phenomena of the world are the result of perpetually cutting into this boundless agency. This act of cutting is *intra-active* in the sense described above. It is intra-action that creates the partitions between phenomena in the world, creating delineable agencies. As such, these delineable agencies are the output rather than the input of an *intra-active* process.

A second term from Barad - *apparatus* – can then be introduced.

> '[*A*]*pparatuses are the material conditions of possibility and impossibility of mattering*; they enact what matters and what is excluded from mattering. Apparatuses enact agential cuts that produce determinate boundaries and properties of "entities" within phenomena.' (Barad, 2007: 148, emphasis retained)

The apparatus can be understood as a quasi lens or situated context through which intra-action occurs. The apparatus sets boundaries to intra-action, serving to define what is permitted to become an output of the original intra-active cutting of the boundless agency of the world. As such, apparatuses are active in what is permitted to matter in the emergent delineated phenomena.

We can think of these two concepts as operating together. In a scientific experiment, for example, an apparatus (a microscope, a detector, a Large Hadron Collider) is used to observe a phenomenon. Under Barad's description, that phenomenon only comes into being onto-epistemologically, through observation, as such, knowledge and being are absolutely and

necessarily combined. The apparatus – the *way* a phenomenom is viewed – can be understood to be active in this process, creating boundaries regarding what is and is not permitted to come to matter.

Whilst such a description might seem counter-intuitive (especially in relation to the sanctity of the scientific method), it finds resonance in the experimental groundwork surrounding quantum mechanics. In Neil Bohr's 'double-slit experiment' (which Barad herself uses as an example), the electron is demonstrated to exist as both a wave and a particle – paradoxically mutually exclusive states of being – and takes a form dependent on how it is observed. Against conventional assumptions of causality, how something is examined or presented changes that which it is.

Let us now consider musical instruments in these terms. If we accept a position of agential matter and of agential humans, then musical instruments can be considered as intra-acting apparatuses. Observing the performative actions of finger and string inter-acts its constituent agencies (perhaps perceived as human and nonhuman) into delineable onto-epistemological being. Prior to this act of performance – prior to their *intra-action* – such separate or individuated musical agencies do not exist.

Such a perspective offers solutions to the problems raised above. The human/nonhuman binary opposition can now be reconceived as an intra-active output, rather than an input. The instrument intra-acts its constituent agencies through and of its own being. And such agencies will be cut differently depending on the context offered by the particular apparatus in question. Emergent hierarchies can also be understood as the output of this intra-active cutting. This is particularly important within the case of the voice, the act of singing/vocalising intra-acting the human agency of the singer-self and the material flesh of the larynx into (even co-equal) partners. To offer an agential realist reading of musical instruments then is to consider them as Baradian apparatuses that intra-act agencies of sound-making into being.

Considering the examples of my own work (introduced above) in these terms can also offer further insight. In *Shell,* the stuttering glitches of its sonic surfaces can be understood as a series of *intra-acting* moments, where each performative (bodily) stratum only comes into delineable existence through the intra-active cut of the piece's performativity. The voice is foregrounded as the apparatus through which the music comes to be. In *Terrains* the agency of the particular preparations constructed is intra-acted into being through and of the apparatus of the entire instrumental setup (body/horn/foil). The volatility of the preparations draw particular attention to a questioning of the arbitrary limits of the constituent parties (why consider the foil agential, and not the horn itself?).

Through the foregrounding of the collision between material bodies and material instruments, the soundworld of *Place,* similarly, becomes a context where the sound (now as vibration in the air) is permitted to intra-act its constitute agential sources into onto-epistemological being.

In addition, such ideas have the potential to adjust our perspective on the realm of making of work (in addition to that work's performative being). Remembering Ingold's hand-axe, acts of making do not passively move ideas from a conceptual to a material realm, the materiality of that which is made (e.g. the 'flint-ness' of flint) acts agentially upon the maker along the way. Folding this model into Barad's domain, might we now begin to see acts of making as primarily *intra-active* operations? Acts of making as intra-actions that actually *produce* the distinguishable agencies of maker and material. Maker and material as indistinguishable until observed. For artists, such a realisation might be quite an easy situation to imagine – does a process generate a work or does a work generate a process?

There is no doubt that the lens of an agential materialism can offer much in the way of creative affordance, especially when reconsidering the role, function and application of a notion of instruments within one's work. But working and thinking in these ways has permitted a wider glimpse of the scope of these Baradian ideas within the wider field of making in general. The vibrant materialist's post-anthropocentric gaze presents a world teeming with universal agency.

In such a world, that which is made (a hand-axe, a piece of music) could now be understood not as a passive output product, but as an active *apparatus* in itself, changing the way in which the entanglement is intra-acted into individuation. Again, the laws of causality are reversed – the thing that was made changing how it came to be made. And when the next thing is made or the next piece is composed, a new apparatus is forged, intra-acting agential cuts differently to that of the first, and so on ad infinitum. Suddenly we may be describing ourselves as makers in the plural, makers perpetually re-made by the things that we came to make.

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CHAPTER SEVEN

EXPRESSIVITY IN WESTERN-ART AND JAZZ PIANO PERFORMANCE: AN EXPLORATORY STUDY[1]

ALFONSO BENETTI

Expressivity has long been considered one of the main elements of music performance by critics, renowned pianists and pedagogues (Cortot 1928, Leimer 1933, Lhevinne 1972, Neuhaus 1973, Hofmann 1976, Sándor 1995)[2], philosophers (Hanslick 1854, Langer 1953, Meyer 1956, Davies

[1]This research was funded by the project "Experimentation in music in Portuguese culture: History, contexts and practices in the 20th and 21st centuries" (POCI-01-0145-FEDER-031380), co-funded by the European Union, through the Operational Programme Competitiveness and Internationalization, in its ERDF component, and by national funds (OE) through the Portuguese Foundation for Science and Technology, I.P., and research funds in the scope of the framework contract foreseen in the numbers 4, 5 and 6 of the article 23, of the Decree-Law 57/2016, of 29 August, changed by Law 57/2017, of 19 July.

[2] References relating to the importance of the expressive qualities of musical performance can be witnessed by documentary sources such as old methods and treatises on instrumental execution: *Essay on the true art of playing keyboard instruments* (C.P.E. Bach, 1778); *Méthode pour le piano-forte* (L. Pleyel and J.L. Dussek, 1797); *Klavierschule* (D.G. Türk, 1789); *Méthode de piano du Conservatoire* (L. Adam, 1804); *Letters to a young lady on the art of playing the pianoforte* (C. Czerny, 1840); *On the proper performance of all Beethoven´s works for the piano* (C. Czerny, 1846), etc. At the same time, "the definition of 'technique' itself in music has been conceived by some authors for the main purpose of expressivity: according to Matthay (1932: 3) "technique means the power to express musically"; for Fielden (1927/1934: 162) "technique can be defined as the physical acquired capacity that an artist uses to express his own spiritual individuality"; according to Hofmann (1976: 81) "all technique should be a mechanism of expression"; and for Cortot / Thieffry, (1986) technique is synonymous with "metaphors for expressivity and feelings" (Benetti 2013: 3).

1987, Kivy 1988, Levinson 1990, Budd 1995, Davies 2001, Alperson 2004) and academic researchers (Seashore 1938, Todd 1985, Repp 1992, Clarke 1995, Sloboda 1996, Palmer 1997, Juslin 2001& 2003, Williamon 2004, Karlsson 2008, Benetti 2013, Fabian et al. 2014).

Empirically, expressivity is described as an element that brings music to life (Clarke 2002) - related to emotional qualities of the work and perceived by the listener (Davies 1994) - defined as the systematic variation of musical parameters in order to communicate a performer's interpretation with conviction (Benetti 2013). Furthermore, some studies try to demystify expressivity as something not taught or learned (Sloboda 1996, Williamon 2004), and others have presented pedagogical perspectives on expressivity (Karlsson 2008, Benetti 2013). Expressivity has largely been evaluated through perceived 'deviations' performed by the interpreter on the 'neutral' parameters of the musical text (Seashore 1938), application of computational models (Sundberg et al. 1983, Todd 1985, Repp 1992), emotional communication during performance (Palmer 1997, Juslin 2001), and multidimensional phenomena (Clarke 1995, Juslin 2003).

Although the quantity of academic work and interest in aspects related to expressivity have grown considerably in recent years, results from empirical research have presented no attractive results for performers in general. Further, issues related to different musical genres and their relation to expressivity have been largely neglected. The empirical methodology is partially responsible: the tendency to work with isolated parameters (which provide answers relating more to the parameter itself than to expressivity), difficulty in numbering and integrating elements in order to supply necessities imposed by musical performance, and the lack of evaluation mechanisms of subjective parameters related to expressivity are some aspects to be considered.

The general disinterest of performers in participating in scientific research represents another challenge, and reflects their scepticism of the applied methods. This is related to some of the following reasons: expressivity has been largely related to tables and graphs of acoustic data, whereas the question of what this data really tells us about the fundamentals of musical expression has somehow been lost (Juslin 2003); most of the research results obtained do not point out practical approach mechanisms and, in many cases, characterize specificities related to basic principles of instrumental execution; scientific language is limited in relation to musical language, which involves a large range of objective and subjective information that efficiently communicates with the performer; and the difficulty of using empirical methods to conceptualize and explain

mechanisms related to expressivity favours the maintenance of the 'mysticism' related to the subject.

In sum, few relevant results have been shared in relation to the performer's improvement and practical development. In this sense, there is a gap between scientific researchers - working in an integrated manner with musical parameters, their manipulation and different musical genres - and the cultural background of performers and audience, which could provide wider results on the expressivity phenomenon.

This exploratory study addresses the approach to expressivity by professional Western-art[3] and Jazz pianists in order to identify similarities and differences in respect to patterns, conceptions and study strategies in relation to an expressive performance. Ten professional pianists were interviewed - five Western-art and five Jazz music performers - on issues relating to expressivity, its definition and practical application. The research addressed the following questions: 1) What are the differences in the approach to expressivity by Western-art and Jazz piano performers? 2) How do these pianists organize decisions that lead to an expressive performance? 3) How do these pianists manipulate musical parameters such as phrasing, agogic and dynamic variations in order to perform expressively? Subsequently, the data was analysed with NVivo support.

Methodology

Participants

In order to obtain consistent data, interviews were conducted with 10 renowned active professionals, with frequent performances in recitals and concerts as soloists, recordings, and - in accordance with excellence pointed out by recent studies on performance - expertise (Ericsson et al. 1993, Sloboda 1996, Krampe 1997, Williamon & Valentine 2000, Chaffin & Lemieux 2004). Based on these criteria, I decided to choose musicians professionally active for more than ten years and older than twenty-one years, which means that they have probably accumulated more than ten

[3] The term "Western-art" refers to an artistic practice based on the reading and interpretation of musical texts according to specific conventions established throughout history. According to Assis (2018: 19), "the performance of Western notated art music is usually associated with the notions of execution, recitation, transmission, reproduction, or interpretation, relying on the existence of a commonly accepted, sedimented musical text, and on a set of stabilised conventions that regulate the communication between composer, performer, and audience".

thousand hours of effective practice in high-level quality activities4. Characteristics of the interviewees are presented in Table 7-1:

Category	**Reference**	**Age**	**How long is professionally active** *(years)*
Jazz pianists	Pianist 1	38	13
	Pianist 2	56	28
	Pianist 3	40	20
	Pianist 4	40	22
	Pianist 5	35	14
Western-art piansts	Pianist 1	26	12
	Pianist 2	60	46
	Pianist 3	53	36
	Pianist 4	29	11
	Pianist 5	49	33

Table 7-1. Characteristics of the interviewees.

Procedure

A semi-structured interview was conducted in order to obtain data relating to the following topics, developed according to elements identified by Benetti (2013) as important to expressivity in music performance: 1) concept (what is expressivity in music performance); 2) manipulation of musical parameters (phrasing, agogic, articulation and dynamics); 3) tendencies (aesthetics, tempo, style of the work); 4) study strategies; and 5) generalities (expressivity in different musical genres). Subsequently, the data was qualitatively analysed with the support of NVivo software.

The semi-structured interviews focused on predefined topics, freely explored according to their pertinence, as attributed by the interviewee. In addition, basic information on the interviewees was previously collected: age, gender, nationality and brief career description (disregarded in the case of renowned professionals). The option for the semi-structured interview model allowed for the exploration of additional and varied information (not imposed by the interviewer) related to the topics established in the set of questions. Thus, information that may have been disregarded or forgotten in the elaboration of the questionnaire and which would not have been

[4] Due to the preliminary/exploratory character of this study, all participants are from Portugal, nine males and one female (Western-art pianist).

expanded in the case of the application of a ‘closed’ structured interview – characterized by the strict application of previously formulated questions – was collected as well. Thus, considering the subjectivity of the theme and assuming a wide range of options regarding the description of the performers' approach to expressiveness, this model was considered appropriate for this research.

On the other hand, using NVivo software enabled creating categories, searching, filtering and questioning data in response to the research objectives. The advantages of using this software are: convenient organization and documentation of large amounts of collected material; portability of the collected data; simultaneous multiple data searching on all collected material; and flexibility in the organization, standardization and prioritization according to the object of study (Benetti 2013). However, the use of NVivo requires a large amount of time for the introduction and codification of data, conducted manually by the researcher using the cutting and storage resource for excerpts from the textual transcripts of the interviews. In addition, it is important to note that, even though NVivo is an auxiliary program for qualitative analysis procedures, the analytical data provided by the program is essentially quantitative. The software is able to create tables and graphs from the categorized data, which allows for the comparison of partial results obtained from the qualitative analysis, but requires further analytical engagement by the researcher.

Results

The results of this study will be described according to the following topics: *concept*, *manipulation of musical parameters*, *tendencies*, *study strategies* and *generalities*.

Concept

Regarding the first topic, interviewees were asked about the concept of expressivity and elements that characterize an expressive performance. In this regard, with respect to the Western-art pianists, expressivity was mainly linked to two elements: 1) personal identity of the performer (referred to three pianists) – the applied terms were ‘the space for the performer’s freedom’ (related to elements which characterize personal signatures of the performer during interpretation - exclusive characteristics of the performance by a specific musician); ‘personal sonic identity’ (related to *sound* as a personal mark of the performer - a quality in terms of sound linked to the performer’s personality which differentiates them from other musicians);

and 'genuineness' (the 'honesty' of the interpretation); and 2) the performer's ability to communicate the message 'behind' the piece (referred by two pianists) – related to the historic context and interpretation tendencies.

With regard to the Jazz pianists, expressivity was mainly linked to two interconnected concepts: 1) personal identity of the performer (referred by three pianists); and 2) unpredictability during performance (referred to two pianists). In this sense, unpredictability is related to the essence of a Jazz performance: the character of improvisation - in opposition to the Western-art performance, that is more predictable and recognized by the audience by its characteristic pre-given material (the score). At the same time, the personal identity of the performer was mentioned as related to the mark and signature of the musician during performance - similar to what was mentioned by the Western-art pianists. However, in this case – due to the characteristic freedom related to the improvised musical style - the available resources able to characterize the interpreter's personality are larger than those related to the Western-art music performance - which must follow the score patterns. According to one of the interviewees:

> The Western-art performer works with largely pre-determined material, so, what can he give of himself? At the same time, a Jazz performer has to create his own repertoire for at least a part of a performance. (Jazz pianist 1)

Furthermore, conviction was also mentioned as an essential component of expressivity. In this case, one of the interviewees pointed out two phases regarding the process of 'building conviction' for a performance: 1) conception - clarity, understanding and recognition of a musical idea; and 2) realization – the technical approach of the performer at the instrument. Finally, the cultural influence was also mentioned by one of the Jazz pianists as an influential aspect relating to expressivity.

Manipulation of musical parameters

In reference to the second topic, interviewees were asked about the manipulation of *phrasing*, *agogic*, *articulation* and *dynamics* in relation to expressivity.

Phrasing

In relation to phrasing, Western-art pianists relate expressivity to the application of agogic and dynamic contrasts between notes/group of notes according to stylistic patterns - which can also be broken down as an expressive resource - in order to give sense/direction to the melody and

create a coherent discourse[5]. The culmination of the phrase was mentioned as a reference point that can guide the approach of the performer, and "structure" was a recurring term used by the pianists. Finally, pianists referred to expressivity in phrasing as related to the quality of the *legato*, harmony, melody, style of the piece, concentration and listening accuracy of the performer.

With regard to Jazz pianists, phrasing was primarily related to the 'hierarchization of notes' whilst playing a melody. In this sense, 'hierarchization' means to apply dynamic contrasts in order to highlight some "important" notes above others[6]. The following reference illustrates this topic:

> The notes of a musical phrase have different relative importance, and you have to accentuate the most important notes more. (Jazz pianist 1)

In this regard, the application of dynamic contrasts as a way of accentuating or hiding specific notes was mentioned as the principal expressive phrasing resource in Jazz playing. This importance is showed in the following reference:

> You can see the importance of dynamic in the 'ghost notes'. We know they are there, but we must play them at a very low dynamic level. You have notes that you must accentuate, and others that you play with a minimum dynamic level. Sometimes you do not play it but you know that they are there because of the logic of the phrase. It is part of the gesture. (Jazz pianist 1)

Agogic (reference to rubato)

Agogic was considered by all interviewed pianists as a fundamental element related to expressivity. However, the approach to this subject showed different related focuses from Western-art and Jazz musicians, respectively, the use of rubato and pulse regularity during performance. With regard to the Western-art pianists, the most important implication of agogic on expressivity consists of the use of rubato. In this sense, Western-art pianists relate the manipulation of rubato to a historical 'tradition' –

[5] The following musical excerpt was mentioned by one of the pianists as phrasing reference: https://www.youtube.com/watch?v=yIM0FM0cHb8 (Rachmaninoff – Etude-tableau Op.39 n.5, performed by Horowitz, sec. 0-45).

[6] The following musical excerpt was mentioned by one of the pianists as example of this tendency: https://www.youtube.com/watch?v=K-JGAz9aszs (Mário Laginha / Chopin, Noturno Op.48 n.1, performed by M. Laginha, sec. 0-30).

tendencies related to music style and aesthetics regarding performance and listening determines what is 'fashionable' in given periods[7]. This reference illustrates this topic:

> There is a tradition of interpretation, that is what really makes the rules – even more than the composer. This is an interpretation practice and it is the tradition that says 'you have to do it like this' - sometimes with no supported basis. That was 'fashionable', that was a different kind of cultural and historical context. (Western-art pianist 1)

According to the Jazz pianists, despite the relation between agogic and rubato or flexibility of time during playing - topics also mentioned during the interviews - the most important expressive aspect related to agogic was the pulse regularity during performance. This means that expressivity in Jazz is built on a regular basis of time, which is fundamental in order to produce musical sense and to appreciate the rhythmic aspects of the performance[8]. The following reference illustrates this subject:

> In Jazz and in music of African origin, the engine works and is maintained by the regularity, and it's what you do in a regular structure that puts the engine to work. Syncopation has its power because it has a regular time base. (Jazz pianist 1)

Articulation

Taking into account articulation, the analysis of data showed contrasting opinions from Western-art pianists. In this case, three of the interviewees referred to articulation as a fundamental element for expressivity, largely related to agogic, 'breaths', style of the work and the characteristics of the original instrument for which the piece was composed. In contrast, two interviewed pianists considered articulation a 'tangible' parameter, and therefore secondary to expressivity. This opinion reflects their belief that expressivity is a quality of the performance related to subjective/ 'intangible' aspects of interpretation - such as the 'color' of sound.

In respect to the Jazz pianists, the analysis of data displayed similar results: three pianists referred to articulation as a fundamental element for

[7] The following musical excerpt was referred as a contemporary reference on the use of *rubato*: https://www.youtube.com/watch?v=axf9J8GI2W8 (Chopin - Prelude Op.28 n.6, played by G. Sokolov, sec.0-40).

[8] The following musical excerpt was mentioned in this regard: https://www.youtube.com/watch?v=ONCBXPoCSBo (A. Mehmari – Berimbau, played by A. Mehmari, sec.0-30).

expressivity, mainly due to its pertinence to phrasing and melodic fluency. At the same time, two interviewees referred to articulation as a secondary element to expressivity, part of a group of elements that constitutes the general "sonority" of a performance - which, according to one of the pianists is constituted by articulation, dynamics and rhythm.

Dynamics

In relation to dynamics, the analysis of data showed similar results from articulation - this parameter is considered by eight pianists (five Jazz pianists and three Western-art pianists) a secondary element in relation to expressivity. According to two of the Western-art pianists, the most important aspect related to dynamics consists of applying large contrasts during playing (such as the *subito*). In relation to the Jazz performers, dynamics are referred as a 'less objective resource' - a shared idea between the interviewees that underline the partial direct importance of this parameter on expressivity. According to them, the importance of dynamics is generally restricted to the application of accents in specific notes in order to differentiate them from other 'less important' ones.

Tendencies

Regarding the third topic, interviewees were asked about contemporary tendencies related to expressivity: *aesthetical limits*, *time*, and *musical style*.

Aesthetical limits

In relation to the first question, interviewees were asked about probable contemporary aesthetic limits in relation to expressivity. In this regard, the analysis of data showed that most of the interviewees (five Jazz pianists and three Western-art pianists) believe that there are no contemporary limits in relation to expressivity. Furthermore, current tendencies of interpretation - in Jazz and Western-art music performance - include a wide range of coexisting approaches - everything is important, valid and allowed. The following Western-art pianist's reference illustrates this topic:

> Today, everything is fashionable and nothing is fashionable. As we move forward, we are recovering the past and, today, we have an amalgamation of everything. You have the more variable trends and all coexisting at the same time. All is legitimate and allowed. It sounds fine, but otherwise looks confused. (Western-art pianist 1)

In contrast, two Western-art pianists believe in strong contemporary aesthetical limits working as 'powerful lines' that guide the interpretation of different Western-art music styles.

Time

In relation to time, interviewees were asked the following question: are slower pieces or themes more expressive than faster ones? In this regard, results showed that four Western-art and four Jazz pianists believe that there is no impact on expressivity by this parameter variation; and two pianists (one Western-art and one Jazz pianist) believe that the expressive possibilities in slower pieces/themes are greater due to the available time for the performer to work on - and for the listener to perceive - the passage from one to another note, and agogic/articulation contrasts.

Musical style

In the last question on the subject of tendencies, the interviewees were asked about particularities related to different musical styles in relation to expressivity. In this sense, results showed that eight of the interviewees (three Western-art and five Jazz pianists) believe that the means for expressivity are the same in all music period styles, and the difference between them exists only in their language. These interviewees also believe that all period styles of music have their own expressive potential, and all are equally important. The following reference illustrates this perspective:

> When you take Prokofiev, you have the rhythm, the rhythmic expressivity that you do not find in the romantic pieces. If you take Stockhausen, you have an incredible rhythmic expressivity, a rhythmic complexity that means expressivity. The language is different but the parameters are the same. (Western-art pianist 2)

In partial opposition to this conception, two of the Western-art pianists believe that works from the romantic period are naturally more expressive than works from other musical periods, due to their intimate character. The following reference exemplifies this opinion:

> By nature, the romantic period is the period of the exposition of the fragilities of the human being. In this sense, expressivity is under the skin, it's above all other things. This is the ideal period for expressivity. More intimate,

> personal, more human. This is the natural period of expressivity, the romantic music, the romantic period. (Western-art pianist 1)

Study strategies

Regarding the fourth topic, interviewees were asked about study strategies applied in their habitual practice related to the improvement of expressivity. In this regard, the answers obtained showed that Western-art pianists normally relate six mechanisms to it: mental practice away from the instrument, auditive accuracy, extramusical knowledge, historic and other disciplines' knowledge, experimentation at the instrument, and practice in slow tempo.

In relation to the Jazz pianists, the analysis of data showed that their practice normally consists of acquiring and developing skills in order to face unexpected or improvisational situations during performance. In this sense, the work on technical aspects (such as scales or arpeggios) is as important as the work on mental dexterity in aspects such as harmony and melody creation. Complementary elements referred to were: experimental work, practice and listening to recordings. The following reference illustrates this topic:

> The musician has to acquire skills that allow him to face any situation. You have to develop digital and mental capacities. When you have time, you choose a skill that you would like to develop – harmony, rhythm, melody – and work on it. The practice consists of improving many skills, so you can solve any problem you have to face in performance. (Jazz Pianist 1)

Generalities – Expressivity in relation to different musical genres

In reference to the last topic, interviewees were asked about differences concerning expressivity in relation to different musical genres. In this sense, most of the interviewees (five Western-art and four Jazz pianists) believe that musical language is sometimes different, but expressivity and the mechanisms for expressivity are the same in all music genres.

Final remarks

With regard to the results obtained in this research, two important relationships are particularly relevant to expressivity – in Western-art and Jazz piano performance: "personal identity of the performer" and 'conviction'. The most referred terms by interviewees were "the space for the performer's freedom" and "personal sonic identity". At this point, it is

interesting to observe that the reference to "the space for the performer's freedom" seems to coincide with the degree of comfort developed by the performer to interpret a particular work - a relation that, in turn, must proceed through the levels of "intimacy", knowledge and the personal taste of the performer in relation to the repertoire. At the same time, "the space for the performer's freedom" represents no more than a flexible variable inherent in the musical interpretation impregnated by the performer's convictions: a 'negotiated' space according to the musician's patterns, beliefs, knowledge and deliberations in relation to given repertoire.

Conceptually, this study revealed that expressivity can be described as the personal character and conviction of the interpreter transparent in his/her interpretation in order to differentiate his/her performance from others. In other words, two suggestions should be emphasized regarding expressivity in Western-art and Jazz piano performance: 1) the reflection on the interpreter's own personality and personal convictions in relation to the musical decision-making; and 2) the avoidance of imitation, superimposed on what is personally genuine regarding the interpretation of a particular piece/theme.

Some considerations can be elaborated according to these findings. One is related to the choice of repertoire: is it possible to be genuine in interpreting 'imposed' works in the course of building a consistent international career? In this case, what then are the practical implications of this condition? Perhaps the answer coincides with the difference between a 'professional' or an 'excellent' performance – it is no coincidence that pianists like Grigory Sokolov, Alfred Brendel or András Schiff restrict the choice of their repertoires to their 'specialisms'.

Another important aspect concerns the 'industrial production'[9] of new musicians and studying through imitation. The term 'industrial' is related to the 'productivity' policy that is part of most traditional musical education institutions. This productivity is reflected in the standardized formation of a large number of 'successful' performers, which ultimately attracts new students to the institution. However, the term is not related to the apparently limitless number of musicians who are being trained in conservatories and music education institutions, but in the way they are being 'produced'. In this context, teaching often occurs by imitation of formalist interpretative patterns created from specific conventions. Such an approach, regardless of its importance, limits the interpreter's critical thinking regarding creativity

[9] Here, the term refers to the mass formation of musicians according to the requirements of the 'market' – which, through a complex network of power relations, 'indicates' what is acceptable in terms of instrumental interpretation and performance at any given time.

and personal choices. At this point it is possible to observe one of the most evident contradictions relating to expressivity in performance: a great number of aspirants [to excellence] in search of a differential for their performance, based on the imitation of patterns applied by renowned pianists - in sum, all seek a differential based on the same patterns. According to the present study, this attitude immediately inhibits an essential component of expressivity: genuineness – related to the degree of personality and intimacy of the performer to the work. While the development of the performer is inevitably influenced by contact with performances by other performers – with obvious influences on their expressive refinement (Benetti, 2013) –, on a professional level, the detachment from the idea of 'reproduction' seems to be crucial for the development of personal creativity in interpretation: putting the maximum of what we 'are' into the 'minimum' of what we do.

However, the 'cost' of being expressive according to one's own convictions may be producing a pattern that is often not accepted by the "market" – this frequently represents a hindrance to the sustaining of a developing career. Paradoxically, on a smaller scale, such difference is immediately recognized as an expressive quality. At this point, a renowned example can be given: in the XV Tchaikovsky Competition (2015) the performances of the young French pianist Lucas Debargue made a great impact. His interpretation was described as non-standard, based on a high degree of personality, genuineness, and strong conviction of his own choices.

What this example tells us is based on an important facet of expressivity: artists are not – nor should they be – imitative machines. If expressivity is related to genuineness and the production of "new" performances, it should not be conceived through copying other performances or imposing imitative conditions.

Obviously, it is not just being different that makes one expressive. In this case, what are the limits? How can genuineness and interpretation be combined without 'disfiguring' the musical work? What is the public's influence on all these aspects? These are questions that veer away from what this study is capable of addressing. However – although speculatively – when people go to a concert, they are usually interested in hearing a specific performer and what he/she in particular gives to the pieces included in the program – which correlates to a topic considered crucial to expressivity by

Western-art and Jazz pianists: the important role of the 'identity of the interpreter'and their 'conviction'[10] in performance.

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[10] For more about 'conviction' in performance, listen to *The Berkshire Bach Ensemble – J. S. Bach, Brandenburg Concerto n.5 in D (Allegro)* – min. 8 to end: http://www.peterweitzner.com/bbs/08_Brandenburgs.htm

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CHAPTER EIGHT

THE MAKING OF A HEARING OF VOICES OF OBJECTS

OLAF HOCHHERZ

Introduction

The core idea of David Tudor's *Rainforest IV* (confirmed by the critic Tom Johnson) is that the listener is able to listen to the voice of the objects that are hanging in the space. In this book chapter I will discuss Johnson's intuitive interpretation that the work can be grounded in the appreciation of its production. I will examine, along with Johnson's review and Tudor's statements, how a knowledge about the production of *Rainforest IV* supports the emergence of the idea that the piece shows the voices of the objects. This is followed by a discussion of the research around Tudor's way of working and on the genesis of *Rainforest IV* in regards to the implications that these interpretations of the production have on the *interpretation* of the work.

Let me briefly introduce David Tudor. David Tudor (1926-1996) was a pianist and composer of live electronic music, who gained fame as a pianist of contemporary music, especially during his year-long close collaboration with Cage (Otte 2000). From there he moved on to work on his own live electronic pieces, of which the *Rainforest* series developed between 1968 and 1973 is best known. Tom Johnson's review of the premiere of *Rainforest IV* concludes with the idea that,

> For those who may be unfamiliar with Tudor, I should add that he was, for some time, the best avant-garde pianist around. He phased out his career as a pianist five to 10 years ago, but I would not be surprised if his current activities could turn out to be even more significant than his now legendary concerts of Stockhausen, Cage, et al in the '50s and early '60s. (Johnson 1973: 57)

> The *Rainforest* series is centered on the idea of sending sounds through resonating everyday-objects and distributing those sounds through multiple speakers in a room. David Tudor started the series in 1968 and continued to develop different versions throughout the 70s (Driscoll & Rogalsky 2004).

Tudor describes his thought process for *Rainforest* as being based on a shift in focus. The usual understanding of electronic instruments, or electronic music, is that one thinks "of the generation of electronic music from signal source to the reproducing output" (Austin 1989). As a reaction to this, Tudor carries out the mind experiment of the reversal of this process where "one, instead, might just as well start from the other end and go back and arrive at a signal source" (Austin 1989). In theory, this may not influence what a piece may sound like, but rather shifts the focus in the process of composition away from the instrument in the hands of the musician to the speakers in space. "And so, immediately, I got this […] dream-vision of an orchestra of loudspeakers, each speaker being as unique as any musical instrument." (Austin 1989) Tudor also associates, in another interview, such uniqueness with the notion of the voice. "The idea that the loudspeaker should have a voice which was unique and not just an instrument of reproduction, but an instrument unto itself." (Hultberg 1988) The sound source is in this case only the means to activate these "musical instruments" — these loudspeakers. This idea is realizable with the use of transducers, which could be described as loudspeakers without membrane. For the performance they were attached to each object so that the sounds from the transducers were transduced or transmitted into the objects. Here the object functions similarly to the membrane of a normal speaker so that the loudspeaker's vibration can then be heard. "I took these transducers and attached them to very small objects and then programmed them with signals from sound generators." (Hultberg 1988)

The *Rainforest* series first started as a piece composed to accompany a dance piece by Merce Cunningham. "In 1968 when Merce Cunningham asked me for a dance score […] I decided that I would try to do the sounding sculpture on a very small scale." (Hultberg 1988) The name of the piece was derived from the title of the dance — *RainForest*. Johnson highlights that while the piece sparked some discussions he suggests that Tudor's music did not catch sufficient recognition saying that:

> Merce Cunningham's 'Rainforest' (1968) has been widely discussed, particularly because of the mylar pillows which Andy Warhol designed for it. The pillows are partially filled with helium so that they are suspended in mid-air and, according to all reports, they are fascinating to watch. The

> music for this dance, created by David Tudor, has received little attention. This music, however, is based on another unique principle which in many ways is even more fascinating than Andy Warhol's pillow idea. (Johnson 1973: 57)

Tudor numbered the different pieces or versions retrospectively. The piece for the dance, which has also been performed independently, was later called *Rainforest I*.

For *Rainforest I*, he chose small objects which he "could travel with," (Fullemann 1984) but "they were so small they didn't have any sounding presence in the space, so I then amplified the outputs with the use of contact-microphones" (Fullemann 1984), though he did not specify what exactly those small objects were. He set up a system in which "the sound that they produced was then picked up with phono cartridges and then sent to a large speaker system" (Hultberg 1988). This shifted the initial idea significantly and made the objects into filters, rather than sculptures or instruments of an orchestra, so that he states: "the natural resonance of the object and its subsequent amplification. It's a kind of mechanical filter." (Fullemann 1984).

Rainforest II and *III* differ from *Rainforest I* only with regard to the sound sources. *Rainforest II* is a rather obscure version, of which no performance documentation or recording is available though it is known to use voices as sound sources. *Rainforest III* differs from *Rainforest I* by the fact that it uses sound recordings as sound sources instead.[1]

Tudor, however, returned to his initial idea in his realization of *Rainforest IV* saying that "in 1973 I made *Rainforest IV* where the objects that the sounds are sent through are very large so that they have their own presence in space" (Hultberg 1988). *Rainforest IV* developed into its shape in a workshop.[2]

> It's a large group piece actually, any number of people can participate in it. It's important that each person makes their own sculpture. Decides how to program it, and performs it themselves. Very little instruction is necessary for the piece. I've found it to be almost self-teaching because you discover

[1] I am following in my numbering of the different pieces Driscoll and Rogalsky (2004: 27). *Rainforest II* and *III* are regrettably not well documented.

[2] "I was asked to give a workshop … There the object was to make the sculptures sound in the space themselves. And part of that process is that you're actually creating an environment." (Fullemann 1984).

> how to program the devices by seeing what they like to accept. (Hultberg 1988)[3]

In the workshop, every participant brings their own sound sources and objects. On this, Tudor highlights the social dimension and the independence of each participating musician. In this version, the sound is not only emanating from the objects, but is still picked up by contact-microphones and distributed through conventional speakers. The usage of contact-microphones has the side effect of shaping the sound as well so that the sounds emanating from the objects differ from the sounds emanating from the loudspeakers. This does not only serve the function of amplifying the sound but also of distributing sounds to different spots in the room.[4]

> It becomes like a reflection and it makes, I thought, quite a harmonious and beautiful atmosphere, because wherever you move in the room, you have reminiscences of something that you have heard at some other point in the space. (Hultberg 1988)

Tudor describes here how the implication that a sound after different steps of mediation sounds differently. The sound, which makes an object resonate, is then picked up by a contact-microphone that will lead into a speaker. This step allows the audience the possibility to compare sounds as they are mediated in various ways.

He continued to perform the piece with some of the workshop participants under the name 'Composers Inside Electronics'. It was performed in various ways, always as a result of a group project, either by 'Composers Inside Electronics', or in workshops in which Tudor and other members of 'Composers Inside Electronics' participated (Rogalsky 2006).

All four pieces are based on the same idea of using objects to filter sounds, but I will focus on *Rainforest I* and *IV* in the following discussion, for the reason that *Rainforest I* and *IV* can be described as the cornerstones of the series. *Rainforest IV* differs from *Rainforest I* with respect to the

[3] To clarify, I think that his use of the notion 'to program' simply means the choice of input material for the sculpture.

[4] "The purpose of the contact mike is to take the resonant frequencies, which you hear at best very close to the sounding object; to take those into an ordinary loudspeaker, which you can consider not as auxiliary but as enhancement." (Fullemann 1984); and "The idea is that if you send sound through materials, the resonant nodes of the materials are released and those can be picked up by contact-microphones or phono cartridges and those have a different kind of sound than the object does when you listen to it very close where it's hanging." (Hultberg 1988).

size of the objects as well as a reflection of how Tudor returned to his initial idea of 'objects as instruments' distributed in space.

Listening to Rainforest IV

From my own experience I can say that before having heard a performance of *Rainforest IV* in Berlin in 2011, my first contact with the pieces of the *Rainforest* series was from CD recordings. When I listened to a recording of Tudor's *Rainforest I* for the first time, I felt and heard liveliness, the bustle of the rainforest, a reference to nature and animal calls. I had never heard a real recording of a real rainforest until then, barring some constructed sound-tracks in certain movies, so I did not know how similar the sounds were to the actual noises in a rainforest in reality — but despite that, the image of a rainforest still immediately sprung to mind.

When listening to the piece, my interest was primarily caught by the synthesizers Tudor used. The recording of the performance in 1968, which was subsequently released on CD in 1998, begins with short electronic sounds, then transitions to short sliding sounds that appear in repetitive patterns and sometimes interrupted by short gestures (Tudor 1998). Even though the patterns are repetitive, they are not 'looped', they are always changing. The melodic sounds appear in the frequency range of bird calls; other sounds are more metallic — with a dissonant spectrum. The sounds and their patterns are clearly of an electronic origin, but their variations do not remind me of musical variation and development of patterns and sound.

The critic Tom Johnson similarly describes his experience of the premiere of *Rainforest IV* where:

> The individual effects were largely repetitious, many having a rhythmic pulse, but the situation was constantly changing. Every few minutes some object would fade out and another would come into play, and the process kept me interested for a couple of hours. (Johnson 1973: 57)

Johnson then describes a shift in focus, that I also experienced when I listened to a *Rainforest IV* performance.

> It was fascinating just to poke around and figure out what was doing what, and the sounds were appealing in their own right. There was a great variety of timbres, from the rumbles of the wine barrel, to the zinging effects of the large cable, to the whirr of the bed springs, to the extremely odd effects

> which happened as the sounds of the tennis racket seemed to drop into the 10-gallon bottle beneath it. (Johnson 1973: 57)

The piece has additional possibilities of access, specifically where the objects hanging in the room, which function as resonators, and which shape the sounds the transducers lead into them. Johnson describes the setup in the following way:

> The sounds are entirely electronic, but instead of using loudspeakers, they are fed into various objects, which resonate in their own ways. These objects, most of which were suspended from the ceiling of the old barn where the concert took place, included a wine barrel, some bed springs, a small metal ring, a plastic lawn sprinkler, a tennis racket perched on a 10-gallon bottle, a styrofoam picnic basket, a long cable which stretched diagonally up to the ceiling, and a large metal rim, which looked as if it belonged on a covered wagon wheel. (Johnson 1973: 57)

A listener can hear the sounds as shaped by the objects, but in order to do this the listener needs an intuition about the acoustic effects of materials on sound. In my personal experience I described this for myself as the haptic quality of the sounds. Haptic in the sense that I hear traces of the objects hanging in the room in the sounds. Johnson hears the work in this way:

> The wine barrel, for example, seemed happiest with low frequencies, and as one might expect, he added a deep echo to all his sounds. The little plastic lawn sprinkler turned out to be a squawky fellow, who resonated much louder than anyone his size ought to. The sounds of the large metal rim had a crazy way of spreading out all over the whole room, making it difficult to tell where they were coming from. But if you put your ear right next to the rim, or better, stuck your head inside its circle, it became quite clear that it really was the rim you were hearing. (Johnson 1973: 57)

Johnson highlights that in his own listening experience, he shifts his listening focus from the sounds as the result of electronic devices, or recordings, to focus instead on the role of the objects on the shape of the sounds:

> Of course the objects were all wired to tape recorders and sound synthesizing equipment, but it was the objects themselves which took on the greatest significance. In a way they were the performers, because it was they, after all, that were actually producing the acoustical sounds we were hearing. Each object had its own distinct voice. (Johnson 1973: 57)

This conclusion resonates well with Tudor's initial idea "that the loudspeaker should have a voice which was unique and not just an instrument of reproduction, but an instrument unto itself" (Hultberg 1988).

Additionally, Johnson describes the performance situation with a focus on its difference to the traditional concert situation where:

> The situation was informal, so that the audience could mill around and explore these objects. (Johnson 1973: 57)

and

> It kept Tudor and his assistants interested for five and a half hours. They were not trying to press the point, as people were free to come and go at will. They just seemed to enjoy keeping the sounds going for those who wanted to stay, and for those who would come back later on. I suppose they were also having an enjoyable time feeding various sounds into various objects, testing how the objects responded to different things, trying to find resonant frequencies, and listening to subtle variations. (Johnson 1973: 57)

A listener can see a group of people (mostly men) behind some tables with electronic devices and cables where the possibility to relate the heard sounds to the actions of the performers is limited.

The static presence of the objects makes it clear that they have to be brought to resonation by an external source. With some knowledge about the usual conditions of live electronic music, the listener can expect that the sounds we hear are controlled by the performers. But overall we can say that a listening to the sounds as made by the musicians is difficult. It is hard and often impossible to associate the different sounds heard to a specific musician.

This dissociation of the sounds from the actions of the performer contributes to the change of focus of the role of the objects as sounds in the performance are not primarily interpretable as traces of specific performers actions.

Listening to the production

The specific focus on the agency of the objects can be better explained when the listening to the work is not simply a listening to the sounds present in space but a listening informed by the production of the work.

When Tudor talks about his practice in general terms he describes his way of working on a piece as a practice of experimentation. Tudor

describes, in the following quotation, the moment when his search leads to the results he cares about:

> There are a lot of musical ideas which are working in my mind, and I try them out here and there, wherever I get the chance. But there's always a certain point where the work that you do to realize these musical ideas, all of a sudden it has a life of its own, and that's the point where I decide that it's my musical composition. When it's living for itself then I feel, "Okay, I can sign my name to that." Before that, it's something that anybody could have done, so I feel, "Why should I call it mine? Everybody hears that. They can do it." But when the process is really living, I can set to work and not really worry about it. (Duffie 1986)

Here, Tudor describes the emergence of a new piece. He uses the notion of life to qualify it. Since every piece he has mentioned in interviews is derived from a particular technical configuration, his work on musical ideas can be assumed as a work of experimentation with the electronic tools used as his instruments.

Tudor made clear in interviews that for him the *Rainforest* series is about finding and showing the personality of objects. In the previous quotation he states that he is searching for something "really living", and to this he adds that when something is living it means that he does not have to worry about it. This suggests that he thinks that what for him constitutes a piece is also that which creates some degree of independence from himself.

Tudor uses sound recordings, or synthesizers, as sound sources and electronic effects to modulate sounds, as well as different transducers to make the objects resonate. According to Rogalsky, members of "Composers Inside Electronics" say that the qualities of the sounds should be short, semi-chaotic, and repetitive with a clear frequency range (Rogalsky 2006: 330). It is obvious that the voice of the objects is not made to be seen by a systematic approach, but rather by putting them into an environment of complex sounds.

Another approach that Tudor does not pursue is to use systematic sweeps of sine tones, which would induce resonances and distortions, but instead he uses complex sounds to create an environment for the objects so that these objects can — to use his metaphor — come to life. In his practice Tudor does not need to dissect the objects by exposing the resonance frequencies and distortions of an object, but rather he aims to show the complex characteristics of the objects in an environment of sounds.

This environment created by the specificities of the sound material used for the performance is the basis for the recognition of the voice of the objects. Johnson traces this experience of the objects showing their voice to the objects as agency from the sound material. He describes his walking through the performance space and his focus on the different objects and how he investigates in detail their effects on the sounds. But while the particular variation of sound qualities produced by the resonances and distortions of the objects, we still have to remember that these resonances and distortions are shaped by a specific sound material, which does not unfold the different acoustic qualities, but rather creates complexes of various qualities.

Discussion

In the following section, I would like to link this way of listening to *Rainforest IV* to central writings about Tudor's work. For me it is most important that the research about the production of the work is, in my interpretation, not a research about the genesis of the work as a tracing of its facticity, but rather a form of research which grounds interpretations. As such we must evaluate not only how Tudor did work, but also how the 'researchers' interpretation of his working informs the interpretation.

Nature

Rogalsky postulates that Tudor understands himself and his music as nature. Rogalsky reminds us of Tudor's statement that "he is nature" (Rogalsky 2010: 134). He distinguishes Tudor also in this case from Cage and Lucier. While Cage's music is imitative in its mode of operation — a mimetic conceptualization of music, and Lucier's music is a music which shows acoustic phenomena — an indexical conception of music (Grant 2003), Tudor seems to suggest a direct relationship with nature. Such an elusive escape from representation explains the reason why Tudor is not able to add any detail to this relationship. When he is prompted by the question "Why do you want to work in nature?" (Rogalsky 2010: 134) with regard to an outdoor sound installation, Tudor responds: "Well, it's part of my being. It's a question I can't answer because I can't get away from it." (Rogalsky 2010: 134) Tudor further states at another point in the same interview with Klüver that "it seems to me that the way I use the technological medium, it is just more of what's already there" (Rogalsky 2010: 134). As he emphasizes in another interview that "I want it to display itself" (Austin 1989) it is already there as nature and nature should

display itself, all of which point toward an entangled relation to nature. In relation to the voices of the objects, they show themselves not to be a distinct quality of the objects but instead have an entangled relationship to the sounds which provide the basis to hear them. Following the interviews Rogalsky made with the workshop participants, I propose that Tudor did not express his conceptualization of nature to the workshop participants but rather showed it to them by his own use of sounds. How far his specific conceptualization of nature is affected by the development of *Rainforest IV* is therefore unclear. Nevertheless, this conceptualization of nature, which primarily affects Tudor's ethics of performance, is the sense that the musicians share what they find in their experimentation in the performance with the audience. Their performance shows something as entangled in its context. The objects are allowed to display their own voices and to be presented as entangled.

But I would like to conclude that when we follow Tudor's conceptualization of nature, we are invited to, not aim to distinguish the objects agency from the agency of the source material, but think of the personality of the voices of the objects as never clearly separable from the source sounds, which provide the basis for the experience of the voice in the first place.

Anthroposophy

Rogalsky and Cameron, and Kahn suggest that Tudor's music can be understood as having been influenced by his interest in Rudolf Steiner's Anthroposophy (Kahn 2001; Rogalsky 2006; Cameron & Rogalsky 2006). Rogalsky summarizes the most important point of Steiner's Anthroposophy for his interpretation of Tudor's work as follows: "'Nature', in the Anthroposophical sense, cannot be reduced to chemical and mechanical properties, but in a vitalistic way is composed of a hierarchy of etheric and astral entities." (Rogalsky 2006) Rogalsky focuses on Tudor's metaphor of wanting to release what is there. Tudor stated: "I try to find out what's there and not to make it do what I want but to, you know, release what's there." (Austin 1989) Rogalsky links this notion of release to a quotation of Steiner: "In music, man feels the echoes of the element that weaves and lives in the innermost core of things, which is so closely related to him." (as quoted in Rogalsky 2006: 106) It implies a connection of music to — as Rogalsky describes — "cosmic musics of higher planes." (Rogalsky 2006) He therefore states that "Tudor's image of 'releasing' the object's sound appears to be connected to an understanding of unheard music, which inhabits the object, awaiting its revelation to the enlightened

listener."[5] (Rogalsky 2006) Tudor's practice appears in this light as a search for the "echoes of the element" in his instruments though it is worth noting that Tudor himself does not refer to his interest in Anthroposophy in interviews. In his statements, he focuses either on practices or on feelings and avoids theoretical and general statements. This means that, to some degree, he does not find it necessary to impose such a frame on his music. Therefore, the claim of Rogalsky that the aim to show the voice of things is framed by religion is still ambivalent. Nevertheless, some kind of framing is necessary to form a basis for his search for the voice of the things he works with. The anthroposophical ideas Rogalsky refers to provide a basis for the intuition of which to investigate an object, in regard to its own voice shown through its interactions with other sounds or instruments until it shows signs of "life." This reference to Anthroposophy explains why Tudor has come to the basic assumption that things can have a voice.

Agency of the instrument

Kuivila's interpretation of Tudor's use of instruments brings forth the importance of the instruments, tools, and devices in his music (Kuivila 2004). Kuivila describes it as a lineage from Tudor's profession as a concert pianist specializing in contemporary music as well as his practice of interpreting open or indeterminate pieces. Kuivila highlights that the significant divergence of Tudor from Cage lies in the role of the instrument in a piece of music. Cage argues for a dissociation of sound from its causes and aims to create the experience of a gap between sounds and their causation, whether it is the causation of the acoustic material by instruments or the structuring of musical material by the composer. Kuivila thinks that "this instrumentalized sound created the possibility of a new musical instrumentality." (Kuivila 2004: 20) This new musical instrumentality is constitutive for Tudor's works, as, according to Kuivila, the instruments can be understood as having a similar role as a score in defining the performance of a piece. Kuivila fittingly cites a quotation of Tudor with reference to an earlier piece *Bandoneon!*: "Bandoneon! uses no composing means, since when activated it composes itself out of its own composite instrumental nature." (Kuivila 2004: 17) I interpret the notion

[5] A quotation of Steiner brought up by Cameron and Rogalsky: "Through her resounding tones, the whole of nature begins to whisper her secrets to the pupil. What he has previously experienced as incomprehensible noise will become an expressive language of nature herself" (Cameron and Rogalsky 2006).

of "composing means" here as techniques of composition as well as notation. Kuivila suggests that, in the work of Tudor, "the piece 'composed itself' out of its constituent elements." (Kuivila 2004: 21) The analogy between instruments and score also implies a similar interpretation of a score in that the instrument must be interpreted in a particular way, where the piece unfolds in relation to a particular interpretation of the involved instruments. This is important in relation to the two moments of the interpretation of music — the interpretation of the performer and the interpretation of the listener.

By discussing the agency of the instrument in the constitution of a musical work it is implied that not only do they affect on the sonic outcome, but also the interpretation of the musical work in relation to the agency of the different actors involved in creating it. To choose against having a score and instead move to having specific instruments objects and spatial arrangements constitutes a specific mode of control. The recognition of control is important in understanding the agency of the objects and, in my personal experience as well as in Johnson's review, happens to occur intuitively.

Performance culture

Laura Cameron and Matt Rogalsky documented well how a network of practices "conserved" *Rainforest IV* and shaped its identity as a musical work (Cameron and Rogalsky 2006). The important point of their article for me is that they state that Tudor did not provide a clearly prescribed musical piece, but instead that the initial workshop and the performance practice of the group of artists which participated in that workshop shaped a practice specific to the piece. Nevertheless Cameron and Rogalsky describe the frame for the work that Tudor set clearly.[6] This provides additional basis for the practice of performing the piece to Kuivila's idea that the piece is developed from the instruments.

Tudor did not define a specific sound material to be used to make the objects resonate, nevertheless he clearly rejected the use of composed music. In an interview he evokes the image of playing tango music through the objects and highlights that this would be not his piece (Duffie 1986). But in addition to this statement of Tudor, the frame set in the performance practice of the piece is much more narrow. The culture

[6] "First, Rainforest 4 is presented as live performance; second, there is no score or fixed program material; and third, the structure and content of Rainforest 4 was collaboratively developed." (Cameron and Rogalsky 2006: 912).

around the piece seems to reject all kinds of sounds of musical instruments. Tudor himself preferring pulsating and rhythmical sounds. Such a choice of sound material influenced the artists performing *Rainforest IV* in the workshop and in subsequent performances by "Composers Inside Electronics". "Composers Inside Electronics" is the name of the group which emerged from the workshop in which *Rainforest IV* got developed. Tudor describes the idea associated with this name:

> The realm of electronics, entered into in the spirit of discovery, can give the musician a new world. Electronic components & circuitry observed as individual & unique instruments, rather than as servo-mechanisms, will more & more reveal their personalities, directly related to the particular musician involved w/ (sic.) them. The deeper this process of observation, the more the components seem to require & suggest their own musical ideas, arriving at that point of discovery, always incredible, where 'music' is revealed from 'inside,' rather than from 'outside.' (music reveals itself) (Tudor 1976b; as quoted in Rogalsky 2006: 289)

In this sense the sound material used for the piece is associated with a specific use of electronics which is associated with the practice of the musicians as a group.

But the use of a specific sound material linked to Tudor's taste cannot be derived from this description of this practice alone. Cameron and Rogalsky suggest that Tudor's taste for pulsating and rhythmical sounds can be grounded in his interest in the sounds of living nature. Tudor associates the unpredictability, which emerges in complex systems, as an expression of liveliness. In Tudor's electronic instruments, which are often based on feedback systems, the unpredictability emerges from the material specificities of the used instruments. Nevertheless *Rainforest IV* is not conceptualized in relation to this type of instrument but instead lets each performer choose their own sound source. This means that the adoption of Tudor's aesthetic varies and when performers adopted the aesthetic of Tudor it may be shaped by Tudor's authority[7], but might also be shaped by Tudor's idea about the relation between the sounds and the objects along the lines that I discussed before as Tudor's conceptualization of nature.

A listening to the work, as described by Cameron and Rogalsky, is not only a listening to the sounds the performers choose, but a listening to the spatiality of the sounds, the personality of the objects and an evocation of

[7] "The sounds of Tudor's younger co-performers also tend to relate back to Tudor's own favourite types of sounds: semi-repetitive, intermittent and ambiguous as to their origin." (Cameron and Rogalsky 2006).

a specific image of nature. What Cameron and Rogalsky made clear in their article is that such a clear framing of the piece *Rainforest IV* is dependent on the social dynamics of the performance and re-performance of the piece by the group Composers Insight Electronics.
The focus on the social dynamic of the development and performance of the piece shifts the focus away from the technology towards the social aspects of music making. This is important as it also makes clear that the informal performance situation and the dynamics of the group in their long interaction with the objects is rather specific to *Rainforest IV*. To put it simply, the music and the objects become a medium of social interaction rather than a centre of the focus of appreciation.

Cybernetics

You Nakai focuses on the question of the role of Tudor in the performance of his works and how his role in his music imposes restrictions on the performance of his music. Nakai builds his discussion on the idea of self-stabilizing systems as they have become the centre of interest in the discourse of cybernetics. Nakai understands Tudor's practice as a creation of self-stabilized feedback-systems and describes not only Tudor's instruments as a feedback system, but also integrates Tudor — as a performer — into the system.

In a feedback system, the effects of parameter changes depending on the previous state of the system. This means that a clear control of the instrument is never possible, as the expectation of what a certain fader or controller change would induce is constantly undermined. Nakai highlights that Tudor, as a performer of his instruments is part of the system (Nakai 2014). Yet, the life of the work is not a transmission of Tudor's aliveness into the system, but rather a condition emerged in the interaction between the parts of its "composite instrumental nature" (Kuivila 2004: 17). Nakai interprets that the moment of self-stabilization of the system is what Tudor calls when things have a life of their own.[8] Life is described in cybernetics as auto-poetic system, though Tudor himself does not refer to cybernetics in interviews or other statements (Nakai 2014).

Such an interpretation, even if it is at the border of Tudor's self-understanding, tries to understand the productivity of the entangled

[8] As already quoted: "there's always a certain point where the work that you do to realize these musical ideas, all of a sudden it has a life of its own, and that's the point where I decide that it's my musical composition." (Duffie 1986).

interaction of Tudor with his instruments. What he highlights is that the tools themselves do not provide the piece but that the piece is developed by the learning of the instruments. The performer becomes more than part of the specificities of the piece, through both his or her interpretation of the instrument — his or her tacit knowledge about the instrument — and the use of this knowledge in the performance. When this is linked back to the idea about *Rainforest IV* — that the piece is showing the voice of the objects — it becomes clear that these voices are the voices as produced by the work and not merely the voice of the object reduced to their acoustic characteristics.

The work of researchers concerned with the production of the work can be understood in this sense not only as a search for the conditions of the emergence of this work in its facticity, but also as a reassurance of a specific focus of appreciation. I hope that I was able to make clear in this chapter how the intuition of the critic Johnson can be linked to the production of the work. The possibly intuitive knowledge of Johnson about the conditions in which the work emerged provided a basis for his specific interpretation.

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CHAPTER NINE

RE-THINKING THE MUSICAL INSTRUMENT… AS A TOOL FOR THINKING

KATHARINA SCHMIDT

> One of my oldest crusades is against the distinction between thought and feeling, which is really the basis of all anti-intellectual views: the heart and the head, thinking and feeling, fantasy and judgment […] and I don't believe it's true […]. I have the impression that thinking is a form of feeling and that feeling is a form of thinking. (Susan Sontag in *The Rolling Stone Interview,* p. 65)

Introduction

This chapter explores the musical instrument as an epistemic tool, thereby also proposing a re-framing of instrumentalist practice beyond the ideal of athletic virtuosity as a form of generating and expressing knowledge. To this end, the text will investigate examples of instrumentalist practices in which instruments act as tools for mediating and structuring physical as well as intellectual movements. These examples involve acoustic, electronic and digital instruments alike, and they are drawn from a variety of styles and genres, such as electronic and classical music, as well as jazz. The aim of this approach is to trace similarities in practice and transfers of knowledges, rather than arguing for further segregation. The practices chosen are not intended to give a comprehensive overview of what may be considered forms and ways of thinking *with* the body and *through* instruments in music, but rather as a step toward different conceptualizations of instrumentalist practice.

The backdrop for this proposed research is the ongoing deconstruction of the mind-body dichotomy in the humanities, and the project of 're-thinking the musical instrument as a tool for thinking' is motivated by what Susan Sontag in her seminal *Rolling Stone* interview calls a 'crusade[s] [is] against the distinction between thought and feeling'. This paper will attempt

to work towards a reconciliation of 'thought and feeling, fantasy and judgment' by proposing instrumentalist practice as one site for this reconciliation, and by exploring and re-conceptualizing the musical instrument as a tool for thinking. While it is not a new idea to conceive of thinking as a physical activity (cf. Wittgenstein 6), the mind-body-dichotomy still forms a powerful *dispositif* for musical and musicological practice. Particularly the distinction of theory and practice remains pervasive due to the extent to which it has been institutionalized. While it still serves to generate highly specialized concepts of expertise, the ideology of positing theory and practice as distinct, mutually exclusive entities becomes increasingly questionable in the light of developments like artistic research and the reality of the hybrid professional lives of many artists who also work as researchers in the academy or vice versa, researchers who also work as practitioners in the arts (cf. Rodgers 'How Art and Research Inform One Another, or Choose Your Own Adventure').[1] The idea of 're-thinking the musical instrument as a tool for thinking' positions itself in this context as well as within the framework provided by theories that have been advanced in philosophy and musicology over the last decades, such as enactivism (cf. Varela et al.; Varela and Thompson), embodied (music) cognition (cf. Leman), and the concept of situated knowledges (cf. Haraway 'Situated Knowledges').[2] Moreover, I will be drawing not only on musicological and

[1] Furthermore, this distinction implies hierarchies. For instance, the distinction between performer and composer, which is another take on the mind-body-dichotomy, has a history of entailing a gendered division of labour in musical practice which echoes the gendering of the body as female and the mind as male (Rodgers 2012: 479). Indeed, as this distinction has been blurred throughout the 20th century in aleatoric, improvised and experimental music which has been bringing out and relying on the knowledge of the instrumentalist in the 'realization' of a piece, this frequently entailed a shift in the traditional power structures of music making.

[2] Embodied cognition posits that cognitive processes are grounded in modality specific brain systems; which means that the way we originally acquired concepts through sight, sound, and touch, continues to affect our understanding of those concepts, even long after they have been abstracted from the specific senses we acquired them through. Understanding, therefore, is akin to simulation. Accordingly, embodied music cognition locates the construction of musical meaning in embodied musical activity as opposed to 'disembodied' reflection on musical *ideas*. The enactive approach, a conceptual framework defined by Varela, Thompson, and Rosch, posits a radically embodied, situated, and non-representationalist notion of cognition which stands in opposition to computational theories of the mind. The theory of enaction focuses on the idea of a structural coupling between agent and environment, which evolve in a system of co-emergence by virtue of a dynamic and

phenomenological research in this text but also on my own experiences as a performer.

Marking

Initially, I took my cue from research in performance studies on choreographic strategies as practices of 'thinking with the body'. One example that has been extensively researched in dance studies is the practice of 'marking', i.e. performing a phrase in a less than complete fashion in rehearsals (Kirsh 'Thinking with the Body': 2864, cf. also Kirsh 'How marking in dance constitutes thinking with the body'; Kirsh 'Creative Cognition in Choreography'). This example can be directly transferred from dance to music as marking is a technique employed by musicians as well as by dancers. David Kirsh traces in his research how dancers develop different techniques for marking which operate on different scales and levels of abstraction and which are standardized to very different degrees (Kirsh 2010: 2865-2866). Although there is no standardized vocabulary for marking in music, musicians similarly use different forms of marking in various contexts. The most popular one is likely to be the practice of soloists marking in (final) rehearsals with orchestras, omitting cadenzas and other particularly virtuosic or strenuous parts and playing or singing less expressively. In improvised music, performers may play rather uninspired solos in rehearsals, over-emphasizing kicks and turnarounds, when their focus is on running through the form. While marking is seen mostly as a strategy for saving energy in rehearsals, i.e. as a practice which is meaningful on a purely physical level, David Kirsh contends in his research on choreography and cognition that marking may also be a way of thinking with the body,

> because marking behaves like a physical representation it can serve as a vehicle for thought. It lets dancers reflect on their movement in more focused ways than either dancing 'full out' or reflectively thinking entirely in their heads without moving at all. (Kirsh 2010: 15)

By performing phrases in a simplified and abstracted fashion, performers are able to review individual aspects of the performance better, both for themselves and with their collaborators. This holds true in music as well: by emphasizing interaction over expressiveness, and contour over detail,

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relational field of shared agency. Donna Haraway's concept of situated knowledges proposes an embodied, local, and partial concept of knowledges as an alternative to the totalizing politics inherent to both relativism and holism.

different parameters of the music may be brought to the performers' attention for *conscious appraisal* as the players are less absorbed in the detailed, full-out physical performance of their part. On the other hand, marking is different from and arguably more efficient than mental rehearsal or visualization, because it behaves as a physically anchored *projection* as opposed to a 'full-out', detailed imagination. In this way, performers are reducing complexity by letting the mind and the body interact and support each other, creating what has been referred to as 'a distributed vehicle of thought, consisting of an inner part and an outer part' (Kirsh 2010: 2867). In this configuration, the instrument acts as a tool for thinking by serving as an interface that mediates between and structures the configurations of the inner and outer part.[3] Marking, therefore, seems to epitomize a structural coupling of physical and intellectual movements in artistic practice. Indeed, the added benefit of marking in comparison with mental rehearsal seems to be lying in the *integration* of mind and body, imagination and execution of a phrase (Kirsh 2010: 2864, 2868).[4] This chimes with research in various other fields, such as cognition, communication, and music pedagogy, which suggests that gesture can facilitate thought (Goldin-Meadow); that mental rehearsal is improved by overt physical movement (Coffman); and that, generally, physically simulating a process can help understand it (Collins). Indeed, embodied cognition contends that understanding is akin to simulation: Cognition remains grounded in modality-specific brain systems even once concepts have been abstracted from the senses through which they were originally acquired (Kirsh 2011: 15).[5]

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[3] Think, for instance, of the tiny suggestions of playing gestures which musicians and composers can often be seen making when reading or writing scores and while air guitar playing has become a genre in itself, everybody making music will be familiar with the sight of drummers tapping their hands on their thighs in an imitation of playing. This is another example of the body helping the mind to grasp something in which the instrument – as a concept rather than as a physically present object – figures as a tool for understanding.

[4] Indeed, many musicians make use of this integration in their everyday practice routines, breaking up pieces horizontally or vertically, and imagining, singing or speaking the parts they are not playing: These practices avoid cognitive overloading as they are anchored in a physical performance, while imagination and memory help the body to avoid issues of coordination or technical challenges.

[5] While this text is concerned with the production side of music, it is worth noting that these insights also pertain to our understanding of the reception of music: There is a vast body of research suggesting that listening triggers representations of movements in the brain and even in electroacoustic music 'listening to dynamics […] suggests mental images of embodied actions that may have given rise to them.' (cf. Van Nort 186)

Playing 'by ear'

Another instrumentalist practice of thinking with the body is what is often described in a rather reductionist fashion as 'learning or playing *by ear'*. This passage from Paul F. Berliner's extensive ethnomusicological study of the American jazz scene, – titled tellingly – *Thinking in Jazz,* brings out how playing 'by ear' is actually a multi-modal practice:

> Moreover, such early knowledge commonly assumed different forms of musical representation from student to student. Singers without formal music education primarily learned their parts in choirs by ear, thinking of them as precise paths of rising and falling pitches, sometimes accompanied by imagined visualizations – graphic representations of their contour and rhythm. Many other self-educated performers also initially *learned music by ear, as well as by hand and by instrument*: memorizing the sounds of phrases together with their corresponding finger patterns and positions on an instrument. (Berliner 1994: 27-28, *emphasis* added)

This description provides a vivid and easily relatable illustration of how instrumentalist practices distribute the load of thinking by generating multimodal representations of musical information. Moreover, it also makes clear how the instrument itself informs these representations, how its physical affordances and inherent logic translate into specific motion patterns that in turn are linked inextricably to the development of musical 'ideas', idioms for improvisation, and generally the *understanding* of music. Indeed, beyond the process of learning to play an instrument and forming initial representations of music, the physicality of the instrument remains ingrained in musical performance: In the basic entanglement of ear and hand, listening and feeling, another form of 'thinking with the body' pervades instrumentalist practice on a micro-level, if one considers that the sensory feedback and feedforward of the instrument is essential for the experience of playing: The physical input gathered from the interaction with the instrument has to be continuously evaluated and negotiated during performance to be integrated with information from other sources in real-time (cf. Hayes 300; Schacher 'Hybrid Musicianship' 56; Berliner 497). Indeed, this dynamism connects to the paradigm of phenomenology that posits the perceiving body as both the subject and the object of perception (Merleau-Ponty *Phenomenology of Perception*). Merleau-Ponty illustrates this duplicity of sensation through the example of the hands, which oscillate between touching and being touched (Merleau-Ponty 1962: 106). Not only is this proposition easily corroborated from instrumentalist practice, but

Merleau-Ponty goes on to connect these 'double sensations' to the structure of cognitive processes and the workings of intellectual reflection:

> The body catches itself from the outside engaged in a cognitive process; it tries to touch itself while being touched, and initiates 'a kind of reflection'. (Merleau-Ponty 1962: 107)

Therefore, it may be argued that, on a very basic level, the practice of playing an instrument itself is an example of distributed creativity by anchoring thought in bodily activity and harnessing physical movements to shape creative processes. Indeed, it is obvious how composition and improvisation are structured and influenced by instruments, their physical affordances and sonic characteristics, as well as by their traditions and roles within an ensemble.[6] Conversely, musical aesthetics drive the development of playing techniques (cf. Berliner 1994: 140) and ultimately, of instruments themselves[7]. In improvised music, the instrument informs the development of personal styles and idioms for improvisation. Again, *Thinking in Jazz* provides many descriptions of these dynamics, such as this one:

> Like their vocabulary stores, performers' individual theoretical methods typically synthesize their personal discoveries with the most useful ideas gleaned from other players. The ease with which artists can negotiate patterns derived from theory when actually mapped out on an instrument, in part a function of their idiosyncratic physical characteristics, further delineates individual methods and contributes to the basis for personal styles or systems of improvisation. (Berliner 1994: 169, cf. also 107, 139-141, 190-191)

Indeed, it may be argued that in musical practice, the human mind is linked to instruments in such a way as to become part of an 'extended mind' (Clark and Chalmers). The theory of the extended mind, which was

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[6] The symbolism and 'role-play' (Morton Feldman in Gagne and Caras) of instruments in classical music is frequently grounded in the physical limitations of instruments before they were developed into their modern iterations and many compositional idiosyncrasies become transparent only when performed on historical instruments.

[7] This kind of mutual influence can be pinpointed in such extreme examples as the development of the 'una corda'-Piano which was specifically tailored by piano-maker David Klavins to the playing style and compositional aesthetic of Nils Frahm (cf. http://www.klavins-pianos.com/unacorda_en.htm).

developed in the 1990s, posits that as objects[8] are used to facilitate and scaffold cognitive processes, the human mind is routinely

> linked with an external entity in a two-way interaction, creating a coupled system that can be seen as a cognitive system in its own right. […] Our thesis is that this sort of coupled process counts equally well as a cognitive process, whether or not it is wholly in the head. (Clark and Chalmers 1998: 7)

This both recalls and elaborates on earlier observations about 'distributed vehicles of thought' and 'multi-modal representations' of musical knowledge. Again, the efficiency of these 'coupled systems' lies in the *two-way* interaction they afford: '[O]bjects and artefacts serve as an external *playground* for thinking' (Magnusson 2009: 170, *emphasis* added) and allow cognitive 'offloading', but they also condition and shape thought with the knowledge tacitly encapsulated in the scripts of their usage, which in turn inscribes these artifacts with their cultural and historical origins and functions. In this sense, the musical instrument as a tool for thinking makes clear how knowledge – and especially musical knowledge – is essentially *situated*, as cognition is not to be separated from the bodies, environments, and technologies it occurs *in* and *through* (Haraway, 1988: 579, 582-583).[9]

Designing and Performing DMIs and NIMEs

Beyond these examples from more traditional instrumentalist practice which largely relies on acoustic and electronic instruments, the development of 'new instruments', DMIs or NIMEs[10] may provide a valuable perspective on instruments as tools for thinking.[11] Indeed, playing a new instrument can be

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[8] These include things as simple and everyday as notebooks and calendars.

[9] 'Creativity' is powerfully shaped by technologies, from the encapsulation of western tonality in the keyboard of a piano, to the inner logic of DAWs and the suggestiveness of their default settings (Magnusson 171).

[10] The terminology in this field is rather complicated: References to DMIs (Digital Musical Instruments), NIMEs (New Interfaces for Musical Expression) – a term popularized by the NIME conference series – and simply and fuzzily 'new (musical) instruments' are often made interchangeably.

[11] This may not only be pertinent with regard to widening the scope of this argumentation, but also in the context of instrument *design* itself, as the embodied knowledge of the performer often remains under-theorized, and a lot of research in the area of DMIs and NIMEs tends to be focused on technological aspects of the design and development of interfaces, while research centered on the knowledge of

seen as a crisis of practice that can potentially draw attention to the kind of implicit and embodied knowledge that has been discussed in this chapter: You may only become conscious of this knowledge once it is the *only* resource you can rely on as a performer. When there are no established methods of playing, yet, and no tradition of teaching, performers are dependent on a successful transfer of knowledge and the application of methods from their previous practice. The process of learning to play a new instrument or NIME emphasizes and exemplifies how creative thought may be aided or scaffolded by physical activity: It is hard to purely imagine the sound or behaviour of an instrument one has never played and maybe hasn't even *seen* played before. Consequently, the player's physical interaction with the instrument will be essential in guiding any conscious exploration of the instrument's expressive and sonic affordances. Moreover, the newly developed instrument – as arguably all digital music technologies do[12] – amplifies the fact that musical instruments as well as tools and technologies more generally become 'black boxes' (Latour 1999: 304), opaque encapsulations of knowledge that no longer need to be understood *explicitly* to be put to use effectively (Baird, 2004: 163).[13] Magnusson outlines the consequences of this dynamism for musical culture:

> If we assume that both the designers and the users of the instrument have an understanding of it, this understanding is very different and attained from distinct origins. The former creates the instrument from a conceptual understanding of the domain encapsulated by it, whereas the latter gains operational knowledge that emerges through use (or habituation) and not from abstract understanding of the internal functionality. (Magnusson 2009: 171)

In this context, it has been argued that *gestures* may act as a way of managing complexity for performers in environments that cannot be fully understood or controlled, but rather have to be physically interacted and

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the performer is still relatively rare (Hayes 300). On the other hand, the performer is considered to be the most important stakeholder in NIME *performance* contexts (Wanderley et al. 2015: 158).

[12] Cf. Magnusson 2009: 171-173

[13] The process of 'blackboxing' happens both through repeated use and with technologies that are so complex that knowledge of their *use* and knowledge of their *functioning* are divorced. Acoustic and electronic instruments, too, are black boxes in the sense that an in-depth understanding of their origins and construction is largely unnecessary for the performer and that they become naturalized through heavy use (Magnusson 2009: 173).

engaged with (Bridges and Graham 2015: 103-104; Schacher 2010: 252, 254; Barrett 2015; Van Nort 2009). It may be argued that these forms of interaction are 'provoked' or emphasized especially in 'intelligent' systems that substitute control with *influence*, and the performance of a 'work' with processes of exploration, discovery, and surprise (De Campo 2014: 8-10).[14] These instruments and software-applications bring out the oscillation of touching-and-being-touched as the duplicity of playing-and-being-played in a system of distributed agency. This may be seen as another form of 'thinking with the body' and of creating distributed, multi-modal patterns of interaction, which are implicit in the design of the instrument. More specifically, the performer's knowledge can also be harnessed in the process of designing an instrument, especially for evaluating the performative affordances of prototypes for further iterations. For instance, 'thinking with the body' in the context of interface design can bring out very specific parameters that are difficult to grasp or evaluate otherwise, such as expressiveness and detail in control gestures (Refsum Jensenius 2015: 16). Therefore, the development of new instruments underscores how the knowledge of the player may mostly be implicit but is therefore no less valid and no more marginal than other forms of knowledge: The affordances of an interface, its expressiveness and playability are inextricably linked in the development process to considerations about design and materials as well as mapping and in turn the implementation of sound synthesis. Indeed, I would argue that the engagement with new musical instruments is marked by the oscillation and transfer between different kinds of knowledges. In his paper on musical instruments as epistemic tools, Thor Magnusson outlines two different kinds of epistemic relationship a performer may have with an instrument, associating each of them specifically with either acoustic or digital musical instruments: The acoustic (as well as the electric) instrument affords a predominantly embodied relationship to the world; while the performer enters into a hermeneutic relationship with the digital instrument (Magnusson 2009: 172). The essential physical dimension of the acoustic instrument can largely be explored in an open-ended, hands-on, and bottom-up process, while the locus of the digital instrument is firmly located in the symbolic meta-language of the sound-producing software, which is understood to be in a largely contingent and arbitrary relationship to the interface, entailing a greater sense of detachment from and awareness of the physical activity of playing (Magnusson 2009: 171-173). These descriptions of embodied and symbolic knowledges in instrumentalist practice illustrate

[14] This can be achieved through the implementation of feedback processes or chance operations, for example.

very well the different ways in which a performer may relate to an instrument and how each of these different forms of relating turns instruments into 'cognitive extensions'. However, moving beyond the hyperbolical opposition Magnusson uses to structure his argument, I would propose that it is most accurate to conceptualize these different knowledges as being connected in a feedback-loop: The examples previously given in this chapter have shown instrumentalist practice to be characterized by the *interweaving* of embodied and symbolic knowledges, and the efficiency of distributed vehicles of thought appears very often to lie in their multi-modality and integrativeness. Consequently, it appears that processes of developing and learning to play digital musical instruments *amplify* this dynamic interplay of different kinds of knowledges.[15] Indeed, Magnusson also acknowledges that working *on* and *with* new instruments entails a continuous switching between forms of interacting with and relating to the instrument,

> as typically their designers are also the performers. This implies a continuous oscillation between a mode of conceptual (system design) engagement with the instrument and embodied (performative) relationship with it. (Magnusson 2009: 171)

Consequently, these different epistemic frameworks are neither mutually exclusive, nor to be rationalized in terms of hierarchies; rather, they are interdependent and complementary.

Furthermore, I would suggest that there is another level on which the instrument may become a tool for thinking: Considering the design and development of new musical instruments from yet another angle, it may be argued that the *design* of the instrument itself can become the site of critical reflection and comment. In this way, Laetitia Sonami's *Lady's Glove* makes the negotiation of the relationship of an instrument to the performer's body itself the site for critical thought. The *Lady's Glove* is a glove interface that feeds signals from various sensors through STEIM's Sensorlab software[16] and the data is mapped onto MAX/MSP patches to translate gestures into sound, images (using Jitter), and occasionally to control other processes

[15] Doug Van Nort's paper on 'sonic gesture as design principle' describes how such a 'sonic-phenomenological design loop' can be harnessed to achieve a more 'embodied view of mapping and control design' (186). Moreover, the experiences gained from working with DMIs and NIMEs are in turn transferred *back* to inform practices of playing acoustic and electronic instruments, creating another loop of mutual influence.

[16] http://steim.org/support/sensor.html

(Sonami 2017). While highly sophisticated technologically, the interface is most striking in its visual and performative qualities. Sonami explicitly refers to the fluidity and intuitiveness of the performer's interaction with the interface when describing the instrument:

> The intention in building such a glove was to allow movement without spatial reference, and most importantly to allow for multiple, simultaneous controls. The sounds are now 'embodied', the controls intuitive, and the performance fluid. It has become a fine instrument. (Sonami 2017)

Moreover, Sonami connects to narratives both inside and outside of the NIME tradition: The glove has often served as a metaphor for an extremely close, even intimate, relationship between a human and an object. Glove interfaces[17] tap into these associations while harnessing the expressive and communicative power of gestures, as well as the potential for intuitive control that gesture-based designs afford. The *Lady's Glove* draws on and elaborates these associations by evoking the image of the cyborg. The cyborg, in turn, is a rather conspicuous figure both in post-humanist and in feminist theory (cf. Hayles xiiff.), making one of its most influential appearances in Donna Haraway's seminal 'Cyborg Manifesto', which uses the concept of the Cyborg to envision both a rejection of the pseudo-naturalist apologies for patriarchal traditions, and a move beyond traditional feminist identity politics (cf. Haraway 2000). Indeed, the Lady's Glove is called the '*Lady's* Glove' because the first prototype of the instrument, that was built for the 1991 edition of the Ars Electronica festival in Linz, was using a pair of yellow rubber gloves like the ones used for household cleaning chores. Sonami refers to these as 'the perfect housewife's tool' and goes on to point out that,

> [w]hile I was intent on finding a more fluid way to perform with the computer, this first glove was also somewhat of a joke, a response to the heavy masculine apparel used in virtual reality systems. (Sonami 2017)

This element of irony[18] makes clear how the Lady's Glove not only positions itself aesthetically and technologically within the tradition of

[17] The most widely-known and influential example is probably Michel Waisvisz's *The Hands* (cf. Andersen et al. 2016).

[18] In the 'Cyborg Manifesto', Haraway proposes irony as a feminist form of relating to a topic, which implies taking this topic very seriously while attempting to relate to it in new ways beyond the simple opposition of agreement and disagreement (Haraway 2000: 291).

glove interfaces in the NIME community, but also acts as a site for the subversive negotiation of performer identity. By not erasing her femaleness but instead making it part of the ideological subtext of the instrument, Sonami references a critical discourse that in turn raises consciousness for the importance of bodily identity within the production of art and knowledge. Moreover, as it interrogates the status of the instrument as a technological artifact both in relation to the performer's body and to the ecologies of performance, the Lady's Glove draws attention to the politics and knowledges encapsulated in the black box of the musical instrument. In doing so, it exemplifies the possibilities for comment and subversion, as well as for the articulation of subjectivities afforded in the process of designing an instrument.

Conclusion

Summing up, I have outlined a number of examples for how instrumentalist practice may be seen as a way of thinking with the body that is mediated and grounded by the instrument itself. Consequently, it may be inferred how the implicit and embodied knowledge of the instrumentalist can be understood as an epistemic resource that is activated in different contexts, which may range from the interpretation and analysis of music to the design of new interfaces for musical expression. The instrument appears as 'a designed artifact that affords cognitive offloading' (Magnusson 2009: 175) within the context of distributed vehicles of thought and multi-modal representations of knowledge that are essential to many instrumentalist practices. Even more generally, it may be said that playing an instrument not only generates knowledge within a specific musical context but also appears as a tool for generating forms of knowledge that no longer perpetuate the dichotomies of mind and body, thinking and feeling, theory and practice, but belong to each of these realms equally. Therefore, I contend that instrumentalist practice and the physical experience of playing an instrument can be investigated and theorized as a framework that shows knowledge to be essentially *situated*; i.e. firmly lodged in the performer's body and their interaction with a certain technology and environment. Thus, playing an instrument structures not only the formation of a performer's knowledge about music, but also relates to notions about the nature of knowledge itself. Indeed, if large-scale research work were to be conducted on this topic, it might be desirable to make a more comprehensive catalogue of different practices on different instruments and in different styles, that may be seen as ways of 'thinking with the body'. I would contend that many practices that seems to be little more than physical exercises actually turn

out to have a deeper meaning if regarded in the context of embodied knowledge and actually derive their efficiency from the integration of physical and intellectual movements. Also, it would be desirable to find nodes in discourses on instrumentalist practices that may drive further research. For instance, *gesture* seems to be a term with considerable epistemic energy and potential in this context, as it is established for describing figurative and physical movements alike and may serve as a concept that mediates between musicological, technological, and phenomenological discourses. Tracing, operationalizing and expanding on these concepts may be a further step toward a more integrated model of instrumentalist practice, that is not limited to particular musical styles or discursive traditions. Eventually, re-thinking the musical instrument as a tool for thinking, and theorizing instrumentalist practice as a form of generating knowledges that are essentially multi-modal and integrative, may give an idea of the possibilities of moving beyond the dualities of mind and body as well as questioning the divide of theory and practice. In doing so, making use of what Donna Haraway refers to as the 'privilege of partial perspective' (Haraway, 1988: 583ff.) may provide a starting place for researching instrumentalist practice from different angles, in a way that acknowledges the plurality of knowledges and the complexity of practice that is hardly to be grasped in such simple oppositions as mind and body, theory and practice.

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CHAPTER TEN

CASA AND OTHER WORKS: STUDIES ON AUDIENCES AND SPACE IN THE PIANO RECITAL[1]

KÉSIA DECOTÉ RODRIGUES

The first moments of a hypothetical classical music concert are described by Christopher Small in his book *Musicking*:

> In a concert hall, two thousand people settle in their seats, and an intense silence falls. A hundred musicians bring their instruments to the ready. The conductor raises his baton, and after a few moments the symphony begins. As the orchestra plays, each member of the audience sits alone, listening to the work of the great, dead, composer (Small 1998: 1).

These codes of actions and behaviours in the classical music concert have been identified by a number of authors (Small 1987; Cox and Warner 2004) as the elements of "the ritual of the concert hall". Some characteristics of this 'ritual' would be: (1) the dedicated place where classical music performances usually take place is the concert hall, which should be ideally soundproof, and should provide an ante-room for the audience, as a transitional area between the outside world and the space of the performance; (2) the stage should provide as little visual interest as possible, and the audience seats are to be arranged in rows facing it; (3) the audience is expected to be in total silence and seated as immobile as possible during the performance, while the performers frequently wear formal outfits, enter through a separate door and "rarely if ever speak to the audience from the platform" (Small 1987: 8-11).

[1] This study was developed as part of the PhD research *For a Dramaturgy of the Piano Recital – an investigation on interdisciplinary strategies for the piano recital*, Oxford Brookes University (UK), supervised by Prof. Dr. Ray Lee. This research has been generously sponsored by CNPq - Brazil

Through a series of experimental piano performances[2], I aimed to question those conventions, and investigate alternative proposals to the live classical music experience.

On one hand, the audience's role in the making of a performance experience is pointed out by Burland and Pitts: "However extensive the preparation that goes into a music event (…), it is the audience, through the quantity of their attendance and the quality of their response, who make each performance distinctive" (Burland and Pitts 2014: 2). On the other hand, Small highlights the impact of the physical settings in the experience: "performance spaces affect greatly the relationships that are created among those that are inside them" (Small 1998: 199).

With these points in mind, I proposed unusual approaches to the relationships between audience, performer, space of performance, and musical work, in six projects. The specific issues addressed by those projects include:

- The social versus the private aspect of the live music experience (audience-audience relationships). Project: *Silent Concert*;
- The relationships between performer, audience, and musical work/programme. Projects: *Les Jours, My piano in the midst of the turmoil, One-to-one Chopin [we are present]*;
- The relationships between performer, audience, and the space of performance. Projects: *casa – reflections on house & home, myths & visions.*

The social versus the private aspect of the live music experience (audience-audience relationships)

Christopher Small introduced the term *musicking*, arguing that music is above else 'an activity, something that people do' (Small 1998: 2). In this kind of approach, the relational aspect of a music performance is highlighted, by understanding that the act of *musicking* sets a series of interconnections in the time and place which it happens (Small 1998: 13).

The responsibility in the making of the live musical experience is shared between performers, audience members and other stakeholders, as pointed out by Burland and Pitts:

[2] Documentation of those performances can be found at https://kesiadecote.wordpress.com/phd-research/

> Live music is a unique form of musical experience spontaneously co-created by musicians and their audience. These experiences are produced through the interaction between musicians, audiences and the environment, and the experience itself cannot be separated from the music (Burland and Pitts 2014: 10).

That process of sharing in the making of music may produce a dynamic of emotional identification among the participants, as if animating 'imagined communities' by "the aggregation of those participating in or attending to a musical or sonic event" (DeNora apud Born 2015, 35).

However, in an opposing point of view from this collective aspect of the listening, there are claims in favour of the dissocialised experience of classical music. Pianist Glenn Gould notoriously defended the private listening over the socialised form:

> …as far as I'm concerned, music is something that ought to be listened to in private. (…) I think that music ought to lead the listener – and, indeed, the performer – to a state of contemplation, and I don't think it's really possible to attain *that* condition with 2.999 other souls sitting all around (Gould in Mach 1980: 102)

Here, then, we have a situation of apparent controversy regarding live classical music:

- its social aspect, since there is a situation of shared space and timeframe between the participants

and

- its aspect of being a private experience, given the character of introspection that the traditional context of live classical music usually suggests.

This apparent controversy then raised the questions: to what extent the social and the private aspects interfere with one another, in the experience of live classical music? Can one reconcile the social context with the contemplative and individual introspection of classical music listening?

In order to address those questions, I developed the project *Silent Concert.*

CASE STUDY 1: *Silent Concert* – dislocating the experience to highlight social conventions of live classical music

Silence Concert[3] was a piano recital performed by guest pianist Josie Lindsay-Clark, and both pianist and audience could only listen through wired headphones.

This project was designed to examine if, by listening to the performance through headphones, the audience members would perceive that musical performance as a private listening experience, or if the social context would nevertheless be determinant in their experience.

Figure 10-1. *Silent Concert,* 23/11/2015. Still from video documentation

The use of individual headphones in a live music performance situation may have resemblances to the *silent disco*s - dance events where the music is transmitted by headphones to the participants. In a study led by Barnett (Indiana University 2016), participants of a *silent disco* evening reported the paradoxical effect of individuality and collectiveness in their experience, as feeling both alone and together with the other participants (Barnett 2016, 40).

This aspect was similarly commented in the audience feedback from *Silent Concert.* One audience member highlighted the sense of individuality in the experience: "it took me somewhere else, because I was on my own"

[3] Video-documentation of *Silent Concert* can be accessed on https://vimeo.com/162971196

(anonymous audience member). On the other hand, another participant commented about the simultaneous sense of collectiveness and isolation: "we were sharing the experience of enjoying the music, but still separated in our own worlds" (anon. audience member). That paradoxical effect came to a resolution with the applauses at the end, when the audience commented that they could finally feel that they were part of a collective experience.

Findings 1: dislocating the conventions to highlight the etiquette

Regarding the conventions for audience behaviour, the ritual aspect seemed to be culturally ingrained in that specific group in the *Silent Concert* project: despite the fact they were wearing headphones and would not disturb the performance by either talking or moving, the formal and quiet attitude was maintained the whole time. A member of the audience commented: "I was very obedient, because of the etiquette, because of the building. I was surprised how easily I was obedient to the rules…" (anon. audience member).

The exclusivity aspect of the ritual of the classical music concert was also highlighted, particularly when a latecomer arrived. That spectator related a sense of exclusion: "I came late, but I could not ask what was going on (…). I felt like a voyeur" (anon. audience member). The sense of exclusiveness was reinforced by the fact that there were no more headphones available for that person, what led to a perception that the event was 'a shared thing, but only some people were allowed in, through [a limited number of] headphones' (anon. audience member).

Findings 2: dislocating the physical aspect to highlight the 'physical co-presence' element

In *Silent Concert*, the sense of 'physical co-presence', i.e., the act of seeing what one is hearing (Radbourne, Johanson and Glow in Burland and Pitts 2014: 65), was disrupted by the use of headphones. An audience member related that the headphones provoked such a detachment from the pianist that it required "an effect of self-will to keep connected with Josie" (anon. audience member). Another person experienced the same effect and commented: "I had to focus more on Josie's fingers, to remind myself that it was live" (anon. audience members).

The impact caused by the unsettling of the sense of liveness led me to reflect on questions about the relationship between performer and audience, and its role in the music experience. To further investigate that point, I developed a series of one-to-one piano performances.

One-to-one performances – investigating the relationships between performer, audience, and musical work/ programme

The sense of interaction with performers is listed as one of the key elements in the experience of liveness (Barker in Radbourne, Johanson and Glow 2013: 20). Additionally, the sense of intimacy with the performers is seen by spectators as a factor that can enhance their engagement, particularly in classical music events (Pitts, 2005: 5).

The relationship between performer, audience, and an eventual enhancement of the sense of intimacy, has been explored through One-to-One performances in a peculiar way. In One-to-One performances, the shared responsibility between performer and audience in the making of the work is highlighted. Firstly, that responsibility includes willingness to embrace the proposal. Secondly, the structure of the work may depend on the active participation of the audience, since 'the spectator is often invited to collaborate (to greater or lesser degrees) with the performer so that the two people create a shared experience' (Zerihan 2009: 3). Additionally, in most cases, One-to-One performances are site specific works (idem).

In the One-to-One projects *Les Jours, My piano in the midst of the turmoil,* and *One-to-one Chopin [we are present]*, I aimed to explore this more personal engagement between performer and audience, and strategies for a more tangible participation by the spectator in the making of the performance. Also, I proposed the approach of the site of the performance as a structural element of the work.

CASE STUDY 2: *Les Jours*[4]

This project was a series of participatory performances to audiences of one person at a time, when I performed Michal Pisaro's piece *Les Jours* (2012). The spectator could put the sections of the musical piece in the order that they wished me to play. Then, the chair for the audience was positioned at the crook of the piano, with their back to the pianist and facing a pastoral landscape through a window.

[4] Video-documentation of *Les Jours* can be accessed on https://vimeo.com/167755164

Figure 10-2. *Les Jours.* 24/04/2016. Still from video documentation.

Findings: intimacy, participation, and auditory immersion/visual expansion

In contrast to the usual distance between the classical musician and the spectator, the closeness of the one-to-one performance made it stand out as a unique experience: "this is the closest I will come to a stage!" (anon. audience member). The intimacy led some participants to feel comfortable to the extent of walking in the room while listening, or lying on the floor. A sense of privilege was also commented - "a lovely warmth and cosy feeling of being played to" (anon. audience member).

Figure 10-3. *Les Jours.* 24/04/2016. Still from video documentation.

Some audience members felt more strongly engaged in the participatory element and enjoyed the opportunity to make decisions about the structure of the work: "because I chose the order, I felt somewhat responsible for the piece, as a kind of minor-part author" (anon. audience member).

However, the participatory aspect did not make a greater impact in the experience of some other spectators, as one person said: "I personally didn't find the order particularly relevant" (anon. audience member). I would understand that those spectators did not engage with the participatory proposal because they were not pre-disposed at the time, especially considering that One-to-one works implies a shared responsibility between performer and audience.

The spatial setting was also highlighted in the audience feedback. The position of the spectator's chair allowed their heads to be nearly inside the box of the piano, enrichening the listening to the resonances and allowing a sense of 'immersiveness'. The viewing to the landscape through the window had the effect of complementing the spaciousness of the musical work:

> The closeness to the instrument brought out different qualities and tones much more strongly, and in a way relates the music with the landscape view from the window' (anon. audience member).

> I loved sitting so close to the piano – it really felt like immersion in the music with it surrounding me. Looking out on such a beautiful view was also the perfect complement to the music (anon. audience member).

The sounds from the outside environment also added to the experience: "Outside the birds, the clouds, the light moved and changed – inside the beautiful notes floated around" (anon. audience member). This combination of the physical setting with the stimuli from the surroundings was effective to highlight the spatial aspect of that specific piece of music: *Les Jours* is a musical work that features sparse musical events, linked by the resonance of the piano carried on by the continuous sustain pedal. This spaciousness between musical events, then, allowed the integration of the environment's sounds into the listening experience.

In this project, we have, then, an exemplification of the site-specific aspect of One-to-one performances. Here, the choice of landscape was an integral part of the concept of the project, where a different environment probably would call for another choice of music, and vice-versa.

From the performer point-of-view, it was interesting to notice that the spectator and me were looking in the same direction, sharing the same sight, which is unusual in a piano recital. There was then a sense of blending of roles, as if both performer and audience became spectators of the landscape across the window.

CASE STUDY 3: *My piano in the midst of the turmoil*

My piano in the midst of the turmoil[5] was a series of one-to-one participatory performances realised in public circulation areas, where only the pianist and the spectator could listen through headphones. For the music programme, the spectator could choose from a selection of one-minute pieces written by contemporary British composers.

The aim of *My piano in the midst of the turmoil* was to tackle the elements of heightening intimacy and immersion, and the sense of isolation despite being in the middle of a social context.

Figure 10-4. *My piano in the midst of the turmoil.* TDE Research Student Conference, Oxford Brookes University. 18/05/2016. Photo: Amy Groeneveld.

Figure 10-5. *My piano in the midst of the turmoil.* Graduate College Annual Event, Oxford Brookes University. 03/06/2016. Still from video documentation.

[5] Video-documentation of *My piano in the midst of the turmoil* can be accessed on https://vimeo.com/232814993

Findings: Immersion, exclusivity, and the spectator as a co-producer of the work

One of the highlighted elements in the audience feedback was the immersion in the music despite the busy social environment where the performance happened. A spectator shared the sense of strangeness at the beginning, by being in the middle of a context where people were socializing, but then he gradually immersed in the music: "It was a little bit strange at the beginning, but then my soul started to feel the music" (anon. audience member).

As a result of that immersion, there was a sense of detachment from the social context: "I felt like my perception of the room was perhaps a little removed. I felt distance, but not in a negative way. Perhaps like an observer, not a part of the room" (anon. audience member). As the performer, I experienced the same dynamics of finding it difficult to disengage from the environment at first, then progressively allowing myself to be enveloped by the music. Additionally, a sense of exclusivity was remarked: "Yes, exclusivity. I felt special!" (anon. audience member).

An external observer commented that pianist and spectator seemed to have formed a unit, a performance to be watched in itself: the image of two people sat beside each other, connected by headphones linked to a piano, in silence and immersed in something not available for the rest of the people in that space. That outcome could be seen as a process of blurring the boundaries between performer's and spectator's roles (Hogarth and Bramley in Reason and Lindelof 2016: 137). In that moment, the spectator/participant became a producer of the work as well, firstly to him/herself when selecting the programme, and secondly to the external audience when becoming part of a scene to be seen.

CASE STUDY 4: *One-to-one Chopin [we are present]*

One-to-one Chopin [we are present[6]*]* was a series of piano performances where I played Chopin's *Prelude in E minor Op. 28 n. 4* to audiences of one person. The spectator's chair was positioned facing the pianist, and both pianist and spectator listened to the performance through headphones. During the performance of the piece, I attempted to keep eye contact with the spectator as much as they would allow me.

[6] Video-documentation of *One-to-one Chopin [we are present]* can be accessed on https://vimeo.com/232814225

This project was inspired by Marina Abramović's piece *The Artist is Present* (Museum of Modern Art, New York, March – May 2010), where the artist was sitting on a chair in the atrium of the museum for eight hours, every day for the entire duration of the exhibition which was a retrospective of her career. The audience was invited to sit opposite her, one person at a time, and exchange eye contact, in silence, for any length of time. The interaction between the spectator and the artist through the intense gaze became so effective that a number of participants – and the artist herself – cried during the experience.

In *One-to-one Chopin,* I aimed to explore an unusual type of interaction between pianist and spectator. Usually, there is a barrier between the pianist and the audience, even in the most intimate settings, which is the piano itself. The spectator rarely can see the face of the pianist from the front, during the performance. I intended to examine how a closer and visually more direct engagement would affect the experience of a piece of music that is generally well known by the public.

Figure 10-6. *One-to-one Chopin.* 18/07/2016. Still from video documentation

Findings: intimacy as a distraction factor

Some participants said that the setting created intimacy and intensified the experience of that well-known piece. An audience member commented that: "the direct contact, being so close, was intense, but in a good way" (anon. audience member).

However, other participants recurrently remarked a feeling of discomfort with the exchange of eye contact. Some of the audience members related to have enjoyed the closeness and to be able to see the activity of the fingers from such a short distance, however the gaze into

each other's eyes became a factor of distraction. Another participant recalled a sense of a romantic situation:

> It was funny, this combination of a romantic music and the gaze, plus the headphones that made the moment just for the two of us, it intensified the intimacy. It had the quality of creating a soundtrack for this situation [between two people] (anon. audience member).

If on one hand the exchange of eye-contact with the pianist in *One-to-one Chopin* raised controversial reactions, on the other hand, in Marina Abramović's *The Artist is Present,* the intense gaze into the artist's eyes was the element that made the work so remarkable. Besides the emotional reactions whilst looking into Abramović's eyes, some participants were willing to go through the long queue several times so they could experience the work again.

By scrutinizing the works in more detail, I can find some crucial differences that may have contributed to such opposing reactions to apparently similar proposals: in *The Artist is Present,* the reciprocal eye contact was the element which made the work, and the audience had plainly been informed about it previously. Then, in *One-to-one Chopin,* the gazing was an accessory aspect, since the essence of the work was the piano performance, and the spectator was not fully warned about it – when they sat on the chair in front of me, I just informed them that I would be playing Chopin's *Prelude*, and that they could use the headphones to listen to it.

It can be then concluded that in *The Artist is Present*, the spectator was looking for the eye-contact, whilst in *One-to-one Chopin,* that element came as a surprise. In both works, the artists proposed an invitation for the spectator 'to be present' with them but, as a result of the lack of appropriate preparation of the audience, in *One-to-one Chopin,* that invitation had the effect of intimidation, and even of a challenge, as commented: "I felt you were challenging me, not in a bad way, a challenge to the space, can you be here with me without being uncomfortable?" (anon. audience member).

The space of performance – mobile audiences and relationships between performer, audience, and space

In *Theatre of Cruelty,* Artaud speaks about extending the spectacle by eliminating the stage and breaking down the barriers between performers and audience. Artaud suggests placing the spectator 'in the middle of the action' and physically enveloping him/her, so "a direct communication

will be re-established between the spectator and the spectacle, between the actor and the spectator" (1958, in Artaud 1970: 96).

Those ideas have been particularly explored in productions classified as *immersive theatre*, an expression that, according to Anderson, involves placing the audience 'within the story-world. Rather than having a separated stage and auditorium, everything is the 'stage', and the audience is placed there alongside the actors' (Anderson 2015).

Inspired by some immersive/ promenade theatre productions that I have experienced as audience[7], I developed the projects *casa – reflections on house and home,* and *myths & visions*, in order to investigate alternative possibilities for the audience's experience of live classical music.

CASE STUDY 5: *casa – reflections on house & home*

casa – reflections on house & home[8], was a piano recital/performance featuring a programme of contemporary Brazilian music, interwoven with theatrical actions. The project was inspired by Bachelard's *The Poetics of Space*, a book that reflects on spaces within the house, and how they resonate through memories of solitude and intimacy.

This project had an autobiographical character, and it was structured around my reflections about the houses I have lived, how they play in my memory and define the passage of my life. Mirroring this personal aspect, the project was titled *casa*, a word in Portuguese (my mother tongue) which can mean either house or home.

casa had characteristics of a promenade performance, where there was no seating for the audience, who were informed that they were free to walk and explore the space during the performance as they wished. I greeted the spectators one-by-one at the door and handed them programme booklets individually, which had information about the inspiration of the programme. The audience entered straight into the playing space, which had no distinction between stage and audience area. I used a variety of pianos during the performance (an upright, a grand, and two toy pianos), which obviously required me to move in between the pieces of music. During those movements, I performed actions such as playing musical

[7] Some productions which I attended which were reference for those projects, were: *Husbands and Sons* (National Theatre and Royal Exchange Theatre, London, UK), *Handle with Care and I do* (Dante or Die Theatre Company, London, UK), and *A Midsummer Night's Dream* (Creation Theatre Company, Oxford, UK).

[8] Video-documentation of *casa – reflections on house & home,* can be accessed on https://youtu.be/bH-iB7383t0

boxes, opening wardrobes, looking at photographs, turning lamps on and off, and playing with stacked boxes.

Figure 10-7. *casa* - greeting the audience. 21/01/2016. Photo: Stu Allsopp

Figure 10-8. *casa* - closeness with the audience. 21/01/2016. Photo: Stu Allsopp

Findings: challenging paradigms of the performer-audience relationship, other perspectives for the experience and reflections on the space layout.

In *casa,* the personal interaction between the pianist and the spectators individually was pointed out as the first element to make an impact and set a welcoming tone for the experience of the performance: 'I found myself at ease from the beginning. Partly because of your warmth and openness in

welcoming your guests, and also by the intimate nature of the arrangement of the studio, light and furniture, space to be in' (anon. audience).

The exploration of space, especially the possibility to experience the work from different perspectives, was also highlighted: 'I enjoyed being able to move around so as to view the events from different angles, and the acoustics from different points made for a deeper level of experience' (anon. audience).

However, some spectators chose to stand still for the whole duration of the performance, which became a point of controversy: if on one hand it fitted within the proposal to give freedom for the spectator to choose their own way to experience the work, on the other hand it frustrated the proposal of having a mobile audience. I then reflected, as a point to be reworked for future projects, the situation of having people standing was only possible because the layout of the space allowed that panoramic view from some points in the room.

From the performer's point of view, some paradigms of my practice as a classical pianist were challenged by the personal relationship with the spectators, the elimination of barriers between performance area and audience, and the mobile audience element. The fact that I welcomed the audience prevented me from having a period of isolation before the performance, which usually is helpful for concentration. Another challenge to my focus resulted from the closeness and the fact that some spectators were moving around while I was playing technically demanding passages.

However, the personalized communication with each spectator helped to engage with them in a distinct way: I was directing my performance to individuals, not to an anonymous crowd. Additionally, there was a greater sense of integration from the lack of distinction between performance and audience spaces, and from the fact that the audience was moving – I did not feel I was performing alone, instead, we were all performing, although different tasks.

Nevertheless, there was a negative feedback from a member of the audience who thought that, although it was interesting to have the option to move, there was a sense of being lost: 'I knew I was free to walk but, … to where?' (anon. audience member).

Thus, I reflected on the need to have strategies to optimize the engagement of the audience within these non-conventional ideas. From my experience as an audience member in some promenade theatre productions, I noted the helpful strategy of having ushers to encourage and facilitate the movement of the audience.

CASE STUDY 6: *myths & visions*

myths & visions[9] was a piano performance which further explored elements of a promenade concert, with the audience being guided by ushers to walk through designated journeys at specific moments in the performance.

The audience members were split into groups at the moment of booking tickets, each group being assigned to an usher. They were then informed to meet at a particular place, from where the ushers led them to the first location of the performance, where I was improvising on the piano outdoors, under a tree. After this first part of the performance, I led the audience into the theatre with my body language, keeping the thread of the performance by vocalising during the journey until they were settled in their seats, each group occupying a side of the auditorium.

In the indoors part of the performance, I performed a musical programme with pieces for extended piano techniques, written by Henry Cowell, John Cage, Sara Carvalho and Marisa Rezende. I took advantage of the more expansive gestures required to perform those pieces, exploring them as starting point for the generation of a choreography, which interwove the whole performance in an organic flow.

Halfway through the programme, the audience groups were guided by the ushers to swap sides of the auditorium.

Figure 10-9. *myths & visions* - audience gathering before the performance. 22/06/2017. Photo: Stu Allsopp

[9] Video-documentation of *myths & visions* can be accessed on https://vimeo.com/244712499

Figure 10-10. *myths & visions* - outdoors beginning. 23/06/2017. Photo by Stu Allsopp

Figure 10-11. *myths & visions* - audience swapping seats. 21/06/2017. Photo by Stu Allsopp

Findings: stronger performer-audience and audience-audience relationships, mobile audiences following a 'sense of discovery' and becoming participants

A stronger link with the audience was a highlight in this project, as commented in the audience feedback: 'There was a strong engagement with the performer, much stronger than in a standard classical music concert' (anon. audience member). The building up of that closer relationship was also helped by my one-to-one contact with the spectators by email before the performance, for the tickets bookings and instructions.

Additionally, the initial gathering at the meeting point had a welcoming effect, as the interaction among themselves gave the audience a sense of community: 'The gathering at the beginning was really nice, because we got to chat to each other, to know each other and the different connections to you' (anon. audience member).

The journeys taken by the audience stimulated a sense of discovery and ongoing element of surprise: "I felt transported onto a journey, from beginning before sound to a discovery; many surprises and breath held between sounds" (anon. audience member). The moving from outdoors to indoors evoked different sensations, from excitement of witnessing "the wild creature of the woods discovering this strange shiny instrument", to a sense of spirituality of being led "into the darkened candlelit space inside" (anon. audience members).

The swapping of seats halfway through the performance was highlighted as offering the spectators new perspectives and heightened the sense of being part of the performance: "I really enjoyed travelling through the space and changing places, perspectives and hearing anew. I felt part of your piece, which I am sure was your intention" (anon. audience member).

From the creator and performer's point of view, the management of the relationship with the audience was as much part of the work as the performance itself. From the exchange of messages prior to the concert, including assembling the groups, and the use of my gaze to engage them during the performance, I searched for ways to turn the spectators into participants. However, I was aware of the great level of ingrained conventions that the audience would bring to a classical music event. Therefore, it was necessary to consider precise strategies to allow the audience to fulfil their proposed role, yet not resulting as an imposition that would distract from the experience.

Although *myths & visions* was in essence a solo performance, there was a heightened sense of an intimate group experience. Performer and audience, in their specific roles, actively contributed to the making of the work.

Conclusions

The six projects discussed in this chapter explored alternative proposals of engagement of audiences in classical piano performances. These proposals explored, particularly, non-conventional relationships between audience, performer and work, and alternative settings for the spaces of performance and audience.

The setting of non-conventional situations for interaction between audience members, as for example through the use of individual headphones in the *Silent Concert* project, demonstrated that the social context plays an important role in the live music experience.

The sense of being part of a community, as when the audience gathered at the meeting point for *myths & visions,* indeed affects the experience of the participants. The sense of being part of a unique event was then noticed to be helpful to strengthen the engagement and generate meaning in those experiences.

On the other hand, the performer – audience relationship is a key factor in the experience of live music. The establishment of more personal interactions, as when I greeted the audience members individually in ***casa****,* created a special bond with the performer. Similarly, the setting of more intimate environments, as in the One-to-one performances, evoked a sense of uniqueness and privilege in the spectators.

Additionally, participatory strategies, such as giving the audience a voice on the structure of the work in *Les Jours* and in *My piano in the midst of the turmoil,* were valuable means to enhance the engagement by activating the sense of ownership of the experience, then to turn the spectators into participants.

Regarding the space of the performance, it was noticed that the physical context indeed affected – as it shaped - the listening experience. Exploitation of unusual settings were shown to be an efficient tool to reach new audiences, while also offering new perspectives to experienced spectators. In particular, proposals of mobile audiences, as in *casa* and in *myths & visions*, were effective strategies in allowing different ways of engagement, and in enhancing the sense of 'being part of the piece'.

However, it was noted that, when there are proposals for the audience which may bring challenges to the traditional conventions of spectatorship, it is useful to design strategies to facilitate their engagement. Lack of information and uncertainties (as when there was no explanation about the eye contact element in *One-to-one Chopin,* or when the spectators were given freedom to walk in *casa****,*** but had no direction of where to walk to) could lead to misunderstandings and discomforts which might detract from the artistic experience.

It is also relevant to observe here that the experiments of this study took place in performance projects aimed to small audiences (maximum of 30 attendants). Probably, some of the proposals here examined would not be possible to be accomplished in larger-scale events. For example, it would have been a considerable challenge to greet the audience members individually in a concert attended by hundreds of spectators. Also, in the

projects of this study, the sense of intimacy was a recurrent factor, what would have to be investigated through other strategies in the case of larger venues and audiences. I envisage that, for effect in projects aimed at more numerous attendance, other proposals of engagement of audiences would have to be examined, with other parameters for the relationships between audience, performer and work.

From the performer's experience, I noticed that alternative ways of relating with the audience can represent challenges to paradigms of my training as a classical musician. In particular, those challenges may require changes in strategies for concentration. However, a more personal interaction can evoke a heightened sense of affection and integration with the audience, which may contribute to the collective aspect (performer-audience/participants) in the making of even a solo performance.

In sum, this study aims to contribute with new insights for the engagement of audience with live classical music, including both new and experienced spectators, also to offer new challenges and ideas for the practice of the pianist/performer.

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CHAPTER ELEVEN

THE BODY AS TRANSITORY SPACE OF RELATIONS AND THE INSTRUMENT AS MULTISENSORY SPACE: EXPRESSIVE AND MUSICAL GESTURE ANALYSIS

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DIGITAL SOCK: study and development of a digital musical instrument and its interactive character

Introduction

The analysis of the interactive processes between body-instrument-environment, which supported the study of the expressive and instrumental gesture presented in this chapter, was based on the hypothesis that the human and instrumental body, as well as the environment where interactions take place, are transformative spaces, endowed with a driving energy, an identifying awareness and an interactional knowledge capable of guaranteeing the dialogicity between the relational spaces. This study was inserted in the context of our research on the development of a digital musical instrument called Digital Sock and aimed to understand the role of gesture and sound during interactive processes.

[1] The authors would like to thank the Center for Research in Science and Technology of the Arts - CITAR and the Portuguese Catholic University for their support, and also the Foundation for Science and Technology - FCT, for the support and funding in their research as Individual PhD students.

The study of the movement for the understanding of the parameters that support the formation of the expressive gesture was based on the hypothesis that the human body welcomes the relations in a transitory way, being the message reframed during the interactions. This study was oriented towards the capture and interpretation of gestures. Data collection was performed at the Movement Capture Laboratory (Capture of Movement) of the School of Arts of the Portuguese Catholic University, of thirteen volunteers between twenty and fifty years old. The participants were divided according to their professions so that we could realize how daily bodily activities could (or did not) interfere with individual bodily expression. Thus, those thirteen participants, five were dancers and / or classical ballet students; four were musicians; three were university students, and one volunteer was a therapist.

The interpretation of the data was conceived through biomechanical and psychological analysis (discourse analysis / experience report).

Crossing the data obtained during the biomechanical and psychological analysis with the attitudes - internal, psychological and dialogical - established through the analysis of the scenic movement (Laban, 1978 and Godard, 1995) showed that the expressive gesture is constituted through perception (movement that anticipates the gesture); of action (the gesture in its expression and interpretation of the environment) and interaction (how we interact with space and how the environment influences our actions). The analysis also revealed that the gesture consists of two fundamental levels: intentional (when it performs a predetermined action. It can be: objectified, complementary, auxiliary) and meaningful (when it carries the memory and identity of the individual).

The analysis of the musical gesture was hypothesized, in its preliminary phase, the multisensory aspect of the instrument, perceived as a space where relations happen in a transient way.

This research used the gestural levels and body steps observed in the first step (expressive gesture analysis) as indicators for analysis and refers to a Case Study. In this study, we analyzed four performances, each one with one type of instrument:

a) Sinclair T-Box (2010) - developed as part of the McGill Digital Orchestra project, the T-Box (Marshall, 2007) uses ultrasonic sensors to detect the performer's gestures in the air above the instrument.
b) Hanging Instrument by Waples (2010) - created in Bern (Switzerland) by Felix Rohner and Sabina Schärer (2001), Hang, is a musical instrument of the idiophonic class, built from two half-

shells of nitrided steel, glued by edges, being its hollow interior, in UFO format.

c) Piano by André Lamounier (2015) - acoustic piano
d) Electronic violin by Andres (2012) - instrument that contains an electronic sound output.

All the instruments chosen, despite the distinct nature and diversified sound control, that were played by hand. We intend with this investigation, observe the different modes of sound control and thus, understand how were chosen the body movements for the conception of the musical gesture.

The videos used in this study were captured from the internet and inserted into the Kinovea application (software developed for biomechanical movements analysis), through which it was possible to observe the trajectory of the movement, its speed and acceleration levels. It was our goal, with this study, to understand the multisensory capacity of the musical instrument and its interference in the conception of the instrumental gesture.

This research revealed that the instrument, perceived as multisensory space, is sustained not only by the sound it sketches, but also by the physical space it occupies, by the texture with which it is constituted, by the way it is connected and by the history of its construction. It carries in its corporeal memory a political and social position, and its sonorous projection is a representation of this creative memory. In dialogue with the one who manipulates it, it stimulates them to reflect, albeit unconsciously, on his conception and historical position. It conditions them to make decisions and encourages them to think about their instrumental manipulation.

The result of this analysis will be the basis for the next phase, in which we will investigate the musical gesture and the stimulating capacity of the Digital Sock instrumental prototype in artistic performances (interactive cycle).

The analysis of the expressive and instrumental gestures, from the perspective of the body as a transitory space of relations and instrument, as a multisensory space, showed that the conception of the instrumental gesture is determined by the same gestural levels (intentional gesture - objective, complementary and auxiliary gesture, and meaningful gesture) and bodily stages (internal, psychological and dialogic attitude) of the formation of the expressive gesture. What changes is the intention of the gesture. This gestural intentionality (the desired result, the motivation for its conception and the personal experience for its conception) is determined by the interaction between body and instrument and, therefore, suffers from interference of the elements that make up the

instrument - form, structure, sound, characteristics of the handling; and interferes in its handling by the individuality that determines it.

Next, we will give a brief theoretical overview of the main studies that guided the investigation of the communicational processes involving the human body, as well as the movement analysis about expressive and musical gestures. Then, we will explain in more detail, the procedures performed during the expressive gesture analysis (performed in the laboratory of MoCap), through which we have obtained, as a result, the levels and stages of the body through which the body is organized during the gestural conception. Based on the perspective of the relations transience observed in the body space (human and instrument), and by crossing the results obtained from the expressive gesture and musical gesture research (preliminary research described above), we present, in the last topic, some conclusions about the interactional process which involves the body, the instrument and the environment.

Theoretical background

The concept that the body manifests itself as an identity space where relationships occur is supported by the thinking of Martín-Barbero (1997), Silverstone (2002) and Orozco Gomes (1993), in relation to mediation - transformation space where the interactions happen.

Martín-Barbero (1997) emphasizes the multiplicity in the composition of the messages and warns that the initial attention emitted by the sender is not always the same as the one sensed and received by the receiver. It depends on individual experiences, personal life histories, and the political, social and cultural positions with which each individual stands before the world, creating a network of meanings, the receiver being also a producer of meaning. For the author, mediation is perceived as a specific temporality and discursiveness; structures, forms and practices; as an institution or geographical location; and as a device of viability and legitimation of hegemony (Signates, 1998), that is, a process through which links are established, discourses are propagated, concepts are legitimized and space where relations are established.

For Silverstone (2002), mediation is a transformative process, a result of the production, circulation, reception, reproduction and recirculation of meanings. This circulation is subject to subjective interpretation and resignification. It is transformed through individual experience and personal practice. Increasingly dependent on the media, mediation has a strong technological character. According to this author, as it leads to decision-making and critical reflection, mediation also acquires ethical implications.

Orozco-Gomes (1993) discusses the concept of mediation by drawing attention to its multiplicity manifested through actions and discourse. According to this author, mediation, understood as a complex, multidimensional and multidirectional process, differs from mediating sources. These sources can mediate other sources and are classified into four categories: a) individual (arising from the subject - cognitive mediation); b) situational (situation of interaction); c) institutional (social institutions that mediate the agency of the subject); and d) video-technology (television as a social institution). Orozco-Gomes (1993) points out that aspects such as the individual's ability to think and conceive ideas (cognition), the space they occupy, the institution they defend and the technological environment they use are considered mediating sources that together make mediation possible.

In the hypothesis presented here - the body as a transient environment of relationships - we question the human body as a physical space (loaded with automated knowledge in body movement; this knowledge is acquired as we grow and move around in the world), a device of political and socio-cultural legitimation, social bond, discursive space and cognitive transformation. A set of mediating sources that, in mediating other sources, makes possible the creation of a network of individual meanings that fit together and multiply.

The body ceases to be a space between relationships to become an environment where ideas are imagined, practices are experienced, and concepts are accumulated. Rather than mediating relationships, the body gains form, structure, and means to think about what happens in its scope. In this sense, we agree with the considerations of Katz & Greiner (2006) on the *Corpomedia Theory*, based on the idea that the body, being its own medium, can position itself critically in the face of everyday events. For these authors, the physical bodies of the human being, the object or the device become transformative spaces. The structure that composes it is modified during the interactions it undergoes, while it interferes in the way its interlocutor reacts to its action. Based on this assumption we come to our second hypothesis: would the instrument body be a multisensory space where relations happen?

We use the concept of multisensoriality, which refers to the stimulating activation of multiple senses, to describe the physical body of a musical instrument. It is similar to the term "interactive multimodality" (Leote, 2015: 27), used to describe the multiple modes of human-computer interaction. In this sense, we understand the structure of the instrument's physical body as a space charged with impressions and information. In interaction with another relational body, the multi-sensory (or multimodal) body of the instrument can cause sensations, stimulate the senses and create

new meanings. The space that it occupies becomes, therefore, an environment where the relations happen, its form and structure being a sketch of ideas and thoughts imprinted by the interlocutors who interacted with it at the time of its trajectory.

Starting from the premise that the human body and the body of the instrument (or the device) are multisensory spaces where relationships take place, the objective of this work focused on the analysis of the movement (which forms the production of the message), and on the interactional processes (which involve the relationship between these bodies). The analysis of the movement and the study of the interactional processes were based on the study of the perception of movement (Merleau-Ponty, 1945), on the proposal of Varela, Thompson & Rosch (1991) in the context of the embodied mind, and on the understanding of information (Maturana and Varela, 1980, 1995).

The corporal scheme is conceived by Merleau-Ponty (1945) as the way the body expresses itself in the world, the consciousness of this body being inseparable from the movement. The body is, in this sense, movement (which absorbs information), sensitivity (sensorial perception) and creative expression (gesture capable of expressing perceived meanings). Through gestures, we perceive the world, shape it in our senses, and express ourselves in a creative and personal way. The action of thought is in the movement, and the relation body-mind is, therefore, a unit.

In the sphere of the embodied mind (Varela, Thompson & Rosch, 1991), cognition depends on the experience that takes place in bodily action. Inseparable from the body, knowledge is an interpretation of interactional relationships. More than a simple capacity to absorb information, cognition emerges from the mind-body relationship, the bodily movement being, expression/perception of the experience lived.

Recognizing the body as an autopoietic[2] system, Maturana and Varela (1980) define corporeality as a phenomenon composed of circularities and different interpretations. For the authors, life is an ongoing process in search of knowledge, and thus, the body's movement is an interpretative representation of information.

The idea that the body, perceived as a system in constant mutation - autopoiesis (Maturana and Varela, 1980, 1995), interprets the world through movements, guarding and re- signifying in itself the knowledge acquired in interactions with other bodies (Merleau - Ponty, 1945; Varela, Thompson & Rosch, 1991) not only supports the hypotheses presented here (the human body, as well as the body of the instrument are configured as transient spaces

[2] Autopoiesis - from the Greek [self] itself, [poiesis] creation

of communication), but it also prompts us to analyze the movement. Through this study we aim to understand how the gesture is constructed during the interactional processes. The analysis of the scenic movement (Laban, 1978 and Godard, 1995) was the starting point for the investigation of the body stages that involve the formation of expressive gesture.

The analyses of the movement by Laban (1978) and Godard, 1995) focus on the gesture in its conception to decipher the structures that make up the expressive gesture. Laban (1978) argued that it is possible to identify the purpose of a movement, or what motivates people to move, identifying the form (how we move), the structure (what moves), the spatiality (where we move) and the dialectic (with whom we move). Godard (1995), in turn, differentiates movement, understood by him as a phenomenon that describes the displacements written by the different segments of the body in space, gesture, inscribed in the distance between this movement and the individual's gravitational background.

The understanding that the formation of the expressive gesture is anchored in different stages led us to study the gestural levels that make up the body's movement (expressive and instrumental gesture). The main authors that supported the research of the gestural levels were Zagonel (1992), Delalande (1988), Marc Leman (2008), Zagonel (1992) and Delalande (1988) describe the gestural construction within the scope of its sonorous conception, its corporeal expressiveness and the imagination. Leman (2008) suggests a practice of musical meaning that is based on the codification and decoding of the patterns of the body's articulations. The body, as natural mediator, is able to transform the artist's intention into action, through felt energy, physical interpretation and his mimetic perception (repertoire of experiences accumulated in the body).

The analysis of the gestural levels (Zagonel, 1992; Delalande, 1988 and Marc Leman, 2008) and the body stages (Laban 1978; Godard, 1995) aimed to understand how the body of the instrument and the body of the interpreter shape each other in the interactional processes, and how the fruit of these interactions, interpreted through the gestures, is conceived.

Expressive Gesture Analysis

The aim of this phase of the investigation is the analysis of the movement during the conception of the gesture without sound intention. We seek to understand the formation of the expressive gesture during the body's stages, gestural levels and interactional cycle, as well as to study the body as a transitory space of relations.

Methodology

The analysis of the expressive gesture, guided by an exploratory research, was divided into two phases: a) data collection (capture of movements and report of experience); and b) interpretation of the data (biomechanical and psychological analysis)

The data was collected in the Movement Capture Laboratory of the Portuguese Catholic University) and CITAR in the last quarter of 2015 using a motion capture system (Vicon T40S-NR18 - 4 megapixel cameras). A group of thirteen volunteers, male and female, of different ages, and professionally divided among musicians, dancers and different activities, took part in the study. At this point we asked the participants to perform daily movements (such as walking, jumping and spinning), as well as some free movements, so that we could see how the body was oriented in the conception of expressive gesture.

After capturing the movements, we invited the participants to report their impressions of the experience before a video camera. During the reporting, they were asked to talk about moments of tension and ease in performing the tasks requested, preferences, sensations, pre-established concepts (gesture and movement) and sound absence.

The interpretation of the data was aided by the 3D animation software Autodesk Maya and the sport analysis application Kinovea 8.20 through which we were able to analyze the trajectory of the executed movements, the rotation and positioning of the lower limbs and the corporeal angulation during the gesticulation, the main objective being the biomechanical analysis of the movements.

For the psychological appreciation, we performed discourse analysis. After the transcription of the testimonies, the following aspects were analyzed: memory, life trajectory and social status of the volunteers.

Management Levels and Body Stages

The biomechanical analysis of the movements has helped us to realize that the formation of the gesture responds to a predetermined pattern which can be observed when we compare the execution of the daily movements. However, in a more careful analysis of each of these movements, it is possible to observe that even in the similar gestures, there are precise alterations that relate to the characteristics of each individual.

When we considered this evidence as the starting point for the analysis of the movement, it was possible to establish two determining guidelines for the formation of the expressive gesture. The first concerns the pattern that

gives shape and structure to the gesture. It is designed with a well-defined intention, and organized in order to respond to what has been determined. The other concerns variations that modify this pattern. These changes are subject to the state of mind, the physical conditioning, the repertoire acquired and the personal idealization during the conception of the movement. These two guidelines helped us to determine and define the two fundamental levels observed during the gestural conception. They are the intentional gesture (when performing a predetermined action) and the significant gesture (when it carries within itself the memory and identity of the individual).

Gesture Levels: Intentional Gesture

The intentional gesture, that is, the movement responsible for performing the task internally determined, is related to the mechanics of movement and can be divided into three levels:

a) Objective (movement that determines action)
b) Complementary (movement that complements the action)
c) Auxiliary (movement is present giving body to action)

a) Intentional Objective Gesture

The objective gesture refers to the movements responsible for carrying out a particular gesture. When observing the movement of the ankle joint (sagittal plane) during walking, we noticed that the flexion between the foot and the surface of the body (dorsiflexion) and its antagonistic movement (plantar flexion) are essential for accomplishing the task, aiming at intended action (intentional gesture objectified). The variations observed during the different modes of walking (ankle joint angulations during plantar flexion and dorsiflexion) do not interfere with the goal of action.

To the circular movement around a part of the body we call Circumduction. The circumference consists of a combination of movements: flexion, extension, abduction and adduction. The movement of the feet is the axis that guides the movement determining the circular gestural conception. In the illustrations below, we can observe a circular variation between the feet during the turns, the circumference of the right foot being wider than that of the left foot. The variations were observed in the same volunteer and also among the participants. We called the Circular movement around the feet, which targets the action (spin), as well as the movement of

adduction/abduction of the legs and flexion/extension of the ankle, objective intentional.

Figure 11-1: Objective Intentional Movement - Rotate Circumduction – see colour centrefold

The jumps are composed by knee flexion and dorsal flexion of the ankle (preparatory squatting); body extension (impulsion); knee flexion and dorsal flexion of the ankle (landing squat). These movements, because they are essential to the execution of the jumps, are characterized as objective intentions.

Figure 11-2: Objective Intentional Movement - Jump – see colour centrefold

b) Intentional Complementary Gesture

The complementary gesture, as the name suggests, concerns the movements responsible for complementing the objectified action. This movement not only accompanies the intended intentional movement, but also broadens it.

In the actions studied (walking, spinning and jumping), we observe that arm/hand movements complement the action, improving body balance and spatial organization.

Figure 11-3: Intentional Complementary Movement - Walking Movement of arms/hands

Figure 11-4: Intentional Complementary Movement - Rotating Movement of arms/hands

Figure 11-5: Intentional Complementary Movement - Jumping Movement of arms/hands – see colour centrefold

c) Intentional Auxiliary Gesture

The auxiliary gesture refers to the movements responsible for giving body to action. They accompany the objectified movement. During the walk, these gestures can be characterized by the cadence of the hips that moves helping the formation of the steps, as well as the movement of the shoulders, elbows and knees.

If we compare the movement of the knees, hips, shoulders and elbows (Intentional Auxiliary) with the movement of the feet (Intentional Objective) we will see that there is a linearity in the action.

Figure 11-6: Intentional Movement Auxiliary - Walking Movement of elbows, shoulders, hips and knees

Figure 11-7: Intentional Movement Auxiliary - Walking Movement of elbows, shoulders, hips and knees

– see colour centrefold

In twists and turns, movement of the head, neck, shoulders and hips accompanies the movement of the feet/legs and helps in the body balance necessary for the activity. When comparing these movements with the path made by the feet during the action (Intentional Objectives) we will see a circular regularity.

Figure 11-8: Auxiliary Intentional Motion – Rotating Movement of head, neck, shoulders and hips

Figure 11-9: Auxiliary Intentional Motion - Rotating Movement of the head, neck, shoulders and hips compared to the footpath - REGULARITY

– see colour centrefold

In the case of jumps, the corporeal inclination assists the conception of the gesture giving it the impulse to accomplish the activity. At the same time, the movement carried by the shoulders, head and hips accompanies the gestural conception. When comparing these movements with the path performed by the knees during the action (Intentional Objective) we will see a regularity in the movement.

Figure 11-10: Intentional Auxiliary Movement Jumping Movement of head, shoulders and hips

Figure 11-11: Auxiliary Intentional Movement - Jumping Movement of the head, shoulders and hips compared to the path taken by the knees - REGULARITY

– see colour centrefold

Gesture Levels: Significant Gesture

Significant gesture carries within itself the memory and identity of the individual. It is characterized by unintentional movement, without prior conception and/or ordered function. It is the gesture that differentiates one movement from the other, because it is subject to the moment, the environment, the critical, social and cultural positioning of the individual depends on individual actions in relation to the world, personal choices,

experiences, life stories, and cultural capital. It is unique, individual and insurmountable.

In carrying the life trajectory and the personal memory, the significant gesture imprints personality on the movement distinguishing the one who designs and conceives it. When we observe, for example, the walking of the volunteers, we realize that there is a differentiation between the form and the way each one conceives the gesture. The same happens during jumps and turns. To this gestural individuality we call Significant Gesture.

Figure 11-12: Significant Gesture – see colour centrefold

Body Stages

Based on the interpretation of the data (biomechanical and psychological) and the systematic study on the main theories of the scenic gesture (Laban, 1978 and Godard, 1995), we perceive that the body is organized in stages, shaping the gesture during its conception. Individually and privately, these stages (or attitudes) can be categorized as follows:

a) Internal Attitude (gestural design)

The internal attitude refers to the perception, that is, the movement that anticipates the formation of the gesture. The method we found to gain an understanding of the gestural anticipation in the analyzed exercises was to observe the initiating actions, that is, the way the gesture was thought. In the actions studied we observed that the volunteers had: a) a heterogenous initial targeting; b) sequential targeting and diversified spatial design; c) different speeds.

Biomechanical analysis provided a general orientation of the gestural design with regard to physical and motor aspects. In analyzing the locomotor actions (walking, jumping and spinning) we perceived a homogeneity, for example, in the use of space during the creation of the gesture. These data could give us the false idea that there is an equality in movement, or that we think the gesture in a similar way in relation to its anticipation and spatial perception. However, if we look more closely, we will see how all the participants used the space was different. Not all, for example, started the same movement in the same direction or in the same way. Instead, each participant had a way of initially positioning themselves (although everyone was asked to start capturing the movements with their

arms crossed), a desired direction, a starting speed and a body organization in interaction with the different space.

b) Psychic Attitude (the gesture in its expression and interpretation of the environment)

The psychic attitude refers to the message imprinted on the movement, being subject to the personal information constructed along the individual trajectory of each volunteer. The way each volunteer imagines the gesture is influenced directly or indirectly by the impressions accumulated internally, by the experiences lived, stories witnessed and different outlooks on life.

We chose to analyze the Psychic Attitude through the understanding of the psychological aspects that involved the actions studied, crossing this information with the movements performed; verifying the nuances imprinted on the movement and its relationship with the personality of each participant. These studies showed that: a) when conceiving the gestures the participants sought, consciously or unconsciously, to reflect the thought and/or an idealized image (communication); b) bodily projected what they experienced at some point in life and which was significant to them (simulation); c) were influenced by humor and capacity of involvement (immersion); d) demonstrated a critical position on the society in which they live and/or the way in which they interact with the world (ethics).

c) Dialogical Attitude (relationships)

The dialogic attitude concerns the relationship, that is, the way we interact with space and the way the environment influences our actions. The form used to analyse this aspect was to observe how the space in which the experimental research happened influenced or not the performance of the volunteers. The following were considered: a) the environment; b) the clothing worn at the time of movement capture; and c) the way the experiment was conducted. This analysis revealed that, regarding the dialogic attitude, the volunteers:

- Conceived the gestures considering the information provided about the final objective of the project

- Were influenced by the environment they were in
- Considered their individual experiences and ways of being

Relational transience of the human body and the multisensory aspect of the instrument

Exploring the daily movements and the formation of the expressive gesture, we studied the body as a changing, ever-evolving environment in which relationships end and/or remain forming the corporeal interactional cycle. This thought is based on the idea of the body as a single organism, with an identity of its own. In this approach, gestures can express personal perception, objectified action, and also an individual meaning (imprinted in the body's memory) regarding the world. In contact with other subjects, other instruments and the environment that surrounds us, this network of meanings transforms itself, shaping new meanings for what we perceive and do. The body thus sustains itself as a space that allows, through relationships, the transmutation of meanings.

Thus, we conclude that:

a) the formation of the expressive gesture is conditioned to the experiences that each individual has had, as well as the physical and psychological aspects that structure it.
b) the relationships with which the body dialogues in the formation of the expressive gesture become transient insofar as they can transform, either by a new decision- making or by social, cultural and political positions.
c) the body, in interaction with the instrument, assumes an objective control. It is focused on handling and sound control, and the gestures are designed for this purpose. This control is performed in a double-way: the gesture that controls the sound is conditioned by the sound response of the instrument and vice versa. The space, occupied and perceived in this dialogue between body-instrument-body, is constrained by this interaction.
d) transformations take place at different levels of gestural formation. They are influenced by space and, at the same time, interfere in the

spatial organization in which they are inserted. This process is cyclical, individual and permanent.

e) gesture and sound are configured as interlocutors of interactive processes

Understood as transitional space of relationships, the body is responsible for modeling movement, creating space for gestural expression. As an interactive space and cultural capital, the body presents itself as a complex system capable of forming concepts, creating ideas and elaborating communicational structures. Ideas and thoughts go through the body that change during the relationship. It creates a network of meanings where they are imprinted: the body's memory, the life story and the individual positions vis-a-vis our society. Studying the gestures and their interactional capacity helps us to understand the social construction of the reality in which we live; assists our understanding of the structures that interpret human beings, the machine, and its relation to the world.

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CHAPTER TWELVE

USING EMBODIMENT IDEALS TO MEDIATE THE ACOUSTIC AND ELECTRONIC IN A WORK FOR SOLO INSTRUMENT AND FIXED MEDIA: AN EXPERIMENT IN AUTO-CHOREOGRAPHY

HUBERT HO

Introduction: I lost the beat

I hear a long swirling sound, somewhat amorphous, though texturally and timbrally rich on my set of 2-channel mini-monitors. There are no significant recognizable melodic or rhythmic markers, just a whirlwind of whooshing sound, sometimes more present, at other times more distant. As I'm focused on playing a set of fast, mostly isochronous notes throughout a 1-2 minute time span, I worry about missing a crucial cue located 1 minute away. I am human, but my counterpart is a machine, and at times I feel enslaved to it.

I miss the cue, hit space bar on my computer, rewind, and start over. Once again, I've lost the beat.

Despite significant advances in research on gestural controllers and live electronics, composers still retain a habit of composing, collaborating on, and disseminating for performance, works for instrument and fixed media (hereafter IFM). The portability of fixed media permits musicians of IFM works to easily rehearse, perform, and travel on tour with them. As Californian-American composer Edmund Campion admits, his composition *Losing Touch* for vibraphone and stereo sound file remains his most frequently performed composition, accumulating at least 52 documented performances from 1995 to 2007, despite his more recent propensity to

work with more interactive forms of electronic manipulation.[1] He expresses significant relief when he can simply mail a score and sound file (or CD) to the performer, abnegating the need for hardware and software updates, or for live computer music and audio assistants at venue.[2]

But music for IFM presents a peculiar set of challenges during the preparation of its performance, especially temporal concerns such as the maintenance of precise tempi, the incorporation of accelerandi and decelerandi to fixed arrival points, and moment-to-moment synchronization. Any benefits that are usually reaped from the addition of a live instrumentalist to the performance situation, either expressive (rubato and microtiming), or pragmatic (the ability of multiple performers to communicate in situ in ensemble settings), are eradicated as the live performer is enslaved to the fixed temporality of the fixed media track. In an experiential account of live IFM performance, violinist Mari Kimura writes:

> I feel quite helpless as a performer playing with tape in concert situations, especially in terms of ensemble and sound quality. Unlike a partner in an ensemble, a pre-recorded tape cannot hear or respond to what a human performer is playing, nor can it react to every detailed situation. There are no means for instantaneous adjustments in playing back the tape part for any circumstantial controls of timing, dynamics, or articulations. The tape part is already "performed" by the composer as a recording, and it "performs" the same way every time, no matter how the performance circumstances vary (such as different human accompanists or changed acoustic environments). (Kimura 1995: 71)

Additional complications include the lack of ability to hear loudspeakers on stage, and the high amount of variability in resonance and reverberation that might alter the performer's perception of the fixed media playback.

Beyond pragmatic nuisances, music for IFM as genre and artistic practice suffers from scrutiny on aesthetic grounds as well. At the core of the resistance to fixed media is the inability of the perceiver (audience member) or performer to attribute any sense of 'liveness' to fixed media. Audiences often experience an absence of a physical human agent intimately involved in the playback of the fixed media file. Adam Stansbie has examined a tradition of thought that categorizes electroacoustic music

[1] Edmund Campion (website), accessed June 20, 2016, http://www.edmundcampion.com/project_losingtouch/index.html.
[2] Discussed in graduate seminar, UC-Berkeley, California, USA, 2000.

as a plastic art, whose practitioners work to create, refine, and polish a static product using the synthesis, sampling, and processing techniques made possible in an electroacoustic music studio (Stansbie 2013). The move towards utilizing live electronics and intimate gestural controllers represented in part a reaction against plasticity in favor of linking human gestures to musical sound (see: Wessel and Wright 2002). Live interactive electronics might solve some of the difficulties arising from matching tempo and beat to the fixed media track, but as Kimura noted, proper interfacing takes time and a willingness to continually solve pragmatic and conceptual problems along the way, often resulting from technological limitations of the time (Kimura 1995: 69-71).

Recently scholars from both sides of the Atlantic have questioned the fixity of acousmatic work, and by extension, works for IFM. Some of this pushback comes from identifying, defining, and clarifying what a 'live' dimension in electroacoustic works entails. For Simon Emmerson, 'live' electronic music as a concept, practice, and genre has undergone a transformative historiography: for instance, multiple candidate compositions vie for the title of first 'live' electronic composition. According to Emmerson, 'live' electronic music requires:

> … the presence of a human performer who takes decisions and/or makes actions during a performance which change the real sounding nature of the music; … embraces the historically accepted view of the 'live' as involving a human who produces sound mechanically; or who produces sounds on electronic substitutes for mechanical instruments using similar physical gestural input; … but it also includes one who does not mechanically cause the sound, yet who may cause, form or influence it through electronically mediated interfaces under their immediate control. (Emmerson 2007: 90)

This return to the importance of gesture in the creation and perception of electroacoustic music has proved inviting to a number of scholars including Luke Windsor, who posits that electroacoustic music can provide "unmediated contact between listeners and significant environmental occurrences." (2000: 10). Here Windsor draws upon Gibsonian ecological psychology, which stresses the interrelationship between organisms and their environment. Specifically, organisms interpret their environmental surroundings as laden with the potential of enactive possibility. The specific tools provided in such an environment are known, in Gibsonian terminology, as 'affordances' (Windsor 2000: 11). For example, a car acts as an affordance for its law-abiding owner to move around more rapidly and freely, though that same car might be marked as a source of easy cash

for a would-be criminal. As an organism's learning about the world relies on sensory perception, Windsor stresses that all "sounds are intimately tied to action, whether natural, human or artefactual." (Windsor 1997: 81).

This invocation to gesture and action motivates the writing of this essay, which situates the preparation of a solo IFM composition within the discourse of embodied cognition. It is both a theoretical exposition and personal reflection on how best to attain a deep and close understanding of fixed audio media when preparing IFM pieces for performance. The main thesis of this essay is that instrumentalists attend to the embodied nature of the fixed media track in a way that would enable them to inhabit its sonic world more profoundly. It suggests that a performer create an auto-choreographic routine to inhabit the sonorous-gestural world of the accompanying fixed audio track more intentionally, leading to performances which convey stronger integration of live instrument and fixed media. It also suggests that the performer spend time with the fixed media track alone, away from the musical instrument during preparation of the performance. In addition to listening to the track repeatedly, the performer should imagine the performative gestures that most meaningfully map onto the sonic events in the fixed media track. The performer need not be an expert movement specialist or choreographer – the performer's goal is to attain an *embodied* understanding of the sound from the fixed media track. At the performance of Mei-Fang Lin's *Interaction* for piano and fixed media at the MuSA Symposium 2016 in Karlsruhe, the video of a sample auto-choreography of the fixed media track was screened alongside the author's performance of the piece, acting as a virtual 'avatar' to the live piano (and the audio of the fixed media track). This experimental amendment to the typical IFM setup provided an opportunity not only to help performers eradicate the dissociative sensations they feel when performing this music, but also to re-evaluate the aesthetics and ontology of IFM performance practice itself.

Electronic sound, embodied cognition and movement

Embodied cognition can be summarized and illuminated by examples from the musical day-to-day world, as follows. Following Varela, Thompson, and Rosch in their landmark publication on embodiment, cognition – traditionally interpreted as the study of processes of symbolic representation – relies upon a body situated in "biological, psychological, and cultural" contexts for perceptual activity to occur (Varela et al. 2017: 173). A person's sensorimotor capacities are perpetually refined in a feedback system known as the 'perception-action loop', such that sensation

and motor actions "are fundamentally inseparable in lived cognition." (Shapiro 2011:53). Instrumentalists, including pianists, utilize auditory and somatosensory systems, listening to one's own sound and engaging in tactile stimulations with the keyboard to attain a desired sound. The specifications of this sound, furthermore, might be governed by historical performance styles, political climates, geographic tendencies, repertoire conventions, or specific musical philosophies.

One central tenet of embodied cognition is that we experience content in the world through enaction (Noë 2004: 62-67), defined as a "set of meaningful relationships determined by an adaptive two-way exchange between the biological and phenomenological complexity of living creatures and the environments they inhabit and actively shape." (Schiavio and van der Schyff 2018: 72). Alva Noë's oft-cited example concerns our experience of perceiving a tomato in the three-dimensional world. Traditional cognitive science posits that we perceive visual stimuli via our visual system; and in our mental representations we interpolate the missing, unseen 'face' of the tomato onto the seen face of the tomato, in order to create a three-dimensional visualization of the tomato in its truest, most natural form. Noë claims instead that our perception of the tomato is predicated on our experience with the tomato as enacted, that without our ability to move about in 3-D space and observe the tomato from various angles, our ability to perceive the tomato as 3-D object would be severely weakened, or non-existent. Only through enaction is the perceiver able to truly observe the tomato. Embodied cognition researchers model this back and forth process between action and perception as a sensorimotor feedback loop.[3]

Andy Clark identifies three levels or 'grades of embodiment': mere, basic, and profound (2008: 42). 'Mere' embodiment suggests that a creature follows a set of directives based on reasoning capabilities alone in order to implement a solution to real-world problem. 'Basic' embodiment lies one step removed, as the body's properties allow for greater fluidity in feedback between sensation and action. 'Profound' embodiment is a state

[3] In *Phenomenology of Perception*, Maurice Merleau-Ponty similarly distinguishes between perception and knowledge using the example of a table. To perceive a table's dimensions and shape, one must have experienced the table from "the positing of a world and of a system of experience, in which [his] body is inescapably linked with phenomena" (354). In other words, a priori knowledge of the table allows the observer to understand that the table has a fixed dimension and shape regardless of where the table stands in relation to the observer. His point resonates closely with Noë's, though Noë ascribes the ability more strongly to principles of embodiment. See Merleau-Ponty (2002: 348-354).

whereby "biological systems" work efficiently and fluidly to "integrat[e] new resources very deeply, creating whole new agent-world circuits in the process." (2008: 42). In the domain of computer music, one might consider the AI experimental model compositions of Bach (and other composers) done by David Cope as an example of mere embodiment, whereas more recent work on music and sensors – for example David Wessel's Buchla tablet, which can manipulate 200 sinusoidal instruments – might aspire to the level of basic embodiment (1987: 30-46).[4] Guy Hoffman and Gil Weinberg's team has built systems that rely on gesture-based learning – Shimon, a robotic marimba improviser, can match rhythmic phrases of a human improviser, modeling anticipation data, gestural history, and micro-timing of the human improviser, rather than sequences of notes (Hoffman and Weinberg 2010). Because learning of gestural knowledge relies on feedback with human performers, such a machine might be labeled as 'profound'-ly embodied.

These ideas of embodiment are rooted in neuroscience research. Clark cites the work of Angelo Maravita and Atsushi Iriki on bimodal neurons, neurons activated by both somatosensory and visual systems (Maravita and Iriki 2004). They recorded neural activity of Japanese macaques in a basic food retrieval task. The macaques were given five minutes of practice time with a rake, after which the monkeys began to exhibit neural activity normally mapped to a larger space, namely to include the space now widened by the possibility of retrieving the food from a larger area. (In neurological terms the visual Receptive Field has enlarged.) The rake thus should be re-evaluated not as a tool of utilitarian means, but a tool incorporated into the "body-schema, … [the organism] treating the stick as though it were part of the body." (Berti & Frassinetti 2000: 415).

The lessons from this experiment might apply to the pianist, whose tactile sensations are mediated via the fingers; if the pianist's fingers are never touching the keys, the skin does not directly sense world events. Along similar reasoning, numb hands are still able to determine the shape of a bottle (or feel out a set of piano keys) via tactile stimulation.

Clark expands the framework of embodied cognition beyond what Varela, Thompson and Rosch anticipated into the realm of *cognitive extension* and *cognitive niche construction*. Cognitive extension posits that instrumental apparati are crucial to the thought process itself, such as the piano (and even the space it is in). Cognitive niche construction refers to body, instruments, and environments considered as a single system, all elements interacting with one another, as the body "negotiates" (again,

[4] See also: Wessel and Wright (2002).

Clark's term) the instrument and its ecosystem. Cognitive niche construction unites individual thought, agency, and affect with the needs of communities and environments. Clark invokes a study by Susan Goldin-Meadow, suggesting that gesture is not only a "prop for interagent communication," but actually contributes to the thinking process (2008: 123).

As an analogue in the auditory domain, we might consider the case of a listener who's been confronted with a piece of music, for example, Beethoven's Sonata op. 2 no. 1. According to theories of embodied cognition, those with prior experience in instrumental performance (esp. this instrument, the piano), or with the composition itself, will attend to it in a different manner than those who have not. Experienced musicians display a higher activation of mirror neurons: that is, pianists who have played Beethoven's op. 2 no. 1 listen to others playing op. 2 no. 1 as if they themselves were playing it, attaining perceptual cues through their re-imagining of playing the piece. The revelation of this "correspondence between observed and executed actions" is one of the major findings of cognitive science today, with implications on how humans empathize and demonstrate intent and action, and on how language evolves (Overy and Molnar-Szakacs 2009: 491).

As applied to electronic music, Deniz Peters advocates a return to tactility as an operating paradigm for embodied listening. Listeners, even if unaware of the specifics of how sound is made, interpret sound through the process of "contact, articulation, and withdrawal." (2012: 17). Similarly, Rolf Godøy advocates for the "gestural-sonorous object," a modification of the basic Schaefferian 'objet sonore', to incorporate the idea that sonic fragments are meant to be interpreted through enacted perceptions, physically, "mentally tracing the onsets, contours, textures, envelopes, etc., by hands, fingers, arms, or other effectors, when we listen to, or merely imagine, music." (2006: 149).

The melodic and rhythmic dimensions of music are readily encoded via the body. Pitch height and melodic line can be mapped to linear motion, and rhythm can be expressed through empathic tapping of foot or hand in synchronicity. However, much electroacoustic repertoire explores the timbral capabilities of music. For timbres not produced by single instruments, or created without a single recognizable sound source, the lack of efferent contact with worldly situations or instances producing these rarer timbres would impede perception via enactment. This might account for the frequent testimonials that electroacoustic music is hard to describe and hard to remember.

The auto-choreographic experiment

In an attempt to demonstrate the potential of embodiment in electroacoustic music, I recorded a video of a choreographed routine (an 'auto-choreography'), using hands and arms set to the fixed media track of composer Mei-Fang Lin's *Interaction* for piano and tape. With absolutely no training as a dance artist, I was reluctant to include more of my bodily frame than necessary in the video, suspecting that any lack of proficiencies might actually distract from the performance. As someone with instrumental piano training, however, I was more comfortable with the video's focus on extremities. Thus, the MuSA 2016 performance – during which the audience was shown the choreography (on film), the live instrumental performance, and the fixed audio media part – serves as a performative experiment with a large practice-based component.

Figure 12-1 Live performance, MuSA 2016, Mei-Fang Lin *Interaction*. Hubert Ho, piano with synchronized auto-choreographic video

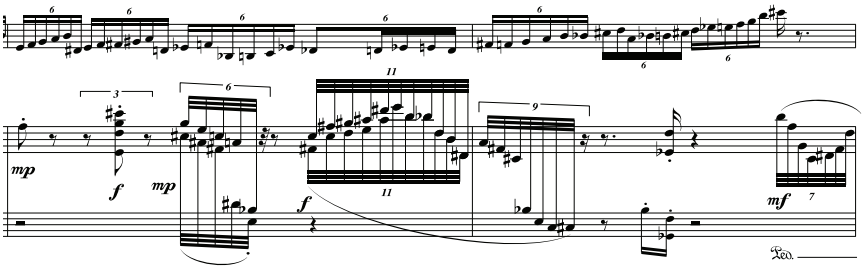
The photograph above shows a frame of a video containing the auto-choreography of the fixed media track to *Interaction*. I map gestures onto the audio track, imagining how the sounds of the media track might be

activated and sustained by physical gestures. The gestures I use are related to percussive and pianistic gestures, as the piano is my primary instrument. The gestures are 'performed' on a velvet cloth, and the 'performed' version was rehearsed for weeks before it was videographed for the final version.

One might argue that timbre-based organization might present itself psychoacoustically not through the learned conventions of harmony and melody, but through our limbic experiences, including those which activate our "fight or flight" mechanism. A harsh timbre – one inclusive of noise elements, morphologized spectra, sudden changes in dynamic pressure, or high spectral centroid – invokes neural hardwiring that has evolved to signal danger.

In preparation for this exercise, I examined opportunities in the electronic track to identify gestural-sonorous objects, and placed them into one of three categories most appropriate for the piece: 1) percussive sounds, 2) stretched sounds, and 3) environmental sounds (sound which forms the ecology to which performer and listener responds).

Analytical insights from an embodied perspective



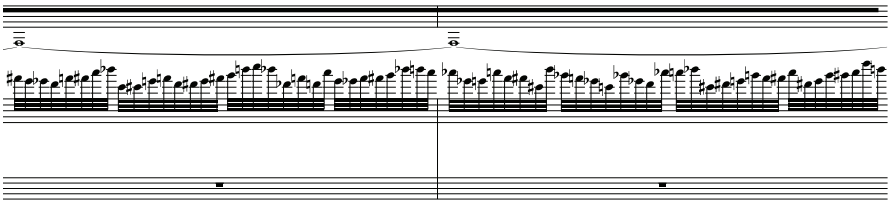
Example 12-1: Mei-Fang Lin, *Interaction*, mm. 60-61

Percussive sounds, primarily processed marimba samples, have sharp attacks, and in this composition, consist of isorhythmic pulses averaging 6 or 8 to a beat (i.e. sextuplets or 32nd notes, end of this section shown in Example 12-1). Percussive sounds reside on precise points on the metrical grid, and thus, require the greatest level of synchrony with a live performer. Percussive sounds are thus discretized in the temporal domain. As clearly sampled, they represent the clearest cases of corporeal articulations with a clearly defined pitch, timbral profile, and rhythm.[5] The

[5] Corporeal articulations are discussed at length in Leman (2007: 81-83).

visuals reflect the sense of these corporeal articulations, as I attempt, in the auto-choreography, to enact percussive gestures which mirror the rhythmic patterns of these passages.

The second category consists of stretched sounds, which tend to occur over a longer period of time, without a definitive starting and ending point (2 measures of this type are shown in Example 12-2). Simple and complex sinusoids weave in and out of the texture over large swaths of time. Stretched sounds tend to take longer and contribute to difficulties with beat-finding, leading to difficulties with synchronization of the electronic track.[6]



Example 12-2: Mei-Fang Lin, Interaction, mm. 74-75

One might ponder whether the third category of sounds, "environmental sound," deserves recognition in its own right, or whether all elements of the musical process, including live processing and live instrument, constitute the environment. Several arguments can be made for interpreting the function of the electronic track as a form of acousmatic ecology. First, the music can be heard as intruding into the live space from unseen sources. Second, the performer is required to negotiate multiple strands of streaming data: a visual notated score, a fixed media part, and a live instrument. These sources work to form an ecological environment, following Gibson's theory of affordances, through which a performer must navigate and adapt. Psycho-physiological processes include entraining to a steady pulse, reacting to sound events, and matching loudness levels.

[6] In this context I use the word 'stretched' only to indicate a way of ramping up tension via increased potential sonic energy through longer stretches of duration, not necessarily to indicate the specific processing technique given the name "time-stretching."

Reflections

I conclude with a few reflections about the process of recording myself doing an auto-choreographic routine of this particular piece. I first performed this piece in Boston Massachusetts about 6 years ago, and remember distinctly the difficulties I had with the synchronization, an issue through which I am still working. Embodying the electronic sound on a most literal level, I thought, might be an interesting experiment from a performative point of view, as to play a duet with oneself. I set the following parameters as a way of managing the project.

The idea to utilize an auto-choreographed body double stems from the work of John MacCallum and Teoma Naccarato, a composer and dancer duo who emphasize the importance of conceiving the body as a moving, not stationary, entity. Their work centers on the use of real-time biosensors, to capture and parameterize heart-rate data (2016: 57-72). They carefully interpret this data not as representational of any "inner workings or truths of the body, but rather," to "evo[ke] [the] dynamic relations between bodies and media [as] continual flows amidst physiology, behaviour and context." (2016: 66).

First, I deliberately chose not to record full-body choreography for a number of reasons. I wanted to limit the dimensionality of the corporeal articulations I included in the choreography. I also wanted to mimic or 'ghost-play' an instrument that I am most familiar with, so naturally I chose the piano as a model for the mimetic exercise.

I also wanted to use gestures I felt were most natural at the moment of hearing. As such, I did not play the role of a true dancer-choreographer who might use this opportunity to 'set' a choreography to the given music or electronic track. As such, my hand and arm gestures aspire not to the condition of art in motion, but rather a reflection of the action percepts I experienced when hearing the piece. As such this choreography is an improvisation: the motions in the video were not planned in advance.

While I did wear a click track when recording the improvised choreography, I resisted the temptation of being a conductor on film. In a few places, though, I gave in. I was also responding to the visual cues afforded by the notated electronic part. The composer herself, however, has always discouraged the use of a click track during rehearsal or performing; she has recommended that the performer learn the electronic part through repeated listenings and extensive rehearsals.

Beyond its role as a practice tool, the use of video recording immediately mediatizes the experience, producing a situation akin to performing with a doppelganger on film. The presence of the video in live

performance invites a multimedial interpretation that arises from the coexistence of moving image and sound. It remains to be determined whether creation and dissemination of the video during live performance of IFM works enhance or impede the aesthetic reception of the piece – but for now, I attest to its ability to let me envision the fixed media sound as livelier, more active, more embodied, and more real.

Conclusion

In conclusion, the extant and rapidly evolving research in embodied cognition has significant implications for the way we process, interpret, and analyze music for instrument and fixed media. Core embodiment ideals of enacted perception, sensorimotor feedback, and ecological affordances allow us to evaluate how the ontological status of electroacoustic music, and music for instrument and electroacoustics, might be challenged. Further advances in neuroscience may further support the theories posited by embodiment theorists and philosophers. To mediate between liveness and the acousmatic of the IFM genre, the performer should envision embodied versions of the acousmatic track, focusing on three gestural categories: percussive (esp. sync points), environmental sound, and stretched sound (time or frequency domain). As an experiment, Mei-Fang Lin's *Interaction* for piano and electronics was performed with an auto-choreographed version of the electronic part. Such an exercise illuminates much of the potential for future practice-based research among composers, performers, and dancers or movement artists, across multiple artistic modalities.

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gestures of patients with Alzheimer's Disease. The investigation focuses on the movement analysis (gesture / sound and memory) and non-pharmacological therapies, centered on artistic practices, for the treatment of Alzheimer's Disease.

She teaches Dance, Theater, Creative Dance and Musical Initiation.

As an Educational Consultant, she has experience in pedagogical accompaniment and teacher training (new teaching methodologies). As a Special Education Specialist, she has guided psychopedagogic interventions with children and young people with special educational needs.

Slavisa Lamounier is also a ballerina, choreographer, journalist and script-writer.

Késia Decoté Rodrigues

Dr. Késia Decoté Rodrigues is a Brazilian pianist and toy pianist with a career focusing on contemporary music and interdisciplinary practices involving classical music performance. She holds a BA (Cum laude) and Master Degree in Piano Performance from Universidade Federal do Rio de Janeiro (CAPES - Brazil Scholarship), MA (Distinction, Santander Scholarship) and PhD in Contemporary Arts and Music from Oxford Brookes University (CNPq - Brasil Scholarship). Késia studied under Mr. Luiz Senise and Dr. Myrian Dauelsberg (piano), and Prof. Ray Lee (Contemporary Arts and Music). Késia's research interest centres on the classical piano concert and audience engagement. Késia is interested in exploring alternative ways to shape her piano recitals, incorporating concepts from theatre, dance and visual arts in her performances. Her project *myths & visions,* a solo piano and dance performance exploring the choreographic potential of the musical gestures, has been presented in festivals in the UK and toured Brazil as an award recipient project. Her project *for her* explores the integration of elements from installation art in a piano recital as a strategy to raise awareness against human trafficking and sexual exploitation of women. This project has been presented in the UK, Portugal and Brazil, and has generated an article published in the peer-reviewed journal IMPAR (2017).

In her career as a contemporary music performer, Késia has had pieces dedicated to her for piano and for toy piano, working in collaboration with composers in the UK, Brazil, and Canadá. Késia Decoté is also interested in improvisation - she is a member of Oxford Improvisers and has released an improvisation album with cellist Bruno Guastalla. Késia's debut solo album, with works for piano and toy piano dedicated to her, is about to be released with Nonclassical.

Katharina Schmidt

Katharina Schmidt is a musician and musicologist based in Berlin. She has been trained as a drummer and pianist and holds a Master's degree in Sound Studies from the Berlin University of the Arts. During her Bachelor's degree in musicology, theatre studies and comparative literature at the Free University in Berlin, she held a scholarship from the Studienstiftung des Deutschen Volkes.

Her artistic portfolio includes film music, sound art, and radiophonic pieces. She has published academic research papers on topics such as sound in literature (particularly in the novels of Virginia Woolf), acoustic ecology, and new interfaces for musical expression. Katharina works as a curator with Cashmere Radio, Sonic Field, and SVS Radio, and continues to write and perform her own music, which has been played at festivals such as Radiophrenia Glasgow and Borealis Festival. For more information, see: www.katharina-schmidt.net

Mathew Sergeant

Matthew Sergeant is a composer and musicologist whose work explores ideas surrounding materiality, of bodies, of objects and objecthood, of relationships between human and nonhuman things. His work is frequently performed internationally, both throughout the Europe, North, Central and South America, Asia, and Australasia. Matthew's music has been commissioned and/or performed by internationally acclaimed ensembles including, the London Symphony Orchestra (UK), the BBC Concert Orchestra (UK), the BBC Singers (UK), CEPROMusic (Mexico), The House of Bedlam (UK), BCMG (UK), Divertimento Ensemble (Italy), ELISION Ensemble (Australia), ensemble 10/10 (UK), ensemble plus-minus (UK), EXAUDI (UK) and the Nieuw Ensemble (Netherlands) as well numerous ongoing creative partnerships with emerging and established soloists. Matthew's work has featured at major international festivals, including the BMIC Cutting Edge Series (London, UK), Festival Musica (France), hcmf// (UK) Sirga Festival (Spain) and Sydney International Festival (Australia). Matthew studied composition at the Royal Northern College of Music (RNCM) and read for his PhD at the University of Huddersfield. His musicological work has been published in leading scholarly journals as well as edited collections. Matthew is currently reader in music at Bath Spa University.

Edward Spencer

Edward Spencer is a Research Fellow at the University of Birmingham and Lecturer I in Music at Magdalen College, University of Oxford. After undergraduate studies on the joint course at the University of Manchester and Royal Northern College of Music, Ed completed a DPhil thesis at the University of Oxford. This doctoral project investigated the role of the drop in Electronic Dance Music (EDM), with a focus on the Harlem Shake meme of 2013, the weaponization of the drop during the 2015-2016 US Presidential Race, and the drop's involvement in online-offline trolling practices at EDM festivals. Ed's article about sonic spatiality and YouTube comments on EDM uploads was published in *Organised Sound* in 2017. In 2018, Ed co-organized 'Music and the Internet' with Pablo Infante-Amate, a Joint Study Day of the Royal Musical Association (RMA) and British Forum for Ethnomusicology (BFE) held at Oxford's Faculty of Music. At the University of Birmingham, Ed is collaborating with Christopher Haworth on the AHRC project 'Music and the Internet: Towards a Digital Sociology of Music'. As a freelance horn player, Ed has worked with Manchester Camerata, Manchester Concert Orchestra and Northern Chamber Orchestra.

Tansy Spinks

Tansy Spinks is an artist, musician and lecturer who studied Fine Art, (Leeds), Photography, (RCA, London) and Music (violin, Guildhall School of Music, London). She has exhibited and taught nationally and internationally. Her photographic work is held in The Museum of Fine Art, Houston and the National Media Museum, Bradford. She performs regularly; venues have included the V & A, Tate Britain, Chelsea Parade Ground, a masonic hall, a windmill, a market in Morocco and a seafort off the north Kent coast. Her PhD was based in CRiSAP at LCC, University of the Arts, London, with David Toop, Angus Carlyle and Cathy Lane and addressed sound in live, site specific performance.

Her lectures and writings include *Sounds Leaving and Lasting – exploring the work of Max Neuhaus*, for the Aesthetics department at Aarhus University, Denmark, *Artwork as a Compositional Interface*, for the Darmstadt Global Composition conference, *Figures of Speech,* for the Performance Research Journal, *Leeds! Leeds!, Leeds!*, for the international Feminist Art Journal, Nparadoxa, and a radio interview on Resonance FM, for *Sound Out*, the sonic arts programme hosted by the late Carole Finer, an original member of Cardew's Scratch Orchestra. She runs the MA in Fine Art at Middlesex University, has been an external examiner for a number of UK universities and is a Senior Fellow of the Higher Education Academy.

Current research interests engage with sound, listening, audiation, instructional text scores, materiality and narrative, and impovisatory performance. Further information can be found at http//:www.tansyspinks.com

Adam Stanović

Adam Stanović (né Stansbie) started composing electronic music over twenty years ago. Since this time, his works have been heard in over 400 international concerts around the world, published on 12 different CDs (with solo CDs on the Sargasso and empreintes DIGITALes labels, and featured in the finals of composition competitions around the globe, winning prizes and mentions, including: IMEB (France); Metamophoses (Belgium); Destellos (Argentina); Contemporanea (Italy); SYNC (Russia); Musica Viva (Portugal); Musica Nova (Czech Republic); KEAR (USA); Musicacoustica (China). Adam Stanovic's writings, previously published under the name Stansbie, address various topics relating to electronic music, including: compositional methods and aesthetic preoccupations; analytical approaches to electronic music; performance interpretation and authenticity; the nature of digitised music; and reflections on the many philosophical dilemmas that electronic music seems to produce. Adam is regularly invited to talk on these topics and, in the past few years, has classes at institutions around the globe, including Harvard University, New England Conservatory, Swedish Royal College of Music, Conservatorium van Amsterdam, The Sydney Conservatorium, Bowling Green Ohio. Adam is Senior Lecturer at The University of Sheffield, UK.

Ann Warde

Ann Warde is an independent composer, sound artist, and researcher whose experimental projects often explore diverse experiences of sonic communication and perception. Her work was recently been recognized by a 2019 NYSCA/NYFA Artist Fellowship in Music/Sound from The New York Foundation for the Arts. Other recognition includes a Cornell Mellon Postdoctoral Fellowship, an award from the Westdeutscher Radio's Forum for Young Composers, and artist residencies at Mills College, the Virginia Center for the Contemporary Arts, and with the European University Cyprus Interfaces Project. As a 2015-16 US-UK Fulbright Researcher at the University of York, she worked on music and bioacoustics projects and developed interests in American philosophy. Linking this philosophical inquiry to music led to recent presentations at the Women in Pragmatism International Conference (Barcelona), and to her participation as co-convener and presenter at the Experience :: Music :: Experiment events

sponsored by the Orpheus Institute (Ghent, Belgium). Her sound installation Hidden Encounters was featured in the 2019 Tone Deaf Festival (Kingston, Ontario) and her composition Doubtful Sound was recently presented during a 2020 Art Lecture Series/PLATO talk at Evergreen State College (Olympia, WA). Among the performers and venues that have programmed her work are BEAST FEaST (Birmingham, UK), Gamelan Son of Lion, Bang on a Can, SEAMUS, ICMC, and BKA Berlin. She is a contributor to Aquatic Conservation, Asian Music, the Journal of the Acoustical Society of America, and the Leonardo Music Journal. Her compositions are published by Material Press. zsonics.org

James Williams

James is a Senior Lecturer and Programme Director at the University of Derby where he teaches music composition, performance, and improvisation. He previously lectured in music composition at the University of Hertfordshire. Having read Music at the University of Bristol (2011), and at Edinburgh University (2012), James wrote his doctoral thesis at the University of Wolverhampton (2016) on the collaborative and creative interactions between contemporary acoustic music and live electronics. James's research interests focus on an anthropology of music, investigating behavioural, social, creative and collaborative processes. He is particularly interested in how such musical behaviours exist online within social media, viral videos and memes, and cyberculture. His research rests on ethnomusicological methodologies and socio-cultural modes of music analysis.

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