The Utility of Resistance in Environments for Live Performance with Electronics as Part of a Compositional Strategy

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Degree of Doctor of Philosophy in Music

DECLARATION OF AUTHORSHIP

I, James Simon Telford, hereby declare that this thesis and the work presented in it is entirely my own. Wherever contributions have been made by others or the work of others has been consulted it is always clearly stated.

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ACKNOWLEDGEMENTS

ABSTRACT

The portfolio of compositions and accompanying commentary presented here deal with three key themes: resistance, liveness, and studioness. In the introduction, resistance is split into two forms: aesthetic and practical. Aesthetic resistance is established as a productively disruptive relationship with a perceived set of musical conventions, building on theoretical work by Kohn (1997), Hegarty (2008) and Thompson (2017). Practical resistance is identified in the relationship between performers and their performance environments, inspired by Noise performance practice and Ferguson's (2013) writing on the subject, where performers perceive unpredictability and instability in their performance environments as resistant to their authorial control. Following Phelan (2005) and Auslander (2012), liveness is found in real-time public renderings of music where performers look to take advantage of the unique affordances of their live performance situation. Studioness is identified in situations where performers make use of the unique affordances of the studio to make work where the studio's presence is clearly evident.

The portfolio of compositions (comprising two projects: 'Spectra' and 'Slow Loris') seeks to investigate the relationship between live performance and studio practice in Experimental Electronica. It employs the idea of resistance to help cultivate a condition of liveness within this context. This live practice is then examined in the studio, asking how the resistant qualities of the live material might be expressed in the studio practice? Can these artefacts of resistance be translated into something with an idiomatic studioness? The possibilities of this approach are the focus of both music and commentary. The commentary also deals with resistance in historical and contemporary theorisations of improvisation and live performance with electronics, and expressions of liveness and studioness in Noise and Experimental Electronica, reflecting upon the effectiveness of the author's compositional methodology and the ongoing relationship between his live practice and studio work.

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ILLUSTRATIVE MATERIALS

All of the illustrative material listed below, provided on physical storage media with hard copies of this thesis, is also available online via the following web address and password:

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Portfolio of Compositions

CD1 – *Striking Distance EP* by Spectra (2016-2018). Runtime: 34:52.

Track 1 – 'Inbound'.
Runtime: 12:02. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 2 – 'Once Removed'.
Runtime: 05:52. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 3 – 'Striking Distance'.
Runtime: 16:58. Format: Stereo WAV file. Sample Rate: 44.1kHz.

CD2 – *Adjunct EP* by Slow Loris (2017-2018). Runtime: 20:41.

Track 1 – 'Insight Informed' (studio).
Runtime: 05:48. Format: Stereo WAV file. Sample Rate: 44.1kHz.
Vocal Samples Recorded by Sorana Santos.

Track 2 – 'Charm' (studio).
Runtime: 14:53. Format: Stereo WAV file. Sample Rate: 44.1kHz.
Vocal Samples Recorded by Dr Alexandra Paddock.

DVD1 – *Live Material* by Spectra and Slow Loris. Runtime: 47:28.

Chapter 1 – 'Spectra Live' (2016-2018).
Runtime: 23:24. Video Format: MPEG-4 file. Audio Format: Stereo.
Performed by James Telford. Filmed by Chiara Liberti and Taylan Mutaf. Video Edited by Taylan Mutaf. Audio Engineering and Mixing by Dan Jeffries.

Chapter 2 – 'Insight Informed' (live) (2017).
Runtime: 10:27. Video Format: MPEG-4 file. Audio Format: Stereo.
Vocal Samples Recorded by Sorana Santos. Performed by James Telford and Celia Newell. Filmed by Chiara Liberti and Taylan Mutaf. Video Edited by Chiara Liberti. Audio Engineering and Mixing by Dan Jeffries.

Chapter 3 – 'Charm' (live) (2017).
Runtime: 13:38. Video Format: MPEG–4 file. Audio Format: Stereo.
Vocal Samples Recorded by Dr Alexandra Paddock. Performed by James Telford and Celia Newell. Filmed by Chiara Liberti and Taylan Mutaf. Video Edited by Chiara Liberti. Audio Engineering and Mixing by Dan Jeffries.

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Amendment 1 – *Performances During the COVID-19 Pandemic*. Runtime: 211:39.

File 1 – 'Charm' (live stream) (2017-2021).
Runtime: 57:19. Video Format: MPEG–4 file. Audio Format: Stereo.
Performed by James Telford. Filmed by James Telford.

File 2 – 'Insight Informed' (live stream) (2017-2021).
Runtime: 44:00. Video Format: MPEG–4 file. Audio Format: Stereo.
Performed by James Telford. Filmed by James Telford.

File 3 – 'Spectra Live 2' (2016-2021).
Runtime: 55:16. Video Format: MPEG–4 file. Audio Format: Stereo.
Performed by James Telford. Filmed by James Telford.

File 4 – 'Spectra Live 3' (2016-2021).
Runtime: 55:04. Video Format: MPEG–4 file. Audio Format: Stereo.
Performed by James Telford. Filmed by James Telford.

Appendix C – *Nightcrawler Tape*. Runtime: 36:46.

File 1 – 'Nightcrawler 43 Both Sides' (2019-2021).
Runtime: 36:46. Format: Stereo WAV file. Sample Rate: 44.1kHz.

COMMENTARY SUPPLEMENTARY MATERIALS

CD3 – *Audio Examples*. Runtime: 10:55.

Track 1 – 'Ex1 (1M)'.
Runtime: 03:13. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 2 – 'Ex2'.
Runtime: 00:01. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 3 – 'Ex3'.
Runtime: 00:30. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 4 – 'Ex4'.
Runtime: 00:32. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 5 – 'Ex5'.
Runtime: 00:35. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 6 – 'Ex6'.
Runtime: 00:16. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 7 – 'Ex7'.
Runtime: 00:03. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 8 – 'Ex8'.
Runtime: 00:07. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 9 – 'Ex9'.
Runtime: 00:04. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 10 – 'Ex10'.
Runtime: 00:36. Format: Stereo WAV file. Sample Rate: 44.1kHz.

Track 11 – 'Ex11'.
Runtime: 00:06. Format: Stereo WAV file. Sample Rate: 44.1kHz.

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Runtime: 00:40. Format: Stereo WAV file. Sample Rate: 44.1kHz.

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INTRODUCTION

This commentary will explore the ways in which resistance presents in and impacts upon my work as a composer of electronic music in both live and studio mediums. Resistance as a term has been used within academic and critical music literature to refer to an immense variety of forms of musical expression intended to challenge or disrupt whatever an artist might consider to be dominant structures or established orders in relation to their work. Although I am loath to begin this discussion by citing the entry from Grove Music on the subject, it is noteworthy that the breadth of possible interpretations of the term is acknowledged within the first three sentences of the article: 'The term has been used so widely in popular and scholarly writing as to be synonymous with virtually any kind of oppositional thinking' (Pratt 2013). This idea of opposition is key as it locates resistance in the attitude of the creative individual; in intent that will not necessarily be easily read by others, dependent as it is upon the aesthetics of this artist and the context in which they locate themselves. Ray Pratt (2013), the author of the Grove entry, himself goes on to make this problem explicit: 'For the present discussion, action will be considered resistant if posed in oppositional terms—action in the form of personal behavior against [...] persons, governments, policies, situations, practices. Resistance in this sense is a psychological state and a form of political behavior. [...] The meaning invested in a particular musical form might, or might not, be decoded or understood by audiences or by those who perform a particular composition or imitate a particular performance or style.' Although Pratt acknowledges in this passage that resistance may take the form of opposition to situations and practices, which would seem to include the immense variety of small 'p' political understandings of resistance that exist within music and sound studies scholarship, his introductory paragraphs focus on the major capital 'P' Political artists and anthems of the Western recorded music canon (Bob Dylan, Bob Marley, Public Enemy, The Clash, Rage Against the Machine, etc.), before dedicating the bulk of his discussion to the resistant power of African American Blues within the cultural and racial context of United States of American history. While resistance to political oppression is a clear and obvious example of how resistance might exist in music, and it would be absurd to claim that the formulations of resistance that are the focus of my practice are in any way outside of politics or devoid of political significance, those looking for a version of resistance in the mould of Bob Dylan and Rage Against the Machine in the following pages will almost certainly be disappointed. The discussion of resistance hereafter draws more heavily on scholars and artists who locate their resistance in opposition to

musical orthodoxy and in their felt experiences of interacting with their instruments than in direct contemporary political provocation.

The forms of resistance in which I am interested can invariably be traced back to these understandings – resistance felt between that which might be considered traditionally 'musical' and that which might not, and resistance felt by performers interacting with technology that behaves in a somewhat indeterminate or unpredictable manner. The latter understanding will founded in the research of John Robert Ferguson and supported by accounts from other experimental musicians who perceive their technologies to be resistant. The former understanding stems from my personal and academic interests in the idea of noise and in Noise music.[1] For Paul Kohn (1997, p.8), 'the essential component in looking at music as resistance seems to be noise', and it is certainly true that the idea of noise is never too far away in discussions of resistance in sound studies scholarship. Kohn (1997, p.8) cites Jacques Attali's seminal text, *Noise: The Political Economy of Music*, in arguing that it was with '"the entry of noise into music"' that resistance in music began, before pointing, via Jean-Jacques Nattiez, to the Tristan Chord as a potential contender for this initial entry point, which '"at the time of its creation (1859), was nothing but 'noise,' in the sense that it was a sonorous configuration that could not be countenanced by contemporary harmonic conventions"'. Kohn's passage neatly brings together three key issues when it comes to discussing noise and resistance. Firstly, that resistance can be read primarily in aesthetic terms in relation to the codes of a given musical style or form of musical expression (the Tristan Chord is resistant to the rules of harmonic movement as accepted within the European Classical tradition of the time). This does not preclude political motivations for this resistance, nor does it preclude the resistance being read as a political act, it simply affirms that the opposition to convention may be apprehended without the political motivations for that opposition being made explicit by the creator. Secondly, that we perceive noise as resistant (or oppositional?) to the idea of music because it interferes with or disrupts the established codes of musical expression (which enables Nattiez to argue that the Tristan Chord could be read as noise). Thirdly, by invoking the idea of the Tristan Chord as noise, Kohn raises the more contentious issue of noise (and therefore resistance) as being

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[1] This discussion will include references to the musical genre known as 'Noise'. Noise as a genre is typically capitalised in order to distinguish it from 'noise' as a noun referring to non-musical sound, or referring to a form of sound material in music ('white noise'/'pink noise' etc.). For the sake of consistency and in order to avoid implying emphasis where none was intended, all musical genres have been capitalised throughout.

entirely 'in the ear of the beholder', simply due to the evident reality that few modern-day listeners are likely to hear the opening bars of Tristan and Isolde as noise rather than music.

The idea that noise and resistance are entirely subjective constructs recurs in the literature, often accompanied by the infamous quote from Noise artist Merzbow (Akita 1997b): 'If "Noise" means uncomfortable sound, then pop music is noise to me.' Paul Hegarty (2008, p.ix), in his book *Noise/Music: A History*, makes a similar assertion: 'noise is a negativity (it can never be defined positively, definitively and timelessly located), a resistance, but also defined by what society resists. [...] This can be internal to the piece, or in how it relates to institutional practices, musical conventions, society as a whole, or to anything else that seems to be in play against that noise'. Marie Thompson (2017, p.168) seeks to delimit her definition of Noise while allowing 'for a broad range of its manifestations – audible and inaudible – without reducing it to particular sonic characteristics (e.g. loudness, complexity) and without reaching the relativist end point where noise is anything to anyone. In keeping with this, noise music should not be reduced to the 'full noise' approach, particularly if noise is to be understood as a means of generating new sensations, of revealing 'hidden delights'. It may be that noise's capacity to generate new sonic sensations is more effective when a subtler approach is utilized, which allows noise's affective impact to come to the fore; such as when noise is used to perturb and warp generic styles and attributes.' While seeking to avoid the 'noise is in the ear of the beholder' conclusion, Thompson successfully accommodates a great variety of versions of noise, and continues the argument set out by Kohn and Hegarty that noise can be understood as oppositional, or at least subversive, when it comes to musical convention and generic attributes. Although she does not explicitly use the term 'resistant', we understand that noise, for Thompson, generates new sensations through a productively disruptive relationship with the old. Following on from Thompson, it is in creating a productively disruptive relationship with a set of musical conventions that I identify what I will henceforth call 'aesthetic resistance'. I will make the argument for this form of aesthetic resistance within the context of Noise music over the course of this commentary, and look to explain how I have incorporated it into my creative methodology as a composer.

Intimately entwined with this aesthetic resistance in my practice is what I am calling 'practical resistance'. My formulation of practical resistance is founded in the improvisational practices that will be shown to be central to Noise music culture, where value is placed on creating musical situations where the agency of human performers is reduced or compromised by the use of sound-making technologies that have a degree of unpredictability built into them.

John Robert Ferguson's 2013 article entitled *Imagined Agency: Technology, Unpredictability, and Ambiguity* will become a central text in this argument. In his analysis, Ferguson (2013, p.142) describes a musical practice in which he interacts with technologies whose behaviour exhibits various levels of indeterminacy and experiences their unpredictable behaviours as having an 'imagined dimension of resistance' to his intentions. This conception resonates with my own experience of working with such systems and seems to me a particularly appropriate way of understanding forms of performance with electronic systems where indeterminacy fosters a productively antagonistic relationship between the human performer and the musical situation in which they are placed. Both myself and Ferguson acknowledge that this understanding is based upon the performer's perception rather than something that can be objectively proven, and over the course of this commentary I will look to argue for the creative stimulation that may be drawn from perceiving indeterminate musical situations as resistant.

My decision to focus on these understandings of resistance arose from a continued questioning of the relationship between studio practice and live performance, especially in the case of experimental electronic music-making. While the relationship between these contexts for the creation of music poses questions in a variety of musical genres, the nature of these questions is particularly complex in the case of Experimental Electronica. I will further contextualise this term at a later point but will provide an initial explanation here insofar as it pertains to the preceding statement. The term 'Electronica' became prevalent in the 1990s as a broad generic term used to refer to popular forms of electronic music intended for private listening rather than music specifically designed for dancing in a club or rave context (Cox and Warner 2017c, p.519).[2] It is the distancing from dance-floor use that distinguishes Electronica from Electronic Dance Music (EDM) and its innumerable sub-genres (Techno, House, Trance, Drum 'n' Bass etc.), and this shift in focus defines various features of the music including, and with particular relevance to the following discussion, the relationships between musicians and the studio.[3] Electronica developed an aesthetic predicated upon the creation of studio art-

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[2] Unless otherwise specified, 'popular' will be used as short-hand for musics that are understood to follow the models of creation and distribution associated with Pop and Rock music, which occurs primarily outside of an institutional and academic context, as opposed to Institutional Electroacoustic Music (Demers 2010, see page 27) and Institutionally-supported Acoustic Music made in the European Classical tradition and following the latter's models of creation and distribution.

[3] I will use this original definition of 'EDM' for the duration of this commentary, given that it serves as a useful catch-all term for a variety of Electronic Music sub-genres intended for dancing, and conveniently delineates these musics from Electronica. I am aware that EDM has itself become a subgenre name for a specific form of EDM, associated with mainstream US Electronic Music: 'initially, electronic dance music was just a generic term for electronically produced repetitive dance music such as techno and house. Subsequently, the abbreviation came to stand for styles that became popular in the USA following David

works (usually in the form of albums or EPs) for private reception, diminishing the importance of public dance-floor reception that was typically foregrounded in contemporaneous forms of EDM. This led to recordings taking centre-stage in Electronica as the definitive expressions of an artist's work, and the studio became the primary site for the creation and evaluation of these works (as opposed to the club). I have chosen the term 'Experimental Electronica' in order to place emphasis on the genres and artists within Electronica that are commonly understood to be adopting an experimental approach by scholars and critics. This includes the notorious(-ly contentious) IDM subgenre and associated Warp record label and leads to the key artists I discuss in the contextualisation chapter: Holly Herndon, Oneohtrix Point Never (OPN), and Tim Hecker.[4] As later case-studies will demonstrate, when artists come to present their work in a live context the primacy of the studio art-work in Experimental Electronica raises questions concerning the relationship between studio and live practice, and this was equally true for me as someone who understands themselves to be working within this genre.

Before commencing my doctoral studies, my studio practice was firmly situated within this construction of Experimental Electronica, where I focused on developing recorded studio-based output for reception in .mp3 or .wav formats via online streaming. When I began presenting this work within the context of live performances I was confronted with the realisation that it sat uncomfortably in this new situation, straining under the weight of conventions and expectations germane to an environment for which it was never really intended. I became increasingly interested in the relationship between live and studio work, in their specific qualities and affordances, in what I found to be idiomatic means of musical expression within their respective forms. Such thoughts began to concern me when attending concerts and gigs by other artists working within the genre: What distinguishes this performance from their studio work? Are they referencing their recorded output? Does what I am witnessing bear any relation to the generative process behind their studio work, or is the live performance an entirely retroactive rendering of material generated in the studio? Attending to these questions were others

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Guetta's 2009 hit 'When Love Takes Over' and subsequent use of techno and trance elements by hip hop and R&B artists such as Akon, the Black Eyed Peas and Rihanna. A more specific branch of EDM is known as US dubstep or brostep and is currently headed by Skrillex [which is to say that it is now common to hear the music of Skrillex and similar artists referred to simply as 'EDM']' (Goldmann 2015a, pp.204-205).

[4] Throughout this discussion musicians will be referred to by their artist names rather than by their real names unless there is a specific reason to do otherwise. Some of these musicians work under multiple pseudonyms in multiple genres and might express differing views on a given topic depending on the context and the body of work that they are discussing. They are referred to by their artist names in order to indicate that they are speaking in relation to the work done under that pseudonym.

regarding the studio output of the artists. What makes this music so well-suited to the recorded medium? What about this music speaks of the studio tools used to create it? Are these artists trying to evoke a live performance of any kind in their recordings? Of course, the motivation for asking these questions of other artists' work stems from me asking them of myself and my own practice, as I grappled with my musical ambitions and what I wanted to achieve as a composer. This research is a response to these concerns. It outlines an approach to developing a live practice for the production of Experimental Electronica which aspires to be idiomatic to the live context whilst maintaining points of commonality with, and feeding into, what aspires to be an idiomatic studio practice. Above all, it asks the question of how the relationship between these two mediums can be explored productively as part of a holistic creative practice, and what role resistance can have in enlivening that practice.

Every musician will have their own particular way of responding to these issues depending upon their creative and cultural background, and views will differ as to the extent to which they are even important. I am no different in this regard, and my musical background and interests inform my approach and give rise to various specificities and peculiarities of this project. The particular approach to live music that I take, what I want from studio technologies and the studio environment, and where and how I perceive resistance as existing in my practice are by no means universal but are based in the musical preferences, ways of thinking and contexts for music-making with which I have grown up and lived. In the contextualisation chapter I will describe how my interest in working in Experimental Electronica began with a desire to reconcile the formal and popular aspects of my musical life, having kept them separate throughout my adolescence and early adulthood. We will see how a formal musical training from childhood piano lessons through undergraduate music studies was primarily associated with Western Art Music and forms of experimentalism within that tradition, while a life-long love of playing and listening to Rock, Folk and other forms of Pop music remained extra-curricular. Experimental Electronica represented to me an opportunity to explore interests in tightly-controlled process musics and extended harmony inherited from my formal musical training within a non-classical context, while the discovery of Glitch and Noise music made me aware of the extent to which radical experimentalism could exist outside of an institutional context. Having developed a way of making studio work in Experimental Electronica that, for me, satisfactorily embraced all of these elements, the aforementioned issue of its live presentation remained the primary aspect with which I struggled to reconcile my musical aesthetics. My preferences regarding live performance were inherited from Rock and Classical music and I therefore retained an interest in the

ways in which musicians interacted with their instruments and one another. This is the context in which I found myself asking the questions in the preceding paragraph of myself and other Experimental Electronica musicians, and I will respond to them here by way of outlining my primary motivations in this research:

1. *Do I want to distinguish live performances from studio work?* Yes. As a musician working in Experimental Electronica, I find the straightforward presentation of studio work within a live setting to be generally dissatisfactory. I have never found the commonplace feature of video projections to be a particularly interesting addition to or replacement for the interactions of musicians and instruments in any genre of music. It is, of course, a perfectly acceptable aesthetic choice for Electronic musicians to 'just hit space bar' and allow an entirely pre-programmed performance to take place with no further intervention from themselves, but this is not how I, personally, want to explore the possibilities of live performance. I seek to ensure that the sonic elements of live performance are related to the interactions between the human performers, their equipment and the space, factors that are all different in a studio setting, and it would follow that the live performances naturally differ from the studio work.

2. *Do I want to reference my recorded output in live performances?* Yes. If I am familiar with an artist's studio recordings in advance of a live show, part of the pleasure of attending is in hearing how the work is adapted for a live context. I also find the space between studio and live practice to be one of creative potential, and reworking a track for live performance can provide a unique and thought-provoking experience for both artists and audiences.

3. *Do I want live performances to bear any relation to the generative process behind my studio work, or should live performances be an entirely retroactive rendering of material generated in the studio?* Beyond the creative potential of developing or reimagining studio work, I find performances to be an opportunity to invite audiences into my creative process, for them to see how I interact with the equipment I use to make studio recordings, and to explore material before taking it into the studio. In fact, in my experience, live performance with electronics (particularly within an improvised context) often becomes about the exploration of equipment and, as I become more familiar with my equipment, desire for control gives way to trust that through exploring the equipment new expressions of familiar material will emerge. Whatever the specific stages of the evolution of a piece, I consistently find that

studio practices inform live performances *and vice versa*, so it is important to maintain and explore that dynamic and not simply seek to emulate one form in the context of another.

4. *What makes Experimental Electronica so well-suited to the recorded medium?* Unlike many genres of music, the context for the production of Experimental Electronica is remarkably close to its context for reception. This music is primarily produced in home studios which are private, domestic settings, and is intended for playback in these environments. This means that producers are evaluating the music in a situation that is highly comparable to that of their intended listeners, rather than evaluating how well it might function in a club context (as is the case with EDM sub-genres) or working to translate pre-existing live performances into pieces of fixed-media work (as is the presumed, though not always actual, case in Rock and Folk genres). I consider the environmental similarities between the contexts for production and perception to be one of the great advantages afforded to producers of Experimental Electronica, allowing me to make compositional decisions predicated upon appropriateness to the personal listening environment.

5. *Do I want this music to speak of the studio tools used to create it?* Modern Digital Audio Workstations (DAWs) allow for the meticulous control of sound at every level. Based on my pre-existing preferences for complex, tightly-controlled process musics, the studio environment to me represents an opportunity to realise extremely detailed, tightly-wrought recorded music. When I go on to consider the work of other artists within the field, the intervention of studio tools in realising various aspects of their precisely-constructed studio compositions is consistently transparent, and this is a quality I aspire to in my own work.

6. *Am I trying to evoke a live performance of any kind in my recordings?* Following on from question 5, the artists I admire in this field take advantage of studio technology to create sound worlds that bear little to no relation to an acoustic reality and, even when using acoustic instruments and sound sources, work to abstract the sound from its acoustic origins. I take a similar approach in my own practice; even when reworking live performances of pieces into a studio work, I seek to create a sonic context for those sounds that is idiomatic to the studio environment. This is not to say that all studio work bears no relation to its live performance counterpart, but that the studio work is never a simple 'reprise' of the live material; the studio compositions take inspiration from and draw upon sonic and conceptual discoveries made within the live environment, and look for interesting new contexts and possibilities for these discoveries in the recorded format.

As a great deal of the practice detailed in this commentary concerns itself with the relationship between live and studio practice, I have chosen the terms 'liveness' and 'studioness' in order to discuss the qualities and affordances of their respective environments. I will begin with these terms before moving on to other key concepts relating to this project.

Liveness and Studioness

Whenever a person sets out to discuss issues surrounding liveness in the era of electronically reproducible sound (Mowitt 1987), it is necessary to grapple with what even constitutes a musical performance. Let us take it as a given that electronic devices for the playback of recorded sound, be they Hi-Fi systems, radios, laptop computers or multi-channel sound diffusion systems, perform when they play music. Indeed, a great deal of Institutional Electroacoustic Music (a term used by Joanna Demers (2010, p.6) to refer to experimental electronic music predominantly performed in Classical music/arts venues and which 'functions thanks to the support of governments, private industry, and educational centers like universities') exists only in the 'fixed-media' format of recorded sound and thus relies upon an understanding between composers and listeners that playback through speakers at home constitutes a musical performance (Wishart 1996; Croft 2007; Emmerson 2007; Demers 2010). However, unless otherwise specified, a 'live performance' in this discussion will refer to a situation where musicians give a real-time 'public rendering of music' (Demers 2010, p.41). This definition is sufficiently broad to not be disturbed by the various temporally and spatially dislocated ways in which a public might receive live performances in the electronically-mediated present day, which might include: standing across the room from a Folk session in a pub; live-streaming a Jazz trio on Instagram; listening to a live RnB album such as *James Brown Live at the Apollo* (1963); watching a television broadcast of a Pop artist performing at the Glastonbury Music Festival; sitting in a concert hall to listen to the multi-channel diffusion of a fixed-media piece of Institutional Electroacoustic Music; watching a YouTube video of a DJ performing a set to a film crew with no audience physically present. In all of these scenarios a public attends to a real-time rendering of music by musicians, which is to say they attend to a live performance.

In the section of the contextualisation dedicated to liveness, I will look at how my conception of live performance departs from Peggy Phelan's (2005) ontological definition, which rests upon spatial and temporal co-presence of audience and performer coupled with an absence of recording and/or documentation. The argument Phelan makes is founded in her aesthetics as a performance artist and is constructed in order to affirm the political power of

Performance Art as a genre. Phelan's definition has become increasingly difficult to maintain as 'mediatization' (to use Philip Auslander's (2008) term) has infiltrated practically every aspect of how we receive and engage with artistic performances. I prefer Auslander's (2012, p.5) understanding of live performance as 'historically contingent', which is to say both that it arose out of a practical requirement to distinguish live performance from recorded sound, and that its apprehension is contingent on the historical conventions that have grown up around various forms of live performance. The 'liveness' of a performance is therefore found not only in the performance's status as a real-time public rendering of music, but also in how this public rendering is situated within a context of live performance traditions, traditions that will be different for an acoustic string quartet concert in a church than they would be for a live Hip Hop performance on a late-night television show. This understanding allows liveness to be more than one thing, and for new forms of liveness to emerge, according to social, technological and cultural contexts. Although this historical contingency gives rise to multiple forms of liveness, I will argue that musicians can aspire to a 'condition of liveness' in their performances through demonstrable intent to take advantage of the affordances of the live performance medium in which they are working. For the aforementioned string quartet, this might be playing more demonstratively, using bodily movement to communicate the expressive intent of the music, or changing the performance in order to accommodate room acoustics or some other factor. For a rapper, this might be acknowledging the cameras (or pointedly not doing so) or re-working a track for this particular setting.[5] As discussed above, my own preference is for live performances that make use of the interactive dynamics between performers and their sound-making equipment. This begins with my background in Rock and Classical traditions, but also stems from my more recent experiences with Noise music in a live context, which count among the most exhilarating live performances of electronic music that I have witnessed.

Live Noise depends upon practically resistant improvisational practices and an understanding among performers and audiences that there is something to see (and feel) in order to cultivate its condition of liveness. Daniel Wilson's (2016, p.124) article on liveness in Japanese Noise recounts the classic Noise-gig scenario of fans in a small, crowded space 'utilis[ing] their physical proximity to closely follow what performers are doing on stage,' while audience members in Klett and Gerber's (2014, pp.284-285) study of the North American scene stand

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[5] In this example, I am thinking of Kanye West and Charlie Wilson's performance of 'New Slaves' for the television show, *Later... with Jools Holland*, which has been reworked to make use of the dramatic potential of this live performance setting (BBC Music 2020).

'raptly engaged … [around] the fluid and nominally defined stage,' with performers '"pre-fer[ring] to play in a small dive where the audience is a couple of feet away from you and you're completely obscured from anybody who's [not] right in front of you; as long as it's a situation where you just sort of ignore the divide between artist and audience." [quote from Taylor, a Noise musician].' Marc-Antoine Dion's (2015) study of Noise scenes in Antwerp, Brussels and Ghent attests to the importance of live performance and improvisation in Noise, while Sarah Benhaïm (2019, p.28) identifies the indeterminate properties of performers' set-ups as '… precious in reimagining the gesture/instrument relationship as a gesture/system relationship, one in which the particular interactions of electronic devices, feedback, volume and sonic accidents contribute to the relativisation of the traditional notion of a musician as in control of their instrument.'[6] As will be explained in more detail in the contextualisation chapter, relationships between performers and their equipment are essential to the construction of liveness in Noise, and live performance is perhaps the central pillar of Noise culture.

It is arguably unsurprising that my background left me predisposed to appreciate Noise, as many of the origin stories of Noise (to be discussed in the contextualisation) trace its roots to Rock sub-genres such as Psychedelic and Experimental Rock, No-Wave, Industrial and Punk, and Noise will nowadays often be promoted and categorized alongside Experimental and 'Harsh' Metal in record stores, the music press and at festivals. As Frith (2012) points out, '[…] in Rock […] the ideal musical experience is the live concert and […] early rock critics judged recordings against a band's 'authentic' (that is, live) sound.' For many, Noise is '"just a kind of extreme rock music,"' (Novak 2013, p.118), and it builds upon many of the Rock assumptions articulated by Frith regarding the authenticity of live performance and live performance's centrality to its genre identity. In drawing inspiration from the live performance practices of Noise and placing them in the context of Experimental Electronica, which has live performance origins in EDM and DJ culture and for which live performance continues to pose problems regarding presentation and communication, I am looking for a live performance aesthetic more reflective of my background and of the performance conventions that communicate to me most effectively as listener and audience member.

Correlating with a condition of liveness is one of studioness, which I understand to exist in music that makes appreciable use of the unique affordances of the studio environment. In the

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[6] Free translation by author: 'Nous verrons en quoi parler de « dispositif » nous est précieux pour re-penser la relation geste/instrument au profit d'une relation geste/cycle, à partir d'une forme de partici-pation particulière de l'électronique, du feedback, du volume et des accidents sonores qui contribue à relativiser la posture habituelle de « contrôle » instrumental du musicien.'

section dedicated to studioness in the contextualisation, I will examine the references to the term extant both inside and outside of musical scholarship. Outside of music, in fields such as theatre and architecture, the term tends to appear in reference to the studio as a space for collaborative creative work that is prized for the social and creative bonds it fosters. Within music, however, it is almost exclusively invoked in relation to liveness, referencing both the tools and techniques associated with the studio such as click tracks, MIDI programming, and looping, and its more general raison d'être of creating a fixed-media piece of art within a highly-controlled environment. The comparison with liveness is often made pejoratively, where liveness promotes free, spontaneous creativity and studioness promotes a calculated, cold, rationalisation of that creativity. As with most electronic musicians, however, I perceive the control and precision of the studio as a space of creative potential, where one can explore the available musical possibilities and better realise certain kinds of creative goals, and I therefore seek to frame studioness as a positive quality.

As with the abovementioned condition of liveness, I believe that artists can work to cultivate a 'condition of studioness' through apprehensible commitment to the affordances of the studio environment. In the previous paragraph I mentioned certain techniques and tools that are associated with studioness, and foregrounding such tools in a track is likely to give rise to this condition. In the contextualisation chapter, we will look at how OPN's tracks often begin as artistic responses to the idiosyncrasies of particular studio tools, tools that he positions as characters within narrative constructions that draw upon the history of computer and internet culture. In particular, the track 'Sticky Drama' will be examined, and the *Chipspeech* plugin that inspired it, which sonifies written text into individual syllables for pitch and durational transformation within a DAW (Lopatin 2016). We will also see how Holly Herndon chops up, reassembles, and transforms her voice in the track 'Home', exploring the spaces between naturalistic and intensely synthetic (Herndon 2019a). In fact, what all of the Experimental Electronica artists discussed in the contextualisation demonstrate to varying degrees is; the less the acoustics of a track resemble a physical acoustical space, the greater the condition of studioness. Tim Hecker uses the studio to advance his project of abstracting sounds from their real-world sources and obscuring the divide between analogue and digital sounds, both of which rely upon denying the visual corollary to the generation of those sounds, and we will examine how he employs studio technologies to distort the traditional sonic image of the piano in his track 'Black Refraction' (Hecker 2016b). He also uses these technologies to engineer high levels of precision and control in his music, pursuing a more 'robust... ecstatic' music through ever greater

levels of refinement (Hecker 2012a). What connects these three artists – beyond the funda-mentality of studio tools to their working practice – is the extent to which their work speaks of a studio perspective. All of them create electronic music that bears no relationship to a physical reality; music in which sound objects move and transform in virtual space. Their work is also marked by a sense that authorial control is intervening at every moment, shaping and directing the sounds from their microscopic spectral qualities to their precise placement within the tex-tural and structural makeup of the music. As Lashua and Thompson (2016, p.85) observe, 'studios are sites that invite intense attention to music-making, where [...] music is decon-structed and reconstructed with immense purpose and control.' This level of microscopic and macroscopic control is, to me, one of the greatest affordances of the studio environment, and works that exhibit this quality, alongside the use of sound transformations and tools that are clearly germane to the studio environment, are more likely to express a condition of studioness.

The kinds of creativity the studio encourages are of course a consequence of its intended function: to produce a recorded sound object. The reality that the technologies and processes of the studio have been designed and refined in order to better fulfil this purpose is not inci-dental in how we hear studioness (understanding, of course, the intense subjectivity of what 'better' might mean in this context). Experimental Electronica proceeds from the assumption that the records it produces are for domestic and/or private listening, and this impacts on the ways in which studioness is expressed in the music. Unlike the Rock and Jazz musics that we will see discussed in the existing literature on studioness, the assumption is not that Experi-mental Electronica exists in a live context first and is then transformed into a studio context. Rather, since its beginnings, Experimental Electronica has been understood to originate in stu-dios (regardless of whether or not these studios exist only virtually on a laptop or tablet) and is intended for recorded playback in a private listening environment. This is different again to the social, public context of a club where EDM is intended to be heard, despite EDM also originat-ing in a studio. This means, not only has apprehensible studioness always been an important part of the aesthetics of Experimental Electronica; its expression of this studioness is also de-termined by the private listening context for which it is intended.

Experimental Electronica

It is often observed that electronic music, perhaps more so than any other form of mu-sic, has spawned a superabundance of genres and subgenres, identified through distinctions that may, to an outsider, seem perplexing and purposefully obtuse (Reynolds 2013, p.7). In his

article *Genres, Subgenres, Sub-Subgenres and More: Musical and Social Differentiation Within Electronic/Dance Music Communities*, Kembrew McLeod (2001, p.60) offers a 100-name extract from a list of 300 subgenre names that he collated from music magazines and CDs published between the years 1998 and 1999 in order to make this point. As established earlier, the term 'Electronica' became prevalent in the 1990s as a broad metagenre used to refer to popular forms of electronic music intended for home listening (Cox and Warner 2017c, p.519). Its subgenres might include so-called Intelligent Dance Music (IDM), Art-Electronica, Glitch, Microsound, Ambient, New-Age, and many others (Reynolds pp.191-208, pp.473-496).

As Electronica is such a broad genre name, I have chosen to use the qualifier 'Experimental' in order to limit the scope of the term. Demers (2010, p.9) points out that the feature most engrained in experimental musics of all kinds is a rhetoric of distinction from a perceived mainstream, coupled with a willful desire to depart from certain conventions associated with their own genres whilst retaining others. For instance, Institutional Electronic Music distinguishes itself from mainstream Classical music culture and, to a large extent, the experimental and avant-garde contemporary composers working within that tradition by freeing itself from the dictates of 'lattice-based' notational systems and acoustic instrumental performance (Wishart 1996), though the extent to which composers completely abandon these structures is a matter of personal preference. However, it maintains its relationship to this tradition through institutional affiliations with universities and state funding bodies and through a set of performance conventions inherited from Classical music (audiences silently seated in concert halls). It also distinguishes itself from Electronica through a perceived avoidance of the sonic signifiers (tonal harmony, 'beats', use of synthesisers as imitations of acoustic instruments) and performance settings (bars, clubs, gig venues) of Popular music. Cox and Warner (2017c), Emmerson (2007) and Demers (2010) all use 'Electronica' as a term for experimental electronic music intended for home listening that retains aesthetic ties to and follows the models of production and dissemination of what are perceived to be more 'popular' dance forms of electronic music (i.e. EDM). Whilst the departure from the dancefloor enacted by the emergence of Electronica in the 1990s might be considered to be sufficiently divergent from the perceived mainstream to classify all Electronica as experimental, I have found its usage as a genre name by fans and the music press to be so broad as to be insufficient in this context. Following on from Hofer (2017), I chose to describe my work and that of OPN, Holly Herndon and Tim Hecker as 'Experimental Electronica' in order to distinguish it from forms of Electronica that certainly aren't

intended for dancefloor use but nor are they associated with an historically experimental tradition by artists, critics and fans.

One of the most well-established subgenres of Electronica is IDM, a term that became prevalent in the early 1990s and is strongly associated with the Warp record label and artists such as Aphex Twin, Autechre, Squarepusher, Amon Tobin, Luke Vibert, Venetian Snares and Boards of Canada. Although the 'Intelligent' qualifier has been strenuously resisted by artists working in this genre, the surface complexity prevalent in the music and its orientation towards supposedly cerebral rather than corporeal modes of reception (home listening rather than dancing) made the IDM label difficult to shift. These features also made it more amenable to widespread academic attention and acceptance within early scholarly accounts of popular electronic music than EDM genres such as Rave and Techno (Cox and Warner 2017c; Toop 1995; Witts 1995). Many of the features established or valorised by IDM continue to be prevalent in Experimental Electronica. These include a tendency towards surface complexity, high levels of microscopic and macroscopic detail borne out of studio tools, and an orientation away from the dance towards home listening. They also include a deepening relationship with academia, as it has become increasingly common for Experimental Electronica musicians to have undertaken formal music lessons as children and teenagers and studied in academic music departments where popular forms of electronic music are accepted and researched. Consequently, many artists working in Experimental Electronica maintain close ties to the academic music community and draw upon elements of their formal musical training. For instance, Holly Herndon has written music for choirs, instrumental ensembles and electronics since her Masters studies in 2008 and openly discusses the influence of notated choral music upon her work (Herndon 2015; Herndon 2019c), while Warp actively emphasise the formal training of one of their major Experimental Electronica artists, Kelly Moran, in their promotional materials.[7] In terms of academic writing and research, Tim Hecker and Holly Herndon, the two artists whose work Hofer (2017) examines in her article *Screenness in Experimental Electronica Performances*, both hold PhDs in music. Herndon also contributed an article on her working practices to the 2nd edition

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[7] 'Moran's horizonless vision is partially owed to extensive academic rigour. Shortly after earning her B.M. in piano performance, sound engineering, and composition at the University of Michigan, the artist enrolled as a fellow in University of California, Irvine's Integrated Composition, Improvisation, and Technology MFA program in 2010. It was there that she finally fused her lifelong loves of dance and composition, perfecting the art of music in motion. Consider her master's thesis — a series of electro-acoustic chamber compositions penned to accompany modern dance performances — a precursor to Ultraviolet's fluid, dance-ready DNA, inherent in its arrangements' (Warp n.d.). Taken from the Warp website's artist page for Kelly Moran.

of the seminal collection of essays on experimental electronic music, *Audio Culture: Readings in Modern Music* (Cox and Warner 2017), while Daniel Lopatin (OPN) was consulted in preparation of that same edition.

As will be discussed in detail in the contextualisation, a consequence of the move towards home listening in Electronica was a shift in the status of recordings within the genre. Before Electronica, and in particular IDM, recordings in EDM were predominantly used as material for mixes by DJs in a dancefloor setting. The IDM aesthetic moved much closer to considering recordings as static art-objects for aesthetic contemplation via the cerebral modes of listening associated with the home (Reynolds 2013, pp.191-208), a shift in perspective that located the studio and fixed-media forms of dissemination such as CDs and records at the centre of the genre (a space the dancefloor had previously occupied). This perspective remains in Experimental Electronica, and in the contextualisation I examine what the centrality of recordings to the genre means for its performance practices. As Experimental Electronica artists accord such value to the recorded sound object, it is commonplace for the fixed-media version of an artist's work to be considered the 'definitive' or 'idealised' realisation. Auslander (2008, pp.74-75) argues that this has long been the case in Rock, stating that 'the primary object in rock music as an aesthetic form is the recording' and cites Gracyk (1996, cited in Auslander 2008, p.75) to assert that 'studio recordings have become the standard for judging live performances [...] musicians are usually re-creating music [in live performances], not making it'. It is significant, though, that the romantic ideal of Rock is that it is created by bands in practice rooms and trialled in a live setting before being recorded, even if this was never the case and the whole compositional process took place in the studio. Therefore, presenting studio tracks live in a Rock context serves to validate the studio recording and the band as capable of writing and playing the music on the record (Auslander 2008). Doing so no longer poses an aesthetic or ideological problem (in fact, it serves to reaffirm Rock's aesthetics and ideologies).[8] However, this was not always the case. Butler (2018) and Frith (2012) have convincingly argued that, during the mid-to-late 1960s, the studio was a contender to be the primary site of Rock's authenticity, before the aesthetics of Rock settled into the current model where the record is the primary object in that it is how the majority of fans regularly listen to the music, yet notions of authenticity (musicians as capable of writing and performing the music) derive from live

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[8] Auslander (2008, pp.73-127) devotes an entire chapter of *Liveness: Performance in a Mediatized Culture* to the construction of Rock authenticity through the interplay of recordings, live performances, televised performances and music videos.

performance. Both Butler and Frith also acknowledge that, whatever the perception that drives the aesthetics, the commonplace reality is that the creative process in Rock is multi-sited and involves exchange between studio work and live performance. In the case of Experimental Electronica, however, the dominant assumption is that the process of creation for its primary texts (recordings) begins and ends in the studio, and so the template of a (even hypothetical) live performance origin is missing, and the question of why one would even recreate the record in a live setting is more fraught. Yet, as I will show in the contextualisation, the recreation of studio work remains the dominant mode of live performance in Experimental Electronica. To describe this scenario, where live performances become beholden to studio recordings as a template or model for recreation in a live setting, and in reference to Auslander, Butler and Frith, I will use the phrase 'album as primary text' for the duration of this commentary.

While I might have chosen many Experimental Electronica artists such as Laurel Halo, Kelly Moran, Andy Stott, Actress, Arca or Burial, or IDM mainstays such as Aphex Twin, Squarepusher or Venetian Snares as focal points for discussion in the contextualisation, the artists chosen had two main features in common: they all have contrasting live practices that relate to their studio work in interesting ways, and interviews exist in which they discuss the relationship between their live practice and studio work; all three released albums in the mid-2010s that directly stimulated and inspired my thoughts regarding liveness and studioness. To have chosen other artists would have been disingenuous as they would not have impacted upon the development of this portfolio as significantly, nor would their live practices have been as relevant or interesting to this discussion. The same factors apply to three of the Noise artists discussed: Jefre Cantu-Ledesma, Merzbow and Prurient. However, the fourth Noise artist case study, Kazumoto Endo, is an outlier in the sense that he has released very few studio albums, with a twenty-year gap between his seminal *While You Were Out* (released in 1999), and his next fully-fledged solo album, *Keiyo*, in 2019.[9] I will therefore focus primarily on the former, as *Keiyo* was released only during the final stages of this research. English-language interviews with Endo are also extremely difficult to find, and therefore the critical discussion of his work will focus upon existing English-language scholarship and criticism alongside the musical texts of studio albums and live performance footage.

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[9] According to Discogs (n.d.), intervening releases include four collaborative albums, four collaborative EPs, a live album and the very limited release full-length *Brick and Mortar* (2003), with no releases between 2003 and 2011. I have been unable to find an explanation in English-language sources for Endo's lack of output during this period beyond references to his aesthetic dissatisfaction with recorded Noise (discussed in the artist case study in the contextualisation).

Noise has grown into a vast and varied musical genre since its earliest exponents began producing music seemingly independently in North America, Europe and Japan in the late 1970s. In each location, Noise appeared to spring up as the logical continuation of increasingly experimental and extreme tendencies in local underground music scenes, whether originating in Punk, Psychedelic Rock, No Wave or Industrial music. The interplay of genre influences within a given local scene tended to give early Noise a particular 'flavour' reflecting its place of origin, which quickly gave way to a transnational cultural exchange facilitated by international mailing networks over the course of the 1980s. A common thread, even in its infancy, was Noise's adoption of an oppositional stance towards orthodoxies and conventions of various kinds. This has included, for certain practitioners and commentators, opposition to the idea of music itself and the consequent designation of Noise as a form of anti-music (Hegarty 2008; Hutson 2015; Novak 2013; Wilson 2015). These foundational aesthetics continue to resonate throughout the culture today, although few maintain that Noise is not a form of music: 'At its origins, Noise Music genuinely aspired to noise. Its practitioners sought to create a form in total opposition to music. What followed, however, was a three-decades long history in which the noisiness of Noise became codified, shed its meaninglessness, and solidified into an established, agreed-upon musical language' (Hutson 2015, p.86). In the contextualisation chapter, I will provide an overview of this history, highlighting how resistance to orthodoxy and convention, particularly with regard to traditional ideas of music and musicality, remained a prominent aspect of Noise even while its sounds and practices formed into a recognisable genre. This development forms the basis of what I identify as aesthetic resistance, which is to say a resistance to what are perceived to be 'traditional' musical features, techniques and approaches.

As stated above, I consider my studio output to exist in the world of Experimental Electronica but, before commencing this research in 2015, I found that this output did not translate satisfactorily into the arena of live performance. It has also been alluded to that the 'album as primary text' status of much recorded Experimental Electronica might inform expectations of live performance within this genre. Prior to 2015, Noise existed as part of an imaginary electronic music scene to me, predominantly based in Japan and the USA, and so my experience of it had always been through scholarship and recordings. Moving to London to begin my doctoral studies made Noise gigs more readily available to me and so I began seeking out performances by artists visiting London. During this time, I have seen Keiji Haino, Aaron Dilloway and

Merzbow perform as solo artists and as members of ensembles, and their performances rank among the most exhilarating live performances of music I have ever experienced. In their article, *The Meaning of Indeterminacy: Noise Music as Performance*, Joseph Klett and Alison Gerber (2014, p.287) argue for 'Noise as founded in live performance', and it is certainly a genre that understands live performance as central to its aesthetic in a way that is not necessarily true of other electronic music genres. Noise relies upon the affordances of liveness, not only to enact the extremely loud volumes that are a notorious hallmark of its performance, but also to direct attention towards the relationship between a performer and their technology; a relationship characterised by mutual antagonism. As will be discussed at length in the contextualisation, Noise performances make use of indeterminacy in order to cultivate an appreciation of their liveness and this entails a perceived adversarial relationship between performers and their sound-making devices (Klett and Gerber 2014; Novak 2013).

My experience of Noise performance led me to seek out a methodology that would incorporate aspects of its performance practice into my own within Experimental Electronica. The intention was to move towards a holistic compositional approach that would fold my live and studio practices into a fundamentally interdependent relationship, drawing upon the liveness I experienced in Noise performance in order to invigorate the process. I found that the prevalence of references to indeterminate and antagonistic relationships with technology in Noise scholarship resonated with concepts of resistance in John Robert Ferguson's (2013) aforementioned account of his musical practice: *Imagined Agency: Technology, Unpredictability, and Ambiguity*. In his analysis, Ferguson describes his experience with technologies embodying a high level of indeterminacy as having an imagined resistance, through which he experiences their unpredictable behaviours as appearing wilfully contrary or contingent to his intentions. Although he acknowledges that this is not the reality and is in fact based upon perception, he argues for the creative stimulation found in the felt experience of performers who perceive indeterminate musical situations as resistant. Ferguson's conception of resistance subsequently became central to my formulation of liveness in Noise, and I have chosen to distinguish this form of resistance predicated upon interactions with indeterminate musical situations as 'practical resistance'.

It is necessary to emphasise the role of perception in the apprehension of practical resistance, as indeterminacy only appears as resistant to a performer when it makes the realisation of their musical objectives difficult. The precise nature of those objectives is inevitably dependent upon the aesthetic preferences of the performer, and on their ideas of what they want to

achieve in the performance in question. My musical background, and in particular my Classical training, instilled in me an interest in contrapuntal harmonic structures and long-form developmental forms of music that persists in my present composition and performance practices. A great deal of the practical resistance I perceive in my work arises from the obstacles presented by indeterminacy to realising pre-conceived harmonic and contrapuntal structures, and therefore conceptions of aesthetic and practical resistance are extremely tightly entwined. The specific expression of this in my own work is more or less foreign within a Noise context, and this is not inherently problematic as I consider my work to exist primarily within the genre of Experimental Electronica, but there are aspects of Noise that have profoundly informed the development of this portfolio. The construction of resistant performance environments generally and the relationship between performers and their equipment are notable factors, while the role of feedback in the Spectra material is perhaps the most transparent connection. However, the aesthetic positioning of Noise as resistant to the traditional materials of music has also been informative in developing systems that work to subvert my impulses regarding the use of harmony and rhythm. All of the Noise artists that I discuss in the case-studies section of the contextualisation productively explore this aesthetically resistant relationship in their work, whether it is in Merzbow's disciplined avoidance of traditionally-conceived notions of musical development, rhythm, pitch and melody, or through the deliberate juxtaposition of these elements with noise in order to identify an aesthetic 'other' (Kazumoto Endo), or in finding emotional expressivity in such juxtapositions (Prurient and Jefre-Cantu Ledesma).

This understanding of aesthetic resistance resonates with Marie Thompson's (2017) previously-recounted construction of noise itself, where noise is not reduced to any particular sonic profile or context but is rather defined by how it functions as a range of techniques employed to productively disturb conventional aspects of music-making. In the case of the music submitted as part of this portfolio, I employ this understanding of aesthetic resistance to develop compositional schemes designed perturb and warp the musical conventions that I typically adhere to in my music (which are, of course, a product of my background). One of the primary mechanisms in this approach is the construction of live performance environments designed to disrupt the straightforward realisation of such musical conventions.

Methodological Decisions

The portfolio of compositions that this commentary serves to accompany is comprised of two projects entitled 'Spectra' and 'Slow Loris'. Each project presents studio output in the

form of an EP (the *Striking Distance EP* and the *Adjunct EP*, respectively) and live output in the form of video recordings ('Spectra Live', 'Insight Informed' (live) and 'Charm' (live)) and live streams ('Charm' (live stream), 'Insight Informed' (live stream), 'Spectra Live 2' and 'Spectra Live 3').[10] These represent studio and live renderings of the same fundamental material. 'Spectra Live' is a structured improvisation that transitions from microtonal Noise to a tonal harmonic progression and exists as an exploration of the relationship between those elements. The *Striking Distance EP* follows the same trajectory yet seeks to do so in a manner that exhibits a profound studioness in its execution. 'Insight Informed' (live) and 'Charm' (live) are improvisations within the Slow Loris Performance Environment, an environment in which the control of various parameters for the generation of algorithmic counterpoint is distributed between two human performers. The *Adjunct EP* studio versions of these pieces isolate idiosyncratic rhythmic and harmonic moments from recordings of the live versions and explore the tensions arising from their transition into a DAW environment. The live streams represent alternative iterations of the live output, delivered solo as 'Spectra' within the context of the COVID-19 pandemic.

The decision to choose different artist pseudonyms for the two projects was an acknowledgement of the convention within both Noise and Experimental Electronica that artists often work under multiple pseudonyms in order to recognise the differing contexts and aesthetics of their various projects. As I wanted to approach the theme of resistance from two aesthetically and methodologically distinct positions, the pseudonyms offered an opportunity to make that distinction explicit. Although I understand the Spectra project as a whole to exist within the genre of Experimental Electronica, its live practice is demonstrably indebted to Noise music, whereas the Slow Loris project more directly employs and aesthetically draws upon the instruments and conventions of Experimental Electronica. The pseudonyms also serve the more practical purpose of drawing a distinction between myself as a solo artist (Spectra) and myself working with a percussionist collaborator (Slow Loris).

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[10] 'Spectra Live' is a title given to a live improvisation (and its live-streamed counterparts) that, as will be explained in detail in the methodology chapter, draws upon and explores material present in various tracks on the *Striking Distance EP*. 'Insight Informed' (live) and 'Charm' (live), however, are live improvisations corresponding to individual studio tracks with the same titles in the *Adjunct EP*. For this reason, the live and studio versions of these tracks are distinguished in this written commentary using the words 'live' or 'studio', appearing in parentheses immediately following the title. This is because the words 'live' and 'studio' do not themselves form part of the track titles, whereas 'live' does in the case of 'Spectra Live'.

As will be demonstrated in the methodology, aesthetic resistance in both the Slow Loris and Spectra projects often presents as a tension between more 'traditional' musical materials, such as tonal harmonic progressions and repetitive rhythmic structures, and atonal, textural, noise-based materials. In order to cultivate such situations, it was necessary to structure some of the improvisations so that these ideas could be properly explored. This might strike some readers as contrary to a Noise aesthetic, for whom live Noise is entirely dependent upon totally indeterminate, free improvisation. However, this is not reflective of the diversity of practice within Noise, and Benhaïm ('Whilst there exist forms of semi-composed noise which consist of pre-recording particular loops, noting down a few 'patches' on paper which enable performers to find certain sounds on a synthesiser, or preparing some cassettes so that the contents is known in advance, the majority of performances are, in reality, improvised' (Benhaïm 2019, p.224))[11], Novak ('[Noise] is often unrelentingly harsh, but also ambient and dynamic; it can be freely played or deliberately prepared, edited, and through-composed' (Novak 2013, p.7)) and Clemence ('Within noise and power electronics, though, a successful performance needn't always rely on meticulous planning, with pre-gig preparation ranging from the thorough to, in some cases, the non-existent' (Clemence 2016 , p.78)) all acknowledge the predominance of improvisation in Noise performance, but also that the structural context for improvisation can be anything from rigorously strict and pre-determined to completely free and emergent in performance, and still be considered absolutely valid. This is consistent with the performance practices of the figures I deal with in the contextualisation (Merzbow, Prurient and Jefre Cantu-Ledesma all describe planning and structuring their performances in advance), and is consistent with my personal experience of seeing Merzbow, Keiji Haino and Aaron Dilloway perform, all of whom are extremely skilled and adept free-improvisers but had evidently prepared a number of aspects of these particular performances. Although I acknowledge the skill and deeply respect the craft of free improvisers who work without any pre-planned material, I choose to draw on forms of Noise performance where there are significant preparations in advance and the improvisations take place within certain defined structures and limitations. This is because, for my purposes, I find that the construction of resistance is best realised when one has goals in mind about what they would like to achieve against which the resistance can work,

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[11] Free translation by author: 'Bien qu'il existe des formes de noise semi-composées qui consistent à préenregistrer certaines boucles, à inscrire sur un papier quelques « patchs » qui serviront à retrouver certaines textures sonores sur un synthétiseur, ou à préparer en amont quelques cassettes dont le contenu est connu, la plupart des pratiques sont en réalité improvisées.'

and these goals are proactively built into the operation of the Spectra and Slow Loris performance environments as well as into the structures of individual pieces.

When seeking to cultivate a condition of studioness, I choose to employ precise audio editing tools allowing for microscopic and macroscopic manipulation and arrangement of digital audio. I therefore favour *Soundloom*, the GUI to the *Composers' Desktop Environment* developed by Trevor Wishart, as a tool for transforming sounds within the studio environment. As this program deals only with recorded sound in the form of .wav files, all of my sounds are created from recordings of acoustic sources or analogue noise-making devices, with synthesisers being excluded from this practice. Clearly, I could record the output of a software or hardware synthesiser and transform it in Soundloom, but I have no desire to do so. This decision forms part of a strategy intended to heighten the apprehension of studioness within my studio practice, drawing on Schloss' (2014) reading of the intersection of liveness and studioness affected through sampling and aligning my approach with the work of Herndon and Hecker, both of which will be explored in the contextualisation and methodology, but bears mentioning here as some may find the absence of synthesisers in my music to be a point of interest. I also find the transformation of acoustic sound sources in Soundloom to be a creatively stimulating and surprising way to work, due to its exploratory nature and the instability inherent in my chosen sound sources. Although users of Soundloom will have some sense of what a sound transformation process will do to a .wav file, the result is so dependent upon the spectral and morphological qualities of that input file that predicting the output is extremely difficult. This encourages a process of trial and error in sound generation that I find to be continually fascinating. Software and hardware synthesisers are yet to inspire this kind of fascination in me as a musician and composer, though I accept they may well do so in the future. Soundloom also offers extraordinarily precise manipulation of specific parameters of sound and is therefore particularly well-suited to the kind of studioness I am seeking in my recorded music. As for the arrangement of audio files created in Soundloom, I use Ableton Live and, occasionally, Logic Pro as DAWs for the formal construction of pieces, including the addition of effects processing and mixing. As with many electronic musicians, however, I find the experience of using Ableton Live as a DAW to be enriched by the fact that it is designed to be an extremely powerful live performance tool. Ableton Live sits at the centre of my practice, often facilitating transitions between live and studio expressions of my work. This is especially true in the context of the Slow Loris project, where I will often 'jam along' in the studio with recorded MIDI input from rehearsals and live performances with my collaborator. This enables me to become aware of and

reflect upon aspects of her performances that might have gone unnoticed in a live context, allowing me to experiment with more intricate and precise iterations of my parts and produce re-workings of the material that would never have been possible in the live environment. All of this while providing rhythmic input idiomatic to a percussionist that I would never have the skills or instinct to programme manually. It is, in fact, such expanding of possibilities and invitations to move outside of my usual creative impulses that makes the transitions back and forth between studio and live performance described in the methodology so rich in creative potential.

COMMENTARY STRUCTURE

The contextualisation that follows seeks to offer a more in-depth description of what I understand resistance to mean in relation to this portfolio. This includes a discussion of my musical background and an overview of Noise history, a detailed discussion of the key themes of liveness, studioness and resistance, and examinations of these themes as they are expressed in Noise and Experimental Electronica. Having established a theoretical context, the specific artist examples of OPN, Holly Herndon, Tim Hecker, Merzbow, Kazumoto Endo, Jefre Cantu-Ledesma and Prurient are used to support and elaborate upon this context.

In the methodology, the Spectra project is introduced through an account of the technological construction of the Spectra Performance Environment and how resistance is built into that environment. Thereafter, Case Study 1 provides an in-depth analysis of 'Spectra Live' and 'Inbound' from the *Striking Distance EP*, tracing the impact of resistant processes throughout. The Spectra section concludes with briefer analyses of the 'Once Removed' and 'Striking Distance' tracks from the *Striking Distance EP*. The Slow Loris project is then presented according to the same structure; beginning with the performance environment, moving on to an in-depth analysis of 'Insight Informed' (live) and 'Insight Informed' (studio) in Case Study 2, and concluding with shorter analyses of 'Charm' (live) and 'Charm' (studio). Accounts of alternative live-streamed iterations of the work are then provided in order to provide a broader sense of my live practice during the COVID-19 pandemic.

The conclusion reflects on how the theme of resistance has impacted upon the construction of conditions of liveness and studioness in the portfolio of music presented here.

'I think that's true of records as well. They've got nothing to do with performances. It's now possible to make records that have music that was never performed or never could be performed and in fact doesn't exist outside of that record. And if that's the area you work in, then I think you really have to consider that as part of your working philosophy. So for quite a while now I've been thinking that if I make records, I want to think not in terms of evoking a memory of a performance, which never existed in fact, but to think in terms of making a piece of sound which is going to be heard in a type of location, usually someone's house […]. I assume my listeners are sitting very comfortably and not expecting to dance.'

- Brian Eno, speaking to Eric Tamm (1995, cited in Moorefield 2005, pp.54-55).

'No, but really, when I make something it starts off in my room, in my intimate space. And when I go to make something, the reason that I won't change it up […] why I like to play it out as it is, is because I want the audience to experience exactly what was happening in my room at first. Because you know, my room is small and I can't fit a whole audience in here so, yo ya'll, this is what it was like, and then I just play it out.'

- Jlin, speaking to Ableton (Herndon and Patton 2018).

'Even Taylor, an artist also known as a prolific recording engineer within the genre, argues one needs just 'four or five [albums] and you have plenty of material to use for whatever purpose you listen to that for', and he puzzles about how people might actually listen to them: 'I'm sure people do, but *I* can't imagine anyone sitting there and intently listening to one of those CDs'. […] Taylor distinguishes his from more traditional genres [in that] the focus on making records is 'a waste of time', and he specifically cites the notion of canonical 'progress' as false.'

- Klett and Gerber (2014, pp.283-286), *The Meaning of Indeterminacy: Noise Music as Performance.*

'EVERYTHING TONIGHT IS LIVE. THIS IS IMPORTANT. TOO MANY SEAMLESS ASS ELECTRONIC MUSIC SHOWS. FUCKING INHUMAN ASS SHOWS[.] WE KEEP THIS LIVE OR THE END RESULT IS DEAD. HUMAN ENOUGH TO BE SHIT, TO BE TERRIBLE. TO FUCK UP AND BE HARD TO FOLLOW [… TEXT OBSCURED …]. LIVE LIKE AWFUL HUMANS.'

- Mat Dryhurst's Stage Projection from *Holly Herndon – Live at The Teragram Ballroom 1/28/2016* (Kirby 2017).

Thrumming away in the background of the above quotes is a tense complex of concerns and convictions about what it means to present electronically-mediated music for public consumption. At one extreme, there is an argument that the ability to transcribe, transform and dislocate sound through recording technology offers complete perspective, profoundly revelatory at every level from the infinitesimally micro (sample-to-sample waveform editing) to the panoramic macro (reproducible playback of entire compositions). There have long been advocates for this utopian vision of recorded sound (Glenn Gould's famous essay *The Prospects of Recording* (1966) provides an often-cited early example), where the perspective of the recording

studio facilitates the realisation of music with form and proportion tailored in every respect to the artist's specification. Brian Eno, whose influence upon the music and text discussed below is profound, began a career-long valorisation of this perspective in his famous 1983 lecture *The Studio as Compositional Tool*:

> The first thing about recording is that it makes repeatable what was otherwise transient and ephemeral. [...] In a compositional sense this takes the making of music away from any traditional way that composers worked, as far as I'm concerned, and one becomes empirical in a way that the classical composer never was. You're working directly with sound, and there's no transmission loss between you and the sound - you handle it. It puts the composer in the identical position of the painter - he's working directly with a material, working directly onto a substance, and he always retains the options to chop and change, to paint a bit out, add a piece, etc.
>
> (Eno 1983, pp.185-187)
>
> The great benefit [of tools like Cubase] is that they remove the issue of skill, and re-place it with the issue of judgement.
>
> (Eno 1995)

In the cases of both Gould's essay and the Eno quote at the beginning of this chapter, advocacy for recording technologies comes with the attendant promise of emancipation from the physical restrictions of live performance; traditional live performance of music in the era of electronically reproducible sound is an unnecessary distraction from, or even impediment to, the discovery and realisation of entirely new forms of abstracted sonic expression. Of course, these arguments follow in a longstanding modernist tradition, as succinctly summarised by Deniz Peters:

> Specifically, to overcome the fallacies of a musician's body or the limits of a traditional acoustic instrument intervening during the sonic realisation of a composer's (suppos-edly unbound) sonic imagination was one of the driving ideas behind the modernist aesthetic preceding some electronic music aesthetics. The hopes of this modernist aes-thetic were on the machine, not only on the noise machines make, but, just as im-portantly, on the mechanistic production of sound; that is, the hopes were tied to the image of the generation of sound using a perfectly suited, untiring and infallible body, or, in stark contrast, no body at all.
>
> (Peters 2012, pp.1-2).

While the removal of the fallible imprecision of human touch enacted by the recording studio and its technologies might represent a modernist ideal to some, for others it represents a threat to the (romantic) idea of art as conveying the personal expression of an individual, where

the individuality of that expression is formed by the idiosyncrasies, variances, or even imperfections in the musician's interactions with their instrument:

> What matters [to those who would argue that studio technologies inhibit artistic expression] is not the difficult issue of creativity itself but, rather, the idea of self-expression. The argument that recurred in the pop press in the 1970s was that the production of electronic noises by synthesizers left no room for individual 'feel' or 'touch'. Gary Numan could tell readers of Melody Maker's musicians' advice page exactly how to reproduce his sound in a way that Jeff Beck or even Keith Emerson could not. They could describe their techniques but not their final, on-the-spot judgement. All Numan had to do was write down the position of his various switches. This was the context in which synthesizers were heard as 'soul-less' [...]
>
> (Frith 1986, p.79).

As recordings became increasingly central to musical culture over the course of the twentieth century, live performance served to authenticate that the 'feel' or 'touch' heard on a record did, in fact, come from the musicians sold to us as the performers of the music (Auslander 2008). Moreover, as music fans became increasingly aware of the extent to which studio technologies could transform various aspects of a musical performance into something different to that which they would be in a live setting, live performance became important in establishing the authenticity of the music, i.e. the authenticity of the self-expression as coming from the 'artist' and not the studio engineers and their equipment. These attitudes have resulted in electronic instruments such as drum machines and samplers that do not facilitate transparent real-time relationships between gesture (touch) and sound being considered ill-suited to live performance. Again, Simon Frith provides an excellent overview of this issue:

> [T]echnology is seen to undermine the pleasures of music-making (and watching music-making). One important strand of rock common sense is that playing an instrument is a physical exercise, visibly involves the body, and is, above all, a matter of effort. This is reflected in the routine contrast of 'live' performance and 'dead' studio activity, and even now rock's core beliefs in energy and community can only be celebrated in concert (hence the importance of Bruce Springsteen). The guitarist became the symbol of rock because he (masculinity is a necessary part of the argument) communicates physically on stage even more obviously than the singer - the link between sound and gesture has become so familiar that audiences have even developed the 'air guitar', a way of sharing the guitarist's physical emotions without needing an instrument at all. One reason why synthesizers, drum machines, tape recorders and so on are regarded as 'unnatural' instruments in performance is simply because playing them takes little obvious effort. Programming a computerized sampling device like a Fairlight engages the

mind not the body and is not a spectator event. [...] The explicit argument is that live performances allow for spontaneity, for performers' direct responses to their audiences; programmed instruments can't do this. But what really matters is not whether a show is spontaneous but, rather, whether it seems to be [...] Rock bands' use of 'artificial' aids are, therefore, hidden entirely (for example, the now routine use of backing-tapes) or disguised (electronic instrument manufacturers are skilled at producing devices that can be played as if they are normal keyboards or percussion – it's not really necessary to design a rhythm machine like a Syndrum or the Simmons Kit as something to be hit!).

(Frith 1986, pp.82-83).

These issues are significant in different ways in different genres and have particular purchase in the Rock context that Frith is discussing (it is generally assumed, for instance, that Pop listeners are unlikely to have problems with pre-prepared accompanying elements such as drum machines and backing tracks in a live context, but will still be concerned with the Pop star's vocal (and sometimes dancing) ability), and the specific questions it raises in the genres on which I am focusing will be addressed in the sections dedicated to liveness in those genres.

The construction of live music as 'authentic' and 'real' in facilitating direct communication of personal expression from the artist to the listener has led to the argument that music finds its greatest meaning-making potential in live performance. The corollary of this argument is that recordings deprive music of its efficacy by wrenching it from the rituals of public dissemination through which groups of musicians and music-lovers have communed for centuries and, in their imitation or transformation of 'in the moment' music-making, recordings emerge as dehumanised transcripts of a deeply human activity. As David Novak puts it:

For many researchers, live music is where authentic musical experiences happen, and performances represent sites of dialogue and interactivity that stand in stark contrast to the displacements of recorded media. [...] Recordings, on the other hand, rationalize music beyond the productive space of social relations into separate forms of "studio art" that are passively consumed. [...] Musical circulation becomes a mediated kulturkreis: live performance stands at the bull's-eye of creative production, but its social force is gradually diffused through waves of technological mediation. At best, recordings become disembodied placeholders for authentic culture. At worst, they are a virtual dead end that dislocates people from the living realities of music.

(Novak 2013, p.31).

All artists cited so far have staked out some fairly extreme positions, whether for comedic effect, stagecraft, or in order to articulate their own view in contrast to a hyperbolic other.

While Jlin's argument for her studio work as the primary text that is then (re-)presented live describes a now commonplace attitude in Experimental Electronica, there are artists working within this genre (not least Holly Herndon, referenced opposite Jlin) who wish to affirm the 'liveness' of their live work as distinct from, and having value in relation to, their studio practice. Jlin herself accepts that her approach will likely shift as her practice develops (Patton and Herndon 2018). Meanwhile, Eno (1995) has argued for the centrality of the body in his studio process against the pervasive image of the electronic musician tethered to the screen-keyboard-mouse configuration, and, contrary to the norms established by Klett and Gerber (2014), Noise artist Prurient has repeatedly insisted upon the importance of recorded media in the development of his practice (Fernow 2018; Fernow n.d.). Suffice to say, any conventions identified as broadly prevalent in Noise and Experimental Electronica during the expository portion of this chapter are likely to be confirmed and contradicted to varying degrees by specific examples later on. This is not surprising, as a complicated relationship with convention is a feature central to both genres.

In this chapter I will look to establish the utility of resistance as a means to explore and interrogate the aesthetics and dominant practices of live performance and studio work in Experimental Electronica. The particular expressions of resistance that feature in my work require contextualisation via two roots: my musical background and that of Noise music. The first section will provide an overview of these two contexts, followed by a review of the extant theoretical background for liveness and studioness. The second section will outline the academic context that informed and stimulated my compositional approach, beginning with a broad discussion of resistance as a central theme in the theory and practice of improvisation before moving on to a detailed examination of how liveness and studioness present in Noise and Experimental Electronica. The final section features case studies of the key figures whose working practices have informed and impacted my own, framed according to their various adherences to and departures from the conventions already established. The chapter concludes with a summary of how this context came to inform the methodology for the portfolio of compositions.

An Overview of My Musical Background

The route leading to my current compositional interests is long and complex, so I will do my best to outline it here in order to provide the context necessary to understand my approach to constructing resistance that draws influence from Experimental Electronica, Noise and Western Art Music. I began taking formal lessons in piano when I was six. I had little

interest in it, nor any particular aptitude, but my parents were keen that I continued, so I kept going to lessons. Although I enjoyed listening to music more than most of my peers at school, my love of playing and making music really began with the guitar. My dad is self-taught, mostly in UK and Irish folk music and in the classic transatlantic Singer-Songwriter traditions of the 1960s and 1970s, and he showed me my first chords and a few riffs when I was around 11 years old. But I wanted to play the music that myself and my friends were into, which is to say Rock and Metal of the late 1990s and early 2000s, so I quickly began teaching myself electric guitar using guitar magazines and online tablature. I formed a band with my closest school friends before I was 12, and the following 8 years of playing with them charted a predictable course of white male working-class Rock self-education; The Beatles, The Rolling Stones, The Doors, The Kinks, Jimi Hendrix, Led Zeppelin, Pink Floyd, Metallica, The Smiths, Stevie Ray Vaughan and Nirvana feature in the memory alongside contemporary noughties rock groups including The Strokes, Queens of the Stone Age, Radiohead and countless others.

During this period, I continued with formal music education through GCSE Music, piano and violin lessons. My interest was still predominantly in Popular music, but I was extremely lucky to have excellent school music teachers who were pointedly non-discriminatory, so this did not pose any problems to my GCSE studies. As I reached the end of secondary school, the musical division of the local education authority organised some composition workshops with Newcastle and Durham University, featuring talks, lessons and concerts with James MacMillan and other contemporary composers. My memories of the concerts are particularly vivid, as they were my first real experiences of this music, and it really felt like something completely different to the Western Art Music I was being exposed to in my formal instrumental and GCSE lessons. A few months later I moved to a new sixth-form college with much more conservative and prescriptive music teachers, so it fell to me to learn what I could about Twentieth-Century Experimental music in my own time. But the fire was lit, and what I remember of my private listening during my A-level years featured the American Minimalists and whatever dissonant-sounding acoustic music I could get my hands on: Bartok, Scriabin, Schoenberg, Berg, Webern, Prokofiev, Peter Maxwell Davies, James MacMillan and so on.

All of this is to say that I was finally beginning to see a space opening up in my formal musical education for a form of musical expression that suited me. My personal tastes in Popular music had always been either too difficult to play or too extreme to be acceptable in the Pub Rock band I was in, but the surface-level complexity and/or dark sound-worlds of the Progressive Rock and Metal I was listening to in my early teenage years (Slipknot; Korn; Godspeed

You! Black Emperor; Tool; The Mars Volta; Battles;) seemed in some way prefigured by the strange angular Modernism of the 20th-century composers I was discovering. The possibility of finding a creative outlet in this space meant that my hitherto tokenistic interest in playing the piano was suddenly invigorated.

Undergraduate studies followed along the same lines. Formal studies feeding a continued compositional interest in process musics with high levels of harmonic and contrapuntal complexity, which predictably manifested in musical preferences for early music up to Bach and 20th Century Modernists now including Ligeti, Penderecki, Boulez, Stockhausen and Berio, offset by the wholesale re-evaluation of musical value brought about by John Cage's Silence and a subsequent interest in his music and that of other American Experimentalists. Meanwhile, outside of the academic context I was trying on musical hats with friends playing in Funk bands and university Jazz orchestras, all of which were abandoned to pursue a Progressive Post-Rock band writing original material; the closest thing I had found to expressing my interests in a non-classical context. I was also being introduced to contemporary Hip-Hop and Electronic music by friends and flat mates, opening up ways of thinking differently about sound and the parameters for experimentalism outside of pitch/durational relationships.

As I concluded my undergraduate studies, I was becoming disillusioned with contemporary Western Art Music culture. Growing discomfort with the institutional and social context for Classical music-making coincided with an awareness that throughout my life I had more or less cordoned off the formal and popular aspects of my musical development from one another. During the summer between my undergraduate and masters I began experimenting with Ableton Live and making electronic music. It is probably unsurprising, given my preference for irregular time signatures and surface complexity in Rock and Metal music, that my initial interest was in emulating the sounds of flagship IDM artists such as Venetian Snares, Aphex Twin, Squarepusher and Amon Tobin. But I was particularly drawn towards the noisier aspects of their work; the distorted breakbeats and harsh clicks and cuts that pervade their music, especially in Venetian Snares. Wanting to find out more about these elements led to my primary research project for my Masters being on Glitch music, during which time I listened to and thought about the music of Oval, Ryoji Ikeda, Yasunao Tone, Christian Marclay and the related Microsound subgenre, and considered their techniques in relation to contemporary producers of IDM and the so-called 'Post-Dubstep' genre such as Burial, James Blake and Mount Kimbie. In reading about and listening to Glitch music, Noise is never far away, and it was during this time that my listening broadened to include Merzbow, Wolf Eyes, Prurient, Richard Ramirez,

Incapacitants, Masonna and others. The music I submitted for my masters was entirely related to this experience, focusing on glitched-out irregular beat-making and long-form Microsound work.

Following my masters, I spent a few years making Experimental Electronica that pulled together structural and harmonic strategies inherited from a Western Art Music tradition with sounds and production techniques from Ambient, Glitch, Noise and Experimental Electronica. It was during this time that various attempts were made to find a satisfactory mode of presentation for this music within a live context, and the subsequent formulation of the ideas and questions that would motivate the current research. As my exposure to live Noise increased during my doctoral studies, I became aware of how the theme of resistance was a recurrent feature at various levels of Noise culture, be it practical resistance expressed through the relationships between musicians and their equipment or aesthetic resistance to traditional ideas of what might constitute art, music, social norms and politics, and this to me seemed to be integral to its live performance and to contribute to the expressive power and liveness of those performances. This is well-established in the literature surrounding Noise and its history, of which I will now provide an overview.

NOISE

For David Novak (2013, p.119), 'Noise is always emergent and endlessly new, too new even to define', expressing a sentiment common to many Noise accounts that any type of definition based on sound is unlikely to be successful (Benhaïm 2019; Dion 2015; Hegarty 2008; Hutson 2015; Thompson 2017). Better, then, to look for other unifying characteristics across the various collections of artists and labels that have become recognised as part of the international genre now known as Noise. But even this presents problems. Aside from the plurality of approaches and sonic characteristics that have been ascribed to the genre, from Dadaist performance art (Runzelstirn and Gurgelstøck, Smell & Quim) to excoriating political provocations (Whitehouse, Moor Mother), from relatively Ambient (Aube, Jefre-Cantu Ledesma) to total Harsh Noise Wall (The Rita, Vomir), it is difficult to know where to even begin given that artists that would later be identified as Noise originators sprung up seemingly independently on three different continents at the end of the 1970s/beginning of the 1980s, presenting markedly different sounds and aesthetics. In Japan, Merzbow began self-releasing recordings and Hijokaidan began performing live in 1979, the former being considered the most notable exponent of Noise on the international scene, the latter a creation of Jojo Hiroshige, who would

go on to found Alchemy Records in 1983 (a hugely important label in the development of Japanese Noise) (Benhaïm 2019; Novak 2013). In Europe, Throbbing Gristle, Nurse with Wound and Einstürzende Neubauten had laid the groundwork for a thriving Industrial music scene, out of which Whitehouse emerged in 1981 to 'put in place many of the archetypes that would later be explored and exploited by other noise acts' (Cooke 2016, p.19). Also emerging in the UK at around this time, and mentioned in various histories of Noise, are The New Blockaders (Benhaïm 2019; Hutson 2015; Taylor 2016). The most noteworthy claim The New Blockaders have in the development of Noise is their manifesto, released in 1982 and outlining many of the common themes that would become recurrent in Noise music culture over the following decades:

> Blockade is resistance... It is our duty to blockade and induce others to blockade... Anti-music, anti-art, anti-books, anti-films, anti-communications... We will make anti-statements about anything and everything... We will make a point of being pointless... [...] The obscure progression of regression shall be halted by us, The New Blockaders... This is the future! This is now! Move over you museum relics!... Avaunt! Avuant! Avaunt! The church of the absurd marches on! ... We are the adverts that mean nothing, we are the speakers who say nothing, we are the fighters who do not fight, we are the creators who destroy.

<div align="right">(Noise2010 2012, cited in Taylor 2016, p.16).</div>

The invocation of resistance to cultural and societal norms, an oppositional stance towards accepted forms of artistic practice, and the clear echoes of the Futurist and Dadaist movements were to become consistent themes in Noise culture and scholarship. However, the role of The New Blockaders in the development of Noise as a musical genre is complicated by the fact that the audio recorded in their early live performances, which they released as albums, was more of 'an afterthought, or even perhaps the byproduct of the performative creation of a situation' (Hutson 2015, p.105). Early New Blockaders performances were primarily pieces of performance art where the recorded audio could serve as documentary material to be circulated as records, but the generation of sound was not the primary function. While many Noise artists' live practice could readily be described as performance art, the sonic element, even when framed as anti-music, is an integral part of its aesthetic raison d'être.

In the USA in 1979, GX Juppiter-Larsen formed The Haters, a group whose typical performances involve performers wearing facemasks using various forms of amplified and distorted tools and construction equipment (Benhaïm 2019). These activities and their iconography would become familiar features of Noise music culture. However, even more explicitly than

the New Blockaders, The Haters deemphasised the aesthetic importance of the sonic component of their practice. Larsen writes: 'The only reason I started incorporating live sound in my performances was to re-emphasize the action taking place. Not for the sake of the sound itself. [...] the kind of Noise I was looking for wouldn't be of the audible kind. What I was looking for was a sociological transmission. A social distortion instead of sonic feedback [...]' (Larsen 2009, p.10, cited in Hutson 2015, p.107). What is significant about The New Blockaders and The Haters is their positioning of Noise as resistant and disruptive, whether to cultural codes in the anti-art/anti-music of The New Blockaders, or sociologically in the actionism of The Haters. Although both The Haters and The New Blockaders would go on to make work that could be unequivocally framed as Noise, their early influence is best understood on conceptual terms, and their status as early exemplars of Noise as a musical genre less straightforward than that of Whitehouse, Merzbow and Hijokaidan.

Numerous accounts of the contemporaneous tri-continental emergence of Noise progenitors are offered within the literature (Benhaïm 2019; Candey 2016; Dion 2015; Hegarty 2008; Hutson 2015; Novak 2013; Taylor 2016), each with their own unique details and assessment of who and/or what was or was not significant where and/or when. They are, however, consistent in avoiding a causal narrative explanation, and investigations into whether the musicians working on each continent were aware of one another in the beginnings come back either negative or unclear. Where there is agreement, it is that Noise emerged as one of many 20th-Century musical developments in which composers and musicians sought to deconstruct historical distinctions between what was considered to be music and what was considered to be simply sound (or noise). There is therefore a context in which the development of Noise can be understood that I will attempt to outline here, encouraging readers to consult the authors cited in this section for further information.

When discussing the foundational ideas of Noise, it is hard to ignore the apparent prescience of Luigi Russolo's *The Art of Noises* (1913), a key text in Italian Futurism and recurrent touchstone in Noise scholarship (Benhaïm 2019, Hegarty 2008, Hutson 2015, Taylor 2016). In this letter outlining the Futurist painter's vision for the future of music, Russolo (2002) describes an approach to sound that would come to resonate with many musical developments over the course of the 20th Century, and the connection is so consistently reinforced in the case of Noise music no doubt thanks to the centrality of its namesake in the Russolo text. Many of Russolo's ideas could certainly be seen to prefigure various musical genres such as Acousmatic,

Ambient, Sound Art and Field Recording, but the emphasis on mechanical sound and the in-dustrial urban imagery lends it particular weight when considering Noise music history:

> Today music, as it becomes continually more complicated, strives to amalgamate the most dissonant, strange and harsh sounds. In this way, we come ever closer to *noise-sound*. [...] For many years Beethoven and Wagner shook our nerves and hearts. Now we are satiated and we find far more enjoyment in the combination of the noises of trams, backfiring motors, carriages and bawling crowds [...] Let us break out since we cannot much longer restrain our desire to create finally a new musical reality, with a generous distribution of resonant slaps in the face, discarding violins, pianos, double-basses and plaintive organs. Let us break out! [...] We enjoy creating mental orchestra-tions of the crashing down of metal shop blinds, slamming doors, the hubbub and shuf-fling of crowds, the variety of din, from stations, railways, iron foundries, spinning wheels, printing works, electric power stations and underground railways. Nor should the newest noises of modern war be forgotten.

> (Russolo 2002).

Russolo would go on to create a variety of acoustic noise-making instruments (*intonar-umori*), 'which produced sound usually by the mechanical means of turning a crank. The sounds of the *intonarumori* were the result of internal cogs and gears and other simulations of industrial machine parts, which would rub together, or blow air through a tube like a whistle to produce sounds that resembled the urban din of an increasingly industrialized environment' (Hutson 2015, p.103). Though unamplified, some of these instruments did create unpitched sounds that would not be out of place in a contemporary Noise recording, however, Russolo's formalised notated compositions for concert hall performance remain firmly situated within a Western Art Music tradition and therefore do not prefigure many aspects of Noise culture be-yond the purely sonic.[12] The final connection worth mentioning is the recurring themes of domination, sexism and fascism in Italian Futurism, which are more explicit in Filippo Tomasso Marinetti's *Manifesto of Futurism* (1909) than in Russolo's *The Art of Noises*, but are evident in the tone of the latter, particularly in the glorification of war. These motifs would come to ap-pear frequently in various forms within Noise music culture, including album artwork, staging, promotional imagery and lyrical content, particularly in the closely-related (and often indistin-guishable) genre of Power Electronics, most commonly associated with UK and Western-

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[12] The original *intonarumori* were destroyed during the Second World War, however, reproductions ex-ist that can be heard in isolation (https://www.youtube.com/watch?v=BYPXAo1cOA4 (David Rato 2012)) and performing excerpts of Russolo's compositions (https://www.youtube.com/watch?v=Lqej96ZVoo8 (PERFORMA07 2012)).

European Noise, helping to reinforce the socially and culturally resistant elements of Noise (more on Power Electronics below).

Another notable figure in the world of Western Art Music is Edgard Varèse, whose advocation of music as 'organised sound' led him to experiment with mechanical and electronic instruments in a quest to further erode traditional conceptions of tonality and instrumentation (Benhaïm 2019). However, due to the inadequacies of non-acoustic instruments in the 1920s and 1930s, it was only really during the latter decades of Varèse's life (he died in 1965) that he was able to begin to properly explore these ideas and he ultimately realised only a small number of electronic sound compositions. Another figure who appears with near-ubiquity in accounts of Noise music is John Cage (Benhaïm 2019; Dion 2015; Hegarty 2008; Hutson 2015; Novak 2013; Wilson 2014). In the majority of Cage's work, noise is placed on an equal footing with traditionally musical sounds and instruments, elevating all sound to the status of music. Hutson (2015, p.104) argues that Cage's treatment of noise as equivalent to music is effectively mirrored in the case of Noise, as in both cases noise is considered the 'intentional content of musical expression' (although Cage would no doubt object to Hutson framing this as 'musical expression'). However, I would assert that there is a crucial difference in the relationship between traditionally musical sound and noise in Noise, as an antagonistic or resistant relationship between these concepts is at the genre's conceptual heart whereas, in Cage's expressly non-discriminatory approach, noise and traditionally musical sound are equivalent and peacefully co-exist.

Along similar lines, one could point to Musique Concrète as the first movement to effectively make traditionally non-musical recorded sound into the stuff of music. The work of Pierre Schaeffer and Pierre Henry, beginning as experiments with records, turntables and mixing desks intended for radio broadcast and moving onto tape manipulation, looping, collage and effects processing as part of the *Groupe de Recherches Musicales* (GRM) in the 1950s, succeeded in creating the first found sound/field recording compositions of the 20th Century. These compositions were intended to be received via a method of "reduced listening", where recorded environmental sounds were heard as 'unit[s] of pure timbre free of any external reference,' (Wilson 2014, p.133). This theory never really proved successful in practice, at least in the case of Schaeffer's own music, however the techniques used to create his recorded sound compositions would be employed and developed in electronic music over the proceeding decades and would ultimately become common features within Noise music, alongside the elevation of traditionally non-musical sound to the status of music.

To conclude this summary of notable figures within the Western Art Music tradition, post-1950s composers who chose to investigate feedback as a compositional tool return as reference points within the literature. Terry Riley's experimentations with tape feedback loops in *Music for the Gift* (1963) and *A Rainbow in Curved Air* (1969), Steve Reich's microphone-feedback piece, *Pendulum Music* (1968), Alvin Lucier's work with positively-reinforcing microphone feedback in *I am Sitting in a Room* (1970), and David Tudor and Pauline Oliveros' continued investigations into tape and digital delay feedback systems can all be seen to prefigure Noise through their use of feedback as the primary source material and, in the case of Tudor and Oliveros, in developing dynamic performance systems which used feedback as a mechanism to transfer some of their agency as performers to the system itself (Benhaïm 2019; Dion 2015; Henry 2016; Novak 2013). As will be demonstrated in the 'Liveness in Noise' section of this commentary, feedback often plays a crucial role in Noise performance and is one of the ways resistance is expressed in its practice.

I make the point of beginning with a summary of experimental music within an institutionalised Western context not as a matter of chronology, and certainly not in order to imply a narrative or progression, but rather as a method of bracketing these figures off from those that have been more explicitly associated with the beginnings of Noise by early practitioners. Most early Noise artists are more likely to point towards experimental albums and artists that exist outside of this tradition, or 20th-Century visual/performance art movements, than the work of John Cage or Pauline Oliveros (Novak 2013; Wilson 2014). The notable exception to this rule is Merzbow, who does frequently cite experimentalists from a broad range of (predominantly Western) backgrounds as influential (King Crimson, Albert Ayler, Velvet Underground and Lou Reed, Throbbing Gristle, SPK, Cecil Taylor, the Futurists, Dadaists and Surrealists), but also experimental electronic music in this institutional context (Pierre Schaeffer and Pierre Henry, Stockhausen, Xenakis) (Akita n.d.; Akita 1999b). As Merzbow's influence on Noise is so profound, his ideas on Noise are often taken to be true of the genre as a whole, rather than pertaining specifically to his own work (Novak 2013; Thompson 2017; Wilson 2014). The incorporation of Western Classical experimental musicians into Noise music studies and criticism may partially be a consequence of Merzbow's status as a Noise figurehead, partially true for select other Noise artists, and partially a consequence of the narrative and conceptual convenience of making such connections for scholars and fans. Whatever its genesis and significance for early Noise artists, it is certainly the case many present-day practitioners and listeners are just as likely to come to Noise via an interest in institutional experimentalist traditions as

they are experimental forms of Punk, Rock or Electronic music (Aspa 2016; Benhaïm 2016; Benhaïm 2019; Clive 2016; Klett and Gerber 2014; Novak 2013).

It is in the post-1950s genres of Free Jazz and Free Improvisation (the former associated primarily with the USA and the latter more so with the UK), where we find the abandonment of features that are traditionally construed as 'musical' (tonality in particular) in favour of sonic (or timbral/textural) exploration *in combination with* an aesthetic where improvisation takes precedence over traditional composition. Benhaïm (2016; 2019), Novak (2013), Hegarty (2008) and Wilson (2014) all point towards the work of Ornette Coleman, John Coltrane and Albert Ayler as music that approaches Noise ideals in its combination of free improvisation with a disregard for traditionally musical sound, even where the music was predominantly produced using traditional instruments. The argument is perhaps stronger in the case of Free Improvisation, whose aesthetic departs further from Jazz tradition, and musicians such as Peter Brötzmann, Evan Parker, Derek Bailey, Fred Frith, and Eddie Prévost, as soloists and in groups (notably AMM, Henry Cow and Karyobin), pushed extended instrumental techniques, modified/prepared instrumentation and the use of everyday objects further into the vocabulary of improvised music. It is also worth noting that, in her history of the Leeds Termite Club, D Foist (2016) highlights the close proximity of Noise performers and Free Improvisers in the UK in the 80s and 90s, and certain artists who traverse the free-improvised Rock, Psychedelic and Noise scenes (such as Keiji Haino, Chris Corsano and Jim O'Rourke) continue to collaborate frequently with members of the Free Improvisation community. This is not intended to imply influence so much as be indicative of areas in which the musical aesthetics and audiences for these genres may begin to overlap.

There are two North American Free Improvisation groups that require special mention here: Nihilist Spasm Band (NSB) and the Los Angeles Free Music Society (LAFMS). NSB arose in the mid-1960's as the '"official band" [...] of the absurdist Nihilist Party of Canada', initially as an impromptu collective providing a live film soundtrack during one of the Nihilist Party's regular hangouts in downtown London, Ontario, then as a more established 'core' group focussing on building their own instruments and performing at a regular Monday night residency in a local bar (Novak 2013, pp.125-127). During this time, NSB included John Boyle, John Clement, Greg Curnoe, Bill Exley, Murray Favro, Archie Leitch, Hugh McIntyre and Art Patten, all of whom made a virtue of their non-musicianship (any musical training members might have had was pointedly disregarded): the focus was on instrument building and the improvisation of music free from constraints such as time signature and equal temperament (Benhaïm 2019).

David Novak (2013) gives a detailed account of how NSB came to be considered by certain musicians and fans as significant figures in Noise in his book *Japanoise: Music at the Edge of Circulation*. This story is used to illustrate the book's core argument that a circulatory model of cultural exchange between continents, partially enabled by records, then tapes, then CDs, then the internet, encourages fans of underground music to imagine musical scenes existing in other countries, even where there might only be one or two isolated bands and no real 'scene' to speak of. Gradually, as these ideas are reinforced, connections are made and more fans become invested in the idea of a growing international community of connected musical scenes, and these scenes actually come to manifest. In the case of NSB according to Novak, the aforementioned Jojo Hiroshige of Hijokaidan and Alchemy Records had obtained a copy of NSB's 1968 album, *No Record*, and had been playing it for friends and talking about it during and after the formation of Hijokaidan. As the idea of Noise music really began to take hold in the 80s and 90s and North American and Japanese audiences became more invested in the idea of a Japanese Noise scene (in which Hijokaidan were one of the central players), NSB became a Noise story (thanks in part to the advocacy of Hiroshige), toured Japan in the 90s and released albums through Alchemy Records. According to Pratten, NSB embraced the 'Noise' label more so than any other genre descriptor they might have been given beforehand: '[...] we were things like 'something rock' for a while, then we were 'proto-punk' and for a while we were some sort of 'radical jazz.' Then when 'Noise' came along, we said 'whew, that's a good *name*!' And 'Noise' is a category we've got no problem with. We've never said we were in it – but we're happy to be whatever anyone says we are. 'Noise' is fine. [...] We never thought of being part of a movement, [...] that's something other people do for you ... I feel no impulse to defend it as music' (Novak 2013, p.127). We can see from this quote that NSB (or Pratten, at least) take pride in being uncategorizable according to traditional genre descriptors such as Rock or Punk or Jazz, and in 'Noise' they find a label that locates them outside of traditional ideas of music and musicianship, a trait very much in keeping with later Noise artists.

The Los Angeles Free Music Society follow a similar pattern, with Hiroshige, again, likely playing a role in their present-day association with Noise music culture. Forming in the early 1970s, LAFMS are a collective of electronic and acoustic instrument builders who play in shifting line-ups, breaking down into smaller groups such as Airway, Smegma and Le Forte Four. As with NSB, the emphasis is on free improvisation with homemade instruments, although the stylistic association with Rock music is perhaps stronger, particularly in the case of Airway. In a documentary short on LAFMS, founding member Joe Potts situates their aesthetic

as directly descended from Rock music: 'Rock and Roll records that we liked, jam records like Jimi Hendrix or Led Zeppelin, they just start to get to the interesting part and then they end because they're held down by, you know, the rhythm and the vocals and everything, and, you know, just when it's starting to get good and you want in to take off into space the record ends' (LAFMS how low can you go? 2016). This locates LAFMS as essentially developing and experimenting within a musical style, rather than positioning themselves as non-music. This is evinced by the use of the word 'music' in their name and their 10-disc compilation released on RRRecords in 1996, entitled 'LAMFS: The Lowest Form of Music'. The idea of 'low' music is complicated, however, in that it declares itself as music whilst representing a resistance to certain ideas of music, most obviously musical virtuosity, or even competence, but also, presumably, the Rock staples of repetitive rhythm and melody Joe Potts identifies as 'holding down' the music of Jimi Hendrix and Led Zeppelin. At some point during their development, LAMFS members began referring to their output as 'Noise', although, according to Rick Potts, this was more of a practical decision to avoid debates about whether or not what they were doing could be called 'music', rather than a bid to position their work as 'opposed' to the idea of music: 'We're all investigating what we can do with sound, and we sort of called it 'Noise' because, at the time, if you called it music people would get in an argument with you' (LAFMS how low can you go? 2016). We can see in this quote and in that of NSB's Art Pratten how both of these groups embraced the association with Noise, not necessarily as oppositional to music, but as an opportunity to avoid the need to justify their work as musical or beholden to any traditional ideas of what music could or should be.

LAFMS sub-group Airway toured Japan in 1978, and Hiroshige describes his experience of hearing them on this tour as one of his inspirations for starting Hijokaidan (Hutson 2015, p.87). Likewise, Joe Potts (a member of Airway), while being wary of ascribing influence of one group upon another, acknowledges having long been aware of Hijokaidan's activity through recordings (LAFMS-the book 2011). The relationship between Hijokaidan, NSB and LAFMS became reinforced through correspondence between the bands during the 1990s and has persisted, with NSB hosting Hijokaidan during North American tour dates and organising festivals with them (Novak 2013, p.2) and Hijokaidan and Incapacitants playing festivals organised by LAFMS (Jeroen Frencken 2012a; Jeroen Frencken 2012b).

Readers familiar with Noise will have noted several instances where key features of the genre have been evoked so far in this section: the incorporation of traditionally non-musical sound (or noise), particularly sounds of urban and industrial origin; recording as a means of

making this incorporation possible; the use of recording technologies to edit, transform and abstract sound; unorthodox usage of conventional instruments and extended techniques, or the creation of whole new instruments in order to avoid recourse to traditionally musical features such as harmony, melody and clearly defined pitches; and improvisation as a principal creative strategy. Readers may also have noted that one of the most obvious features of Noise, its loudness, has so far remained undiscussed. The loudness of Noise, associated with the extensive use of feedback and distortion, is where its relationship to a variety of Rock and Punk subgenres becomes most evident. Indeed, it is not uncommon for practitioners to characterise their work as an extreme form of Rock music, and beyond simply its loudness, Rock music elements such as histrionic performance styles, dark, Metal-inflected lyrical content and visual imagery, a commitment to self-taught musicianship and live performance as indicative of 'authenticity', and an oppositional stance towards musical and cultural orthodoxy are all features that appear with noteworthy frequency in Noise culture (Aspa 2016; Novak 2013).

In her illuminating ethnographic study of the Parisian Noise scene, Sarah Benhaïm (2019) asked 16 local fans and practitioners to each name 5 artists that they considered representative of the breadth of styles within Noise, and to justify their responses. Unsurprisingly, Merzbow was the most cited, with 6 respondents choosing him as one of their 5 artists, followed by Whitehouse, Hijokaidan, Incapacitants and Wolf Eyes, each chosen by 4 respondents. Interestingly, however, when Benhaïm asked her respondents to choose 5 tracks in the same manner, rather than artists, the most chosen track was in actuality an album: Lou Reed's *Metal Machine Music* (1975). This album is often identified as an early example of Noise, and associated the Rock music of Reed and the Velvet Underground with the genre ("Sister Ray" by the Velvet Underground was also cited by multiple respondents). Other early Experimental Rock artists such as Frank Zappa, Captain Beefheart and the Grateful Dead have also been identified by artists (notably Merzbow and Hijokaidan) and fans as foreshadowing the sounds and aesthetics of Noise (Benhaïm 2016; Benhaïm 2019; Novak 2013; Van Nort 2006; Wilson 2014). The 1980s New York-based Experimental Rock movement known as 'No Wave' also features frequently as a genre presaging Noise aesthetics, whose notable artists such as DNA, Glenn Branca and Teenage Jesus and the Jerks reacted against Punk's increasing resemblance to mainstream Rock and capitalist co-option by embracing atonal guitar work, avoiding traditional song structures (and durations) and in some cases abandoning repetitive rhythm in favour of totally 'free-meter' tracks. However, the Punk elements of 'aggressive' music and lyrics coupled with loud performance volumes and raucous live shows were retained. These artists

explicitly associated the incorporation of traditional musical features into Punk music with its capitalist co-option, and expressed their political resistance through rejecting what they considered to be hallmarks of traditional musicality. New York artists emerging from this scene, notably Swans and Sonic Youth, would go on to define Noise Rock and, particularly in the case of Thurston Moore, maintain close ties with both Japanese and North American Noise communities.

As mentioned at the beginning of this section, the development of Industrial Music in the UK and Western Europe in the late 1970s and early 1980s is consistently identified as a key root of Noise music. The harsh, distorted soundscapes of Throbbing Gristle, Einstürzende Neubauten, Die Krupps, Nurse With Wound, Le Syndicat and SPK, which sample urban, industrial sound sources and tend towards electronic instrumentation and synthesisers over traditional Rock instrumentation, do much to foreshadow Noise.[13] Industrial music is also associated with an anti-art and anti-music attitude, 'using the tools of art in order to better destroy [the idea of art]', with many bands being comprised of non-musicians releasing records via a DIY network of independent labels (Benhaïm 2019, p.38).[14] Industrial music is credited with giving birth to Power Electronics, a term coined by Whitehouse member William Bennett in the liner notes to their 1982 album *Psychopathia Sexualis*, and the frequent categorisation of the latter both as a sub-genre of the former and as a Noise sub-genre is indicative of the common elision between the genres of Industrial, Power Electronics and Noise (Taylor 2016, p.13). The point of distinction most commonly drawn between Noise and Power Electronics is that Power Electronics has vocals as a prominent feature of the music, perhaps even 'traces of a traditional song structure' such as a repetitive rhythm underpinning the noise, whereas Noise is less likely to contain such elements (Candey 2016, p.47). For Novak (2013, pp.178-181), more so than the sonics, it is the depiction of technology as a dominating force to which performers and audience submit within Industrial Music and Power Electronics culture that bears the strongest relationship to Noise culture, despite the musical texts of Power Electronics tending to retain clearer markers of traditionally musical features. Throughout his book, Novak remains insistent on the categorisation of Noise as something different to Industrial Music and Power Electronics:

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[13] SPK are, in fact, Australian in origin, but were located in London between 1980 and 1984, during which time they recorded their first two albums.
[14] Free translation by author: '... en utilisant les outils de l'art afin de mieux le détruire'.

In the 1980s, "Noise Music" described a broad range of "noisy" artists that could also be described as "experimental," "industrial," "hardcore," "postpunk," or "no wave" (e.g., the NYC- based bands Sonic Youth, Suicide, Glenn Branca). "Noise Music" was a loose, metageneric term for all of these diverse underground sounds that were too noisy to be absorbed into a commercial mainstream or recognized as a distinct musical movement. Noise was everything on the margins of musical genres: recordings with no consumer market, sounds that could never be confused with any kind of normal music. But with the sudden appearance of Japanese Noise [in the USA in the early 1990s], much of what had previously been called Noise became "noisy music," to be distinguished from a purer form of Noise, which was represented by new sounds from Japan. [...] In the alternative media networks of the 1990s, Noise was now something that came from Japan. The invention of the term *Japanoise* further supported the North American belief that the distant Japanese Noise scene was bigger, more popular, and more definitive of the genre.

(Novak 2013, p.13).

This conception ties into Novak's argument that the idea of Noise was constructed through circulatory patterns of cultural exchange between artists and fans, primarily in the USA and Japan, and leads Novak to identify Noise as something following the techniques of a prototypical Japanese Noise (or 'Japanoise') that rose to prominence in the transcontinental underground scene of the 1990s, and whose defining features are the use of feedback as the primary creative and musical focus and a consistent avoidance of any features that might be traditionally construed as musical. However noisy, distorted or loud Power Electronics might be, for Novak, its reliance on synthesisers as a primary sound source and use of repetitive rhythmic and harmonic figures marks it out as generically different from the purer form of Noise that he terms 'Japanoise'. This may be true for Novak, and for the fans and artists with whom he interacted in the 1990s, however, within present-day Noise circles, artists using vocals with traces of traditional song structures are frequently categorised as Noise (Prurient, one of the key artists discussed in this portfolio, is widely considered to be a Noise musician, despite his use of vocals and repetitive synthesised harmonic and rhythmic patterns), and artists and albums will often be qualified by different fans and critics as Noise, Power Electronics, Industrial Music, or all three at the same time, belying the generic proximity of these genres.

To return to the early 1980s, this is the period where we can really see the emergence of the major Noise and Power Electronics artists that would come to define the genres. In the UK, William Bennet formed Whitehouse in 1981 as 'a reaction to what he saw as Throbbing Gristle's increasing commercialism', and would go on to lay out the basic tenets of Power

Electronics in Western Europe, using his EDP Wasp synthesiser to create clusters of distorted noise at the extreme highs and lows of the frequency spectrum, combined with profane screaming vocals and dangerously loud live performances (Cooke 2016, p.19). Bennett's artistic motivation is markedly political, which comes across in the transgressive lyrical content of Whitehouse and in the infamous incident where, in 1981, he released an early album by Italian instrumental Noise musician, Maurizio Bianchi, on Come Org (Bennett's own label), but changed the artist name from MB to Leibstandarte SS MB and overdubbed speeches from Nazi war leaders onto the tracks (Cooke 2016). This highlights the primacy of the political and social transgression to Bennett's aesthetic, where the music is 'an antagonistic sound bomb meant to shock by virtue of its thoroughgoing hideousness' in service of the lyrical and extra-sonic contextual themes (Wilson 2014, p.9). Whitehouse's foregrounding of the politically and socially resistant elements of their practice is a characteristic often considered to be a defining feature of 'Western' Noise in contrast to Japanese Noise: 'Akita [Merzbow] himself states that the most important distinction between Western noise music from bands like Throbbing Gristle or Whitehouse and Japanese noise music is that the Western bands have a thoroughgoing socio-political message while Japanese noise is intrinsically meaningless' (Wilson 2014, p.306). Although Whitehouse's only permanent member was Bennett, Philip Best quickly became the most consistent 2nd member of the group, having already begun making records as Consumer Electronics and having created his own label, Iphar, to release his work and that of friends (Taylor 2016). In Italy, Maurizio Bianchi released the seminal *Symphony for a Genocide* (1981) on Sterile Records, where he could retain greater artistic control than on Bennett's Come Org, and, in 1982, two artists associated with Bennett and Whitehouse established their own highly influential Power Electronics outfits: Kevin Tomkins with Sutcliffe Jugend, still considered to be one of the most brutal and uncompromising early Power Electronics acts, and Gary Mundy with Ramleh. From these beginnings, more key Western European Power Electronics and Noise outfits emerged over the course of the 1980s, notably Skullflower, Con-Dom, The Grey Wolves, Smell and Quim, Putrefier, Dustbreeders, and the Schimpfluch-Gruppe of Rudolph Eb.er (Runzelstirn and Gurgelstøck), Joke Lanz (Sudden Infant) and Dave Phillips, who used Power Electronics to re-imagine Viennese Actionism, while the more Industrially-aligned Le Syndicat and SPK continued to develop their sounds.

If William Bennett's liner notes are consistently cited as ground zero for the term 'Power Electronics', 'Noise' as a genre name has its own origin story which takes place during the late 70s/early 80s at the Kyoto "free space" called Drugstore (a small room in the

industrial outskirts of the city with a maximum capacity of 20 people where the Kansai underground would congregate to play, experiment and listen to music). Many early exponents of Japanese Noise met at Drugstore, including Hijokaidan, and it was during the listening sessions there that Hijokaidan member Mikawa Toshiji began referring to the records he would bring in, encompassing various experimental music traditions (Stockhausen, Whitehouse, Nihilist Spasm Band), as 'Noise' (Hutson 2015; Novak 2013). According to this story, Hijokaidan therefore began referring to their own work as 'Noise', and the genre name continued to be used to describe the music of themselves and their peers when Jojo Hiroshige began releasing it through Alchemy Records in 1983. Over the course of the 1980s, major exponents of what would come to be known as Japanese Noise (or Japanoise) would be released on Alchemy Records, including Hijokaidan, Incapacitants, Hanatarash and K.K. Null, while members of Experimental Rock band Boredoms would appear as members of numerous short-lived groups on early releases. Boredoms always resisted the label Noise, but their social and generic proximity to the Kansai Noise scene has led to them becoming closely associated with the genre, while another Experimental improviser, Keiji Haino, also deserves special mention here as a profoundly influential musician with roots in a Rock tradition (founding the Experimental Rock band Fushitsusha in 1978), whose influence and practice often extends into Noise music through his notable use of homemade instruments and everyday objects, deafening performance volumes and continued exploration of distortion and feedback. While Merzbow's experimental junk compositions were transforming into the archetypal Noise for which he would become renowned, this growing 1980s Japanese underground was beginning to produce a host of new Noise acts, including notable exponents Masonna, Gerogerigegege, K2 and Solmania.

In the mid-1980s, two key labels in the development of US Power Electronics and Noise were established: Hal McGee and Deborah Jaffe's Cause and Effect, which ran from 1983 to 1988; and Ron Lessard's RRRecords, a monumental institution of US Noise that began in 1985 and continues to run out of Lowell, Massachusetts, having released music by countless well-known Noise acts (Candey 2016). Cause and Effect put out the music of Jaffe's own Noise project, Master/Slave Relationship, but also that of Blackhouse (an Evangelical Christian Power Electronics project intended to satirise the already slightly tired trope of 'dark and disturbing' themes in Power Electronics), The Haters, and Controlled Bleeding. During the 1980s, RRRecords also released music by these artists alongside that of Randy Smersh, Smegma (of LAFMS), Lessard's own Emil Beaulieau, and an impressive selection of Western European and Japanese Noise, including some early Merzbow releases, a great deal of Nurse

With Wound, Hanatarash and an early example of Runzelstirn & Gurgelstøck in collaboration with Merzbow and Due Process. Nurse With Wound and Merzbow also released music through Cause and Effect.

One might perceive in the output of the Cause and Effect, RRRecords and Alchemy Records labels the beginnings of the circulatory patterns of cultural exchange in Industrial, Power Electronics and Noise that would give rise to a generic understanding of Noise that Novak (2013) describes in *Japanoise: Music at the Edge of Circulation*. I have already mentioned the widespread yet reductive reading of early Western European and North American Power Electronics/Noise as tending towards political and social resistance, inherited from Punk and Industrial traditions, from which the musical qualities logically arose, whereas early Japanese Noise was primarily concerned with resisting easily identifiable 'musical' traits, aligning itself more so with Dada and Performance Art and focusing on sonic exploration. The assumption is that, because Western European and North American artists could rely upon the Power Electronics emphasis on vocals and artwork as a means to transmit transgressive thematic content, they were subsequently more content to continue with traditional synthesisers and drum machines (however wildly distorted) as the sonic foundation for the music, while Japanese Noise-makers were quicker to embrace no-input mixing and feedback and to abandon traditional instrumentation altogether than their Western counterparts. This, of course, does not hold up to any real scrutiny. Firstly, the output of Smell and Quim, Blackhouse and the Schimpfluch-Gruppe provides early evidence of a knowing, humorous approach to Power Electronics, while early Merzbow and Alchemy Records releases were hardly devoid of transgressive (particularly sexually) content. Moreover, as we have seen, whatever awareness The Haters, Whitehouse, and Hijokaidan might have had of one another when they started out, within just a few years the release catalogues of RRRecords, Cause and Effect and Alchemy Records demonstrate a transnational exchange of Power Electronics and Noise that would lead to a continued growth of the genres over the course the 1990s, and further blurring of any already vague distinctions drawn along national or generic lines. Japanese artists Aube, MSBR, C.C.C.C., Pain Jerk, Monde Bruits and Killer Bug (Kazumoto Endo) achieved international recognition alongside Merzbow, Incapacitants and Hijokaidan, while the US Noise scene exploded with a string of major artists including Richard Ramirez (whose numerous side-projects include Black Leather Jesus and Werewolf Jerusalem), Macronympha, Daniel Menche, Crank Sturgeon, The Rita, Prurient and Wolf Eyes. Wolf Eyes, in its beginnings a collaborative project between Nate Young and Aaron Dilloway that developed a rotating cast around Young after Dilloway left in 2005, has

become one of the most well-known Noise projects internationally, while Dilloway's prolific output as a solo artist is also extremely highly regarded in Noise circles. Since the 2000s, Noise has continued to develop its reach and traverse numerous generic boundaries, with cross-over artists working in Rock (Melt-Banana, Daughters, Street Sects) Electronica (Emptyset, Cut Hands (William Bennett), Soft Issues) and Hip-Hop (Death Grips, Moor Mother) drawing heavily on Noise for influence. Musique Concrète, Field Recording and Institutional Electronic Music continue to converge in the Noise of Spoils and Relics, Vom Grill, Altar of Flies (Mattias Gustafsson) and Wanda Music, while Guttersnipe and Sister Iodine illustrate that the traditional Rock band setup can still find new and interesting expressions of Noise. Throughout its now long and diverse history, Noise has consistently placed great emphasis on its resistant potential, both socio-politically and as an aesthetic 'other' to traditional ideas of music. While Whitehouse might be the most obvious example of emphasising the former, and innumerable Power Electronics provocateurs have proliferated across the globe in order to continue that tradition (see Jennifer Wallis' (2016) excellent article on transgressive themes in Power Electronics, alongside many others that consider this theme, in her edited volume *Fight Your Own War: Power Electronics and Noise Culture*), in the case of the latter we might consider Vomir, whose now-famous slogan 'No Dynamics, No Change, No Development, No Ideas' explicitly denies four basic inherited expectations of what music should do (Henry 2016, p.141). While Vomir, Richard Ramirez, Incapacitants, The Rita, Kazuma Kubota and others continue to create Harsh Noise (and its off-shoot, Harsh Noise Walls) that makes absolutely no accommodation to the traditional materials of music, resisting the idea of 'music' as an 'other' implied by the absence of its signifiers, I find that, after at least 40 years of development, Noise's aesthetic resistance is most effectively heard when it is placed in direct contact with traditional musical elements, where the tension is audible and explored as a space of expressive potential. This might be heard in the protest music of Harrga, the Dadaist junk music of Bonne Humeur Provisoire, the vocal experimentalism of Lingua Ignota's survivor anthems, or the hiss and crackle of Andy Stott's early-2010s Industrial Techno. The Noise artists I will discuss in the case studies sections were chosen in order to explore this specific aspect in detail, demonstrating different ways of exploring Noise's productive disruption of traditional musical forms.

In the introduction, I followed Demers (2010, p.41) in offering a definition of live performance as a situation where musicians give a real-time 'public rendering of music'. I am using this definition in order to exclude performances of fixed-media studio recordings given by consumer music-listening devices for private listening (Bluetooth speakers, Hi-Fis, smartphones and headphones etc.) whilst including the various technologically-mediated forms of live performance that exist in contemporary society (Instagram live, televised concert performances, live albums etc.). Such technologically-mediated examples of live performance diverge from the definitions offered in Peggy Phelan's 1993 book *Unmarked: The Politics of Performance* (Phelan 2005), which is considered to be one of the 'seminal contributions' with which the 'liveness debate [was] launched' (along with Philip Auslander's 1999 study, *Liveness: Performance in a Mediatized Culture*) (Meyer-Dinkgräfe 2015, p.69). Phelan insists that spatial and temporal co-presence of audience and performer is essential to the ontology of live performance: 'Performance's only life is in the present. Performance cannot be saved, recorded, documented, or otherwise participate in the circulation of representations of representations: once it does so, it becomes something other than performance. To the degree that performance attempts to enter the economy of reproduction it betrays and lessens the promise of its own ontology. Performance's being, like the ontology of subjectivity proposed here, becomes itself through disappearance. [...] Performance honors the idea that a limited number of people in a specific time/space frame can have an experience of value which leaves no visible trace afterward' (Phelan 2005, pp.146-149). Phelan's valorisation of spatial and temporal co-presence is tied to her Performance Art background, where it serves as a means of distancing Performance Art from the demands of the art market and capitalist economy, consequently establishing distance from object-oriented forms of visual art and contributing profoundly to its own ontology and aesthetics. From my perspective, it is not the ontology of live performance, broadly conceived, that 'mediatization' (to use Auslander's (2008) term) threatens for Phelan, but her ontology and aesthetics (and, implicitly, the cultural and economic capital) of Performance Art. As a musician who has grown up with the vast majority of my musical experiences being in some way mediatized, and given my understanding of live performance in music as a real-time public rendering of music, I do not find mediatization to be problematic for the ontology of live performance. Auslander (2008, p.7) also finds Phelan's definition to be 'untenable', arguing that '[...] the qualities performance theorists frequently cite to demonstrate that live performance forms are

ontologically different from mediatized forms turn out, upon close examination, to provide little basis for convincing distinctions. Mediatized forms like film and video can be shown to have the same ontological characteristics as live performance, and live performance can be used in ways indistinguishable from the uses generally associated with mediatized forms. Therefore, ontological analysis does not provide a basis for privileging live performance as an oppositional discourse' (Auslander 2008, p.184).

Live performance in music can withstand mediatization because we apprehend it through traditions of performance practice whose poetics are predicated upon real-time public rendering. What mediatization has the potential to change is rarely the ontology of live performance but how we as audience members experience its liveness. Watching an artist perform on the Friday night broadcast of the BBC television programme *Later... with Jools Holland* (for which performances are pre-recorded on Tuesdays (Robjohns 2013)), I experience the liveness of that performance differently to how I would were I a member of the studio audience, and differently again to the kind of liveness I would experience watching the same artist performing the same song in a gig venue. Auslander also recognises the distinction between live performance and liveness, although I will take issue with certain aspects of his argument: '[...] "recorded live" [...] *is* an oxymoron (how can something be both recorded and live?)[...] The liveness of the experience of listening to or watching the recording is primarily affective: live recordings allow the listener a sense of participating in a specific performance and a vicarious relationship to the audience for that performance not accessible through studio productions' (Auslander 2008, p.60). I understand how this argument could be made in the case of a live album, where the performers are understood to be performing primarily for the temporally and spatially co-present audience (although the knowledge that the event is being recorded is likely to influence their performance), but in the example of *Later... With Jools Holland*, the liveness experienced will surely be different as the primary function of that programme is to provide live performances for an at-home, temporally and spatially dislocated audience (and we would expect this knowledge to influence the performers' behaviour). Moreover, as is evident from previous discussion and discussion to follow, I do not consider 'recorded live' to be an oxymoron, because temporal and geographical displacement are no longer cause for contemporary audiences to perceive a performance as 'not live', an argument that Auslander himself has warmed to in his more recent writings (Auslander 2012).

I do, however, agree with Auslander's (2008; 2012) assertion that liveness must be construed as 'historically contingent'. As he observes, 'it was the development of recording

technologies that made it both possible and necessary to perceive existing representations as "live." Prior to the advent of these technologies [...] there was no need for a category of "live" performance,' (Auslander 2012, p.3). The development of studio technologies for the capture and recording of sound made live performance into a form of music-making with its own traditions of practice predicated on the real-time public rendering of music by musicians, and the cultural resonance of those traditions grew as the studio diverged further and further from functioning simply as a means to document live performances and developed its own traditions of practice. Live performance traditions may stretch back beyond the advent of recorded sound or may not, but audience members will apprehend their liveness in accordance with a body of traditions developed over the course of the history(-ies) of live performance. For example, televised live performances developed as representations (however misleading) of what an artist would do in a non-mediatized live performance setting. Nevertheless, they function to contextualise performers within a tradition of live performance distinct from their work within a tradition of recording studio practice. Over time, this gave rise to traditions of televised live performance and an understanding of what liveness can be within this context.

Although liveness is 'historically contingent' and, to a certain extent, in the ears and eyes of the beholder, I believe that there are steps musicians can take in order to aspire to a 'condition of liveness' in their live performances. As a phrase, a 'condition of liveness' is a reference to Vijay Iyer's (2009, p.402) conception of improvisation not as a quality, but as 'a condition'. Just as Iyer argues that a 'condition of improvisation' is something that can be cultivated and is more dependent upon attitude than the objective qualities of a live performance, so I believe that a 'condition of liveness' is one that can be cultivated and is dependent upon the attitude of those participating in a live performance. My interest in improvisation is explored in detail in a later section, as it is fundamental in how I look to encourage a condition of liveness in my own work, but there are numerous qualities in a live performance that might come together in order to give rise to this condition. What is crucial to my understanding of a condition of liveness is a demonstrable intent to take advantage of the affordances of the live performance medium in which one is working. While this might be taken to mean recourse to the visual, perhaps through the use of electronic and acoustic instruments that allow for an apprehensible relationship between physical gesture and the morphology of a sound, or through the implementation of video projections, stage lighting or similar, this need not necessarily be the case. A concert of fixed-media music presented in multichannel loudspeaker diffusion can equally cultivate a condition of liveness through sensitive and intelligent sound equalisation and

spatialisation that considers the affordances of this live performance context and tradition, taking into account factors such as room acoustic and audience positioning. My own preferences for cultivating a condition of liveness, however, stem from my background in Classical and Rock music, and have evolved to incorporate my exposure to live Noise and Experimental Electronica performances. The ways in which artists in Noise and Experimental Electronica typically engage with live performance will be detailed over the course of this chapter, but my decision to draw upon Noise when working in a live performance context is motivated by the privileging of the relationship between performers and their equipment, which resonates with my Rock and Classical upbringing. Before addressing this in depth, I will first address the concept of studioness.

STUDIONESS

In this section I will seek to define what I mean by 'a condition of studioness'. Simply put, it is a correlate of a condition of liveness, in that I believe a condition of studioness can be cultivated by artists who make appreciable use of the unique affordances of the studio environment in their fixed-media work. Where the term 'liveness' in the study of music, and the performing arts in general, has become so widely accepted as to develop into an established field of inquiry in and of itself, the term 'studioness' (or 'studio-ness') remains almost non-existent. Outside of music scholarship, it appears primarily as a reference to the collaborative potential of shared working spaces. Within the field of theatre studies, Bryan Brown (2018, pp.9-10) offers 'studioness' as a possible translation of 'studiinost'; a term widely used in Italian, Polish and Russian scholarship that 'does not have any referent outside of theatre.' Studiinost refers to the atmosphere and dynamics of the theatre studio space, which is continually 'breathing, hoping and growing' to foster a collaborative ethos among actors. Similarly, Harvey Molotch invokes the collaborative aspects of studio space in his review of the edited volume *Studio Studies: Operations, Topologies and Displacements* (Farías and Wilkie 2016, inside cover), an interdisciplinary look at the studio in a variety of creative and industrial contexts: '... the studio is offered up – in its ad hoc procedures and modes of emergent organization – as an empirical model for social life and creativity more generally. It makes the studio mundane while showing how the worlds outside – factories, firms and so much more – share in the 'studio-ness' that makes things happen.' Neither of these examples really call to mind the relationship with liveness that would be implied by the use of the term in a musical context, and neither address

the qualities of studiness in the resulting artistic products, being as they are primarily concerned with the inter-personal dynamics of people within studio spaces.

The available musical references, by contrast, almost always place studioness in relation to liveness and, in particular, acknowledge the impact of studio methodologies and technologies on the artistic product. In Robert Pierzak's (2015, pp.13-14) PhD commentary for his narrative album, *The Worm*, he perceives 'studio-ness' in the quantised repetition associated with sampling technologies (although he does allude to the intersection of liveness and studioness effected by sampling) in contrast to what he perceives as the liveness of recorded performances on acoustic and electronic instruments (which he presents as non-repetitive, variable elements): 'The balance of liveness and studio-ness here is the expectation of sampling in a style such as New Jack Swing, but the backing track of "The Toast" only rarely settles into a strictly repeating groove, nor does it use any non-percussion samples. The saxophone part, especially in the first verse, refuses to settle into a locked pattern, one which could easily be comprised of a sample ... This kind of liveness is a bit less common in [a] style that's heavily made up, and arguably defined by the use of repeating samples. The hi-hat and kick lines [...] here as well, are through-composed, and never really settle into a repetitive groove until Verse 2.' Pierzak makes the problematic assumption that changing time-signatures and non-repetitiveness inherently signify liveness, whereas those familiar with studio technologies will be aware of the ease with which non-repetitive structures can be generated in a studio environment. However, a sympathetic reader will recognise that Pierzak here understands studioness as presenting in the technique of looping, and that this is an audibly recognisable trait of studio technology. The term 'looping' arose from the practice of making 'locked grooves' in phonograph records and physical loops out of magnetic tape in early electronic music studios (Holmes 2016, pp.169-190), and became a recognisable feature in Hip-Hop and EDM as the technique was emulated and developed in samplers, drum machines and 'on the grid' of the DAW. Indeed, the 'swing' of the 'New Jack Swing' genre name refers to its prevalent utilisation of the swing function that is built into these studio technologies, allowing samples to be looped in 'swung' rather than 'straight' patterns (Rivers 2018). It is not surprising, then, that Pierzak perceives the played-in swing of his saxophonists and keyboardists as evoking liveness in comparison to the automated swing that characterises the New Jack Swing style he is emulating.

Simon Zagorski-Thomas (2016) also employs studioness in contrast to liveness in his analysis of the Kings of Leon's of "Sex on Fire", similarly attaching flexibility of rhythm and tempo to liveness while identifying quantised rhythms and metronomic tempo as qualities of

studioness. He argues the 'break down' chorus is deliberately employed in the studio version of the song to evoke the live performance technique wherein bands drop all of the instruments except for drums and vocals to provide a sing-along section for the audience: '[This] stands as a cultural marker that brands the Kings of Leon as musicians who see their identity as a live band rather than a studio band – or at least weighted towards 'liveness' rather than 'studio-ness'. The final aspect of the narrative shape of this track that I [Zagorski-Thomas] will address is the changing tempo. [...] Not playing to a click track is not only a further marker of the value the band attribute to playing live but also relates to two other tropes: one being freedom and the other being the historical golden age of rock in the 1960s and 1970s,' (Zagorski-Thomas 2016, pp.118-119). This kind of distancing from the 'mechanistic' and 'rationalising' technologies of the studio in favour of the supposed 'expressivity' and 'freedom' of the live environment is an oft-repeated trope of Rock ideology (Frith 1986; Frith 2012; Lashua and Thompson 2016; Butler 2018), and will be returned to later on, but it connects to our next example, by Paul D. Greene (2005, pp.9-10), whose only use of 'studioness' is in reference to the studio environment as compromising the authenticity of a musical genre: 'Some music genres showcase recognizably "high-tech" sounds, and studio technology's traces come to function as prestigious markers of modernity. In other musics, such traces are heard as warning signs of cultural co-optation, and engineers labor to mask or conceal the "studioness" of their products.' Lashua and Thompson (2016) highlight the consistency with which depictions of commonplace studio processes such as multi-tracking, performance editing and post-performance production are avoided in music films and documentaries, whereas the comparatively rare moments of group performance are repeatedly foregrounded:

> Romantic images of recording studios, and what apparently happens inside them, pervade popular media and are reproduced in Hollywood films and music documentaries; see, for instance: *Begin Again* (Carney 2013); *Music and Lyrics* (Lawrence 2007); *Ray* (Hackford 2004); *Sympathy for the Devil* (Godard 1969). Music documentaries in particular often represent an incomplete view of the recording studio and its processes, filming musicians "delivering [a] collective performance rather than focusing on the fractured, individual nature of overdub performance central to most multi-track popular music recording" (Williams 2011, web source). In popular music-making, depictions of "the artist" as the sole creative force inside the recording studio inadvertently diminishes the contributions of others (engineers, producers, and other musicians) and the necessary interactions with recording technologies (Thompson 2016).
>
> (Lashua and Thompson 2016, p.71).

For Lashua and Thompson, this widely-perpetuated conception of the artist in the studio feeds into the myth of the studio, and they employ 'studio-ness' as a term to equate the myth-making that gives rise to a popular idea of the studio with the myth-making that gives rise to popular stereotypes of Italianness or Englishness. Which is to say that they are stories 'that are not true or false *per se*, but that blur the distinction between true and false, reality and illusion, as well as natural and social orders of things. They offer, in the words of Stuart Hall (1997, p.41) "a message about the *essential meaning*" of cultural practices that are in need of interrogation.' Crucially, Lashua and Thompson, Greene, Zagorski-Thomas and Pierzak are in agreement that certain techniques and technologies of the studio are broadly culturally understood as signifying of the studio, to the extent that efforts are made to conceal them where they are seen as compromising the aesthetic ideals of a genre (Greene 2005; Lashua and Thompson 2016; Zagorski-Thomas 2016). All except Lashua and Thompson also explicitly state that the sounds of certain techniques and technologies are associated to varying degrees with the live environment or with the studio by listeners, and that this informs compositional decisions based on whether artists want their music to be perceived as tending towards liveness or studioness.

The final usage of studioness in the musical literature that I would like to address is that of Martin and Slater (2012). In their article, *A Conceptual Foundation for Understanding Musico-technological Creativity*, Martin and Slater outline a framework through which points of connection can be found between the ideas of studio work in major culturally iconic recording studios, such as Abbey Road, and the ideas of studio work on a laptop or iPad. They find these connections in the relations between individuals, technology, and the history of recorded music. Taking the act of recording a drum kit at a studio in Sheffield and performing the same task in a London studio as their example, they note that the 'buildings, technologies, instruments and people will likely be different but the *enactment* is the same. [...] 'studioness' obtains in both the Sheffield and London locations as an essence that 'spins connectedness' (Born 2005, p.16) between the differing objects and surface characteristics of each discrete place. By understanding the essence of the invariant characteristics of musico-technological creativity, the connecting sinews between the more familiar, centralized enactments (recording drum kits in a studio) and the less localized, less formalized enactments (making a track from scratch on the train platform with a mobile phone) can be drawn out,' (Martin and Slater 2012, pp.61-62). Martin and Slater's reading of studioness does not extend to the musical texts produced in the studio, instead restricting it to the activities, objects and technologies of the studio. I would

argue, however, that the sounds associated with these activities, objects and technologies also communicate studioness through their association. This idea of studioness as an 'essence' that 'spins connectedness' is therefore useful, as a studio is fundamentally a means of handling, combining and transforming recorded sound with the understood aim of producing a recorded sound object, and the body of approaches, techniques, technologies and sounds that have accumulated around this process can be understood as contributing to the construction of this essence that we might label 'studioness'. When we sit down to make a track, whether recording a band in a commercial recording studio or assembling loops on Garageband, we are engaging with traditions of handling recorded sound, the tools for which originate in these traditions, and, crucially, with the aim of producing a recorded sound object, and we apprehend the studioness of this form of engagement with sound in the resulting musical products.

That Garageband loops grew out of a studio technique of making physical loops out of pieces of tape *is* significant, and it is just one of many techniques originating in physical interactions between people and sound-making/processing equipment in the studio that has been transported into the virtual realm of the DAW. From the technique of the cut (we might consider anything from the audible mid-phrase cut that concludes 'Oh, Darling' from The Beatles' *Abbey Road* to the extreme fragmentation of piano and vocal in James Blake's 'You Know Your Youth') to the equipment of analogue compressors (now digitally modelled and available in DAWs) to the physical spaces of studio live rooms (convolution reverbs are available to emulate the spaces of numerous famous recording studios (Audioease 2020)), the features of the historicised recording studio have increasingly been folded down into the personal computer interface of the DAW, yet the studioness that spins their connectedness remains.

As with the abovementioned condition of liveness, I believe that artists can work to cultivate a 'condition of studioness' in their work through apprehensible commitment to the affordances of the studio environment. I have already described many of the techniques and tools that are associated with studioness, and foregrounding these tools in a track is likely to give rise to this condition. In the case studies section, we will see how this is achieved in the work of OPN, Holly Herndon and Tim Hecker, and how their music also exhibits high levels of microscopic and macroscopic control. The issue of control is not unrelated to the express purpose of the studio: to produce a recorded sound object. This control-focused approach inevitably informs the kinds of creativity that take place and, therefore, the resultant work that is made in this environment. This stands in contrast to the qualities so consistently evoked as unique to live performance, such as spontaneity, responsiveness, and unpredictability. Although these

features may, in fact, be relatively absent from many forms of live performance (as Simon Frith (1986) demonstrates in *Art vs. Technology: The Strange Case of Popular Music*) and absolutely present in many forms of studio practice, the form of liveness I am seeking, which draws on approaches I have seen taken to live performance in Noise culture, does embrace these qualities, and has a strong heritage in various forms of improvised music.

IMPROVISATION, RESPONSIVENESS AND RESISTANCE

As established in the introduction, my interest in Noise stems from the realisation that it offers approaches to live electronic music performance that are more easily reconcilable with the live performance preferences I developed as a teenager and as a student than the approaches that are prevalent in Experimental Electronica. I find that the potency of Noise arises in no small part from the centrality of resistance to the practice, both in the aesthetic resistance to cultural and musical norms detailed in the previous sections and in the indeterminate improvisational practices that contribute to the construction of practical resistance. I believe that the pains artists take to enact this latter form of resistance helps to establish a condition of liveness founded in the relationships between artists and their technology. That said, the understanding that resistance is valuable in the construction and communication of liveness in improvisation is not unique to Noise. Its legacy as a productive force in musical performance has roots in earlier forms of improvised music and the motivations for this emanate from a desire to reassure those present that they are witnessing real, honest-to-god, spontaneous creation. As Vijay Iyer (2009, pp.401-2) puts it, there is 'nothing in the sound of a musical action that announces "Yes, I was 'authentically improvised'! You can tell just by hearing me ... I came into existence in the moment that you heard me,"' so there is always work to be done in establishing what Iyer, following George Lewis, defines as a 'condition of improvisation'. Any number of approaches might give rise to this condition, but in Free Jazz, Free Improvisation and Noise, 'responsiveness' consistently features as an essential quality of improvisational practice, and it is through responsiveness that I will define practical resistance as I conceptualise it.

Muhal Richard Abrams (cited in Iyer 2009, p.402) describes improvisation as 'a human response to necessity'. In this succinct definition, Abrams at once articulates the centrality of responsiveness to his formulation *and* points towards its fundamental resonance with other forms of human interactivity in everyday life, insofar as our actions are defined by an ongoing responsiveness to (and negotiation with) external stimuli. This continuity between

responsiveness, improvisation and life is also present in Tim Ingold and Elizabeth Hallam's (2007, cited in Toop 2016, p.28) identification of improvisation as 'relational [...] because it goes along 'ways of life' that are as entangled and mutually responsive as are the paths of pedestrians in the street.' It follows that one way we might cultivate a 'condition of improvisation' is through a transparent responsiveness to a set of conditions that are not entirely predetermined, and in so doing an evocation of life and/or liveness might emerge.[15] This, of course, is not guaranteed, but it can contribute to the cultivation of a condition of liveness, as it exists in live Noise practice and as I hope to develop in my own practice.

The responsiveness that sits at the heart of improvisation can be understood as presenting at various levels in the practice. The most apparent is between the players, in the frequently-invoked image of musicians locked in meaningful eye contact communicating... something, the nodding of heads, the intentional performativity of hands falling from keys or bodies backing away from an instrument to signal a player's conviction that a natural conclusion to the music has been reached. Indeed, the idea that listening is the most important skill in improvisation is pronounced so often as to be a cliché at this point, however accurate, yet it calls upon responsiveness to affirm the ephemeral, wordless space *between* members of the group as the nexus of creative meaning, trumping the skill and creativity of any individual member of the group. This might account for Derek Bailey's designation of solo improvisation as 'disgusting' (Toop 2016, pp.180-181), or the conviction of many seasoned improvisers that aesthetic interest in improvisation is predominantly found in the dynamics between the players, rather than in individual contributions (Toop 2016, pp.2-3; Prévost, cited in Cox and Warner 2017b, p.353). Bailey (1992, p.371) foregrounded the significance of this group dynamic in his recollections of playing in the band Joseph Holbrooke; '[...] the experience of playing freely soon had the effect, as it always does, of producing a set of characteristics unique to that particular grouping of musicians and of producing an identity only a small proportion of which was established by the technical, purely musical constituents.'

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[15] I say 'one way' because I accept that there are numerous ways of cultivating a condition of liveness that, in fact, depend upon predictability, planning, and cultural norms. We might think of the Rock convention of dropping all instruments other than the drums in order to have a sing-a-long chorus with the audience (discussed in the 'Liveness' section) or EDM audiences 'waiting for the drop' to dance ('the drop' can be either the reintroduction of bass into the mix in many forms of EDM or, specifically, the introduction of the hallmark 'wobble bass' sound in a Dubstep track). However, the condition of liveness to which myself and the artists I discuss here aspire, which is to say founded upon resistance, relies on responding to unpredictability.

Then there is responsiveness to material; the physical characteristics of the objects employed in the production of sound. An object contains within it a set of 'perceptual affordances' – ways in which one can interact with it determined by its construction – and this dictates the sound-making possibilities available to a player (Klett and Gerber 2014, p.278). A microphone plugged into an amplifier can be used to amplify the sound of whatever it is pointed at, but when a performer brings it into close proximity with the amplifier and feedback is produced, the relationship between those objects becomes transparent. The affordances of the amplifier, the microphone and the room collapse into the sonic event, and the ways in which the sound can be manipulated through the covering of the microphone, bringing it closer to the amp or further away, or adjusting volume and EQ on the amplifier, describe the material makeup of the microphone/amplifier/room configuration. Similarly, when a performer negotiates their way around an object not intended for the generation of sound, drawing sounds from it that are evidently surprising to them as much as to anybody else, it creates an empathetic response from audience members due to the transparency of that moment of discovery. As the performer concentrates their focus into that tactile relationship with the object, responding to its affordances, it reminds those around them of their own lived experience of how chains of causation figure into the production of sound. Being attuned to the materiality of sounding objects is central to constructions of resistance in Noise and will be returned to in more detail later on.

The examples of responsiveness to material offered above also address the materiality of the room, and responsiveness to the environment is certainly a recurrent theme in formulations of improvisation. 'Environment' might refer to the physical properties of a space in terms of size, material and, contingently, acoustic, 'a theater of physical choreography as wed to objects and space' (LaBelle 2015, p.38), but it can also refer to the social environment. Christopher Small (1998, pp.48-9) highlighted the unspoken understanding that audience members and performers have with one another in any live performance setting; that they are going to affirm the significance of the performance conventions of the given genre, and in doing so take part in the construction of meaning during that event. Performers rely on the audience interpreting and appropriately responding to their musical and extra-musical gestures (for example, applauding after solos at a Jazz gig) and in doing so respond to the audience. Even in experimental musical genres, this manifests in the understanding that the performance might deliberately contravene the conventions of its own, or other, genres. 'What we need to keep in mind is that those taking part in performances of different kinds are looking for different kinds of

relationships, and we should not project the ideals of one kind of performance onto another. Any performance [...] should be judged finally on its success in bringing into existence for as long as it lasts a set of relationships that those taking part feel to be ideal and in enabling those taking part to explore, affirm, and celebrate those relationships' (Small 1998, pp.48-9).

If we consider non-human elements in live performance to be inviting an attitude of responsiveness from players then we might understand them as having an embodied agency, present in their material make-up and the kinds of responses they elicit. This is an idea resonant with John Robert Ferguson's (2013) (and my own) felt experience of interacting with electronic music systems in which indeterminacy is a prominent feature. Ferguson describes this kind of agency through Sally Jane Norman's account of working with puppets; '[...] puppets are not just passive, neutral entities to be set in motion like clockwork ...*Via its material and structural make-up, the puppet expresses a kinetic 'will',*' (Norman 1995, cited in Ferguson 2013, p.145 [my emphasis]). The idea that materials and objects embody agency is increasingly prominent in a broad range of disciplines, particularly now that electronic interfaces represent a dominant form of interactivity in daily life. Lisa Blackman provides insight here through discussion of Howes' concept of skin knowledge;

> [Howes] terms these new ways of 'knowing' 'electronic skins' that produce the body as a machine connected up with other automated and digital technologies [...] These electronic skins create and shape different ways of 'feeling in the world' (Classen 2005, p.402). These processes of 'feeling in the world' are both disembodied, in the sense that they rely [upon] or forge physical detachment, whilst simultaneously overloading and overwhelming us with visceral stimulation. The kinds of skin knowledge that Howes identifies are not simply cognitive forms of reflexivity, but tactile forms of knowing that attune us so that we are permeable and open to being affected by the other, human and non-human.
>
> (Blackman 2008, p.87)

This idea can certainly inform how we conceptualise our interactivity with sound-making objects, whether electronic or acoustic, and holds particular resonance when considering our responsiveness to material objects in music performance. Blackman's argument recalls Mowitt's writing on percussion, in particular his invocation of skin (both human and drum) as the key element in the construction of the subject; 'percussive sense-making is caught up in the way that skin contact produces a subject who at once makes sense of various patterns of contact and who is itself the locus of sense for such contacts. [...] The point is [...] that the subject forms in and through the limits of embodiment' (Mowitt 2002, p.7). Mowitt goes on to elucidate all the

various ways that interacting with and being acted upon by his sound-making objects of choice (drums) via the skin makes sense of drumming itself. One could make the connection between Mowitt and Blackman in arguing that it is through skin that we feel our way through out interactions with sound-making objects, but also though the skin that we feel their sonic and physical characteristics acting upon us. Similarly, Ferguson (2013) argues the case for an 'imagined agency' when interacting with various sound-making technologies and experiencing their in-built affordances and restrictions, while Klett and Gerber (2014, p.278) reference Hennion to connect responsiveness and the object in their discussion of the role of indeterminacy in Noise performance; '[In] performance, 'the object matters a great deal – but an object seen now through the "feedbacks" and reactions it enables' (Hennion 2008, p.5).'

Through the foregrounding of responsiveness, improvisation becomes a performative enactment of finding situatedness in the world. Players locate themselves and are themselves located through dynamic relationships with one another, the material objects with which they interact, and their environment. This playing out of the dynamics of life as lived is no doubt why a 'condition of improvisation' holds such strong currency in discussions of liveness in electronic music. There exists a well-documented suspicion as to what constitutes liveness in performance with electronics, and musicians are often eager to emphasise the improvisational aspects of their practice in order to refute accusations that what they are doing is entirely predetermined or that their role in the sound generation process is minimal or tokenistic.[16] Jefre Cantu-Ledesma (2016) insists upon the centrality of improvisation to his practice when confronted with the assertion that he is playing music from his album *A Year with 13 Moons* during his live shows; 'I don't play [*A Year with 13 Moons*] songs. I wouldn't know how. All that stuff is improvised. I don't write songs. At each show, I just come up with something for that show in particular.' Holly Herndon touches on the themes of improvisation, responsiveness to the environment and liveness when discussing her performance practice; '[...] if I make a track and it has all these crazy layers to it, and then I play it live, it's not going be the same thing. There's going be an extended jam and I'm going to change things up for a live environment, so it's going to have a new life in that environment...' (Herndon and Patton 2018). Statements such as

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[16] The following texts address distrust of liveness in their respective areas of interest: a) Institutional Electroacoustic Music – *Bodily Expression in Electronic Music: Perspectives on Reclaiming Performativity* (Peters, Eckel and Dorschel 2012). b) DJ Culture – '*How do you know he's not playing Pac-Man while he's supposed to be DJing?': Technology, Formats and the Digital Future of DJ Culture* (Montano 2010). c) Noise – *"We Need You to Play Some Music"* (Julian 2013). d) Experimental Electronica – *Screenness in Experimental Electronica Performances* (Hofer 2017).

these call attention to the special credence improvisation has when it comes to establishing a condition of liveness. When considering this within the context I have already established, where responsiveness is central to theorisations of improvisation, one can appreciate why improvisation would be so highly valued by performers who want to be able to adapt and change their performances according to the performance situation, and during the performances themselves. Through incorporating improvisation into their practice, performers can respond to the various (imagined and real) agencies at play in a given performance situation, be they other performers, the audience or their own musical equipment. Through this sense of interacting with a complex of agencies, performers can affirm the liveness of their practice, negotiating their way towards something that they can reconcile with their own aesthetics and objectives, whether these aesthetics and objectives are predetermined or emergent in performance.

Having established a route towards a perceived 'condition of improvisation' through responsiveness to external agencies, I will now turn to practical resistance. Peters, Ferguson and Haenisch's representations of resistance all depend upon the perception of sound-making objects as embodying agency, particularly in the case of electronic instruments, and all three point towards indeterminacy as the key feature giving rise to the perception of resistance. For Ferguson (2013, p.144), it is in the construction of his MAD (Machine-Assembled Dislocation) 'performance ecology', where all of the elements influencing sound creation are so profoundly interdependent that it becomes impossible to keep track of the chains of causality, and 'the interdependence of the system may resist any attempt to perform a discrete action.' Peters (2013, pp.158-159), describes environments developed for the Embodied Generative Music (EGM) research project as giving rise to a quality of resistance through their obscuration of the relationship between physical gesture and resultant sound; 'Resistance is resistance to movement. In hearing resistance, then, one hears resistance to motion. Motion in music is the basis of musical agency. To hear motion in music is to hear an imagined agent, one that is like a being in that it is animated and alive without literally being the composer, the performer, or the listener. [...] the instrument may also turn into another agency, particularly if its response is less predictable than that of a static object. The 3 cases where this would happen in EGM explorations were (1) a certain level of complexity and contrast in the sonic topology that would frustrate the ability to learn stable spatial locations; (2) sounds that resist a ready acceptance in being made by us, for example, the sound of another human's voice; and (3) motion tracking glitches. Then and there, a foreign agency would seem to gain presence [...] In cases such as these, agency splits in two: the environment becomes animated, and the position of the self

towards it becomes the topic of exploration–from egoic distance, over self-extension, to trans-
gression, or self-effacement'. Similarly, Haenisch (2013, pp.166-167) explicitly connects in-
determinacy, the agency of sounding objects and resistance in his account of Andrea Neu-
mann's 'Inside Piano'; 'Often it is the material properties of an object [...] that are unsuitable
for achieving a precise sound reproduction, or the fragility of a combination of objects [...] that
refuse to let themselves be subject to an exact way of playing. This resistance of the artifacts is a
fundamental aspect of their efficacy as agents. In this context the instrument acts as a counter-
part "that cannot be mastered, that has its own momentum" and that can behave out of line with
expectations'. All of these authors describe situations in which a level of indeterminacy creates
an impression of resistance for musicians working within a given performance situation. It is
not coincidental that these authors are addressing issues of improvisational practice with elec-
tronic sound performance systems, where the correlation between an action and the resulting
sound can be obscure for performers and audiences alike. Practical resistance acts as a mecha-
nism to foreground the indeterminacy of a musical situation and promote a heightened attitude
of responsiveness among the musicians, throwing into relief the partiality of their control. This
partiality of control is central to the communication of liveness in the given examples, as the
musicians struggle to direct the ongoing sound-creation process. As asserted in the introduc-
tion, John Robert Ferguson's account of resistance and imagined agency in his practice seem to
resonate deeply with those of Noise performance practice, influencing my conceptualisation of
this portfolio. Key sections from Ferguson's research therefore bear quoting here at length, be-
ginning with an account of a performance featuring a modified Speak-and-Spell;

> *Improvisation 2* begins with the Speak and Spell already on the verge of a crash, but the
> smell of burning quickly emerges, signalling the death of the keyboard, which existed
> in this modified form for only (some of) the length of this session. In establishing
> thresholds of resistance and malleability, then engaging via a process of filtering and
> restraint, this practice is all about becoming familiar with and interacting with a system.
> Although the machine broke, and on one level this is a problem, the apparent agency in
> the act of breaking i.e. when the machine appears to withdraw its co-operation, is ac-
> cepted and incorporated into the performance, and this is but one example of an emer-
> gent phenomenon that flows throughout the practice. In my opinion, it is the moments
> where control is apparently relinquished or regained, that are most interesting. [...] My
> assertion that an interface can be resistive is based on my perception; this perception is
> distorted by an artificial focusing on haptic and auditory phenomena. Though able to
> imagine lifelike resonances with which to interact, however lifelike some technologies
> may appear, I am not claiming a spirit lurking within. Interaction with perception, like

any other interaction, is based on a willingness to engage, and the position at which
that perception lies between the real or the imagined is, as Koestler states, a 'matter of
degrees'.

<div align="right">(Ferguson 2013, pp.139-142)</div>

It is certainly my experience that the process of working with electronic music technology is one in which frustration emerges at all levels of the practice as I attempt to realise my aesthetic goals for a given project. It is also the case that the will of the interfaces with which I choose to work influences the creative journey I undertake as a composer, and this will appears to be that of a resistant agent, even when I know there is no 'spirit lurking within'. In the best scenarios, negotiation with the resistances of these interfaces forces me to consider alternative possibilities, new ways of working, and leads me away from stagnation and repetition. It is a continued faith in this impulse, and an acceptance that some performances and compositions will emerge as learning experiences rather than testaments to the fruitfulness of the approach, that motivates me to cultivate practical resistance in my practice rather than minimise or eliminate it. Derek Bailey evocatively describes the ideal scenario; 'When you've got ill-fitting elements, it's almost as though the rubbing together of the elements in order to make it work – the old analogy – produces a pearl,' (Bailey 1992, cited in Toop 1995, p.135).

LIVENESS IN NOISE

Noise exists in an uneasy position in terms of convention, as one of its foundational tenets is a 'no-rules attitude' (Klett and Gerber 2014, p.282). Nevertheless, a prevalence of particular sound-generation techniques and performance practices has arisen, with an attendant understanding that departure from these techniques and practices can be desirable and, sometimes, necessary (Cassidy and Einbond 2013, p.xx; Julian 2013, pp.127-8; Lewis 2013, p.123; Tremblay 2013, pp.77-78). While there are numerous sound-generation techniques employed in the production of Noise, Noise performances commonly utilise feedback as a primary source material in the construction of their sound world (Benhaïm 2019 pp.77-78, pp.189-195; Dion 2015, pp.57-58; Novak 2013 pp.139-148). This feedback can be generated acoustically, as in the case of the microphone/amplifier/room setup described earlier, or it can be mechanical. The latter scenario is typically achieved through the interconnection of various pieces of electronic music technology and routing the outputs of the equipment back into the inputs in order to create feedback loops. There is a predominance of consumer guitar pedals in these setups, with a particular focus on distortion, delay and equalizer pedals (Novak

2013, pp.141-143; Klett and Gerber 2014, p.277). My own noise rig setup is a typical example of the mechanical feedback scenario (often referred to as no-input mixing), and will be described in detail in the methodology, but I will briefly summarise its construction and operation here. The heart of the system is a simple mixer with five inputs and five outputs. All five inputs can send their incoming signal to all five of the outputs. By connecting the output of a guitar distortion pedal to input 3 of the mixer and connecting output 3 of the mixer to the input of that same pedal, a feedback loop can be created. If I then route the signal from input 3 to output 5 and connect output 5 to an amplifier or PA system, I will hear the results of that feedback loop. It is not uncommon to see guitar pedals and mixers connected to one another (often through an impenetrable morass of cables) on a table at a noise performance, but bespoke pieces of handmade equipment, laptops, microphones, synthesisers, samplers and other bits of instrumentation and sound-making objects can be used to augment or supplant this basic construction in order to create variety and individuality of sonic palette.

Aside from the approach to technology, there is another widespread convention in Noise that I would like to address before moving onto the issue of liveness, and this relates to performance situation. A classic Noise gig happens in a confined space, such as a 'livehouse' (a small, specialist form of performance venue common in Japan and strongly associated with the development of Noise in that country) (Novak 2013, pp.33-36), a small alternative music venue or bar, or the basement of a residential house (the latter is prevalent in the North American Noise scene). In these scenarios, there is rarely a stage, with performers and their equipment situated on the same level as the audience (who often huddle around the performer during the performance). It is also a scene where the majority of listeners and consumers are, themselves, performers (Clemence 2016, p.78). The pseudonymously-named Noise artist, Dee, is unequivocal on this issue; 'one thing I learned about Noise is you're not listening to Noise unless you're making it,' (Klett and Gerber 2014, p.285). I take care to illustrate this point because both the insider-knowledge of audience members and the physical proximity of audience and performer are indicative of a focus on the process of sound creation in Noise as a point of aesthetic interest. How performers interact with the sound-making equipment (a result of its technological construction) plays an essential part in the communication of meaning in live Noise performance, in a way that is not necessarily true of other electronic music genres.

As feedback plays such a central role as a sound source in Noise, the decisions made when assembling mechanisms for its production and manipulation are considered to be part of the creative process. What is significant about feedback, whether acoustic or mechanical, is

that it is a sound generated by a whole interconnected system, rather than there being a 'sound source', as is the case with most traditional instruments (Novak 2013, p.146). In the case of acoustic feedback, the sound is generated through the ongoing interaction of microphones, amplification systems and a space and is, in a sense, a sonification of the space *between* these elements. If a performer does not adjust any parameter within that configuration, the system would continue to generate sound, although the sound would quickly plateau at an unchanging pitch. Through intervention within the system – changing the distance between the microphone and the speaker, altering the EQ of the amplifier – the performer can explore its material makeup and call attention to particular aspects of it, but it is still the sound of the relationships between the constituent elements that is heard. The same is true of a mechanical feedback system; the sound it produces is a window into the interaction of the components in the system, but there is no sound source, as such. Players may re-route the sound through different components, alter the chain of causation, increase gain or adjust EQ, add delay, but this changes the behaviour of a system that is engaged in the ongoing generation of sound through interaction with itself. It is a sound that describes the relationships of its constituent parts, sonifying the chains of causation between them, rather than a representation of a sound source.

Feedback systems have the potential to complicate and obscure the causal relationship between gesture and the production of sound. Such relationships are entangled with a well-entrenched historical precedent that sound is descriptive of physical actions in acoustic space. 'Music as an expressive medium follows on as an extension from the bodily act of expression. This extension seems so natural that it is easily taken for granted that music should be, like bodily expression, a means of psychological expression, in prolongation of emotional expression as given to us via the face, voice and entire body,' (Peters 2012, p.1). Historically, the properties of a sound directly related to the causal relationship giving rise to that sound; for instance, increased bow pressure will cause a violin string to produce a louder sound, which is consistent with many actions in material space in which greater force is likely to elicit louder sound events. As audience members, we appreciate that when a violinist produces a crescendo effect it is a result of them gradually exerting more pressure upon the strings of the instrument. This is not necessarily the case in electronic music, as Peters (2012, p.4) observes; '[electronic] instruments are not necessarily bound to replicate the natural touch-sound relation, and replication of the richness of the relation is, in fact, a sophisticated challenge.' The feedback systems produced by Noise artists do not need to make any attempt to replicate this relationship. In fact, it is common for Noise artists to develop their systems in such a way as to deliberately occlude the

relationship between their interventions and the resulting sounds (Novak 2013, p.156). Performers can engineer high levels of complexity in their feedback systems, and a deep interdependence of the constituent parts, in order to create a situation where the relationship between a change in the parameters of the system and the effect of that change becomes distorted, subverted or lost in the operation of the system.[17] It is worth noting that this occlusion is rarely absolute: the relationships between gestures and sonic outcome might range from direct and transparent to tangential and unclear from performer to performer (and, sometimes, within a performance). There exist artists such as Keiji Haino, Sly and the Family Drone, and Justice Yeldham who seek to maintain some transparency of relationship between gesture and sound, even when the precise causality of this relationship is not completely clear, and artists such as Incapacitants and Kazamoto Endo where the relationship is at times extremely unclear but their interactions with the equipment are still foregrounded as intending to influence the sound generation process.[18]

Nevertheless, the construction of feedback systems in Noise predominantly serves to at least complicate and, often, subvert performers' intent (Benhaïm 2019; Wilson 2016). In many ways, 'humanness' and 'liveness' are manifested through expressions of intention by the performers in relation to the ongoing sound-generation of the system. It is in the perception of an intent to affect the sound-creation process that liveness is apprehended. As Tremblay (2013, p.77) puts it, 'there is only noise in non-intent,' and the interaction between the agency of the performer and the agency of the system highlights the importance of intentionality in musical performance. Of course, the dynamics inherent in these systems give rise to an impression of practical resistance, as the performer's intention is altered, subverted, suppressed, or

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[17] Merzbow's work with a pedal-based system illustrates this point. The 'Live at Milan' performance (Kofoed 2012, https://www.youtube.com/watch?v=TeH8lGFcEWQ) on YouTube is similar to a performance I saw him give at Café OTO in London in 2016, insofar as small gestures can have very large effects in some sections of the performance, and at other times Merzbow can alter four or five settings with minimal audible impact on the sound. It is clear from his attitude in performance and the way he sets up his system that he is not 'directing' the performance in any traditional sense so much as exploring and experimenting with the makeup of the system throughout.

[18] In contrast to the preceding footnote, Lucas Abela (who performs under the stage names Justice Yeldham and Granpa) does not use his pedal setup to create the same kind of ambiguity regarding the relationship between gesture and sound, as being able to identify the amplified glass that he presses to his mouth as a sound source is central to the poetics of his performance style (his 2019 performance at The Bakery in Atlanta, Georgia is typical (EMPATH ATL 2019, https://www.youtube.com/watch?v=kqB5ign5i_g)). The effects pedals do transform the timbral properties of the sound, and feedback is often present, but the indeterminacy and resistance in his performance stems primarily from the physical relationship between his body and the cut glass; a relationship that is inherently unpredictable. Although this form of performance has certain indeterminate aspects, the sound-gesture relationship is more transparent than that of a typical Merzbow effects pedal performance.

absorbed in the operation of the system. '[…] [R]esistance and indeterminacy are clear indications for the agency of artifacts, as an interactive communicative relationship between human and technology comes into being when an artifact behaves contrary to expectations, that is, when it acts contingently,' (Haenisch 2013, p.167).

It is through the apprehension of practical resistance that Noise artists are able to perform and enact the representations of struggle and antagonism that are such a well-established feature of its performance. The way the systems are constructed encourages the question of 'to what extent does a musician perform the technology or does the technology perform the musician?' (Ferguson 2013, p.141) (Haenisch expresses an almost identical sentiment in *Materiality and Agency in Improvisation* (2013, pp.168-169)), and performances in Noise abandon the object-subject dynamic in favour of the 'subject-subject model of discourse,' (Lewis, cited in Born 2012, p.168). There is a recurrent theme of performers being subjected to the will of their technology in Noise, and Dominick Fernow's performance practice as Prurient is one of the most extreme examples that I have encountered;

> And especially in the earlier days of Prurient, with the feedback performances, I was literally just in physical pain. Just putting myself in a situation of standing in front of 13" x 12" speakers, two horns and two 15s all playing just microphone feedback. It was just literally a painful environment. And that forced me in the most visceral sense to react to the sound and explore that pain.
>
> (Fernow 2018)
>
> Zachary Lipez: That leads to the next question of why you're up there or even why you're making the music. Live, it's a visceral, intuitive thing – is it okay to step outside of it, and think of it in terms of, "I need to be doing this right now, or I need to make this sound right now, or I need to move around a bit" or are you constantly just in the moment?
>
> Dominick Fernow: Well… usually I'm just trying not to puke. Literally. I'm just too old for this shit. It's more and more demanding every year.
>
> (Fernow 2015a)

The manner in which artists like Prurient, Incapacitants and Masonna perform their experiences of struggle with technology (flailing limbs, screeching, pained expressions and dramatic demonstrations of force as they try to influence the process of sound generation) might be consistent with a Rock tradition of histrionic stage craft, but it is also sincere in its attempt to convey engagement with a practically resistant technological agent. Whether or not performers enact this relationship in their performance style (Merzbow notoriously adopts an attitude of passivity, approaching indifference, in his performances), audiences develop an appreciation of

this dynamic through an understanding of feedback generation techniques, the staging conventions (or lack thereof) and the rhetoric of adversarial relationships with technology that pervades Noise culture in conversation, media and scholarship. Evens (2005, p.82) states it plainly when he says 'feedback mechanisms preclude a wholly preconceived performance,' and it is embedded in the culture of Noise that resistance to authorial intent is central to the communication of meaning in performance.

In short, the liveness of Noise is dependent on the understanding that there is an interplay of conflicting agencies at work. This is represented in my use of the term 'performance environment' rather than passive terms such as 'performance setup' or 'equipment'. This is slightly different to Ferguson's (2013) preferred term, 'performance ecologies' (cited by Ferguson as originating with John Bowers (2002, p.47)), which he uses to connote the complete interdependence built into his musical practice. However, it is more common to speak of the 'sounds of an environment' rather than 'sounds of an ecology', and in the environments I have described it is the sound of the environment that is heard. As Van Nort (2006, p.176) says of feedback systems, it is 'the interaction within (and with) the system endows it with form,' and, in my view, the form of the systems is the form of the sound.

Studioness in Noise

It should be clear at this stage that Noise is a genre that validates the 'liveness' of live performance through the relationship between performers and their technologies. However, in contrast to most forms of electronic music, the value of recording and studio work is often called into question by practitioners and scholars (Benhaïm 2016; Benhaïm 2019; Dion 2015). As Noise privileges resistance and indeterminacy as communicative of meaning, the studio environment can appear suspect in its ability to disrupt the direct communication between performer and listener and reduce the risk of failure inherent in live performance. This, of course, recalls many of the arguments associated with Rock aesthetics already discussed in the section on studioness and is the central thrust of Klett and Gerber's argument in *The Meaning of Indeterminacy: Noise Music as Performance*. They find this attitude to recur in their interviews and conversations with practitioners;

> Noise recordings appear equally on CD, CDr, and vinyl formats, and the otherwise-antiquated medium of cassette tapes has remained a regular artefact of the genre to this day. CDrs and cassettes in particular are passed between artists and audience members and slipped into pockets as a token or a calling card. However, these objects are not

central to the genre in the way that performance is; artists and audiences devalue recorded media because of the possibilities for obfuscation – as did each of our interviewees, though all had released more than a dozen recordings by the time of our interviews. These recordings were made peripheral by comparison to the core of live performance by our respondents, who also minimized the role of recorded media by other artists. This is not surprising: in general, we observe no Noise musicians or fans who do not attend performances regularly, often whenever possible, but we do observe many who do not regularly listen to Noise recordings, and our interviewees support this finding. Several respondents could not name the last album heard in its entirety; for Taylor and others it is not odd to go four or five years without buying a record.

(Klett and Gerber 2014, p.283)

Sarah Benhaïm's (2019) study of the Parisian Noise scene found the same attitude to be prevalent there. When she asked a group of fans and practitioners to list five of their favourite Noise tracks she found that a significant number of respondents stated that they did not listen to Noise outside of a live context and were therefore unable to complete that section of her questionnaire. Noise recordings do not typically aspire to the status of primary text, as is commonly the case in more popular genres such as Rock and Pop, and the ways in which they are presented and circulated reinforces this position. Merzbow's early releases were self-produced tape recordings, wrapped in photocopied pornography that he had found discarded in Tokyo, and distributed secretively (Wilson 2018, pp.176-177). This insistence upon the object-status of recorded Noise remains persistent. It is common practice for Noise artists to release a high volume of recordings, often multiple records per year, and this discourages the notion that any individual release represents a 'statement' in that artist's development. Rather, recordings exist as artefacts, or documents, of an ongoing process that does not develop towards completion but instead produces obsessively and tangentially. The Merzbox might represent the most extreme example of this approach. Released in the year 2000, the Merzbox is 'a collection of fifty compact discs of Merzbow noise packaged with an interpretive Merzbook, a t-shirt, poster, medallions, stickers, and postcards,' (Smith 2005, p.53). The sheer size of this collection mocks any notion that somebody might actually sit down and listen to it, compounded by the fact that it only represents a small cross-section of Merzbow's overall output, and in doing so reaffirms the recorded music as an object not intended for repeated listening through the rituals of reception and consumption typically associated with the medium. It is also consistent with Noise artist Taylor's assertion at the beginning of this chapter that 'the notion of canonical 'progress' [is] false'. While these sorts of gestures might be understood as demarcating recordings as

distinct from and lesser than live performance, they have a kinship with the attitudes of resistance and struggle that define it. The presentation of the recorded artwork through antiquated distribution media and deliberate cultivation of vast impenetrable discographies represents an aesthetic resistance to the conventional recording industry model of promoting artists through flagship singles and albums. It also resists traditional notions about what art should aspire to by insisting upon the materiality of the practice;

> Material has long been marginalized in Western philosophy and aesthetics, harking
> back to the Platonic belief in the schism between an ideal and its form. For much of
> western history, philosophers regarded material as incidental to the truly worthy objects of contemplation: ideas and essences. Materialism emerged at various moments in
> the past several centuries as a repudiation of idealism.

(Demers 2010, p.79)

This materiality is also reinforced in the studio practices. In Novak's (2013, pp.48-58) detailed account of recording and mastering techniques in Noise, he describes how it is uncommon to try to reproduce the acoustic of live performance through microphones that capture the ambience of a space or reverb effects that artificially create the illusion of space. Instead, performers tend to use direct-injection to record straight into the mixing desk. This recalls the live aesthetic of sonifying the performance environment, but here it is the performance environment without the visual element of a human presence, or the social presence of a shared space of audition, or the physical acoustics of the performance space, all of which form part of the environment in a live context. In this form of Noise studioness, the performer and the performance space are replaced by the playback medium. When you listen to a Noise tape produced in this way, you hear the technology performing; the performer's equipment, through the mixing desk, through the tape. The materiality of the process is reinforced through the conspicuous absence of a human presence. It is Noise as heard by the technology.

These recording techniques pull Noise out of its situatedness in live performance and re-establish it as a document of a process. This document status is compounded through the use of tapes and other forms of defunct audio media, situating recorded Noise as, on the one hand, separate to the live culture of Noise, and on the other, aesthetically resistant to the commercial music industry. The production process of Noise recordings remains consistent with Van Nort's (2006, p.176) description of feedback systems, insofar as 'the interaction within (and with) the system endows it with form,' however, it is now a mechanical system of guitar pedals, mixing desks, consumer tape decks and HiFi systems. We might construe this as an idiomatic response to recording studio technologies, but the distrust of studio techniques as

obfuscating liveness, and the devaluing of recorded artworks in order to assert the authenticity and primacy of live performance, represents an attitude towards studio work that is contrary to my own aesthetic when working in that medium. In my view, the studio offers powerful means of sonic expression that are distinct from those of live performance, and I will now proceed to discuss how expressions of studioness in Experimental Electronica can be particularly instructive and compelling in this regard.

STUDIONESS IN EXPERIMENTAL ELECTRONICA

Experimental Electronica has its roots in the IDM and Ambient movements that took place in the early 90s. Whereas a record in earlier forms of electronic music had been primarily 'regarded as a tool *for* performance rather than a facsimile *of* one' (Langois 1992, p.234), the labels that promoted IDM and Ambient artists made a conscious move away from the artist anonymity prevalent in House, Rave and Techno, and towards the more traditional music industry model of tentpole artists, long-playing albums (as opposed to 12" singles) and, ultimately, touring bands; 'We'd seen from running the shop how dance labels had about a year of being on top,' Steve Beckett, founder of Warp records, told Simon Reynolds (2013, pp.193-194). 'We were determined that wasn't going to happen to us. The only way to avoid it was to get more artist-oriented and album-oriented'. This movement was, of course, primarily aesthetic rather than commercial on the part of the artists, who had grown up with consumer electronic instruments, become extremely adept at controlling, manipulating and modifying this technology, and were eager to explore its sonic possibilities without being beholden to the strictures of the dancefloor. Even in the early days of IDM, Aphex Twin (Richard D. James) showed little interest in live performance, humourously highlighting the preference of himself and his peers for working in their solitary bedroom studios by describing them as 'bedroom bores' (Toop 1995, pp.210-213).

'Resurrecting progressive rock's elevation of head over body, melodic complexity over rhythmic compulsion' (Reynolds 2013, p.193), the perspective in the early days of Experimental Electronica shifted to that of the studio outlined at the beginning of this chapter. 'Assum[ing their] listeners are sitting very comfortably and not expecting to dance,' the artists working in Experimental Electronica aligned themselves as much with the Ambient work of Brian Eno and early Electroacoustic composers in the Musique Concrète and Elektronische Musik traditions as they did with House and Techno, elevating the studio as the place for unbridled sonic exploration whilst retaining many of the House and Techno sounds that would

enable them to maintain purchase on the commercial music industry. Again, I do not wish to imply the motivations were so cynical, nor is there anything pejorative implied in the association with any of these genres, but the shift towards a studio perspective rather than a dance-floor perspective whilst retaining the sonic signifiers of commercial forms of electronic dance music is crucial to my understanding of Experimental Electronica.

Many forms of electronic music in which the studio is the primary venue for the creation of sound adopt a philosophy consistent with that of Eno; namely, that the studio facilitates the most precise and effective realisation of a composer's sonic vision. This is evident when Simon Emmerson (2007, p.25) speaks of Institutional Electroacoustic Music; 'the studio is a huge instrument... In effect one rehearses actions which produce the right *perceptions*. The finished work instantiates an idealized *performance* – only one which did not happen at one particular time', when Moorefield (2005, pp.54-55) discusses its role in the development of Ambient music; '[...] the recording studio is effectively a meta-instrument, a way to shape entire compositions. It is score and orchestra rolled into one', and in Bjork's account of the impact of recording technology on songwriting; 'Later on, humans became genius at writing and arranging and producing specifically for radio. Now we've got the Napster thing, the Internet and downloading and you write specifically for that. I use micro-beats, a lot of whispery vocals, which I think sound amazing when they're downloaded because of the secrecy of the medium. It's all about being in your own little house, on your own. You're creating paradise with your laptop, or underneath your kitchen table where nobody knows about it,' (Toop 2004, pp.226-227). This conception of the studio finds a particularly extreme expression in the aesthetic of Markus Popp, founder and now sole member of the Glitch music project Oval. Oval have always dealt primarily with digital audio, from the early days of defacing the playing surfaces of CDs then playing them back and recording the output, to installation pieces in which members of the public produce music entirely using Popp's bespoke *Ovalprocess* software. Despite Glitch being a sub-genre of Experimental Electronica predicated on a critical subversion of the utopian ideals present in other forms of electronic music, it nevertheless valorises the studio and recorded media as the primary sites of sonic exploration. Popp (1996, cited in Cox and Warner 2017c, p.518) goes so far as to make the case that the recording studio has enabled us to transcend 'music' as traditionally conceived; 'The main culprit in electronic music is the term "music" itself [...] The whole field of electronic music has long since reached a state of pure abstraction and music only survives as a metaphor in software [...] Musical metaphors in software are

just providing some means of orientation for people who deal with music as it was [...] I don't usually use the term music too much. I just say "audio"'.

Here, Popp is arguing that studio recordings need no longer function according to the principles that traditionally governed music. Sounds need no longer be bound to the same cause-and-effect mechanisms of acoustic instruments in physical space, nor need they be arranged according to structural principles such as those implied by 'the grid' in the software Popp is discussing. Oval's own music, particularly the early work, often utilises the repetitive rhythmic structures associated with grid-based composition, organising glitches into beats and melodic hooks. Recognisable instruments such as guitars and drums also often appear, 'glitched out' to varying degrees, so clearly the entire continuum between the historical ideas of music and pure abstracted audio is explored in Oval's studio practice. Nevertheless, it is noteworthy that the abstraction of audio and liberation from the cause-and-effect mechanics of acoustic music are prized qualities for all those cited in the preceding paragraph. Artists can create their own self-contained worlds of pure sound (under their kitchen tables or elsewhere), where sounds produced or recorded in the studio need no longer reference any physical source. This accords primacy to the intimate, private and personal relationship with sound that a composer has when handling audio in the studio, or that a listener has when they receive the sounds through the idealised listening scenarios of Experimental Electronica; sitting comfortably in front of home speakers or listening through headphones. There need not be any referent to a performative action that creates these sounds, only the personal, private response to them at the moment of audition.

The studio being conducive to this intimate relationship with sound was compounded when the laptop computer essentially became a self-contained studio. The tool for the production of music has become the same as that for the distribution and playback of music, emphasising the sympathetic connection between the music producer and the music listener. Both Holly Herndon and Oneohtrix Point Never (OPN) (artists that will be discussed in more detail towards the end of this chapter) make music that draws on their personal interactions with their computers in their homes. Herndon's creative process is predicated on the idea that the 'laptop is the most intimate instrument' (Herndon 2014; Herndon 2017). She uses a 'sousveillence' software called Dispatch, developed by partner and long-term collaborator Mat Dryhurst, to record sounds made during everyday browsing and other activity on her laptop which are then abstracted from their context and reconfigured into new pieces, in what herself and Dryhurst refer to as a 'net concrète' approach. Similarly, OPN's 2015 album *Garden of Delete* is full of

sampled speech and sounds from YouTube videos, horror films and documentaries he had watched as a teenager, lyrics culled from chat forums and other websites, chopped up, transformed and reconfigured through studio editing processes (Lopatin 2015b). Describing his compositional process for the podcast *Song Exploder*, OPN articulates how the interaction with the internet in his studio feeds into his process; 'I'm not a person that needs to have the wifi off. I have, like, twelve [web browser] tabs open, I'm talking to people, I'm looking at stuff. And, so, I think naturally that helps me, it's like, just, another synthesiser in the room,' (Lopatin 2016). Both artists are invoking both historical and quotidian intimate, personal interactions with technology to affirm their relationship with their laptop as an evocative and emotive one. As the laptop is also the studio in these situations, these practices establish the studio as a conduit between the listener and the real and imagined worlds of the composer. Of course, this moves away from the reduced listening aesthetic of microsound and other earlier forms of Experimental Electronica, relying upon the referents to web activity and technology in the construction of meaning (and, for these artists, emotional expressiveness), but nevertheless locates the laptop (hence, studio) as the central metaphor in the creative process. Reading the laptop as a form of studio relies on the understanding posited by Martin and Slater (2012, pp.61-62), where studioness is an 'essence' that 'spins connectedness'. Although DAWs may, in some cases, seem to be far removed from the culturally received idea of the studio as represented by major studios such as Abbey Road, the body of approaches and techniques inherited from such institutional/cultural touchstones continue to inform the methods and practices of arranging sound, and their sounds continue to be heard as evoking a condition of studioness rather than liveness. The increasing proximity, both physically and conceptually, of the tools of musical production and those of social media, web browsing and other forms of web-based connectivity has not eroded our ability to perceive studioness in music, and the associative and metaphorical power of the sounds of digital life as wielded by OPN and Herndon is enhanced by the knowledge that the same tool (a laptop) is being used to draw their musical, cultural and social lives together.

OPN's approach when writing the *Garden of Delete* album invokes another aspect of the studio perspective, and that is an obsessive focus on detail. He decided to rent a basement as a workspace away from his home (his previous album, *R Plus Seven*, had been composed entirely at home); 'I had this dungeon reality and it was also kind of like I was uninhibited, like I would just get into the zone, work for like 17 hours. I was just, like, tweaking out in this windowless room [...]' (FACT 2015). This image of tweaking for 17 hours, pouring over small

details, represents a commonly cited feature of studio composition. It recalls the aforementioned utopian dream of a perfected music, available through constant refinement, more precise tools, more control (Cascone 2000). However, electronic musicians also know from experience that the studio perspective is one that can become warped. The virtues of the medium, facilitating repeated playback and evaluation, infinite tweaks, versions and revisions, can lead to inertia or entropy. These themes circulate in Tim Hecker's accounts of his studio practice, with a continual tension between a sense that the 'ecstatic dream' of the piece is attainable and an awareness that the studio can induce a kind of myopic attention to detail that ultimately becomes damaging. Christopher Weingarten's profile of Hecker, made just before the release of his 2013 album *Virgins*, illustrates the point;

> "It's maddening, listening to this shit in the studio by yourself at high volume for days on end," says Hecker. "There are some times when I'm losing my mind, where pieces are crescendoing, and there's 20 layers of things, and I'm trying to balance it to hit right – it's technically challenging and spiritually exhausting. It feels [like] a mixture of drudgery and really morose melancholy, just getting assaulted, mixed with these crystallized epiphanies, like surrender of the body to these waves coming at you, and that feeling that you've done good work. In desperation, you think it's just another record where you didn't really get at what you hoped you would get at, because it went somewhere else, and so it's this weird feeling of just being kind of partial failure."
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> "He does have this way of self-analysis, this musical hypochondria," says co-engineer [Ben] Frost, who claims to have mixes of *Virgins* dating back three years, with certain tracks in up to 30 different incarnations. "You would be shocked by the amount of time that goes into a record like this."
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> "I was there almost every week, just stopping in and hearing how things were, as they progressed," says [Kara-Lis] Coverdale. "He was almost suffering sometimes, like, 'Oh, I'm so done with this shit.' I think a lot of these pieces had 15 or 16 versions that had been equally good. Why do you keep processing all this shit? It's already good. That's some of Tim's OCD, I think."

(Weingarten 2013)

Hecker expresses similar sentiments elsewhere; 'I've always been hesitant to release material. I do it so slowly that I almost sometimes wish I'd just let things go more glibly. [...] [I have] feelings about what music should achieve, what its ideal state would be. For me, it's some form of intellectually satisfying ecstatic music that I keep failing at achieving. I wish it was more ecstatic, I wish it was more brain-explodingly robust, and each time I finish a record it's kind of

a failure to get to those points' (Hecker 2012a). I take time to draw attention to these issues as they illustrate two qualities of studio work that have particular relevance to my portfolio;

a)   Attention to detail and close listening are features germane to studio composition, and are particularly valuable affordances of the medium.

b)   This highly refined, time-intensive and detail-oriented working practice, compounded by an intimate, emotional relationship with their laptop studio, encourages composers in Experimental Electronica to consider their studio work to be the (closest they can get to an) ideal instantiation of a piece.

Experimental Electronica's historical grounding in studio composition and embracing of studio albums as the primary medium for distribution has led to a conception of the studio work as primary text. This 'phonograph effect', as Mark Katz describes it, is not at all unique to Experimental Electronica, now that 'for many – perhaps most – listeners, music is now primarily a technologically mediated experience' (Katz 2004, p.26). Historically, it has been most commonly observed and critiqued in genres where the music is conceived to be realised first and foremost in live performance. Seminal recordings of Classical and Jazz repertoire are now understood to have profoundly impacted subsequent performances and renditions, and even shaped conventions regarding 'good' instrumental and orchestral sound (Katz 2004; Small 1996, cited in Cox and Warner 2017a, p.167). The section that follows will examine what happens when this hierarchy is inverted and music is created in order to be realised through recorded media, as in Experimental Electronica. However, before doing so, I would like to discuss one further issue pertaining to 'studioness' in Experimental Electronica: that of sampling.

Sampling is such a widely-employed technique across a variety of contemporary genres that I must begin by stating that I am going to restrict my discussion of it here to aspects that relate directly to this commentary, which is to say, ways in which sampling may enrich our consideration of the interplay of liveness and studioness in Experimental Electronica. I am expressly going to avoid commenting on the ethical and legal implications of sampling work by other artists for reuse in new compositions, as this really has little bearing on the music of myself or on the issues at hand. I will address, first, the commonplace misconception that the term 'sampling' only refers to the practice of musicians excerpting sound from records by other artists. In everyday usage amongst electronic musicians, the term 'sampling' is used to refer to recording segments of audio from any source, so long as they are intended for use as part of a musical composition. This understanding of 'sampling' begins with the 'sampler' instrument, 'an electronic musical instrument which has no sound of its own, but whose sounds are entirely

derived from recordings,' and whose typical functionality includes (as a minimum) 'transposition [...], looping, reversal, insertion and removal' (Davies, 2001). The presence of these features in early hardware samplers during their initial rise in popularity in the 1980s (fuelled by their usage as the primary tool in Hip Hop beat-making), coupled with the limited memory of the early machines which restricted sample length to a few seconds, gave rise to the modern-day conception of a sample as any short piece of recorded audio that is placed in a musical composition, particularly if it is chopped up, transposed, reversed, or subjected to any of the processing techniques associated with early samplers (Schloss 2014). To employ an example from one of the key artists in this portfolio, Holly Herndon, when recounting how she recorded the sounds of a robot made by collaborator Conrad Shawcross, said 'I sampled the sound of the robot' rather than 'I recorded the sound of the robot' (Herndon 2014). Such usage of the term is commonplace for electronic musicians to denote the practice of recording sounds that will be used in fragments in a final piece, whether simply excerpted from a longer recording or extensively segmented, reconfigured and processed.

Given this definition of sampling, and given its centrality to my own practice and that of the key artists discussed hereafter, it is worth considering how it might impact conceptions of liveness and studioness. Joseph G. Schloss (2014, p.159), makes an argument for the intersection of liveness and studioness affected by sampling in his study of the practice in Hip Hop: 'A hip-hop beat consists of a number of real-time collective performances (original recordings), which are digitally sampled and arranged into a cyclic structure (the beat) by a single author (the producer). In order to appreciate the music, a listener must hear both the original interactions and how they have been organized into new relationships with each other. Sample-based hip-hop music, therefore, is simultaneously live and not-live.' I would dispute describing the practice of sampling records (what Schloss is referring to as 'original recordings') as sampling 'real-time collective performances', given the likelihood that these records are studio recordings and are themselves likely to be assemblages of multiple real-time performances. Nevertheless, his base argument is that the tension between recordings of 'played-in' musical instruments and the automated looping function of a sampler serves to make listeners aware of both the liveness and studioness of the musical result, and we will see the tension between liveness and studioness affected by sampling repeated in various musical cultures centred around electronic music technology. To stay with Hip Hop for a moment, however, Schloss elsewhere explains how the inaccuracies and errors in human instrumental playing captured in samples can become a musical focus:

[A looped sample] begins to gather a compositional weight that far exceeds its original significance: "Sometimes, I'll put a loop on and let it play for, like, two or three days. I've done it before. When you do something like that, you get to hear all different parts and pieces and elements of it that you never really heard before.... It probably sounds strange to a lotta people, but you get to hear stuff that the musician didn't try to put in there. You know what I mean? It's just in there." (DJ Kool Akiem 1999). While this may sound like a very abstract and mystical statement, the process to which it refers is fairly concrete. The things "that the musician didn't try to put in there" are musical relationships and emphases that are created by the new context. [...] "the 'cut' attempts to confront accident and rupture not by covering them over but by making room for them inside the system itself" (Snead 1984: p.67). In the case of hip-hop [...] controlling the unpredictability of random musical gestures is the explicit and acknowledged goal. This again is what DJ Kool Akiem is referring to when he speaks of the looping process allowing a producer to hear musical figures that "the musician didn't try to put in there."

<div align="right">(Schloss 2014, pp.137-139)</div>

The peculiarities of a sample, highlighted by its separation from its original context and the detail-orientated precision tools of the studio, come to take on new meanings that evoke both the liveness of the original and the studioness of the tools used to recontextualise it. The simultaneous presence of that which is 'live' and that which is 'of the studio' affected by sampling can actually be read as heightening the presence of the studio, the juxtaposition making the studio apprehensible and activating the music's studioness. Readers familiar with Walter Benjamin's essay *The Work of Art in the Age of Mechanical Reproduction* might identify a connection between the point Schloss is making and Benjamin's prescient observations on the artistic possibilities afforded by the cinematic technologies:

Fifty years ago, a slip of the tongue passed more or less unnoticed. Only exceptionally may such a slip have revealed dimensions of depth in a conversation which had seemed to be taking its course on the surface. Since [Freud's] the *Psychopathology of Everyday Life* things have changed. This book isolated and made analyzable things which had heretofore floated along unnoticed in the broad stream of perception. For the entire spectrum of optical, and now also acoustical, perception the film has brought about a similar deepening of apperception. It is only an obverse of this fact that behavior items shown in a movie can be analyzed much more precisely and from more points of view than those presented on paintings or on the stage. As compared with painting, filmed behavior lends itself more readily to analysis because of its incomparably more precise statements of the situation. In comparison with the stage scene, the filmed

behavior item lends itself more readily to analysis because it can be isolated more easily. This circumstance derives its chief importance from its tendency to promote the mutual penetration of art and science. Actually, of a screened behavior item which is neatly brought out in a certain situation, like a muscle of a body, it is difficult to say which is more fascinating, its artistic value or its value for science. To demonstrate the identity of the artistic and scientific uses of photography which heretofore usually were separated will be one of the revolutionary functions of the film.

(Benjamin 1939, p.229)

The way that sampling reveals the possibilities of capturing spontaneity, with all of its attendant idiosyncrasies and imperfections, can become a point of artistic and aesthetic focus for electronic musicians and emblematic of the intersection of liveness and studioness. It is not surprising that Benjamin might perceive similar possibilities in the technology of cinema, identifying in it a point of intersection between art and science. These validations of the subconscious, unintentional, and accidental recall the assumptions about technology outlined at the beginning of this chapter, from Mat Dryhurst's quote about his performance with Holly Herndon being 'live [... and] human enough to be shit', through the fallibility of the human body invoked by Peters, to the soullessness of Gary Numan's drum machine as discussed by Frith (Kirby 2017). As Frith (1986, pp.82-83) points out, in the face of the automation possible in computer-based music-making, the perceived imprecision of human instrumental playing is quickly valorised as indicative of human expressivity in the forms of 'touch' and 'feel', expressed in 'the routine contrast of 'live' performance and 'dead' studio activity.' Such assumptions repeat across a range of genres:

The music video for "Rebirth of Slick" features the members [of Hip Hop group, Digable Planets] taking the New York subway to a local jazz club where they perform with a Japanese rhythm section for a diverse, yet small audience. (The entire video is shot in black and white.) The irony of this is obvious, promoting a "live" aesthetic of a jazz club for a recording that has been constructed through digital sampling. But these jazz instruments suggest "liveness," even when this is not accurately the case. Because of the cultural associations with acoustic jazz (in this case, acoustic bass, piano, and drums playing a jazz vamp), these jazz instruments would be heard as live, one trait of a particular jazz authenticity that suggests unmediated expression and creativity.

(Williams 2013, pp.60-61)

"If you truly want to make your stuff sound like its not sequenced – like some computer just did it – it doesn't hurt to go in and do it by ear. Don't just let the computer quantise it, move it yourself. Sometimes it sounds good when something's off. It makes it sound like you're playing a live instrument, which I'm all for. I use all technology in my

style but I still like it to sound imperfect. Imperfection is what makes it come across as pleasing to the ear." [Todd Edwards, American House and Garage Producer].

(Host 2002, p.20, cited in Harkins 2016, p.182)

Well, yes, in a way they are breakbeats. I'm [Aaron Funk, aka Venetian Snares, IDM producer] just not using traditional drum sounds a lot of the time. I prefer to create my own drum sounds from scratch. A lot of the time I'll take a [sample of a] breakbeat, originally played by a drummer on a traditional kit, and replace all the drum hits with my own sounds, then chop that up and construct the beats from that. One method is to open the breakbeat in Sound Forge and regionalise all of the individual hits, by hand – the auto-region function has never seemed accurate enough to me. Then I'll mute all the hits, but leave the regions still marked. Then I'll put my own drum sounds into the regions using the Mix function. It's great because you can layer a lot of sounds in the regions, just as a drum kit would have hats and snares and so on overlapping and inter-acting with each other. I can have the flow and nuances of real drums, but with whatever sounds I want. The possibilities are endless!

(Funk 2002)

Aside from Venetian Snares continuing the thread of prizing variation in samples of human instrumental playing over digitally sequenced drums due to their imparting of an elusive 'flow' (which can be read here as synonymous with 'feel'), I chose to cite him in particular because, as an IDM producer with a markedly experimental edge, his music brings together a lot of aspects of Experimental Electronica. Nowhere is this more pronounced than with his 2005 album, *Rossz Csillag Alatt Született*, where Venetian Snares sampled a range of Western Art Music composers including Bartok, Stravinsky, Mahler, Elgar and others to combine with his signature high-speed breakbeats. As will become clear in the discussion of key Experimental Electronica artists, Venetian Snares is not at all unique in his invocation of Western Art Music within this context, demonstrating another way in which the genre resurrects various Progressive Rock aesthetics. What is significant about this selection of samples, however, is how consistently critics and Experimental Electronica fans hailed the album as marking a development in Venetian Snares' expressive and emotional palette in contrast to previous, more overtly 'electronic-sounding' albums:

With the album title and every song in Hungarian, the foundation of each track being classical music tinged by Hungarian folk (as opposed to the typical Snares epileptic electronic torture) [...] accentuated by his signature ballistic drums that Funk keeps in careful check most of the time here, *Rossz Csillag Alatt Született* is surely his most accomplished album to date. [...] This is an album of uncouth beauty that is at once

sublime, timeless, cinematic, sporadic, and moving from start to finish for the uppity junglist or the CBC Radio 1 listener in your family. Drill and bass has never and probably will never again be so elegant and emotional.

<div align="right">(Ranta n.d.)</div>

What really matters is that he has used the Hungarian theme as an impetus for the integration of various bits of melancholy and/or brittle classical string music [...] with his own jackhammer beats and crazed sonic manipulations. Moody and sometimes fevered minor-key string themes combine (or alternate) with the violently aggressive sounds of hyper-rhythmic slash ′n′ burn electronic percussion. [...] Occasional frantic movements of the strings up or down a scale can sometimes suggest a Looney Tunes soundtrack, but Funk deftly sidesteps musical slapstick. There is a fundamental seriousness to his vision here; the music is emotional and at times violent. Funk himself might disagree, but one dimension of his synthesis seems to be the conflation of morbid romanticism with a defiant will-to-live, not denying the essential sorrow of much of human existence but fighting (even ripping and tearing) a way through and past it. The result is a dynamic musical and spiritual tension – and an awesome listening experience for those who can handle the strong stuff.

<div align="right">(Tilland n.d.)</div>

One of three full-length albums that Aaron Funk released in 2005, *Rossz Csillag Alatt Született* remains the most powerful and neatly conceptualized work of his career. Conceived while a heartbroken Funk was on tour in Hungary and found himself ruminating on the lives of the pigeons that populated Budapest's Royal Palace, it is suffused with a very European melancholy. The Winnipeg native scaffolds his hypercomplex drum programming around samples of some of the giants of European composition: Bartok, Stravinsky, Mahler. This manner of sampling can often feel ephemeral, a way of attaching exotic flavor or false gravitas to a project, but Funk brings a very authentic heaviness of spirit. The title translates to "Born Under a Bad Star," and Funk embellishes these borrowed string quartets and operatic arias with his own violin and trumpet playing. Two particularly mournful tracks, "Galamb Egyedül" and "Második Galamb," pay tribute to Budapest's avian population, while the astonishing "Öngyilkos Vasárnap" ("Gloomy Sunday″) is a cover of a 1933 ballad by the Hungarian composer Rezső Seress, and samples a version sung by Billie Holiday. Seress wrote it for his former fiancée, who later killed herself; he, too, ended his life in 1968, and the song is now nicknamed "The Hungarian Suicide Song." It is honored properly here: In Funk's hands, the song and his other breakcore moments are elevated to high art.

<div align="right">(Pattison, 2017)</div>

In my view, these reviews consistently identify two key concerns relating to Experimental Electronica. Firstly, samples of acoustic instrumentation associated with human touch and expressivity contrasting with studio tools associated with the mechanistic, robotic and inhuman. Secondly, a tension between 'high' art signifiers, in particular academic and Western Art Music cultures, as conferring a cerebral seriousness of intent upon the music, and EDM as a 'Popular' music form. While samples of acoustic sounds and instrumentation may be one of the key tools in the Experimental Electronica artist's toolbox for invoking liveness (and simultaneously studioness) in the context of their studio practice, the live arena itself presents different problems for the presentation of music within the genre.

Liveness in Experimental Electronica

As stated above, before the emergence of Experimental Electronica in the early 1990s, recordings of commercial electronic music were primarily used as tools for performance. In House, Techno and Rave music, the expectation was that recorded music would be used as the source material for live DJ sets in club and festival settings rather than home listening (Langois 1992; Rietveld 1998; Moorefield 2005). The move towards the album-oriented model of the mainstream music industry made good business sense for Warp, Rephlex and other labels in the 1990s, however, as making money from records became less and less viable in the early 21st century, live performance became the primary means of generating income for artists, labels and promoters (Nardi 2012); '[...] the emphasis has shifted from an object-based economic form to a performance-based one, in which living actors are regarded less as a long-term investment whose status is comparable to that of the self-employed businesspeople in the world of the visual arts; instead, they tend to have the status of day laborers [...] Musicians can only support themselves by touring and taking advertising contracts, not from the sale of reproduced sound storage media, whose reproduction has become obsolete in the digital age because copies and originals have now become technically indistinguishable' (Diederichsen 2008, cited in Cox and Warner 2017a, p.168). Experimental Electronica finds itself in the position of having established the studio album as primary text and now being beholden to that as something to reproduce in a live environment. This was explored in the 1990s by major-label bands like The Orb, The Chemical Brothers, The Prodigy, Daft Punk and others who would bring their whole studios (complete with multiple computers, synthesisers and drum machines) on tour in order to playback elaborately sequenced audio accompanied by bombastic visuals. The pre-programmed album tracks would be given their 'liveness' through bespoke mixing and EQing for

the venue (Moorefield 2005, pp.100-101) or improvisation over the pre-sequenced core (Reynolds 2013, p.208). Most of these artists would also remix and recombine their tracks in the style of a traditional DJ performance in order to draw a distinction between the live experience and the studio work, however the absence of gestural action giving rise to changes in the sound was cause for suspicion among audiences and the music press (Hofer 2017).

In the case of the contemporary Experimental Electronica artists I discuss here, it is unlikely that their live setup will comprise of racks upon racks of synthesisers, effects units and drum machines, as developments in processing power mean that many artists nowadays tour with little more than a laptop and a few select pieces of hardware. However, a distrust of liveness and performativity in Experimental Electronica persists, circulating in particular around the laptop, as evinced by the quote from Holly Herndon's Teragram Ballroom concert that introduces this chapter (Kirby 2017). Informative discussions exist on this topic from Ed Montano (2010), Joanna Demers (2010, pp.40-42) and Sonya Hofer (2017), questioning whether or not it is necessary for there to be visual confirmation that an artist is directing the sound creation process. From my perspective as a composer seeking a fulfilling, dynamic and stimulating relationship *between* live performance and studio practice, the question of laptop performativity in Experimental Electronica is less relevant than the question of to what extent it is productive to affirm the status of the studio album as primary text in performance. I have seen thoroughly engaging performances using nothing more than a laptop and MIDI controller and, likewise, thoroughly underwhelming performances in which there are elaborate stage setups with live keyboards, bass, drums, and vocals. However, the impulse to play album tracks in a live setting in ways that seek to directly emulate the studio versions has, in my experience, generally encouraged less imaginative explorations of the possibilities of the live performance medium. As Demers (2010, pp.41-42) points out, electronic music 'can be seen as wreaking havoc with preelectronic music's rituals through its use of unmusical sounds as well as its destruction of liveness; this is the same sort of havoc that twentieth-century art movements, from Cubism to minimalist sculpture, wreaked with their destruction of the frame,' but it has been doing so for 'nearly one hundred years of phonographic technology, [therefore] listeners have become savvy enough to accept a "live" performance of sounds clearly not originating in the present'. From my point of view, the predominant concern as an electronic musician is to establish a condition of liveness through an apprehensible commitment to constructing that condition. In short, it is to demonstrate a commitment to the live performance medium through making use of the affordances of that medium. This might be achieved through elaborate

visuals, constructing a set tailored to the listening conditions of the venue (dancefloor or seated audience, for instance), utilising the prospect of failure and what Gould (1974) described as the 'blood sport atmosphere' of the concert hall to performative advantage, but, crucially, drawing musical and formal distinctions between extant studio work and the way in which that work is presented live. It is not my intention to devalue or argue against any method employed by other artists working in Experimental Electronica, but rather to describe their approaches in order to delineate my own approach and argue for its value in my process and within the context of Experimental Electronica more broadly.

As Carlo Nardi (2012) points out in his analysis of more dance-oriented electronic music genres, the financial incentive for electronic musicians to tour more extensively effected a widespread move towards artists presenting their work in the staged, concert settings that are traditionally the province of Rock, Pop and Classical artists. This migration has brought with it the Rock and Pop expectation that artists re-present their studio records in a live setting, as a mechanism to promote their own records and profiles as *producers* of electronic music. Whereas EDM 'originally used to define itself against the institution of the stage concert and in favour of the democratic and participatory context of the dance floor' (Nardi 2012, p.81), Experimental Electronica had already established itself as 'liberated from the demands of the dancefloor' (Reynolds 2013, p.193), and was therefore particularly well-positioned to embrace the stand(or sit)-and-watch paradigm of live music reception over the dance-and-socialise paradigm of club culture. Of course, the former is predicated on the assumption that there is a visually engaging component to the live performance. In the final section of this chapter, I will present an overview of the major artists influencing my portfolio in order to illustrate the varying approaches to addressing this issue that are prevalent in the field.

Oneohtrix Point Never

Oneohtrix Point Never is the artist name of Daniel Lopatin, originally from Boston, Massachusetts but now based in Brooklyn, New York (McDermott 2015). His mother was a classically-trained pianist who taught piano after emigrating to the USA from Russia with his father. She taught Lopatin piano from a young age, although by his own account he was not a very good student (Lopatin 2011). In the 60s and 70s, his father was the keyboard player in a successful Russian Rock band called 'Flying Dutchman', leading to Lopatin inheriting a Roland Juno 60 synthesiser as a teenager, an instrument that would become perhaps the most

consistent feature of his music as OPN (Lopatin 2011). OPN's output has always been intensely synthetic in character, especially since the 2013 album *R Plus Seven*, often utilising retro or genre-specific synthesiser sounds to purposefully invoke 80s/90s video game/computer culture. A dominant characteristic of his music is the juxtaposition of episodic 'scenes' of musical material, often through sudden cuts and contrasts or overlaid into complex rhythmic and timbral lattices.[19] OPN describes this approach as 'creating a zoo of little synth emotions and shapes' (Lopatin 2011), and the abundance of sounds and textures that proliferate in OPN's tracks are largely a consequence of his enthusiasm for the tools available to him in the studio environment. His more recent albums have adhered to an over-arching 'concept', as in 2015's *Garden of Delete*, which deals with numerous aspects of Lopatin's adolescence in 1980s USA through the cipher of a fictional teenage boy named 'Ezra'. *Garden of Delete* is littered with references to retro computer games, science fiction novels, 80s/90s alt rock and thrash metal and early web-forums and internet culture. However, in all of the accounts of the compositional process that I have encountered, OPN describes tracks as beginning with responses to synthesisers and samples, from which a concept emerges and evolves as the piece progresses, rather than as him setting out to tailor the sounds to a specific narrative. For instance, in a detailed recounting of the songwriting process for 'Sticky Drama' (the lead single from *Garden of Delete*), OPN explains how composition began with two particular pieces of software:

> OPN: I got inspired by this particular plugin called *Serum*; it's just a software synthesiser. The main progression, it was a preset that we tweaked in *Serum*, and the sound tells you how to play it, in a way. That's what I like about presets, is [that] they kind of beg to be played some way and you have to decode them. The obvious way to use that preset was to play it on the higher octaves and do a kind of like, a hard style EDM beat.
> Hrishikesh Hirway: Like what? What's a good example?
> OPN: I dunno, it all just goes like "[plays synth and scats along] jank jank jank jank, da da da da da da da da da da da, donk donk donk donk," y'know? It's just heinous. And so, let's find some other meaning for this or some other way to deal with this.
> The lead vocals, it's a software synthesiser called *Chipspeech* [...] You have these text lines in the window, and you put whatever you want [in] and essentially you press down on a note that means 'read the first syllable', so everything has to be an individuated instance of the note to get through the phrase. So it creates all of these weird

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[19] The opening track of *Garden of Delete*, entitled 'Ezra', is typical of this approach, as is 'I Bite Through It' and virtually every track on *R Plus Seven*.

difficulties 'cos that's not a natural way to play [...] If you just played it on a normal instrument it would just sound like garbage, but tailored to the way that this piece of software is thinking, it just sounds wild.

(Lopatin 2016)

OPN's aesthetic is interesting as it relates to presets, in that he advocates the subversion of the intended usage of presets, yet his music also relies upon the associative power of preset sounds in order to evoke the retro video game and film nostalgia that pervades his work. Both of these approaches are addressed in Stefan Goldmann's book, *Presets: Digital Shortcuts to Sound*. The former is portrayed as the widely-accepted norm of creative methodology in electronic music: 'Until recently, I [Goldmann] had never used a preset purely, never reused a sound or sample I had ever used before, never recalled any of my effects or synthesiser settings without altering them. I had been following an unwritten rule that creativity in electronic music means, to a greater or lesser extent, engaging with sound design' (Goldmann 2015b, pp.12-13). This is a common feature of Experimental Electronica, and the above quote illustrates OPN's commitment to experimentation with the parameters and intended usage of presets as a space of creative inquiry. This kind of focus on sound design will also be recalled in the discussion of Tim Hecker's work. The broad argument of Goldmann's book, however, seeks to destigmatise the utilisation of presets without spending lots of creative energy disguising or subverting them, freeing up that energy to spend on other aspects of the composition, such as arrangement. It is evident that OPN does not consider this to be an either/or choice. With the *Serum* plugin, he explores the creative potential of subverting presets, while he uses the *Chipspeech* synthesiser as intended, freeing up time for constructing the densely complicated structures that characterise his work.

Elsewhere in the *Song Exploder* interview, OPN explains how preset sounds invoke generic cultural associations which come to represent characters in the programmatic narrative of the music. The sounds described in the above extract represent the 'sugary pop' existence of an adolescent in their bedroom, and later in the track the *Chipspeech* sythesiser is extensively transformed using a vocoder in order to construct a 'demonic grind character' as the 'devil on [their] shoulder'. What is salient in terms of this discussion, whether or not the narrative is imposed before, during, or after the studio work, is the extent to which the compositional process is led by the qualities of the studio tools that OPN is exploring. OPN even describes *Chipspeech*'s behavior as the way it is 'thinking', pointing to the affordances of the studio tools as communicating agency through their material construction.

Samples take on a similar role in OPN's work, particularly in *Garden of Delete* and his earlier album, *Replica* (2011), where 'the armature of a track will be a sample, and that will suggest other interesting things to do around it' (Lopatin 2015b). 'In *Replica* for instance, the structures of the pieces would emerge from following the melodic line of samples, which had their own kind of eco-system [...] I would listen to them and respond' (Lopatin 2013). The evocative power of samples is a recurrent theme in OPN's accounts of his work, an understanding of sampling has long been acknowledged as a crucial aspect of its appeal for producers and electronic musicians: '[t]his is due to the compositional elements that come with even the smallest sample, whether those be a sense of harmonic orientation, a rhythmic feel, or a timbral (or even social) "vibe." The less-constrained nature of live instruments – they could play anything – actually makes them *less* valuable because there is no sensibility, no musical clue, for the producer to work with. A sample of a chord played by jazz guitarist Grant Green, for example, can suggest a feel to a producer, and it is then his[/their] task to develop it into a song' (Schloss 2014, pp.68-69). OPN's working process places the studio at the centre of his methodology, and studioness is manifest in the way synthesisers and other studio tools lead the conceptual and sonic development within the compositions. To an extent, the music is about these tools, but the extremely precise, detailed construction of OPN's musical structures also speaks of a studio perspective. Rather than representing a physical reality or conveying some sense of human actors interacting with instruments, the sharp contrasts in timbre, texture, acoustic and instrumentation are traits clearly germane to studio editing processes. The ubiquity of samples is crucial here, in fact, as the precision of the editing highlights the extent of OPN's interventionist approach, while the imprint of their acoustic sources (in particular the predominance of vocal samples) works to enhance the studioness of the manipulation through juxtaposition.

OPN is consistent with my earlier description of performance culture in Experimental Electronica, insofar as he tours in order promote albums, so tours usually follow shortly after an album is released and shows comprise of entire 'playthroughs' of the albums they are promoting. In recent years, OPN's stage shows have developed in two ways; the projection and light components have become considerably more elaborate and OPN has been accompanied by increasing numbers of collaborators. On the *Garden of Delete* tour, OPN played laptop, MIDI keyboard and mixer with collaborator Nate Boyce on electric guitar and supplementary electronics, while two projection screens displayed bespoke pre-programmed visuals with synchronised DMX lighting. Describing the development of that show, OPN touches on a number of themes pertaining to this discussion;

> We had 10 days, which is much more [than] we had previously, just in a big black box
> type room with a really good PA, and the first five days were just thinking about the rec-
> ord and transforming it into a concert and just trying to think about what works. Just
> hearing it on the PA and mixing it, sitting there, is so different than [in the studio], so
> you really understand what works and what's flat. [...] So, like, I'm singing and [Nate's]
> playing guitar, so there's all this potential for wipeout – wipeout potential – which is
> awesome and exciting, but also it hypes me up because I'm so, so starved to communi-
> cate some of the ideas from the record to like look at people and say the words that are
> on the record. I just know that they're gonna get familiar with the record and get ex-
> cited to hear certain things, and it just feels like a real concert and less of like a weird
> Powerpoint presentation. I'm kind of over that.
>
> (Lopatin 2015a)

OPN is demonstrably committed to the studio album as the primary text to be recreated in the live environment, and his live shows proceed from this assumption. He also evidently associates liveness with traditions of performance with pre-electronic instrumentation (guitars and voice) and their latent potential for failure ('wipeout potential') in contrast to the controlled 'Powerpoint presentation' of laptop performance. Having attended one of the *Garden of Delete* shows and watched videos taken by fans on YouTube, it was clear to me that a large proportion of the music Lopatin produced was pre-sequenced and elaborated upon using the guitar and vocals, with some tracks reconfigured structurally and sonically for the performance but largely replicating their studio form. This is not inherently a problem, and the *Garden of Delete* show I attended was thoroughly enjoyable, but by OPN's own standards, there was little evidence of 'wipeout potential' in the performance, and OPN's setup of microphone, mixing desk, laptop and MIDI keyboard did not depart far enough for reviewer Bryce Segall (2015) from the 'Powerpoint presentation' model; '[...] it's often difficult to discern just what Lopatin is up to amidst most of his time onstage (one imagines him just as likely surfing 4chan as actually performing), though it's easy to side with him in large part thanks to the quality of his current material, which lands him squarely among the Warp elite and IDM's biggest heroes.' Segall's remarks may smack of an outsider's perspective, as fans of electronic music are accustomed to seeing relatively stationary laptop performers, but I wonder whether the fact that a large proportion of the sound generation in the *Garden of Delete* shows was provided by pre-programmed electronics with an unclear or absent gesture-sound relationship was made more conspicuous by their juxtaposition with the live electric guitar and vocals. In 2018, OPN released *Age Of*, an album whose imagery and sounds draw explicitly on the symbology of Baroque music, in particular

through extensive use of harpsichord in the title track. The shows on the associated tour were billed as performances of the *Myriad* 'concertscape', which OPN described as an 'epochal cycle' based upon 'a kind of libretto for an opera that involved an inverted *2001 [: A Space Odyssey]* scenario' that he had written (Barbican 2018; Lopatin 2018). The use of the term 'concertscape' and OPN playing with his 'first full live touring *ensemble* [my emphasis]' in the publicity continues the Experimental Electronica tradition of invoking Western Art Music by moving towards a self-consciously 'Classical' mode of presentation. Moreover, the line-up for this tour, with Classically-trained pianist and Experimental Electronica musician (and Warp label-mate) Kelly Moran on keyboards, and 'artist, composer and percussionist' Eli Keszler (n.d.) on acoustic and electronic drums, suggests that OPN has continued to pursue the (re-)presentation of his studio work with traditional instrumentation as a means to create a condition of liveness in his performances. My experience of *Myriad* at the Barbican was that it was more successful than the *Garden of Delete* tour, but one of the biggest audience responses of the night was to a Keszler drum solo with MIDI-triggered real-time electronics, rather than one of OPN's own tracks. Although the addition of Moran and Keszler did lend the show a greater condition of liveness than its predecessor, their presence did also serve to emphasise the comparative lack of dynamism in the performance of OPN himself and his collaborator on electronics, Aaron David Ross. This might be seen as an inversion of the simultaneous liveness and studioness represented by sampling in the earlier discussion, where the studioness of the pre-programmed elements in the *Myriad* concert performance served to heighten the liveness of the instrumental performances given by Keszler and Moran. Were I to follow the OPN model of incorporating acoustic instrumentalists into the presentation of Experimental Electronica, I would seek a more comprehensive condition of liveness through making my interactions with my instrumental players more transparently responsive and dynamic, rather than delivering a tightly predetermined pre-programmed parts and requiring that they play along with them. This, of course, follows the models outlined in the 'Improvisation, Responsiveness and Resistance' section and is predicated upon my own desire to move away from the 'album as primary text' aesthetic of many Experimental Electronica artists, whereas OPN seems quite content to work within this model. In doing so, he finds himself caught between the 'weird powerpoint presentation' style he bemoaned in his early live performances and the liveness attained by Moran and Keszler during their instrumental solos in his more recent shows.

Holly Herndon is a Berlin-based composer and electronic music artist. The foundational aspect of Herndon's musical upbringing was her extensive participation in choirs as a child growing up in East Tennessee. This activity was encouraged as part of the church-oriented cultural and social lives of her parents, leading to Herndon (2014) developing strong sight-reading abilities, supplemented by guitar and piano lessons. From 2003 to 2008 Herndon lived in Berlin, embracing the city's booming EDM culture, before moving back to the USA to study at Mills College in Northern California where she began to make music with computers under the supervision of Maggie Payne, John Bischoff and Fred Frith. Here she wrote music for vocal ensembles and professionally trained vocalists and instrumentalists, using conventional Western musical notation and electronic processing based on Max/MSP. This led to a PhD in Electronic Music at Stanford, which she completed in 2019 (Herndon 2014; Herndon 2019a). In many ways, Herndon's career trajectory is emblematic of the increasingly interwoven cultures of traditionally institutional forms of music-making (acoustic and electronic) and Experimental Electronica, also evident in the work of Kelly Moran and Tim Hecker.

Herndon's (2017, p.555) work in both studio and live performance begins with the premise that 'the laptop is the most intimate instrument the world has ever seen. It mediates all aspects of our lives, connecting with the good and the bad of the world around us.' She is acutely aware of how this instrument is guiding her creative process, and emphasises the distribution of agency it affects;

> The question of agency has increasingly become a pivotal concern. Any instrument coaxes us to compose in certain ways and this is no different with the physical and digital design of the laptop, its applications, and the web platforms we contribute [to] and that provide affordances and suggestions towards a predetermined end. I see myself as having a playfully critical collaborative relationship with the engineers and designers who continually augment and refocus our capacity to produce and distribute art with new tools. [...] What is this tool telling me to do, and what does that mean? Where am I in this increasingly automated process?

<div align="right">(Herndon 2017, p.557)</div>

Herndon certainly responds to the studio environment (a studio that is, as far as I can tell, essentially comprised of a laptop and microphones), and synthesisers feature in her work (she refers to looking up YouTube tutorials on sound design with software synthesisers (Herndon 2014)), but she differs from OPN in that her emphasis is less on an exploratory and

intuitive response to the traditional tools of studio composition and more on exploring the relationships between humans and digital technology within a more politically-explicit creative framework. For instance, the track 'Home' from the 2015 album *Platform*, was written as a 'breakup song' to the United States of America's National Security Agency (NSA) and inspired by Herndon's growing sense that whenever she was unable to connect to the internet she felt uncomfortable and adrift while travelling: 'This was before I had international roaming on my phone, which has been a lifesaver. So, whenever I would have Wi-Fi, I would be like, "Oh, I'm home." That's where "Home" came from, like my inbox is my home. I can control and answer people and I can connect with people and get everything done that I needed to get done. It was about [...] feeling at home with my device. That's where the next layer came in of being like, "Well, if this is my home, and this is where I feel comfortable, and this is my private zone," like, "What does it mean that somebody is potentially [...] listening and viewing?"' (Herndon 2014). Other tracks from *Platform* address numerous aspects of contemporary internet culture: 'Lonely at the Top' is inspired by the culture of Autonomous Sensory Meridian Response (ASMR) on YouTube and is a collaboration with ASMRtist Claire Tolan, while 'Locker Leak' is a collaboration with 'Twitter humourist' Spencer Longo, and 'Chorus' is a massive assemblage of sounds culled from Herndon's everyday laptop activity as described earlier in this chapter (Beaumont-Thomas 2015).

If one looks in detail at 'Home', it is a track that wears its studioness proudly on its sleeve. Beyond its conceptual grounding in Herndon's critical yet intimate relationship with her instrument in the age of online surveillance, as with the majority of her output the focus of the music is Herndon's voice itself. The track begins with sampled 'ah' sounds setting up a single-note rhythmic counterpoint with the bass, as Herndon delivers the opening line. By the 1:30 mark, these vowels have been pitchshifted and are bouncing around the stereo field in a lattice-like interplay with one another and an abundance of scratching, clattering and rumbling found sounds, while the main vocal line is harmonising with innumerable manifestations of Herndon as backing singer. All of these samples are constantly moving not just left to right but also from hyper-real high-definition, as if centimetres from the listener's ear at one moment, to 50 metres away in some cavernous reverberant space at the next. Herndon's voice is intercut with processed, filtered and tremolo versions of itself, oscillating between intensely naturalistic and synthetic within a single phrase. This juxtaposition is, of course, made possible through the aforementioned potential of sampling to express a simultaneity of liveness and studioness and, in interviews, Herndon repeats many of the issues that were addressed in the 'Studioness in

Experimental Electronica' section. In particular, the spontaneity and lack of control embedded in recorded sound as less sterile and more organic:

> Holly Herndon: I think that's actually a shift that has been happening more with this album [*Platform*]. I think it's more overtly 'emotional'. [...] [Collaborators Metahaven] often use the slogan "the personal is the political" which is a term that I really like, so I tried to include a lot of personal sounds with that in mind. [...] I feel like the whole palette is hyper-personal and made from my browsing, the sounds around me, my body and those of my collaborators. There's very little actual synthesis, so there are some synthesisers and drum machines, but it's mostly really personal sounds. [...]
>
> Christian Eede [interviewer]: Honing in on the technique of 'Musique Concrète', and how seminal it is to your work, what do you appreciate about that form of production?
>
> Holly Herndon: That's something that came out of my use of sampling and Mat's 'net concrete' system which is very much related in terms of jamming sounds together, while also wanting to bring in the sounds of my environment more, including the messiness. I really like that messiness you can get with sampling. It sounds more earthy and I appreciate the idea around DIY technology and the aesthetics around that. I think when people imagine the future, they seem to imagine this sterilised lifestyle, but I don't think nature or dirt and that messy imperfection has to go away.
>
> (Herndon 2015)

Here, Herndon explicitly draws the connections between nature, messiness and expressivity with sampling. This facilitates a particular kind of studioness when these samples are assembled in the warped spatial perspectives of Herndon's music. As we saw with OPN and will see with Hecker, the use of overt studio intervention in acoustic sound sources serves to heighten the perception of studioness. However, in Herndon's case this approach is made even more pronounced by her focus on the human voice.[20]

It is important to note that, in the intervening time between the composition of the music that comprises this portfolio and the completion of the written commentary, Holly Herndon released *Proto* (2019), an album in which Herndon collaborates with a vocal ensemble, Mat

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[20] Given Herndon's academic background and her consistently well-researched and considered reflections on her own practice, I have no doubt that she consciously foregrounds the voice in her considerations of the relationships between humans and technology in order to locate the practice in a tradition of philosophical examinations of the associations between voice, identity, body and technology. I chose to restrict my discussion to Herndon's own accounts in order to avoid drawing focus away from the key issues of liveness and studioness as they relate to sampling, however, interested readers may wish to consult the following texts by way of introduction to this rich topic: Roland Barthes' (1977) *The Grain of the Voice*, Adiana Cavarero's (2005) *Multiple Voices*, Susana Loza's *Sampling (Hetero)Sexuality: Diva-ness and Discipline in Electronic Dance Music* and Catherine Provenzano's (2019a; 2019b) studies of auto-tune.

Dryhurst, and an Artificial Intelligence (AI) 'baby' named 'Spawn' (housed in a modified gaming PC) developed in collaboration with Jules LaPlace (Herndon 2019a). The compositional process involved months spent training the AI on the recordings of Herndon and Dryhurst's voices before taking the AI into the studio, writing scores for the vocal ensemble, feeding performances of those scores into the AI, responding to the output with the ensemble, repeating the process and then editing and mixing the recordings into the studio album (Herndon 2019a; Herndon n.d.(b)). *Proto* presents as a logical continuation of Herndon's stated interest in asking 'where am I?' in the increasingly automated processes of human-computer interaction, and the decision to make the centrality of the voice more explicit in this record is not accidental. Herndon chose to draw on Folk singing traditions in order to underline the fundamentality of the voice in human culture and, as transparently as possible, explore the elisions between human and non-human in digitally-mediated sound:

> This musicologist, Gary Tomlinson, looks at human evolution through music. Some of the dissonant, almost nasal deliveries you find in different communities around the world that would never have been in contact with each other – [it's almost this] inherent technology inside of us that had to come out. [Singing is] tied to all kinds of things, like hunting on the savannah – humans being able to make their group sound louder so that they could hunt more efficiently. We weren't trying to focus on one specific region or delivery style. It was more about trying to find cross-cultural similarities – almost like finding a new kind of folk music.
>
> The most audible one is the Sacred Harp, a kind of music that's found in the American South, Ireland, and all over the UK. [...] It's performed in a square or circle, this amazing surround-sound of really powerful voices almost scream-singing at you really emotionally. Sacred Harp felt like an apt vessel to explore some of [the timbral] qualities I was discussing earlier with Tomlinson – these delivery mechanisms. We were searching for a new kind of communion, in a way.
>
> (Herndon n.d.(b))
>
> "I'm singing through a system I've made. I can morph between human and animal and digital." [...] Holly's vision of the future is to make the human visible within the machine. On Swim, the last song completed for the album, the human and non-human members of the ensemble are at their most seamlessly, serenely unified. "They really occupy the same space," she beams.
>
> (Herndon 2019a)

Of course, Herndon's work on *Proto* is a far more technologically complex version of sampling than those discussed so far or that which is employed in my own work: her AI samples sound at

the granular level, establishes patterns based upon detailed analysis of those grains and their relationships, and synthesises new output based upon what it has learned. The result is a much more integrated version of the vocal processing described in *Platform*, but continues to explore the range of possibilities that exist between the extremely naturalistic and intensely synthetic (Herndon 2019b). The poetics of *Proto* depend upon the symbolism of the voice as a pro-foundly human (natural) element in a self-consciously digitally-mediated context, which also holds true for Herndon's earlier work, despite the synergy of poetics and methodology being less complete in the earlier work.

Herndon states a perspective on live performance that departs significantly from the record;

> When I tour, I try to mix myself. Nothing should sound the way it does on my albums. There's a whole other narrative and dramatic quality when you play live than when you record songs in the studio. People should be able to see how a song builds up and how it is created in their presence. Mat Dryhurst often joins me on stage and adds visual elements to the performance. My concerts feel like a game to me. Almost nothing is planned. With other electronic concerts, everything is usually perfectly coordinated. The lasers go out at precisely the moment the base [sic] drum gets kicked. That can be great. But I want my show to be wilder – it's perfectly fine for things to go wrong.
>
> (Herndon n.d.(a))

Herndon therefore adopts a minimalistic setup (laptop, vocal microphone, MIDI controller and mixer) that allows her to assemble the music 'on the fly' by triggering pre-recorded loops and sections from her album tracks. There are also prepared improvised sections and pieces composed specifically for the live performance. Nevertheless, in footage online and my own experience of attending a performance from the *Platform* tour, Herndon presents the improvisations and new compositions as links between the album tracks, and the majority of the show consists of album material, rendered in a manner that does not deviate substantially from the studio version (Kirby 2017). Herndon's advocacy for the laptop extends to live performance, and she explicitly dismisses the idea that the laptop is not a performative instrument; 'That's one of the criticisms, that [laptop music is not performative]. Maybe not in this room, everybody [here] [...] accepts laptop music as totally normal, but for a lot of people it's really still very abnormal, which is kind of mindblowing. So, [when studying at McGill University] I heard a lot of arguments, like, 'but you can't see the physical gestures', 'you don't know if you're checking your email', you know, all those kinds of arguments, that I don't think really hold up' (Herndon 2014). This certainly can be true, but the statements projected at the start of Herndon's

concert that I quoted at the beginning of this chapter (and were repeated almost verbatim when I saw Herndon perform live), insisting upon the liveness of her performance, betray an anxiety as to whether she is communicating that liveness. The position of insisting that laptops are performative for me recalls Demers' (2012, p.82) observation regarding 'reduced listening' in traditional Musique Concrète, which requires that 'reduction occurs through the listener's own sheer will.' Similarly, the assertion that laptops are performative depends upon the audience member's 'sheer will', or at least pre-disposition, to believe it to be so. Although laptop music can be performative, measures can also be taken to construct and cultivate a condition of liveness. Herndon does this through projections, live vocals, rearrangement of tracks and live mixing, but evidently still nurses doubt as to how effectively she is communicating that liveness.

Tim Hecker

Born in a Vancouver, Canada suburb, Tim Hecker began making music in Rock bands as a teenager, before purchasing a sampler in order to replace a drummer who never showed up to practice. So began Hecker's journey into electronic music, leading to him releasing two 'Glitch Techno' albums under the pseudonym 'Jetone' in the late 1990s and contributing to *Electric Ladyland Clickhop Version 1.0*, a compilation from seminal Glitch label, Mille Plateaux (Weingarten 2013). In 2001, Hecker released *Haunt Me, Hanut Me Do it Again* under his birth name, marking a shift away from Glitch towards more Drone- / Ambient- influenced expressions of Experimental Electronica. As his interest in distorted, droning walls of sound developed, he enrolled on the Ph.D. programme at McGill university in Montreal, Canada, in 2006, graduating in 2014 with a thesis entitled *The Era of Megaphonics: On the Productivity of Loud Sound, 1880-1930*. His decision to examine pipe organs as part of this research no doubt led to these instruments becoming the central focus of his 2011 album *Ravedeath, 1972*. The organ source material was recorded over the course of one day in a church in Reykjavik, Iceland, which Hecker spent a month processing and editing in his Montreal studio, resulting in an album that Hecker describes as 'a hybrid of a studio and a live record' (Colly 2011; Pollard 2011). The combination of live sound and extensive transparent studio intervention in Hecker's work draws parallels with Holly Herndon's studio practice, both focusing on sampled sound augmented by synthesisers. Hecker appears uninterested in explicitly drawing upon the symbolism of his sounds as referents to extra-musical ideas, however, which distinguishes his practice from that of Herndon and OPN who are commenting upon and invoking

computer culture in their work. Track titles are assigned to the music in retrospect, providing an opportunity to 'cloak the work with a kind of poetic garb', and this practice is indicative of a compositional aesthetic wherein sounds are transformed and assembled into abstracted musical forms (Hecker 2012a): 'I feel like the debates about source material, through sampling, have really been blown away by more advanced ways of assessing and working with digital audio [...] I don't want to set up a digital-analogue divide because I find the most interesting things confuse the two, like hybridity or in-between. It's easy to get wrapped up in the means of expression, and I feel like it just keeps coming back to confusing that stuff and having abstraction' (Hecker, 2016b).

For the 2013 album *Virgins*, Hecker assembled a group of instrumentalists to play piano, synthesisers and woodwind, and directed them while they improvised in the studio. A lot of this practice involved musicians improvising over transformed versions of their own previous takes. Kara-Lis Coverdale, one of four keyboardists who feature on the album, describes the process; 'We'd often think of Tim's sound desk as this transfiguration chamber, [...] Sound goes in, and then as soon as it's there, it's gone. Then you're jamming with yourself, but it's already not yourself. As soon as you hear it back, it's Tim-ified. It's fucked. You can't be married to the idea that you're going to hear yourself on that record' (Weingarten 2013). Hecker consistently refers to sound as 'plastic material', and as soon as something is recorded it ceases to be a performance and is instead something to be worked by the tools of the studio (Hecker 2016b). Although there are many moments in *Virgins* in which sound sources are clearly identifiable as, for instance, piano or clarinet, there is always the sense that they are cut from their context, and that the instrumentalists would have had no sense of what their performances might sit alongside or the textures they would be subsumed under. The majority of the album deliberately distorts, reconfigures and mutates the source sounds into the 'hybrid' uncanny valley between analogue and digital, acoustic and synthetic, that Hecker describes as his sonic ideal. Even sounds that remain identifiable retain their studioness in the audible processing and editing choices that betray Hecker's intervention in details from the microscopic to the macroscopic, as described in the 'Studioness in Experimental Electronica' section of this chapter. In 'Black Refraction', the track that would appear to bear the most transparent relationship to its acoustic piano source, a repeated piano phrase is subjected to abrupt jump cuts, the studio obstinately inserting its presence into the most acoustically raw and plaintive moment in the album, while the sound of the pianist's foot on the pedal is amplified to unreal proportions, further distorting the acoustic image. Out of time (both rhythmically and through the temporally dislocating

effects of the recording process) fragments swirl and echo in the background, while small varia-
tions in cutting, reversed playback and tape manipulation continue to affect the main line and
draw the close-listener's attention to Hecker's (and, contingently, the studio's) control at every
juncture.

Hecker's studio practice chimes with many features outlined as typical of Experimental
Electronica, in particular, precision editing of samples giving rise to an increased level of studi-
oness through audible studio intervention into acoustic sound sources. What is notable about
Hecker's choice of samples, moreover, is how frequently he returns to the instrumentation and
sounds associated with Western Art Music. Whether these are the organs of *Ravedeath, 1972*,
the pianos and woodwinds that dominate *Virgins* (listeners familiar with the music of Steve
Reich will likely draw comparisons between Reich's piano music and many of the repeating pi-
ano figures in *Virgins*, which Hecker confirms as intentional in his interview with Christopher
Weingarten (2013)), or the rescoring and sampling of Josquin de Prez's music for the 2016
album, *Love Streams* (Hecker 2016b), Hecker continues to enforce the connections between
Experimental Electronica and Western Art Music.

Hecker's dedication to listeners receiving his music as abstracted from its source ex-
tends to live performance. He performs primarily with a laptop and a mixing desk and embraces
live performance as a medium for presenting his music but sees it as an opportunity to direct
listeners' attention towards sound itself. This is the reason for Hecker's long-term practice of
filling his performance space with thick clouds of haze, often requiring seven or more industrial
concert hazers to fill a space (Hecker 2016a); 'It's about doing something that's the equivalent
of darkness, that focuses the eye back on sound. When it's done with enough haze, there's like
a narcotic effect where it makes your eyes kind of crack out and it makes, like, a third ear open
up. It amplifies sound, in a way that going to a live show with a huge video screen doesn't.'
Through removing himself from the performance, along with video screens and other instru-
mentalists, Hecker can enforce what he considers to be the ideal conditions for receiving his
music; visual absence encouraging heightened aural awareness. 'I refuse to perform my music
in a traditional sense of instrumentation, I don't have an amazing live stage spectacle to pro-
vide, and I don't want to go there. I don't see how the music would stay true to the spirit of the
work. So working with devices and guitar pedals and mixers and synthesizers is what I do, and I
prefer people not focus on that because it's kind of distracting from what the point should be.
At least for me, it's to have the primacy of aurality in the experience of that evening. I try to
deny the visual aspect as much as possible' (Hecker 2012b). This may recall the quote from Jlin

at the beginning of this chapter in its desire to control the manner in which the music is received, however, Hecker does not 'just play out' his album tracks. Fragments of material from the album are excerpted and reconfigured live, often with real-time processing through bespoke Max/MSP patches, which moves beyond the loop triggering and remixing of traditional DJ performance. There is an improvisational element to the live mixing and transformations, responding to the acoustics of the space and the somewhat unpredictable outcomes of the live processing, and these improvisatory elements sit within an overall preplanned structure for the performance (Hecker 2012a). Of the artists discussed here, Hecker's methodology is probably closest to my own in that it seeks out and makes use of the different affordances of studio and live work, embracing each on their own terms. However, Hecker's practice privileges 'aurality' in the reception of music to the extent that the live performances are an opportunity to enforce the idealised listening conditions that Hecker imagines for his recorded music. Although the live performances differ in content and form from the studio work, they still aspire to the same goal of encouraging listeners to receive sound as abstracted and divorced from the causal relationships between objects interacting in physical space.

Merzbow

Merzbow is the stage name of Masami Akita, a Noise artist born in Tokyo, Japan. Merzbow's influence on Noise culture is profound, having amassed an enormous discography of over 400 releases since the project began (Akita 2015), and he is by far the most consistently-cited Noise artist in discussions of the genre; as Paul Hegarty (cited in Thompson 2017, p.146) puts it, Merzbow is 'the ultimate example, the reference point, for Japanese noise music, and for consumption of and writing on noise'. This has led to Merzbow's approach to, and aesthetics of, Noise often being read as archetypal and, indeed, many of the characteristics of Noise that have already been discussed will be recalled in this section. However, I do want to undermine the pat dismissal of Merzbow that the reason he is able to produce so much music is due to it all being essentially the same or produced with little attention or care. In fact, a survey of Merzbow's work reveals a wide range of changing approaches and ideas, meaning that the extent to which he aligns with the Noise conventions previously established also changes over time and from project to project. One area where he has remained relatively consistent, however, is in his identification of his work as 'music', though resistant to traditional ideas of musical value. This can be illustrated by the following two quotes, the first from an interview conducted by David Novak in 1998, the latter from a magazine interview in 2018:

When I started, I used the word Noise, but at that time people hated it… they thought Noise was just 'no-good music.' I kind of 'pretended' to use the term Noise because it means separation from other music, it was outside of Music. But by the late 1980s, a lot of people began to use the term Noise for different purposes… so it's not useful anymore.

(Novak 2013, p.133)

Since I had started making music, its motive changed remarkably. Originally, the Merzbow music was unappreciated by people. […] Probably, at the beginning noise presented itself as a protest to already existing forms of music. This is the musical taste I had and still have […] I'm not sure that I understand the term "anti-music". I dare say that at the beginning I was quite opposite-minded towards all sorts of things. The things we did at that time couldn't be called "musical". At that time, a sign of good manners was to do "rock" or "jazz". Passionate, toe-tapping rock music was quite popular. And we [were] the exact opposite. Just noise, without any passion. In other words I would say that we did this "anti-music" advisedly.

(Akita 2018a)

In these quotes Merzbow clearly identifies his practice as 'music', but also emphasises the importance of it being 'unappreciated' and perceived as 'bad' by outsiders. I find the idea that Noise is not music to be spurious, so it is reassuring that Merzbow clearly intends for his music to be considered anti-musical, i.e. opposed to culturally-entrenched conventions of music, but not ontologically distinct from music. I find Steven Alan Wilson to be particularly convincing in locating how Merzbow's practice functions in relation to music: '[Merzbow's] work forces the listener to confront a music that has no recourse to harmony, form, melody, rhythm, or virtually all other features that were considered important and necessary elements of music until the mid-twentieth century. […] In Merzbow's work, we confront the margin between music and non-music' (Wilson 2014, p.15). Wilson takes Merzbow's claim (following Deleuze) that Noise is 'the nomadic producer of difference' to argue that Merzbow employs Noise in order to transgress the boundaries that traditionally delimit music by moving across them freely and without acknowledging any externally-imposed hierarchies (Wilson 2014, pp.324). 'Noise can only be nomadic', according to Wilson (2014, p.311), 'if it exists within the structural field of music' and Merzbow's work 'is robbed of its transgressive power if we define it in terms of essential difference [to music].' Even though Merzbow rarely employs traditional musical elements in his music, it must continue to be understood as music in order to be perceived as resisting these norms. My impression from reading interviews with Merzbow and listening to his music is that his assertion that his music is 'bad' is to be understood along similar lines. It is bad

if one understands it to be aspiring to traditional ideas of musical form and instrumental skill, which is why I believe Merzbow returns to the idea of it being misunderstood or unappreciated as a point of value. If one understands his music as intentionally deconstructing traditional musical value systems, then it makes sense that Merzbow would take pride in its being rejected by those who place stock in those value systems. His first cassettes were released on his own label, 'Lowest Music and Arts', the name of which confirms that emphasising the non-musicality of the project was important to Akita from the outset (Novak 2013, pp.134-135). This is another extremely prevalent aspect of Noise culture of which Merzbow is emblematic. In her doctoral thesis, Sarah Benhaïm (2019) relays an anecdote of attending a Noise show where a musician's facility as a pianist betrays his musical training and is therefore treated as a point of suspicion by other fans and musicians, and devotes an entire chapter to the idea that traditional musical skill is considered suspect within the genre.

From what we know of Merzbow's studio practice, it broadly adheres to the conventions of Noise already outlined, in that studio recordings normally consist of long improvised takes recorded directly onto a CD recorder, which are then uploaded to a home computer for editing (historically, he used Digital Audio Tape (DAT) format or consumer audio cassettes rather than CDs, but he abandoned these formats because digitising them takes longer) (Wilson 2014, p.314; Akita 2018b). The extent to which tracks are edited varies immensely, however, and overdubbing certainly plays a role in the creative process. Turning to a fairly recent Merzbow album as an example, *Kakapo* (2016), it is evident that this was the approach to recording. The whole first track operates over a fairly prominent drone figure, with what sounds like two separately-recorded improvisations (panned quite hard left and right) playing out over the drone. In constructing his music in this way, Merzbow demonstrates a methodology that is not a straightforward recording of what he does live but is constructed accumulatively through the layering of extended improvisations, where one can hear the real-time manipulation of parameters.

Another salient factor, corroborated by *Kakapo*, is that Merzbow recordings always seek to respond in some way to the circumstances under which the album is being produced. *Kakapo* was released by Oaken Palace Records, a label specialising in Drone and Psychedelic music that donates 100% of its profits to charities dedicated to the preservation of endangered species (in this case, the Kakapo bird of New Zealand). Given that Merzbow is well-known for his sustainability and animal rights activism (merzbow.net displays the subtitle 'Vegan Straight Edge Noise Project' and Akita has written a book entitled 'Cruelty Free Life') it is not

surprising that this label would appeal to him, but the prominence of drone textures and slow developmental pace of the record is clearly in consideration of the label's genre associations. Merzbow has often adopted the 'house style' of a given label as a subject for one of his releases, most famously on *Venereology* (1994), which was released on the Death Metal label 'Relapse Records' and so the 'target was death metal itself' (Akita 1997b). Merzbow has consistently asserted that he approaches each release as an opportunity to try something new, and that he deliberately changes his setup for each new recording, so it is to be expected that the kinds of studioness (and liveness) present in his work will change from release to release (Akita 1997a; Akita 2015). However, even in more heavily edited work, the improvised element means that the liveness of Akita manually adjusting faders and knobs is usually evident (Wilson 2014, pp.314-315). An interesting contrast to *Kakapo* in this respect is *1930* (1998) (released on John Zorn's Tzadik label), which contains recordings of many improvisations recorded to tape, and these tapes were then mixed in real time by Merzbow (Akita 2019). The way in which whole textures and sounds move in and out, but are still brought in by Merzbow's hand, is markedly different to the long single takes of *Kakapo*. This audible presence of Merzbow's hand, which has nothing like the precision of a DAW's automation curve, injects a continual sense of liveness into these recordings. In tightly-controlled studio products, such as those of the Experimental Electronica artists already discussed, the audible presence of 'played-in' elements, particularly through sampling, can serve to highlight the studioness of the recording. However, in Merzbow's case, the takes are long and often uninterrupted, with large extracts of improvised material being allowed to play out either in sequence or overlapping with one another, manipulated in real time. The effect is therefore more akin to listening to simultaneous incredibly intimate live performances, mediated through the technology between ourselves and Merzbow, than a meticulously-refined electronic music studio product. According to Merzbow himself, his studio work is more improvisational than his live solo material:

> I have been home recording for a long time. I like to play, record and mix all by myself. [...] I usually record all of my improvisations, so I constantly have them in stock.
>
> (Akita 2018b)

> Actually I don't pay much attention to the difference between [improvising and composing] [...] Because my pieces are not composed as ordinary music, but are rather like an abstract rendezvous of various sounds.
>
> (Akita n.d.)

> I record almost everything I play at home. I don't record live by myself because live is kind of... a routine. [...] Solo live is harder, there are many more things to work on. I

need to prepare the structure, what to do with rhythms, etc. Improvisation plays a very, very small part in my solo shows.

<div align="right">(Akita 2013)</div>

These quotes suggest that Merzbow is more comfortable using his home studio as an exploratory space to improvise more freely with sound, where he can retain authorial control by selecting material from his recordings and subjecting them to varying degrees of editing and production.

Now that it comes to talking about Merzbow's live performance style, I am going to predominantly focus on his post-2009 approach of using an analogue setup in the mechanical feedback style described in the Liveness in Noise section. Other periods, including 1997-2009 when he famously switched to laptop-only performance, will also be discussed when required, but as the majority of available performance footage and related interviews concern his more recent work, and the post-2009 period corresponds with the production of my portfolio and the times when I have had the opportunity to see Merzbow perform live, it seems appropriate to concentrate on his contemporary practice. In Merzbow's live practice, we will find many correspondences with and departures from the conventions outlined in the Liveness in Noise section. Clearly, his assertion that his live performances are more structured and 'routine' than his studio work is contrary to the centrality of totally free, uncontrollable improvisation to live Noise as described by Benhaïm (2019), Klett and Gerber (2014) and Novak (2013). Having watched Merzbow performing live, however, I have to conclude that his interactions with his equipment during live performance are exploratory, responsive and improvisatory on the small scale due to the unpredictability of behaviour that is an inevitable consequence of the large and complex feedback setup with which he is performing. On the large (formal) scale, it is entirely possible that Merzbow plans his performances in advance in terms of what equipment he will use at various stages, which external sources (acoustic or electronic) he will bring in and when, and perhaps there will be groups of settings that he will have prepared in advance to aim for at different moments, but the moment-to-moment decisions of activating pedals, changing settings and mixing will be decided in response to the ongoing sound-generation of the system. It would make sense that the role of improvisation would seem small to Merzbow in this context, requiring that he prepares a structure or approach to the performance in advance so that his explorations take place within a certain time-frame and work as a performance for a live audience, in comparison to the studio setting where he can spend much longer searching for sounds and textures without any recourse to the presence of an audience or the time limits of a gig slot.

These comments all refer to solo performances, however, and Merzbow solo shows, at least outside of Japan, have become increasingly rare as he has developed a collaborative touring relationship with drummer Balázs Pándi. According to both Merzbow and Pándi, these performances are much more freely improvised: 'It's completely improvisational. We have a very slight structure, which is just only for when do we play together and when solo, so we just, basically, have these, like, huge chunks of music. But within that, like, sometimes one part is longer, the other's shorter, so that's really just something that we need to have, something that helps us, like a fixed structure, but it helps us to open up more and gives us a security, but this security opens up the improvisation...' (Pándi 2013). When working with others, these loose improvisational structures free Merzbow from the sole developmental responsibility, allowing him to be more freely improvisational: 'In live collaboration including studio sessions, I basically improvise' (Akita 2019).

It is interesting that, despite the widespread acknowledgement that Merzbow is taken to be emblematic of Noise culture, his own words and performances represent a complicated relationship with these norms. On the one hand, his studio work is largely based on a long-form home improvisational practice, recorded directly into the desk, which is consistent with the conventions previously established, yet he does place a premium on this work, and certainly does not devalue it in relation to live practice. His live approach is far more structured than one might expect, yet it does also clearly embrace the tools and improvisatory elements associated with Noise to varying degrees depending on context. One final element of Merzbow's philosophy that has remained consistent is his aesthetic resistance to musical orthodoxy, already discussed, but this recurs when it comes to live Noise performance. Initially, Merzbow was opposed to performance altogether: 'My original idea was to only record music in the studio. I was against live performance, because I didn't like the charisma of it. Therefore, I had no idea about live performance for a long time. It is only when I did a long tour in America that I found pleasure in live performance. [...] It is more physical pleasure, with my body and sound. After that, I continued to make live performances more often' (Akita 1999a). Merzbow has always been notoriously undemonstrative and inscrutable in live performance, in contrast to the performative emotiveness of Rock that Noise inherited and is typified by the flailing limbs and pained expressions of other seminal Noise artists such as Incapacitants, Masonna and Prurient. He obviously nevertheless values the physical sensation of sound that is foregrounded in live Noise, so it is unsurprising that moving to laptop performance in 1997 would appeal to him as an even less demonstrative mode of live practice that allows the focus on sound to come to the fore. Whilst

this clearly afforded him the opportunity to move away from the charisma of live performance that he found distasteful, it was also motivated by a growing sense of conventionality in Noise: 'I switched completely to using laptop computer in the late 90s. Practically nobody used computers for noise back then. I received a lot of criticism for going fully digital. [...] But now that everybody is using their laptop, I decided to go back to using analog' (Akita 2019). Again, Akita frames his creative decisions regarding the presentation of his work as motivated by a resistance to musical orthodoxy. While this may be observed more broadly in his rejection of traditionally 'musical' features, it was also clearly expressed in his performance practice as a reaction to a burgeoning Noise scene and sense of growing conventionality within this scene.

The Noise artists I will discuss hereafter all engage with Noise as potentially resistant to musical orthodoxy, but also engage critically with orthodoxy within Noise. We will see in the methodology chapter how I use resistance to create tension with traditionally musical features that I have inherited from my musical background, and we will also see how my own approach to improvisation resonates with that of Merzbow, in that I find predetermined structures useful as ways of reliably delivering a satisfactory musical architecture within a given performance slot, and, in my case, for ensuring a certain degree of resistance (after all, where there is no structure and all outcomes are acceptable, resistance disappears). I do, however, prefer to place the musical conventions with which I am constructing my aesthetic resistance within the text of the music itself, and the Noise musicians I will discuss hereafter all do this in ways that are generally absent from Merzbow's full-noise approach.

Kazumoto Endo

If the received wisdom of Noise history says that Noise exists in opposition to conventionality in music, then the music of Kazumoto Endo seeks to make this opposition as explicit as possible. Endo is a Japanese Noise artist who originally began making Noise in the early 1990s under the moniker 'Killer Bug', but only released a small selection of cassettes under this name over the course of the decade, reportedly 'displeased with how noise [as a genre] came across on record' (Schleicher 2006). The decision to release his first full-length album, *While You Were Out*, under his given name in 1999 clearly represented an attempt to do something different with Harsh Noise as a studio art form, and subsequently became a touchstone reference for Noise fans (Bowe 2012; Hutson 2015; Moss 2012). In his doctoral thesis, *Sonic Affects: Experimental Electronic Music in Sound art, Cinema and Performance*, William Moran Hutson provides an excellent overview of the development of noise from being the 'byproduct

of a performative activity' to being heard as an aesthetic object within the 'codified practice of music-making' that is Noise (Hutson 2015, p.137). *While You Were Out* features as a key text in Hudson's argument, and illustrates the expressive potential of noise as musical material but also as it functions in relation to more 'traditional' musical features through direct juxtaposition. I will draw on Hutson in the following discussion of *While You Were Out* and will endeavour to be transparent when doing so.

Over the course of the 1990s, Endo had developed a signature style in which screeching blasts of noise lasting anywhere between a fraction of a second to a minute were intercut with periods of silence, allowing 'Endo's noise [to become] experientially *louder* [than unrelenting noise – emphasis original] – even if it may not actually be louder as measured by a sound pressure level meter – through its contrast with silence' (Hutson 2015, p.127). Of course, the incredible quietness of digital silence means that this approach lends itself to the studio medium, as such silence is unlikely to exist in a live setting, and the lack of visual cues allows the bursts of Noise to remain completely unexpected, even after multiple hearings. Although this approach does feature in *While You Were Out*, the defining development in this record was Endo's decision to use pre-existing Pop, Classical and Folk musics where he would have previously used silence. It is Endo's original treatment of these materials that is invariably focussed upon in discussion of the album and his subsequent work by scholars and the music press: 'Other noise artists have done perhaps a track or two like his before, some even an entire CD, but it always comes across as a joke. Like rich kids dressing poor, experimental artists often have a tendency to flash their love of the mainstream for bragging points. This is obviously not the case with Endo, though.' (Shiflet 2003).

Track 2, 'Itabashi Girl', is probably Endo's most well-known track (Hutson 2015; Bowe 2012) and it is constructed around a Disco music sample, which is cut and looped for the majority of the song. The loop is deliberately cut in an awkward place in the bar, rendering music intended for dancing completely undanceable, while blasts of screaming Noise crash in and out of the mix, impeccably-timed for maximum impact and, almost certainly, a degree of absurdist comic effect. The timing and precision of the editing is crucial here, and practically every discussion of Endo's music that I read, whether academic or from the music press, makes reference to the evident care and attention with which he assembles his Noise in the studio:

> Endo inundates his listener with wave upon wave of sound, with careful attention paid
> not only to the density and "feel" of each component, but also an intense attention to
> the interlocking of rhythms. [...] Every moment is perfectly controlled; even at the

heaviest and most complex moments on the 7″, Endo is in absolute control – you
never forget that these are two Kazumoto Endo tracks. [...] Both tracks that make up
the release are incredibly precise, cathartic explorations in form and texture that really
make *Evergreen* a stunning display of Kazumoto Endo′s craftwork.

(Atamian 2011)

This makes for great noise because the cuts are so quick and unexpected. They are also
remarkably clean and excellently timed.

(Shiflet 2003)

Endo gives the impression that no sound he makes is accidental and that everything is
intended. A model of noise which defines it as the byproduct of an expressive act fails
to describe what occurs in Endo's music. His work pushes Noise Music even closer to-
ward traditional music by his display of craftsmanship and attention to detail. Endo's
pieces never sound accidental–they sound meticulously composed and edited.

(Hutson 2015, pp.127-128)

In all of these quotes one can observe language that approaches that which is used in music scholarship and criticism for genres where instrumental and other traditionally 'musical' skills are valorised. Hutson makes the point that Endo is making an argument for the musicality of Noise through his evidently highly-skilled (I would say virtuosic) construction of Noise in direct juxtaposition with the generic banality and technical simplicity of the Disco sample in 'Itabashi Girl'. This is compelling to me, but I would like to go further in highlighting that he does so in his first real studio album after a long period of reported dissatisfaction with Noise in that medium. Endo is also making an argument for the affordances of the studio, most notably preci-sion of construction, to make Noise that takes advantage of the modes of listening associated with the recorded format. From my perspective, Endo manages to create music that more suc-cessfully evokes a condition of studioness than a great deal of Harsh Noise releases. Endo clearly remained cautious about releasing Noise on record, with only a spattering of collabora-tive releases and one limited-edition album, *Brick and Mortar* (2003), coming out in the 20 years following *While You Were Out*. This changed in 2019, with *Keiyo*, arguably his first sig-nificant solo album in 20 years. The studioness of Endo's work remains throughout his cata-logue, although by the time he arrives at *Keiyo*, the sampling of other genres of music has dis-appeared. A simple kick drum and sub-bass swell work in contrast to Endo's screeching clouds of Noise, although the interplay is far more deliberate and harmonious than Endo's sampling of other people's work. Sometimes Endo's noise locks into grooves with the kick and bass, some-times the kick and bass audibly feed into Endo's noise rig, and they work together to build

tension and fall into climax-driven musical structures that were not so evident on *While You Were Out*. To put it simply, Endo is no longer using his studio work to question the 'musicality' of Noise, but rather taking this as read and taking advantage of the studio to wield noise in traditionally 'musical' ways.

Watching Endo perform live, it is evident that he uses a combination of acoustic and mechanical feedback (Kazumoto Endo 2018). The acoustic feedback is generated using a contact microphone (sometimes attached to a homemade instrument, sometimes on its own) and the mechanical feedback is generated through a network of guitar pedals, homemade effect units and a PA mixer. This network is divided into 4 isolated channels, where each channel can be accessed using a homemade 'switcher' device, for which Endo has helpfully provided a demo on YouTube (Kazumoto Endo 2019). The switcher allows Endo to select channels to turn off and on via the touch of a button, or to combine them using a joystick controller. The ability to quickly turn whole channels of self-contained feedback loops on and off facilitates the alternation of sound and silence and quick juxtaposition of different noise textures that characterise Endo's style. In a live context, Endo is clearly improvising, and the sculptural precision with which he can construct phrases with nigh on melodic contours in a studio setting, along with the clean separation of elements afforded by panning and studio mixing, is notably reduced. Here we can observe the practical resistance and centrality of indeterminacy in improvisation that has been described as typical of live Noise, in that Endo's Noise setup is clearly far less controllable than the studio work might lead one to believe. He does, however, continue to pursue a more sculptural and controlled style of live Noise than many Noise musicians, and it is the clear difficulty he experiences in delivering this that foregrounds the practical resistance present in his feedback performances.

Jefre Cantu-Ledesma

Jefre Cantu-Ledesma is the least noisy Noise artist I will discuss in this chapter. Some readers may even dispute my categorising Cantu-Ledesma as a Noise artist at all, as his music employs many of the harmonic, melodic and rhythmic traits of more 'traditional' musics against which Noise has historically defined itself. There is a romantic emotiveness to Cantu-Ledesma's music, and he himself does not dispute observations that his work has developed a 'Pop' sensibility (Cantu-Ledesma 2015). However, it is the generic 'inbetweenness' of Cantu-Ledesma's music that invigorates his use of Noise and is particularly inspirational for me; as reviewer Philip Sherburne (2015) found with the album I discuss here, *A Year with 13 Moons*

(AYWTM), 'It's hard to decide if [it] is the year's most fucked up ambient album, or its most bucolic noise record'. Cantu-Ledesma places his noise in the context of a Pop-inflected Ambient soundscape in a way that is markedly different to Kazumoto Endo's approach, as Cantu-Ledesma's Noise is used to 'perturb and warp the generic styles and attributes' of the other genres at play and find emotional expressivity in the tension between genres, as opposed to Endo's emphasising of the alterity of Pop in relation to Noise (Thompson 2017, p.168). This works as an expression of Noise that draws on its aesthetically resistant history, although his approach to production also bears relation to the methodologies already described in the sections on liveness and studioness in Noise. Through improvising using networks of guitar pedals and feedback loops in tandem with synthesisers, guitars and drum machines, and a studio practice that seeks to document this live improvisational process, Cantu-Ledesma creates work that is sufficiently resonant with Noise to warrant examination within this context.

AYWTM was recorded at an artists' residency at the Headlands Center for the Arts in San Francisco, where Cantu-Ledesma spent three months in his studio, 'six hours a day, seven days a week,' improvising and recording everything he did (Cantu-Ledesma 2015). This resulted in 'hours and hours and hours' of improvised music, from which he selected the excerpts that would become the tracks on the album. This gives *AYWTM* a strange commonality with the work of Merzbow, in that one of the recurrent features of Merzbow's music is that tracks either begin sharply or fade in to reveal a process that was clearly ongoing before the track begins, and usually end equally abruptly, implying that the recorded work is something of a catalogue of excerpts of an ongoing creative process. In Merzbow's case, this effect is compounded by his immense and perplexing discography, but nevertheless the majority of the tracks on *AYWTM* begin with a fade-in that introduces the listener to an ongoing process of sound generation with no sense of where this excerpt sits within that process. The implication that these works are documentary-like snapshots of an evolving artistic practice is corroborated by Cantu-Ledesma (2015) himself; 'I record that whole process and at some point I'll get to the end and find where the songs are. I've always been interested in the idea of music as a diary or a catalogue of what's happening in your life. When you put the ideas together, a narrative relationship is created.' 'Love After Love', the second track on *AYWTM*, is typical of the approach used throughout the album. From 00:00-00:48 a simple repetitive rhythm like the dull rubbing of a piece of machinery in operation emerges, which appears to be a single sound source (origin unclear) dowsed in filtered white noise. At 00:48, a new layer of feedback enters, audibly being manipulated by filter sweeps, and continues until 01:11 as the original rhythm fades away. From

01:14-02:16 the main harmonic progression for the track fades in, with accompanying drum loop, and the feedback layer from 00:48 fades out. From this point to the conclusion the track remains much the same, the whole sound world shimmering in hazy distortion, overdriving the equipment it is being fed into while Cantu-Ledesma manipulates and shapes a layer of noise improvisation on top of the harmonic and rhythmic base. It is unclear whether the Noise improvisation was recorded simultaneously or was overdubbed afterwards, or even if they are two separate improvisations that happened to line up fortuitously. It is clear, however, that the sections beginning at 00:00, 00:48 and 01:14 were distinct improvisations, recorded at different times, and juxtaposed in order to create a 'narrative relationship'. Cantu-Ledesma evokes a level of studioness in his juxtaposition of temporally dislocated elements, similar to that of Merzbow in *1930*, but not as meticulously edited and constructed as in Endo's approach. The studioness of the transparent editing is placed in tension the 'played-in' liveness of Cantu-Ledesma's improvisations. Where Endo uses studioness in Noise to argue for its aesthetic resistance to traditionalism in music, Cantu-Ledesma's wields the tensions between liveness and studioness, and noise and 'music', in service of an uncomplicatedly 'musical' expressiveness.

As the album tracks are composites of improvisations, using extracts that could have been arrived at after hours of development, Cantu-Ledesma is unable to reproduce these pieces in live performance. Instead, he will plan the conditions for an improvisation, then generate music in much the same manner as he would in the recording studio; an insight into his studio practice presented as live performance (Cantu-Ledesma 2016). However, Cantu-Ledesma (2017) claims he doesn't really perform much anymore, having expanded his improvisational practice to include multiple players for the 2017 album *On the Echoing Green* and generally reconceptualising his approach as a methodology for producing studio work, rather than live performances. This attitude is distinct from that of Noise performance as described in this chapter. It is in the juxtaposition of tonally, melodically and rhythmically traditional elements with Noise textures and techniques that Cantu-Ledesma's approach resonates with my own. However, where his studioness predominantly arises from editorial decisions when collaging long studio improvisations, I seek to create recorded music with a more profound studioness from my own improvisations, making use of a broader range of more interventionist studio techniques, as will be shown in the methodology chapter.

Prurient is the stage name of Dominick Fernow, a Noise artist born in Wisconsin, USA. He is the artist discussed here whose relationship with both studio and live work has shifted most significantly during the course of his career. In keeping with the practices described in the 'Studioness in Noise' section, the Prurient discography is vast, comprising multiple EP and LP releases per year (beginning in 1998) on numerous labels and formats including vinyl, cassette, CD and CD-R. Towards the beginning of his career, Prurient's releases tended to bear a close relationship to his live performance practice. In all of the interviews and articles I read on Prurient, the early period album that was most frequently discussed as one of his most significant releases was 2005's *Black Vase*. This album was explicitly recorded in order to document Prurient's performance practice at the time, which comprised of the microphone, PA and speakers setup described in the 'Liveness in Noise' section; '[...] when we recorded *Black Vase*, that was done in one day, and at that time I [Prurient] had been touring heavily, and Ben from Dropdead had said to me at one point, "A record is a recording of what you do live." That was a very radical idea to me at that time because in my mind, coming out of a metal background, you toured in order to show what you had done in the studio, not the other way around' (Fernow 2015c). As Fernow's career developed (and he, significantly, launched a Dark Techno project under the alias 'Vatican Shadow' in 2011), the Prurient releases increasingly incorporated synthesisers, drum machines and other elements from outside of the Harsh Noise feedback setup for which he had become known. In 2011 Prurient released *Bermuda Drain*, an album containing nine short (mostly between three- and five-minute) tracks in which his vocal performance is accompanied by obsessively repeating synth melodies, pads and programmed drum machines. The album would probably not be considered a Noise record were it not for the screamed vocal peppered throughout (although much of the album is spoken word), the dark lyrical content and the intensely uncompromising aesthetic that remains even though the instrumentation has changed. The smaller Prurient releases between 2005 and 2015 appear at various points along the dark synth experimentalism and harsh noise continuum, which is part of a deliberate methodology in Prurient's work; 'It's a semantic issue, and I think it's an ongoing, interesting discussion in music of what makes an album. Some people just think it's length, but to me, it's more complicated. That's why I've always loved 7-inches. The albums are the 'big statements', but those are less organized in a way because they have to address all aspects of the project. EPs are where you can obsess over something, and the album is supposedly the

results of your research' (Fernow n.d.). This approach makes particular sense when considering the 2015 album *Frozen Niagara Falls*. At 90 minutes' duration, *Frozen Niagara Falls* is a 'big statement' that appears as something of a career retrospective, with tracks like 'A Sorrow with a Braid' and 'Wildflowers (Long Hair with Stocking Cap)' clearly documenting more or less live feedback improvisation while the dark synth exploration of 'Every Relationship Earthrise' and 'Jester in Agony' recall *Bermuda Drain*. It is therefore significant that the opening two tracks, 'Myth of Building Bridges' and 'Dragonflies to Sew You Up', seem to inhabit both at once, establishing that these elements will be in conversation for the duration of the album. Repeated synth riffs and programmed drums insistently tick away, while screeching feedback and crashing clouds of distortion swirl around, decorating and colliding with the harmonic and rhythmic base. The view that the harmonicity of the synthesiser lines and the inharmonicity of the noise and distortion have something of an antagonistic relationship with one another is borne out in the structuring of the album as a whole which, almost without exception, alternates between 'Noise' tracks and tonal 'Synth' tracks throughout. As this approach is so consistent, it is hard to imagine that Prurient was not deliberately exploring the aesthetic resistance between noise and 'music' as a key theme in this album.

Prurient confirms that he was reflecting upon his career when he made *Frozen Niagara Falls*, and began by seeking to revisit the improvisatory Harsh Noise methodology of *Black Vase*; 'When I first started talking with the producers that I worked with, Arthur and Chris, I was referencing the *Black Vase* Prurient album, which was entirely [made] from drums, feedback and vocals. That record was recorded in a day and similarly I wanted to go in and fucking do the thing... [...] I wanted to convey the early moments of my career - the physicality of it all. Essentially I was going for a lack of a pedal noise; this is more about the body than the gear. The more we went towards the live approach with this record; we stumbled upon an important contradiction, as it reminded us how important it was to be in the studio in a new way' (Fernow 2015d). It is interesting that the album began as a return to the recording of live Noise-making (elsewhere, Prurient recounts a desire to create the album predominantly from acoustic sounds such as rocks being broken and thrown, fabric torn, wood cracked and so on (Fernow 2015b)) and, once the acoustic space for recording the album (a barn in rural Pennsylvania) became unavailable and Prurient transferred to a more traditional recording studio, he and his producers recognised and took advantage of the tools available to them to create an album where this tension between liveness and studioness is expressed in the music itself.

Prurient is clearly deeply committed to the studio as a site for creative exploration, not just as a means of documenting live performance, and utilises this relationship in both his studio and live work. His early live practice has been extensively discussed already, as has the increasing physical and emotional toll that this practice takes on him, so it is perhaps unsurprising that Prurient live shows are becoming less frequent and beginning to depart from the 'pure feedback' performances of the past. Increasingly, Prurient performs live vocals over loops and samples from his studio albums triggered using Ableton Live, interspersed with sections of *Black Vase*-style feedback performance; 'It starts with *Pleasure Ground* and *Black Vase*-era tracks, then it goes into the *No Fun* era and I'll play 'A Meal Can Be Made' from *Bermuda Drain* and end with 'You Show Great Spirit.' So there's a touch of the new stuff, and it's done in an almost straight chronology that isn't necessarily intentional' (Fernow n.d.).[21] Prurient is characteristically unequivocal in his explanation for this transition from the feedback performances, when all of the sound was generated in the moment using the acoustics of the room, to the live-mixing model that he has adopted more recently; 'Live, I'm trying to not fiddle around with Ableton. I don't have anything against that. It's just not a consideration for me. I have no problem with playback. At some point it's all playback, whether you're sampling or you're activating a trigger that's a sample of the sample. That's an irrelevant issue to me. Also, what's so goddamn interesting about watching someone play the guitar? I mean, you know what's going to happen. "My god, there's a guy sitting at a drum set. What's going to happen? Wow, he's really doing it." I mean, haven't we moved beyond that?' (Bennett and Fernow 2015). This position has no doubt been reinforced by Fernow's experience playing Techno sets at Berghain, Fabric and Ibiza as Vatican Shadow. Nevertheless, Prurient's studio and live practice both now sit in an interesting, boundary-crossing position between studioness and liveness, and in doing so have particular relevance to my artistic practice.

Towards a Methodology

All of the key artists profiled towards the end of this chapter conform to and depart from the conventions broadly outlined in the sections on liveness and studioness in Noise and Experimental Electronica. In the case of the Noise artists, Kazumoto Endo is the most typical in his documented suspicion of the successfulness of recorded Noise (a possible explanation for

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[21] An example of Prurient performing in this way can be found here: <https://www.youtube.com/watch?v=mseqFqoamVw> (unARTigNYC 2015).

his limited discography) and practically-resistant feedback-based live performance practice. However, these factors led him to deliver a studio album that departed from recorded Noise as straightforward documentation of live practice and embraced the close-editing and structural control afforded by studio technology in *While You Were Out*. Merzbow uses studio technology to record long-form Noise improvisations which he then collages together, which would be considered typical, yet his live practice is a lot more carefully planned and structured than the total Free Improvisation model described in ethnographic accounts such as those given by Klett and Gerber (2014), Novak (2013) and Benhaïm (2019), and he does not devalue studio practice in relation to live practice. Jefre Cantu-Ledesma developed a studio practice from what might be considered a typical Noise improvisational live practice, ultimately leading to a preference for the former over the latter. Prurient has moved from foregrounding live performance in *Black Vase* to foregrounding the studio in *Bermuda Drain* to exploring both in *Frozen Niagara Falls*, while his live performance practice has gradually moved away from total-feedback Noise. While this might be understood as demonstrating that generalisations about any musical culture are to be taken with a grain of salt, my choice of key artists is also a natural consequence of my own interests in liveness and studioness. For all of these artists, the relationship between live performance and studio work persists as an ongoing and unresolved area of inquiry, motivating consideration and re-evaluation of how they approach their practice in both mediums. This makes their work more interesting to me than that of the artists discussed in ethnographic accounts who privilege live practice to the extent that studio work is considered secondary. Having said that, Merzbow, Endo and Cantu-Ledesma take advantage of the Noise convention that live performance need not bear any relation to studio work beyond showcasing some of the approaches to sound generation to keep the two practices relatively distinct, whereas Prurient is negotiating the presentation of studio work in a live environment in such a way that holds particular relevance for my aspirations in Experimental Electronica. For my tastes, Prurient still relies too heavily on extensive playback of parts from his tracks, rather than finding a method of recreating his studio work that is more variable and dynamic. As will be shown in the methodology, I look to maintain the indeterminacy and resistance of feedback performance when incorporating studio material in a live format.

In this chapter, I began with an overview of the key concepts and contextual background required to understand my approaches to the creation of music in live and studio settings. In the section on my musical background, we saw how my early experiences as a musician laid the groundwork for a compositional approach predicated on tightly-controlled

compositional strategies and a general preference for live performance practices where the musician's relationship with their instrument contributes to the liveness of the experience. In the section on Noise history, it became clear that every development that has been associated with Noise in the wide body of existing scholarship has positioned itself as being in some way opposed or resistant to established norms; be they social, cultural or musical. This was followed by sections dedicated to the concepts of liveness and studioness, allowing me to establish my understanding of these terms going forward. Having identified an overarching resistant aesthetic in Noise culture, we saw how this can be practically expressed by musicians as a performative strategy in a variety of genres, where resistance functions as a mechanism for cultivating a 'condition of improvisation' and, contingently, a condition of liveness. I then showed how this practical form of resistance has a particularly significant role in Noise performance environments, contributing to the profound liveness of Noise performance practice. As a composer whose studio output exists in the world of Experimental Electronica, the resistant performance practices of Noise offered a path towards a methodology that would encourage a condition of liveness in my own live performance.

The aesthetic resistance of Noise to established musical norms and signifiers was expressed in the Noise albums discussed in this chapter. *While You Were Out, AYWTM* and *Frozen Niagara Falls* place the sounds and sound generation techniques of Noise into dialogue with tonal and rhythmically repetitive material and this, for me, acknowledges this form of resistance in a more interesting way than more straightforwardly 'harsh' Noise records. As Julian (2013, p.127) has observed, Noise has now 'been around long enough to develop stylistic moves and a feel of the "traditional" about it,' and the very fact I can discuss how liveness and studioness exist within the genre, even with the understanding that I am speaking generally and there exist numerous departures from these norms, is testament to this development. In order to maintain the resistance that makes Noise so vital and exhilarating as a genre, it must find new contexts for that resistance, and the Noise of Endo, Cantu-Ledesma, Prurient and myself finds that within the context of tonality and rhythm. For me, aesthetic resistance arises in my practice from my desire to work with harmonic languages (whether tonal or otherwise), which are placed into tension with the microtonal (or atonal) and indeterminate elements of my improvisatory live practice.

Over the course of this chapter, I have also sought to illustrate that working with electronics in live and studio contexts seems to engender a predisposition to privilege one context over the other. I began by making this distinction along generic lines, where Noise artists tend

to conceive of their practice as best expressed through live performance and Experimental Electronica artists tend to understand theirs primarily as a studio art. During the latter portion of this chapter, the Experimental Electronica artists I cited as influential to this portfolio all have interesting live performance practices but, at least at the time of writing, look to the studio in order to find the fullest expression of their work. This context encouraged me to seek a more holistic practice for the production of Experimental Electronica wherein I could create music for live performance, with an idiomatic liveness founded in practically resistant improvisational practices, and music for recorded media, with an idiomatic studioness founded in the tools and affordances of that environment. Both live and studio work would be placed in an ongoing and mutually dependent relationship, whilst maintaining their identities as fundamentally different mediums presenting their own particular opportunities and advantages as means of artistic expression. My approach to exploring this will be described in the following chapter.

METHODOLOGY

The portfolio of compositions presented here comprises work from two projects, referred to under the pseudonyms 'Spectra' and 'Slow Loris'. For each project, I will describe the development of the live performance environment associated with the given project before moving on to a case study that examines individual pieces produced using that environment. Case Study 1 looks at 'Spectra Live' and 'Inbound' from the *Striking Distance EP* in the Spectra project, while Case Study 2 looks at 'Insight Informed' (live) and 'Insight Informed' (studio) from the *Adjunct EP* in the Slow Loris project. The case studies illustrate how the construction of resistance in the performance environments informs the music in both live and studio versions of the tracks. Each case study is followed by shorter analyses of the remaining pieces from the given project, building upon the methodology established in the preceding sections and focusing on developments and departures from the approaches and techniques described in the case study. The final section presents alternate versions of the live work, produced during the COVID-19 pandemic and detailing how they were adapted for the live-streaming format.

Project 1 - Spectra

The Spectra Performance Environment

The Spectra Performance Environment is constituted by 2 'rigs' that interact with one another; a 'digital rig' comprising a laptop running Ableton Live, an Alesis MIDI keyboard and an Akai APC40 mkII MIDI controller, and an 'analogue rig' comprising a matrix mixer and effects units.

Figure 1: The Digital Rig in the Spectra Performance Environment

Figure 2: The Analogue Rig in the Spectra Performance Environment

The Spectra Performance Environment – Digital Rig

Development of the Spectra Performance Environment began with the digital rig; a series of Max For Live (M4L) patches designed in order to apply amplitude envelopes and filtering to sound sources in Ableton Live. Inspired by Alessandro Cipriani and Maurizio Giri's (2013, pp.359-426) explanation of subtractive synthesis using digital filters in Max/MSP, the initial environment contained multiple filters that could be manipulated in real time in order to extract predetermined partials and, ultimately, harmonic content in the form of chords from a source sound. In the first instance, this was done by taking M4L's CombFilterMulti audio effect, which allows users to filter 5 precise pitches from a source sound, and editing it so that these pitches would change in response to notes pressed on a MIDI keyboard.
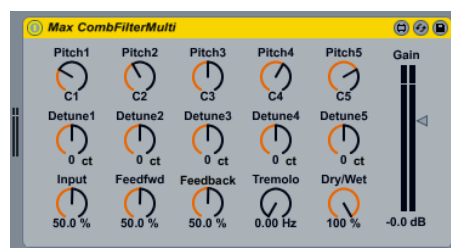

Figure 3: Max For Live CombFilterMulti Audio Effect

The Input, Feedforward and Feedback controls facilitate the manipulation of timbre, Tremolo applies a tremolo effect to the sound and Dry/Wet dictates how much of the source signal the effect is applied to. As comb filters operate by subjecting the source sound to delayed versions of itself, the process can create quite a coarse, synthetic timbre. In order to offer a more subtle and customisable form of filtering, I built my own filter audio effect (fffb_filter) containing 5 fffb~ (Fast Fixed Filter Bank) Max/MSP filter objects. Each fffb~ object is a bank of 8 band-pass filters tuned to the harmonic series. Therefore, if I send a fundamental frequency to an fffb~ object, it will place a bandpass filter on that fundamental and each of the 7 natural harmonics above it. As I am emulating the design of the CombFilterMulti audio effect, the 5 fffb~ objects in the fffb_filter audio effect are tied to the pitches of the CombFilterMulti audio effect. For instance, were CombFilterMulti in the state depicted in Figure 3, the fffb_filter audio effect would be applying bandpass filters at the pitches of C1, C2, C3, C4 and C5 and the 7 natural harmonics above each of those pitches.[22] The CombFilterMulti and fffb_filter effects are placed in a single effects chain so that I can apply blends of comb filtering and fffb~ filtering to the source sound, or choose to use one, the other or neither. The advantage of the fffb_filter is that it offers adjustable Q on each filter, allowing a very narrow range of frequencies to pass through (in which case it extracts a single pitch in the manner of a comb filter, but with a softer timbral character) or a very wide range (in which case more of the original source sound is audible).

In the Ableton Live Set for the Spectra Performance Environment, I created 4 audio tracks (referred to as channels within the Spectra Performance Environment), each containing a CombFilterMulti effect and fffb_filter effect. This enabled me to input up to 4 source sounds simultaneously and apply a different set of 5 filters to each source. The table in Figure 4, visible when performing within the Spectra Performance Environment, illustrates how the setup is configured.

	Note 1	Cent 1	Note 2	Cent 2	Note 3	Cent 3	Note 4	Cent 4	Note 5	Cent 5
Ch. 1	G# -1	0.00	G# 0	2.00	F 2	5.00	A# 2	25.00	D# 3	37.00
Ch. 2	D# 1	-9.00	F 2	-10.00	C 3	-2.00	A 3	8.00	D# 4	5.00
Ch. 3	A# 3	18.00	D 4	10.00	G 4	25.00	A# 4	9.00	D 5	2.00
Ch. 4	E 1	-9.00	G# 2	-5.00	D 3	-19.00	E 4	0.00	F# 5	-32.00

Figure 4: Note Table in the Spectra Performance Environment

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[22] Throughout this discussion, notes are referred to according to the A3=440hz standard, where C3='Middle C'.

In the situation depicted above, the source sound being input into channel 1 would be sent through a CombFilterMulti effect and fffb_filter effect that would apply filters at the pitches of G#-1, G#0(+2), F2(+5), A#2(+25) and D#3(+37).[23] The source sound being input into channel 2 would be filtered at the pitches of D#1(-9), F2(-10), C3(-2), A3(+8) and D#4(+5), and so on. This allows me to effectively 'tune' the source sounds coming into channels 1-4 to the pitches displayed in the corresponding rows of the table.

It soon became clear that, if I wanted to change the pitches of the filters being applied to a channel, changing each note individually was not practical when improvising within this environment. It is at this point that the first level of resistance enters into the system. A MIDI keyboard is used to change the pitches of the filters, however, a group of 5 pitches (a 'pitchset') is assigned to each note within a 3-octave range on that keyboard. In the case of Figure 4, the pitchset that is being displayed on channel 1 is assigned to C2 on the MIDI keyboard, so when I play C2 on the MIDI keyboard, those 5 pitches are filtered from channel 1. I must assign the pitchsets to the keys of the MIDI keyboard in advance, when setting up the conditions for an improvisation within the Spectra Performance Environment, and choices regarding the content of those pitchsets will depend on the desired harmonic character of the improvisation (Figure 4 is microtonal, whereas the pitchsets in 'Spectra Live' are much more stably tonal).

Each channel is allocated 3 notes in each of the 3 octaves of the MIDI keyboard. This means that the pitchsets assigned to C2, C#2, D2, C3, C#3, D3, C4, C#4 and D4 on the MIDI keyboard control the filters on channel 1. D#2, E2, F2, D#3, E3, F3, D#4, E4 and F4 on the MIDI keyboard control the filters on channel 2, and so on (see Figure 5, overleaf). This construction completely subverts the established relationship between the MIDI keyboard and the Western tonal system. As a pianist, I can choose to play D2 and F3 on the keyboard in the Spectra Performance Environment, but the pitches extracted from the source sounds will be those assigned to keys D2 and F3, not necessarily the pitches D and F themselves, and may, in fact, be up to 10 completely different pitches.

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[23] Numbers in brackets following pitches denote microtonal tunings in cents (1/100ths of a semitone) above or below the A=440hz standard.
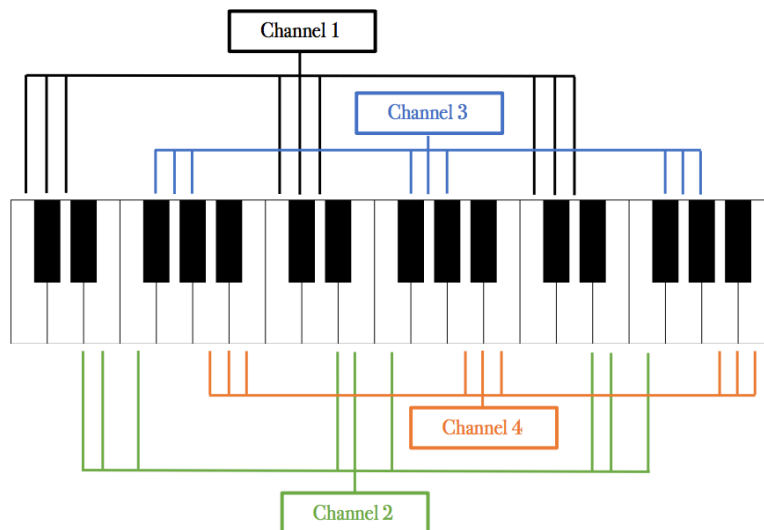
*Figure 5: How Pitchsets are Assigned to the MIDI Keyboard
in the Spectra Performance Environment*

This establishes a theme that will be returned to as I describe my approach in this methodology chapter: impediments to the realisation of harmonic structures being understood as aesthetically resistant. This theme arises from a combination of factors, generic and personal, that were established in the contextualisation. Firstly, the complicated question of Experimental Electronica's relationship to 'Western Art Music', beginning with the relocation of live EDM from the dance-floor to a much more 'Classical' mode of seated, contemplative reception. This relationship has continued throughout the history of Experimental Electronica and can be seen in the numerous present-day examples given in the contextualisation including Venetian Snares' *Rossz Csillag Alatt Született*, the work of Kelly Moran, OPN's *Myriad* 'concertscape' and various aspects of Holly Herndon's musical output. Secondly, Noise music's aesthetic resistance to tonal harmony as a signifier of musical convention as seen in the work of Kazumoto Endo, Prurient and Cantu-Ledesma. In my own work I am looking to explore the relationships between noise, atonality and tonality, drawing on the productive tensions exposed in the practice of these artists, yet rendered in a markedly different fashion. Finally, my creative background as a composer. While Noise music typically presents an aesthetic resistance to various signifiers of musical convention, my music has always explored tonality as a point of compositional interest, and this impulse is followed and pushed further by the methodology and context of the work I am producing now. Various features of the systems I have devised as part of this research project are designed to 'warp and petrub' the perfect realisation of preconceived harmonic structures and, in doing so, encourage the discovery of unforeseen harmonies or, often-times, to explore the boundaries between tonality and atonality, harmony and texture. Given

that there is a Western Art Music convention written into anything one does with MIDI (the MIDI protocol being based entirely around the equally-tempered chromatic scale), setting up systems that resist my internal biases for working within these conventions requires that I at least acknowledge and begin with these conventions.[24] My background as a composer and pianist who uses keyboards as compositional tools has conditioned me to expect certain harmonic outcomes when playing an instrument with a keyboard layout. Therefore, the subversion of the relationship between the MIDI keyboard and harmonic output affected by the pitch-filtering system described above is experienced by me as resistant to my own inherited impulses and biases.

Beyond the pitch extraction effects CombFilterMulti and fffb_filter, there is a M4L MIDI Instrument assigned to each channel of the digital rig that allows me to apply an amplitude envelope to the output of that channel. This can be used to give rhythmic contour, expressive shape and accents to the filtered sound. The M4L MIDI Instrument I designed to achieve this is called amplitude_control.
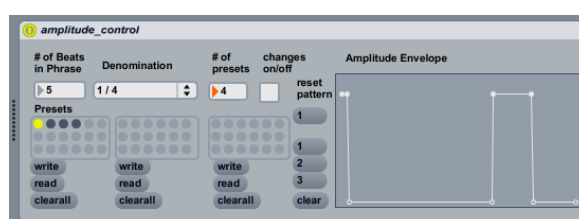

Figure 6: amplitude_control M4L MIDI Instrument

amplitude_control allows me to 'draw in' an amplitude envelope with my mouse, and this envelope will be applied to the output of the sound in the associated channel. In the scenario depicted in Figure 6, the envelope will take 5 crotchet beats (according to the global tempo of the Ableton Live set) to play out from beginning to end, starting with a short sharp burst of sound, falling silent, then fading back up sharply for a longer burst of sound at around 4/5 of the way through the envelope (i.e. around the 4th crotchet beat) and falling silent again. Once I have drawn in an amplitude envelope, I can save it as a preset, represented as a dot in the boxes labelled 'Presets'. The 'changes on/off' button allows for more rhythmic variety when it is enabled, as the patch will cycle through a number of presets rather than just looping the selected preset.

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[24] The extent to which Western musical traditions govern software design is the focus of Khyam Allami's work. He has designed the programs *Leimma* and *Apotome* to fulfil what he perceives as a need for contemporary software that does not take Western modes of music-making as the presumed starting-point for electronic music composition (Faber 2021).
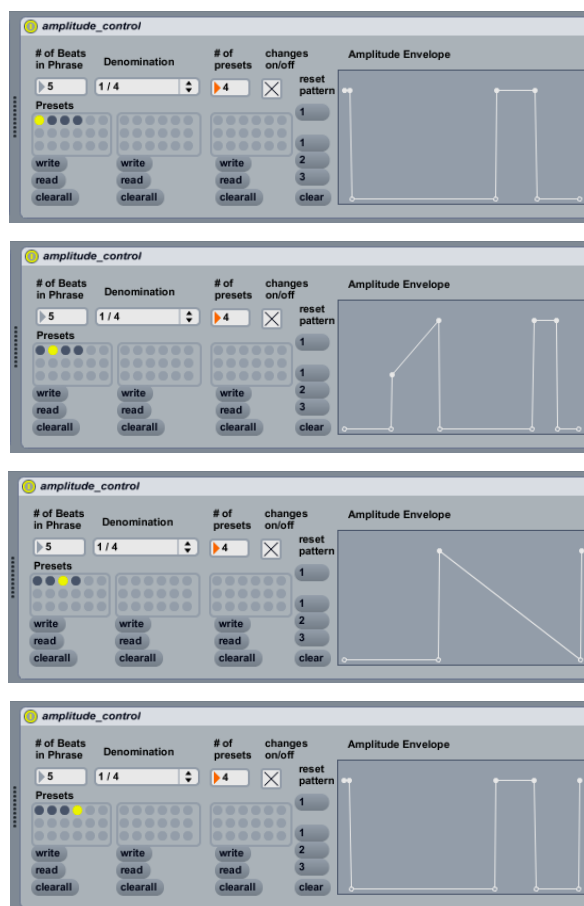
*Figure 7: A Cycle of 4 Amplitude Envelopes Playing in Sequence
in amplitude_control*

In combination, the objects described above facilitate pitch extraction and the imposition of rhythmic contours onto source sounds across 4 separate channels of audio within the Spectra Performance Environment. Having built the digital rig, I spent some time experimenting with a variety of source sounds, including recordings of machinery, samples of recorded music, and live acoustic sources. However, none were yielding particularly interesting results. It was only when I began experimenting with white noise as a sound source, adding distortion and other effects, that the digital rig began to function effectively as an environment for improvisation. This led to the development of the analogue rig.

The Spectra Performance Environment – Analogue Rig

The heart of the analogue rig is a homemade matrix mixer designed in consultation with Josh Smith, a friend with experience of building homemade synthesisers and other pieces of musical electronics. Josh also built the mixer. The matrix mixer (Figure 8, overleaf) has 5 inputs and 5 outputs, and sound is directed through the system via a 5x5 grid of faders and on/off switches. During the course of this discussion, the components on the grid will be referenced

using x,y pairs, with x running from low to high from left to right and y running from low to high from bottom to top. For example, fader 1:1 is the bottom left fader in Figure 8, and fader 5:5 is the top right fader. The inputs and outputs are numbered correspondingly. Input 1 is the leftmost input and input 5 the rightmost. Output 1 is the bottommost output and output 5 the topmost. The killswitch numbering is the same as for the outputs.

The matrix mixer is designed for quick and easy construction of feedback loops through complex audio routing. Let's assume that all on/off switches and killswitches are switched to 'on', enabling audio to be directed to any output by turning up a corresponding fader. Audio entering input 1 can be directed to output 1 by turning up fader 1:1. The same audio input can be directed to output 2 by turning up fader 1:2. Audio entering input 2 can be directed to output 4 by turning up fader 2:4, and so on. Turning off an on/off switch will break the connection. For instance, the audio in the 3 previous examples can be muted by turning 'off' on/off switches 1:1, 1:2 and 2:4 respectively. Killswitches effectively mute their corresponding output, so turning killswitch 2 to 'off' would break the connection between all faders and on/off switches directing audio to output 2 (1:2, 2:2, 3:2, 4:2 and 5:2).

In order to create feedback using this system I must connect a piece of technology that can increase the gain of an audio signal, such as a guitar pedal, effects unit or amplifier, and create a closed loop. This can be illustrated by example using one of the most-utilised pieces of equipment in the analogue rig; an Altai *Analog Echo System* ('Altai' hereafter), intended to add delay effects to guitars and vocals. As part of my setup, I connect the output of the Altai to input 1 of the matrix mixer, and output 2 of the matrix mixer to the input of the Altai. All on/off switches and killswitches are 'on'. When I turn up fader 1:2, this connects the output of the Altai to its own input, and feedback is created. I can then connect output 1 to a master output (such as an amplifier or P.A. system) and turn up fader 1:1 in order to hear the results of this feedback loop. Once this feedback loop has been created, it will stabilise at a single pitch until I intervene by further increasing or decreasing the level on fader 1:2, which will cause the feedback to become louder or softer and also affect changes in pitch.
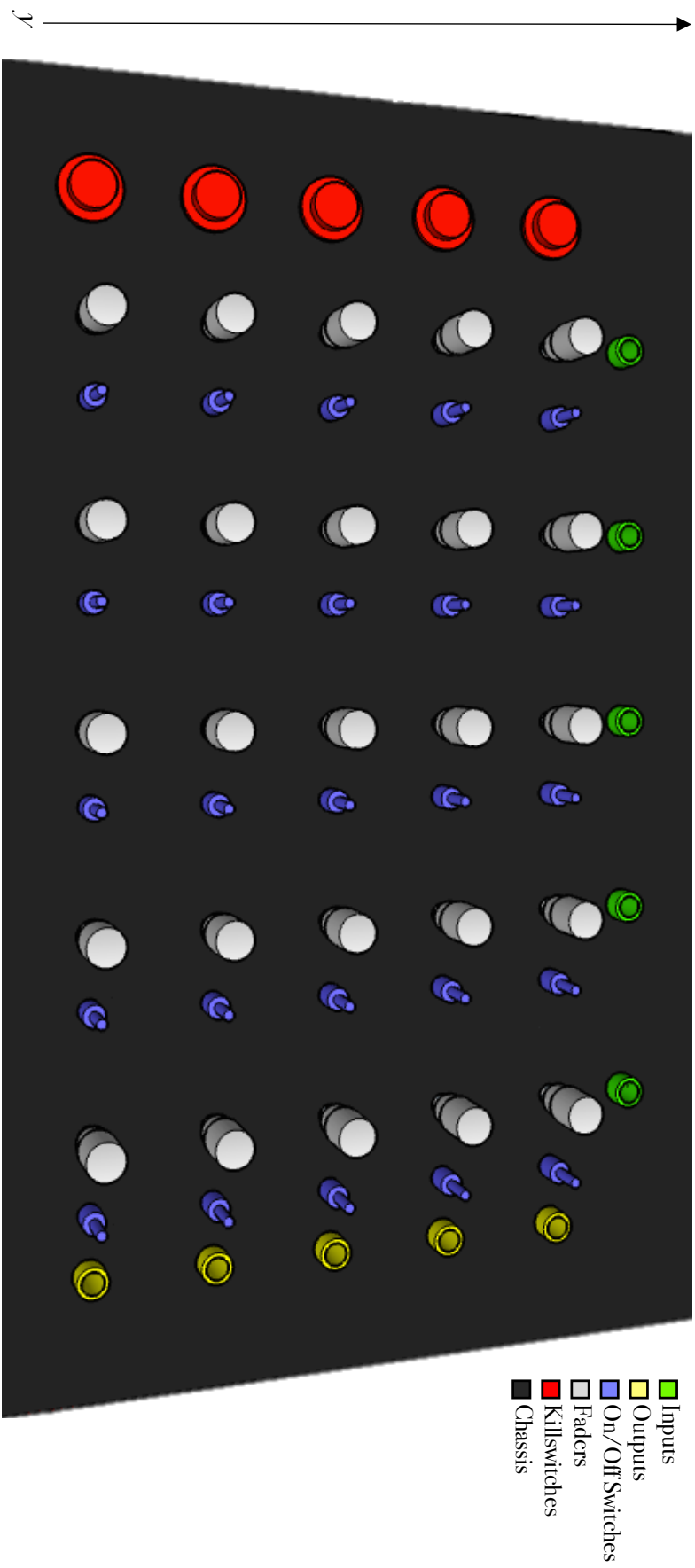
Figure 8: Original Design for Matrix Mixer by James Telford, Modelled and Colour-Coded in Trimble SketchUp Web (Trimble Inc., 2018).

■ Inputs
■ Outputs
□ On/Off Switches
■ Faders
□ Killswitches
■ Chassis

The monophonic texture of a single feedback loop has its uses, but the full potential of the matrix mixer is found in its ability to create multiple chains of interacting feedback loops. The next step towards this state might be to connect a distortion pedal, in this case a Fulltone Fulldrive 2 MOSFET (henceforth 'Fulltone'). I connect the output of the Fulltone to input 2 of the matrix mixer and output 3 of the matrix mixer to the input of the Fulltone. Turning up fader 2:3 causes the Fulltone to begin feeding back into itself. At this point, rather than simply turning up fader 2:1 to send this feedback loop to the master output, I instead turn up fader 2:2, sending this feedback loop to the input of the Altai. If fader 2:2 is increased to its maximum level, the Fulltone will overpower the Altai and I will simply hear the Fulltone's independent feedback loop. However, it is in the interaction of these elements that interesting effects emerge, so by carefully adjusting fader 2:2, I can find a middle ground where both the Altai and Fulltone feedback loops are heard and the way they are affecting one another is apprehensible. This is due to the nature of feedback, which seeks a state of equilibrium (i.e. a single, unchanging pitch), and the introduction of outside elements (in this case introducing the feedback of the Fulltone to that of the Altai) upsets this equilibrium and one hears the resultant instability in the sound. It is in this way that I understand practical resistance as being expressed in the material makeup of the system, insofar as its operation is defined by multiple interacting elements vying for a state of stability against one another. Performance with the analogue rig is achieved through the construction of feedback loops in the manner described above. Each loop is seeking its own equilibrium and this behaviour may impact upon that of all the other loops created within the rig. Therefore, a deep interdependence is built into the system, founded upon a situation wherein numerous competing agendas interact with and enact change upon one another, creating audible expressions of the resistance between them.

Although resistance can be seen as presenting in the material makeup of the system itself, it is in the complexity of the system that the analogue rig establishes practical resistance between itself and myself as performer. The scenario described thus far comprises a delay unit on one input and a distortion pedal on another, however, when playing as Spectra there are multiple devices connected to each input of the matrix mixer (Figure 9, overleaf), each with its own controls that affect the nature of the feedback created (even in the above scenario, the Altai has volume, EQ and echo volume controls while the Fulltone has volume, tone (EQ), overdrive, boost and 2 on/off switches that affect the timbre of the distortion). That is to say, once a sufficient level of interdependence has been introduced to the system, where 5 chains of effects are creating feedback loops through 5 inputs and 5 outputs, it becomes extremely difficult to

predict how changes in any one parameter might affect the behaviour of the entire system. This kind of complexity does contribute to my experience of the system as practically resistant as it is impossible to hold all of the variables in one's head in performance, all the changes that have been made since the performance began, and therefore difficult to predict the precise manner in which a further change might affect the operation of the system. As illustrated in the contextualisation chapter, the association between unpredictability and the apprehension of resistance is strong in experimental and improvised music performance, and it is certainly the case that various kinds of highly complex performance systems could be constructed in order to cultivate an experience of practical resistance. However, it is also the case that feedback, being in its nature a dynamic and partially-controllable phenomenon, helps compound and exaggerate the experience of practical resistance within the analogue rig and the other performance systems that place feedback at the core of their functionality (such as the no-input rigs and acoustic feedback systems that remain a staple of Noise performance practice).
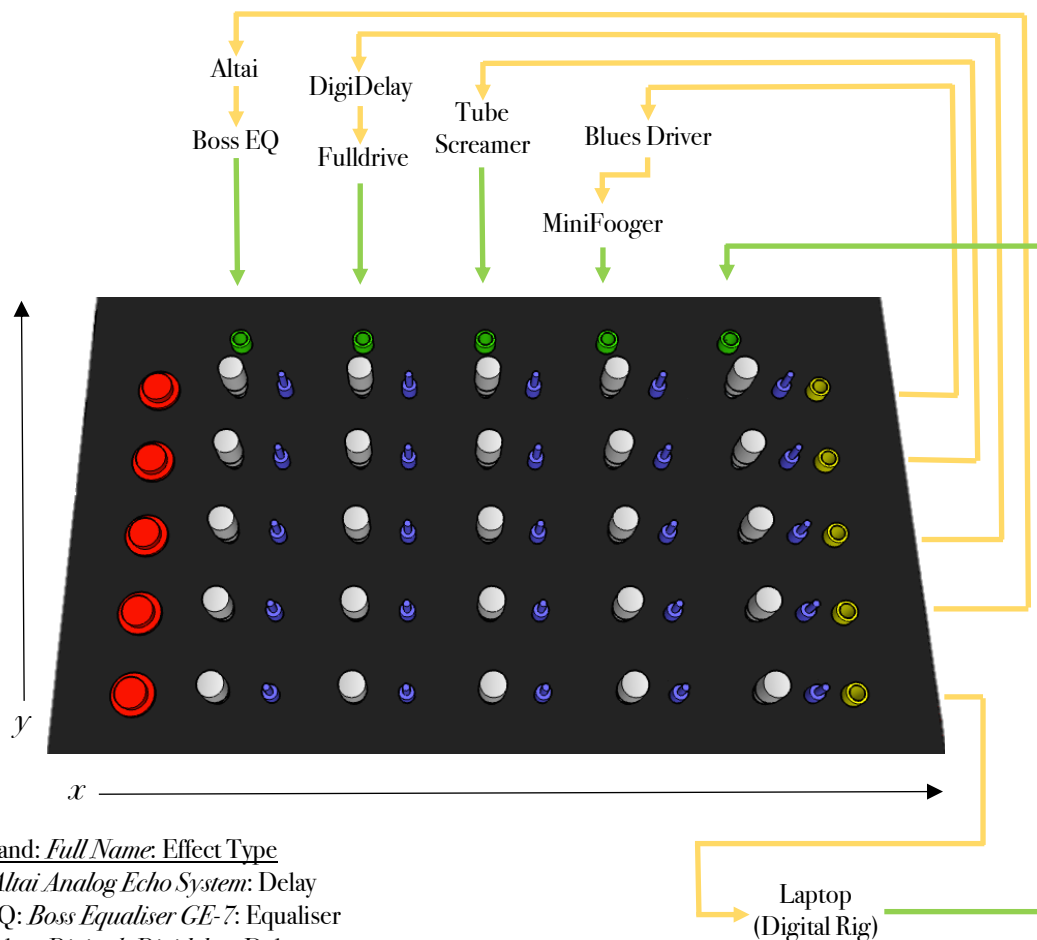

Shorthand: *Full Name*: Effect Type
Altai: *Altai Analog Echo System*: Delay
Boss EQ: *Boss Equaliser GE-7*: Equaliser
DigiDelay: *Digitech Digidelay*: Delay
Fulldrive: *Fulltone Full-Drive 2 MOSFET*: Distortion
Tube Screamer: *Ibanez TS9 Tube Screamer*: Distortion
Blues Driver: *Boss BD-2 Blues Driver*: Distortion
MiniFooger: *Moog MiniFooger Drive*: Distortion and Equaliser

Figure 9: Analogue Rig Setup for 'Spectra Live'.

THE SPECTRA PERFORMANCE ENVIRONMENT – ANALOGUE AND DIGITAL RIGS

When used in combination, I understand the two rigs in the Spectra Performance Environment as essentially embodying a tension that is inherent in my work, where the analogue rig represents an improvisational, atonal exploration of timbre and texture, and the digital rig represents a structured approach to harmony and rhythm. In relation to the themes established in the contextualisation, this can be read as an embodiment of the aesthetic resistance between Western Art Music structures and Noise / Free Improvisational structures, tonality and atonality, institutional and popular that make up my creative identity as a composer. When I designed the system, I envisaged the analogue rig producing expansive, rich textures of distortion and white noise that could then be fed into all 4 channels of the digital rig, where it would be sculpted into 4-voice rhythmic and harmonic polyphony. This is certainly possible, but the effectiveness of this is highly variable in terms of being reliably used in performance. It transpired that, when I closed the loop and created an interdependence of the digital and analogue rigs, the whole system began to express the underlying tension of its construction. Noise textures can be developed in the analogue rig and fed into the 4 channels of the digital rig, but it is when I select channels from the digital rig to send back into the analogue rig (done using the MIDI controller), creating feedback loops within the entire environment, that the most musically satisfying things tend to happen. Of course, once the environment is so thoroughly interdependent, the practical resistance to me as performer becomes more pronounced: it is possible for small changes to completely interrupt and derail the development of promising moments; the nature of tuning with digital filters can result in certain frequencies becoming intensely resonant and suddenly piercing through the texture; the environment can become so thoroughly self-reinforcing that performances get stuck in a soundworld from which it is difficult to break out. Nevertheless, there are equally moments when the digital rig is shaping the output of the analogue rig, and the analogue rig is responding to the digital rig's harmonic and rhythmic material, and one can hear the two rigs influencing one another and negotiating, struggling to reconcile the conflicting musical agendas built into their systems. My role as a performer is to try to cultivate this situation and direct it, whilst understanding that the environment may well thwart the intentionality of my interventions. Frustration is as likely an outcome as delighted surprise when dealing with an environment embodying resistance at so many levels, from the disjuncture between the MIDI keyboard and the harmonic content, to the innumerable variables of the analogue rig, to the unpredictability inherent in the interdependence of the whole

environment, but this is where a condition of liveness – and creative inspiration – might be found.

Case Study 1a – 'Spectra Live'

The development of 'Spectra Live' and the entire *Striking Distance EP* was not linear, and both informed one another at various points, so there will be some discussion of studio material here and likewise some discussion of live material in the studio section. The first stage of composition for both live and studio versions was a tonal harmonic progression that could be programmed into the digital rig (Figure 10).
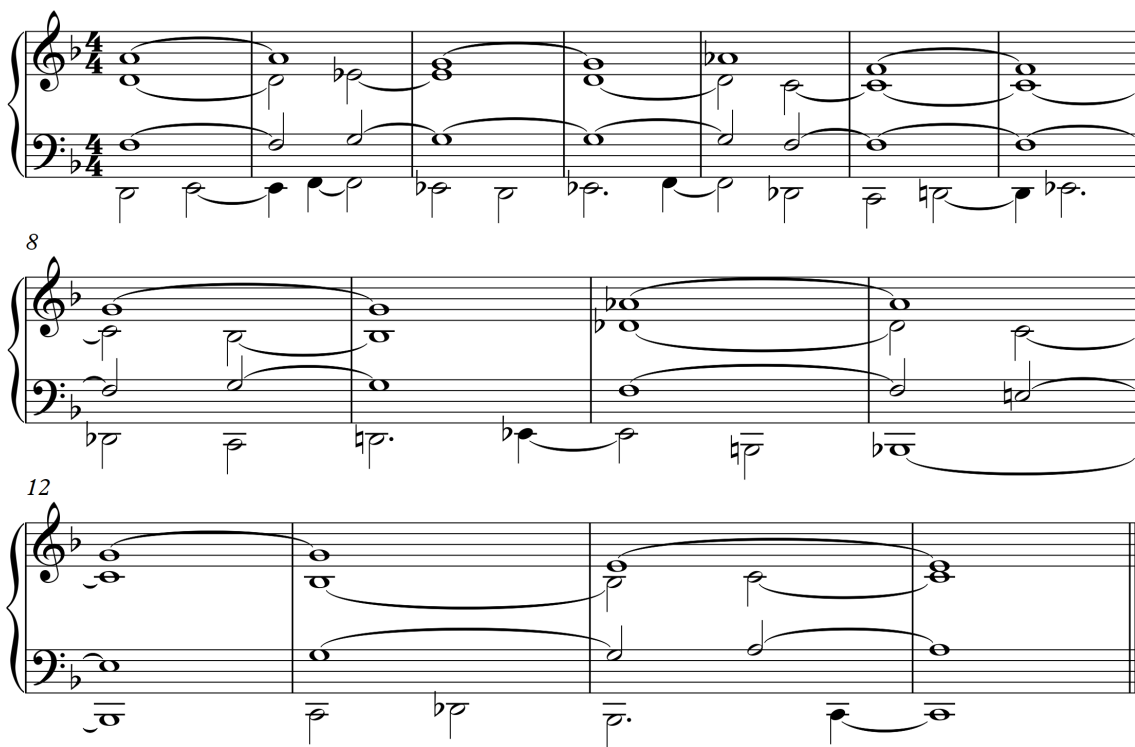

Figure 10: Harmonic Progression for 'Spectra Live'.

Compositional decisions regarding this progression were restricted by the way pitchsets are handled within the digital rig. Months of experience improvising within the environment had made in clear that allocating 5 pitches to each channel resulted in erratic and unpredictable behaviour on that channel, because one or two pitches within the set would usually become especially resonant and overpower the other pitches. While this is often musically interesting, I wanted to create a situation where it was likely that I could extract and make audible the harmonic progression depicted in Figure 10 from the noise of the analogue rig in performance. The solution was to limit pitchsets to 1 or 2 pitches per channel. The execution of this is visible in Figure 11.

	Note 1	Cent 1	Note 2	Cent 2	Note 3	Cent 3	Note 4	Cent 4	Note 5	Cent 5
Ch. 1	D 1	0.00	D 1	0.00	D 1	0.00	D 1	0.00	D 1	0.00
Ch. 2	F 2	0.00	F 2	0.00	D 3	0.00	D 3	0.00	D 3	0.00
Ch. 3	A 3	0.00	A 3	0.00	A 3	0.00	A 3	0.00	A 3	0.00
Ch. 4	D 4	0.00	E 4	0.00	F 4	0.00	A 4	0.00	D 5	0.00

	Note 1	Cent 1	Note 2	Cent 2	Note 3	Cent 3	Note 4	Cent 4	Note 5	Cent 5
Ch. 1	A# 0	0.00	A# 0	0.00	A# 0	0.00	A# 0	0.00	A# 0	0.00
Ch. 2	E 2	0.00	E 2	0.00	C 3	0.00	C 3	0.00	C 3	0.00
Ch. 3	G 3	0.00	G 3	0.00	G 3	0.00	G 3	0.00	G 3	0.00
Ch. 4	D 4	0.00	E 4	0.00	G 4	0.00	A# 4	0.00	D 5	0.00

Figure 11: Pitchset Distribution in Digital Rig at 2 Points in Figure 10 Progression: Bar 1, Beat 1 and Bar 12, Beat 1.

This material, in its compositional method and harmonic makeup, bears perhaps the most transparent lineage to my Western Art Music training of anything in this portfolio. Its chromaticism recalls the late-romantic/early-modernist period which was so important in developing my interest in Western Art Music as a teenager. Its arrangement, also, could legitimately be described as a chorale, being so clearly delineated into 4 contrapuntal parts. Within the theorisation established in the contextualisation, where aesthetic resistance to traditionally 'musical' features is a recurrent theme, the decision to use harmonic material which could be understood as having a profoundly traditional lineage provides a stimulating jumping-off point for an exploration of the spaces between tonality, atonality, sound and noise, given the aesthetic and emotional resonances it has for me as a musician whose relationship with Western Art Music has become increasingly fraught and complicated. 'Leaning into' the chorale association, I will describe the 4 parts of this material as Soprano, Alto, Tenor and Bass (SATB), as it is not only apt but will hopefully help the reader to keep straight which voices are top, inner and bottom during the discussion. Channel 1 handles the bass and channel 3 handles the soprano, while channel 2 handles tenor and alto. Channel 4 is a compressed summary of the harmony in a higher register, incorporating pedals and suspensions, usually employed texturally rather than harmonically. This highlights another compositional limitation, in that each channel only has 9 MIDI Keyboard notes allocated to it. Complete chromaticism is therefore an impossibility on channels 1 and 3 and, as channel 2's pitchsets are all dyads, the tenor and alto lines must be constructed from a maximum of 9 2-note chords.

Although this was the first section of 'Spectra Live' to be composed, I had always intended it as a point to aim towards in an improvisation, as a midpoint or conclusion, rather than a point of departure. Therefore, although I am discussing it first here, it actually concludes the version of 'Spectra Live' included in the portfolio. The character of the harmonic material might be described as plaintive, or mournful, and there certainly have been performances of

'Spectra Live' in which it has been expressed in this way. If the digital rig is more prominent than the analogue rig in the mix, or if there is a preponderance of delay-based feedback sounds in the operation of the analogue rig, the interaction of the two rigs will give rise to a more reflective, sombre rendering of the progression. However, if there is a lot of distortion-based feedback present in the analogue rig when the digital rig extracts the harmonic material, the result will have a more aggressive, destructive quality to the sound. In the performance of 'Spectra Live' included in this portfolio, the trajectory of the improvisation led to the latter scenario.

'Spectra Live' : 17:45 – 23:25

At the beginning of this section in the included video, I have arrived at a situation where the whole Spectra Performance Environment is operating in a closed loop, where the analogue rig is generating noise via feedback loops, the digital rig is filtering pitched material from the noise, and the filtered material is being fed back into the analogue rig. At around 17:45, the automated extraction of the Figure 10 harmonic progression is triggered in the digital rig. Until approximately 19:05 I am balancing the interaction of the two rigs, seeking a situation where the harmony is apprehensible but is being transformed and subverted by the feedback of the analogue rig. I am also trying to cultivate a situation wherein the tension between the two rigs is audible in the sound and each time the digital rig attempts to extract a new pitch the disruption in the equilibrium of the analogue rig's feedback loops is pronounced and interesting. The precariousness of this dynamic is present in the tentative way in which I am interacting with the environment, as I know from experience how easy it is to upset the balance and destroy the drama of this moment, towards which the whole improvisation has been building. At around this time I realise the bassline on channel 1 is not audible, so from 19:05-19:55 I work to incorporate this into the texture by increasing the gain of this filter. There is a lot of practical resistance present in this moment to me as performer, insofar as increasing the gain on one channel can diminish or obliviate the presence of the other filters, or the digital rig can overpower the analogue rig and the oscillating instability of the feedback loops can equalise into a more literal and less interesting expression of the progression. At 19:55 the activation of the Fulltone pedal results in a drastic timbral change and sets in motion a search for a balance between bass and soprano material, where the EQ of the system as a whole dictates which voices come screeching out of the texture. The rest of the improvisation consists of me working to maintain the audibility of the SATB voices in the texture and the interesting dynamic between the two rigs.

This scenario is typical of working within the Spectra Performance Environment, in that the nature of the filtering in the digital rig means that, placed in a feedback loop with the analogue rig, certain filters might become suddenly resonant and 'ping' out of the texture. This is another way that practical resistance presents in the environment, and finding a situation in which all channels are equally audible is nigh-on impossible, but it is possible to find one in which the system oscillates from one channel to another, depending on how the filtering of the digital rig relates to the harmonic spectrum of the activity in the analogue rig. Of course, the way in which this manifests is always unpredictable and variable, recalling Haenisch's (2013, pp.166-167) statements regarding resistance as explored in the contextualisation chapter; 'Often it is the material properties of an object [...] or the fragility of a combination of objects [...] that refuse to let themselves be subject to an exact way of playing. This resistance of the artifacts is a fundamental aspect of their efficacy as agents. In this context the instrument acts as a counterpart "that cannot be mastered, that has its own momentum" and that can behave out of line with expectations'. Alongside Ferguson's (2013) emphasis on interdependent complex systems giving the impression of resistance because of the uncertain outcomes to discrete actions, and Peters (2013), similarly, drawing connections between unpredictability and the apprehension of resistance, we can see how uncertainty might become a valuable quality when constructing a condition of liveness through resistance.

'Spectra Live' : 00:00 – 05:15

What is now 'Spectra Live' did not begin life as a 20-30 minute improvisation. When I went into the recording studio to begin work on the *Striking Distance EP* I was working with a structure of about 10 minutes' duration. This structure was simple: build up a bed of noise through feedback loops on the analogue rig; gradually introduce pitch extraction and rhythmic accents across the 4 channels of the digital rig; transition into the harmonic progression in Figure 10. However, while setting up I stumbled upon a group of analogue rig feedback settings that produced a high-pitched, (mostly) monophonic microtonal line. During the recording sessions, I would begin by improvising with these settings and gradually work towards the noisy feedback textures, the pitch extraction of the digital rig and the harmonic progression. As will be described in Case Study 1B, one of these monophonic introductory improvisations would come to form the melodic material at the heart of 'Inbound'.

In its current form and that of the video presented here, 'Spectra Live' begins with an evocation of that monophonic line. Despite noting down the settings from the recording

sessions, I have never been able to exactly recreate the friction between the distorted material and the clean monophonic line that characterised the improvisation used in 'Inbound'. Nevertheless, I begin with the settings from those recordings as notated, and improvise a melodic line using only the analogue rig. When using these settings, very small movements can create quite extreme changes in pitch and timbre, so the notion of repeating previous performances is redundant and the whole section has an atmosphere of focused attention.

From 00:00 to 02:25 in the video, I improvise a monophonic line using these settings. This section is looped, and a keyboard part is overlaid from 02:35 to 05:15. As the two loops are recorded asynchronously and without a metronome, they do not share the same start and end points and therefore drift apart as the performance progresses. The keyboard part uses a sound from the introduction of 'Inbound', again referencing the timbres and textures of the studio version and establishing a similar tension between the microtonal monophonic line and the equally-tempered keyboard part (the implications of this will be explored in more detail in Case Study 1B).

'Spectra Live' : 05:15 – 09:05

In its current form, the 'Spectra Live' improvisation more or less retains its original structure as a transition from microtonal Noise material towards tonal harmony. The nature of the monophonic line as a point of departure does, however, make this transition more difficult, and it is the navigation of this transition that I typically find to be the most practically and aesthetically resistant aspect of the improvisation. Using the digital rig to sensitively introduce harmonic and metrical material into the textures established during the opening sections addresses issues at the theoretical core of the Spectra project, and decisions made during this transition are highly dependent upon how those opening sections have developed. Whether material from channel 1, 2, 3, 4 or some combination is first introduced will depend partly upon the registral placement of the monophonic line and keyboard part; while channel 1 might be introduced as a bass line in order to balance a particularly piercing introduction, channel 4 might equally be selected in order to join it and intensify the registral imbalance. The amplitude envelopes affecting channels of the digital rig might be privileged in order to offer accented rhythmic contrast to an introduction full of sustained drones and minimal space, while a sparse introduction might warrant the introduction of simple, sustained pitches with no variation in amplitude.

In the case of 'Spectra Live' as included in this portfolio, I opt for a rhythmically articulated mid and low/range counterpoint. Channel 2 is first introduced, filtering a single dyad from the alto and tenor lines with an amplitude envelope articulating a simple 2-note rhythm to a ¾ pulse (Figure 12; enters c.06:15).
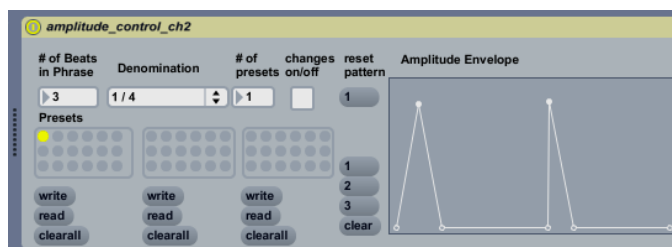

Figure 12: amplitude_control for Channel 2 as Heard in 'Spectra Live'.

Until 08:30 this channel 2 material interacts with an EQ-manipulated feedback loop in the analogue rig. Channel 1 is then introduced; a low A#0 being articulated to the rhythms illustrated in Figure 7, disrupting the low-end feedback of the analogue rig until 09:00.

'Spectra Live' : 09:05 – 17:45

At 09:00 in the video performance the interaction between channel 1 and the analogue rig is abruptly cut. The keyboard loop continues as a bridge while the amplitude envelopes on all channels are changed to constant unchanging drones (although, at this point none are audible). As the channels are now in the correct rhythmic state to render the harmonic progression towards which I am aiming, this passage is preoccupied with establishing an interdependence between the two rigs that will engender interesting results in the analogue rig in response to changing pitchsets in the digital rig. At 09:30 the monophonic line and keyboard loop are removed while the digital and analogue rig fade back up in a closed loop. Now that the two rigs are interacting, 09:30-10:15 explores the timbral makeup of this relationship. From 10:15 to 11:55 I experiment with how pitch changes in the digital rig affect the behaviour of the analogue rig. During this section, channels 1, 2 and 3 in the digital rig have all been filtering the output of the analogue rig and sending the result back into the analogue rig. The digital rig is too dominant at this point, so at 12:00 I remove channel 3, then channel 2, and begin exploring the generation of more feedback and instability in the analogue rig over the low drone of channel 1. Having altered the parameters of the analogue rig, at 13:55 I attempt to reintroduce channels 2 and 3 and once again explore the effects of pitch changes within the environment. At 14:55 a rich, rhythmic feedback loop is created when the MIDI keyboard sets the digital rig to tuning the opening D minor chord of the harmonic progression. From this point, the texture builds towards the introduction of the first full statement of this harmonic progression at 17:45

through further alterations to the relationship of the two rigs, further manual pitch changes to the digital rig, and a gradual increase in volume.

'Spectra Live' : Review

      This performance of 'Spectra Live' represents one manifestation of this piece. It was recorded months after the *Striking Distance EP* was completed, and therefore has a relationship to that work that was not present in earlier versions. The incorporation of the introductory monophonic line and keyboard part from the *Striking Distance EP* studio sessions deliberately sets up a relationship for listeners familiar with the studio work between the EP and the live practice. The keyboard part, being a manipulated sample of feedback from the matrix mixer, shares timbral characteristics with the monophonic line and assumes an interesting position as live but also 'studio', particularly within the context of the transparently live material from the matrix mixer. 'Spectra Live' also retains the concept that motivated its original form; to express the resistance present in the Spectra Performance Environment through negotiation of the agendas built into the analogue and digital rigs, agendas that can be seen to represent a micro-tonal, textural approach to the organisation of sound and a tonal, metrical approach respec-tively. In relation to the notions of practical and aesthetic resistance already established, the Spectra Performance Environment and 'Spectra Live' provide an interesting expression of both simultaneously. The environment is practically resistant in that its interdependence and com-plexity render its behaviour unpredictable for the performer, giving rise to the impression of an interplay of agencies at work and recalling the definitions of resistance offered by Ferguson, Peters and Haenisch, but this unpredictability appears particularly resistant when a performer is looking to express regular rhythmic material and preconceived harmonic progressions. This intersects with the aesthetic resistance established in the account of Noise provided in the con-textualisation and as expressed in the work of Prurient and Kazumoto Endo, but goes further than the straightforward juxtaposition of microtonality/noise with harmonicity and other 'tradi-tionally musical' materials, building their interaction into the system and then playing out their negotiation as part of a compositional method. The particular expression of harmony within this work derives from my background in Western Art Music and the complicated relationship with it that I now have. The tension between what this material represents and my background in Popular music and non-Classical Experimental musics is also at work here and informs my desire to play with the aesthetic resistance between these forms. As the work of Herndon, OPN, Hecker and other Experimental Electronica artists illustrates, I am hardly alone in exploring

the connections between these genres, but I would argue that my own approach is more holistic and less simplistic than outright juxtaposition of the samples and sounds of Western Art Music.

The experience of resistance for me as a performer is particularly acute during the central section of the improvisation, where certain approaches to the reconciliation of these elements are thwarted or proven to be ineffective by the environment, and new approaches must be sought. The trajectory of this negotiation in the performance described above led to a particularly cacophonous and noisy conclusion, which is dramatically satisfying, but the minute changes that I make within the environment towards the end of the performance are a consequence of the delicate balance required to maintain that situation.

CASE STUDY IB – 'INBOUND' FROM THE STRIKING DISTANCE EP

The *Striking Distance EP* as a whole is a long-range studio expression of the same trajectory as that of 'Spectra Live'. All of the material in the EP is directed towards the revelation of the harmonic progression in Figure 10, but using the fine-tooled precision of digital audio editing to execute this development in a form that exhibits a strong sense of studioness. The aesthetic resistance embedded in the construction of the Spectra Performance Environment is expressed in the EP as a tension between microtonal noise material and tonal material, but also in transforming the practical resistance inherent in the activity of feedback into something that is idiomatic to the recorded studio work.

This discussion will describe in exhaustive detail the approach I took to extracting harmonic and melodic content from 'noise' material generated within the Spectra Performance Environment. The rationale for doing this goes beyond a desire to describe the ways in which resistance functions as part of the studio process (although this is certainly important). It also seeks to demonstrate an approach to incorporating compositional techniques from a Western Art Music tradition within the context of Experimental Electronica that is more deeply integrated and subtle than the approaches described in the contextualisation chapter. It is not my intention to make overt gestures to Western Art Music in the way that Venetian Snares did in *Rossz Csillag Alatt Született* (2005), or Tim Hecker does in *Love Streams* (2016), or Oneohtrix Point Never does in the title track of *Age Of* (2018). As already stated, I have an interest is in the push and pull between tonality and atonality, harmonicity and noise, and I still find the pitch organisation techniques associated with Western Art Music to be useful as part of my approach. As these techniques are quite far removed from the approaches that predominate in Noise and Experimental Electronica, they can create interesting forms of aesthetic resistance

when placed in these contexts. This, to me, is more well-integrated and sincere than broadly alluding to Western Art Music through liberal usage of orchestral samples or MIDI instruments designed to replicate Classical instruments.

As mentioned in the discussion of 'Spectra Live', the initial plan for the studio version of this material was to go into the studio and record improvisations, using the Spectra Performance Environment, in which a wide spectrum of noise gradually transforms into the target harmonic progression. However, when setting up the analogue rig for these improvisations I stumbled upon a group of parameters that yielded a high-pitched monophonic line. During the recording sessions for the *Striking Distance EP* I recorded a number of improvisations with these settings. When I returned to these recordings after a few days of improvising in the studio, I found one of the high-pitched improvisations to be particularly interesting and it became the focus of the entirety of 'Inbound'. This is included in the *Audio Examples* CD under the title 'Ex1 (1M)' (henceforth 1M). During the course of 'Inbound', 1M is cut into separate sections and individual gestures which remain in their original sequence but are spread out across the track. Despite their microtonal nature, I considered these gestures to be melodic material for harmonisation, and the track as a whole can be understood as a gradual harmonic contextualisation of 1M.

'Inbound' : 00:00 – 01:50

'Inbound' begins by stating the first 2 gestures from 1M. The first gesture outlines a descending figure from D6(+36) to F4(+6) and the second gesture similarly outlines D6(+33) to F4(+2). These 2 gestures were processed using the Soundloom *Texture* program, which repeats and overlays soundfiles within a user-specified range of delay times and transpositions, in this case between 5.4 and 7.8 seconds and -50 and +50 cents. This creates a structure wherein, between 00:16 and 01:50, these gestures are gradually pitchshifted away from their original form, while the keyboard part attempts to harmonise with this unstable material. The keyboard sound, which is also used in the opening sections of 'Spectra Live', was created by filtering out the frequencies above the F4(+6) in the first gesture and overlaying the result to create a constant drone that could be played chromatically. The intention in this section is to establish the tension between the microtonality of the melodic material and the tonality of the accompaniment from the outset, before this idea is explored more thoroughly in the rest of the track (and EP).

<u>'Inbound': 01:50 – 02:48</u>

This section is the longest excerpt from 1M in the entire track, and plays out in its original form with added effects and processing to intensify its spectral character. It acts largely as a bridge between the introduction and the beginning of the main body of the track.

<u>'Inbound' : 02:48 – 04:38</u>

It is not practical to describe in detail all the processes that enable the textures at the beginning of this section to transform into the workable harmonic material that they become towards the end of the piece. However, I will describe this section in some detail in order to establish the fundamentals of the approach, then turn to broader descriptions for the proceeding sections.

As mentioned in Case Study 1A, I find the way that pitches transition from one frequency to another in the feedback loops of the analogue rig to be a particularly interesting aspect of its operation. Throughout 1M, one can hear the resistance built into the analogue rig in the audible distortion and friction as one note glides to another; a small microcosm of the system expressed in the moments when a frequency becomes more resonant than the one previous. Given the tradition of considering noise and tonality as aesthetically resistant to one another, it is perhaps unsurprising that I often find myself trying to emphasise and extract those noisy places between the notes when working with material generated in the analogue rig.

At the stab that begins this section, 1M is transitioning between pitches in precisely this manner, so I excerpted 2 notes from this moment which have a great deal of spectral noise present between them ('Ex2' on the *Audio Examples* CD) and performed an iterative filtering process in Soundloom to extract this noise ('Ex3' in *Audio Examples*). The area of interest between the notes can be seen in the Peak Frequency Spectrogram below (Figure 13), where the two dominant pitches are represented in yellow at the far left of the image and the white box highlights the information between them that I am trying to extract.
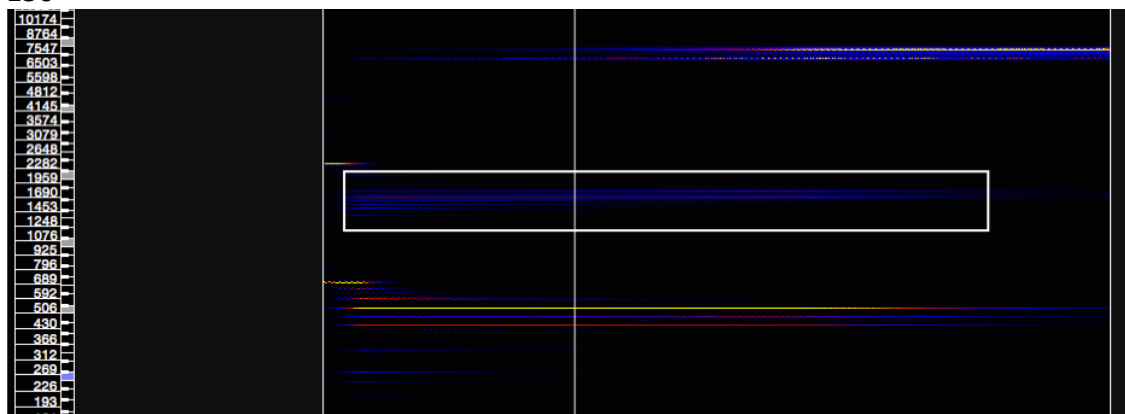
Figure 13: Spectral Information in Ex3, Created Using Sonic Visualiser (Cannam, Landone and Sandler 2010)

Ex3 was then transposed down so the band of spectral interest in the white box is orbiting around the pitch B2(-20), and all of the material below it creates a low bass rumble ('Ex4' in *Audio Examples*, depicted in Figure 14). The rationale for transposing to a pitch centre of B2(-20) may seem obscure at this point, particularly when this pitch centre is not yet apprehensible in the sound, but detuning the harmony by 20 cents is a deliberate decision taken to establish context for a key harmonic movement later in 'Inbound'.
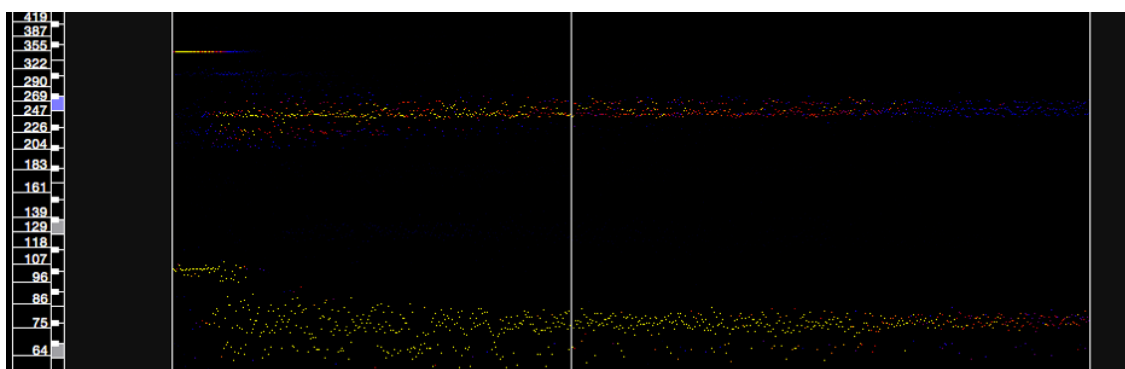

Figure 14: Spectral Information in Ex4, Created Using Sonic Visualiser (Cannam, Landone and Sandler 2010)

Ex3 and Ex4 form the basis for this entire section. They both enter at 02:48, along with a 3rd file (henceforth Ex3f) which is simply Ex3 with a bandpass filter removing everything other than the spectral band in the white box in Figure 13. This is done in order to reinforce that material as of particular interest. There is clearly a great deal of harmonic and spectral information at this moment, to the extent that there are really no identifiable pitch centres or a sense of harmony. The sounds are predominantly textural, and the compositional intent from here to 07:25 is to gradually sculpt this material into something that can be used to harmonise with 1M. This trajectory can be followed in Figure 15 (opposite), where the development of Ex3f is traced along the line marked 'Treble', Ex3 along the line marked 'Mid' and Ex4 along the line marked 'Bass'. The designation of 'clean' or 'rough' indicates the extent to which the associated pitch has been extracted from the sound and how much extraneous spectral
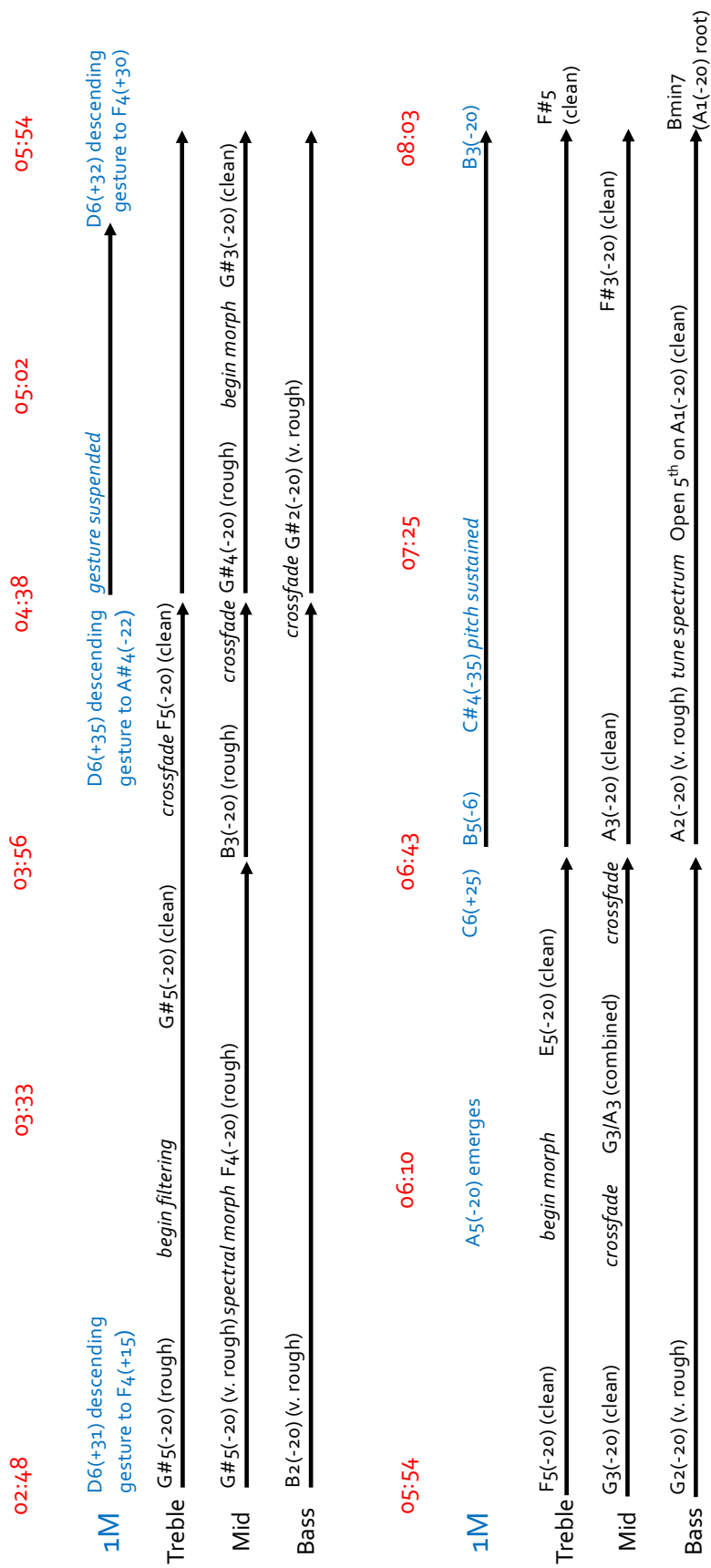
First timeline (02:48 – 05:54)

02:48   03:33   03:56   04:38   05:02   05:54

1M
D6(+31) descending gesture to F4(+15)
D6(+35) descending gesture to A#4(-22)
D6(+32) descending gesture to F4(+30)

Treble
G#5(-20) (rough)   *begin filtering*   G#5(-20) (clean)   *crossfade* F5(-20) (clean)   *gesture suspended*

Mid
G#5(-20) (v. rough) *spectral morph* F4(-20) (rough)   B3(-20) (rough)   *crossfade* G#4(-20) (rough)   *begin morph*   G#3(-20) (clean)

Bass
B2(-20) (v. rough)   *crossfade* G#2(-20) (v. rough)

Second timeline (05:54 – 08:03)

05:54   06:10   06:43   07:25   08:03

1M
A5(-20) emerges   C6(+25)   B5(-6)   C#4(-35) *pitch sustained*   B3(-20)

Treble
F5(-20) (clean)   *begin morph*   E5(-20) (clean)   F#5 (clean)

Mid
G3(-20) (clean)   *crossfade*   G3/A3 (combined)   *crossfade*   A3(-20) (clean)   F#3(-20) (clean)

Bass
G2(-20) (v. rough)   A2(-20) (v. rough) *tune spectrum*   Open 5th on A1(-20) (clean)   Bmin7 (A1(-20) root)

Figure 15: Graphical Depiction of the Transition of 'Treble, Mid and Bass Voices into Workable Pitched Material from 02:48 to 08:03 in Inbound

information there is around that pitch. As the mid and bass are in their original forms (though transposed in the case of the bass) and no attempt has been made to extract workable harmonic material from them, they are annotated as 'very rough' ('v. rough'). The treble has undergone some filtering and is therefore simply 'rough'.

The process of moving towards sounds with a more stable sense of pitch begins immediately, with Ex3 (mid) being subjected to a spectral morphing process that removes all of the spectral information outside of the white box in Figure 13 and transposes it from the area around G#5 to around F4(-20). This can be seen in Figure 16 (*Audio Examples* Ex5), which begins identically to Figure 13 but the frequencies quickly either shift towards the F4(-20) area or fade out completely.
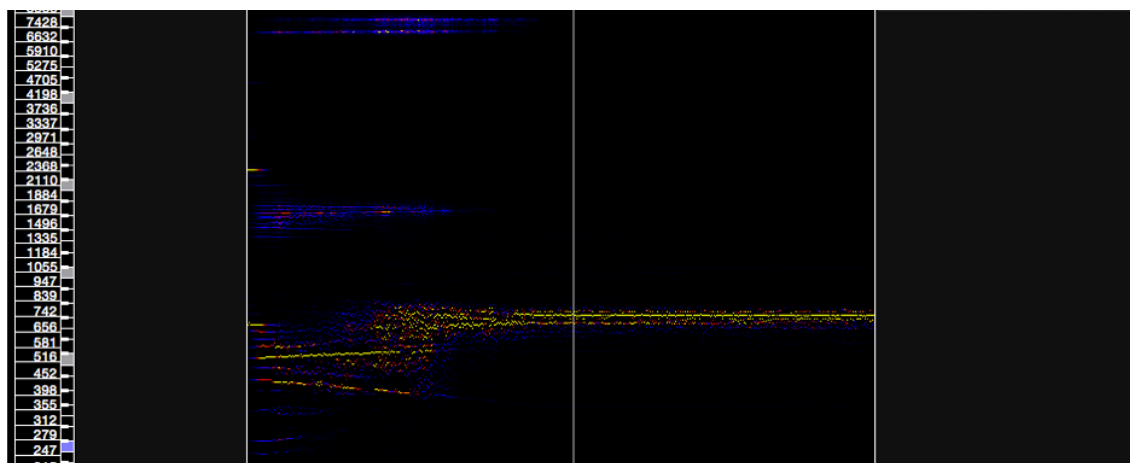
Figure 16: Spectral Information in Ex5, Created Using Sonic Visualiser (Cannam, Landone and Sandler 2010)

This process happens between 02:48 and 03:33 in 'Inbound'. The bass and mid voices continue to sound while from 03:12 to 03:56 the spectral information in Ex3f in the treble is further filtered into a pure G#5(-20) tone. At 03:56 the mid voice jump-cuts to the B3(-20) pitch area. From 04:09 to 04:35 the treble voice crossfades with a version of itself transposed to F5(-20). During this passage, the next gesture from 1M begins to fade in, overlaid with multiple versions of itself and timestretched. At 04:35, the texture underpinning this 1M gesture is as follows:

Treble: Ex3f on F5(-20) (clean).

Mid: Ex5 on B3(-20) (rough).

Bass: Ex4 on B2(-20) (very rough).

Ex3f has now been filtered into a single pure tone useable in a harmonic context. Ex5 is still sounding the material from the 'white box' spectral band around G#5, now transposed to around B3(-20). Ex4 has not undergone any transformation and therefore has a full spectrum of noise around its core pitch of B2(-20).

'Inbound' : 04:38 – 05:54

At 04:38 the 1M gesture is heard in a full statement, descending from D6(+35) to A#4(-22). As the mid and bass are still not clearly defined pitches, the roughness of the harmonic movement at this point is exaggerated through applying multiple delays to the 1M gesture and gradually crossfading the mid and bass to new pitches, rather than creating a clear chord change. The mid moves from B3(-20) to G#4(-20) and the bass slides from B2(-20) to G#2(-20), while the D6/A#4 pitches of the 1M gesture continue to ring out above the texture along with the unchanged treble voice on F5(-20). It is noteworthy that, although there is little harmonic stability at this point, the voices are still treated as though they are harmonising with the 1M gesture; 1M is sounding the pitches D and A#, while the treble pitch is F and the bass and mid sound a G#, together forming a Bb7 in third inversion (enharmonically). The remainder of this section (05:02-05:54) focuses on the gradual spectral morphing of the mid voice from a rough G#4(-20) into a clean G#3(-20) as part of the overall project of harmonic clarification.

'Inbound' : 05:54 – 08:03

05:54 marks another harmonic shift, where the clean G#3(-20) in the mid voice and very rough G#2(-20) in the bass move to G3(-20) and G2(-20) respectively. This is done in response to a new gesture in 1M, which contains dominant pitches of D6(+32) and F4(+30), implying the harmony of a G7 chord with a missing 3rd. The new 1M gesture is repeated a few times, before revealing the final note of the gesture at 06:10; an A5(-20) that gradually emerges from the texture. The sequence of pitches in 1M from this point to 07:25 (visible in Figure 15) are the target pitches towards which the whole track has been directed. The A5(-20), C6(+25), B5(-6) and C#4(-35) pitches outlined in 1M are construed to imply an A major/minor tonal centre, the dominant chord of the D minor harmonic progression around which 'Spectra Live' and the *Striking Distance EP* are constructed. As 1M articulates the root of this dominant chord at a pitch of A5(-20), all of the accompanying pitches in the treble, mid and bass have been detuned by 20 cents throughout the piece in order to lay the foundation for this moment.

From 06:10, the whole texture of the music builds and clarifies in order to render an A major chord as 1M sounds a C#4(-35) pitch at 07:25. The treble voice descends from F5(-20) to E5(-20) via a spectral morphing process, while the mid voice crossfades through a sound file that combines G3(-20) and A3(-20) transpositions of itself to arrive at A3(-20) at 06:43. At

this point the bass voice is still the unaltered full spectrum of Ex4, transposed so that the 'white box' spectral band is centred around A2(-20). From 06:43 to 07:25 the bass voice undergoes a full spectral tuning process, based on the harmonic series of the pitches A1(-20) and E2(-20), which tunes the whole spectrum of Ex4 to those pitches and their natural harmonics. At 07:25, the process of transforming the sound files in the treble, mid and bass voices into workable material for harmonic development is complete. Listeners to 'Inbound' who follow along with Figure 15 will have noticed a number of other files have entered the texture beyond the harmonic skeleton illustrated in Figure 15 and described in the above text. These files are all transformations of the source material in 1M, variously transposed and manipulated in order to reinforce or contradict the harmonic and textural clarity at a given moment. For instance, very soon after the A major revelation at 07:25 some keening high-pitched material enters, while the mid voice moves to F#3. As this is still an early stage within the development of the whole EP, I am still inclined to resist a state of harmonic clarity, and the remainder of 'Inbound' is characterised by a balance of harmonically stable material and inharmonic textural material. At 08:03 1M shifts to a pitch of B3(-20), and the texture swings back towards harmonic ambiguity.

'Inbound' : 08:03 – 12:01

'Inbound' continues as a harmonisation of the 1M line to its conclusion, though at no point does it regain the stability of 07:25-08:03. This harmonic development can be followed in Figure 17(overleaf). This whole section is characterised by an increasingly dense texture, created by excerpts and transformations of material from 1M, superimposed in order to strengthen harmony and, on occasion, fill in harmonic detail that is not represented in the treble, mid and bass voices. It is noteworthy that the detuning by 20 cents persists from the A major chord at 07:25, despite key pitches of the 1M line being detuned and sharpened to varying degrees. The refusal of the harmonic accompaniment to tune to the microtonality of 1M maintains a tension between these elements, while also affirming the centrality of the 07:25 A major chord to the compositional scheme of the track. The conclusion of the piece on an A minor chord is at once a reference back to that moment but also a reference forwards to the D minor tonality of 'Once Removed' and, ultimately, the harmonic progression that will conclude the entire EP.

Section	08:03	09:33	09:50	09:56	10:16-10:24	10:33-10:56	10:56-12:01
1M	B4(-9)	B3(+2) + A#4(-7)	A#5(-14) + G5(+4)	Rising gesture to B5(-13)	Repeat previous 2 columns	G#5(-33) rising to D6(+31)	Resolution to B3(+2) and B4(-10)
Treble	F#5(-20)	F5(-20)	Unchanged	Unchanged	Unchanged	Unchanged	E5
Mid	F#3(-20)	F3(-20)	Unchanged	E3(-20) + D3(-20)	E3(-20) + C3(-20)	Unchanged	Unchanged
Bass	A1(-20)	B1(-20) + G2(-20)	Unchanged	B1(-20)	C2(-20)	Gradual introduction of A1(-20)	A1(-20)
Harmony	Bmin7	G7$^{\#9}$	Unchanged	Emin7^{b9}	Amin^{b6add9}	Amin$^{b6\#7add9}$	Amin9^{add4}

Figure 17: Harmonic Development of the Final Section of 'Inbound'

<u>'Inbound' : Review</u>

'Inbound' is deeply inspired by the ways in which aesthetic and practical resistance presents in the Spectra Performance Environment. The strategy of focusing on the distorted spectral activity as pitches change in the analogue rig, and building sounds up from that instability, is one way in which the practical resistance of the environment presents in this piece. 'Inbound' also represents the aesthetic resistance expressed between the two rigs and their sound-making agendas by setting up a compositional scheme predicated upon the negotiation between a microtonal melodic line and a tonal harmonic language. However, whereas in 'Spectra Live' this relationship is negotiated responsively, intuitively and in real time in order to affirm the liveness of the sound-making process, 'Inbound' employs tools unique to the studio in order to explore this relationship. Spectral analysis using Sonic Visualiser, a plethora of detailed and pre-planned sound transformation processes such as spectral morphing, tuning, automated filtering, pitchbending and transposition using Soundloom, and careful structuring of voice leading and harmonic development in Logic Pro, all require a time-intensive and detail-oriented approach to sound organisation that is embedded as a profound studioness in the music. The aesthetic resistance established by the account of Noise and example musicians in the contextualisation chapter is hereby explored within a different context, that of Experimental Electronica, and calling upon my own creative background as a composer of Western Art Music to explore

aesthetic resistance to tonality as a symbol of that which is 'traditionally musical' more subtly than straightforward juxtaposition or broad signalling of Western Art Music samples and timbres.

A further advantage of the compositional scheme for 'Inbound' is that the juxtaposition of the 'played-in' liveness of the melodic line, most clearly presented in the opening passage but present throughout, creates a tension between itself and the more tightly-controlled studio processing of the other elements. The decision to sample live performances of my own work deliberately calls upon the interplay of liveness and studioness affected by sampling, as discussed in the contextualisation. In the context of Experimental Electronica, these samples capture the spontaneous nature of the sounds produced by the Spectra Performance Environment in order to highlight both the liveness of the source material and the studioness of its processed transformations, working to render both liveness and studioness more active and apprehensible within the context of the fixed-media art work. Such an approach can be found in the work of the example musicians discussed in the contextualisation chapter, most obviously in the studio manipulation of recorded acoustic instruments in Tim Hecker's *Virgins*, but also in Holly Herndon's cutup vocals and in OPN's sample-based work. The relationship between liveness and studioness is also a compositional theme in Prurient's *Frozen Niagara Falls* and Endo's *While You Were Out*. In all of these cases, the juxtaposition of material that is evidently played(or sung)-in with programmed elements serves to remind the listener of the extent to which the music is a studio construction. This is even more essential to the work of the Experimental Electronica artists, as they operate in a genre where entirely programmed and automated tracks are reasonably common and the possibility of the studio becoming so ubiquitous as to be to all intents and purposes invisible is persistent. It therefore makes sense to draw our attention to the studioness of the music through placing transparently 'live' sound into a studio context an wielding studio tools to transform and manipulate it. Finally, the transitions between live performance, studio work, and back again, facilitating the close examination of the operation of the Spectra Performance Environment and the studio exploration of the sounds it produces, demonstrates the stimulating compositional possibilities presented by cultivating a mutually informative relationship between live practice and studio work. The processes in both environments are inextricably interwoven, but not in such a way that live performance and studio work lose their identities or fail to make use of their idiomatic affordances. This is a model I have employed throughout the portfolio, and the pieces that follow will juxtapose various forms of 'live' and 'studio' sounds within a studio context with a view to activating the studioness of

the fixed-media works. As a whole, Case Study 1 offers an approach to live performance with electronics and studio composition that investigates the same compositional ideas, with sound material in common across both mediums, yet retains and celebrates key features that are idiomatic to those mediums.

The *Striking Distance EP* – 'Once Removed'

During the recording sessions for the *Striking Distance EP*, I experimented with recording improvisations on each individual voice of the main harmonic progression (Figure 10) within the Spectra Performance Environment. As the digital rig was only trying to extract single monophonic lines from the noise of the analogue rig, these improvisations would tend to be more focused and less erratic than improvisations in which all 4 channels of the digital rig are trying to extract a polyphonic texture. This also meant the sonic results of resistance between the two rigs were typically of a subtler character. This can be heard in the strange interference pattern towards the end of 'Ex6' (*Audio Examples*), in which the tenor voice of channel 2 is interacting with an analogue rig that is producing delay-based feedback. This short moment was particularly appealing to me as an artefact of resistance in the Spectra Performance Environment, so I extracted it ('Ex7' in *Audio Examples*), timestretched it, and shaped it into a more typical attack-decay envelope ('Ex8' in *Audio Examples*).

When experimenting with Ex8, I discovered that its character was particularly well-suited to rendering chordal material, but did not want to use it for the final harmonic progression at the end of the EP as its short decay time was not suited to the sustained, mournful polyphony that I had in mind for the ultimate conclusion. 'Once Removed' thus became something of a keyboard miniature, foreshadowing the harmonic content of that final progression. It was generated by recording keyboard improvisations with a Logic Pro software sampler loaded with Ex8. These improvisations followed a harmonic template (Figure 18, overleaf) that begins in a very similar way to that of Figure 10, but moves into more distant and chromatic territory, alluding to the conclusion of the *Striking Distance EP* whilst maintaining distance from it. One of these keyboard improvisations was subsequently chosen as the central focus of 'Once Removed'. Other interesting interactions between the analogue and digital rig were then excerpted from the recording sessions (3 of these are presented as 'Ex9', 'Ex11' and 'Ex13' in *Audio Examples*) and made into textures that fade in and out to decorate and embellish the keyboard improvisation ('Ex10', 'Ex12', 'Ex14' in *Audio Examples*). 'Once Removed' showcases the sampled artefacts and idiosyncrasies arising from the forms of resistance present in the

Spectra Performance Environment, rendered very differently to 'Inbound'. The studioness of the precise and delicately programmed ornamental material is emphasised through its juxtaposition with the transparently 'played-in' qualities of the central keyboard improvisation.
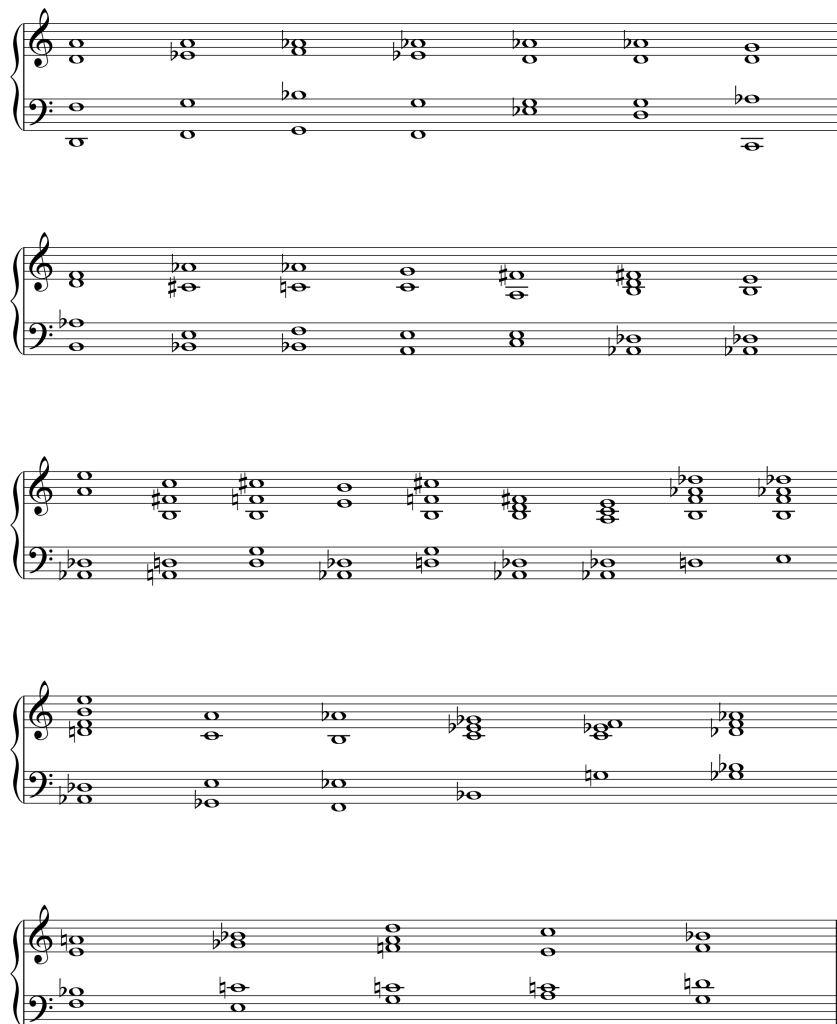
Figure 18: 'Once Removed' Harmonic Template

The *Striking Distance EP* – 'Striking Distance'

As in 'Once Removed', 'Striking Distance' is built from audio samples in which the forms of resistance in the Spectra Performance Environment give rise to interesting timbral behaviour. The opening 3 minutes are constructed entirely from loop-based transformations of two excerpts from the recording sessions for the *Striking Distance EP*; 'Ex15' and 'Ex16' in *Audio Examples*. In both of these excerpts, one particular frequency becomes especially resonant and emerges from the texture; an aforementioned recurrent consequence of the interaction between the analogue and digital rigs. This characteristic of the source sounds in 'Striking Distance' is brought out in the construction of the piece, which is replete with moments where

one partial or frequency will dominate the texture, and the friction inherent in the sounds is audible in the distorted timbre of the material. Ex15 and Ex16 are transposed, filtered, and rearranged throughout the opening section, with transformations of Ex16 being used to articulate select notes from a protracted statement of the Figure 10 progression between 00:27 and 03:24 (the selected notes are highlighted in red in Figure 19) in order to lay the harmonic groundwork for the entry of the full progression.

Figure 19: Figure 10 Harmonic Progression as it Appears in 'Striking Distance' (Sounding Pitches in Red)

At 03:24 two new excerpts are introduced ('Ex17' and 'Ex18' in *Audio Examples*) and cut into repeating fragments to create a denser rhythmic polyphony. The texture continues to build and the harmony moves towards the D minor first chord of Figure 10 as the introductory section concludes.

At 04:15 Figure 10 enters. However, between this point and the conclusion of the progression at 08:30, there is never an exact statement as it appears in 'Spectra Live'. The note durations of the progression are doubled in order to accommodate the complexity of the rhythmic polyphony during this section and notes are frequently omitted, particularly from the bass, in order to gradate the introduction of harmonic and textural variety in the development of the

passage. Excerpts from Spectra Performance Environment improvisations on the harmonic progression are gradually introduced, creating distorted textures above the main progression and alluding to the soundworld of 'Spectra Live'. When the progression ends at 08:30 these textures come to dominate, until at 09:10 they give way to the sound of the filters of the digital rig, transformed into interlocking rhythms and keening pitchshifts.

From 09:10 to 11:10 this texture gradually transitions into a full extract from an improvisation on the soprano line of the harmonic progression. This material is subjected to a *Drunkwalk* process, which cuts up small sections of the sound file and overlays it upon itself, obscuring the material whilst allowing it to retain the basic shape of the line. At 12:00 the tenor and alto lines enter, subjected to the same process, and the three improvisations play out on top of one another until the close of the track.

'Striking Distance' finally presents the harmonic progression from 'Spectra Live' that had been foreshadowed in 'Inbound' and 'Once Removed', however during 04:15-08:30 it is seen through the distorted lens of the irregular spectral behaviour in the excerpts used to render it. This is given its studioness through the fine-detailed sample editing used to create rhythmic polyphony between the voices, and a great deal of digital processing done in Soundloom. The closest expression of the material to that of the original improvisation is heard in the closing moments from 11:10 onwards, and this continues to be refracted through studio processing that obscures the source and the line, but also calls attention to the presence of the studio in the nature of the manipulation.

Project 2 – Slow Loris

The Slow Loris Performance Environment

The Slow Loris Performance Environment was designed after a trip to the *Sonar Stockholm* music festival in February 2016. A number of major figures in Experimental Electronica were performing (Holly Herndon, Oneohtrix Point Never, Squarepusher) alongside more mainstream EDM acts. The OPN and Holly Herndon live shows were as described in the contextualisation chapter, with OPN performing alongside Nate Boyce on guitar and Herndon performing on laptop and voice alongside Mat Dryhurst (whose projected messages recalled those from the beginning of the contextualisation chapter; 'This is all live, so live that we could fuck up easily, but that's ok.'), so considerations of liveness in Experimental Electronica were at the forefront of my mind. There were numerous other acts, however, that performed using sample

pads or 'drum pads'. Without exception, these sample pads were used to recreate in a live setting the beats and percussion parts that would have been programmed into studio versions of the tracks. This inspired me to search for a more dynamic and interesting relationship with this increasingly ubiquitous piece of electronic music technology.

The foundational concept for the Slow Loris Performance Environment is to create an environment for the algorithmic generation of counterpoint, in which control of the rhythmic and pitched elements of that counterpoint is distributed between myself, my collaborator Celia Newell and M4L patches running in Ableton Live. Celia plays an Alesis *SamplePad*, while I use an Alesis MIDI keyboard and Akai *APC40 mkII* MIDI controller to alter parameters within the M4L patches. When Celia strikes a sample pad, the M4L patches send a sequence of 4 MIDI notes to a software sampler in Ableton Live, the velocity of which are determined by the force with which Celia strikes the pad. The pitches of those MIDI notes will change according to my input on the MIDI keyboard and how the M4L patches handle that input. I can also alter how many of the MIDI notes are sent to the software sampler and the duration of those notes. Figure 20 is a visual summary of the distribution of roles in the Slow Loris Performance Environment.
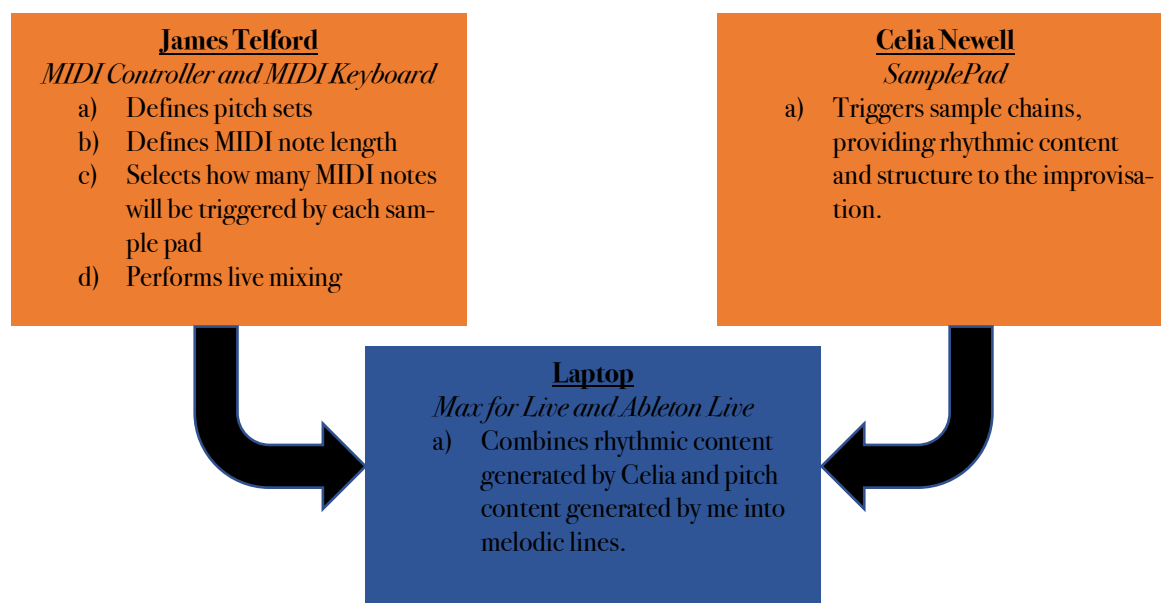
James Telford
MIDI Controller and MIDI Keyboard
a) Defines pitch sets
b) Defines MIDI note length
c) Selects how many MIDI notes will be triggered by each sample pad
d) Performs live mixing

Celia Newell
SamplePad
a) Triggers sample chains, providing rhythmic content and structure to the improvisation.

Laptop
Max for Live and Ableton Live
a) Combines rhythmic content generated by Celia and pitch content generated by me into melodic lines.

*Figure 20: Roles within the Slow Loris Performance Environment*

The *SamplePad* played by Celia comprises 4 individual sample pads. In order that the Slow Loris Performance Environment can function, the Ableton Live software sampler instrument must be loaded with samples. That being done, the M4L patches developed for the Slow Loris Performance Environment will send up to 4 MIDI notes to the software sampler each time Celia strikes one of the sample pads, triggering a sequence of 4 samples. The initial pitches, relative velocities and durations of these MIDI notes is predetermined in advance as

part of the compositional process for each improvisation. These settings will be referred to as 'initial parameters'. When I set up the initial parameters for an improvisation in the Slow Loris Performance Environment, I decide which 4 MIDI notes the laptop will assign to sample pad 1, the velocities of the 2nd, 3rd and 4th notes relative to that of the 1st note (if Celia strikes sample pad 1 with a MIDI velocity of 80, the 1st MIDI note will play with that velocity, but the subsequent notes could be programmed to decrescendo through relative velocities of 90%, 80% and 70%, which would yield MIDI velocities of 72, 64 and 56 for the 2nd, 3rd and 4th notes) and the durations of all notes. I will then do the same for sample pads 2, 3 and 4. When an Ableton Live set for an improvisation within the Slow Loris Performance Environment is loaded, the laptop assigns four MIDI notes to each pad according to the pitches, relative velocities and durations defined in the initial parameters for that improvisation. This behaviour is best illustrated by the following example of an imaginary piece for the Slow Loris performance environment.

Example

This very simple piece uses 11 samples of a violin playing semibreves at a given tempo as its source material. Each sample is a recording of a different note of the chromatic scale from C3 to B3. The sampler instrument in Ableton Live is loaded with these samples, ensuring that the MIDI note triggering each sample corresponds to the actual pitch of the sample (MIDI note 60 triggers the sample of the violin playing C3, MIDI note 61 triggers C#3 and so on). The initial parameters are set up so that each pad will trigger the following phrases when struck (associated images illustrate which buttons on the MIDI controller correspond to which pad and how this will appear to me in performance):

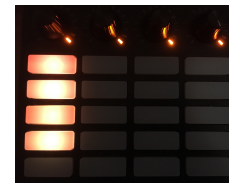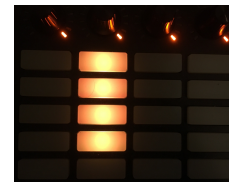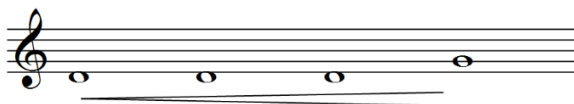Pad 1
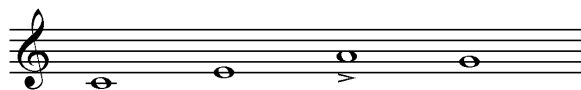
Pad 2
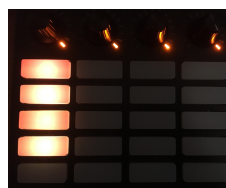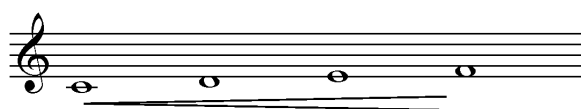
Pad 3

Pad 4

Were I to play a G minor chord on the MIDI keyboard, each pad might now trigger the following phrases:

Pad 1

Pad 2

Pad 3

Pad 4

The use of the word 'might' is deliberate, as the way in which the M4L patches in Ableton Live assign the pitchsets I play to the pads is, by design, changeable and unpredictable. Although the laptop will try to adhere to the pitch curves defined by the initial parameters, there is indeterminacy built into this process to prevent myself and Celia from becoming too familiar with its responses. Another function beyond pitch manipulation is sample/MIDI note duration. I use dials along the top of the MIDI controller to determine this parameter. If I were to dramatically shorten the sample lengths the pads might now trigger the following phrases:
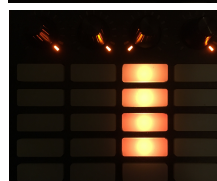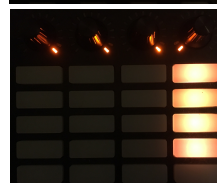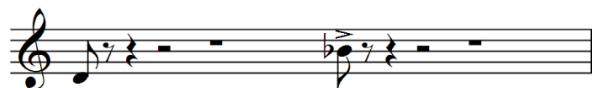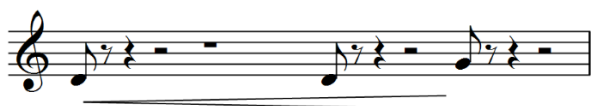
Pad 1

Pad 2

Pad 3

Pad 4

I can also remove notes from the phrases using the MIDI controller:

Pad 1

Pad 2

Pad 3

Pad 4

If Celia and I were improvising in the Slow Loris Performance Environment with the 4 phrases described in the last example the MIDI controller would appear as it does in Figure 21.
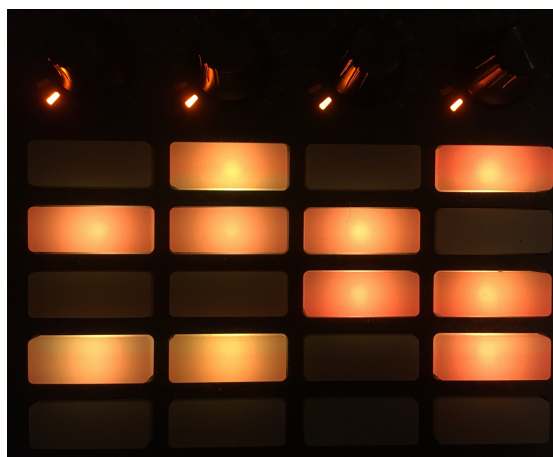
Figure 21: MIDI Controller After I Have Removed Some Notes from Each Pad and Shortened the Note Durations in the Slow Loris Performance Environment.

When improvising with these materials, even with this basic setup, Celia and I might experience aesthetic resistance within the environment if I were to play a new pitchset on the MIDI keyboard and unsatisfactory melodic and harmonic content was produced. In response to this situation I could elect to change the pitchset again, remove notes or alter the sample lengths, while Celia might adjust the rhythmic texture and therefore change the polyphonic weave generated as we play. We would also experience aesthetic resistance from one another if, for example, I added or removed notes that inferred a new time signature or tempo or presented some other obstacle to Celia, requiring that she make a change. Similarly, Celia might recombine the phrases into a new rhythmic pattern that does not work with the harmonic choices I have made, and I would be forced to adapt. This understanding of resistance recalls that which was described for the Spectra project, where aesthetic resistance arises from the difficulty presented in realising 'traditionally musical' features, but in the case of Slow Loris this extends beyond tonal harmony (although this is a major part of it) and into repetitive rhythmic structures. Given that our default approach is to seek to incorporate these traditional elements into our work, the way the Slow Loris Performance Environment handles and translates our interventions to 'peturb and warp' the realisation of these traditional harmonies and repetitive rhythmic patterns means that we experience both aesthetic and practical resistance when playing within it. Because there is indeterminacy built into the Slow Loris Environment's operation, we experience practical resistance through the unpredictability and complexity of its responses to our actions, where the environment seems to express its own agency and kinetic will. The relationship between aesthetic and practical resistance is even more closely enmeshed here than it is in the Spectra Performance Environment, in that the practical resistance experienced through the indeterminacy of the Slow Loris Performance Environment is so directly aimed at disrupting

predictable expressions of pitch and rhythm. This is a product of my desire to move away from simple juxtaposition of noise and harmonicity (in the mould of Endo, Cantu-Ledesma and Prurient) in search of more integrated and subtle ways to 'warp the generic attributes' of my music. Our negotiation with the environment, and the indeterminacies and variances built into it, mean that we create different musical outcomes in each performance by responding to the different manifestations of aesthetic and practical resistance that occur during each performance. The case studies that follow will help to illuminate the precise nature of some of these manifestations.

Whilst this example describes the simplest piece imaginable for the Slow Loris environment, the possibilities should be apparent when one considers applications in which melodic phrases stretch over multiple octaves, various samples are loaded into the environment with different timbres that can be combined in numerous ways, and samples assigned to single pitches in the Ableton Live sampler instrument actually contain multiple pitches themselves (as is the case in 'Insight Informed').

Case Study 2a – 'Insight Informed' (Live)

'Insight Informed' utilises the following vocal fragments as its source material, written and composed by me and recorded by Sorana Santos:
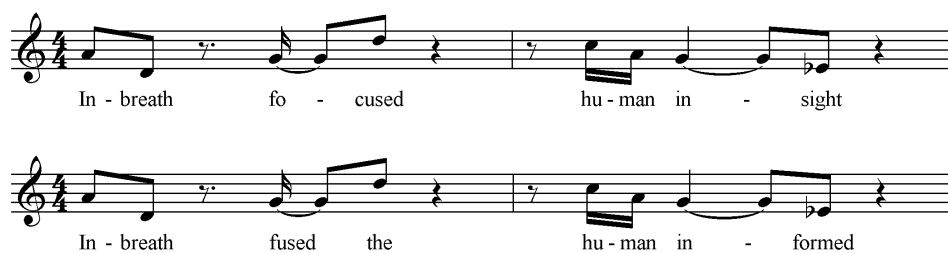
These phrases were composed in order to be broken into two-note micro-phrases and loaded into the sampler instrument so that they could be triggered according to the first note of each micro-phrase (Figure 22):

Pads 1 and 3

Pads 2 and 4

Figure 22: The segmentation of the two vocal fragments into micro-phrases (MP).

In the initial parameters for this piece, all of the sample pads are assigned the following sequence of notes in the following rhythm in order to match the first note of each micro-phrase (first notes highlighted in red in Figure 22):
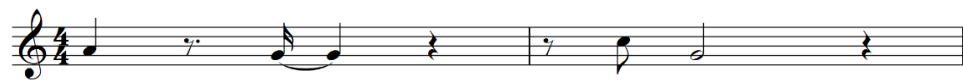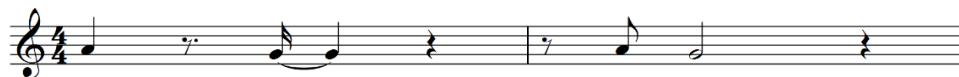

Figure 23: MIDI Note Sequence for All Pads as Assigned in the Initial Parameters.

This results in the micro-phrases being realised exactly as they are notated in Figure 22 whenever Celia strikes a corresponding pad. However, once I intervene by playing a chord on the MIDI keyboard, those micro-phrases will be transposed so that the first note of each micro-phrase matches a note from that chord. For instance, if I play the notes A and G on the MIDI keyboard those pitches will be assigned to the pads by the M4L patches, according to the rhythms and durations in the initial parameters. One possible manifestation of this scenario is illustrated below:

Midi Note Sequences Assigned to the Pads

Pad 1
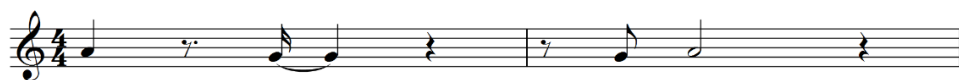
Pad 2

Pad 3

Pad 4

Pad 1

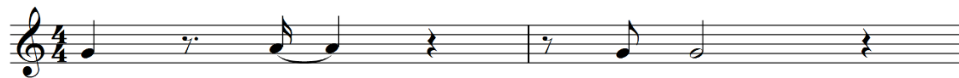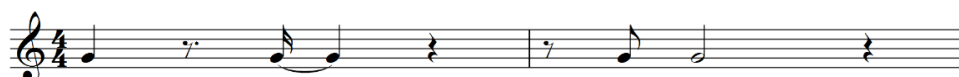

In - breath   fo - cused   hu - man   in - sight

Pad 2

In - breath   fused   the   hu - man   in - formed

Pad 3

In - breath   fo - cused   hu - man   in - sight

Pad 4

In - breath   fused   the   hu - man   in - formed

Every piece for the Slow Loris project has demanded some modification of or augmentation to the environment, and in the case of 'Insight Informed' this was the introduction of a chromatic transposition function to ensure that the phrases could reliably be heard in their original form if so desired. Utilising this function, the transpositions of the micro-phrases for a given pad remain fixed in relation to the first note assigned to that pad, ignoring the notes assigned to micro-phrases 2, 3, 4, 6, 7 and 8. Therefore, if performer 1 plays A and G on the MIDI keyboard with the chromatic transposition function set to 'on' for all pads, the resultant phrases might be:

Pad 1

In - breath   fo - cused   hu - man   in - sight

Pad 2

In - breath   fused   the   hu - man   in - formed

Pad 3

In - breath   fo - cused   hu - man   in - sight

Pad 4

In - breath   fused   the   hu - man   in - formed
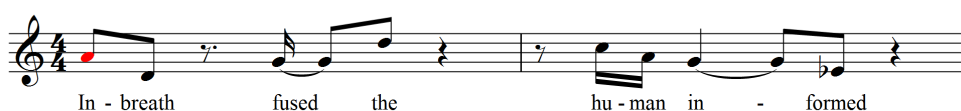
In performance, this material is available as notated in a clean, minimally-processed form. It can be heard in the portfolio performance of 'Insight Informed' (live), entering at around 06:10/29:32[25] and continuing to the conclusion. Also available to be mixed into the performance are highly processed, drone versions of this material (henceforth referred to as 'drone voice') that do not change pitch within a microphrase. For instance, the first microphrase of pad 1 in the original statement (as illustrated in Figure 22) would be rendered by the drone voice as 2 A pitches, rather than as A and D. This is because, in the drone voice, each microphrase is tuned to what I consider to be the root pitch of the entire phrase, and the root pitch of the original statement is A. When the initial parameters are loaded, the drone voice on pad 1 therefore also delivers 2 A pitches as its second microphrase, despite doing so in response to a MIDI note input of G (Figure 23). Similarly, the third microphrase will be rendered as 2 A drone voice pitches in response to a MIDI note of C, and the fourth likewise in response to a MIDI note of G. These transpositions of the drone voice enable the sounding of the root pitch *throughout* statements of the original phrases where the chromatic transposition function is turned on. Were I to play a single A note on the MIDI keyboard and turn off the chromatic transposition function so that all MIDI notes triggering the sampler became an A, the drone voice would still deliver 2 A pitches as its first microphrase. However, the second microphrase would be rendered as *2 B pitches* because the drone voice is set up to play 2 A pitches for this microphrase in response to a MIDI note of G. Likewise, the third microphrase would be rendered as 2 F# pitches in response to a MIDI note of A as the drone voice requires a MIDI note of C to deliver 2 A pitches for this microphrase. The fourth microphrase behaves identically to the second. Comparisons of these two scenarios can be observed below.

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[25] Timings for video recordings of live performances of the Slow Loris material are given in pairs, as the timings for the online files are different to those of the DVD that accompanies the printed thesis. This is not the case for the 'Spectra Live' performance, where the online and DVD timings are identical. Timings for the Slow Loris live performances are notated as follows: Online/DVD.
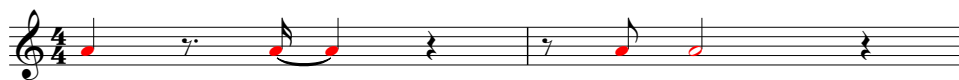
MIDI Note Sequence Assigned to Pad 1 when the Pitchset is the single note 'A' and Chromatic Transposition is Enabled
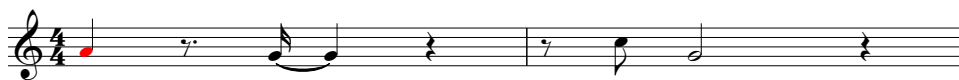
Audio Output by Pad 1 Drone Voice

In - breath fo - cused   hu - man in - sight

MIDI Note Sequence Assigned to Pad 1 when the Pitchset is the single note 'A' and Chromatic Transposition is Disabled

Audio Output by Pad 1 Drone Voice

In - breath fo - cused   hu - man in - sight

The performance included in the portfolio begins with the drone voice and builds up a rhythmic counterpoint through gradually changing the pitch content and note selection for each pad. A great deal of the development of this section is achieved simply through enabling and disabling the chromatic transposition function. An example of this can be observed at 00:49/24:10, where I turn the chromatic transposition function off on pad 3, changing the MIDI note selection and revealing the highest-sounding pitch so far in the piece. I can be seen experimenting with turning on and off the chromatic transposition functions on pads 2 and 3 from 00:49/24:10 to 01:30/24:51, controlled by the blue buttons towards the bottom of the MIDI controller, affecting subtle changes in the pitch selection on those pads. At around 01:30/24:51 I turn the chromatic transposition function back on, removing the highest pitch, and add a new note to pad 2. A rhythmic flexibility results from these changes as the durations of the new sounds is accommodated in the actions of myself and Celia.

When 'Insight Informed' was in development, it was taken to an initial rehearsal with incomplete configurations of the vocal material and a cruder implementation of the M4L patch. The most notable feature of this incomplete version was that certain drone voice samples would timestretch as they were transposed to lower pitches (in the manner of traditional keyboard samplers), causing them to play at different tempi to the other samples. Whilst it was assumed

that this would be a distraction to be ignored, it was clearly creatively stimulating for Celia and actually encouraged her to experiment with shifting tempi and time signatures. For this reason, it has remained a feature of the piece (and also influenced the composition of 'Charm') and can be heard in the portfolio performance. At 04:20/27:42, Celia is arranging the rhythmic interplay in order to accommodate the timestretched rhythm of the lowest drone, giving rise to an interesting shifting bass line. When I change the pitchsets at 04:58/28:20, Celia becomes reticent to play the pad triggering that low drone (pad 4), as its timestretched rhythm is more difficult to reconcile with the rhythms of the new pitches on the other pads. These are just a few examples of how both aesthetic and practical resistance present within the Slow Loris Performance Environment, and negotiation with resistance is expressed in each and every change that Celia and I make (or, are required to make) to accommodate the rhythmic instability that characterises 'Insight Informed' (live).

In terms of how this comes across to an audience, they may or may not infer the way in which the behaviour of the environment is prompting the performers to make rhythmic accommodations and informing other aspects of the improvisation. In the above passage I am attempting to describe my experience of performing within the environment, and how I perceive resistance as expressed in the system. Because Celia and I are responding to the changes made by one another as translated by the environment, we are transparently engaged in the close listening and responsiveness that I described as hallmarks of improvisation in the contextualisation chapter. In my experience of performing the piece live, I have found that audiences have apprehended and engaged with this aspect of the performance as promoting a 'live energy', but have also commented upon moments where we seemed challenged by or frustrated with changes made by one another or the M4L patches within the Slow Loris Performance Environment, supporting my conviction that when performers interact with an environment they understand to be resistant this helps cultivate a condition of liveness.

I have established my understanding of aesthetic resistance as informed by a Western Art Music way of thinking about harmony and rhythm. This is as an aspect of my creative identity as a composer, an aspect that has always co-existed with my creative identity as a Rock and Experimental musician within a Popular Music context. The aesthetic resistance between the Experimental Electronica and Noise aspects of this project and the Western Art Music aspects derives from the examples of tensions between 'traditionally musical' features and non-traditional as set up by the case study musicians in the contextualisation, but also represent my journey as a musician seeking a creatively productive relationship between these (conflicting)

aspects of my identity. As was evident looking at the work of Hecker, Herndon and OPN, I am hardly alone in using the techniques and symbols of Western Art Music within an Experimental Electronica context. The recurrence of Cage and Tudor in Noise music histories cannot be ignored either. All of these musicians negotiate their relationships with Western Art Music as part of their experimentalism, and for me this tradition is expressed in the harmonic, contrapuntal and rhythmic techniques employed in my work. I use my performance environments to actively resist and disrupt the physical and mental biases towards these techniques, yielding musical outcomes that differ from those that I would otherwise create.

Case Study 2b – 'Insight Informed' (Studio) from the *Adjunct EP*

'Insight Informed' (studio) is constructed from the same vocal samples as the live version and a short drone voice fragment generated during a performance of that version. When Celia played this fragment, she was inferring a tempo of roughly 145bpm from the material allocated to the sample pads by myself and the M4L patches at that point in the performance, despite the actual tempo of the original samples and the Ableton Live set being 130bpm. Upon choosing this rhythmic fragment as the foundation for the studio version and realising it was not being played at the original tempo, I made no attempt to ascertain the inferred tempo. As illustrated in Case Study 2A, fluctuations in tempo are a result of, and response to, the forms of resistance embedded in the Slow Loris Performance Environment. For this reason, deviations in tempo and juxtapositions of multiple tempi have become a point of creative interest in my studio work as part of the Slow Loris project, and 'Insight Informed' (studio) is no exception. Instead of figuring out the tempo of the fragment, the MIDI data from Celia's performance of it was extracted and placed in a loop, the beginning and end points of which were set intuitively. The act of looping the MIDI data input by Celia's sample pads allowed me to continue playing within the Slow Loris Performance Environment, changing pitchsets, note selections and durations as though I were improvising with Celia, but with a view to creating a piece more structurally idiomatic to studio composition. These studio-based improvisations introduced new harmonic and rhythmic material, three variations of which can be heard as 'Ex19', 'Ex20' and 'Ex21' on the *Audio Examples* CD, and the decision to place the original fragment in a loop gave rise to a piece with a more firmly established sense of repetitive rhythm. This became a defining characteristic that distinguished the studio version from its live counterpart. As the

tempo of the loop was unknown, downbeats and rhythmic contours were inferred and handled intuitively.

The same fragment of MIDI data was then used to generate clean vocal loops, experimenting with different pitchsets, note selections and durations; an approach identical to that which was employed to generate the drone voice loops. Once a large palette of clean vocal loops had been generated, a selection of them (some of which are visible in Figure 24) were chosen and superimposed in Ableton Live to run alongside the drone voice loops.
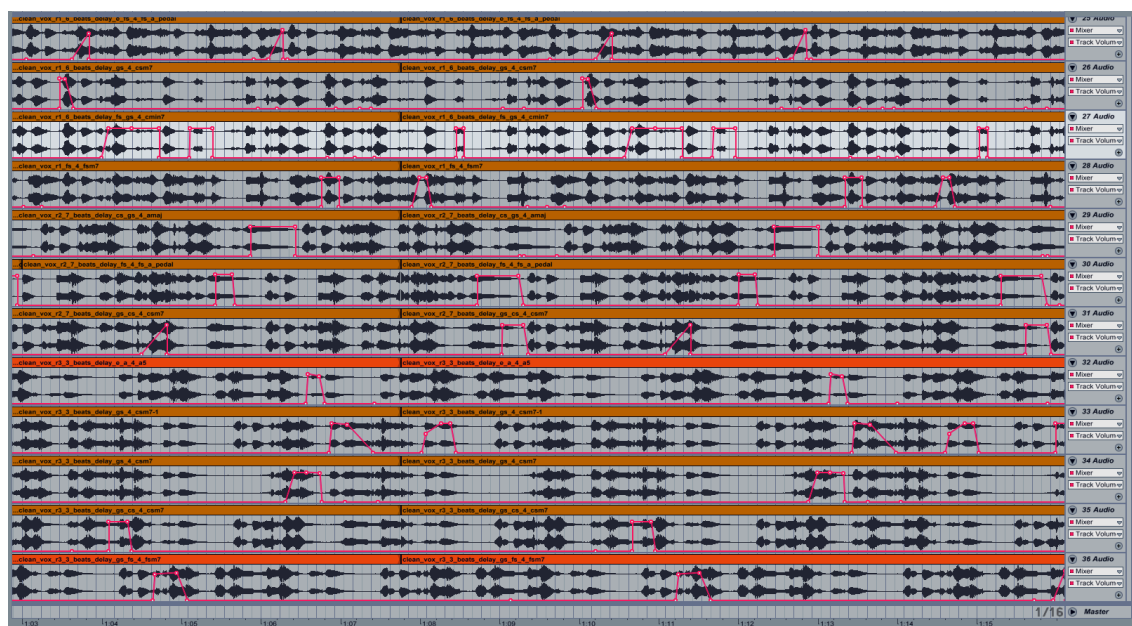

Figure 24: Selection of Clean Vocal Loops from 01:03 to 01:16 in 'Insight Informed' (studio), Arranged in Ableton Live

The clean vocal loop that appears in track 27 in the above figure is presented as 'Ex22' on the *Audio Examples* CD. Although this is the original form of the loop, readers experienced in working with DAWs will have noticed that automated volume envelopes have been 'hand-drawn' on all of the clean vocal loops. This means that only small fragments of the loops are actually being heard in 'Insight Informed' (studio). The clean vocal loop on track 27 can be heard in its sounding form in 'Ex23'. In this way multiple hidden iterations of the MIDI data, rendered through clean vocal loops, are revealed in tiny fragments in order to realise a close-knit polyphony predicated upon the original material. These configurations would be completely impossible to recreate in a live setting but are, nevertheless, derived from material generated in this form and would not exist with the same rhythmic plasticity had they been created using a different method. 'Ex24' provides the full statement of the interlocking clean vocal loops depicted in Figure 24 as they appear in 'Insight Informed' (studio).

The majority of the track continues as a process of harmonic and rhythmic experimentation with the drone voice loop, above which numerous subtle variations of the clean vocal material are realised by altering the volume envelopes on those tracks. From 03:55 to 04:15, however, the automated volume envelopes gradually give way to a simple statement of a single clean vocal loop. From this point to the conclusion the relationship between the clean and drone voice loops is more transparent and closely related to that of the live version, existing as a simultaneity of one example of each, changing only to match one another harmonically or to create interesting rhythmic interplay.

Case Study 2 – Review

The Slow Loris Performance Environment began as a project investigating pitch as a resistant element in live improvised counterpoint. Aesthetic and practical resistance certainly do present in odd and unsatisfying combinations of pitches when one performer is controlling the rhythmic component of a polyphonic texture and the melodic/harmonic component is being constructed through interactions between the other performer and a laptop. However, what was not foreseen was the extent to which associating note duration with note pitch would cultivate interesting and surprising rhythmic interplay. The destabilising effect of this creates productive aesthetic and practical resistance both among the performers themselves and between the performers and the environment. Together, these elements cultivate a condition of liveness in performance, as every aspect of the soundworld being created is negotiated by the performers within that environment as the performance evolves. This encourages transparent interaction between myself, Celia and the M4L patches within a musical situation characterised by ongoing change.

The rhythmic instability present in improvisations within the Slow Loris Performance Environment informs and is incorporated into the studio manifestations of the pieces. It encourages a complicated relationship with the tyranny of 'the grid' in studio-based composition, inviting me to work both with and against DAW structures predicated upon repetitive rhythms, looping and regular time signatures. I would have never been able to envisage and construct the off-kilter rhythmic sway of 'Insight Informed' (studio) had it not been for the rhythmic profiles embedded in the live material, themselves shaped by the specific forms of resistance present in the Slow Loris Performance Environment. This speaks to the expansion of possibilities and inspiration that can be found in the transitions between live and studio practice, where a new perspective (and set of tools) opens up alternative expressions of the same compositional ideas and

material. The use of sampled vocals also gives rise to perhaps the most direct expression in the portfolio of the simultaneity of liveness and studioness affected by sampling, where the captured spontaneity of the performances calls attention to the studioness of its placement through juxtaposition *and* drives many of the compositional decisions. In the case of 'Insight Informed', the flexibility of rhythm in the live version transfers to the studio version, yet the expression of that flexibility is markedly different both formally and contextually. For instance, the meticulous manipulation of timbre and envelope in the clean vocal material, the strong sense of repetitive rhythm and the precisely predetermined harmonic relationships exhibited in the studio version of 'Insight Informed' are features typical of Experimental Electronica and are idiomatic to studio-based composition. However, they retain the resistance present in the live version through the off-kilter rubato of that repetitive rhythm and the ways in which these rhythms shift and interlock. Both live and studio versions aim to reflect the characteristics, possibilities and limitations offered by their means of creation and the performance circumstances they inhabit.

Slow Loris – 'Charm' (Live)

'Charm' (live) was developed in order to further complicate the generation of pitched and rhythmic content in the Slow Loris Performance Environment. The material used as a sound source in this piece was a recording of my friend, Dr Alexandra Paddock, performing medieval storytelling, part of which included the recitation of a charm in Old English. From this material I focused on the opening line ('Wenna, wenna, wenchichenne'), extracting the sibilant sounds and manipulating them into percussive material, then taking groups of syllables and employing them as pitched material. The syllables were assigned to the sample pads as follows; Pad 1: Wenna. Pad 2: wenna. Pad 3: wenchi. Pad 4: chenne. However, rather than simply arrange this pitched material according to a chromatic scale in the western tonal system, the words were given scales based upon their harmonic spectra. For each word, I would choose a particularly unusual or interesting partial, then subdivide the distance between that partial and the fundamental into 12 equally-spaced pitches and that would become the scale for that word. The percussive sounds were also tuned to match the scales of the syllables on the corresponding pad. Therefore, the percussive sound allocated to pad 1 is tuned to the same scale as 'Wenna', the percussive sound on pad 2 to 'wenna', that of pad 3 to 'wenchi' and that of pad 4 to 'chenne'. This means that when I play a chord on the MIDI keyboard, the pitches to which each word will be transposed will relate to the notes of that chord, but based upon their own twelve-note scale.

As each word has its own scale, the way pitches change in performance is impossible to keep track of and, therefore, harmonic development must be handled intuitively and responsively. The construction of rhythm in 'Charm' (live) is also different to, though inspired by, that of 'Insight Informed' (live). In previous pieces, adjusting the dials on the top of the MIDI controller changed the note durations on a given pad, but in 'Charm' (live) it also changes the distances *between* the notes. When a dial is turned to its highest value, a pad's 4-note rhythm will play according the tempo given in the Ableton Live set. However, as the dial value is reduced, the rhythm will contract, gradually squeezing the notes closer together. The exact behaviour of this varies from sound to sound; on some pads, the second, third and fourth notes will move closer in time to the first as the dial value decreases, before gradually disappearing from the phrase (Figure 25), whereas on some pads the 4 notes will compress until they form a chord (Figure 26). As the dials are rarely all set to the highest value in performance, Celia and I are required to incorporate the different tempi and varying output of each pad into the polyrhythmic weave of the performance. This can be observed between 04:20/38:10 and 06:50/40:40 in the version of 'Charm' (live) included in the portfolio, as Celia and I find our way from a difficult and unwieldy group of settings towards one that is rhythmically interesting, and can be seen listening and adapting to changes in the outputs of the pads throughout.

Although 'Charm' (live) can be viewed as the most resistant live piece for the Slow Loris Performance Environment due to its level of unpredictability in terms of rhythm and pitch, the sheer variation this affords has actually been freeing. Although Celia and I often find ourselves stuck in sections of music that are not to our satisfaction, we have come to trust that the possibilities open to us are so numerous that we can work our way out of these areas into something at least surprising and interesting. 'Insight Informed' (live) has a predetermined starting point insofar as the sounds and pitch content for each pad are always the same when the environment loads (although development from the opening onwards is entirely free). 'Charm' (live), however, has no compositionally predetermined structure or starting point and, in this sense, it is the most 'free' improvisation in the Slow Loris repertoire to date. The variety and potential in 'Charm' (live) to myself and Celia as performers is a result of the ways in which its resistance directs us towards new and unforeseen approaches to the material, preventing us from falling back upon the tried, tested, and predictable. This is borne out by my experience of playing this piece a number of times live, and whenever we try to replicate something that we did in a recent performance or rehearsal we find ourselves unable to do so, we become frustrated and the performance suffers. This was actually the case for the version of the piece that is
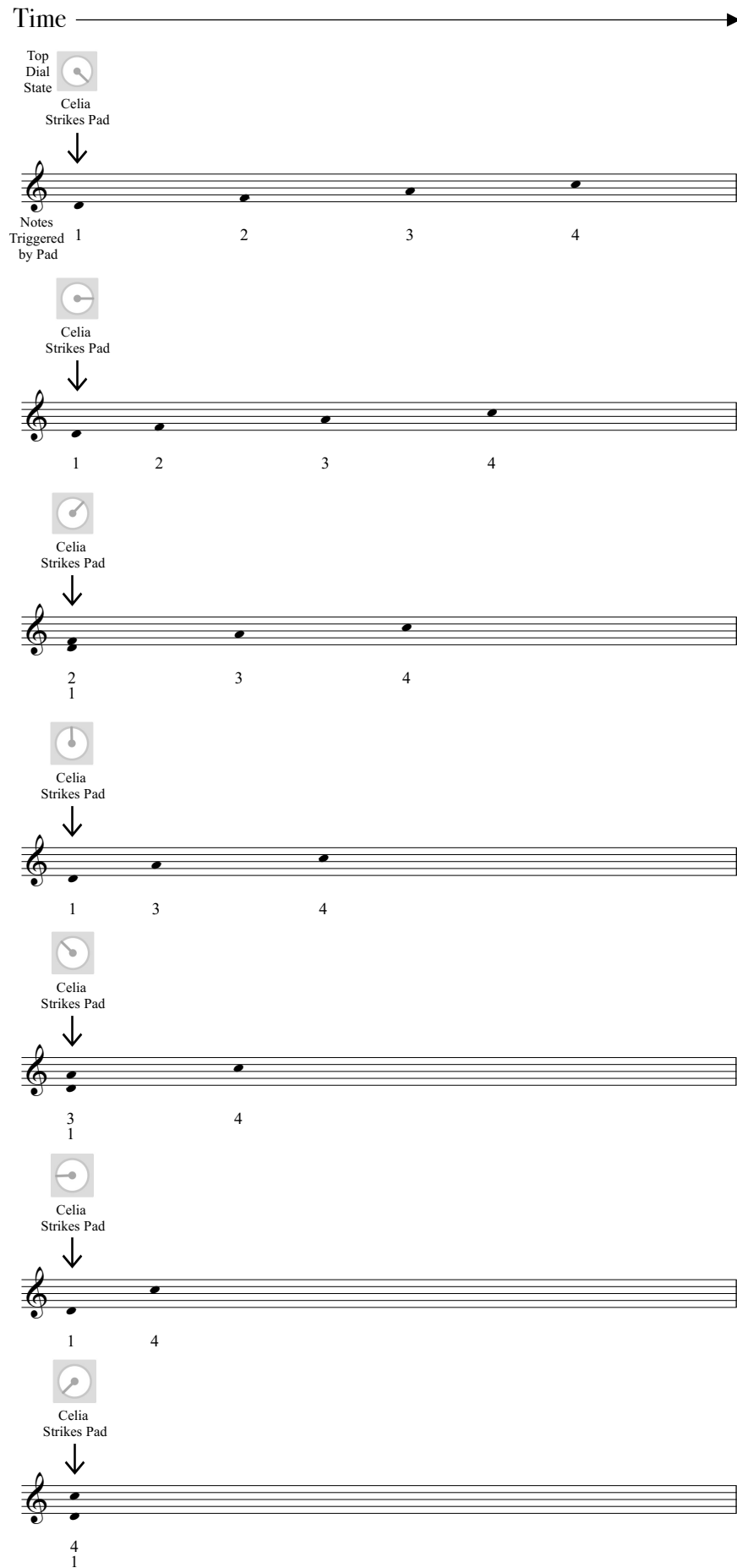
Figure 25: One Way in Which Times Between Note Onsets Can Relate to Top Dial Value Changes in 'Charm' (live)
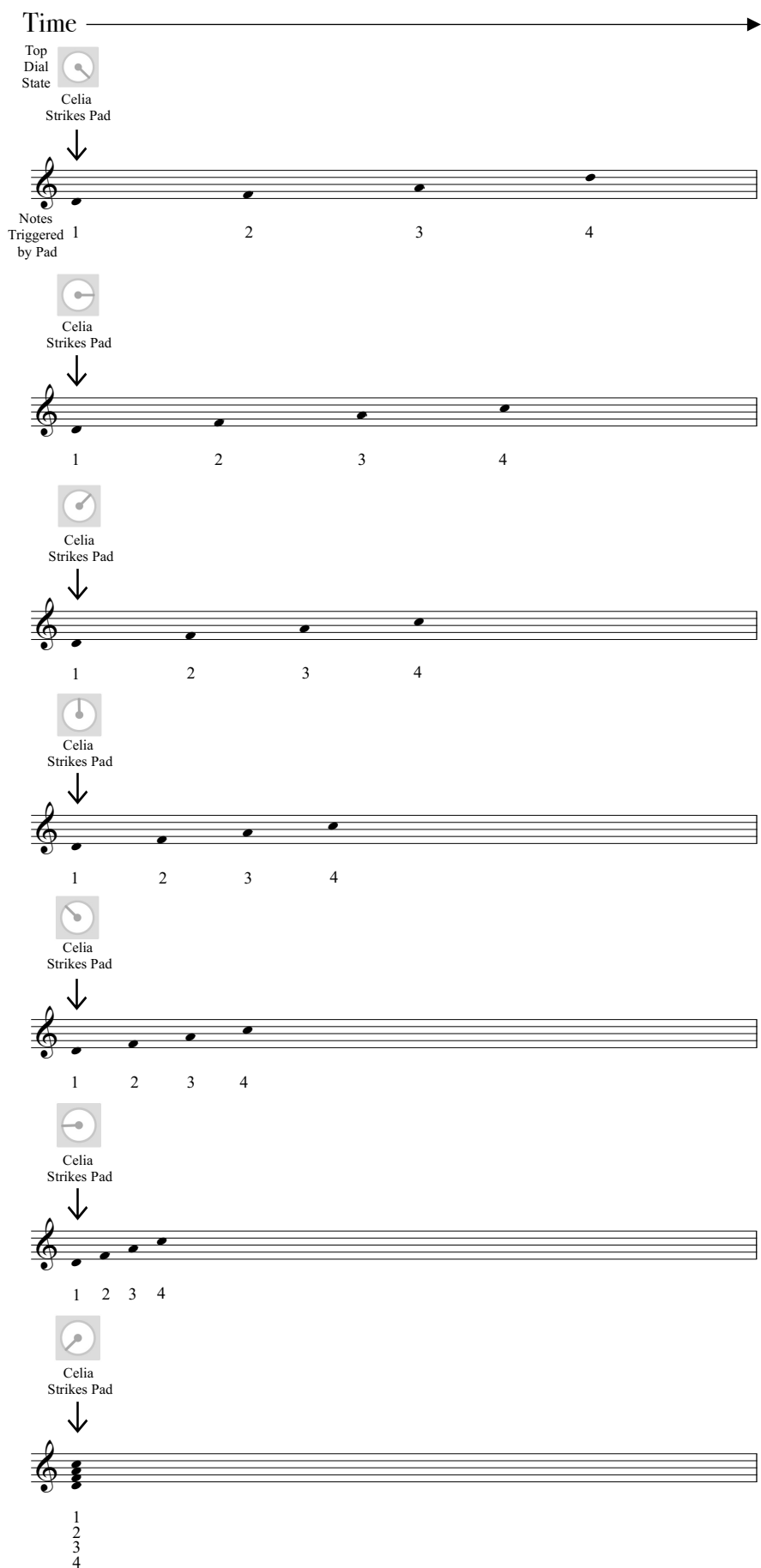
Figure 26: One Way in Which Times Between Note Onsets Can Relate to Top Dial Value Changes in 'Charm' (live)

included in this portfolio. Just a few days before the filming of this version of 'Charm', we had played the piece at a gig in the Amersham Arms in New Cross, London, where we had found a way of playing it where I was suddenly introducing and cutting out new sounds on the different pads, led by the way the performance had developed. This gave the piece a different kind of structure to the more gradual changes that we had become accustomed to. Celia and I both agreed when we came off stage that this was the best iteration of 'Charm' that we had yet come across, and the success of the performance seemed to be corroborated by a very enthusiastic audience response that was equaled by the promoters of the event. With the positive feeling from this performance fresh in our memories when we came to film the live version of 'Charm', we naturally tried to recreate it in the performance presented here, and it didn't really work. Although the performance is certainly acceptable, and has plenty of good moments, it doesn't really cohere in the way that my favourite performances of 'Charm' have done. We certainly feel a bit stuck in the section between around 4:00/37:50 – 7:00/40:50, and Celia and I both agreed after the filming that this was a consequence of trying too hard to replicate the performance from the Amersham Arms; we should have been more responsive to the Slow Loris Performance Environment rather than trying to force the performance down a particular path. In this sense, however, the performance becomes a good fit for inclusion in this portfolio, as it makes clear the resistance built into the environment when trying to replicate or force particular performances, and how it is best to let the performance evolve in negotiation with, and with a heightened responsiveness to, the environment. This way, we are more likely to discover new interesting and surprising iterations of the piece.

THE *ADJUNCT EP* – 'CHARM' (STUDIO)

'Charm' (studio) begins by focusing on percussive material from Pad 4 ('Ex25' in *Audio Examples*), the only pad in 'Charm' (live) that does not have variable durations between MIDI note onsets. Having compiled recordings of a number of rehearsals and performances of 'Charm' (live), it became apparent that, when Celia was focusing on this pad, the tempo of the material played was fairly consistent. I began by extracting the pad 4 material from all of the recordings I had made and overlaying them. Having assembled all of the recordings in a DAW, I found two points, about 1 minute apart, where the superimposed recordings aligned into what could be described as 'beats'. I emphasised this quality by pitchshifting some of the extracts, being careful not to timestretch them in the process, so low sounds could be used to imply downbeats. 'Charm' (studio) begins by fading in a seething drone texture, over which the pad 4

material is gradually introduced. At 01:29 the 1st beat enters. As the music progresses, certain elements of this beat begin to drift as the recordings are allowed to play through their material, moving towards the 2nd beat, which arrives at 02:41. During this time the attacks of the pad 4 material are opening up gated filters on an excerpt from a recording of pad 1, taken from another performance of 'Charm' (live) and placed in a loop (the pad 1 loop is provided in 'Ex26' and the gated filtered version in 'Ex27'). This pad 1 excerpt has a more flexible tempo, so it does not always align with the beats, causing the gated sounds to emerge irregularly. The codependence of the relatively rhythmically stable pad 4 material and the shifting pitched material underneath is a reflection of the tension between these elements in the live version of 'Charm'. From 03:05 to 07:13 this process is repeated in an extended version, wherein the attacks of pad 4 gradually reveal more and more of the frequency spectrum of the pad 1 loop ('Ex28' provides an example the gating process when applied to a broader frequency spectrum, contrasting that of 'Ex27'). As the section progresses, the pad 4 material pitchshifts to match the spectrum of pad 1 and the pad 1 recording becomes audible in its entirety (06:49). In this way, the pad 4 material becomes subservient to the harmonic content of the scale allocated to pad 1 in the development of 'Charm' (live). Through rendering the pad 4 material to meld with that of pad 1 there is a reconciliation of resistant metric, rhythmic and pitched elements towards the end of this section that embodies the spirit of the Slow Loris Performance Environment in the studio expression of the material. Again, one can understand this as an expression of live practice in the studio work, where the played-in nature of the parts is placed in contrast with the tightly-controlled arrangements and production, foregrounding the studioness of the latter. It is also a rhythmic and harmonic expression of the material that would be impossible to construct in a live scenario, but also one that I could never have envisaged without my intimate knowledge of the behaviour of the Slow Loris Performance Environment in 'Charm' and without the live recordings of the particular rhythmic patterns it had produced. It is such interplay between live and studio work that this methodology engenders that fuels and inspires the artistic practice in this portfolio.

The second section of 'Charm' (studio) explores the relationship between three pad 1 excerpts from different performances of 'Charm' (live) played at different tempi. A transitional passage (07:13 – 09:38) gradually introduces these excerpts, and in doing so reveals a rhythmic and harmonic progression that will serve as the foundation for the second section of the track. This harmonic progression (henceforth 'HP') enters in its first full statement at 09:38 and an isolated version of it is presented as 'Ex29' on the *Audio Examples* CD. It was created

by placing the three pad 1 excerpts in sequence, based on the interesting harmonic relation-
ships of the excerpts and their appearing to me as retaining a sense of rhythmic propulsion in
this configuration, despite their differing tempi. The execution of this in Ableton Live can be
viewed in Figure 27.

Figure 27: Arrangement of Excerpts in HP as They Appear in Ableton Live.

In all of the excerpts, all 4 of the notes assigned to pad 1 were being triggered and were
audible when the pad was struck, the first note being a low, bass 'we', and the other notes being
shortened transpositions of that sound in higher registers, ending with the fourth note in the
highest register and with the shortest duration. The 4 sounding pitches in the first excerpt are
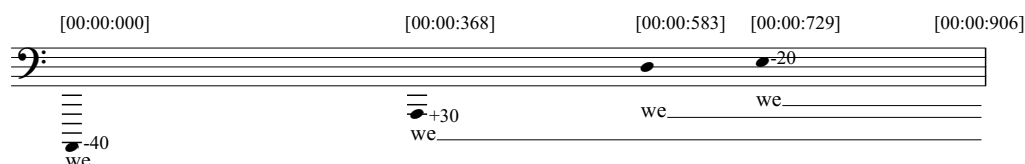notated in Figure 28, as they occurred when pad 1 was struck.

Figure 28: Pad 1 Sounding Pitches and Note Onset Times in First Excerpt of HP.

The structure of the second section, from 09:38 to the conclusion of 'Charm' (studio),
was plotted out in its entirety by looping HP. Once this structure was created, variety was intro-
duced by occasionally lengthening the duration of an excerpt for one or more individual notes,
causing these notes to overlap with the following excerpt. For instance, between 10:50 and
11:14 (Figure 29, 'Ex30') notes 1 and 4 from the second excerpt continue to play material
from the particular performance of 'Charm' (live) from which they were excerpted while notes 2
and 3 deliver a standard statement of HP by continuing onto the third excerpt. In doing so, two
performances of 'Charm' (live) are being heard simultaneously, affecting a simultaneity of mul-
tiple tempi that evokes that feature of 'Charm' in performance, where different pads will infer
different tempi according to the settings of the top dial of the MIDI controller.

Figure 29: Arrangement of Excerpts from 10:50 to 11:14 in 'Charm' (studio),

Forming a Variation on HP (Figure 27).

Variations such as that which is described in Figure 29 occur in most iterations of HP between 09:38 and 12:55. Throughout this second section of 'Charm' (studio), material from pads 2, 3 and 4 that was played during the corresponding HP excerpts is selectively revealed, in much the same manner as illustrated in Figure 29. At 12:55, a statement of HP is intercut with yet another, much longer pad 1 excerpt from a performance of 'Charm' (live). This new pad 1 material comes to dominate the texture, offering the longest complete excerpt of material from a 'Charm' (live) performance in the entire track, and builds to the final climax at 14:40.

The Slow Loris project began as an attempt to express practical resistance through unpredictability in the management of pitched material in algorithmically generated counterpoint. This counterpoint was always intended to have a strong rhythmic profile (a natural consequence of utilising sample pads as the primary control in its assembly) but the emergence of aesthetic resistance in our interactions with the resultant rhythmic structures led to these elements becoming the dominant aesthetic focus in both live and studio expressions of the material. This manifested in the live work as a co-dependence of pitch and rhythm, but also as a distribution of control of rhythmic parameters across the environment so that they were not solely in the hands of the percussionist, Celia, instead arising as a product of the resistant interactions of the entire system. It, likewise, informed the studio work by encouraging the development of pliant rhythmic structures within the 'grid' of the DAW, as the freedom of tempo and rhythm available in live performance is placed into a productive tension with the more repetitive forms idiomatic to studio composition in Experimental Electronica.

The Nightcrawler Tapes and Performances During the Covid-19 Pandemic

During the period of time following my viva examination, I was able to explore a musical idea inspired by, though not directly related to, the research conducted in preparation for this PhD. *The Nightcrawler Tapes* began to formulate as an idea when reading the chapter on cassette culture in Noise music in David Novak's *Japanoise: Music at the Edge of Circulation*. Novak details the origins of the persistent affinity for the format of the cassette in Noise culture, and how ordering and distributing cassettes via postal services was integral to the development of Noise. In terms of the inspiration for *The Nightcrawler Tapes,* the following passage sticks in the memory:

> Through the collective anonymity of the [cassette] mail networks, cassette traders also
> developed new techniques of mixing that blurred the lines of musical authorship. Using
> the newly minted technology of four-track cassette machines (first with the Teac 144,
> followed by the Tascam Porta series a few years later), tapers began to create multisited
> recordings based in layering individual contributions on top of one another. Recordists
> circulated tapes through the mail, each creating a track to add to the previous ones in a
> sort of auditory Exquisite Corpse, erasing sounds and recording again until all tracks
> were full or someone decided the collaboration was finished.

(Novak 2013, p.207).

This idea of Noise collage as described by Novak fused with my desire to have some cheap musical artefact to give away at gigs and other social gatherings whenever somebody expressed interest in my music. I decided that distributing sound collages in which I relinquish some authorial control seemed preferable to telling the person to go home and look me up online, and resolved to set about making them. I would use aleatoric procedures to make each cassette different, which would give me the pleasure of knowing each person was receiving something one-of-a-kind and conceptually interesting whilst liberating me from the negative feelings that accompany freely giving away studio material that represents hundreds of hours of work (which would be the case were I just giving away copies of my EPs). As *The Nightcrawler Tapes* themselves are only being introduced into this thesis because the Max/MSP patch that I built to create them was used in the live performances presented below, I will not spend too long detailing the specifics of their operation. The inlay from the cassettes provides an adequate summary as a point of departure:
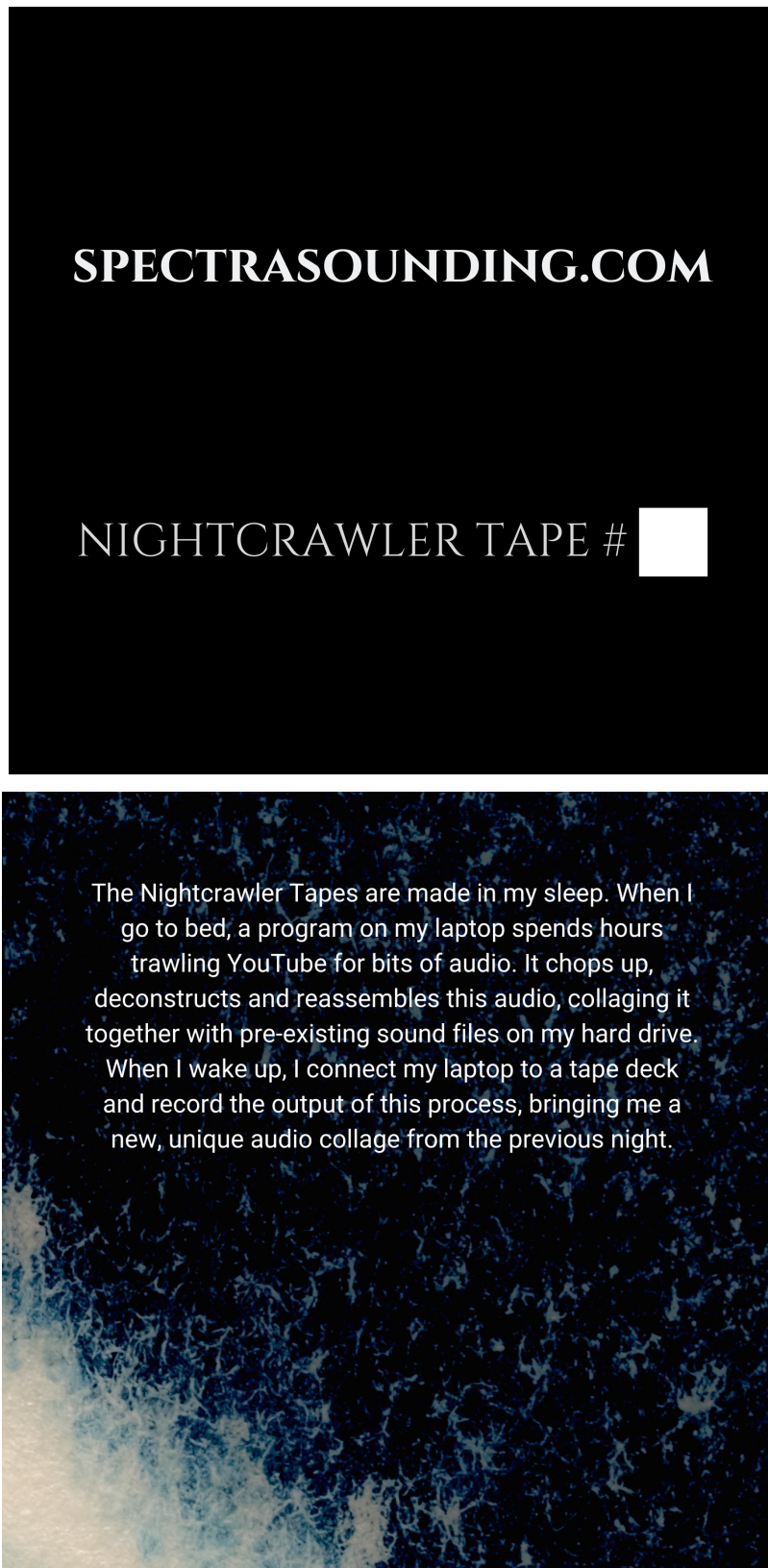
SPECTRASOUNDING.COM

NIGHTCRAWLER TAPE #

The Nightcrawler Tapes are made in my sleep. When I go to bed, a program on my laptop spends hours trawling YouTube for bits of audio. It chops up, deconstructs and reassembles this audio, collaging it together with pre-existing sound files on my hard drive. When I wake up, I connect my laptop to a tape deck and record the output of this process, bringing me a new, unique audio collage from the previous night.

Figure 30: Front (Top) and Inside (Bottom) Designs for the Nightcrawler Tapes Cassette Inlay.

For the setup process to make a *Nightcrawler Tape*, I connect to a Virtual Private Network (VPN), changing the VPN location for each tape so that I appear to be connecting from a different country each time. I open YouTube on an anonymised browser running cookie-

deleting add-ons and adblockers which, in combination with the VPN, presents YouTube's homepage and all of its tailored suggestions based solely (as far as I can tell) upon the location information provided by the VPN. I click on a video that appears interesting to me in the moment, either because of its specificity to the VPN location or presumed sonic content, run *The Nightcrawler Tapes* Max/MSP patch which begins sampling the audio output and let YouTube's autoplay function do the rest.

The Max/MSP patch runs 4 simultaneous audio channels, each of which is used to play back a combination of the audio recorded from YouTube and audio from a designated folder on my hard drive. Each audio channel is composed of an adapted version of *Plode* granulator object designed by Peter Batchelor (2018) and 3 groove~ objects (see Figure 30). The *Plode* object and 1 of the groove~ objects (Groove A) handle the YouTube input (Section A), with *Plode* timestretching and transposing short samples of the input and Groove A looping and transposing these samples. An automatic crossfade periodically transitions from *Plode* to Groove A and back again. The output of Section A is used to drive an envelope follower, which is determining the output of 'Section B' (containing 2 groove~ objects (Groove B and Groove C)). Groove B and Groove C are crossfading in the same way as *Plode* and Groove A, although not in synchrony, and are looping samples from the predetermined folder on my hard drive. However, every so often according to a given probability, an automatic crossfade will transition to the output of Section A from Section B, making the YouTube samples audible rather than those from my hard drive. In short, the audible output of a channel is an automatically generated mix of material from YouTube, sampled, manipulated and looped, and material from a folder on my hard drive, looped and with an amplitude envelope dictated by the sampled YouTube material.

There are 4 channels operating as described in the previous paragraph within *The Nightcrawler Tapes* Max/MSP patch, which are then fed into an Ableton Live set which applies effects chains to these channels in an aleatoric fashion. An example of a *Nightcrawler Tape* has been added as Appendix C to this commentary. The standard methodology for *The Nightcrawler Tapes* described above could not meet the requirements of good academic practice as I would be unable to obtain all the necessary references and permissions for the material sampled from unknown sources on YouTube. Therefore, this *Nightcrawler Tape* samples its material from a pre-compiled YouTube playlist of Creative Commons-licensed videos intended to be

representative of a typical YouTube autoplay trawl (namely, a mix of environmental sound, speech, people making things and royalty-free library music).[26]
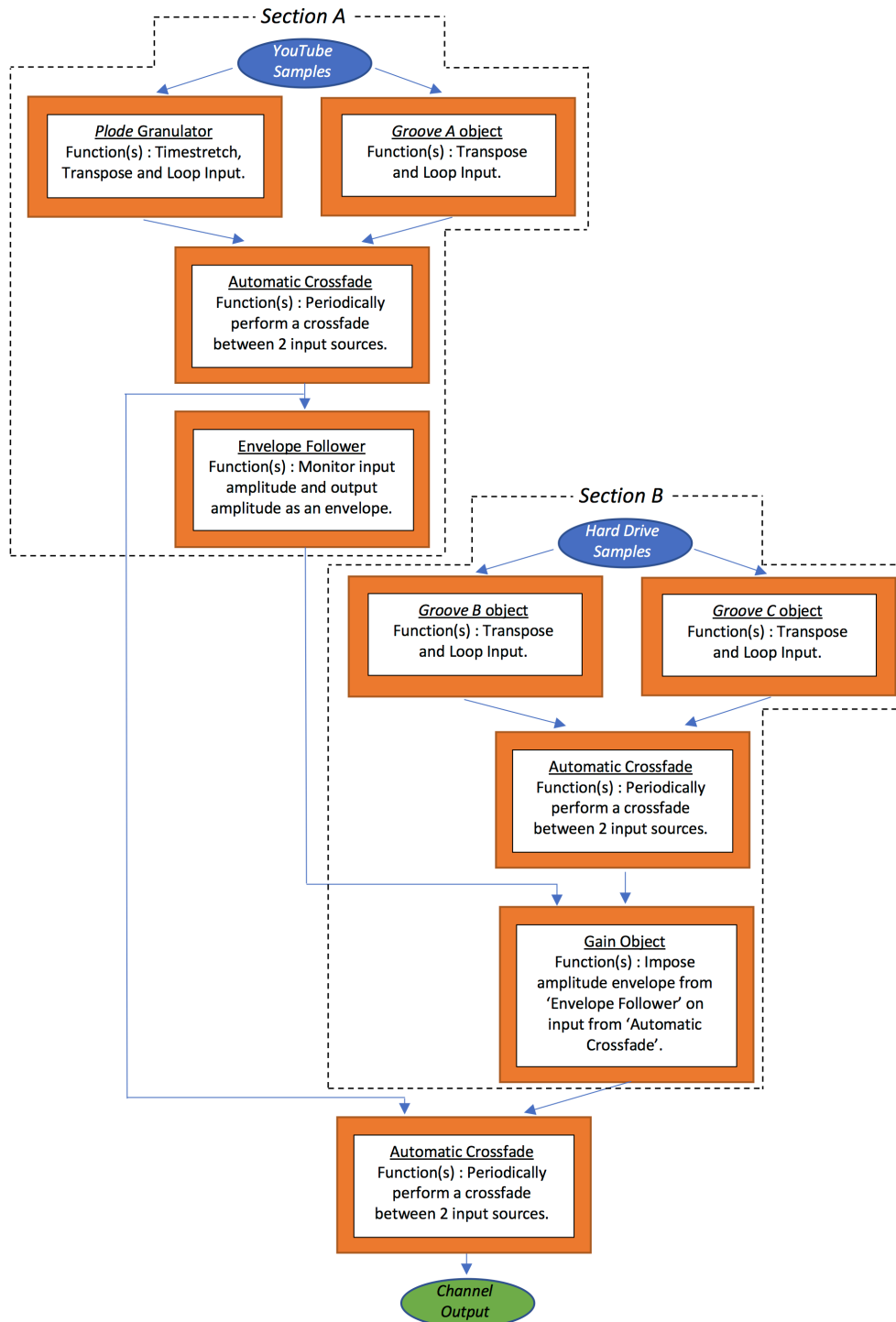

Figure 31: Diagram summarising the Operation of Each Audio Channel in The Nightcrawler Tapes Max/MSP Patch

[26] The YouTube videos employed for this *Nightcrawler Tape* can be found in the bibliography under the following references: Authentic German Learning (2015); Chiara ASMR (2021); Delta State (2018); Easy German (2019); Galaxy ASMR (2018); GreenShortz DIY (2016); Kharma Medic (2019); Lightwave 802.22 (2020); Mazay DIY (2020); NBC Left Fields (2020); Nicop Records (2021); P. J. Christensen (2020); Sadhguru (2014); Sinius (2020); vlogbrothers (2021); World Economic Forum (2020).

'Charm' (live stream) : Spectra / Slow Loris Live Stream on YouTube

Due to restrictions on social mixing during the Covid-19 pandemic, I was forced to find a way of presenting live performances of my work in a live-streaming format that continued to address the core concepts that I wanted to explore in my thesis. This meant finding an interesting way of reimagining the Slow Loris material so that it could still find some kind of liveness in a live-streamed setting and when performed by me alone, as opposed to in a duo with Celia. *The Nightcrawler Tapes* Max/MSP patch presented a solution in that, with some minor modifications, it could function in a live setting as a tool to automatically reconfigure and transform the material from the Slow Loris project. The modifications were as follows:

1. Use a live performance of a Slow Loris track as the audio input for Section A instead of YouTube videos.

2. Use a folder filled with samples from Slow Loris performances and studio recordings of tracks other than that which is being used in Section A as the input for Section B.

3. Add functionality so the automatic crossfades can be paused and stick on a loop, allowing me to retain sounds as they emerge in performance.

4. Remove automation on effects chains and tie to a MIDI controller so that Ableton effects chains can be applied manually.

5. Tie channel output levels to a MIDI controller so channels can be introduced and removed at will.

6. Add functionality to feed channel outputs into the analogue rig of the Spectra Performance Environment.

By introducing these modifications, I was able to develop a setup where I could present improvisations on the Slow Loris material as Spectra, combining aspects of the two projects in a manner appropriate to a live-streaming format.

The first performance in this format was an improvised response to 'Charm' (live), using the video recording of the live performance already discussed in this portfolio as the source material for Section A of *The Nightcrawler Tapes* patch. It occurred to me that the live-streaming format, where the audience will be sitting at home watching at their desks or on their sofas, is a good opportunity to screen a video as part of a live performance because there are relatively few gig settings where you are likely to get the kind of attention from an audience that would support the screening of a 13-minute video. This also served the practical function of allowing me to feed a whole performance of 'Charm' (live) into *The Nightcrawler Tapes* patch and to lock the automatic crossfades on transformed output from that performance in advance of the

switch to the improvised response. More significantly, however, this allowed me to clearly establish the soundworld of 'Charm' (live) in the minds of the audience members for the improvisation that was to follow and, through juxtaposition, to heighten the liveness of the real-time performance from my kitchen.

As I knew that 'Charm' (live) as performed by Slow Loris is a pretty relentless and frenetic experience for an audience, I resolved to begin the improvisation with a no-input exploration using only the analogue rig, giving a few minutes respite before reintroducing the 'Charm' (live) material (13:55 – 19:50). Although the primary goal is that this segment provides a 'space to breathe' within the context of the stream as a whole, the basic focus is to try to develop interesting interactions between high and low delay-based feedback. Of course, as this is feedback, control is only ever partial, and there are various moments where tones refuse to change pitch and my attempts to force them results in loud bursts of isolated pitches, disrupting the intended tranquillity of the segment (notably 16:20 – 17:20). At 17:20, a bass shudder results from running too much bass through the system, but I liked it, so tried to incorporate it, but can't really get the analogue rig to do it again. At 18:50, I tried to incorporate some distortion from the Ibanez Tube Screamer, but rather than setting up an interesting interference pattern as I expected it to, it quickly overrides the delay-based feedback. Again, this must be accepted and incorporated into the performance.

At 19:50 a channel of sampled 'Charm' (live) material is introduced to the analogue rig, again to try to introduce some variety into the behaviour of the feedback. It is worth mentioning here that I don't have the option of hearing the audio material on these channels before introducing them. The only option is to fade them up, hear what sounds are presented along with the audience, and deal with it in the moment. From 19:50 to around 26:15 I am seeking the interesting interaction of feedback and samples that I know is possible with this setup, but I can't seem to find it. Mostly, the result is a mix of samples and blasts of single pitches of dominant feedback (which, in retrospect, I let hang for too long). During 26:15 – 27:45 I've found some nice interaction of the delay-based (as opposed to overdrive-based) feedback and the samples, so this becomes a focus. At 27:50, I trigger a crossfade on one of the channels, which are often quite gradual, but this one is sudden and of a wildly different character, so I immediately set to work incorporating it. At 28:45, I make a sudden change to the delay setting to try and find something less spacious and appropriate to the rhythmic samples I am working with. At 29:50, I turn on the Moog Minifooger and this adds a blast of low-end content to the feedback loop. This is a moment where I've worked my way into something I like, so I follow the

development of the analogue feedback and samples and just try to make gradual change while maintaining the balance of the elements. Again, by 34:30 a single feedback pitch has become too dominant and I seek to mitigate that, and in doing so, change settings and samples that lead me into a section with a more tranquil character. I distinctly remember wishing I'd been able to maintain this more aggressive repetitive section for longer, but, as is always the case with the analogue rig, I needed to respond to its behaviour and what I was able to make happen in the moment. By 37:15, I am leaving more automatic crossfades open on *The Nightcrawler Tapes* patch to allow for the introduction of more files and a mix of material from the hard drive containing Slow Loris tracks other than 'Charm'. This instigates a section where I am less interventionist and just following and listening. For me, this is one of the more successful sections in the improvisation in terms of interesting interaction of sampled input and analogue feedback.

Between 43:30 and 44:30 a digital 'click' emerges, and the desire to remove this click dictates the minutes that follow. Until 48:30 I am looking for something interesting to move into the next section. Ultimately, I don't find anything and, feeling stuck, set all of the crossfades in *The Nightcrawler Tapes* patch to change automatically. I have to deal with all of this suddenly changed material and try to build a conclusion. This felt forced at the time and still does in retrospect. At 52:30 I kill the distortion and, as a more subdued set of sounds emerge, I look to invoke the clean feedback swells that began the improvisation (if all else fails, ending where you began often works as a conclusion, if a little contrived as an approach).

The account I have provided of my experience performing this improvisation illustrates the way that dealing with feedback in the analogue rig, in combination with a system that generates unpredictable output such as *The Nightcrawler Tapes* patch, presents the performer with many instances where they have to adapt their actions to resistance in the system. It was my hope that the samples generated by *The Nightcrawler Tapes* patch would provide interesting harmonic and rhythmic material against which the microtonal and textural material of the analogue rig could work, which it does. I experience aesthetic resistance when the patch delivers samples that force a marked change in harmonic or rhythmic character to what had gone before, followed by practical resistance as I work within the complex, interdependent environment of the analogue rig to make musical sense of these changes. I have detailed a number of moments in this performance where I expected to be able to effect a certain kind of change to the sound based upon my previous experiences of performing with the system but was unable to do so and had to change tack. There are also many parts of the performance that I am very happy with, particularly during the central section, but from 43:30 until the end I think it's obvious that I

am trying to force the situation and lose my way a little. For future performances with this setup, I am going to address this issue by trying to let the uncertainty of what might emerge in the system guide me a little more, as I feel I am trying to exercise too much control in this instance, rather than interacting and affecting change where and when I can. In short, try to prioritise *responsiveness* a little more. This will entail:

1. 'Locking' the automated crossfades less – I have designed *The Nightcrawler Tapes* patch so that the rate at which the samples change when automated is to my taste when generating the tapes. I should try trusting this more in performance rather than locking the samples every time I hear something that I like.

2. Rather than having control of which channels get sent to the Ableton effects chains, I will re-automate this process, and have control of the effects chain volumes instead. This will mean I relinquish control of which sounds are having effects applied, instead offering a changing palette of 'effected' sounds that I can fade in and out and incorporate as they change.

In making these alterations, I hope to encourage myself to embrace the resistance in the system a little more, to adapt to it, rather than continue to force it to bend to my compositional will. The most satisfying moments in this improvisation came when I abandoned trying to realise a particular sound or kind of interaction that I had found in the system in a previous rehearsal or performance and instead placed more emphasis on responding and listening.

'Insight Informed' (live stream) : Spectra / Slow Loris Live Stream on YouTube

This performance takes the same setup as that which is described above, using 'Insight Informed' as the input to 'Section A' of *The Nightcrawler Tapes* Max/MSP patch. The suggested changes in approach made after the previous performance were implemented, whereby the effects sends were automated and I resolved to avoid 'locking' loops in place in this performance. While experimenting with the setup in preparation for the performance, I noticed that the patch tended to produce more 'Ambient' sounds from the 'Insight Informed' (live) input than it did with 'Charm' (live). I resolved to take advantage of this and begin the performance by experimenting with entirely 'delay-based' feedback. This was an interesting experience in that it is harder to affect noticeable change with this setup, so a lot of the opening passage is concerned with me trying to force through changes in the behaviour of the delay and to allow feedback loops to develop but not to become too static or to overwhelm the samples from 'Insight Informed' (live). I will not provide too much analysis of this performance as I found it to be

generally more successful than the previous one and feel it can speak for itself. However, I will draw attention to certain moments that are particularly relevant to ideas already discussed.

In order to make a convincing transition from the video of 'Insight Informed' (live) into the live improvisation it was necessary to begin with sampled loops from that video 'locked'. This allowed me to make clear the connection between what the audience had just heard and the improvised response. Upon reflection, another benefit was the change in energy that this approach facilitated when the loops are 'unlocked', and the automatic crossfading is allowed to introduce new samples and I become required to follow these changes. I take advantage of a sudden overpowering bass drone that emerges at 24:30 to begin the automatic crossfades. For around 3 minutes, I am trying to match the increasing activity of the samples with increasing intensity in the output of the analogue rig. However, at 27:30, the selection of samples becomes less dense, so I respond by thinning out the texture in the analogue rig and await another change in feel to begin rebuilding again. Over the proceeding minutes, I can be seen trying to mitigate changes that feel too sudden, or trying to incorporate them into the performance in a convincing way, all while pushing towards a distorted section as the possibilities of the delay-based texture are more-or-less exhausted at this point. I have learnt from previous performances and those already detailed in this commentary that pushing for certain outcomes is risky in resistant performance environments, so this is balanced with listening to and incorporating changes in the samples being provided by the Nightcrawler patch and listening carefully and responding to how my interventions are affecting the behaviour of the analogue rig. In general, I feel I achieve this more successfully in this performance than in some others, and, having arrived at a dramatic and interesting interplay of feedback, distortion and Slow Loris samples by around 37:00, at 37:55 I activate the Fulltone pedal with an image of cascades of rich distorted feedback being introduced into the texture. I know this is possible from experience, and a good example of this behaviour can be heard during the finale of 'Spectra Live' (already discussed), however, in this case the Fulltone overpowers all of the other activity in the performance environment leaving a single pitch of very loud feedback. Having played with this pedal for many years now, I was aware that this decision was risky, as the balance of other interacting elements has a profound effect on how the pedal behaves, but this balance remains so fine that I still never be confident that activating the pedal will lead to a desired outcome. Such moments support the assertion of myself and others that complexity within a feedback system creates an impression of practical resistance for the performer as it subverts expectations and precludes total control. In the performance in question, I spend about 90 seconds trying to counterbalance the

Fulltone feedback loop, but in the end have to turn it off. Having reached a climax (if not the most subtle one), the texture begins to thin out once the Fulltone is turned off and I follow this to the conclusion of the performance.

'Spectra Live 2' : Spectra Performance on the Zoom Videoconferencing Platform

Although the COVID-19 pandemic forced necessary adaptations in my approach to performing as a member of Slow Loris, the extensive discussion of different forms of liveness already undertaken as part of this commentary and portfolio required that I take the modes of presentation of the Spectra material into consideration, as it is necessarily different in an online format than it is in a traditional in-person live performance. While thinking about how I would like to present material from the *Striking Distance EP* online, I was drawn to considering the daily rituals, both online and offline, that have developed over the course of this pandemic and how I might look to incorporate them. After almost a year of relying upon videoconferencing software in order to maintain contact with friends and family, I became aware of the kinds of interactions we might expect to have with one another in this environment. In particular, videoconferencing platforms become forums in which people expect to hear stories of everyday occurrences and developments in one another's lives, and the telling of these stories is part of the performative aspect of social interaction on Zoom. I chose to make use of the now well-established expectations of social Zoom calls part of the performance of the *Striking Distance EP* material, appearing in everyday dress in a relatively messy domestic/workspace environment, speaking directly to camera, and beginning by recounting a (fictional) story that invoked the daily rituals of life during the pandemic.

In preparation for this performance, I created a series of 3 'Mystery Sounds' using a combination of recordings I had made in my house and local outdoor environments to give the credible impression of something 'growing' in the earth near my home.[27] I set these 3 samples as the input for 'Section A' of the Nightcrawler Tapes Max/MSP patch. This allowed me to tell the story of these sounds' origins as a way to draw the audience into the performance and also recontextualise the keyboard part from 'Once Removed' into something far darker and more ominous than the original studio version. 09:00 – 21:00 of the video of this performance is predominantly concerned with gradually transitioning from Mystery Sound 1 to Mystery Sound

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[27] It is worth noting that this performance was given before the release of Ben Wheatley's *In the Earth (2021)* and before I was aware of the film's existence, although the fact that pandemic-induced anxieties also inspired folk-horror imaginings of something dark and untoward growing underground outdoors in the mind of such an original director is certainly encouraging (Kermode 2021).

3 via Mystery Sound 2 while convincingly introducing the keyboard material.[28] The most challenging aspect, as is consistently the case when performing with the analogue rig, is trying to cultivate interesting interaction with the feedback; avoiding the performance becoming too literally and figuratively 'one-note'. The goal is that the Mystery Sounds and keyboard become audible amongst the feedback, preventing a state of equilibrium in the analogue rig while also becoming part of the soundworld, rather than sticking out or appearing 'on top'. This is made difficult beyond the in-built unpredictability of the analogue rig due to the simple physical demands of being required to monitor and develop the interaction of the Nightcrawler Tapes and the analogue rig whilst playing the keyboard. The sort of soundworld I am searching for is approached at around 20:00, but by 21:30 has become lost and the keyboard is abandoned in order to seek a new texture. This is achieved by cutting back to Mystery Sound 1 (which removes the drone pitch present in Mystery Sounds 2 and 3) and introducing looped and granulated iterations of the sounds using the Nightcrawler Max/MSP patch (23:00). A satisfactory balance is struck at around 24:00, and this is maintained and developed through until the end of 'Once Removed' (29:00). As soon as I stop playing keyboard at 29:00, the lack of input allows a single pitch of feedback to find dominance in the analogue rig and come searing out of the texture, which I supress by overloading it with input from the Nightcrawler patch.

My goal from 29:00 – 36:00 is to find settings that approximate the beginning of 'Inbound' from the *Striking Distance EP*, which is to say high-pitched melodic feedback in the analogue rig. Although finding the exact settings in the middle of a performance that is underway is highly unlikely given the behaviour of the analogue rig, I do get something close enough at 36:00. Possibly my favourite moment in the whole performance arrives during this transition – the distorted interaction at 34:10. The analogue rig interacts with itself almost independently, setting up melodic gestures that I still don't really understand, and have never heard before. As I have said many times during this commentary, these are the sorts of moments that make working with resistant performance environments so rewarding. The operation of feedback within the analogue rig and the interdependence of its parameters can create scenarios where single pitches of feedback become dominant and can be very hard to eliminate (a situation that I have been dealing with at various moments in the performance so far), but when the right balance of settings is alighted upon, that interdependence can give rise to new and unpredictable

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[28] One negative consequence of choosing Zoom as a platform for these performances is that the recording function is not totally reliable, resulting in some audio glitches in the included video documentation (16:10, 28:20, etc.).

behaviours. In retrospect, I wish I had played around here more, rather than continue pushing through to the opening settings of 'Inbound', but there is certainly a special moment there, and the fact that the interaction was interesting enough without much intervention from myself allowed me to make changes to the Ableton set in preparation for 'Inbound'.

From 36:30 to the end of the performance I mostly follow the outline for the improvisation described in the 'Spectra Live' section of this commentary, so I will not dwell too much on it here. I will note that the transition from the atonal melodic material by introducing harmonic and rhythmic interaction between the analogue and digital rigs from around 42:00 has a markedly different character, especially as it relates to the looped material. The warm drone helps establish the root bass much more quickly, but the mid-range drone is (and was to me in performance) quite irritating, and I seek to introduce notes that will disrupt this drone from 43:45. This doesn't really work and just leaves me with a repeated mid-range note. A couple of minutes struggle and by 46:00 I have found a texture from which I think I can build some harmonic development. As the filtering from the digital rig seems to have a strong hold on the activity of the analogue rig, I am confident that I can start changing pitches while maintaining the sense of pitch and rhythmic activity. However, at 46:20 I attempt a pitch change and the melodic line completely disappears. I try to force it to reappear until 48:00 when, in a moment of frustration, I abandon the repetitive rhythms in the hope that the pitches will at least hold steady as sustained drones. As is often the case when trying to force an outcome in a resistant performance environment, this transition is sudden and badly handled. From this point I seek to build drones and pitches to render the final chord progression, finally resulting in some interesting interaction between the analogue and digital rigs. A chord change at 50:55 causes audio dropout, and I become aware that this might be a feature of the final minutes of the performance. My laptop is now a good few years older than it was when I designed the Spectra Performance Environment, and not quite as capable as it once was of handling the CPU load of the digital rig. Although I take steps to reduce the probability of audio dropout in performance, it still does happen from time to time. This is a shame, as unusual interaction that I have never encountered before between the digital and analogue rigs arrives at around 52:00. I think certain pitches being filtered by the digital rig are becoming extremely dominant, forcing high-end activity to sporadically disappear in the analogue rig, but my frustration with repeated audio dropout leads me to stop the chord changes and conclude the performance.

I resolved to include this performance in the portfolio, despite the technical difficulties, for several reasons. Firstly, I find the performance overall to be successful in engaging with the

forms of liveness and performance associated with videoconferencing technology. This was corroborated by audience feedback after the performance, where I received questions and comments expressing interest in the sounds from the story I told at the beginning and several audience members liked the drawing in of material from my day-to-day life. Of course, this also supports my impression that the informal expectations of social Zoom calls make them an interesting medium as people are more likely to accept premises for performances that would no doubt be treated with suspicion in other contexts (with only one exception, every attendee I have spoken to believes that the mound emitting sound in woodland near my house really exists). Secondly, the first 50 minutes of the musical performance are largely successful in my view (particularly the introduction and performance of 'Once Removed' and the opening section of 'Inbound'), and where there are difficult passages due to the practical resistance inherent in the operation of the system, they are offset by other passages where this resistance generates new and surprising moments (most notably, 34:10). Thirdly, the audience members, including fellow electronic musicians, expressed surprise when I mentioned technical difficulties at the end of the performance, as they had not been aware of them, so I was not left with the feeling that they had detracted substantially from delivering a convincing performance.

Finally, the experience of performing 'Once Removed' in this situation presented interesting forms of resistance. From an aesthetic perspective, the balancing of tonal material from the keyboard and the atonal activity of the analogue rig introduced a new harmonic and melodic expression of the track. From a practical perspective, managing the 'Mystery Sound' material, the analogue rig activity and the introduction of pitched material at the same time (in particular the requirement that I play notes on the keyboard with a certain regularity to prevent the analogue rig becoming totally dominant as it does at the conclusion of that track) while trying to deliver a recognisable expression of the harmonic material dictated the manner of my interactions and required that I adopt a heightened level of responsiveness to developments within the environment. This supports my contention that the greater the complexity of the interactions within a performance environment, the more likely a performer is to perceive it as practically resistant, especially when many of its behaviours function independently. Another significant factor is that the desire to recreate the principal of the studio track, where a harmonic progression is improvised upon and embellished by textural material around it, led to a radically different iteration in the live environment, due to the tools available but also a willingness to recontextualise and reimagine the soundworld of the track. This was an instance where seeking out a new kind of liveness in response to the studio version offered an inspiring

creative challenge and produced a version of 'Once Removed' with a new character born out of the affordances of the live performance situation.

<u>'Spectra Live 3' : Second Spectra Performance on the Zoom Videoconferencing Platform</u>

In the weeks that followed the previous Zoom performance, I continued to receive questions from attendees about what was happening with the mound in the woodland near my house. This encouraged me to push the idea further and design a more improbable sound in order to claim that the mound had begun emitting this sound in the intervening weeks. I thought this might sow a little more doubt in the minds of audience members as to the veracity of the tale I was telling at the start of the performance. Also, it was clear that this aspect was really drawing people into the performances on Zoom. Unfortunately, it was also clear that running both the Nightcrawler patch and the digital rig simultaneously on my laptop ran too high a risk of audio dropout due to the high CPU load of the Max/MSP patches. Therefore, I resolved to play the sounds using a looping app on my phone (A Tasty Pixel 2021). I also ran the sounds through the Nightcrawler patch and recorded its output to provide a few manipulations of the material to use in the app. Obviously, the unpredictability of the sonic material generated by the Nightcrawler patch is lost in this new setup, but I considered this to be an acceptable trade-off for the performative gain of playing the sounds from the same device that was supposedly used to record them.

Aside from introducing the new sounds from my phone, I chose to return to the structure set out in the 'Spectra Live' section detailed earlier in this methodology. This decision was primarily taken in order to foreground material from the *Striking Distance EP*, which had been derailed as a consequence of the previous performance's technical difficulties. I had also been gifted some new effects pedals on long-term loan (a Memory Man and a homemade fuzz pedal) by a friend, so returning to the original structure allowed me to explore the possibilities of these new pedals within a known structure. As mentioned in the contextualisation, seeking to defamiliarize oneself with one's setup through adding new elements or reconfiguring existing ones is a commonplace Noise practice, introducing more indeterminacy from the performer's perspective and, hence, practical resistance: 'It is certainly possible to learn the technical parameters of any electronic system, yet many Noisicians deliberately avoid becoming too familiar with their equipment. Most choose to change the components of their setups regularly to maximize accidents and unpredictable elements, even as they struggle in performance to adjust the sounds emitted by the system' (Novak 2013, p.160).

As this performance follows the same structure as 'Spectra Live', I will look to be brief here and only highlight moments that are of particular relevance to the discussion at hand, taking it as read that all of the material is, by design, engaging with the themes of this commentary on some level. Firstly, I had found that continued droning 'hum' in the 'mound' sounds could become an overbearing presence as it implied a harmonic centre, which could limit the harmonic development if it stayed around too long. I therefore removed it when creating the 'new' sound for this performance. Once I have decided to move away from that hum in this performance, the awkwardness of the phone looper's interface led to a sudden leap in volume at 23:30, and the increased intensity encouraged me to build a more aggressive noise texture in the analogue rig from this point on. The no-input jam that underpins this section was a really enjoyable and liberating moment for me, but resolves naturally to a single drone pitch for which I cannot find the source. The frantic activity from 25:30 to 26:15 is indicative of me being lost in the complexity of the system, unable to affect the change I need and modulate or remove this drone. Eventually the solution is found in turning off one particular effects pedal, but this process of problem-solving within a resistant performance environment has led me to a position where I have lost the interesting settings that facilitated the no-input jam a couple of minutes earlier. This essentially means that I have to recommence from zero with the analogue rig. I set about finding a new context for starting again, changing the phone loops and transitioning to a more ambient section. At 28:20 I begin introducing pitch-filtering from the digital rig, in the hope that this will provide a little more control (and variety) over the activity of the analogue rig. However, in order for the pitch-filtering to work, the analogue rig must be providing sufficiently rich harmonic content for the digital rig to be able to extract the desired pitches from it. As was described in the 'Spectra Live' section, finding the correct balance, and executing a convincing transition from the noise of the analogue rig to the repetitive rhythms and harmonic content affected by the digital rig is always the most challenging aspect of this improvisation, and where I perceive the Spectra Performance Environment to be its most resistant. The minutes that follow are definitely a struggle, but by around 37:30 I have found something I considered to be fairly convincing in terms of an effective interplay between the elements that can be used to transition to the harmonic progression outlined in Figure 10. A pitch change in the bass voice at 40:00 cannot be rendered by the environment, and so adjustments have to be made in order to reintroduce the low frequency content. Ultimately, this is achieved through switching from repetitive rhythmic envelopes to continued drones. From this point onwards, I am looking for interesting 'beating' effects as the pitched and unpitched elements within the

system negotiate and change. At 46:30, while searching for new distorted interaction within the analogue rig, I made a change that significantly reduced the overdriven intensity of the texture. Although not really what I intended given the build-up I had cultivated, this is typical of how small interventions can have quite drastic consequences when playing within the Spectra Performance Environment, and I resolved to follow this drop in intensity and move out of a distorted texture for the concluding section of the performance.

An interesting aspect of the performances as Spectra is the interplay between harmonic and textural effects brought on by the design of the Spectra Performance Environment. This is most notable in the development of harmonic material from 39:00 onwards in this performance, 42:00 onwards in 'Spectra Live 2', and 10:00 onwards in 'Spectra Live'. As previously discussed, the relationship between the MIDI keyboard and pitch filtering in the digital rig makes it difficult for me to know which pitches will result from playing a given key. This means that I am unable to realise the harmonic development that I would attempt were that relationship a direct reproduction of the key-to-pitch relationship of a standard keyboard. In these sections where I am changing pitches and listening to how the harmonic development affects the behaviour of the system in general, it is apparent that certain harmonic combinations cause interesting and, often dramatic, 'beating patterns' and changes in the interaction of feedback in the analogue rig. Likewise, these changes can cause sudden losses of tension where a note disappears or a harmonic combination results in a fairly straightforward and uninteresting texture in the system as a whole. Here we can observe interactions of aesthetic and practical resistance, where I am seeking a particular harmonic expression, but also balancing these impulses with what is possible for the Spectra Performance Environment to render and the other musical features, particularly textural, that emerge from these harmonies. In this way, my aesthetic ambitions in terms of harmony are in constant negotiation with the development of other features within the environment, meaning that these ambitions are deeply entwined with textural concerns. As I make harmonic alterations and encounter dissatisfactory textural changes as result, I experience practical resistance as changes in the environment are produced tangentially to my actions that I must then deal with or try to ameliorate, but also aesthetic resistance as the environment 'peturbs and warps the generic attributes' of my practice (those generic attributes being the harmonic and repetitive rhythmic aspects).

Questions of liveness in the live-streamed performances

When it became clear that the COVID-19 pandemic was going to force me to deliver live performances online in order to complete this portfolio, I was primarily concerned that the liveness of my practice would be diminished in the new format. I took many steps to try to foreground the liveness of the practice, notably the incorporation of *The Nightcrawler Tapes* patch to introduce new and unpredictable iterations of previous performances, the decision to screen videos of previous Slow Loris performances as foundational material for improvisations so as to highlight the real-time manipulation of that material in the improvised responses, and the decision to speak to camera in the Spectra performances in order to bring people in and make use of the affordances of the live format. Other factors included camera positioning and lighting to focus attention upon my interaction within the environment, foregrounding the domestic setting in the Spectra material and creating more of a 'staged' atmosphere for the Slow Loris streams. While the storytelling element certainly prompted a new kind of investment in the Spectra material from audience members, the verbal feedback was much the same as that which I tended to receive from audience members at in-person live performances. A recurrent theme was my attitude while playing, in particular my body language and the ways in which I interact with the equipment. In the live streams, this does not seem to have been diminished, as audience members consistently commented upon how it was evident that I was intensely focused and attentive while playing, and how physical movements always seemed to signal that I was responding to developments within the music. Often, commentators would observe that the music was obviously 'real' or 'live' or 'happening in the moment'. In terms of the objectives set out in developing these resistant performance environments as means to cultivating a condition of liveness in performance, these comments are encouraging. Watching the videos back afterwards, I am struck by these elements myself, although I have obviously chosen to describe them differently, and am content that the performance environments help to create a condition of liveness that is peculiar to me as a person and performer and to my compositional and aesthetic interests.

CONCLUSION

'As the established economic structures of the music business implode, built as they are on ownership and trading of material objects (from sheet music to CD), so there is a remembering, however faint, of the impermanence of sound and how that poignancy of loss, even in moments of overwhelming pleasure, adds depth to the experience of audition.'

- David Toop (2010, p.36), *Sinister Resonance: The Mediumship of the Listener*.

As we absorb the innumerable cultural, economic and political actions and reactions emanating from the nascent integration of the internet into every aspect of daily life, there is certainly a tendency (towards which I have yielded on various occasions in this commentary) to point towards the devaluing of recorded sound as the flashpoint in a fundamental shift in how music is appreciated in the early 21st century. To this shift we must at least partially attribute a renewed interest in live performance, and certainly the reallocation of music industry backing in favour of the medium. However, as David Toop succinctly articulates, the ubiquity of recorded sound is coupled with a vague recognition of the value that inheres in each finite, ephemeral moment of a musical performance. Live music-making, at its best, charges the present with a heightened sense of its own passing. The good-faith agreement between participants to come together to attend to music affirms the uniqueness of each and every sound as it moves among them in that moment in that space. Here we find a less cynical reading of the burgeoning interest in liveness; in the face of a cheap plenitude of reproducible sound, the unique affordances of live performance emerge as singular and precious. This may go some way towards accounting for the suspicion surrounding playback of prerecorded material in live performance with electronics, and the appeal to improvisation and 'jamming' by Herndon and others cited in the contextualisation chapter. Improvisation celebrates the impermanence of sound, between people and objects, in space; irreproducible. Recording revels in its own fixity and, as with the plastic arts invoked by Tim Hecker, it is typically our relationship to the object in space and time that changes, more so than the object itself. These ideas find root in Walter Benjamin's (1939) *The Work of Art in the Age of Mechanical Reproduction*, where Benjamin takes the comparison between the stage actor and film actor as opportunities to illustrate his conception of 'aura' in the work of art. In the context of a theatre, where the actor shares the same physical space with the audience, audience members are able to apprehend the actor's aura because they are able to present their aura to the audience 'in person', rather than as mediated by the camera. Andrew Goodwin is one of many scholars that has looked to Benjamin's reading of shared physical space as providing access to a performer's aura in order to theorise live performance (Frith

1986; Goodwin 1988; Savage 2014; Taylor 2001). In Goodwin's (1988, p.45) case, it is to argue for the appeal of Pop music concerts. Despite his assertion that '[t]he sound quality is often very poor, and the visual imagery is usually too distant to be of any great value', he argues that shared presence with the Pop star provides access to their aura, which might be used as an outright justification for the value of in-person live performance in response to a ubiquity of temporally and spatially dislocated presentations of music. However, I would argue that Benjamin (1939, p.222) does not neglect the affordances of the live performance environment in facilitating a dynamic relationship between audience and performer, where the stage actor can 'adjust to the audience during performance' (I would add to this the innumerable other aspects of a live performance environment beyond the physical presence of an audience to which the performer might adjust), and therefore the appeal of live performance might extend well beyond the simple fact of co-presence. Benjamin also provides a positive appraisal of the new creative possibilities afforded by film technology, which were shown in the contextualisation chapter to be recalled in the possibilities afforded by sampling to the contemporary electronic musician. By identifying in recording the ability to capture spontaneous gestures and moments that can then be brought to the attention of audience members and manipulated in service of artistic expression, Benjamin prefigured many of the questions raised in relation to liveness in studio products that have been explored by key artists discussed elsewhere in this commentary. Even where some might read Benjamin's work as offering a theoretical backing for valorising liveness based solely on co-presence with performers, his work can also be read as supporting versions of liveness predicated on the affordances of the live environment to performers *and* versions of studioness predicated on highlighting and finding expressivity in small, overlooked, spontaneous recorded moments.

In the contextualisation, I argued that cultivating a 'condition of improvisation' through responsiveness to external agents, be they other people, objects or the environment, is fundamentally resonant with ways of going about daily life. This invocation of life as lived, affecting and affected by others, gives rise to a condition of liveness. Such ideas percolate throughout Toop's (2016, p.70) writing; '[In improvised music] Fragments of life are given licence to escape without trace, even though they may be among the most affecting moments of beauty or the most complete communication within a group that the player will ever experience. Their transience infuses them with meaning.' Inspired by contemporary practices in Noise music, I have embedded practical resistance in my performance environments in order to court the impermanent, the irreproducible, the transient. In work created as part of the Spectra

project that resistance presents in the relationships between a digital rig, an analogue rig and myself; between an agent seeking to control, organise and structure sound, an agent whose systemic complexity resists these strategies, and an agent with an aesthetic interest in the space between those poles. The live work exists as a dramatic enactment of these relationships, while the studio work homes in on the peculiarities of these relationships' emergent artefacts. Said artefacts are isolated and held up for contemplation, examination, recontextualisation and transformation through the processes of the studio environment, yielding work that celebrates the affordances of its medium.

The Slow Loris Performance Environment propagates practical resistance through the distribution of control of various parameters between myself, Celia and a laptop computer. These parameters come together in order to generate a polyphonic weave in which authorship is always negotiated and a player's viewpoint is always partial. The unpredictability of the harmonic outcomes of our actions is one consequence of this resistance, alongside flexibility of tempo. This general flexibility of tempo is also extended to the individual voices assigned to individual sample pads, affecting a simultaneity of multiple tempi. The unknown melodic, harmonic and rhythmic relationships in the live work translate into a creative tension with the grid-based, fixed-tempo organisational system of DAW composition in the studio work. The rhythmic instability and unusual harmonies produced by this methodology present aesthetic resistance to my compositional impulses when recontextualised within the studio environment, reaffirming the vital and rejuvenating role of resistance within the process. The challenges and inspiration arising from this process are significant to me as a musician with a grounding in Classical and Popular musics and with aesthetic preferences predicated upon this background, but they also resonate within the context of Experimental Electronica in which I work. As illustrated in the contextualisation chapter, Experimental Electronica undertakes its experimentation with tonal harmony and rhythmic stability within a culture that frequently calls upon Western Art Music and Experimental musics in that tradition in order to formulate its genre identity and to contextualise its musicians.

By way of the approaches described above, the Spectra and Slow Loris projects have developed their own methods of exploring the utility of resistance. To me, this utility exists as part of a compositional strategy that seeks to foreground and embrace the liveness of live performance, leading to productive and stimulating compositional questions as part of a methodology that accords equal value to the affordances of the studio environment. The resistant artefacts described in the methodology, such as the unstable spectral resonances of the Spectra

Performance Environment, or the drifting tempi of the Slow Loris Performance Environment, or the tension between the harmonic, microtonal and atonal in both, are just some of the qualities that can be idiomatically explored in a live context, and my focus will no doubt shift and refine as I continue these practices beyond this portfolio. The studio work presented here seeks to illustrate the potential of these materials when they are shaped by studio tools and, likewise, is by no means a final statement on what is possible.

It has been my compositional intent throughout this research to seek a form of live performance that delivers a unique expression of liveness in relation to its studio counterpart and responds to the issues surrounding live performance that I have identified in Experimental Electronica. As described in preceding chapters, my negotiation with both the practical resistance built into the design of the Spectra and Slow Loris Performance Environments and the challenges they pose when trying to realise certain harmonic and rhythmic structures within them (aesthetic resistance) requires that I cultivate a condition of improvisation during performance. This condition is predicated upon an ongoing responsiveness to changes and developments within the environments. It has been my contention that this condition of improvisation naturally promotes a condition of liveness, where the negotiation with the environment and ongoing process of listening and decision-making reads to the audience as uniquely potent within a live context. This has been borne out by audience response after performances, where the dynamic between myself and Celia as Slow Loris is consistently remarked upon, and likewise in the case of my physical relationship with the equipment during Spectra Performances. The recurrent comments tend to concern the responsiveness and close listening attitudes of myself and Celia, and my physical responses to musical developments when performing solo. Watching my recorded performances back over the course of this thesis, I have been struck by my affect within the Spectra Performance Environment in particular; by the relatively tentative relationship with the equipment. This attitude is no doubt informed by experience of how being coercive with resistant performance environments tends to lead to gridlock or, at least, unsatisfactory outcomes, and it is usually better to engage in a negotiation with the environment and embrace the push and pull of development between yourself and it within the performance. But the attitude is also clearly one of heightened attentiveness and responsiveness which, although far from the histrionics of many Noise performers, certainly expresses its own kind of liveness.

The compositional strategy outlined in this commentary explores utilising the same sound sources in both live and studio work as part of a holistic process that engenders a mutually informative dialogue between the two mediums, whilst maintaining a profoundly idiomatic

liveness and studioness respectively. Consequently, I have sought to demonstrate the ways in which practical and aesthetic resistance stimulates and informs the studio process, and therefore functions as part of the strategy. This became most apparent when the liveness embedded in the material produced in these resistant performance environments was transferred to the studio, the effect of which was a foregrounding of the studioness of studio techniques (close editing, digital processing and assembly) through juxtaposition, coupled with a new range of harmonic and rhythmic possibilities that I would not have imagined were I working solely in the studio. In the case of 'Spectra Live', further development and augmentation of the performance occurred after the studio version was completed, and avenues for development of the live work in the Spectra and Slow Loris projects continue to present themselves as the passage of time shifts and reconfigures my relationship to the studio output. This is an additional benefit of the centrality of improvisation within the practice, in that it allows for continued development of the material according to changes in performance context and cultural continuum, which became useful in reconfiguring the material for live-streamed performance (the Slow Loris performances as transformations of previously-possible live expressions of the material in the context of a global pandemic, and the Folk Horror-inflected re-interpretation of 'Once Removed' in 'Spectra Live 2').

As discussed in the contextualisation, the genres upon which this work draws, and the major artists that have influenced the portfolio, tend to privilege either live or studio work over one or the other. My experiences at concerts by major Noise artists such as Keiji Haino and Aaron Dilloway were defined by the exhilarating liveness of their practice and their negotiation with the resistance embedded therein. My experience with their recorded output, by contrast, has to a large extent been less fulfilling as it tends to exist as a document of their live process, and where it succeeds it does so as an evocation of the liveness of that process. The Experimental Electronica artists I have discussed, with whose work I understand my studio practice as having a closer relationship, tend to think first and foremost for and through the studio. Their recorded output therefore presents as very much at home in this medium. Although I have attended and enjoyed live performances by these artists, it has always been framed as a re-presentation of their studio work which, whilst being familiar and dependable, always appeared more complicated and fraught, and less idiomatic. By contextualizing myself as a musician making Experimental Electronica that draws on Noise performance practices, I have sought to develop a practice for working within Experimental Electronica that celebrates and takes equal advantage of the affordances of live performance and studio-based composition. I have worked to

avoid making one form imitative of or beholden to the other, instead looking to create a rich and complex relationship in which they inform and inspire one another, and their separateness and interdependence is apprehensible and rewarding to listeners acquainted with both. John Pfeiffer once said in an interview with Mark Katz (2004, p.189), 'a recording is one thing, a concert is another, and never the twain shall meet.' I would rephrase it as 'a recording is one thing, a concert is another, and inevitably the two relate.' More cumbersome, perhaps, but more accurate as a description of the situation for composers living and working with electronics at this particular moment.

APPENDIX A
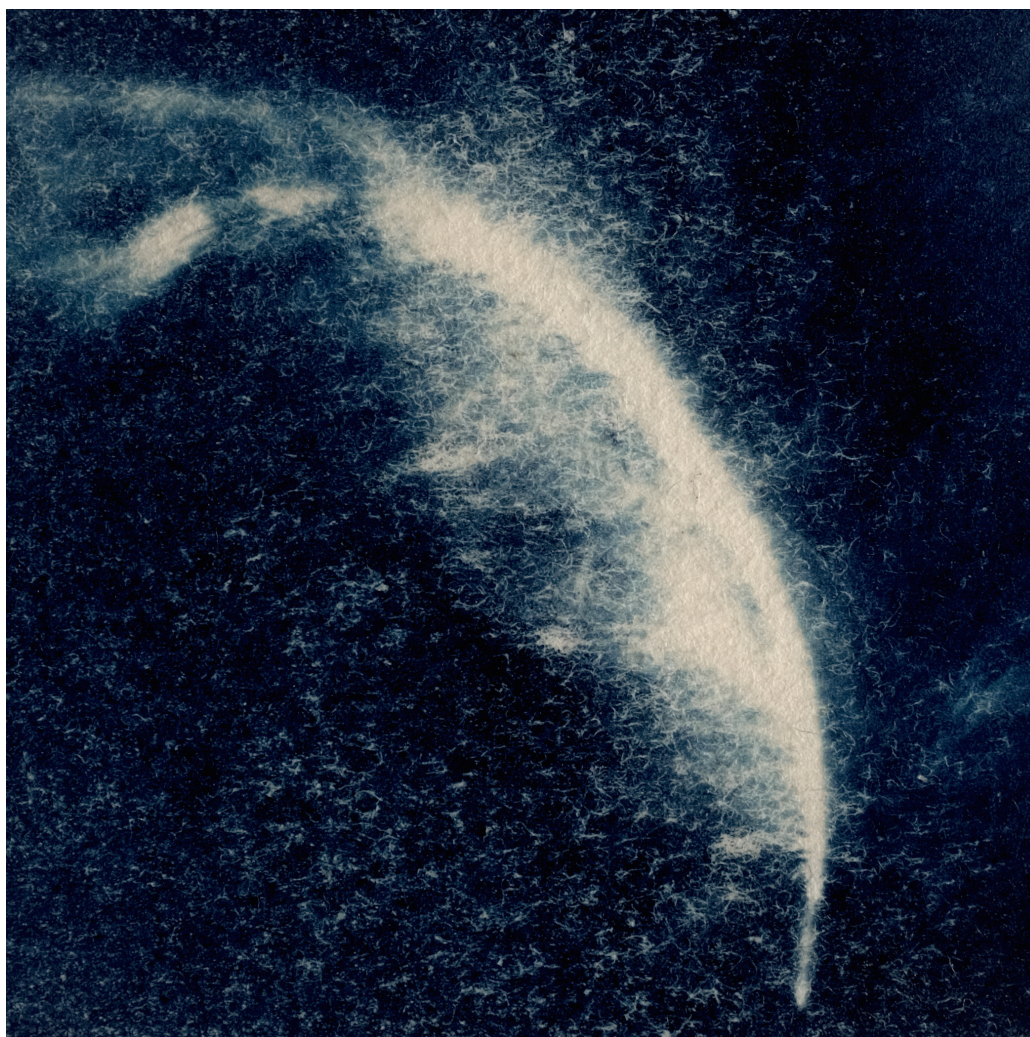
Appendix A1: Striking Distance EP Cover Art (Image: Emma&Beano of RTProjects. Photo: JB Stobbart)

Appendix A2: Striking Distance EP as a Digital Release (Bandcamp, Inc. 2019). Available at: https://spectra-sounding.bandcamp.com/releases
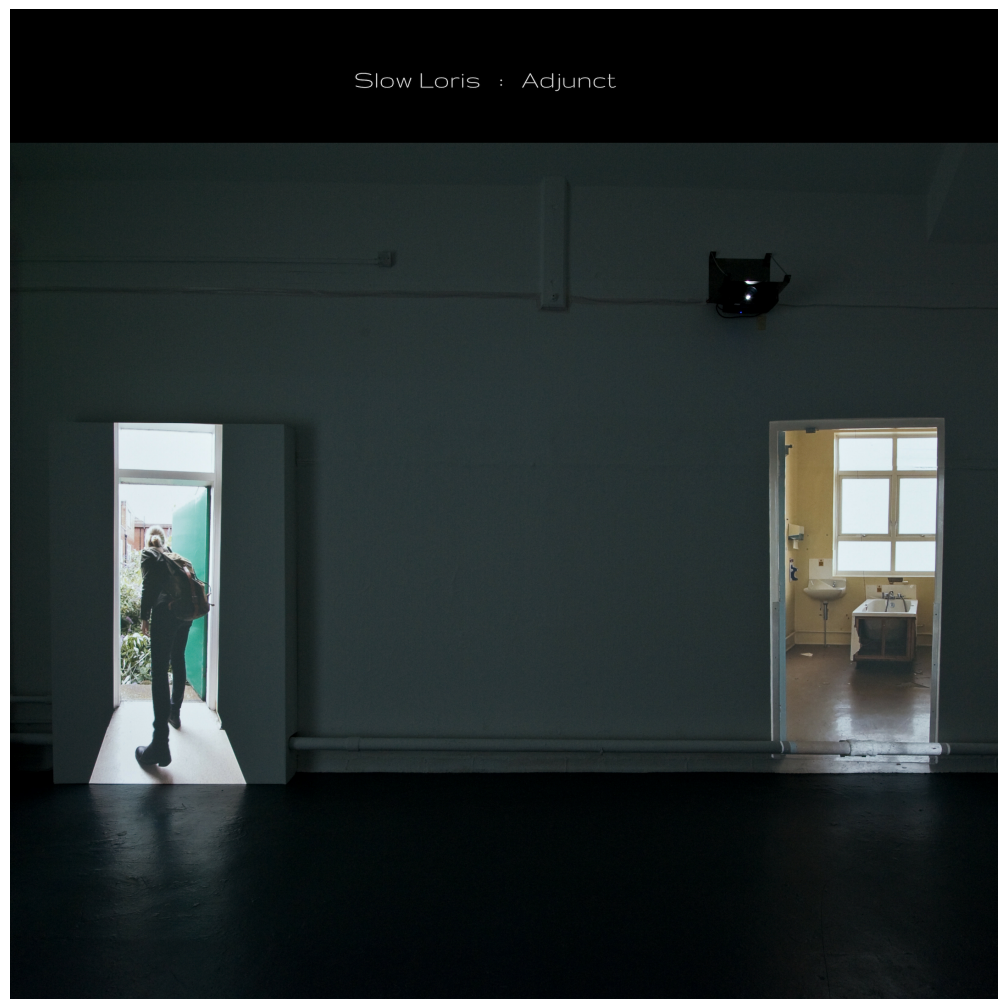
APPENDIX B

Appendix B1: Adjunct EP Cover Art (Image: Kathryn Brame. Photo: Colin Davison)

Appendix B2: Adjunct EP as a Digital Release (Bandcamp, Inc. 2019). Avatar Image: J. Smit (1904). This EP is

not currently available online due to potential interest from record labels / publishers.

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