Turntablist Performance Practice

Commentary in support of portfolio of recorded performances

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The candidate confirms that the work submitted is his own and that appropriate credit has been given where reference has been made to the work of others.

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Abstract

The work here presented is a reaction to a number of issues within contemporary turntablism. Firstly, the perceived disparity between the turntable traditions of hip-hop and the avant-garde has been analysed, and a number of new works created in order to explore the possibilities for greater hybridity between these two playing styles. Secondly, the rapidly changing landscape of turntable technology has been addressed, and conclusions drawn concerning both the new technical and sonic opportunities afforded by the new technology and the influence of these changes on existing playing styles and techniques. Finally, one of the defining characteristics of the instrument – the need to choose source material before playing – has been explored, in order to make judgements concerning the interplay between technique, style and the chosen sonic materials. These different strands of practice-led research all feed into an overarching discussion of idiomatic playing, and the findings of these projects help to define what that phrase might mean for contemporary turntablists.

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Chapter 1: Introduction

This chapter outlines the original motivating factors behind the creation of this portfolio, while also asserting my position on certain issues arising from the nature of collaborative and practice-led approaches to musical research.

Chapter 2: Research themes

Chapter two articulates the research themes and questions being addressed by my portfolio. The three broad aims of my research are discussed individually, and details of the specific performance projects that relate to each aim are given.

Chapter 3: Review of literature and other sources

A broad overview of current academic literature and online sources pertaining to the topic of turntablism is given here, in addition to discussion of which sources are the most relevant to the specific research aims of my work. The reasons for the literature being less relevant, in general, to my work than the practical work of previous turntablists are also discussed.

Chapter 4: Analysis of previous works by other practitioners

My analytical framework is discussed here, and a number of new analyses are presented of previous turntable works. Chapter 4.8 provides a detailed explanation of the specific techniques and areas of technique being focused on by the hip-hop and avant-garde turntable traditions respectively. This provides contextualisation and justification for the specific research themes of my work.

Section B: The Portfolio

Chapters 5 – 9 contain comment on and evaluation of the folio works themselves. There is a separate chapter for each of the folders contained within the portfolio, and full analyses are given of key works. Decisions over which works to analyse fully were based on evaluation of which pieces were the most essential in demonstrating either one research strand in the clearest fashion or multiple themes within a single performance.

Section C: Conclusions

Chapter 10: Hip-hop instrumental technique within avant-garde contexts

This chapter concludes the discussion, begun in Chapter 4.8, about the integration of hip-hop scratch and juggle techniques to the avant-garde turntable scene. Chapter 4.8 identifies those areas of technique that have previously not been utilised within the world of avant-garde turntablism; this in turn provides justification for the areas of technique being focused on throughout the folio works, and Chapter 10 examines the new insights drawn from analysis of the folio. Theories are presented concerning the relevance of the hip-hop techniques to the compositional priorities of the avant-garde and the ways in which the techniques have changed and developed as a result of my abstracting them from their cultural roots. This relates directly to the second main aim of the research.

Chapter 11: The impact of source material on technique and style

Relating specifically to the first main aim of the research, this chapter contains my theories and conclusions regarding the ways in which playing styles and instrumental techniques are impacted by the sounds being used. The influence of specific sonic and stylistic attributes, drawn from a wide variety of source sounds, is evaluated both in terms of the suitability of different techniques when manipulating different sounds, and of the ways in which the techniques have changed and developed as a result of engagement with different source material within my work.

Chapter 12: New technical and sonic opportunities afforded by DVS technology

This chapter relates directly to the third main aim of the research. Chapter 4.8 evaluated the impact of DVS among previous practitioners. This has fallen almost entirely within the realm of the technical,

hence the focus on the sonic aspects within my portfolio. However, Chapter 12 brings together both conclusions drawn from my own work and evaluation of previous performers' work, in order to provide a broader understanding of the technology's impact than could be derived from my folio alone.

Chapter 13: Polyrhythm as an idiomatic device for turntable music

This chapter relates specifically to the technical examples presented in Folder 6 and examined in Chapter 9. The polyrhythmic potential of the standard two-turntable instrument is explained in Chapter 13, and illustrated by the recordings contained within Folder 6. While a reasonably self-contained section of my research, this chapter also feeds in to the wider discussion of idiomatic playing, which is also central to Chapter 14.

Chapter 14: Wider relevance of this research

Chapter 14 brings together the different themes and strands of the research, with reference to the contemporary situation of DJ culture in general. I explain the importance of the different developments and experiments contained within my research, within the context of the continuing relevance of this instrument, and of the discovery of contemporary relevance for techniques and skills that are becoming less necessary within the wider arena of turntable performance. I also suggest ways in which my research could influence the future work of other practitioners and identify opportunities for further research arising out of this body of work.

Section A: Contextual Evaluation

Chapter 1: Introduction

For more than half a century, musicians have been manipulating pre-existing recordings using turntables, as a way to create new pieces of music. Within the culture of hip-hop, and specifically of DJ scratch battles, a wealth of instrumental technique has been developed using two turntables and a mixer, and to this day hip-hop DJs continue to discover new ways of expressing musical ideas using this technology. The turntables have also appealed to practitioners from the avant-garde, the directness of their physicality making them an attractive device with which to manipulate recorded sound. One of the key motivating factors behind the research presented here was a perceived disparity between the practices of these two groups of performers: I wanted to ascertain the extent to which the two traditions have crossed over. Have hip-hop techniques been used within the avant-garde, and if so, what techniques, or areas of technique are present? For those areas that are under (or simply not) represented, could hip-hop techniques be used effectively to fulfil a different set of compositional desires from those of the scene from which they came? I have attempted to answer these questions through analysing the work of previous practitioners, and subsequently creating new recorded works.

I also wished to develop a better understanding of the intrinsic qualities of this instrument, and how they can serve musical purposes, leading to a greater understanding of what 'idiomatic playing' might mean for a turntablist. One of the key differences from almost any other musical instrument is the ability to work with any recorded source sound: how does the sound chosen influence the style and technique of the performer? And how does the instrumental vocabulary of the performer influence their choice of sound? I have engaged with and utilised a range of sonic materials to explore these aims.

It is pertinent to address, within this introduction, the nature of practice-led research and the placement of my own research methodologies within that arena. Rust, Mottram and Till define practice-led research as '[r]esearch in which the professional and/or creative practices […] play an instrumental part in an inquiry'.[1] They go on to assert:

> This is not to say that practice is a method of research or, as some assert, a methodology. Practice is an activity which can be employed in research, the method or methodology must always include an explicit understanding of how the practice contributes to the inquiry and research is distinguished from other forms of practice by that explicit understanding.[2]

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[1] Chris Rust, Judith Mottram and Jeremy Till, 'Practice Led Research in Art, Design and Architecture' (Sheffield, 2007) p. 11.
[2] Ibid., p. 11.

In order to develop this 'explicit understanding of how the practice contributes to the inquiry', it has been important for me to design projects from a starting point of clear research aims and objectives, and to consider whether practice is the best way of answering the questions arising from these aims and objectives. For each of my three main research aims (Chapter 2) practice has been a naturally relevant and important activity to employ in creating the new understanding and knowledge here presented. In order to evaluate source material and its effect on technique, it is necessary to go through the process of physically applying turntable manipulations to a variety of sonic materials: this step in my methodology is clearly essential in uncovering a deeper understanding of the interplay between source material and instrumental technique than any purely theoretical consideration of the same questions. Likewise, the second aim of abstracting a range of hip-hop playing techniques from their cultural roots requires the creation of new musical works in order to be fully realised: this activity both demonstrates the relevance of those techniques within a new context and leads to discoveries that, once again, could not be imagined within a purely theoretical framework. When attempting to evaluate the new sonic opportunities of DVS technology[3] (my third main aim) the sound-world created by technical malfunction within the DVS cannot be imagined without the inclusion of practice as a vital methodological step: these sounds need to be created before they can be evaluated. In short, because my research themes are all predicated on creating new understanding and knowledge within the practical field of turntable performance, it follows that practice itself is a natural and essential component of the methodology required to assert meaningful conclusions on those topics.

As a turntablist, my instrument is one that has undergone huge technological changes in recent decades, with a move towards digital equipment being the most obvious change.[4] DVS systems are now the standard setup for hip-hop turntablists, while dance music scenes less focused on technique have moved towards CDJs,[5] laptop performances and manipulation via MIDI controller hardware. The new technologies bring new features and possibilities to performers, while concurrently making the pure turntable techniques 'old'. With this new change, and its pervasiveness within popular music scenes that used to rely on analogue turntables, it is too early to evaluate what the long-term effects will be on the musical practices and techniques of turntablism. My work here begins to evaluate the impact of the digital technology and to explore the opportunities it affords.

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[3] DVS stands for 'Digital Vinyl System' (some sources, mainly originating from from Rane (the manufacturer of the Serato DVS), state 'Digital Vinyl Simulation' as an alternative definition. The phrase 'vinyl emulation software' is also frequently used.). This is a system that integrates the turntables with a laptop computer. The performer uses timecode records that give temporal information to the laptop. The result is that a digital sound file can be loaded and then manipulated as if the sound were on a record.

[4] I remember being in the audience at the 2010 DMC world final when Tony Prince announced that digital setups would be allowed the following year. By 2012 one would have been hard pushed to find a single entrant using an analogue one.

[5] CD turntables.

The nature of practice-led performance research means there is much here that is subjective: it is my own instrumental technique and creative vision that are brought to bear in creating the folio works, and consequently in answering my research questions. However, I am also ideally placed – through my previous academic and performing experience – to do this work. I am a hip-hop turntablist with more than a decade of dedicated practice contributing to my instrumental vocabulary; between 2008 and 2012 I was active on the scratch battle scene and appeared in several UK finals of the DMC and other turntable competitions. I have also studied electroacoustic composition to Masters level at The University of Huddersfield and released records in a variety of electronic styles and genres. I therefore have both a comprehensive understanding of hip-hop turntable technique and a sound knowledge of the compositional priorities of other musical styles and genres. In spite of the subjective nature of the folio's creation, the ideas and conclusions that have flowed from this research are of importance to turntablism as a whole. There is also a wider significance, within academia, to the research presented here. As Chapter 3 will show, there has been little scholarly writing on the subject of turntablism. Presented within this commentary are thirteen new, detailed analyses of turntable performances, and insights into the current technical and aesthetic landscapes of different turntable traditions. In addition to their usefulness in supporting my discourse, these elements will also serve to deepen the understanding of this instrument within academic circles.

As part of this introduction, I also wish to clarify my thoughts on a number of issues pertaining to scope, style, language and process in this body of work. Firstly, the question of notation: it was decided early in my studies that any attempt on my part to redesign or develop scratch notation systems would detract from focusing on the key aims of the folio. Scratch notations follow the Turntable Transcription Methodology (TTM) system.[6] A key strength of the TTM is that it clearly shows the movements and interactions of the two hands, and this made it the most useful system in illustrating my points. While I believe there are significant weaknesses in the TTM method, especially when engaging with composers, it was nevertheless the best tool for my purposes here. Other notation systems were used in collaboration with composers at various points in the creation of the portfolio: each of these was project-specific and created to cater to the needs of the piece at hand.

Another issue is that of collaborative work. There are several collaborations contained within my folio (indeed, collaboration was essential for the advancement and testing of some of my central ideas) and I am aware this may raise questions of authorship and ownership within the research. However, in relation to the specific works here presented, the work undertaken in order to answer my specific research questions was completely my own. The same projects may also belong to somebody

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[6] Appendix 5 of this document explains the basic workings of the TTM system: this overview is sufficient to understand the notations used within this commentary. For a more comprehensive insight into the TTM notation, see John Carluccio, Ethan Imboden and Raymond Pirtle, *Turntable Transcription Methodology* (self-published, 2000). Available at < http://www.studioscratches.com/scratchy-100-ttm-turntablist-transcription-method-explained/> [last accessed 23rd June 2016].

else, as viewed in relation to a different set of research questions, but this does not detract from the fact that I am presenting independent work and findings here.

Finally, I wish to clarify some details in regard of semantics and terminology. Scratch techniques have often been given differing nomenclature at different times, usually as a result of independent discovery by more than one practitioner. For example, the technique that I refer to as a 'stab' can also be called a 'cut' or a 'forward scratch'. It is not my intention to claim any specific term as superior to any other, or to propose a standardised version of scratch terminology, but I have maintained an internal consistency throughout this document, so that each technique referenced will be called by the same name each time it appears. Also, I shall make frequent references to the 'hip-hop tradition' of turntable manipulation, as the techniques of scratching and beat-juggling were first devised within hip-hop culture. Some of these turntable scenes, particularly the battle scene, now make use of a wider variety of sonic materials than just hip-hop music; some of the examples given include source material from drum 'n' bass, electro, reggae, dubstep and dance music genres. However, it was deemed that the term 'hip-hop turntablism' would be appropriate, for my purposes, including battle routines and performances that do not necessarily contain only hip-hop music, as a way of differentiating this scene from the avant-garde tradition of turntablism (as typified by Christian Marclay).

Chapter 2: Research themes

The work I have undertaken can be classified into three broad aims:

i) The evaluation of source material and its effect on technique.

ii) The investigation of the application of hip-hop instrumental technique within other musical contexts.

iii) The investigation of the new sonic possibilities afforded by DVS technology.

There are similarities, and points of contact, between the first two aims, since source material is closely linked to compositional style and musical genre: however, they are distinct enough topics to warrant separate discussion.

The evaluation of source material and its effect on technique

The sound-worlds of hip-hop and avant-garde turntablism have remained relatively narrow in the past, especially given the instrument's unique ability to be played using any sound desired. This topic is addressed in the portfolio through a number of projects that take a variety of different sounds as their starting point. My work with Adult Mags uses environmental/found sounds, my two interpretations of *lines that have been drawn on photographs of sculpture* use wind band/keyboard sounds respectively, my collaboration with Alistair Zaldua, as well as some of my own scratch poetry works, use recordings of the spoken word, and *ctrl+alt+dvs* uses sounds derived from the technical malfunction of the DVS system.

Throughout these projects, I am focused on how the sounds used affect playing style and technique for myself as a turntablist. This influence exists at a technical level (for example, aspects of the sound such as attack, duration, texture, pitch etc. all have an impact on how I manipulate the sounds in performance), but also at an aesthetic level: style/genre of the original source material can also be a consideration for determining how to manipulate sounds.

The investigation of the application of hip-hop instrumental technique within other contexts

The essence of this aim is to further abstract the playing techniques I have learned as a hip-hop turntablist from their roots in hip-hop culture. As will be discussed in Chapter 4.2, there is a broad absence of these techniques from the majority of experimental work in the field; in particular, I have focused much of my attention on using beat-juggle techniques to meet the needs of a range of compositional priorities, and have specifically investigated the beat-juggle as divorced from its usual links with dancing (i.e. without the constraints of strict/regular meter). My own scratch poetry work

uses beat-juggling to extend certain vocal sounds, and to shift the focus between different parts of a word, my work with Alistair Zaldua uses the device to chop phonemes into patterns that could not be achieved using only one turntable, and other works within the folio explore the use of two copies in order to create delay/phase effects.

The investigation of the new sonic possibilities afforded by DVS technology

As discussed in Chapter 1, a DVS system is rapidly becoming part of the standard instrument for hip-hop turntablists. By contrast, this technology is not often used by practitioners from the avant-garde, and has even been consciously rejected by many within this tradition. Paul Bell writes:

> [F]actors concerning the inferiority of this DVS emerged. For example, when the timecode vinyl played back at very slow speeds the sound quality either degraded into noise or simply stopped altogether [...]. This was something I found difficult to adjust to [...] I came to realise just how much the DVS [...] had inhibited the practice I had been nurturing.[7]

The focus on DVS as a new instrument within my research requires a shift in perspective, away from DVS as purely an emulation of the analogue instrument, and even away from DVS as purely a convenient way to cue up a variety of digital sounds.[8] The aim here is to explore the sound-world of DVS itself, and to promote a view that the sonic differences of the digital medium can be used to creative effect. There are parallels here with the approach to the analogue instrument typified by Cristian Marclay. In Marclay's own words:

> [W]hen we play a record, we don't want to hear the surface noise, the pops and clicks of the scratches. But those are the sounds that [...] I want to use in my music, instead of rejecting them as technical malfunctioning sounds.[9]

My work within the performance folio has taken a similar approach to investigating the sound of the medium, firstly through deriving sounds from the technical malfunction of the DVS, and secondly through applying external processes to interrupt the control signal, in order to determine how the system will react sonically, and how the sounds derived in this way can be used creatively.

Throughout this commentary I shall be reflecting on these central aims: the objectives of this study are to propose new theories concerning the suitability of different source material to the instrument, to demonstrate different ways in which source material impacts playing (both technically and aesthetically), to demonstrate the efficacy of scratch and beat-juggle techniques when applied to a

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[7] Paul Bell, 'Interrogating the live: a DJ perspective' (unpublished doctoral thesis, Newcastle University 2009).
[8] Even the words 'simulation' within 'digital vinyl simulation' and 'emulation' within 'vinyl emulation software' imply inferiority. It is pertinent to note that, even within the hip-hop community, the popularity of DVS technology is based on technical, rather than sonic, considerations. There are still many voices on internet scratch fora espousing the view that vinyl 'sounds better'.
[9] Interview with Christian Marclay, <http://www.pbs.org/wnet/egg/231/marclay/interview.html> [last accessed 1 April 2014].

range of musical styles/compositional desires, to propose (informed by discussions of source material, technique, and musical style) new theories regarding the idiomatic playing of the instrument, and to evaluate the sonic properties/possibilities of the new digital instrument of turntables with DVS system. In an age when much of the purpose, and many of the skills, of DJs have been superseded by newer technologies, this discourse also seeks to demonstrate the continuing relevance of the turntables as a musical instrument.

Chapter 3: Review of literature and other sources

There is only a limited amount of scholarly writing relating to turntablism, which highlights the importance of developing academic research in this area. However, there are certain key texts, and other sources, that form an important part of the contextual background for my research. The most significant monograph in this area is Sophy Smith's book *Hip-Hop Turntablism, Creativity, and Collaboration.*[10] Smith's book focuses on turntable teams, and on analysing the specific compositional processes of those teams: however, within this framework the book addresses many wider issues and has broader aims than simply the understanding of the collaborative compositions in question. As stated in the book's introduction: '[t]he key contribution of this book is in the development of an analytical methodology specifically for turntable music'.[11] In addition to analysis, the book also proposes a new notation system, and aims to move away from the sociological discourse that is common to most hip-hop research, favouring instead a focus on purely musical aspects of composition and performance.[12] This latter quality of Smith's book places it as a key resource for myself, predicated as my research is on musical aspects of DJ performance: however, her analytical and notational systems have a clear focus on the understanding of the macro qualities of the performance, rather than the finer details of individual techniques or gestures.[13] The analytical system Smith proposes is also specific to ensemble playing, with some sections being dedicated to the interplay between the different members of the group: for these reasons this approach is not an appropriate one for the specific research questions I wish to answer. However, the discussion of analytical systems, and their relative merits in reference to turntable music, is useful in informing my own decisions as to a suitable framework for analysis.[14] This development of a structured approach is of prime importance in demonstrating the ways in which my portfolio aims to develop the art of turntablism. Other themes within the book, such as Smith's overview of turntable technique, discussion of context and analysis of various notation systems, are also of importance within my work.[15]

Sophy Smith is also the author of other papers and articles, most notably 'Compositional strategies of the hip-hop turntablist' from 2000.[16] There is again information given regarding playing technique (the technique section of the 2013 book is adapted from this earlier version), and a pertinent theory regarding composition: 'the division between performer and composer is rarely an issue in DJ

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[10] Sophy Smith, *Hip-Hop Turntablism, Creativity and Collaboration* (Farnham: Ashgate, 2013) .
[11] Ibid., p. 1.
[12] Ibid., pp. 1-2.
[13] Ibid., pp. 94-138 & Sophy Smith, *Hip-Hop Turntablism, Creativity and Collaboration: notation to accompany the book* (2013) <www.turntablecollaboration.com> [last accessed 24 May 2014].
[14] Smith, *Hip-Hop Turntablism, Creativity and Collaboration,* pp. 71-9.
[15] Ibid. pp. 43-9, 15-28, & 81-101.
[16] Sophy Smith, 'Compositional strategies of the hip-hop turntablist', *Organised Sound,* 5.02 (August 2000), 75-79.

genres as the DJ combines both roles'.[17] This comment underlines the fact that there has been little use made of this instrument by composers at large; I believe, however, that greater engagement with composers can be beneficial for the development of the instrument. Throughout my portfolio I shall demonstrate ways in which collaboration with composers from other traditions, outside of turntable culture, can be a catalyst for development both technically and aesthetically.

Professor Mark Katz is another writer of books and articles on music technology and American music, including DJ-focused works. The most relevant text to my research is *Groove Music: The Art and Culture of the Hip-Hop DJ.*[18] While this book focuses on the cultural and sociological context of turntablism, there are important observations here that have relevance to my work, particularly Katz's analyses of the relationship between hip-hop, battle culture and the development of turntable techniques. (Battling, i.e. competitive performing, is a central theme within hip-hop culture, derived from a desire to turn inner-city gang affiliations to positive ends. As George Lipsitz states, when discussing turntable pioneer Afrika Bambaataa: 'Bambaataa tried to channel the anger and enthusiasm of young people in the South Bronx away from gang fighting and into music, dance, and graffiti'.[19] Bambaataa himself discusses this cultural development in the documentary film *Scratch*.)[20] In tracing the historical development of turntablism, Katz opines that the most creative developments have taken place in battles such as the Disco Mix Club (DMC), International Turntable Federation (ITF) and International DJ Association (IDA) competitions, and that these are the areas of DJ culture that are (musically) the furthest removed from mainstream hip-hop: a view which supports my central aim of developing turntable music through the further abstraction of these techniques from their roots in hip-hop.[21] By contrast, in the conclusion to the book, Katz notes that 'most DJs do not compete, or only do so for short periods': this is a pertinent observation, since the cultural norm of battling to gain recognition before returning to more dance floor-oriented performances helps to explain why these techniques have not been applied within a wider range of musical genres in the past.[22]

Nowhere is there a complete methodology for scratching and beat-juggling techniques; keeping up to date with technical developments in this field requires engagement with a variety of sources, with particular focus on DVD and online resources. Descriptions of technique do occur in books, for example Brewster & Broughton's *How to DJ (Properly),* but the technical focus here is on mixing, with only the most basic scratch or juggle patterns being described.[23] The same is true of

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[17] Ibid., p.79.
[18] Mark Katz, *Groove Music: The Art and Culture of the Hip-Hop DJ* (New York: Oxford University Press, 2012).
[19] George Lipsitz, *Dangerous Crossroads: Popular Music, Postmodernism and the Poetics of Place* (London: Verso, 1994) p.26.
[20] *Scratch,* dir. by Doug Pray (Palm Pictures, 2001).
[21] Katz (2012) pp. 127,8.
[22] Ibid., p. 252.
[23] Frank Broughton and Bill Brewster, *How To DJ (Properly): The Art And Science Of Playing Records* (London: Bantam, 2006).

other DJ manuals in the popular press such as John Steventon's *DJing for Dummies*[24] or Danny Rampling's *Everything YouNeed To Know About DJing And Success.*[25]A number of instructional DVD sources exist that aim to teach scratch techniques, notably Q-Bert's *DIY* series[26] and DJ Shortee's *DJ 101* and *DJ 202* videos.[27] There are also several online and DVD projects aimed at classifying scratch technique, including *The Ever*[28], *Q-Bert Skratch University*[29] and *Scratchlopedia Breaktannica.*[30] As previously mentioned, none of these are comprehensive, being either focused on the basics, no longer updated or (in the case of the *Scratchlopedia*) focused on advanced patterns and combinations to the exclusion of some more basic techniques. Internet fora are often the place to look for discussion over new patterns and techniques, the most important being *Digital Vertigo*[31] (*Skratchlounge*[32] was important to my development in the early years of this project, but no longer exists). Other internet fora that are useful in finding links to interesting examples of other practitioners' work include *Turntablist Network*[33] and *Alternative Turntable Music Forum,*[34] although these sites have seen little activity in recent years. Engaging with the continuing aural tradition is another important way in which to stay informed of developments; the kind of ethnographic research that comes from meeting/practising with other turntablists is a key aspect of my technical development.

Another prolific academic writer on the subject of turntablism is Kjetil Falkenberg Hansen. Hansen produced his doctoral thesis, 'The Acoustics and Performance of DJ Scratching: Analysis and Modeling', in December 2010.[35] Hansen's main aim was to develop an understanding of scratching by designing computer tools that will model the acoustics of scratch performances (these tools are intended to allow the user to execute performances that are true to the sonic nature of scratching, without the need for proficiency in turntablism). In creating the necessary knowledge to affect this modelling, Hansen has performed detailed analyses of a number of scratch performances. However, there are methodological weaknesses in these studies due to the small sample sizes used: only one DJ

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[24] John Steventon, *DJing for Dummies,* 2nd edn (Chichester: John Wiley and Sons, 2010).

[25] Danny Rampling, *Everything You Need To Know About DJing And Success* (London: Aurum, 2010).

[26] DJ Q-Bert, *Do It Yourself Vol. 1* (Thud Rumble Recordings, 2003) and *Do It Yourself Vol. 2* (Thud Rumble Recordings, 2003).

[27] DJ Shortee, *DJ 101* (Faust and Shortee Music/Eyekiss Films, 2002) and *DJ 202* (Faust and Shortee Music/Eyekiss Films, 2004).

[28] Ricci Rucker, *The Ever* (2003) < http://www.studioscratches.com/the-ever/> [last accessed 2 May 2014].

[29] DJ Q-Bert and others, *Q-Bert Skratch University* (2014) < http://artistworks.com/skratch-lessons-dj-qbert> [last accessed 2 May 2014].

[30] DJ Q-Bert, *Scratchlopedia Breaktannica* (Thud Rumble, 2007).

[31] *Digital Vertigo Forum* (2014) <www.digitalvertigo.co.uk/forum/> [last accessed 2 May 2014].

[32] *Skratchlounge* (2014) <www.skratchlounge.com> [last accessed 1 May 2014].

[33] *Turntablist Network* (2014) < http://www.djgeometrix.com/message_board/> [last accessed 2 May 2014].

[34] *Alternative Turntable Music Forum* (2011) < http://forum.itchymuzik.com/index.php> [last accessed 2 May 2014].

[35] Kjetil Falkenberg Hansen, 'The Acoustics and Performance of DJ Scratching: Analysis and Modeling' (unpublished doctoral thesis, Stockholm, Sweden, 2010).

was used in the first two included papers[36] and three DJs in the third.[37] This can lead to some over-generalised conclusions such as 'a typical (two-handed) technique […] manipulates a single-onset, vocal sound sample […] from the start'.[38] This comment typifies the way in which these studies have failed to explore fully the growing popularity of multiple-onset sounds in contemporary scratch culture, as seen in scratch drumming and scratch sentence samples.[39] The way these multiple-onset sounds allow the performer to move forwards (or backwards) with the record more than once in succession, and thus place sonic attacks (or reversed samples) with more freedom within a scratch phrase, is both an interesting and important aspect of the acoustics of contemporary hip-hop scratching, and is one that I have explored in my own work. Despite these limitations, Hansen's analyses are extremely detailed and provide a useful starting point from which to consider the current vocabulary of scratching: for example, observations such as '80% of the [record direction] changes were silenced' and '88% of the played sounds came from the first half sample' give a precise view of the way in which sounds are typically being manipulated by the hip-hop turntablists included in these studies, which in turn helps me to discuss ways in which technique could be developed or changed.[40]

Hansen is also interested in source material (which forms a major part of my research), and states in his thesis:

> It is understandable that the playing is adjusted to fit the current sample, such that for instance there will only be short movements when the samples are short, less use of the crossfader if the sample itself has several onsets, more muted backward movements if the sample has a fast decay, and so forth.[41]

This observation (and the fact that this is one of the least developed strands in Hansen's work) support my decision to focus on different sound-worlds and thereby develop a more complete understanding of the effect of source material on playing style and technique. Hansen's main experiment in this area approached the subject the other way around from my own, i.e. with the techniques as a starting point. Performance data drawn from the third research paper was mapped to different sounds, in order to determine whether expert and non-expert listeners would evaluate the techniques being used as less

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[36] Kjetil Falkenberg Hansen, 'The Basics of Scratching', *Journal of New Music Research,* 31:04 (2002), 357-365 and Kjetil Falkenberg Hansen and Roberto Bresin, 'Analysis of a Genuine Scratch Performance', in Antonio Camurri and Gaultiero Volpe, eds., 'Gesture-Based Communication in Human-Computer Interaction: 5th International Gesture Workshop'*, Lecture Notes in Computer Science,* 2195 (2004) 519-528.

[37] Kjetil Falkenberg Hansen, Marco Fabiani and Roberto Bresin, 'Analysis of the Acoustics and Playing Strategies of Turntable Scratching', *Acta Acustica united with Acustica,* 97:02 (March/April 2011) 303-314.

[38] Hansen, 2010, p. 45.

[39] Scratch drumming is the manipulation of percussion samples using scratch techniques, typically using samples with multiple drum hits placed closely together; scratch sentences are other multiple-onset sounds arranged for scratching (typically, though not always, vocal snippets). Examples of DJs using these multiple-onset source materials can be found in DJ Unkut, *Beware of ze Average Man, YouTube* <http://www.youtube.com/watch?v=n4UJ31EDqmU> [last accessed 6 April 2014] and DJ Muzzell, *WTK Worldwide Scratch Battle 2010: Muzzell, Youtube* < http://www.youtube.com/watch?v=dlS--tAes_w> [last accessed 29 May 2014].

[40] Hansen, 2010, p.16.

[41] Ibid., p. 47.

effective when the performance was transplanted to a series of different sounds: it was then shown that the recordings were evaluated as less successful as the sonic properties of the sound used moved further away from those of the original sample.[42] Conversely, my work in this area has taken source material as a starting point, in order to determine the effects of different sound samples on playing technique: however, the results of Hansen's experiment can nevertheless be seen to strengthen my claim that the sonic properties of the source material used has an important bearing on subsequent manipulations of that material.

The work of Paul Vandemast-Bell is also relevant to my research: Bell completed a PhD in turntable performance in 2009, and his doctoral thesis is titled 'Interrogating the Live: A DJ Perspective'.[43] Bell is an improviser and DJ who learnt the techniques of hip-hop turntablism as a reaction to issues of 'liveness' in using pre-recorded music within an improvisational setting, and in the belief that these techniques would enable a greater degree of spontaneity and expression using the turntables compared to the techniques of playback and mixing learnt from practice as an electronic music DJ. Although Bell's trajectory as a performer is opposite to my own, i.e. he is an experimental improviser first and hip-hop turntablist second, this use of scratch techniques to afford a DJ more immediacy within an improvisational performance is a significant aesthetic similarity between Bell's performances and my own. The most obvious difference between my practice and his is the absence of beat-juggle techniques in Bell's work; there are also clear differences in the range of scratch techniques, and style of scratch manipulations being focused on, in our respective portfolios. A video of Bell performing, and a comparison between his approach and mine, is discussed within the key performances section.

Many academic papers are focused on the results of digital enhancements of the instrument: largely these are specific to the exact hardware/ software designs of those authors, and therefore of limited use in my research. One example of this is the paper by Takuro Lippet: *Turntable Music in the Digital Era: Designing Alternative Tools for New Turntable Expression.*[44] Lippet outlines two projects here: 'Lupa', designed to allow a turntablist to layer performances in a particular way, and 'Audile', a system for turntable-specific semi-automated signal processing. Since these are not the systems I am using, the results of these studies are not directly relevant. There are, however, insights to be found regarding the general aesthetics of this kind of work that are useful to me in planning for my own technology-focused projects. There is a parallel between the objectives of the 'Lupa' project ('allowing the DJ to spontaneously compose with fragments of sounds rather than entire tracks')[45] and my own work using looping technology to build larger textures from more minimal source

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[42] Ibid., pp. 47-9.
[43] Paul Bell, 'Interrogating the Live: A DJ Perspective' (unpublished doctoral thesis, Newcastle University, 2009).
[44] T.M. Lippet, *Turntable Music in the Digital Era: Designing Alternative Tools for New Turntable Expression*, (Paris: NIME, 2006).
[45] Ibid., p. 72.

material. Also of interest in Lippet's article is the statement that 'simply mapping reverberation to platter speed proved not to be that sonically interesting'.[46] This highlights an important consideration when experimenting with the control of different parameters within a turntable performance: care must be taken that the performer has real control over these manipulations, rather than processes being controlled arbitrarily as a by-product of actions being made by playing the instrument. This is a potential hurdle since many techniques involve careful movement of both hands; it is easy to imagine having difficulties as a performer when trying to introduce further manipulations. The control of effects and other processes could be limited to use with certain one-handed techniques (e.g. tear scratches or baby scratches), adjusted in between other movements (e.g. at the ends of phrases) or implemented with footswitches.

Also in the field of digital turntablism, 'Off the Record: Turntablism and Controllerism in the 21st Century (Part 1)' is a conversation between the authors on the subject of digital developments within the DJ scene.[47] The article gives a succinct explanation to the reasons behind many DJs resisting certain digital developments of the instrument: 'the commodification of "DJ culture" as it loses touch […] with what constitutes the virtuosity of playing an inventive instrument' is seen as a danger of the newer technologies by the authors.[48] There is a signpost here to the wider value of my research: many of the projects I have undertaken aim to show the contemporary relevance of techniques and skills that are being replaced by technology in mainstream DJ culture.

Papers also exist that analyse the aesthetic qualities of specific DJ performances/recordings. For example, Michael Philips's doctoral thesis provides a detailed evaluation of the semantic and ontological meanings to be found in two turntable mix albums.[49] Alinka Greasley and Helen Prior's article, 'Mixtapes and turntablism: DJ s' perspectives on musical shape', analyses the results of ethnographic research into the concept of musical shape as applied to DJ practices.[50] There are parallels between the DJs' shaping of mixtapes and use of the 'existing shape inherent within the musical materials' and my own structural concerns in many of the folio pieces: also between 'Rich's descriptions of how the amount of existing musical shaping within tracks influences his mixing style' and the previously discussed area of the influence of source material on technique.[51] Especially relevant here is the discussion of the visual representations of tracks within DVS software, and the variations in DJ practices that are fostered by the availability of this added visual information in

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[46] Ibid., p. 74.
[47] Tobias C. Van Veen & Bernardo Alexander Attias, 'Off the Record: Turntablism and Controllerism in the 21st Century (Part 1)', *Dancecult: Journal of Electronic Music Culture,* 3.01 (2011).
[48] Ibid.
[49] Michael Philips, 'The Aesthetics of Consumption in the Age of Electrical Reproduction: The Turntablist Texts of DJ Shadow and Cut Chemist' (unpublished doctoral thesis, University of Ottowa, Canada, 2012).
[50] Alinka Greasley and Helen Prior, 'Mixtapes and turntablism: DJs' perspectives on musical shape', *Empirical Musicology Review,* 8.01 (2013) 23-43.
[51] Ibid., p. 37.

performance.[52] This integration of visual data when playing using a DVS is a theme that will be commented on further in the discussions of my own performance practice.

Miriama Young's article analyses two examples of vocal samples being manipulated by turntablists.[53] This paper is particularly relevant, since Young chooses examples from both hip-hop and the avant-garde. While Young claims that Marclay, the experimentalist, is 'exploring techniques not dissimilar to those used by hip-hop artists such as Q-Tip', it is evident from her analyses (and from listening to the recordings she is discussing) that there are actually clear technical and creative differences in the manipulations applied to the human voice in each case. In discussing Marclay's performance, Young states:

> In one instance, 55 seconds into the piece, the high vocal note is caught and held for over 45 seconds. At this moment, the suspended voice signals the moment of both technological and physical mediation, the point at which Callas's acoustic presence all but disappears, only to be replaced by the voice object and the sound of the composer/DJ's intervention upon it.[54]

This effect is achieved, as Young explains, by 'the playback of archival records that are mixed and manipulated simultaneously on multiple turntables, and the result recorded'.[55] My own work with the human voice (particularly in *Scratch Poetry*) demonstrates a similar effect, that of using the turntables to extend certain components of the sound object: however, the technical process through which this is achieved in my piece is markedly different, using scratch and beat-juggle techniques taken directly from the vocabulary of hip-hop playing, producing a piece that integrates hip-hop technique to a much greater degree than the Marclay example. The techniques I am using also create greater distinctions in this shifting of focus between sound object and DJ interventions, since having a wider pallet of techniques from which to choose allows me to change the sonic properties of the original samples to greater and lesser degrees within a piece.

This chapter has outlined the key sources that have both enhanced my understanding of the turntables as an instrument of musical creation, and informed the direction, aims and objectives of my research. Further evidence drawn from these, and other related sources, will be used throughout this commentary in order to contextualise my performance practice within the field of turntable performance as a whole.

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[52] Ibid., pp. 35-8.
[53] Miriama Young, 'Scratch and Mix: Sampling the Human Voice in the Metaphorical Phonograph', *Contemporary Music Review,* 29.03 (2010) 337-345.
[54] Ibid., p. 343.
[55] Ibid., p. 342.

Chapter 4: Analyses of previous works by other practitioners

4.1: Analytical methodology

A number of analytical systems have been considered in approaching this work: particularly useful was the analysis offered by Sophy Smith into various existing methodologies tailored specifically towards hip-hop and popular music.[56] The system proposed by Smith in answer to this discussion is specific to team composition/performance, and is therefore not appropriate for my use. However, in discussing previous systems, Smith draws two pertinent conclusions regarding their inappropriateness to turntable music: firstly that these systems tend to be predicated on songs and song form within popular music, and secondly that the general inclusion of recording techniques/technology as a category for analysis is not always relevant to turntable music.[57] Turning instead to analytical systems devised specifically for electroacoustic/acousmatic music, Lelio Camilleri and Denis Smalley speak of identifying 'pertinences', ranging from the individual sonic properties of sound-objects to the structural arrangement of sounds and the associated connotations of human experience that may be implied by those sounds.[58] They opine that '[i]n the absence of a viable ready-made analytical system', each analyst is responsible for 'identifying, selecting and naming pertinences' relevant to the task.[59] In constructing the analyses presented here, it was important to adopt a systematic approach, in order to compare and contrast those pertinences most relevant to my research questions across a range of both my own work and that of other performers.

Also of interest is the phenomenological approach proposed by Lawrence Ferrara.[60] Ferrara addresses issues of subjectivity in the discovery of meaning within musical works (which is particularly relevant within the context of analysing my own work). The resulting system involves repeated listenings in order to comment on how the work is experienced at various levels and with various questions in mind. The system I have used (outlined below) follows this same format of repeated listenings, and my key considerations of turntable technique, sound-world, use of technology and musical style take prominence within this approach. This is not intended as a proposed new system for more widespread analysis of turntable music, but rather is a methodology created in order to evaluate the specific aims of this portfolio. The procedure is as follows, and is used for detailed analyses of previous works in Chapters 4.2 – 4.7, and then analyses of folio works in 5.1 onwards:

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[56] Sophy Smith, *Hip-Hop Turntablism, Creativity and Collaboration* (Farnham: Ashgate, 2013) pp. 71-9.
[57] Ibid., pp 77-8.
[58] Lelio Camilleri and Denis Smalley, 'The analysis of electroacoustic music: Introduction', *Journal of New Music Research,* 27.1-2 (1998) 3-12.
[59] Ibid., p.7.
[60] Lawrence Ferrara, 'Phenomenology as a Tool for Musical Analysis', *The Musical Quarterly,* 70.3 (1984) 355-373 pp. 359-361.

1. A first open listening: this stage of the analysis will identify the most immediately prominent features of technique, technology, source material, musical characteristics or ontological meaning, depending on the specific piece being analysed. Any relevant background information (what Smith terms 'evidence left by the artist') drawn from ethnographic or other research should also be discussed at this point.[61]

2. Explanation of the technology being used: specific technologies should be identified, as well as the specific features of those technologies being used by the performer. Broad identifications of how the technology allows the performer to operate should be given (to be subjected to a finer focus in sections 3-5). Technology used in performance may not be the only consideration here: technology used in composing or otherwise realising the piece prior to performance could also have significant musical impact.

3. Chronological analysis of instrumental technique: a complete description of the techniques being used throughout the performance. The exact parameters/boundaries of these techniques will be identified here, in order to show which affordances of the instrument are being used (and to use the scope of the technique as a differentiating factor between performances).

4. Analysis of musical features: a comprehensive description (chronological or otherwise) of the musical/aesthetic components of the piece. Discussions may address (but are not necessarily limited to) form, structure, phrasing, tempo, rhythm, metre, pitch, register, tonality, timbre, texture, dynamics, audio processes, development of sonic material, syntax and genre. As in section three, it is important to identify the boundaries of these musical devices in order to delineate the differences within a variety of turntable performances.

5. Analysis of the sound-world of the piece. This falls into three broad sections: source material contained within vinyl records or digital files (whether sourced prior to, or recorded during, performance), sounds derived from the technology being used and sounds/transformations of sounds specific to a particular technique or group of techniques. The relative importance of each of these three elements will be identified, as well as the specific timbral and stylistic components of the sound world.

6. Analysis of the interrelationship between the aspects discussed in the previous parts (2-5). This final section should address the ways in which technology, technique, musical aesthetic and sound-world work together and affect each other throughout the piece. There may be cause to comment on the foregrounding of a particular aspect or aspects over the others, or on a shifting of focus between the technological, technical, musical, and sonic components. In particular, this final summative

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[61] Smith, 2013, p.73.

section should offer insights into the affordances of the turntables as a creative tool, through identifying the key features and boundaries of the performance in question.

4.2: Analysis of Maria Chavez: *Live @ Texas Firehouse*

1. Open listening

Chavez is clearly a performer in the Marclay/Yoshihide mould, foregrounding the sound of vinyl itself over any sounds that may be pressed onto the record (the needle barely makes any contact with the grooves of the record throughout this performance). However, this is an active performance, with Chavez creating all the sounds through dextrous actions, rather than allowing the record to produce sound without intervention. As such, it is a performance that demonstrates a fairly tight control over the sounds being produced. The foregrounding of a single technique is evident, allowing the listener a very precise focus on one particular affordance of the medium.

2.Technology

Chavez uses one vinyl record, one analogue turntable and the mixer section of a PA head in this clip. Specifically, the EQ controls are the only part of the mixer that is manipulated, and the only part of the record played is the blank section (run-out groove) after whatever music pressed onto the record has finished.[62] The turntable tonearm is a particularly important part of the technological set-up here: the weight and balance of the tonearm, and hence the specific rhythmic contractions that occur as it bounces, form a significant aspect of the sound being derived from Chavez's playing of the instrument. Speed controls for the turntable platter, and manual manipulation of platter speed, also afford changes in the sound.

3. Technique

As previously mentioned, the range of techniques being used here is deliberately narrow: the bouncing of the tonearm and the manipulation of EQ form almost the entire technical content of the piece. Beginning with bounces of the needle in the right hand and EQ changes with the left, at 0'12" the left hand switches the platter to a faster speed before returning to the EQ controls. In the next section, from 0'20" – 0'37", both hands are used on the turntable, in order to continue bouncing the needle while also manually pushing the platter faster. The whole range of speeds possible with the platter is not explored, however: slow movements that could be achieved by switching the motor off and moving it manually do not appear, presumably because such speeds would not cause the needle to interact with the run-out groove in the way Chavez desires. The piece then finishes with a return to the original needle bounce/EQ combination technique.

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[62] The run-out groove is a single, looped groove at the end of a record. Containing no deliberate sound, its purpose is to keep the needle from bouncing away after the record has finished.

4. Musical content

The needle-bouncing style of playing produces percussive sounds: a key feature of the piece is the rhythms created by the interplay between the natural rhythm of the tonearm's bounce and the human interventions applied to it. Rhythms are not arranged in any metre, but rhythmic variation is achieved by varying the height of the bounces (slower motifs when the tonearm is raised higher, and faster successions of pop/scrape sounds when the needle bounces closer to the record). There is a constantly repeating rhythmic motif throughout the piece of two-three longer notes followed by a succession of shorter notes. Although rhythm is a key focus for musical interest within the piece, one of the main rhythmic devices of hip-hop turntablism is absent here: the cutting in and out of sound using a crossfader.[63] At 0'12", after the switching of the platter to a faster speed, the EQ is used to accentuate the higher frequencies: in this way, the turntable manipulations and the process applied to them are working in tandem, both focusing on raising the perceived pitch of the sound. As this happens, the sound naturally becomes harsher, and the attacks more pronounced. The manipulation of the EQ affects another timbral shift at 0'42" by dulling the sound and removing higher frequencies. From here, the latter part of the piece focuses on two distinct parts of the sound: the percussive pop of the needle's contact with the run-out groove and the pink noise texture of the scraping of the needle against the record. The focus shifts between these two sounds until the piece ends.

5. Sound-world

The first category of sounds, material pressed onto the vinyl record, is completely absent from this piece: the sounds heard are derived entirely from the medium itself. However, the sound-world Chavez derives from the turntable in this performance is notably different from many other examples of avant-garde turntablism, since there is a firm focus on my third category of sound, i.e. sounds specific to the performer's technical actions. Never is the system left to produce sound without human intervention: although the sound objects that are heard are all derived from the physical nature of the record and needle, their duration, envelope, pitch, and timbral and rhythmic development is under the performer's strict control at all times.

6. Summative analysis

There is a broad ABA structure to the piece, the middle section being defined by an increased focus on higher frequencies, while the A section has a smoother sound characterised by mid-range frequencies. There is, however, a progression in the way that the two main sounds (pop/scrape) become more homogenised towards the end of the piece, an effect created by focusing in on smaller movements (as opposed to the larger bounces of the needle towards the start of the piece). The techniques used work effectively together to create this increase in energy/intensity in the middle

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[63] A technique known, in hip-hop playing terminology, as transforming.

section of the piece. However, there is more that could be done to develop the central themes of the piece: another layer of rhythmic interest could be added by transforming the sound with a crossfader (this would be particularly effective if the fader were to imitate the rhythmic contractions of the needle's bounces), and the experimentation with platter speed could be extended to include slower speeds. There is a sense of irony in the way that the run-out groove (that usually serves to prevent the needle from bouncing/scraping) is the part of the record used to create these sounds: this focus on one small area of the record is in keeping with the minimal nature of the piece both technically and sonically. As such, it can be seen that, while this performance effectively explores the sonic nature of one particular technique in a way that develops coherently throughout the piece, there are a number of ways in which technique from the realm of hip-hop turntablism could be used to add further layers of musical interest while maintaining a focus on the same compositional and aesthetic priorities.

4.3: Analysis of DJ Sniff: *Live at STEIM* (extract)

1: Open listening

This piece is a demonstration of Takuro Lippet (DJ Sniff)'s most recent hardware setup, which he has named the 'Cut 'n play' system: Lippet's own explanations of this technology can be found at DJ Sniff's website[64] and on Paul Bell's internet forum.[65] The system aims to integrate live sampling into a DJ setup in a way that affords the performer creative and expressive control of this process directly from crossfader manipulations. Making use of a specific feature of the Rane Empath mixer, triggers are activated from crossfader clicks at both the left and right hand ends of the fader's trajectory to start/stop loop recording of the musical material being scratched. Additional pitch-shift processing of the sampled sound can also be activated using faster clicks, allowing certain fader techniques (drawn from the vocabulary of hip-hop scratching) to affect the sound in new ways.

This specific extract has been chosen due to the prevalence of hip-hop playing technique shown throughout the performance, and also because Lippet uses a combination of hip-hop and non-hip-hop source sounds in the piece. Although it is unfortunate that the full performance is not available, it was deemed that these features make the extract particularly relevant to my own portfolio and work. The hip-hop scratch techniques used are executed with precision, demonstrating the usefulness of this instrumental vocabulary in controlling both the source sounds and the hardware system (ways in which other techniques could be particularly useful with the 'Cut 'n play' technology will be discussed later). Use of idiomatic turntable devices, such as the gradual slowing of the platter to manipulate speed/pitch,[66] also form an important element of the sonic development within the piece. Two main sounds are used: drum samples and a piano. The treatment of each of these demonstrates ways in which the source sound used can influence technique, and this will also be discussed fully in a latter section of this analysis.

2. Technology

One turntable, vinyl records, mixer (with unique features that make the sampling setup possible), sampler with controller and Max patch are used throughout the performance. The crossfader is a key technological element, serving the dual purpose of cutting sound in and out from the turntable and also sending record on/off messages to the sampler. Clicking the fader at the right hand side (the 'record off' sampler message) is intrinsically linked to the scratch techniques being performed, since this is the same action that mutes the sound from the turntable; clicking at the left hand side ('record

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[64] Takuro Lippet, 'Tools', *DJ Sniff* (n.d.) <http://djsniff.com/tools.html> [accessed 10 July 2014].
[65] Takuro Lippet, 'cut 'n play – crossfader-triggered sampler', *Alternative Turntable Music Forum* (2008) <http://forum.itchymuzik.com/viewtopic.php?f=5&t=13&sid=43dbd3399d1f7252d6c45b34e32ee3bf> [accessed 10 July 2014].
[66] Known as a 'drag' scratch.

on' sampler message) is more independent of the scratches being performed, since closing the fader on the left does not affect the sound coming from the turntable.[67] However, there is still the consideration of the physical time it takes the hand to get to this position preventing the control of this message from being truly independent of the scratching element of the performance. This fader position also mutes the sound from the sampler during the performance, although this feature could easily be disabled using the mixer controls, if desired. The controller has a jog-wheel which allows the sampled sound to be manipulated in ways that echo the drags and reverses applied to the vinyl records, and its buttons allow the selection of different loops or of specific pre-programmed behaviours.

3. Technique

This piece shows a hybridity between hip-hop playing and the avant-garde that is absent from the majority of turntable performances: as such, it is of particular interest to this portfolio. At the beginning of the piece, while using exclusively drum samples, DJ Sniff executes a variety of hip-hop techniques. These can be categorised as faderless techniques, that do not involve the crossfader, and integrated fader/record techniques, which do; this distinction is an important one to make in reference to this piece since the crossfader also has other functionality within the setup. On the faderless side, there are rub scratches (simply moving the record backwards and forwards), drags (manual slowing of the record), and pushes (manual speeding up of the record). Related to the drag, there is also subtle use of the tear scratch (a manual pause of the record before pushing it again in the same direction, thereby breaking the sound up into smaller parts while also creating variation in pitch). At 0'34" Sniff makes creative use of switching the turntable motor off, in order to execute a more prolonged/emphasised reverse drag. The integrated fader/record techniques used are transforming (mentioned previously), forward stabs (using the crossfader to play only the forward movement of the sample, while muting the backward), chirps (starting with an open fader and muting only the portion of the sound in which the record changes direction), slices (a chirp performed with opposite fader movements, i.e. starting closed)[68] and twiddles/crabs (flicking 2/3 fingers past the fader to produce a succession of on/off clicks).

Sniff also uses the line faders on the mixer (the individual channel faders that run vertically) to cut mostly the sampler (but occasionally the turntable also) in and out, thereby switching different sounds on and off without simultaneously operating the sampler triggers. However, this manipulation

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[67] Turntablists refer to crossfader positions as 'open', i.e. somewhere in the middle of the two end points, or 'closed', i.e. pushed all the way to one side.

[68] The slice has only subtle sonic differences from the faderless rub scratch, since the only portion of the sound that is muted tends to be before the sample start. Its fader movements are ghost clicks, as discussed in Chapter 4.8. The slice makes more sense within combinations or backward scratch patterns; it is likely that its use here results more from the operation of the sampler triggers than from a deliberate desire to incorporate the slice scratch.

of the line faders does not go beyond simply fading sounds in and out, i.e. these faders are not used to execute scratch techniques.

At 1'33" the right (crossfader) hand is used to execute a drag on the jog-wheel of the sampler's controller, at the same time as a record drag is performed on the turntable. This is particularly interesting since, while reminiscent of beat-juggle manipulations, these hand movements are in unison, presenting a contrast to the more typical beat-juggle convention of moving the left and right records alternately (this is repeated at 2'13" to create a digital stutter in the sampled audio). In the following section, further use is made of the right hand in this way, pushing controller buttons in between crossfader movements. There are similarities here with my performance of a beat-juggle that incorporates controller buttons in *ctrl+alt+dvs*, although, as will be demonstrated, my treatment of this device incorporates more of the syntax of hip-hop beat-juggling into this hybrid technique.

At 2'18", left hand rubs/drags are combined with right hand manipulations of the EQ controls of the mixer, showing a creative departure from the standard crossfader/record placement of the hands during a scratch technique: this is another device that can be seen in my own work (applied to fast tear patterns). From 2'35" the idea of dragging the controller's jog-wheel is developed further with patterns that also incorporate a quick rub scratch and a push.

Upon the entrance of the piano sound at 3'10", while the same underlying set of scratch techniques is used, they are applied in new ways: the piano is introduced by a more complex arrangement of scratch combinations, and in particular by more complex combinations of fader movements. This results from the desire to return to the same point on the record for a more prolonged period of time than with the drum samples; since much of the variation up to this point has been derived from moving between different attacks/samples, it is natural for the technique to intensify in this way when dealing instead with a single repeated attack. As the section develops, Sniff isolates different notes/pairs of notes using the stab/chirp/slice techniques, while also ornamenting this with pushes and drags. At 4'52", the increase in intensity is underlined by a new faderless technique: the scribble (a very fast rub created by tensing the arm muscles to create a shake or spasm in the hand movement).

The final return to drum samples from 6'35" recapitulates much of the technique heard in the opening section, but at 7'05" Sniff develops the crab/twiddle fader movements to become more prominent than at any point previously. Rolling crabs/twiddles, in which the initial attack of the sample and change of direction with the record hand also create notes alongside the fader movements, are used to create longer streams of manipulated sound. This technique is applied to a long crash cymbal sound, again demonstrating how the technique used is appropriate to the sound being scratched, since a longer sample is necessary in order to have time to execute the crab fader movement before the end of the sound.

4. Musical content

The key musical feature of the piece is the interplay between live scratch manipulations and the sampled, looped phrases that result from the Cut 'n play system. Throughout the piece, Sniff reacts to the specific rhythmic nature of the loops created by playing complementary scratch phrases, and also by placing live attacks from the record in between attacks heard in the loop (a common beat-juggle device often used to double the tempo of a looped break, or to create double-time fills, within hip-hop playing). The sampling setup is constantly re-recording musical material over the top of previous loops, rather than any of the loops being kept in order to re-introduce them. This results in a linear development throughout the piece, with the sampled sound always being comprised of recently played material. The way in which the sound coming through the mixer is always comprised of one sampled loop and one live part also results in a fairly static texture (as compared to many sampling/looping setups which exist in order to build many layers of different loops that can be heard concurrently): however, DJ Sniff does create textural variation, both by using line faders to remove either part of the overall mix, and by varying the density of sound being played/recorded. This is achieved through both the scratch techniques employed and the original musical material chosen.

5. Sound-world

A common musical aesthetic of most turntable music is the shifting of focus between acousmatic sound and the manipulations applied to that sound, and this piece is no exception. Throughout the performance, DJ Sniff presents a wide continuum between sounds where the listeners' points of causal reference are simply 'a piano' or 'a drum', to those where the association is more likely to be 'a scratch'. By letting snatches of records play back without interruption, and varying the degree to which different scratch techniques distort the original sample, Sniff creates a constant back and forth between these two aspects of the overall sound.

The source sounds used have mostly already been identified: kick, snare and cymbal hits, piano and a very short vocal snippet at the beginning of the piece are the only musical materials used in this extract. There are points in the piece, most notably at 5'00", where pops from the vinyl medium form a significant part of the sound-world: however, since Lippet opines, in the internet forum thread previously mentioned, that 'if the interface improves i [*sic*] would be happy to play digital files', it can be extrapolated from this that the vinyl pops are not considered as a particularly intrinsic element of the sound-world by the performer.[69] The focus on pushes and drags in the scratch technique being employed has the effect of making the manner in which the platter moves/slows down/speeds up another integral part of the sound-world; there is also an effective juxtaposition between the sonic nature of the vinyl drag and a digital timestretch effect at 2'11". The digital half of

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[69] Takuro Lippet, 'cut 'n play – crossfader-triggered sampler', *Alternative Turntable Music Forum* (2008) <http://forum.itchymuzik.com/viewtopic.php?f=5&t=13&sid=43dbd3399d1f7252d6c45b34e32ee3bf> [accessed 10 July 2014].

the setup also influences the sound-world, particularly in the use of pitch shift processes, as activated by the faster fader movements.

6. Summative analysis

The Cut 'n play system clearly enables the performer to integrate live sampling in an expressive and creative manner. To use the crossfader to control sampling/looping has both benefits and limitations: it is a particularly useful device from the point of view of being able to operate these functions without disturbing the flow of the scratch performance, but also means that these two aspects are intrinsically linked in ways that might not always be desired. In summary, the Cut 'n play innovation seems most well suited to the exact type of performance DJ Sniff uses it for: a constantly changing soundscape that involves many short loops being recorded, played back instantly, and interacted with quickly in the performance moment. Two other options for recording and looping are explored within my portfolio, these being the use of foot-pedals and the involvement of a second performer. These have the advantage of separating the looping from the scratching, and thereby theoretically giving the performer the freedom to create loops at any desired point: however, both these systems have their own compromises, and it will be seen in the folio evaluations that the style of performance resulting from these setups are aesthetically very different from DJ Sniff's style.

The use of hip-hop technique is particularly pertinent here: it is clear that the instrumental technique of hip-hop turntablism gives Sniff two key advantages. Firstly, the ability to react quickly to the rhythms of the sampled loops hinges on having developed precise control of a range of scratch techniques, and secondly, the variety of timbral and rhythmic developments applied to the sonic material is made possible by hip-hop techniques. For the future development of performing using the Cut 'n play system, it would be useful to further develop the range of faderless techniques used (faderless techniques in particular because of their independence from the crossfader, which would then be freer to operate the sampling/looping). For example, more use of different tear patterns or the inclusion of tap-pausing (literally tapping the record in order to create pauses) would be an interesting direction in which to take this experimentation. There could also be greater use made of the line faders to perform chirps/stabs etc. independently of the crossfader. Two-handed faderless scratches such as swipes or hydroplanes could potentially be explored, although these would, of course, impede the crossfader hand from operating the loop controls during the scratch.[70] There are occasional elements in the piece that are influenced by the vocabulary of beat-juggling: while the traditional way of using beat-juggle techniques (using two turntables) gives the performer more precise control over exact rhythms and loop points, again DJ Sniff creates a very different sound-world using his system

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[70] Swipes involve using the hand that would normally be operating the crossfader to nudge the record during its forward/backward trajectory, thus creating extra notes, while a hydroplane is executed by dragging the record against the tip of a finger in order to create a fast juddering past the needle. Both techniques use left and right hands on the record simultaneously.

from the one which would result from traditional beat-juggle manipulations of the same original material. This is another key difference between Lippet's practice and my own: he is concerned with building new tools to enhance the turntable setup, while I am developing the more recognisable hip-hop (two turntable) instrument.

The minimal amount of source material used in the piece allows for a greater focus on the manipulations being applied to those sounds. While there are recognisable hip-hop sounds in the piece (i.e. drums), their treatment does not follow hip-hop conventions of pulse and rhythm, thereby abstracting the notion of scratch drumming from the genre within which it is usually heard. There are obvious parallels here with some of the central themes in my work: however, our individual approaches to achieving these aims differ in a number of important stylistic ways. In addition to those aspects previously discussed, the range of scratch/juggle techniques used and range of sonic characteristics of source material being explored are significantly different.

4.4: Analysis of Christian Marclay: *Live on Night Music*

1. Open Listening

There are a great number of works and performances by Marclay that explore the vinyl medium from different conceptual angles. This particular performance has been chosen for inclusion here for a number of reasons. Marclay is using unmodified record players here, and is manipulating records live: while works such as *Record Without a Cover,* or Marclay's phonoguitar performances, may more perfectly express Marclay's creative vision, this performance displays a greater proximity to the hip-hop playing tradition with which this folio is concerned.

There is a clear focus on the visual in this performance: a record made of pieces of other records seems to be used just as much for its visual impact as for the sound it produces, and even the throwing away of used records is an integral part of the performance, becoming a comment on the disposability of these artefacts of our contemporary culture.

2. Technology

Marclay uses four vintage analogue turntables; there is also a mixer seen as part of the set-up, but this is not manipulated during the performance. Rather, the four outputs are all heard continuously throughout the piece, whenever there is a record playing on that particular machine. However, a type of mixing is achieved through using the individual volume controls of each turntable. Another important technological element is the use of pre-performance interventions being applied to the records themselves, as will be discussed in more detail in the following sections.

3. Technique

The piece begins with the playing of a record that has strips of tape across it, deliberately designed to skip the record player's needle in a percussive, looped rhythm. (This technique is appropriated into hip-hop battle culture in 2001, when DJ Kentaro uses a similar device in his routine.[71] However, there is no evidence to suggest that Kentaro is directly influenced by Marclay: the use of similar techniques may well be a case of independent creation.) Further records are introduced using the other turntables, one with a similar modification to the first, and others with stickers applied to them in order to skip the needle in a continuous loop (another technique that became popular in the field of hip-hop turntable battles). At 0'46", a colourful record constructed from pieces of other records is introduced, and throughout the changing, cueing up and playing of different records, Marclay continuously uses his turntables' volume controls to shift the focus between the different snippets of sound.

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[71] DJ Kentaro, *DMC 2001, YouTube* < http://www.youtube.com/watch?v=sXSyG352Wak> [last accessed 6 September 2014]. The section beginning at 4'15" demonstrates the technique in question.

At 1'42" a new technique enters: Marclay begins manually speeding up the rotation of records before letting them go, creating extreme variations in pitch. This motif continues, and is developed at 2'15" to become a two-turntable pattern that is technically not far removed from faderless beat-juggling: the two hands work in alternate motions to create a musical phrase from the resulting glissandi of both records. Marclay then slows the records down to create a drone texture over which the next musical idea is overlaid (at 2'30"). This is another pre-prepared effect: Marclay has drilled a new, off-centre hole for the turntable's centre pole, creating a portamento effect when the record is played. More pushes are used, and then at 3'12" Marclay drums on the surface of the record with the right fingertips in order to create a rhythmic sound. This particular technique is similar to DJ Woody's 'woodpecker' scratch: again, there is no evidence to suggest direct influence from Marclay on DJ Woody's technique.[72] This technique is juxtaposed with more pushes of the records, until the performance closes with long scrapes of a needle across the surface of one of the records.

4. Musical content

The beginning of the piece is driven by rhythmic interplay between the various snatches of music and percussive loops; the entrance of the first pitched (low-register piano) sound at 0'26" is initially synchronised with the percussive, clicking loop, but as the two parts drift apart, the overall sound becomes more chaotic. This effect is enhanced by the rapid introduction of more percussive loops, intensifying the texture of the piece and creating a bustling sound as different snippets of recycled musical culture vie for attention. This soundscape continues to shift, with more insistent rhythms and harsher timbres occasionally dominating the mix, until at 1'44" there is a sudden change in the piece: introduced by an extreme upwards pitch bend that gradually settles back to its original speed, a new orchestral sample becomes the only sound heard. The orchestral sample has a much fuller frequency spectrum than the previous material, and so the effect here is of the mix being stripped back, yet simultaneously expanding. Following this moment, the orchestral sample is accompanied by swirling textures, and the focus again shifts between the different elements of the overall sound, until this section culminates in the aforementioned 'faderless beat-juggle' phrase. The previously battling elements of orchestra and record glissandi now become congruent, as the record manipulations follow directly the rhythmic and melodic shape of the orchestral part.

At 2'24", the sudden settling of the piece into a drone texture provides a sharp contrast with the fast-paced development of the piece so far. This is used to introduce the slowly undulating texture of the record with the off-centre hole. A gradual reintroduction of more rhythmic material brings the piece back around to the same kind of chaotic texture that was heard in the opening section; a coda to the piece is then provided by the harsh, creaking sound of the needle scrape.

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[72] DJ Woody, '2002 Winning World Vestax set practice', *YouTube* <http://www.youtube.com/watch?v=I1eL0gZgjYo> [last accessed 6 September 2014]. The woodpecker scratch is seen from 0'41".

<u>5. Sound-world</u>

From the beginning of the piece, the sound-world of the medium itself is afforded a particular prominence; the opening record with the tape stuck onto it produces pops and clicks that are a product of the technology rather than of any sound actually pressed onto the record, and many of the extreme pushes of the records produce streams of sound that owe more to the medium than to their original sound-worlds. However, while Marclay is known for foregrounding these medium-specific sounds, the musical content of the records is also surprisingly important in this performance. Snatches of various instruments are highly evocative of a high-speed dash through a world where there is no time to stop and listen: the tension between these sounds almost fighting to be heard, and the turntable noise that constantly threatens to obliterate them, provides much of the momentum of the piece.

<u>6. Summative analysis</u>

Much of the technical content of the piece stems from the preparation of the media used, rather than playing techniques used in the performance moment. In general, the piece is a carefully prepared one: in particular, the moment of synchronicity at 2'15" demonstrates how well-planned the performance is. The performance contains numerous points of contact with hip-hop playing, even pre-empting certain devices that will later appear within the hip-hop scene. The importance Marclay places on visual aspects of his performance also finds parallels within hip-hop battle culture: the posturing and body tricks of some DJs bring a visual element to their battle performances, added to the simple fact that hip-hop turntablism is linked to graffiti art (another of the primary creative expressions of hip-hop).

4.5: Analysis of Tron Lennon: *Live @ Blue Rinse*

1. Open Listening

Paul Bell has an individual style as a turntablist, which is both rooted in hip-hop technique while also distinct from it in interesting ways. From studying this, and other performance videos, it can be seen that Bell makes much use of faderless scratch techniques, often using one hand to control other elements rather than the crossfader, and also scratches with the motor off to a much greater degree than most hip-hop practitioners. There is much use of longer samples in Bell's work, allowing him to move through the sound rather than return to the same point repeatedly. He is also one of the few experimental turntablists to use (as I do) two turntables, in a traditional hip-hop battle-style setup. However, beat-juggle techniques do not feature to any great extent, the use of two turntables instead serving other functions, as will be discussed.

Tron Lennon is an improvisatory duo comprising Bell on turntables with an electric guitarist, John Ferguson: Bell explains in his PhD thesis that the use of hip-hop scratch techniques is deliberately employed as a way to facilitate production (rather than reproduction) of sound within improvised playing.[73] In this particular performance, Bell is scratching video clips as well as audio: in this way, an extra dimension of experience is added to the turntable techniques through the movement and manipulation of the video content being projected behind the duo.

2. Technology

As previously mentioned, the DJ setup is very similar to my own: two turntables, DJ mixer, and DVS (incorporating video capabilities) are used throughout. There is also minimal use made of a MIDI controller in the performance. A delay effect is also used, sparingly, to develop the scratch sounds.

3. Technique

To begin with, long textures are manipulated on the left turntable (with the motor switched off): the platter is moved slowly, but with a gradually wavering speed, as the right hand manipulates the EQ controls of the mixer. Occasional rubs are used to inject greater energy into these drone-like sounds: this device becomes more overt from 1'11", and at 1'17" a development of previously heard technique is achieved as the two devices of EQ manipulation and record rubs become more synchronous, with the two hands working together. The slowing (and therefore descending pitch) of the record is juxtaposed with a filter sweep that shifts focus to the higher frequencies of the sound.

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[73] Bell, 2009, p. xiii.

The right turntable now enters, and from 1'42" Bell performs a variety of tweaks on the right turntable, while continuing to occasionally push the left record to produce sound.[74] This juxtaposition of the two textures is the closest technical element to beat-juggling in the performance: since both records are being manipulated with the crossfader allowing both to play together, this could be viewed as a faderless juggle. There is also a point of contact here with mix DJ culture: the two turntables are used to thicken the overall texture, having a similar effect to a DJ blending two tracks.

From 2'08", a finger in the centre of the platter is used to speed up the record gradually: this is another technique with parallels in mixing, where the same idea would be used to make adjustments to a record during a mix. Then at 2'13" a new faderless technique is used: the left hand brushes the platter to create extra articulations in the pushes being performed by the right hand. This is an unusual technique that would not normally be seen in hip-hop playing: it is similar to, though significantly different from, the swipe technique. More rubs, pushes, and tears are then used while again manipulating EQ using the mixer. The EQ manipulations continue while the gradual tempo manipulation of the platter is expanded upon, with a long, siren-like sound being created. At 3'13" the platter is pushed to a higher speed than has been used before, only to be immediately interrupted with a rub/release pattern that brings the pitch back down again: variations on this theme follow until at 3'27", when the faderless platter-brushing idea returns to close the section.

The MIDI controller is used to load a new sample, and from here the obvious correlation between scratch techniques and video projection begins, with a short vocal clip being scratched. Again, the record is tweaked using rubs and drags, and the way that releases of the record have a sudden change in pitch with the motor off is used as an integral part of the performance. EQ is once again manipulated as Bell plays a long section of the vocal backwards, again applying manual adjustments to the speed of playback throughout. Extreme slowing of the record follows, and then the section using this sample closes with more tweak rubs. There is then a short section of solo guitar before the next sample enters at 5'10".

Introduced by a quick tip scratch, the next sample is again a vocal sound.[75] Stabs are used to play forward snippets of the vocal: this first use of a technique involving the crossfader contrasts with the previous scratch sounds, as the backward movement of the record is now muted. Both the use of the crossfader, and the fact that the turntable motor is now switched on, place this section of scratching technically closer to the usual conventions of hip-hop playing than what has gone before. The phrasing here is also ornamented with record stops, a quick reverse stab, and one instance of a slow reverse drag. A much longer section of the sample is now played, using tap-pauses to break up

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[74] In hip-hop terminology, a 'tweak' is any scratch performed with the motor switched off. There is a predominance of rubs in the tweaks played here; some drags and tears are also played.

[75] The 'tip' scratch is a rub that only uses the very beginning of the sample: while technically this could be regarded as the same technique as the rub, the distinction is a helpful one for timbral reasons. The attack of a sound is often sonically quite distinct from the rest of the sample: therefore the classification of the tip scratch as a different technique, within hip-hop terminology, demonstrates that culture's awareness of the capabilities of the instrument to deconstruct sound.

the rhythm of the speech.[76] A delay is quickly applied to the turntable's output (at 6'00"), and Bells' platter-brushing scratch, followed by a tear pattern, are performed with this development. The tap-pausing motif is now developed further, with quick tap-pauses breaking the sample into a stream of stuttering interjections; a reverse tear pattern also echoes the sound of this tap-pause idea, and EQ is manipulated using the left hand. Stabs and slices are played, at 6'28", using a very short, glitch-type sound, and the speed of the record hand is used to end many of these phrases on a lower pitch. Again, forward stabs are used to play snippets of sound: this time the technique is developed through the use of some faster stabs and further pitch manipulation of the forward stabs using the record hand.

At 7'17", a more chordal texture enters: again, snippets are played using forward stabs: this time the motor start/stop button is used to create sharp glissandi at the end of short bursts of sound. The stabs are also performed using the mixer's line fader, and its more gradual curve is used to fade the sound rather than cut it in at full volume. At 7'55", this fading idea is combined with a long, continuous rub scratch. A new technique enters at 8'41": needle drops onto a stationary record create percussive, glitch sounds: there is a parallel here with both the 'needle drumming' of DJ Plus One's routine (Chapter 4.6) and the vinyl popping sound-world embraced by Marclay and Chavez (Chapters 4.2, 4.3). This is then combined with rubs, drags, and pushes of the record. Bell then, at 9'28", holds the platter still using the left hand, while the right hand taps the record to create bursts of sound: this is almost a hybrid technique, incorporating elements of the platter swiping and tap-pausing motifs that have been previously employed. This, in turn, is developed to include push and tear manipulations. The slow, wavering, siren-like pushing of the record returns, before a new guitar sample is treated in the same way; then extremes of fast and slow record speeds are used while the right hand manipulates EQ.

4. Musical Content

One of the most striking aesthetic features of the performance is the interplay between the two improvisers. This demonstrates another key advantage of scratch technique within this type of performance: as well as the observations Bell makes about being a producer of sound, this area of DJ technique is also more immediate than mixing or beat-juggling, and there are many moments in the piece where Bell's scratch vocabulary allows him to react quickly to the guitar player. At 1'10" a sharp glissando from the guitar is answered immediately by the scratch, followed by the echoing of the guitar's 'wah-wah' effect using the mixer's EQ controls: Bell is shaping these gestures in an imitative manner in order to complement the other instrument. The section from 5'10" is another point at which the performers explore the same musical idea together, with both employing short bursts of sound, and using silence as an important part of the overall texture.

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[76] A 'tap-pause' is simply a manual stop applied to the record: it is then held still at the fingertips until released. This is usually performed with a light touch, in order to ensure that the platter is still spinning at full speed beneath the record, thus facilitating a virtually immediate return to full tempo upon releasing the record.

5. Sound-world

Much use is made, in the turntable part, of long, smooth textures, which Bell moves gradually through, applying adjustments to their playback using the turntables. Another striking element of the sound-world is the use of vocal samples and the extreme pitch bending of the first vocal, achieved through moving the record very slowly. It is Bell's turntable techniques that bring sonic unity between his output and that of the other performer, imitating the shape and character of the guitar sounds as has been previously discussed. The strings that enter at 7'17" provide an interesting twist in the sound-world: this sound brings with it more obvious causal connotations than many of the other textures Bell is using. It is a snippet, not only of sound, but of another place and time in the mind of the listener. The interruptions and manipulations Bell applies to the strings position that memory at a distance: it is glimpsed through the prism of contemporary turntable performance.

6. Summative analysis

This performance provides an excellent demonstration of the efficacy of scratch manipulation within improvised music. Not only does the immediacy of scratching allow Bell to react quickly to the other performer, but through the gestural nature of his scratch technique, the turntables become a platform for intuitively following the shape of the guitarist's sonic output. Bell's favouring of long, smooth textures allows his scratch technique to focus on elements not usually heard within hip-hop (where short samples, and constant returns to the attacks of those short sounds, are more commonly used). The pitch bends created by the platter slowing or speeding up without the motor on, and the sudden rises and falls in pitch caused by knocking the freewheeling platter faster or slower, become integral parts of Bell's phrasing. In this way, the performer can be seen to be embracing the idiomatic nature of the turntable technology and the sonic manipulations it promotes. Even the vocal samples, which have much clearer hitpoints that a hip-hop performer would aim to use when scratching them, are longer recordings and are largely manipulated in a similarly linear fashion. There are parallels to be drawn here with my own work investigating source material, and there is much use of similar long textures in some of my folio works. A key difference between my practice and Bell's is the range of techniques used and the technical focus of the playing. While here there is a tight focus on the fluidity of pitch afforded by the turntable platter, and this is a theme I also explore, my work engages with a wider range of hip-hop techniques and has more focus on the crossfader as a tool for processing sound.

4.6: Analysis of Plus One: *DMC Routine 2001*

1. Open Listening

This is the winning set from the DMC World Championship competition in 2001: it is exemplary of a period in hip-hop turntablism during which innovative practice and experimental techniques were highly prized attributes within high-profile battle performances. It is interesting to see, in this routine, what limits the expectations of the hip-hop audience place on such experimentation.

2. Technology

Two turntables, mixer, and vinyl records are used throughout (according to the rules of the competition at the time): however, Plus One explores possible uses for these technologies that were not commonplace, even among turntablists: a common theme in the hip-hop turntable tradition is the finding of new creative uses for equipment that was never intended to be used in those ways. As Katz writes: 'turntablists […] bend the equipment to their will'.[77] The specific ways in which the equipment is used will be explored in section three.

3. Technique

The routine opens with a stickered loop: that is, a sticker has been placed on the surface of the record in order to skip the needle in a constant loop.[78] This is a device that Plus One returns to at various points in the routine. A drum break is then scratched, using a two-handed rub pattern that culminates in an orbital two-click flare and release.[79] While the use of two hands could facilitate greater speed in moving between different rub scratches, given the speed of this passage it is likely that the use of two hands is more for show than necessity. Plus One's intro continues with different records being cued in quick succession, ornamented with some transform scratches, rubs, a hydroplane (at 0'40") and the use of a record stop at 0'42".

At 0'48", very slow movements of the record are used to introduce the next record, before the first beat-juggle section begins from 0'56". Throughout this juggle, use is made of another stickered loop (on the left-hand record), allowing Plus One to return much more quickly to the start of that loop than would be possible were he needing to backspin the record every time. The juggle is created using two different records, as opposed to the more usual practice of juggling two copies of the same record; Plus One loops small section of these records, and also uses the device of placing drum hits

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[77] Mark Katz, *Capturing Sound* (Berkeley: University of California Press, 2010), p. 125.

[78] A practice that seems to have become virtually obsolete since the introduction of DVS. Discussions on the optimum tempi for such preparations were still active in the turntable community, until the DMC competition began allowing DVS in 2011.

[79] The two-click flare involves chopping a sound into three parts by placing two fader clicks after its initial attack. A scratch described as 'orbital' is one in which the same manipulations are applied to both the forward and backward sounds.

from one record in between those playing on the other, to create double-time rhythms, but the technical emphasis throughout this section is the addition of scratch techniques within the looping patterns of the juggle. Rubs are applied to the records, and the crossfader is used for crabs and transforms: the mixer's line faders are also used, either to transform sounds or to cut one record out while the other is being scratched. A particular double-fader transform pattern is used extensively (a good example is seen at 1'17"): this is a precursor to the euro scratch (mentioned in Chapter 7.1), where a similar effect is achieved using one hand (the euro scratch requires a more adjustable mixer than in Plus One's setup). At 1'38", brief use of the start/stop button on the left turntable creates variation in the juggle pattern being played. Immediately after this point, allowing the stickered loop to play affords the time necessary to cue up a different loop on the right hand turntable: however, the left hand continues to make adjustments to the left hand record at the end of each loop, in order to remediate the slight discrepancy in bar length at the point at which the record skips. Between 1'40" and 1'46", the device of playing hits in between those on the other record is at its most prominent, alongside similar crab/transform patterns as the earlier part of the juggle: following this, the new break on the right-hand side is allowed to play, and the performance moves into a scratch section at 2'07".

The scratching here takes elements from the two previous sections, presenting them in new patterns: there is increased focus on the hydroplane scratch, alongside use of the two-handed rubs, and a cross-handed version of the line fader transform. The section is brief, culminating in a forward drag before the sample is played without manipulation for the first time. This introduces the area of technique that Plus One describes as 'needle-drumming': firstly, two fingers are used on the back of the headshell to tap out a rhythm using the needle, against the central label section of the record. The sound produced is also filtered using the mixer. This sound is then juxtaposed with a thud sound created by tapping the other record, which still has its needle resting on the record. From 2'55", a feedback loop is played (created by wiring a mixer output back into one of its inputs): this is cut in and out using the mixer's line/phono switch, while the right hand begins scraping the needle horizontally across the surface of the record. The feedback tone is also manipulated using the mixer's EQ controls. Further drumming of the needle against the record's label, again with EQ manipulation, leads to a short transition during which the needle is left resting against the label as it turns: filtering is again applied using the mixer.

Another stickered loop is used, and this time Plus One cuts in the snare from another record in a syncopated rhythm while also continuing to transform using the line faders. The next beat-juggle section begins at around 4'04", when the turntables are switched to 45rpm . The juggle contains a mixture of previously heard techniques (the swipe seen at 4'08" is a new technique, though similar in style to the two-handed rubs that have preceded it): the use of rubs, and of drum hits placed in between the hits of the other record, are themes that are greatly expanded upon in this section. Hydroplanes now feature as part of the juggle, and the line fader transforming is again employed. At

4'29", a controlled reversal of the left-hand record forms part of the rhythm, and from 4'32", the crab scratch is further developed into longer phrases, and combined with chirps. There are more swipes, leading to a faded rub that makes the transition back to 33rpm before snippets of another two records are played, again ornamented with rubs, chirps and a hydroplane.

The final beat-juggle section is introduced at 5'09": Plus One makes use of the fact that his next stickered loop is from a record pressed at 45rpm to play a short section slowly at 33rpm, before speeding it up to full tempo at 5'13". He cuts between a few different parts of this track before much faster patterns begin at 5'22". Again the line faders form an important part of the overall technique, being used for transforming and muting, and the phrases here end with a chirp/flare combination using the left-hand record. From 5'32" the two copies are used to create a syncopated rhythm that incorporates rubs, transforms using the line fader, and reverse drags. The section from 5'40" focuses on scratching the left-hand record, while occasional bursts of sound are brought in using the right-hand line fader: again, this is made possible by the stickered loop, and the patterns played would be impossible were the performer having to backspin to the same sound each time. There is a recapitulation of the previous syncopated juggle idea, until the routine ends with a short coda provided by another stickered loop, this time played as the motor is switched off and the record is allowed to gradually slow to a stop.

4. Musical content

Musically, the piece is predicated on forming new musical passages and soundscapes through turntable manipulation. The performance largely remains in 4/4 time, though not exclusively: some transitional passages are without meter, being focused instead on the juxtaposition of different samples, either to provide a pause between sections or to hype the crowd with a posturing vocal snippet. While there are similarities here with my own work removing meter from the performance of scratch and juggle techniques, I have taken this idea further and made it a more fundamental component of a variety of pieces. While ametric playing is in evidence in this performance, it is only ever an interlude and doesn't involve development of the scratch and juggle techniques, specifically to meet this musical feature, as is evident in my work. Structurally, the piece revolves around its main beat-juggle sections, with most other material being an introduction to, or transition between, these juggles.

5. Sound-world

There is a predominance of hip-hop source material, some of which seems to be deliberately chosen for its familiarity within the scene. Through quoting familiar musical materials, Plus One shifts the focus of attention onto his manipulations of that material and makes the extent his interventions more obvious for his audience. The obvious departure from the hip-hop sound-palette is the feedback/needle drumming section. With obvious parallels to the work of performers such as Marclay

or Chavez, Plus One presents sounds here derived purely from the DJ technology, rather than sounds pressed onto a record. The difference here is that Plus One presents these sounds within a musical context that is more appropriate for his audience, playing notes and rhythms that imitate the sound of the hip-hop source materials used in the rest of the set.

6. Summative analysis

There are two key driving forces behind this performance: one is the display of virtuosic skill in order to out-do the other contestants, and the other is the advancement of turntablism through the dissemination of new techniques and ideas. The needle drumming, use of stickered loops, mixer feedback, some of the scratch patterns used (especially the double-fader patterns) and the hybridisation of scratch and juggle technique can all be seen as elements concerned with originality and advancement.

4.7: Analysis of DJ Unkut: *Beware of Ze Average Man*

1. Open listening

This is a piece designed to display skill, precision and speed. There is constant, fast-paced manipulation of the samples and an almost machine-like quality to the exactness of the scratch and juggle techniques' execution.

2. Technology

The equipment used is two turntables, DJ mixer, and analogue records. However, the influence of DVS technology can also be seen in the way that the routine has been composed; the placement of certain sounds, in sequence on the records, arranged specifically for the techniques Unkut wishes to use throughout the routine, is indicative of a compositional process that involved using DVS to work out the structure and layout of the musical materials before pressing the sound files onto analogue records.[80]

3. Technique

The routine is introduced with some short vocal samples, scratched in using chirps; the first main scratch section begins at 0'18", as Unkut moves between different sample attacks using more chirps, stabs and rubs. At 0'22" the swing flare is combined with release stabs in order to create musical phrases, leading to a boomerang/release scratch pattern from 0'25". From 0'28" to 0'36" variations on the swing flare and boomerang scratches are combined with transforms, stabs and chirps to create phrases that, once again, move back and forth between a number of different samples (the crossfader is also used at 0'33" to mute the right turntable). After this, rubs are performed on both turntables to create a quick faderless juggle, before the previous scratch ideas are recapitulated; this time the theme of muting the right turntable is expanded upon, with both hands using the line fader to this effect at different times.

In the section from 0'50" to 1'11", further developments of the same scratch patterns, line fader muting and faderless juggle ideas are performed, with increasing complexity: the idea of using a quick reverse of a multiple-onset drum sample is also used at part of the overall rhythm during this part. At 1'11" a scratch passage enters with a much clearer focus on the stab; phrases are created that still include the 3-click fader pattern of the swing flare, and the section is introduced with another boomerang scratch, but stabs and stab/chirp combinations come to the fore here. At 1'24" the beat is

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[80] It is likely that the pressing of the routine onto analogue records has been done in order to use them in battles that forbid the use of DVS. Unkut's first entry to the 2011 DMC online battle (DJ Unkut, 'Godzilla Porn Routine – DMC Online Worldchampion 2011', *YouTube* (2011) <http://www.youtube.com/watch?v=C1WaDr_skz8> [last accessed 26 October 2014]) demonstrates this performer's use of DVS within a battle where this was allowed.

slowed down for the next section of scratching. A reverse 3-click tug job scratch is the first technique used, before Unkut focuses again on fast streams of stabs; these are combined, at 1'31", with a quick Joe Cooley-style forward tear/scribble scratch.[81] A fading scribble is then used to end the section, before some connecting samples are played to lead up to the first full beat-juggle section. The juggle is played from 1'55", beginning with looping of different short sections of the records. A key feature of this juggle is the use of quick rubs, performed with both records, and there is also much use made of the fill (drum hits from one record being placed in between the hits of the other). There is also a line fader transform, at 2'05", use of the stop/start button from 2'19" and line fader stabs at 2'22". At 2'36" there is a 3-click delayed flare scratch included as part of the juggle, followed by more use of the line faders for transforms and stabs.

The juggle is followed by another scratch section, introduced at 2'53" with chirps and then snakes that fade out using the line fader. At 2'57", there is a series of stabs that fade in using the line fader. The next section of scratching develops further the idea of incorporating the line faders: they are used for muting, stabs and (at 3'06") both are manipulated together in order to transform the right record at the same time as performing a stab on the left. This section also continues the theme of moving between different attacks on the record with a predominance of 3-click fader patterns and stabs. The second half of this scratching section (from 3'18"), by contrast, uses a single-onset sample. The patterns used are similar (stabs, swing flares and other related 3-click patterns), but there is also the introduction of greater pitch manipulation with some drags forming part of the technique. The routine now moves into another juggle section, with very similar technical components as the previous juggle: looping, rubs, fills and line fader stabs are the main ways in which Unkut manipulates this break.

From 3'57" there is a scratch drumming section: much of the technical content here is similar to the previous scratch sections, with stabs and 3-click patterns used to move between the different drum sounds. There is also a new pattern of staggered release stabs, and variations upon this new pattern, that form syncopated rhythms (as in Figure 1) and have particular prominence within the section.

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[81] The 'Joe Cooley' style of scratching has caused more debate and confusion that any other technique (see, for example, the discussion here: ericuk, 'qbert misleads with the Joe Cooley?', *Digital Vertigo* (2014) <http://www.digitalvertigo.co.uk/forum/index.php?showtopic=36147> [last accessed 23 October 2014]). It is beyond the scope of this analysis to engage further with the ongoing Joe Cooley debate, suffice to explain that the sound of the Joe Cooley scratch is a distinctive one, but since part of that distinctiveness derives from its extremely fast execution, it is often hard to tell whether what is being performed is a swirl (a one-forward, two-backward tear pattern), a quick scribble, or some hybrid of the two: various DJs have performed all of these as part of Joe Cooley-influenced performances.
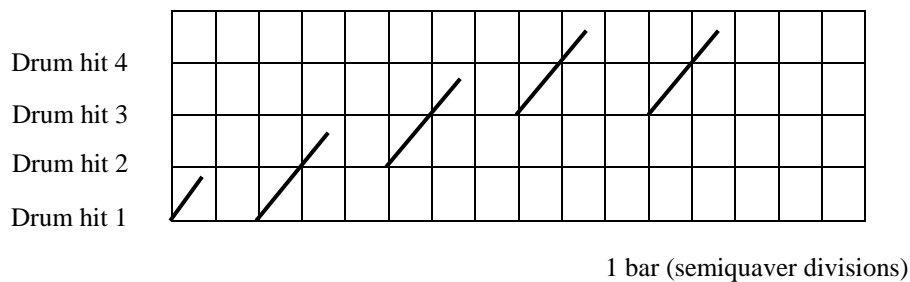
Figure 1: *A typical drumming pattern from Unkut's scratch performance.*

It can be seen from the notation that different pairs of drum hits are played using stabs to form the overall rhythm. The next musical excerpt is introduced with snakes and rubs on the right hand turntable, while the left hand fades these scratches using the line fader.

The final beat juggle section follows, from 4'57", and comprises developments of many techniques that have been used earlier in the routine. The snake scratch now fulfils a much more important rhythmic role than before, and fast pull backs of the record also contribute faster streams of percussive sound to the phrases. Needle dropping is included for the first time, and the line fader manipulation (of line faders individually, and of both together) increases in complexity from its previous uses. The final section, from 5'36", is another drumming section on the left turntable, and again the technical components of the section are previously seen ideas combined in new and more complex ways. The staggered release stabs, stabs and chirp/stab combinations and 2 and 3-click fader patterns all return, but are mixed together to a greater degree into hybrid patterns, with increasingly fast transitions between different scratch patterns. At 5'49", a stream of boomerang-style 2-click patterns are used to move swiftly between a variety of different attacks, until the routine finishes with rubs that are faded out using the line fader and the slip-cueing of a final outro sample.

4. Musical content

4/4 time signatures are maintained throughout the overwhelming majority of the performance. In addition to the rhythmic developments afforded by the scratch and juggle techniques, there is melodic and harmonic content. Some sections have a simple chord sequence that repeats, giving a grounding of constancy underneath the complexity of the rhythmic turntable manipulations. Melodies are created through scratching small snippets of pitched material.

5. Sound-world

The majority of the sounds used are either percussive hits or synth parts. However, Unkut's turntable technique forms an equally important component of the overall sound-world. The forward and

backward sound of rubs and chirps, the pitch variation achieved through tears and the sound of percussive sections being spun backwards are all integral parts of the musical phrases being played.

6. Summative analysis

This performance shows the influence of DVS as a catalyst for a perceptual shift in the composition of battle routines. The starting point here is Unkut's turntable technique, with sounds arranged in order to facilitate the scratch and juggle manipulations he wishes to perform. DVS is instrumental in making the arranging of sounds quick, easy and adjustable during the composition phase. Percussive sounds with sharp attacks (this specific characteristic allowing Unkut to display his extreme precision) are arranged in sequence to cater to the patterns in which Unkut will move between them. When the performer wishes to perform a rub with the record that is playing, a custom bar is created that will remain in 4/4 with the addition of the scratch. Plus One does the same with one of his stickered loops – scratches the record to make a bar of 4/4 – but the process here is an opposite one. While Plus One is led to the inclusion of the scratch through the intrinsic properties of the record he is using, Unkut is led to change the sounds on the record to fit his desire to include a scratch. The piece also has a focus on the scratching of multiple-onset samples. The movement between different hits becomes an important way of creating musical variation during scratch passages, and the performer frequently uses a new sound as the last note of a phrase to shape the phrasing of scratch passages.

4.8: Overview of Current and Historic Performance Practice

This chapter examines the work of a variety of turntable performers, in order to provide justification for the specific musical and technical areas that form the focus of the portfolio. The pieces/performances referred to in this chapter have largely been provided in Folder 1, and those pieces deemed to bear the closest similarities to my own work have been fully analysed in Chapters 4.2 – 4.7. Through reviewing the work of a range of performers, this chapter's ultimate aim is to demonstrate the originality of the work presented in the folio. The contents of Folder 1 are presented in table 1 (page 48).

Full analyses have been included for two reasons. Firstly, the careful dissection of key works is useful in providing a comprehensive understanding of where my original contributions lie. Secondly, these are intended to build upon the work of Mark Katz, whose analysis of I.E.Merge's 'Hardcore Scratching' battle routine was presented in *Capturing Sound*.[82] Katz states that 'a rather detailed analysis […] will help one understand and appreciate this complex work'.[83] It is also my desire to promote understanding and appreciation for turntable works through the presentation of these analyses. However, for ease of understanding, this chapter gives enough explanation of the key musical and technical points that contribute to my argument, such that the discourse can be understood without reference to the more detailed analyses.

Inclusion and exclusion of works was decided on the basis of three main objectives. Firstly, there are examples which demonstrate to what extent ideas and techniques have previously crossed over from the hip-hop tradition to the avant-garde (and vice-versa). This is true of the performances from DJ Sniff, Christian Marclay, Tron Lennon, Marclay & Yoshihide, James Kelly, Wright & Redgate and Plus One. Secondly, two of the pieces (DJ Unkut and DJ Rafik) are included in order to demonstrate the particular developments of flare-type scratches that are relevant to my argument (this is discussed in detail on pages 49 – 53). Thirdly, the examples from Wright & Redgate, DJ Unkut, DJ Vajra, Jon 1st and DJ M-Rock (see page 54) have all been chosen in order to demonstrate the current extent of the influence of DVS technology on style and technique. The only example that falls outside of these three objectives is Maria Chavez: this performance was included as an example of a piece created solely from the sound-world of the medium itself, rather than any sounds pressed onto a vinyl record (a device typical of the avant-garde tradition). As such, it is useful to compare and contrast this performance with that of Plus One, who uses some of the same techniques within the hip-hop arena. Notes on the specific reasons for each work's inclusion are included in Table 1.

It is beyond the scope of this chapter to give a complete historical overview of the development of either tradition, and it can be seen from Table 1 that nearly all the examples presented

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[82] Mark Katz, *Capturing Sound: How Technology has Changed Music,* rev. edn (California, 2010), pp 137-140.
[83] Ibid., p. 137.

are from the year 2000 onwards. However, this fact has developed naturally from the specific objectives employed in selecting material. Crossover and hybridisation are ongoing processes, and it is natural to expect that those examples in which these processes have been the furthest developed will be the most recent. This also means that some influential and innovative performers (Philip Jeck or DJ Switch, for example) have been excluded: these were examples that, despite their importance for turntablism as a whole, were less relevant to the specific research questions of this project. The examples here presented are therefore those that are the most helpful in demonstrating my original contribution and supporting my arguments.

Table 1: *Folder 1 contents*

Chapter	Title	Hip-hop or avant-garde tradition	Full analysis (where applicable)	Reasons for inclusion
1	Maria Chavez: *Live at Texas Firehouse* (2007)	Avant-garde	Chapter 4.2	This was chosen as a pure example of a performer drawing on the sound-world of the vinyl medium: any sounds that may be pressed onto the record are not heard.
2	DJ Sniff: *Live at STEIM* (extract) (2008)	Avant-garde	Chapter 4.3	This example has many stylistic and technical points of contact with the hip-hop playing tradition, and also similar musical priorities to some of my own work.
3	Christian Marclay: performance on *Night Music* (1989)	Avant-garde	Chapter 4.4	One of the most prolific and recognised performers from the experimental turntable scene, Marclay shows a breadth of instrumental technique in this clip that has some striking similarities with certain hip-hop performers and styles.
4	Tron Lennon: *Live at Blue Rinse* (2010)	Avant-garde	Chapter 4.5	This recording gives a good overview of Paul Bell's turntable style: he is another performer who makes deliberate use of hip-hop techniques.
5	Christian Marclay & Otomo Yoshihide: 'Blood Eddy'[84] (2001)	Avant-garde		This is another example of recognisable scratch sounds forming part of an experimental piece.
6	James Kelly: *Transformation of the Mind* (2009)	Avant-garde		As well as demonstrating hip-hop scratch vocabulary assimilated into experimental performance, Kelly also develops and enhances the instrument in interesting ways.
7	Matt Wright and Roger Redgate: *Turntable and Violin Duo* (2009)	Avant-garde		There are hip-hop techniques in this example, and the performance also provides an example of how DVS can be used to integrate the DJ more fully with other performers.
8	Plus One: *DMC Routine 2001*	Hip-hop	Chapter 4.6	While demonstrating a variety of hip-hop techniques, this performer also presents several more experimental techniques within the hip-hop battle context.
9	DJ Unkut: *Beware of Ze Average Man* (2010)	Hip-hop	Chapter 4.7	A very contemporary scratch style is demonstrated here, and the performance also demonstrates the influence of DVS on the compositional development of routines.
10	DJ Rafik: *DMC Routine 2007*	Hip-hop		Rafik is a pioneer of many contemporary scratch techniques: this example demonstrates some quintessential features of these scratches.
11	DJ Vajra: *DMC Routine 2011*	Hip-hop		See below.
12	Jon 1st: *DMC Online Routine 2013*	Hip-hop		Both examples 11 and 12 have been chosen to demonstrate the inclusion of DVS within hip-hop battle routines.

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[84] Christian Marclay and Otomo Yoshihide, 'Blood Eddy', from *Moving Parts* (Asphodel, 2001).

Takuro Lippett opines that: '[s]o-called "experimental turntablists" have had very little connection to Hip-Hop music or DJ culture'.[85] It is this perceived disparity that first encouraged me to explore a greater hybridity between these two turntable traditions. However, focusing (as my folio does) on the instrumental techniques of the hip-hop turntablist, many examples of this crossover can already be seen. As is highlighted in the detailed analysis in Chapter 4.4, Marclay seems to foreshadow many techniques later used by hip-hop turntablists in his performance from 1989, and almost all the experimental examples presented in this chapter use hip-hop technique to a certain extent. Most notably, Paul Bell and DJ Sniff (who is Lippett, quoted above) deliberately incorporate a variety of techniques learned from the hip-hop tradition, and techniques that use the record hand in expressive ways (such as tears and drags) are particularly favoured. Other examples of hip-hop technique within experimental music include James Kelly, who uses chirps, stabs, drags and tears, and who explores the use of audio effects combined with his scratch techniques, and Matt Wright, who uses the transformer scratch in the clip provided. Some stabs and rubs are also heard at the beginning of the Marclay/Yoshihide piece from *Moving Parts.* It would seem, to the casual listener, that this crossover between hip-hop technique and experimental genres is already a feature of a variety of performances. This is where, however, detailed analysis of a variety of exemplary performances can reveal, at a deeper level, that differences between the specific techniques and developmental directions of the two traditions remain.

The examples drawn from experimental performance show a clear bias towards faderless scratch techniques: drags, pushes and rubs are common, and the techniques that do involve the crossfader tend to be those in which the movement of the fader is synchronised with the record (chirps and stabs, for example). There is a general absence of flare-type patterns (i.e. patterns that use fader clicks to cut samples into separate notes), and especially of the more complex two and three-click fader patterns. Figure 2 shows the basic one, two and three-click flares (scratch notations follow the Turntable Transcription Methodology (TTM) style throughout this document).[86]

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[85] Lippett, 2006, p. 72.

[86] Appendix 5 of this document explains the basic workings of the TTM system: this overview is sufficient to understand the notations used within this commentary. For a more comprehensive insight into the TTM notation, see John Carluccio, Ethan Imboden and Raymond Pirtle, *Turntable Transcription Methodology* (self-published, 2000). Available at < http://www.studioscratches.com/scratchy-100-ttm-turntablist-transcription-method-explained/> [last accessed 23rd June 2016].
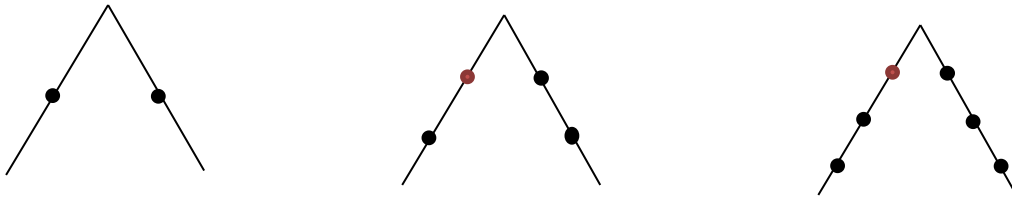
Figure 2: *One, two and three-click flares*[87]

The two and three-click flares, in particular, are an active area for the development of techniques within the hip-hop scene (and also form an important part of my own investigations into polyrhythm within scratching). The fader movements of the two-click flare repeat in three-note patterns, and it is common for performers to feel these not as two clicks with a pause each time the record changes direction, but rather as three continuous movements: close-tap-open. The same is true of the repeating four-note pattern of the three-click flare: this can be felt as close-tap-tap-open.[88] By applying this small shift in perception to the physical movements of the fader, it becomes easier to conceive of starting the fader patterns from a different note, and many of the contemporary developments of these scratches revolve around this device. This is exemplified by the two and three-click tug job scratches (Figure 3): these are the same basic patterns as two and three-click flares, but start from a different note (they start from the red clicks indicated in Figure 2). By doing this, the fader movements become repeating patterns of open-close-tap (two-click tug job) and open-close-tap-tap (three-click tug job).

Figure 3: *Two and three-click tug jobs*

These fader movements can also be combined with different record movements, and it is experimentation in this specific area that I have identified as particularly active among hip-hop practitioners. By combining these click patterns with changes of record direction on every note, the

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[87] It is, of course, possible for the performer to vary the manipulations applied to the forward and backward motions. However, partly for ease of explanation, but also because they are far more commonly seen, this section of my discourse focuses solely on the orbital versions of these scratches (i.e. those in which the same manipulations are applied to the forward and backward movements).

[88] It is useful to read the TTM in a particular way while discussing fader movements in these terms: if one imagines a line with a dot at the beginning but no dot at the end as the action 'open', the reverse as 'close', and a line with dots at both ends as 'tap', my descriptions of the TTM should be easier to understand.

boomerang (two-click) and swing flare (three-click) are formed, as notated in Figure 4. It can be seen that the crossfader patterns are the same as those of the two and three-click tug jobs; the boomerang scratch takes six notes to complete, since the record movements are inverted in the second half of the pattern, while the swing flare repeats every four notes. These patterns technically no longer bear the hallmark of the earlier flare patterns: the movements of record and fader are once again synchronised, without any clicks occurring mid-sample: however, it can be seen that they have been derived through taking the fader clicks of flare patterns as a starting point.

Figure 4: *Boomerangs and swing flares*

This development also introduces the concept of 'ghost clicks': i.e. fader movements that do not technically alter the sound, occurring at points where all that is muted is a silent part of the record. There will be subtle sonic differences when adding ghost clicks: vinyl crackle before the sample may be eliminated, or a small amount of the sample itself may be removed. However, the real reason for performing ghost clicks is that, when the scratch is played in reverse or the click pattern is started further into a sample, these do then alter the sound in more overt ways. The boomerang is a good example of this: the first two clicks in Figure 4 are ghost clicks, but the next two are not, since with the record movements inverted these serve to mute the change in record direction. Organising these fader patterns in such a way as to start from the closed position also allows for the record to continue travelling, rather than change direction, at the end of a group of clicks, with the fader articulating the next group of notes, as in the autobahn #2 scratch (Figure 5). A multitude of hybrid patterns can be derived from timing some of the clicks to coincide with record movements, while others cut the sample, as in the original types of flare: an example of such a scratch is the autobahn #1 (Figure 6).[89]
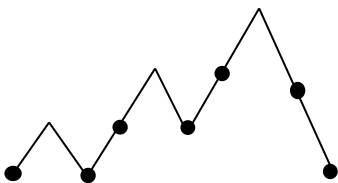

Figure 5: *Autobahn #2*

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[89] There was confusion over the exact execution of the autobahn scratch, since DJ Rafik played two different patterns on the *Scratchlopedia Breaktannica* DVD explanation of the technique. I have simply classified the two patterns as autobahn #1 and autobahn #2, in the order played by Rafik.
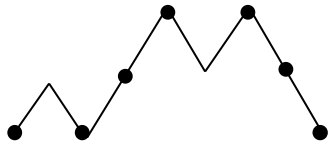
Figure 6: *Autobahn #1*

It can be seen that the fader movements of the autobahn #2 are still consistent with the other two-click scratches (open-close-tap/open-close-tap/open-close-tap), while those of the autobahn #1 have the familiar three-click placement (open-close-tap-tap/open-close-tap-tap). These scratches that travel through a sample, rather than simply using a constant backward and forward motion of the record, have another interesting application (that is again a key developmental area within the hip-hop turntable community): they are ideally suited to multiple-onset source sounds. If one imagines the autobahn #2 scratch from Figure 5 applied to a record containing three sounds in quick succession (Figure 7), this now becomes a method of moving smoothly between different, tightly grouped samples (drum hits, or individual syllables within a sentence, are particularly favoured for this approach).
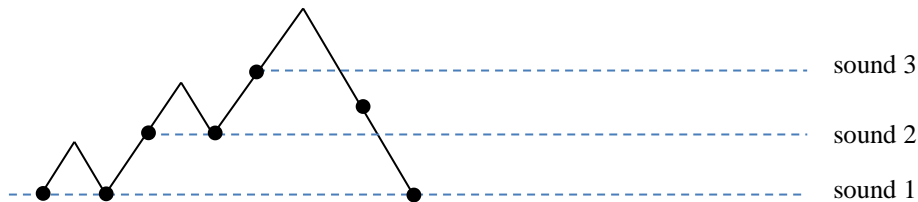
Figure 7: *Autobahn #2 played across three individual sounds*

This, in turn, opens up a wealth of rhythmic possibilities, since the performer is able to place attacks with more freedom. Forward attacks of the sounds can be placed onto the off beat, while reverse record movements can be placed onto strong beats. Through realising this particular feature of this group of techniques, the increased opportunities for syncopation are clear. A prime example of this style of scratching can be found in the supplied performance from DJ Rafik: he uses these types of pattern throughout, but the section from 2'30" – 3'15" illustrates my points particularly well. The syncopated rhythms mentioned above are particularly evident at 2'58": much of the scratching here comprises a steady stream of demisemiquavers, with different syncopated articulations executed through the use of two and three-click patterns. These patterns are also evident in the performance from DJ Unkut (Chapter 4.7).

This deeper analysis of the specific techniques being used in a variety of performances shows that, in contrast to the initial observation that hip-hop scratch techniques do exist within experimental turntablism, it is however the case that the most active area of experimentation and development within hip-hop scratch technique does not feature in the experimental scene. It is no surprise that crossfader-centred techniques are largely absent from the experimental examples: the subtle manipulation of the turntable platter or record is clearly more attractive to the expressive performer than the clicking of a simple on/off switch. However, my portfolio demonstrates ways in which this contemporary scratch vocabulary can be used experimentally.

The same is true of beat-juggling: any semblance of this area of technique in these examples is entirely faderless. The patterns most readily associated with hip-hop beat-juggling: the looping of different sections, the use of tap-pauses to deconstruct rhythms, and the placement of drum hits in between those on the other record in order to create double-time rhythms, can be seen in the work of all the hip-hop performances in Folder 1, but are absent from experimental performance.[90] My folio also addresses this, and demonstrates ways in which these hip-hop beat-juggle conventions can be used to fulfil other compositional priorities and create new musical effects.

The instrument itself is also largely different in these two areas: the standard hip-hop setup of two turntables and DJ mixer is seen in some of the experimental performances, but it is much less common. This uniformity within the hip-hop examples can partly be explained by the rules of particular battle events[91]: however, it can be seen that it is more common among the experimental turntablists to choose or design individualistic hardware setups (the performances of Marclay and DJ Sniff, for example, demonstrate this). This, in turn, influences both technique and creative decisions, with those performers developing styles appropriate to their instruments (and vice versa). Also more common within the current hip-hop tradition is the use of DVS. Reasons for the rejection of DVS by some experimental performers have already been discussed (Chapter 2, page 10), while, conversely, it is now a standard enhancement for the hip-hop performer.

While there are some examples in my portfolio of DVS-specific playing technique, this is an area that has already been explored to a large extent within the hip-hop scene, as is demonstrated by the supplied clips of DJ Vajra and Jon 1st. Vajra, at 2'02", maps a mixer control to the settings of a modulation effect in order to manipulate pitch while scratching. Jon 1st makes use of MIDI controller buttons to jump to different DVS cue points, playing musical phrases using these buttons (beginning from 4'31"): he also combines this technique with filtering (using the mixer) and manipulations of pitch using the turntable. At 4'40" an interesting effect is achieved that is only possible through the use of DVS: Jon 1st uses the turntable platter and pitch control to create pitch bends in the notes being played, while the use of cue points keeps the tempo constant. This demonstrates a greater freedom to manipulate pitch and rhythm separately in this new digital environment; using the analogue

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[90] These are the three techniques identified by Smith as the loop, the breakdown and the fill: Smith, 2000, p. 78.
[91] DMC, 'Rules', *DMC World* (2011) <http://www.dmcdjchamps.com/rules.php> [accessed 12 Oct 2014].

instrument these pitch bends would be intrinsically linked to the tempo of the music being played back.

DJ M-Rock[92] demonstrates a variety of patterns that revolve around integrating jumps to DVS cue points with physical manipulations of the record using the other hand. From 2'54" the same idea, of manipulating pitch while using the cue points to maintain a constant tempo, is seen. Another key development is seen at 2'35": the left hand plays a succession of quick rubs using a snare sample, and then, after a release plays just the forward sound of the snare, the cue point is used to add another forward snare to the end of the phrase. This demonstrates the way in which DVS cue points can be used to place attacks anywhere that is desired, without having to first rewind the record to the correct place. This freedom from the necessity to always alternate between moving the sample forwards and backwards has similarities with the rhythmic possibilities of multiple-onset sounds (as discussed on page 52): the same opportunities for syncopation exist, this time with even more freedom to go against the rhythms implied by the original sample. In light of these existing demonstrations of DVS-specific technique from a variety of practitioners, I have focused, instead, on making creative use of the sonic properties of DVS. The existing negative opinions of these sonic properties have already been mentioned (Chapter 2, page 10): it is due to the prevalence of these opinions that such research has not, so far, been carried out, and my folio aims to react to this observation through demonstrating creative opportunities of the digital technology's sound-palette.

There is much use, across all of the examples provided, of turntable-specific sounds. These are not just limited to the pops, scrapes, bounces and other medium-generated sounds embraced by Marclay, Chan, and Plus One, but also include transformations of source sounds that flow directly from the idiosyncratic movements of the turntable. The non-linear speeding up and slowing down of sounds afforded by manual interventions upon the turntable/record forms an important (and idiomatic) element of the sound-world in a majority of turntable performances. Most scratch techniques revolve around constant backward and forward movements of a small section of sound (see Appendix 1): this also has its own distinctive sound, and is recognisable as a scratch regardless of the source sound it is applied to. This therefore leads to another common, idiomatic musical theme in turntable music: the (often sudden) juxtaposition between a sample being played in its original state and the same sample being manually manipulated by the performer. The causal relationship perceived by a listener to that sample can be quickly switched between the original recorded sound source and the turntable. Taking into account these different ways in which previous performers have worked with the sound-world of the medium itself, it is a natural progression to also investigate sounds derived specifically from DVS technology.

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[92] DJ M-Rock, 'Digital Juggling', *YouTube* <https://www.youtube.com/watch?v=9mNMkDXLZ4o> [last accessed 9 January 2016].

Turntable performers also take advantage of the instrument's ability to recycle sound in order to make use of quotation. The hip-hop performers often quote tracks (or other sounds) that are familiar to their audiences, subtly shifting the focus of the listening experience towards their own manipulations of those tracks/sounds: when the source material is known, the ways in which it is being changed become more overt. Marclay quotes too: not specifically known pieces of music in this case, but he quotes the genre of jazz in order to conjure up the imagery that his audience will naturally associate with it. This is another area in which DVS has an impact: with this technology, it is possible to quote anything that is desired, without first having to locate a record of it (or press one, at a not inconsiderable cost). However, it is also possible, conversely, to move away from the area of quotation altogether, instead creating and recording custom sounds for use within a turntable performance. The limited use of DVS within the experimental scene means that these are creative opportunities that can be explored more fully: my folio makes use of DVS to both of these ends. The sounds used by hip-hop players, while influenced by DVS in both of the aforementioned directions, are also constrained by the cultural conventions of playing in that environment, with drum breaks in 4/4 having a particular prominence. Given that there are areas of scratch and beat-juggle technique that do not feature in the experimental turntable scene, this folio represents the first time that a wider range of source materials has been developed using these techniques.

Section B: The Portfolio

Introduction

This section provides detailed explanation of the various projects, performances and collaborations that form the folio submission. There is a chapter dedicated to each folder presented, with the exception of Folder 7. Folder 7 is not intended as part of the main submission, but is included as supplementary material, in order to more fully show my progression from hip-hop performance to the eventual abstraction of those techniques in the folio works. Full analyses are given of key works. Works are arranged thematically, rather than chronologically, within the folders, as follows:

Folder 2: the *ctrl+alt+dvs* project. This was undertaken in specific response to the third main aim of the research, and was also designed after analysing the DVS-specific techniques of previous performers (Chapter 4.8). In reaction to the mostly technical developments of artists such as M-Rock and DJ Vajra, the project was focused on experimenting with the sonic properties of the DVS system. This folder has particular relevance for the conclusions contained within Chapter 12.

Folder 3: collaborations with Jim Birchall. This part of the folio contains two separate projects: Rough Fields and Adult Mags. The thematic link (as well as the personnel) is that these are the only folio works concerned with ensemble playing. Rough Fields was concerned with using my instrumental techniques within an ensemble setting (as part of the second main aim of the research) and has relevance to the conclusions in Chapters 10 and 14. Adult Mags was more focused on the evaluation of different source material (the first main aim) and therefore relates to Chapter 11.

Folder 4: *lines that have been drawn on photographs of sculpture and tables:nuemes.* The thematic link here is that this folder presents my collaborations with contemporary classical composers. Also the performances contained in Folder 4 are all focused on source material (first main aim). The evaluation of the source material feeds into Chapter 11; discussion of my working practices with the composers involved has relevance within Chapter 14.

Folder 5: assorted solo works. These are all selected from my individual practice. Items 1 – 5 are all concerned with source material (main aim 1; Chapter 11) while the final piece has relevance for the discussion of instrumental technique (main aim 2; Chapter 10).

Folder 6: technical examples. These are original scratch patterns created to illustrate my claim that polyrhythm is an idiomatic device for the turntable performer. This is a reasonably self-contained section of my work: Folder 6 relates directly to Chapter 13.

The chronology of the various projects is illustrated by the following Gantt chart (Table 2).

Table 2: *Gantt chart of the PhD chronology*

PhD Chronology																						
Page 1																						
TEXT		**2011**				**2012**				**2013**				**2014**				**2015**				
	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I
Project																						
Polyrythmic development	▽—▽																					
DMC 2011 Routine	▽——▽																					
Rough Fields			▽————————▽																			
lines that have been drawn...			▽———————▽																			
ctrl+alt+dvs						▽———————————————————————▽																
tables:nuemes								▽——————————————▽														
Scratch Poetry												▽——————————▽										
Control Signal														▽————————▽								
Black Mist															▽——▽							
Adult Mags																		▽——▽				

Portfolio contents

Folder 2: *ctrl+alt+dvs*

1. Will Baldry – *ctrl+alt+dvs part one*
2. Will Baldry & Ewan Stefani – *ctrl+alt+dvs part two*
3. Will Baldry & Ewan Stefani – *ctrl+alt+dvs parts one & two* live at Birmingham Conservatoire
4. Will Baldry & Ewan Stefani – *ctrl+alt+dvs part three*
5. Will Baldry & Ewan Stefani – *ctrl+alt+dvs DJ set*

Folder 3: collaborations with Jim Birchall

1. Rough Fields – *Watery Fable* (1st interpretation)
2. Rough Fields – *Watery Fable* (2nd interpretation)
3. Rough Fields – *Harbour Wall* (beat-juggle version)
4. Adult Mags live in Saltaire
5. Adult Mags live at Fuse, Bradford

Folder 4: *lines that have been drawn on photographs of sculpture* and *tables:nuemes*

1. Lauren Redhead – *lines that have been drawn on photographs of sculpture* (studio recording)
2. Lauren Redhead – *lines that have been drawn on photographs of sculpture* Live at SARC, Belfast
3. Lauren Redhead – *lines that have been drawn on photographs of sculpture* (keyboard version) live at Goldsmith's, London
4. Alistair Zaldua – *tables:nuemes* live at Di Stanze festival, University of Leeds

Folder 5: assorted solo works
1. Will Baldry – *Scratch Poetry*
2. Will Baldry – *Control Signal*
3. Will Baldry – *Black Mist*
4. Will Baldry – *Scratch Poetry* live at Fuse, Bradford
5. Will Baldry – *Control Signal* live at Fuse, Bradford
6. Will Baldry – *DMC routine 2011*

Folder 6: technical examples

1. Quintarang
2. Septarang
3. 2-click clover tear
4. 12 note swing tear
5. Triquintear
6. 2-click flare expanding/contracting rhythms
7. Crab flare expanding/contracting rhythms

Folder 7: Dr Weevil battle archive

1. IDA UK final set 2009

2. DMC UK final performance 2011
3. DMC online heat 2011
4. DMC online heat 2012

Chapter 5: *ctrl+alt+dvs*

Introduction

In this project I have attempted to evaluate the usefulness of DVS as a sound source, or as a new way of processing sounds. The sequence of performances was designed in order to answer my research questions concerning new sonic possibilities afforded by DVS technology. However, insights were also gained into other aspects of my performance practice, specifically in the area of ensemble playing and the efficacy of different techniques when reacting to another performer. In the same way that the imperfections of the vinyl medium were embraced by Marclay and others, this collection of recordings pushes the DVS to breaking point in order to discover a new sound-world through its technical malfunction. One potential hurdle for the evaluation of the DVS technology in this way is that the system combines hardware with software; software constantly changes through updates, making the drawing of absolute conclusions concerning what is possible harder. However, the performances presented here used two different versions of the Serato hardware, and three different versions of the software, all with similar sonic results.

5.1 *ctrl+alt+dvs part one* (full analysis)

1. Open listening

This was one of the first attempts to derive technology-specific sounds from the DVS system. Sounds were collected while running the system without sufficient battery power for it to function correctly; these recordings were then played back using the DVS (functioning as normal again) to create a piece.

2. Technology

Turntables, DJ mixer and Serato Scratch Live system were used: it is important to note that this setup was used both for the creation of the original source material for the piece, and in the performance of the work.

3. Technique

The piece begins with slow rubs and drags on the left turntable, while EQ is manipulated using the mixer. The right hand turntable is then introduced, simply playing a filtered version of one of the sounds (again, filtered using the DJ mixer). Some very slow movements of the left hand record are used, and I then switch that DVS channel to internal mode: this causes the DVS to continue playing the sound automatically, at the same playback speed as when it was switched. The sound therefore

continues to play slowly, without me needing to manually keep the record moving. Further EQ transformations are applied using the mixer, as the pitch of the right hand sound is raised through pushing the record faster. I then spin the right hand record quickly backwards, and again utilise Scratch Live's internal mode to keep that sound playing. The section closes with further slow movements on the left hand side and further manipulation of EQ.

At 2'04" I launch two copies of the same sound in unison, using the keyboard shortcuts to access Scratch Live's pre-programmed cue points.[93] I then use a faderless juggle pattern which consists of applying small rubs to each turntable in turn. At 2'35" I introduce the fader into the juggle, performing loops while simultaneously adjusting EQ using the mixer. There is then a return to the previous faderless juggle technique. In the next section, the pitch control of the right turntable is slightly adjusted in order to create a slow drifting out of sync as the two copies of the sound play together; EQ continues to be manipulated here also. The piece ends with downward pitch bends created through switching off the turntable motors, and the playing of a heavily filtered version of one of the sounds at a slightly varying speed (caused through manually pushing the record).

4. Musical content

Musical interest is created through the variety of ways in which the turntables can develop the (broadly similar) source materials. Heavy use is made of the EQ controls, and of extremes of slow/fast movement of the records, in order to introduce pitch variation into the overall soundscape. Of key importance is the way the duality of the instrument is explored: two copies of the same sound are used to create doubling effects that twist the sonic landscape (especially at 2'04"): these then morph into delays as the records are brought in and out of sync with one another. Shifts in the frequency range create structure within the performance: the piece is bookended by extreme filtered versions of the sounds, and while the opening passages focus on isolating narrow frequency bands within the sounds, the later parts deal with fuller versions of those sounds.

5. Sound-world

The sounds harvested from the DVS all display a characteristic, grainy distortion. Most of the original sonic characteristics (of the sound files that were playing during this harvesting process) are gone, although some drum rhythms can still be heard. The sound-world here is firmly rooted in the technology itself (the DVS system) as opposed to the original sound files being played; a parallel can be drawn with Maria Chan's performance (Chapter 4.2), which focuses entirely on the sound of the analogue medium. All the sounds recorded had very similar frequency content, in spite of the use of a variety of pitches in the sounds being distorted: this is a possible limitation of using DVS to create sounds in this way.

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[93] Later in the portfolio, I return to this idea using MIDI controllers, making the technique more accessible through eliminating the need to reach the laptop keyboard.

6. Summative analysis

The performance techniques used here are clearly influenced by the source material: the narrow frequency variation leads to a focus on EQ and extremes of fast/slow record movement in order to create more variation. This is not entirely successful: for example, the slow movements do not create low frequencies with any real weight or depth. This is largely caused by the sonic properties of the DVS-sourced sounds, and highlights a limitation of using the turntables to create pitch variation in this way: some sounds will react better than others to extremes of pitch bending. By contrast, *Control Signal* is a more successful piece in this respect. There are other ways in which the sonic properties of these sounds influenced playing style and technique. It was discovered that the sonic material sounded similar whether being played backwards or forwards: the opening passages demonstrate the use of this fact to create a long, continuous texture by using backward and forward movements of the record. Of particular interest is the first faderless juggle at 2'23": this demonstrates beat-juggle manipulations being used for purely timbral, rather than rhythmic, ends. The interruptions applied to each record in turn have the effect of bringing the two copies of the record in and out of sync with one another, juxtaposing the sonic effect of doubling the sound with that of mixing the sound with a delayed version of itself.

5.2 *ctrl+alt+dvs part two* (full analysis)

1. Open Listening

This was the first piece created in collaboration with Ewan Stefani as part of the *ctrl+alt+dvs* sequence of performances. The desire here was to move beyond recording DVS-specific sounds before creating a piece, and instead to design a system that would allow the specific timbral qualities of DVS function/malfunction to be accessed during a performance. We created a setup in which Stefani was able to apply audio processes to the Serato control signal (using a Max/MSP patch) before the affected sound was fed back into the Scratch Live software, in order to create a variety of transformations, interruptions and glitches in the system's playback. There were two key areas I was most interested in evaluating throughout these collaborative performances: the new sound-world we were accessing through hacking the DVS technology, and the way that the new behaviour of my instrument would impact technique and playing style.

During initial sessions spent experimenting, evaluating and composing with the new system, the most frustrating aspect we discovered was the seeming unpredictability of the technology. Some processes which had been particularly favoured, or which had formed the basis of musical passages I wished to include within a performance, would yield different sonic results each time the system was set up afresh. The conclusion I drew from this was that, while the software is optimised to interpret

the record movements for normal playback, and successfully does this for a wide range of signal strengths, left/right balances etc., the modes of playback we were trying to create through the hacked system were far more sensitive to these slight differences each time the hardware was connected up. This theory was borne out after new control records, new needles and a comprehensive cleaning of the contacts inside the turntable tonearms greatly improved the situation. In addition to this, successive performances focused more specifically on the processes we had found to be more stable and predictable: by the time we recorded the *ctrl+alt+dvs DJ set*, I had a clear understanding of how the processes would be incorporated into my performance (Chapter 5.4).

       ctrl+alt+dvs part two is from an earlier point in the development of the project: however, the slight unpredictability in the system at this point did produce some interesting performance dynamics. At this stage, performing with the hacked DVS had a battle-style feel: the laptop performer creating interruptions to my techniques and patterns, with myself having to react creatively to those alterations within the performance moment. It can also be heard, through the submission of the live version of parts one and two from Birmingham Conservatoire, that the piece was able to be repeated in a rendition that is clearly another instance of the same musical work.

2. Technology

My right-hand turntable was plugged directly into a Max/MSP setup, with the output from this being fed back into the right-hand turntable's Scratch Live input. The rest of my instrument was as normal: turntables, DJ mixer and DVS system. This processing being applied to one side only allowed for two different ways of incorporating the hacking into the performance: I could beat-juggle between one affected and one unaffected version of the source material, and I could use the (unaffected) left turntable to scratch over the (affected) sound from the right.

3. Technique

The initial scratch manipulations consist of faderless rubs and tears, before the opening track is played. During this intro, scratch patterns including chirps, stabs, boomerangs and crabs are used. The juggle section at 1'04" begins with long loops embellished with chirps, stabs and rubs that introduce each new loop. There is then a section of shorter loops and fills: the fill technique is developed to move through the bar of music being used, until the phrase 'lick it' is looped, ornamented with rub scratches and a tear pattern at 1'26". Further loops lead up to a scratch pattern at 1'36" which consists of clover tears being faded using the mixer's line fader. I then play a more complex set of hybrid beat-juggle/scratch patterns which utilise fills, loops, rubs, tap-pauses and pushes. At 1'56" the DVS hacking is introduced, and I juggle and scratch between the two versions using loops, stabs, boomerangs and drags. In the section from 2'33" I perform loops, but use the cue points within the Scratch Live software in order to give greater control of the starting point of the hacked part each time it is repeated. I cut in some sped up forward and backward sections of the left sound (in order to

imitate some of the more extreme effects of the hacking) and then perform scratch passages which include chirps, stabs, boomerangs, crabs, drags and tears, until at 3'29" the left turntable is sped up before switching the motor off and simultaneously fading the hacked part out.

The remainder of the piece focuses on using scratch techniques with the left hand turntable, while the right is used to play a track with various hacking processes applied. The section opens with no hacking applied, and scratching in 4/4: these are more standard hip-hop passages within the overall technical landscape of the piece. After introducing the scratch sample using stabs, chirps, crabs and a two-click flare, at 4'12" I begin a long stream of two-click patterns. These move back and forth through the sound in order to create timbral variation; this is also achieved by shifting focus between the forward and backward versions of the sound.[94] As the hacking begins to affect the playback of the right hand turntable, I scratch using stabs, chirps, one and two-click flares, crabs (and crab flares), tears and boomerangs. At 5'11" there is a brief return to the earlier syncopated two-click motif (two-click tug jobs in this instance) before transformers, more crabs, drags and pushes lead up to the next scratch sample.

At 5'17" I begin scratching with a drum sample containing three individual drum hits: kick – snare – kick. I manipulate this using stabs, chirps and a variety of three-click variations (most notably swing flare and autobahn #1 patterns, and slight variations on these), which are used partly in order to move from one drum hit to another. At 5'45" the next sample enters: a long pad texture with a slowly evolving morphology. I use primarily drags, pushes and transformers in manipulating this sound. From 5'59" the next scratch sample is used: this is another multiple-onset sound comprising drum hits and a vocal syllable. This is again manipulated using stabs, drags, pushes and autobahn #1-type patterns. In manipulating the next sound, another vocal 'ahhh' texture, I focus on first on swing flares and then on transformers. There are also stabs, drags, chirps and crabs. The next, and final, sound that I use is another three-hit drum sample. Much of the manipulation here focuses on forward and reverse stabs, and on rubs played with a long forward scratch followed by a quick reverse one. There are also chirps, stabs, transformers, drags and boomerangs. At 7'59" there is a stream of two-click flares reminiscent of the long two-click passage from earlier. After some more stab-heavy manipulations I transform and crab the fader over fast forward and backward pushes of the record: the snippets of sped-up drums that this produces are a deliberate imitation of the hacked DVS sound-world. There are some final tears and transformers, until the hacked turntable is switched off, producing a long, gradual pitch bend that ends the piece.

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[94] There is also a point of contact here with my work on polymeter in scratching: all of these patterns are grouped in multiples of three, but are played in semiquavers in order that they repeat at different points in the bar. This is, however, the most common polymetric device already present in hip-hop scratching: my technical examples develop the idea much further.

4. Musical content

The performance is predicated on creating interruptions and distortions to what would otherwise be standard hip-hop playing of the instrument. Tension and interest are created through the performer's interaction with the altered playback of the right turntable. Rhythm plays an important part in the musical landscape of the piece, and specifically the disintegration of rhythm from the familiar to the abstract is a key musical feature. The need to constantly listen and react to these changes, and to bring my technical vocabulary to bear on adapting to those changes within the performance moment, produces a whole that is expressive and ephemeral in nature.

5. Sound-world

There are two main elements here: hip-hop material and the sound of the hacked DVS. The DVS sounds exist on a continuum between the unaffected, original material and absolute destruction/digital noise, and the use of different processes to arrive at different points along this continuum is an important feature of the *ctrl+alt+dvs* project as a whole. Hacking the signal also produces another interesting effect that was unexpected at the start of the project. Since these processes all affect the playback, rather than the sound itself (i.e. there is no direct processing of the source material), the resultant sounds follow some of the same rules as other turntable-produced sounds. The playback must move backward and forward through the sound, rather than jump instantly to a different position; also pitch and tempo are linked. Because of this, an interesting sonic unity arises between the hacked DVS and the scratching, and many of the sounds produced have similar characteristics to rubs and tears, in particular. This is an aspect which is explored further in the *ctrl+alt+dvs DJ set*, where a deliberate ambiguity is created between the actions of each individual performer.

6. Summative analysis

While the hacked DVS system was to become more predictable in future performances, this 'battle-style' moment in its development has interesting connotations for free improvisation with the turntables. Of particular interest is the way in which the scratch techniques employed change with the level of destruction being applied to the original source material. When the meter has been eradicated, there emerges a clear focus on the stab scratch, due to it naturally being a technique within which each individual sound heard is carefully placed by the performer. By contrast, the passages which have constant meter more naturally lend themselves to hybrid techniques (those techniques I have identified in Chapter 13 as having the potential for homogenised muscle memory) such as the long, flowing passage of two-click variations. More generally, the whole landscape of scratch technique shifts when meter is removed: instead of being predicated on rhythmic interplay with the beat, these manipulations become gestural and timbral devices. While assessing the sonic results of hacking the DVS was the primary aim of the piece, further interesting developments emerged through my

engagement with them as a performer. Of particular note is the use of extreme pushes that are transformed or crabbed using the crossfader: this scratch, with its unique sound, was only conceived through attempting to imitate the sounds emanating from the hacked turntable.

5.3 *ctrl+alt+dvs part three*

This is a reworking of an earlier piece from 2011: I felt that the hacked DVS system could add an extra dimension to this work, which was originally focused on the development of beat-juggle patterns through the inclusion of a wide variety of time signatures. In this recording, the augmented DVS system becomes more integrated with the beat-juggling than in the previous recordings. The piece opens with a rhythmic amplitude modulation process applied to the DVS signal. This imposes a fixed rhythm onto the sounds coming from the right turntable, which in turn leads to an interesting development of the beat-juggle techniques being used. Since the constant rhythm will always be heard, I am able to experiment with extreme pushes of the right hand record, the resulting snippets of sped-up drums adding to the texture, while a steady pulse is still heard due to the hacking. There are three different styles of beat-juggling juxtaposed within the piece: standard hip-hop juggling in 4/4 and 12/8, ametric juggling (there is a continuum between these two styles, with some passages being rooted in 4/4 but having occasional distortions applied to the meter) and juggling between one hacked and one unaffected turntable. In the second beat-juggle, and in particular during the passages from 3'28", I have re-appropriated ideas learned from experimenting with smoother sounds back into the hip-hop source material. Instead of aiming for the obvious hitpoints within the sound, I treat this hip-hop break as if it were a smooth texture, sometimes cutting into the drum sound after its initial attack, or in other unusual places. The resulting soundscape develops the timbres within the original break in more extreme ways than would be achieved by always cutting the sound at its obvious hitpoints. This device is continued into the next beat-juggle section also (at 5'15").

The final juggle using Dave Brubeck's *Take Five*[95] shows an interesting way in which the turntable performer's capacity for quotation can influence an audience's perception of the music. This is a well-known piece of music, famous partly for its 5/4 time signature. Because of this previous association being made as soon as the sample is heard, the listener naturally expects to hear 5/4. Using juggle patterns to play the material in triple or quadruple time hence sounds unnatural: it creates musical tension that is then resolved when the familiar 5/4 returns. The piece ends with a timbral exploration of the Brubeck piece, with extreme granular processing applied to the right turntable's signal, and scratch techniques on the left that deliberately imitate the hindered playback of the hacked side (mainly drags and tap-pauses).

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[95] The Dave Brubeck Quartet, 'Take Five', from *Time Out* (New York: Columbia, 1959).

5.4 *ctrl+alt+dvs DJ set*

Through the previous performances, and the experimental sessions which led to their creation, Stefani and I found we had developed enough familiarity with the *ctrl+alt+dvs* system to create a structure within which we could perform improvisational DJ sets using our modifications. We established a signal from myself that was to mean 'bypass', and agreed that patch processes would always begin from the less destructive ones (i.e. those effects that changed timbre without having much effect on rhythm or tempo) and gradually move to the harsher processes until the next 'bypass'. In this way, I was able to create an improvisational performance in which my playing remains congruent with, and complementary to, the nature of the interventions being applied by the other performer.

Throughout the opening of the piece, a wide variety of scratch techniques is employed, and more of the extended juggle vocabulary discussed in Chapter 5.3 is also heard, alongside the more traditional juggle techniques of looping and fills. From 2'40", I take inspiration from the way the DVS hacking is affecting the opening brass riff, and use pushes, tap-pauses, snakes (these involve rubbing a finger in diagonal lines, back and forth against the surface of the record, creating a rounded tear-type manipulation) and tears to imitate the hacking in various ways, and to create hybrid phrases between the two turntables. The result is a set of passages that have a certain ambiguity as to whether straight scratching or DVS hacking is being heard at any single moment. Throughout the performance, this more fully developed synergy between myself and the hacking is evident in the patterns played, the techniques employed and the tracks selected. The bypass signal allows me to interject snippets of recognisable hip-hop juggling into the overall sound, creating musical interest through juxtaposing these manipulations with the more avant-garde sound-world of the DVS hacking. A particularly good example of this tension can be found in the section from 12'56" – 17'00", during which there is a constant back and forth between the two styles, with each frequently emerging before being overtaken by the other.

The overall structure of the DJ set is very different from that of a standard DJ performance. Because of the focus on beat-juggle techniques, and on creating gradually shifting variations to a beat-juggle passage, the performance comprises only short passages of a variety of tracks. None of the pieces used are allowed to play for more than a few bars, with musical interest being derived from presenting those bars in a wide array of different ways.

Chapter 6: Collaborations with Jim Birchall

6.1: Rough Fields

Rough Fields was a project in which I fulfilled the role of drummer/percussionist, using the turntables, within a band. The full line-up consisted of myself, a keyboard player, bass guitarist, two guitarists and singer, with occasional other instruments (melodeon, glockenspiel) being played by members of the band. The overall sound was created through the use of live looping of the various instruments (using *Ableton Live* running on a laptop), and so it was important for me to keep the band in time by playing the drum/percussion samples in time with the *Live* project. I had a click track from *Live* routed to one side of my headphones, and my own performance in the other ear.[96] I then had to mix the Rough Fields drum parts with the click in order to keep time for the whole band: this is relevant as it demonstrates a new way of using beat-matching techniques, as opposed to just a method for matching two records within a DJ set. Through the development of DJ technologies, beat-matching is rapidly becoming an obsolete skill for a club DJ: my work with Rough Fields demonstrates contemporary relevance for a skill that is continually becoming less fundamental within its original context.

Two interpretations of the track *Watery Fable* are presented here. In the first, sequenced drums are mixed to the click, with a second copy of the drum part being used, from the other turntable, to add ornamentation. This happens in much the same way as the 'fill' technique from beat-juggle vocabulary, i.e. drum hits are placed in between the hits of the other record. The other way in which the drum part is manipulated here is by using the turntable platter to create deliberate drifts and imperfections in the timing of the part. These are controlled by either dragging a finger along the side of the spinning platter to slightly slow the playback, or by gently pushing on the part of the record near the spindle to speed up slightly. This is exactly the same methodology used by mix DJs to correct timing imperfections during a mix, the difference being that I am using these techniques to an opposite end. While use of the turntables as a tool for keeping two sequenced tracks rigidly in time with one another is rapidly being superseded by new technology, my use of beat-matching technique here embraces the technical properties of the turntable in a way that could not be recreated using digital playback methods (or would, at least, be difficult to recreate). The resulting sound is a drum part that has a looser, less 'sequenced' feel to it than would be possible without the turntable, played in a way that works with the properties of the instrument in an idiomatic fashion.

The second interpretation of *Watery Fable* does not use the original sequenced drums at all: instead, the sequenced part is used to inform the rhythms and timbres of the performance, like a kind

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[96] Or at least, I would have done, had we successfully worked out how to do that. What actually happened was that I wore two pairs of headphones, and arranged them on my head so that the appropriate right/left balance was achieved.

of 'sonic score'. The samples are all taken from DJ tools/battle weapon releases, and are manipulated using standard hip-hop scratch drumming techniques. The main techniques used are rubs, chirps and stabs; there is also a limited amount of the type of boomerang-style scratch drumming discussed in Chapter 4.8 (in reference to DJ Rafik).[97] The third presented Rough Fields recording is the beat-juggle version of *Harbour Wall.* Here I use loops from the sequenced drum part, and manipulate them using standard beat-juggle techniques: looping, tap-pauses and fills. While these second two Rough Fields recordings therefore offer nothing new in terms of playing style/techniques, scratch drumming and beat-juggling are rarely used in ensemble playing outside of turntable team routines, and rarely combined with mixing skills through being executed to a click track. The beat-juggle patterns and loops of *Harbour Wall* could have been executed using cue points and digital technologies in order to launch the samples: however, the sonic nature of each loop being launched by hand from the turntable again adds imperfections that make the overall sound more human. These recordings demonstrate that the techniques of scratch drumming and juggling can be viable within an ensemble setting, and can be used to add characteristic sonic elements to the whole that could not be achieved using other methods of producing/playing back rhythmic backing tracks.

6.2 Adult Mags

Live in Saltaire (full analysis)

<u>1. Open listening</u>

Adult Mags is an ongoing collaboration between myself and laptop performer/sound artist Jim Birchall. The basic premise of our performances is the use of environmental sound, recorded in the vicinity of the performance space in the hours leading up to the performance, in order to create ephemeral, locality-specific sonic events. For these performances we also used pre-prepared drum loops in order to create musical variety. However, the drums for both of these performances were also written to be used only once, in keeping with the ethos of the project as a whole. While this analysis relates specifically to the recording from Saltaire, the technical and structural landscapes of the two performances are broadly similar. Specific aspects of the Bradford performance that merit separate discussion will be included after the Saltaire analysis.

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[97] This is a studio recording containing overdubs. The part could not be recreated live by a single turntablist: however, overdubbing was deemed to be the most appropriate method for creating the desired sound within a studio setting. This feeds into the discussion about using the turntables with minimal source material in Chapter 11.

2. Technology

I am using my usual current set-up of two turntables, mixer, DVS and Novation Dicer controllers. However, my technical set-up and that of the laptop performer are connected, and interact with each other beyond us simply playing our instruments together. Birchall uses Ableton Live to play back the field recordings, and to apply a variety of audio processes to them. In particular, the use of very precise band-pass filters allows Birchall to isolate small frequency bands within the environmental sounds, essentially playing notes and chords. An output from the laptop set-up is connected to Serato's recording input, allowing me to record sections of the laptop performance and subsequently manipulate these recordings using the turntables. At the same time, an output from my mixer is also reconnected to an Ableton input, allowing the processes being applied within the laptop environment to react to the sounds I am producing, by using the signal from the turntables as a sidechaining input for gate/compression effects.

3. Technique

The first entrance of the turntables is at 2'20" with some spare stabs using the beginning of the sound I have recorded. I then play long sections of the sound, articulating slight pauses before recuing the sound on each turntable. From 2'49", this recuing becomes faster, morphing into a recognisable use of beat-juggle technique, specifically looping. At 2'56", I imitate the rhythmic chops of the looping with a new technique: tap-pauses on a single turntable. From 3'02" I switch back to the beat-juggle manipulations, developing the complexity of the rhythms heard through also introducing fills alongside the looping. At 3'27" I use the pitch control of one turntable to introduce a new, flatter pitch into the overall sound created by the looping. The section continues with further looping and recuing of the recorded sound, embellished by some stabs (notably at 4'09") and further tap-pausing.

From 4'56" I process the recorded sample using the eurofader[98] technique, creating a much faster, but also smoother, rhythmic development of the source material. At 6' (introduced, again, by some stabs) I use the looping techniques to juxtapose two of the more noise-based parts of the recording, highlighting their textural differences by doing so. After a break, during which the laptop plays alone, the turntables re-enter at 7'22" with more stabs, looping, and tap-pausing, embellishing this sound-world at 7'46" with a pitch-bend created by slowing the record to a complete standstill. From 10'02" I manipulate the sample using a snake scratch. The snakes begin slow and deep, gradually speeding up to create a fast, pulsing texture at around 10'49". Further snake variations, and occasional eurofader embellishments lead up to the introduction of the drums at 14'20".

The drums consist of a pre-composed sound file that I play back using the right turntable. Throughout the drum section I also add scratch manipulations of the previously recorded sound using

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[98] This is a two-fader technique: one hand operates both the crossfader and the line fader together in order to place a fast stream of gaps over the sound.

the left turntable and mixer. This begins, once again, with stab scratches (from 4'37") which imitate some of the rhythms heard in the drum part. From 15'03" I explore rhythmic expansions and contractions of the two-click flare scratch: this is exactly the same musical idea presented in Chapter 9.6, heard here within the context of a full piece. From 16'04" I play a number of variations using the three-click fader pattern of open-close-tap-tap. I often perform the fader clicks over the sample simply playing, creating a repeating quaver-semiquaver-semiquaver rhythm, and I also use releases to create phrasing in the part. In the second part of the drum section, I again use stabs and three-click patterns to manipulate the noise recording, with the three-click rhythm becoming especially prominent from around 18'52". From 20'08" the expanding and contracting two-click flares are heard once again. In the final section of the piece I again use stabs, looping, fills and tap-pauses to inject rhythm into the noise recording and to juxtapose different pitches within the sample, finishing with a repeat of the pulsing snake manipulation (which imitates the delays Birchall is using to add rhythm to his parts).

4. Musical content

The performance uses textural variation as the main source of musical interest, and while many of the individual gestures of both performers are improvised, the overall textural structure of the piece was planned. Birchall begins by playing high-frequency parts, which I then record and begin manipulating while Birchall gradually shifts into a lower register: by creating this progression in the spectral content, more weight and intensity is felt from the music as this section evolves. The initial entrance of the turntables immediately presents the attacks that are the key sonic development I am applying to the sounds: doing this creates a sudden, attention-grabbing progression in the sound that serves to introduce the main musical difference around which our interactions are based. We also create musical interest through the juxtaposition of more clearly pitched sounds with the noise content, and the foregrounding and backgrounding of those two elements relative to one another, with the pitched sounds eventually breaking through before the drum section. The intensity of the sound also continues to shift and grow in different ways throughout this section (sometimes Birchall introduces more sounds into the mix, while at others increases the harshness of the sounds already playing). During the drum section, the noise textures of the laptop performance react to the drums, through sidechaining compression. At the same time the turntable part begins the pure scratching section in time with the drums. In this way, both of the previously heard parts become overtly metric, in stark contrast with the meter-less opening passages. Many of the same noise textures as in the first section are replayed from the laptop, heard now within the new context of a rhythmic, breathing line reacting to the rhythms of the kick drum; the same sonic unity is inherent in my part as the scratch performance utilises the recordings from the first section.

After the drum section, the laptop part focuses on more rhythmic material than in the earlier sections, while the turntable part creates phrases through the juxtaposition of different moments in the pitched material from earlier. This is almost a reversal of roles from the opening section of the

performance, although the turntable part still contributes rhythmically also. The piece can be viewed broadly as having an ABA structure (noise textures in both instruments – drum section – back to noise textures). There is also a general progression from a spare, minimal beginning to a fuller sound in the B section, via a number of crescendi created by adding more sonic material; the textural intensity then calming down again leading into the end of the piece.

5. Sound-world

There are two clear elements of the sound-world: the environmental sounds recorded before the performance and the drums. These are quite disparate elements, with the drum loops being an obvious point of contact with a standard sound-world within DJ culture, while the environmental element is far removed from the type of sounds usually manipulated by hip-hop turntablists. Another important aspect of the source material for my manipulations is the processing already applied to the sounds by the laptop performer before I take my recordings. The technological and performative features of my instrument then add another dimension to the noise sounds, primarily through the creation of attacks. These occur as the recording begins and as the crossfader cuts a sound in during a scratch or juggle technique. Within this performance, the sound I recorded from Birchall was a long take of the initial noise texture growing into a sweeping, pitched crescendo. This allowed me to access two contrasting sonic elements within the same recording, making judgements in the performance moment over which sound-world to reintroduce into the mix at any given time.

6. Summative analysis

The use of different sounds each time Adult Mags performs naturally leads to an improvisational style of playing: however, the heavy processing that is often being applied to the sounds does create a certain degree of predictability in the sonic content of the recordings I am taking from the laptop performance. The exact manner in which I manipulate these recordings is led by Birchall's performance, requiring decisions to be made in the performance moment about how my beat-juggle vocabulary would best be employed in developing this material. For example, a large amount of variation in the part I have recorded may lead me to juxtapose different parts of the recording with each other, while a more static sound could encourage me to make use of the turntable pitch controls, in order to create variation while back-spinning to the same point in the recording each time. The way in which both of us manipulate the recorded audio both plays to the strengths of the different set-ups while complementing each other sonically: Birchall is able to create long, slowly evolving textures through smooth changes in effect parameters, while I am able, mainly through beat-juggle techniques, to articulate phrases and invest more rhythmic content into the overall soundscape. The DVS technology is instrumental in allowing such close interaction between the two performers, facilitating as it does the live sampling of Birchall's output for my own use. I believe the feedback, created through then allowing the turntables also to exert influence over the laptop part, is a particularly

interesting area that merits further development. For example, having the noise textures duck in time with the rhythms of a beat-juggle passage (rather than just the kick drum, as happens here), or using a gate instead of a compressor, in order to chop the laptop part into the same rhythm as my playing, could yield another interesting musical dimension.

There are also clear differences in my approach to playing the A and B sections. The need to play the drum part using one of the turntables naturally leads to the B section being focused on pure scratch technique; however, the way in which the two areas of technique (scratching and beat-juggling) are handled, with the juggling being expressive and meter-less and the scratching firmly metric, make each a good fit for the overall sonic landscapes of the two sections. The style of the performance, and the nature of the other performer's part, fosters some interesting differences between this metric scratch performance (section B) and those commonly heard within hip-hop. Instead of being focused on phrasing, which would usually (in a hip-hop scratch performance) be a characteristic of prime importance, my performance consists mainly of long, shifting textures that either allow the gradual evolution of the recording to play out through the rhythmic filter of a repeated fader technique, or employ a close focus on a single technique to produce similarly subtle musical shifts using the technique itself. This approach is directly influenced by the stylistic and sonic characteristics of my co-performer's part. My handlings of the snake and eurofader scratches in particular are facilitated by both the sound-world and the style of the piece in conjunction with one another: firstly the length of the sample allows me to extend these techniques into much longer passages than would usually be heard within hip-hop performance, and secondly the ametric nature of much of the performance allows me to experiment with fluid shifts in the speed of execution of these techniques.

While there is an attempt here to infuse the drum part with the same transitory nature as the other parts (through only ever using it for one performance), and the use of signal processing technology to increase the interaction between the drums and the environmental sound, it was still a problem for us that the two elements of the sound-world are so disparate, and that the use of the drums has diluted the purity of the locality-specific ethos. An example of one attempt to remediate this disparity will be heard in the recording from Bradford, in which the turntables are instrumental in the live creation of the drum part. This was an ideologically superior move, bringing the drum part closer to the ephemeral nature of the other parts: however, it was not without its own compromises and issues, and still only brought slightly more congruence between the parts. Recent discussions have turned to the possibility, in a future performance, of creating more percussive sounds from the field recordings themselves. There are attacks created at the point at which Serato begins recording; I could potentially record smaller bursts of sound in order to create more attacks. Envelopes could also be created using the audio processing capabilities of the laptop element. This would be likely to lead to the inclusion, once again, of live looping, since only minimal percussive textures could be created

in this way, and the live turntable environment is only capable of playing back two of these sounds at any one time.

Live at Fuse, Bradford

The scratch and juggle techniques heard in this recording are broadly similar to those employed in the Saltaire performance. In the opening of this performance, Birchall's use of a vocal sample informs my beat-juggle manipulations in an interesting way: since the voice has an intrinsic rhythm of its own, my loops and fills work with and develop this existing rhythm, rather than imposing a completely new rhythm, as in the Saltaire recording. From this it can be seen that the sonic qualities of the source material naturally affect my playing style. The use of a vocal sample also brings with it a stronger causal association in the mind of the listener than the samples used in the previous performance. Because of this, the turntable stops and starts, created mainly through tap-pausing (the section from 3'45" demonstrates this well) have a more marked effect, as the bending of pitches away from that familiar vocal register is more immediately noticeable than it would be with a more abstract sound.

The key difference in the technical landscape of the turntable part in this performance is the treatment of the drums. In an attempt to remediate the lack of liveness in the drum part from the Saltaire performance, we have opted here to create the drum part using a collection of loops, which are built and developed using a variety of techniques. I utilise the mixing of different loops, fast chopping between different parts of loops and filtering using my mixer's EQ controls in order to create variety in the rhythms, timbres and spectra of the drums. I also use the looping capabilities of the DVS to free myself to focus on the mixer controls (specifically the crossfader and the EQ controls), while the sound files used play on continuous loops within Serato. While this has the desired effect of making the drum part more performative, I also lose the ability to perform scratch manipulations alongside the drums, as both turntables and both hands are busy with the drum samples.

Chapter 7: *lines that have been drawn on photographs of sculpture* and *tables:nuemes*

7.1 *lines that have been drawn on photographs of sculpture* (wind band version: full analysis)

1. Open Listening

This is a performance of a largely indeterminate piece by composer Lauren Redhead.[99] In addition to the score (Appendix 3), I was also supplied with the source samples to play: throughout this analysis it will be seen that both the visual element of the score and the sonic properties of the supplied sounds were influential over my playing style and interpretive decisions. Each page is interpreted as two systems, with one line each for left and right turntable, throughout. The performance is from the Sonorities Festival in Belfast, March 2012: I have also included a full-quality audio recording of the piece (from a rehearsal) in the folio, but the version being analysed here is the live performance video.

2. Technology

The piece is performed using a standard contemporary hip-hop turntable set-up of two turntables, a DJ mixer, and the Serato Scratch Live DVS system. The use of DVS was instrumental in facilitating easy experimentation with the provided sounds, and in creating certain effects in performance, as will be discussed. The mixer's ability to reverse which volume fader controls which turntable quickly and easily is also used in interpreting the score, when certain marks/ideas move from one turntable to the other (in particular to alternate which turntable is affected by the euro fader scratch, which is explained in the next section).

3. Technique

The piece opens with quick panning manipulations using the DJ mixer, in response to the shapes that open the first page of the score. The new shape that enters in the right hand part half way along the first system is interpreted as a pitch bend executed using the rpm selector buttons. At 0'51" the first direct physical intervention applied to the record is a gradually slowing stop, pause and release; throughout the following section these three technical ideas continue to be employed, until at 1'22", when I conclude this page of the score with a push of the record while also switching the motor off in order to create a contrasting slowing of the sound. This time, the slowing effect is derived from the nature of the platter technology, rather than from a physical gesture; the push extends the effect by causing the record to start from a faster speed than it would have been travelling at had this not been executed.

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[99] Further thoughts from both myself and Lauren on the piece's creation and realisation can be found in the conference proceedings of the Interactive Keyboard Symposium, Goldsmith's University, 2012 (Appendix 2).

I begin page two with short tremolo effects being created by manually applying a pulsing pressure to the platter with the fingertips of both hands (this being a new interpretation of similar symbols to those on page one). Other more vertical marks in the score are interpreted as quick pushes, drags, and tear scratches. Descending pitch bends, caused by switching the motor off, are again employed at the end of page two: this is a device used frequently in order to close sections of the piece, leading into a short silence before new musical material is introduced. Page three begins with a juxtaposition of the tremolo platter manipulation in the right hand with the push/drag/tear manipulations in the left. Moving into the second system the roles are reversed, but there is now a third interpretation of the original score symbol: this is now played as a rhythmic tapping on the record with the motor off.

My interpretation of page four sees the manipulations of the records becoming more extreme and, at the same time, more recognisable as hip-hop playing techniques. There is a short beat-juggle section that begins with the looping of musical material before this idea is ornamented with quick rub and tear scratches. The juggle finishes with the looping of a smaller section of the sample (at 3'27"). The right turntable is stopped (this is an interpretation of the symbol, towards the end of the first system of page four, that looks like a note-head with a ledger line), before at 3'42" a new fader technique enters: the euro scratch. This is a two-fader technique that consists of transforming the sound with each fader in turn to produce a fast muting/unmuting of the sound. This is my interpretation of the thicker lines in the left hand line of the score. Panning and record speed are manipulated with the left hand during the euro fader scratch. Moving into the second system of page four, the left record is played while the rpm selection buttons speed the sound up and down. Further recognisable hip-hop scratch techniques are now executed with the right turntable, these being forward and backward stabs and drags, before the previous euro scratch idea transfers to the right turntable.

At 4'35" (page five in the score) there is a combination of the rhythmic platter pulsing idea with the speed changes afforded by the rpm buttons; this is first executed as a two-handed technique before the right hand takes over both roles, in order to allow the left hand to perform a long drag/rub manipulation of varying speed on the left turntable. In the second system of page five, these ideas switch between the two turntables, while the drag idea is expanded upon with the inclusion of quicker pushes. The first system of page six has further prolonged sections at 45 rpm, interspersed with quicker returns to the original speed: further stabs of differing pitch are played alongside this. The second system of page six consists of push, drag and tear scratches played using both turntables together (the crossfader remaining in its central position): this is a technique, known as faderless juggling, that I have used at various points in the folio. Here there is alternation of left and right hand scratches, reminiscent of the movements of a more normal, crossfaded beat juggle: the two hands do not scratch in unison. The juxtaposition of rpm button manipulation with the rhythmic platter pulsing is then heard (this is the first system of page seven).

There is a sudden development, in my interpretation of the second system of page seven, of the scratching vocabulary being employed in the piece: the right turntable, for the first time, simply plays through a sample without any interference from the performer, while new scratch techniques and patterns are played using the left. This can be viewed as a point of contact with traditional hip-hop scratching, where the most common device is that of scratching with one turntable over a beat that is playing from the other. The techniques used are a boomerang, a three-click tug job, and then some combinations of transformers, crabs, drags, and tears.[100] The beat-juggle theme then returns, this time being developed by the inclusion of pushes: at 7'44" a transition is made to a development of the faderless juggle. This time slow reverses of each record in turn are played alongside the forward motion of the other turntable; these reverses tend towards tap-pauses at the end of the section. The techniques of using alternate tap-pauses to play sections from each record in turn is the most common faderless juggle pattern seen in the hip-hop tradition, most usually applied to a triplet, 'strobing' manipulation of the beat.[101] There is then a development of the euro fader scratch idea, this time using the motor on/off buttons to create deep pitch bends while each record in turn is transformed using the euro fader (this is the second system of page eight).

A variety of faderless scratches are used at the beginning of the final page, again building on what has been used before: tears, drags and pushes are now combined with different swipe patterns. This idea then transfers to the right turntable, with the inclusion of a hydroplane scratch and some more complex push patterns using both hands. The platter is then manually sped up using a finger in the label area of the record, in order to create a longer descending texture once the motor is switched off: once again the euro fader scratch is employed as the final sounds fade into silence.

4. Musical content

A key musical feature of the piece is the application of distortions and interventions to recorded sound. The samples provided by the composer (drawn from a recording of a previous piece) include digitally processed versions of the source material, and my live performance further processes these sounds using turntable techniques. I have mirrored the progression in the sound files, where increasingly harsh processes change the sonic properties of the sounds by increasing degrees, by also using the turntables to progress towards more extreme manipulations as the piece progresses: this can be seen in the chronological analysis of the techniques being employed. There are other elements of the source sounds that have also influenced my playing. The focus on the breath (rather than on notes being played by the instruments) that is heard at various points in these recordings is another aspect I

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[100] The boomerang scratch is a mirrored six note combination of slices and stabs: the crossfader moves in a three-note pattern of open-close-tap while the record moves regularly back and forward. The three-click tug job is a mirrored eight note combination with a similar fader pattern of open-close-tap-tap, while the record fills in the second and sixth notes by changing direction. It is actually the same scratch as a three-click flare, but starting on a different note. See Appendix 1 for notated examples.

[101] The strobing pattern involves recontextualising pairs of drum hits to become triplets: this is achieved through adjusting the positioning of the next pair of hits from the other record.

have picked up on, using scratch and beat-juggle techniques to extend these textures. The style of the samples is also important in informing their treatment: the fact that these recordings contain instruments playing without overt rhythmic content or traditional consonant harmony, but instead in swelling phrases that focus on textural and timbral interest, has influenced the way in which I perform the piece (this is another area in which the processes applied to the sounds by the composer is important: some of the effects used introduce more rhythmic elements into the sounds, and this is also mirrored in the way that the live manipulations become increasingly rhythmical).

The pitch content of the performance is a product of both the samples used and the turntable manipulations of those sounds, and again my playing technique has been influenced by the source material. The instrumentation of the recordings gives quite a narrow spectral range to the given samples, leading to the proliferation of techniques that transform pitch in some way (motors being switched on and off, pushes, drags, tears and the use of the platter speed buttons are all prominent features of the performance, and are all techniques that produce (sometimes extreme) variations in pitch).

The structure of the piece is informed by the score: different sections of the piece, recapitulations of various themes and combinations of musical ideas on left and right turntable are all traceable to changes, repeats and combinations of the styles of mark within the score. The interpretation of the score sometimes gives marks specific correlative meanings (for example, the 'note-head' at the end of the first system of line four in the right-hand part) but often allows the score to inform style of playing in a more general manner (for examples, pages eight and nine). This latter feature of my interpretation places greater importance on the overall impression made by each page of the score, rather than the individual marks upon it. While this aspect of the work was apparent from viewing the score in isolation, it was also backed up by investigating the sculpture mentioned in the score's notes, Michael Pennie's *Across the Board*. Pennie has described the creation of the sculpture on his website, explaining that he was 'concerned less with the individual and more with the populace'.[102]

5. Sound-world

As previously mentioned, all the original samples for the piece are recordings of a wind band. Each of the four raw recordings has three other digitally processed versions: firstly a version with a rhythmic step filter applied, secondly a version with a short multi-tap delay, and finally a version with both of these two processes combined. Thus the overall sound-world of the piece shifts focus between acousmatic sound, studio processes applied to that sound, and turntable manipulations applied to this combination. Much of the sonic experience of the piece is derived directly from the turntable

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[102] Michael Pennie, 'Across the Board and Two Other Sculptures', *Michael Pennie Info Page* <http://www.michaelpennie.net/Sculpture/acrosstheboard/Acrosstheboard1.html> [accessed 15 August 2014] (para. 6 of 10).

technology: the way in which pushes of the record create a momentary speeding up of the sample, followed by a smooth return to the original speed, the glissandi created by the switching of the platter speed between 33 and 45 rpm, the effect created by switching the motor off, and the rhythmic chopping of the sound achieved by the instantaneous on/off settings of the faders are all elements of the sound-world that can be assessed as being unique to turntable performance. In performance, musical interest is created partly through a progression in the interventions (both pre-performance and during performance) being applied to the recordings[103], but also, at times, through sudden juxtapositions between the sound of the samples and the sound of turntable scratching techniques. This is another common theme in the portfolio, and is again informed by the nature of the technology: the turntable's ability to switch quickly between simply playing a sound and manipulating it almost beyond recognition making this an idiomatic device for turntable music. The use of DVS technology, while instrumental in creating and rehearsing the piece, is also used in an idiomatic way within the performance: the use of cue-points allows the performer to play two copies of the same sound in unison (at 7'23", for example) with much greater ease than the purely analogue instrument would allow. This is a theme that is explored in greater depth in subsequent folio pieces.

6. Summative analysis

It has been identified that many points of contact with established hip-hop practices and techniques exist within the piece: however, both the musical style and sonic properties of the sounds provided by the composer have created a space in which certain extended techniques can also be experimented with. The platter pulsing idea, alternate euro fader scratches punctuated by record starts and stops, and much of the specific beat-juggle vocabulary, are all features that would rarely be seen in hip-hop scratch battles. The beat-juggle elements, in particular, are influenced by the source material in interesting ways. The absence of a strict tempo allows the rhythms of the juggle greater freedom and fluidity: connected to this point, there is also a lack of the clearly defined beats that would usually give the beat-juggler specific points to aim for in cutting in different parts of the record. This leads to a situation in which any point of a long sound can be used with broadly similar effect, in stark contrast with the usual hip-hop practice of juggling a drum break with definite hit points. The pattern at 7'46" in which sections of the record are heard playing backwards and forwards at the same time would be messy and undesirable within a hip-hop performance, but due to the style of the musical material here this device serves instead to enhance the textural variation within the piece.

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[103] This process could be viewed, in traditional musical terms, as 'exposition' and 'development'.

7.2 *lines that have been drawn on photographs of sculpture* (keyboard version)

This version of the piece was recorded live at the International Keyboard Symposium, at Goldsmith's university, in March 2012. The piece was revisited with a completely new set of source sounds (again supplied by the composer); it was especially pertinent to my central theme of source material's effect on technique to play the same piece with entirely new sounds. Much of the technical landscape of the piece remains similar to the wind band version, but the key difference is the greater consideration of specific hitpoints when juggling. This is directly influenced by the more percussive nature of these source sounds, which naturally creates more obvious hitpoints for the juggler to work with. I focused on the theme of distance throughout the performance (an idea which is absent from the earlier versions), using (pre-applied) reverb and the mixer's volume controls in order to create changes in the perceived distance of the soundscape from the listener. The reverb processes applied to the sounds also serve to smooth the percussive nature of the piano sounds, and so in the latter half of the piece, the earlier reliance on hitpoints is juxtaposed with scratch techniques that serve to explore and extend these smoother textures (in particular, snakes, tears and rolling crab/flare combinations).

There are sonic elements that remain constant between the two interpretations due to the turntable technology itself, especially the smooth pitch bends created by changing speed from 33 to 45rpm and by manipulating the platter. It is also apparent that there are stylistic similarities in the scratch and juggle vocabularies of the two versions: this is a natural result of their being performed by the same person, but is amplified by the inclusion of partly improvised passages in both performances. In the quieter passages, the fader clicks add to the sound-world of the turntable manipulations: they produce attacks that are not dissimilar from the action of the piano keys, therefore being a welcome addition to the overall piece. This illustrates an interesting point regarding turntable performance in general: the most common way of recording a piece is to take a line out from the mixer, and this certainly produces a clean signal, while also giving the easiest control over recording levels. However, there are other, acoustic, sounds being produced by the actions of the performer, and it is not always desirable for these to be missing from the recording. In such instances, recording through a microphone can produce a truer document of a performance. In some of the folio recordings (for example *tables:nuemes*) I have mixed both a direct line and a microphone recording, in order to give creative control over the amount of acoustic sound included within the final video soundtrack.

7.3 *tables:nuemes* (full analysis)

1. Open listening

This performance demonstrates the current state of an ongoing, year-long collaboration with composer Alistair Zaldua. The piece has gradually evolved over the course of several meetings, and began with discussions as to how a variety of vocal phonemes used in one of Zaldua's previous pieces could be developed using the turntables. Beat-juggle technique was a key area that both the composer and myself felt was worth focusing on during this project, and the first version of the score was produced (Appendix 4). This featured notations of juggle patterns based around directing me to play clusters of phonemes in certain orders from within the recorded sentences, but unfortunately many of the patterns notated were impossible to play using the files we had recorded. The patterns, as notated, would require one record to be rewound to a previous phoneme while the other hand was busy performing a tap-pause, or other manipulation, that therefore made it impossible to mute the rewind using the mixer's faders. Two potential solutions to the problem were proposed by myself, the first being to pre-program the patterns to a greater degree, creating sound files that would have the phonemes repeated in the correct order so as to move through the score. This was deemed to be an unsatisfactory solution, since Zaldua was keen to allow the capabilities of the turntables to guide the compositional process, rather than impose a structure that did not reflect the instrument. The second solution with which we experimented was the introduction of a 'mute-all' footswitch into the juggling set-up, allowing me to rewind records in silence without the need for a hand to be operating the mixer. While, within the context of this piece, it was decided that the resulting phrases were too slow, the 'mute-all' footswitch is an idea that I am keen to revisit as a development of beat-juggle technique in a future project, and one that would not have been envisaged were it not for this collaborative project and the original score I was given.

As this experimentation was taking place, Zaldua also produced sound-files of the score, in order to demonstrate how the finished clusters of phonemes would sound. I decided to experiment with beat-juggling *these* sound files, sending the results through to the composer for his consideration; it was from here that the current version of the piece developed, and while the original score was not eventually used, it was nevertheless instrumental in the creation of the sounds we used. While listening to the beat-juggle files I was sending, Zaldua also made an aesthetic connection between the percussive act of turntable manipulations and the sound-world of these phonemes with the West African talking drum. Because of this connection, we also began experimenting with talking drum samples, leading to the three areas of sound used for the performance: the original sentences, the

sequenced versions of the original score, and the talking drum sounds. I sent a variety of sound files of beat juggle manipulations using different combinations of our eventual source sounds: Zaldua then decided on the most effective pairings and produced a structure for the performance, by giving me written instructions as to which pairings to use, and which order to play them in. The piece was debuted at Goldsmith's University in March 2014: the instructions and sound files were then tweaked in response to this before the version presented here was performed at the University of Leeds. The piece is still under development, and the planned next stage is for Zaldua to produce a more prescriptive score to be followed at future performances.

2. Technology

I use my standard set-up here: two turntables, DJ mixer, and DVS system, as well as deck-mounted Novation Dicer controllers in order to access Serato cue points without needing the laptop keyboard. The controllers are also useful for bridging the gap between pairings: at certain points in the performance, these MIDI triggers allow me to play a sound with one hand while the other is loading new sound files at the laptop keyboard.

3. Technique

The opening passages of the piece use looping and fills, both of which are standard beat-juggle techniques. The loops are of a variety of lengths: I use them in order to isolate, repeat and juxtapose different phonemes within the sound files, and also at times to shift focus onto the less obvious parts of the sound files (for example the intake of breath before a word). At 1'20" I use a forward and backward drag on the right turntable to develop the rhythmic and timbral content of the source material, embellishing this by adding a single syllable from the right turntable, to form a hybrid drag/looping technique. This idea is returned to throughout this coupling, while I also continue to develop the material using the looping and fill techniques. At 2'04" there is a brief passage in which I simply mix the two sounds together, allowing them to play together from the two turntables.

Throughout the next coupling, I again use looping, fills and occasionally mix the two sounds. At 3'04" I am using release stabs on the left turntable to mix the same passage of the talking drum with different sections of the vocal sound, until at 3'14", when I switch off the turntable motor to create a long downward pitch bend as the record slows. I then focus exclusively on the looping and fill techniques again, until 5'04", at which point a short passage of mixing leads into a new idea at 5'12". Here I use the MIDI controller to access cue points as the records play, in order to play the same passage from both records at the same time. I then apply pressure to the turntable platters to slow the playback, and to create smooth changes in playback speed throughout the rest of this section.

From 6'16" I return to the main loop and fill techniques, embellished at 6'51" with some slow reverse drags in both hands, and at 7'47" with some fast stabs. There is a return, at 8'25", to the hybrid drag/loop technique: this time it is developed further through speeding up the pattern. The

section closes with a repeat of the stabs from the opening phrases. The next drum section focuses mainly on fills, until at 9'38" I employ a walking, tap-pause juggle technique to move through the sounds, isolating short snippets of each in turn. There is then further use of the loop and fill techniques, until the final drum coupling, during which I return to the mixing, platter slowing and simultaneous MIDI triggering ideas.

4. Musical Content

A central theme here, as with *Scratch Poetry,* is the obfuscation of semantic meaning from vocal recordings. Here this process began before the point of turntable intervention, as the original sentences written by Zaldua were already concerned with the erosion of the words' semantic content. A key consideration for me in interpreting the work was the evaluation of each sound's sonic properties in order to determine, within the capabilities of the instrument, how each should be treated. Given the turntables' ability to play sounds forward, backward, at different speeds, or with interruptions applied using the crossfader, different sounds reacted more or less favourably to different manipulations. Some sounds created interesting rhythms when played alternately forward and backward; others reacted well to extremes of pitch manipulation.

In the early workshop phase of the project, Zaldua mentioned two aspects that became central features of the piece: firstly the ability for my beat-juggles to create a number of repetitions of musical material, and to invest those repetitions with slight and subtle differences that create sonic interest. Secondly was his assessment of my looping techniques as being a process of applying 'windows' to the sound and juxtaposing these different windows using the two turntables.

5. Sound-world

As outlined in section one of this analysis, the sound-world of the piece largely grew out of the collaborative process, with two of the main source sounds – the sequenced version of the original score and the talking drum – arising organically from our discussions and experiments. The other sound – the recordings of Zaldua's original sentences – provided another dimension, especially in the natural speech rhythms they contain. As with *Scratch Poetry*, the ability of the beat-juggle vocabulary to isolate and extend different sonic moments within the syllables is a key feature of the performance. The juggle techniques are also employed to bridge the gap between the vocal and drum sounds, creating passages in which both complement and interact with one another.

6. Summative analysis

This project was one of the clearest indications, within my folio, of the potential for collaborative work to further our understanding of this instrument. Through working closely with the composer, a number of insights were gained that would not have come about in isolation. The majority of the

source materials were sounds that neither of us had conceived using at the beginning of the project, and their creation led to the evaluation of my playing technique within the context of sonic materials I would not otherwise have been using. Zaldua's perceptual slant on beat-juggling – that of seeing 'windows' applied to the sounds – was instrumental in furthering my development of avant-garde juggle technique. Once I had considered this shift in perspective, it became clear that the expansion and contraction of these windows would be an interesting avenue to explore. It is also likely that it was easier for Zaldua to view the technique in this way given his experiential distance from hip-hop turntable techniques. The way in which the original (unplayable) score led to other ideas for the development of turntable (specifically beat-juggle) technique has also been discussed. Being involved in this project has led me to the conclusion that collaboration with composers is imperative for the acceleration of this instrument's development.

Chapter 8: Assorted solo works

8.1 *Scratch Poetry* (full analysis)

<u>1. Open listening</u>

Scratch Poetry was one of pieces devised in order to address the central theme of source material within the portfolio. While the spoken word is clearly part of the sound-world of hip-hop music, the recorded poem (Brian Johnstone – *Assent,* as read by the author) has important sonic and stylistic differences from those usually found in recordings of rap performances. While poets do make choices of word selection and arrangement inspired by the metric rhythms of most Western music, the rhythms to be found here are lean closer to the natural rhythms of speech than those that would typically arise from a rapper performing to a beat. At the same time, Johnstone's lilting delivery does arrange some of the syllables into more traditionally musical rhythms, creating a whole that has interestingly multi-layered rhythmic aspects that beat-juggle techniques can be used to explore. Another important consideration is the minimal nature of the piece's source material: only the poem is used throughout. This is another important departure from the way in which vocal sounds are heard within hip-hop, and one which has important consequences for the execution and development of my playing techniques. In addition to the nature of the source material itself, the compositional priorities of this work are very different from those found within hip-hop, leading to treatments of the sounds far removed from those that would result from using *Assent* as the source material for a hip-hop scratch performance (in particular, the turntable manipulations here are more concerned with timbre than rhythm). In any case, scratching of vocal samples is not an area of particular development or advancement within hip-hop turntablism, and many of the vocal snippets used in performances from competitions like the DMC are pre-arranged into scratch 'sentences' with extremely regimented rhythms placed onto the vocal samples, thereby removing one of the key aspects of speech as source material.

<u>2. Technology</u>

An augmented, live-looping version of my standard setup is used for the performance. Ableton Live and the foot pedal are used for the recording, playback and looping of musical material originating from the turntables, and for the interactive sound processing in the final section of the piece. As with many of the pieces discussed throughout this commentary, the main influence of the DVS system lies in the composition, rather than the performance, of the work. The ability to apply turntable manipulations directly to digital files removes the need for the costly and time-consuming process of getting vinyl records of the source material cut, before even being able to experiment with

scratching/juggling the sounds in order to assess whether the chosen sonic material is the best option for the piece.

3. Technique

The opening scratch phrases incorporate a variety of techniques: there are stabs, forward and reverse drags, crabs and clover tears. After these initial scratch manipulations, there is a section of simply playing the poem in full. The poem is now mixed with itself using the two turntables: here I employ the MIDI controller to launch both copies of the sound simultaneously, and apply pressure to the turntable platters to manipulate the speed of playback. There are similarities here with the technique (primarily used within house music genres) of phasing: playing two copies together while making small adjustments to the speed of one copy, usually in order to create a peak in the energy of the music. There then follows a beat-juggle section using the opening phrase of the poem: this comprises loops and fills, until the two copies are mixed together at 2'51". In the next section ('stuff' and 'hitched rawness') the juggle technique is stripped back to just looping, embellished near the beginning with rubs, drags and tears, until at 3'36" the fill patterns are reintroduced. From 4'05" I use a faderless juggle to develop the sounds, allowing both copies to play but interrupting each in turn with slow drags. The next two beat-juggle sections make extensive use of loops and fills once again; each grows in complexity as it is played, with the addition of scratch techniques (rubs, drags, tears and stabs) and the extending of the fill to include more repetitions. At 5'36" I return to faderless juggling: the interruptions applied to the sounds become more extreme here. Instead of moving through the sound, I now focus on one small passage on each turntable, returning to the same point each time by dragging the record further back. Forward and backward sounds are played alongside each other, with the interplay between the two records shifting due to the timing changes in the manipulations being applied. The original faderless juggle idea is then used again to close the section.

The next section opens with a return to the 'stuff' beat-juggle: similar patterns and scratch embellishments are used as in the previous iteration. This time I am using the MIDI foot pedal to record the juggle and start it playing on a continuous loop. The next passage to be recorded is a beat-juggle almost entirely focused on loop and fill techniques, until at 8'03" an extreme pitch bend is created through switching off the turntable motor and immediately using a finger to take most of the speed out of the platter's movement. The 'sacrifices' and 'chance discovery' juggles are the next two recordings, again comprising loops and fills with scratch (rub, stab, tear and drag) embellishments. Then comes the first purely scratch passage: stabs and releases are a focus here, although I also use some swing flares, a crab, drags, tears, chirps, one-click flares and boomerangs. The next scratch part, from 10'37", is again introduced using stabs before a more technical passage involving three-click tug jobs, crabs, drags, forward and reverse stabs, chirps, swing flares and a reverse three-click autobahn #2 pattern is played. The passage closes with slow forward and reverse stabs until 11'18". Stabs are again a main feature of the next passage, as well as some chirps and crabs; the releases used are

tending towards being longer here also. The phrases beginning at 11'56" become busier again, with repeats of some of the three-click patterns from earlier, and an increased use of the transformer scratch. At 12'23" I employ the eurofader (dual fader) technique to create fast chopping across the opening line of the poem. Throughout the scratch section of the piece, there are frequent uses of extreme drags, performed in order to create large downward pitch bends in the vocal sounds.

4. Musical content

The piece is concerned with using the turntables to develop the rhythms and timbres of the original poem (with a particular focus on timbre). Specific areas of interest include the deconstruction of the words and syllables into their constituent sonic parts (thereby 'focusing in' on sounds usually perceived as single audio events, i.e. syllables, in order to expose the variety of different sounds that combine to produce them), the shifting of focus between different elements of the source material (and in particular the deliberate use of accidental sound – intakes of breath etc. – as sonic material of equal importance as those sounds made deliberately by the reader) and the layering of manipulated sonic material in order to develop both texture and timbre. All of these musical devices find similarities in the typical processes of electroacoustic composers, and all of them enable a gradual shift away from the semantic content of the words in order to move focus onto the intrinsic sonic qualities of the speech, thereby promoting reduced listening (and again, this central musical aim finds clear parallels with electroacoustic composition). The obfuscation of words' original meaning through the layering of the recordings (and manipulations of the recordings) bears a not inconsiderate likeness to *Come Out* by Steve Reich.[104]

My Ableton Live project was set up in order to add interactive signal processing to the performance. After recording the first passage, the 'stuff' juggle, each successive sound recorded has the 'stuff' juggle's rhythmic envelope imposed on it (through the use of a sidechaining gate) as it is played back. The live turntable is unaffected, however, allowing me to play each new part as a counterpoint to the main repeating rhythms, before each in turn is subsumed into the sidechained texture. This device added an extra layer to the final piece, beyond simply layering different juggle and scratch parts in amorphously shifting loops (as in the version recorded in Bradford). I had a greater opportunity to interact with the looped parts in the performance moment in this final version.

5. Sound-world

There is only one sample used, namely Brian Johnstone's *Assent,* meaning that the piece only contains sounds made by one specific human voice. However, there are other important aspects of the sound-world that should be considered. One is the sound of the turntable techniques themselves: the way in which different manipulations alter the original sonic characteristics of the source material to differing

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[104] Steve Reich, 'Come Out', from *Early Works* (New York: Elektra Nonesuch, 1987).

degrees creates a continuum between simply playing the sound without interference and extreme alterations that leave few of the original voice's sonic characteristics intact. At this latter end of the scale the sound is more 'scratch' than it is 'vocal': i.e. the most immediate causal relationship likely to exist in the mind of the listener is a turntable, rather than a voice. The general trend within the piece away from the semantic and towards an abstracted vocal/turntable texture is exacerbated by the layering and gating that occurs in the second half.

6. Summative analysis

There is evidence within this recording for one of my central claims: that the techniques of hip-hop turntablism can, indeed, be effective tools for the realisation of a wider array of compositional ends than exist solely within the culture from which they derive. Throughout this piece I am using beat-juggle looping in order to repeat and isolate different sonic elements within the vocal performance, and scratch techniques such as rubs, drags and tears to extend a variety of momentarily heard textures within the speech. Beat-juggle fills are also instrumental in developing the rhythms of the vocal. Not only are the techniques effective in realising my ends, but the unquantised turntable environment becomes especially useful when one wishes deliberately to create fluidity and freeness in the timings. Because of this, it is possible to allow the inherent rhythms of the words to inform my playing. Scratching to the looping 'stuff' juggle also fosters a move away from typical hip-hop phrasing within the scratch parts, becoming instead more gestural.

8.2 *Control Signal*

This is another piece conceived in order to help answer my research questions surrounding source material. Here I work with a sonic palette considerably more reduced than that of *Scratch Poetry*: the source material consists of one timbre. The sound used is the Serato Scratch Live control signal, or, more specifically, the two copies of that sound pressed onto the vinyl records I use to control my Scratch Live setup. The analogue vinyl medium does slightly widen the range of available sounds, since imperfections picked up over time, and unique to those specific copies of the record, become a likely subtlety of the source material. Aside from this minor consideration, my performative techniques are solely responsible for all variation in the sonic, rhythmic, textural and structural elements of the work. Because of this, *Control Signal* provides an opportunity to draw clear conclusions concerning the capabilities and limitations of the instrument in the creation of musical variety. While the key focus in this project has been the evaluation of turntable techniques (specifically scratching and beat-juggling techniques), the desire to do this within the framework of a coherent musical piece, rather than a study or technical exercise, led to the inclusion of live looping as

another performance tool. This serves to allow thickening of the musical texture through combining separately performed passages. This is one of the few items here presented to be performed using the purely analogue instrument. While the sound used has a thematic link with DVS, the turntable aspect of the piece is performed, conversely, without digital technology.

As with *Black Mist*, the beat-juggle techniques being used (mainly looping, but also fills and tap-pausing) serve to articulate rhythm within a sound previously devoid of that musical feature. Each time I move from one turntable to the other, the manual re-launching of the sound creates an attack, and because of the manual way in which this is performed, there are slight sonic variations between these individual attacks. Manipulating the sounds in this way therefore creates a musical whole that is naturally more human than that which digital sampling technology would allow. Another key development of the sound is pitch variation. Extremes of fast and slow are used to give the widest range of frequencies possible, and within these extremes the pitch slider and 33/45 rpm control are used to play more precise pitches. Scratch techniques are also used to create rhythmic and timbral development of the source sound. Boomerang-style two and three-click patterns were particularly useful: since the sound has no initial attack with which to work, these patterns (that start with the fader closed) allow a clear opening attack at the beginning of a phrase. Drags and tears were also useful, as they make alterations to the pitch of the sound.

A progression can be seen between the live version of the piece, performed at Fuse, and the final studio recording of the finished piece. The earlier version exposed a limitation of using scratch techniques to develop the source sound: since the rhythmic back and forth movements of the record are largely dictated by the tempo of the passage, the scratch passages naturally occupied a similar register to one another. Consequently, the final version uses much less of this scratch vocabulary. There is a clearer focus on using the small pitch variations afforded by the turntables' pitch sliders, and on the interplay between those different pitches as they loop together. The progression of the piece has been slowed down in order to allow the listener to appreciate more fully the musical progression derived from this singular sound source. In summation, the final piece is concerned less with scratching and more with the source material itself.

8.3 *Black Mist* (full analysis)

1. Open listening

Once again, the creation of *Black Mist* was concerned chiefly with reaching conclusions concerning source material. The two key categories of sound source that this piece has helped in assessing are noise textures (presented, however, in a context far removed from the work of Adult Mags) and minimal sounds (minimal by comparison with the full tracks that are used to create DJ performances

in a variety of popular music styles). In response to the challenges of creating larger sonic textures from more minimal material, while still only having two turntables, I again included live looping as a performance tool. Further, insights gained from *ctrl+alt+dvs part one, Scratch Poetry* and *Control Signal* concerning the limitations of the turntables for creating sonic variety in a single sound prompted me to experiment with a new compositional concept in the source material. Taking inspiration also from my work as a dance music producer, the sounds used are all minimal in texture, but have been chosen to represent a wide variety of original sonic characteristics, in order to fulfil separate compositional roles. The noise textures are combined with more rhythmic environmental samples, individual drum hit samples, and the reuse of the Serato control signal. This timbrally varied collection of sounds is manipulated and combined live, using turntable techniques and Ableton Live's looping and signal processing capabilities. *Black Mist* is the only one of the live looping performances to have a time signature, in which respect it can be seen as less removed from hip-hop culture than some of my other works.

2. Technology

Again, the augmented live looping version of my setup is used: two turntables, mixer, DVS system, 'Dicer' MIDI controllers, Ableton Live and a MIDI foot pedal controller. I have routed Ableton's click track to one side of my headphones in order to keep time with the project.

3. Technique

The opening noise texture is manipulated using only looping techniques, until the pitch bend created by switching off the turntables at the end of the passage. The next sound (hi-hat) is played using simply chirps and stabs (a combination sometimes referred to as 'military style' scratching). Then the rattling junk sample is played using stabs, releases and a long upward pitch bend, manually applied with a push. Looping and tap-pausing are employed in my playing of the next (noise) sample. The treatment of the birds is only slightly more complex: here there are stabs and loops in a variety of rhythms and a snake scratch at 3'52". The bass texture is added by using the Serato Scratch Live control signal and transforming very slow movements of the record (without the motor running). The next sample, a kick drum, is added using forward and reverse stabs. The rattling junk sample is now doubled, with some more versions recorded that include more stab manipulations and a boomerang scratch. A long pad sample is then played using looping, stabs and tap-pauses.[105] The final loop I record is the same pad again, running this time at 45rpm, and manipulated almost entirely using

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[105] It can be difficult, when analysing technique, to distinguish between the beat-juggle fill technique and a juggle that has been embellished with stab scratches: broadly speaking they amount to the same thing. There are certainly many points within these analyses where either explanation would be correct. I have endeavoured to make these judgements according to the feel of each individual occurrence, and what my closest point of 'hip-hop' reference is as I perform each passage. This example felt more like a stab than a fill.

looping. The rest of the piece is then performed within the Ableton Live project rather than at the turntables.

4. Musical Content

The piece is structured as one long crescendo: a device which is naturally derived from the use of live looping to construct the overall sound in performance. The piece is in 4/4 time, with a looseness in specific timings that derives both from the sounds used (in particular the rattling junk sample) and the human placement of each rhythmic articulation using the turntables.

5. Sound-world

The use of drum samples connects this work to hip-hop/dance music convention. These are juxtaposed with a variety of noise samples, but these two main elements of the sound-world become more connected due to the turntable techniques used. By using (primarily) beat-juggle devices with the noise samples, rhythms are articulated that previously did not exist in the source material. The looping and tap-pausing techniques, which are key in creating these rhythms, also invest the overall sound-world with turntable-specific sonic elements. Small pitch bends are created each time a hand launches any particular section of a longer, smooth sample (starting from a still record) clearly contrasts with the more clinical chopping that would be heard were one to launch chunks of sound using any digital sampling/playback technology.

6. Summative analysis

As can be seen from the technique section of this analysis, this piece is much simpler, technically, than any of the other folio works (a fact naturally arising from the compositional decision to use individual sounds to fulfil individual functions within the mix, as opposed to other pieces in which I am working harder to create sonic variety using the turntables themselves). However, this close focus on a handful of techniques here makes *Black Mist* useful in demonstrating one of the main discoveries of this research. This is the clearest example of how the techniques of hip-hop beat-juggling can be applied to smooth sounds, which do not have the hit-points a DJ would typically aim for in constructing a juggle passage. When applied to this sound-world, the juggle vocabulary creates rhythm, rather than working to develop existing ones.

8.4 DMC routine 2011

This was my entry to the solo category of the UK DMC competition in 2011. It is firmly in the hip-hop/battle tradition and as such, is the most traditional performance here. Although there is more innovative work elsewhere in my folio, there are some moments in this piece that show how my experimental and developmental ideas were becoming re-appropriated into my hip-hop battle performances. At 2'18" there is a long repeating patterns of three notes, played in semiquavers over the 4/4 beat, hence repeating at different points in the bar. This is clearly much simpler than some of the polymetric ideas presented within my technical examples (in fact, three against four is the most common of these ideas already prevalent within hip-hop playing). However, it is unusual to see a sustained passage of three-note groupings, being more often used as a device to create brief syncopation. At 3'21" I incorporate one of the ideas from my experimental work and use two copies of the same musical material to create a short delay effect. The delayed version is then processed further using the eurofader technique. This creates a choppy texture, the underlying morphology of which can be heard to follow the shape of the other record. The routine is partly influenced by the 'mash-up' style of DJing (typified by DJ Yoda) in which performers hype the crowd by quoting a wide range of unexpected pieces of music.

8.5 Dr Weevil battle archive

This folder is supplementary to the main folio submission, and is not intended as part of the portfolio (the first item was recorded before the start of this research). However, for a viewer of this work to be able to see all the instrumental techniques I am discussing, within their original context of hip-hop battle performance, is potentially useful. The material here gives an insight into my background as a performer, before I attempted to abstract these techniques throughout the folio works.

Chapter 9: Technical examples

The scratch patterns illustrated below are all original creations. I composed them during the early stages of the research, and some of them have subsequently been used in other works. The basic ideas from which these scratch patterns have been devised could be used to create an almost limitless amount of new scratches, through different placement of clicks, different patterns of record movement or different grouping lengths.
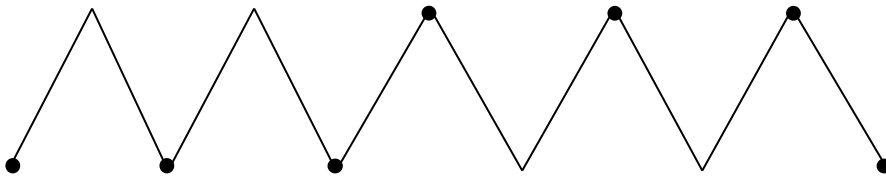
9.1 Quintarang

Figure 8: *Quintarang*

This is a ten-note pattern created through combining record movements that repeat every two notes (a simple backward-forward rub) with fader movements that repeat every five notes. This can be seen as an extended version of the six-note boomerang scratch: the fader movement is open-close-open-close-tap, rather than the open-close-tap of the boomerang. As with the boomerang, the odd-numbered pattern of the fader results in the second half of the scratch being the reverse of the first (a 'mirrored' pattern).

9.2 Septarang
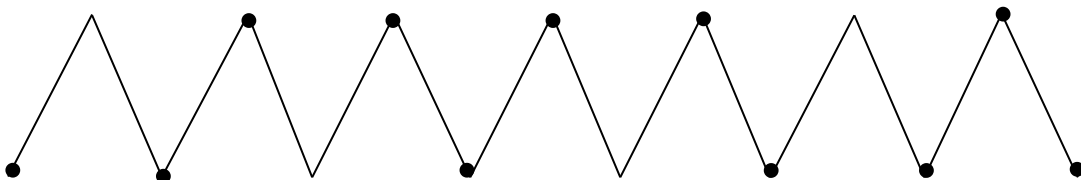
Figure 9: *Septarang*

A fourteen-note pattern created through combining record movements that repeat every two notes (a simple backward-forward rub) with fader movements that repeat every seven notes. The fader

movements are a combination of a two-click (three note) and three-click (four note) pattern, i.e. open-close-tap-open-close-tap-tap. Once again, the odd number in the fader hand results in a mirrored scratch that repeats after both forward and backward versions have been played.

9.3 Two-click clover tear
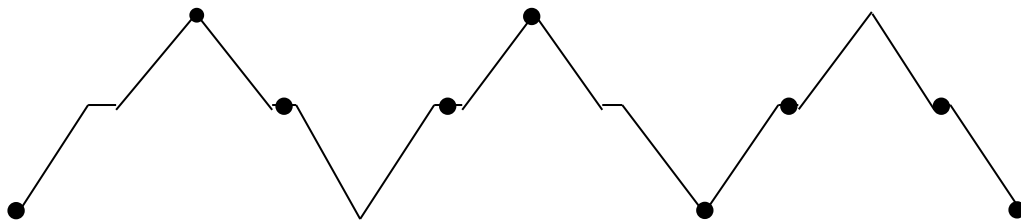
Figure 10: *Two-click clover tear*

Here the patterns begin to move away from simple two-note rubs in the record hand. This pattern is created through playing a four-note clover tear on the record (two movements forward and two back), combined with a two-click (three note) fader pattern. This is the typical open-close-tap of the boomerang etc. Once again, even-numbered groupings in the record hand against odd-numbered ones in the fader result in a mirrored overall pattern.

9.4 Twelve-note swing tear
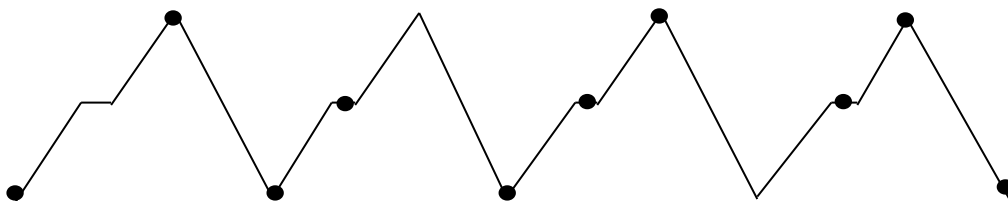
Figure 11: *Twelve-note swing tear*

This is basically the reverse of the previous idea: a three-note pattern in the record with a four-note pattern in the fader. The record movements are two tears forward and one note backward, while the fader plays a standard swing-flare type three-click pattern: open-close-tap-tap.

9.5 Triquintear
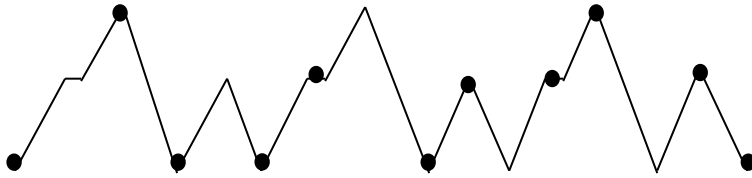
Figure 12: *Triquintear*

The triquintear is constructed using a five-note pattern in the record hand, played against a three-note pattern in the fader hand. The record hand plays two forward tears, one backward scratch and one rub (five notes altogether), while the fader plays the familiar boomerang-influenced two-click pattern: open-close-tap. In the video, the idea of polyrhythmic scratching is taken another stage further through combining the five-note and three-note meters of the scratch pattern with a beat in 4/4 time. There are therefore three coexisting meters being heard in this example.

Another observation arising from this experimentation is that in all of the examples the meter of the crossfader seems more apparent to the listener than that of the record. This would suggest that, when crossfader and record are concurrently being used rhythmically, it is the fader that provides the stronger rhythmic articulation.

9.6 Expanding and contracting rhythms

The final two examples from this disc demonstrate a different rhythmic idea: that of using the turntablist's ability to feel a group of notes as one movement in order to create subtle expansion and contraction of rhythms. In the first video, the two-click flare pattern shifts between being played in semiquavers and being played with the record movements in triplets. In the triplet timing, the fader movements can follow the record movements, and in doing so can create complex rhythms that would be much harder to play were the performer having to place every note consciously. The result of this contraction is a small shift in the speed of the scratch: nine notes instead of eight in the original timing.

The second example demonstrates the same device using a crab flare (an eight-note pattern). Originally played in semiquavers, the scratch is again contracted in such a way that the record movements become arranged in triplets. The result of this is twelve notes in the time of eight. Chapter 13 will expand further on why I believe these rhythmic devices are particularly idiomatic for a turntablist trained in the hip-hop tradition.

Section C: Conclusions

Chapter 10: Hip-Hop Instrumental Technique within Avant-Garde Contexts

This chapter identifies and evaluates the specific ways in which my portfolio demonstrates experimental applications for a range of hip-hop techniques. In general terms, the increased control afforded by practising a variety of instrumental techniques allows a turntablist operating within any genre or tradition a greater expressive range when manipulating samples. However, through the analyses presented in Chapters 4.2 – 4.8, it has been shown that the range of techniques used by avant-garde turntablists has been significantly narrower than that of hip-hop practitioners.

The practice of DJing, and the various areas of technique that have become part of its development, are rooted in reproductive musical practices[106], with the traditional set-up of two turntables and a mixer being (in its day) the perfect tool for playing back an uninterrupted series of records to a dancefloor or radio audience. When considering this technical set-up instead as an instrument of creation, i.e. as a tool for producing, rather than reproducing, musical material, there is disparity between the various areas of DJ technique in their appropriateness for the new creative desires that this brings. For example, beat-matching and mixing (the cornerstones of DJ technique within dance music cultures) are problematic areas for use when improvising with other musicians. The amount of time it takes to execute these techniques is counter-productive when attempting to react to other musicians in the performance moment.[107] By contrast, the immediacy of scratching makes it a much better fit within this type of musical environment: it is a practice in which each sound heard is the direct result of an action made by the performer. When mixing, a sustained period of previously composed sounds is necessarily heard while the technique is executed. There are also large differences in the range and type of sonic developments afforded by various areas of technique: when mixing, the source materials are combined with one another and possibly processed using filters, EQ controls, or effects units provided as a DJ mixer option or software plug-in. When scratching, it is possible to apply extreme pitch shifting, to reverse sounds, to isolate components of sound, to cut sounds into different pieces and to change the envelope of a sound using the mixer's faders. Beat-juggling gives less opportunity for pitch manipulation and sample reversal than scratching, since there is more of a need to let go of the record while the hands are busy elsewhere, but it is ideal for juxtaposing different parts of a source sound. In devising the various pieces that form my portfolio, I have mainly gravitated towards scratching and beat-juggling (both of which are areas of technique arising chiefly from hip-hop culture and DJ battles), since these are the areas that afford me the

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[106] Scratching is something of an exception to this statement, having always been a creative act. Its inception is, however, intrinsically linked to a broader culture encompassing dance and other artistic expressions, rather than being purely musical.

[107] An opinion shared by Paul Bell: Bell, 2009, p. xiii.

greatest control over my sonic output, and the greatest opportunity for developing my source materials.

Chapter 4.8 explains how contemporary 2 and 3-click crossfader patterns afford the modern hip-hop turntablist a wide range of possibilities for placing sample attacks at different points within a phrase, shifting focus between forward and backward record movements and articulating different-sized groups of notes in order to create cross-rhythms and syncopated passages. When these patterns are used within music that is not grounded in a constant meter, as is the case with *lines that have been drawn on photographs of sculpture, Live in Saltaire* and *Scratch Poetry*, they naturally become gestural movements that give more emphasis to creating articulations of small moments within a source sound, rather than being concerned with the interplay of different rhythmic stresses. In other words, these techniques lean further towards becoming timbral (as opposed to rhythmic) devices within these folio works. This is not to say that timbre is unimportant in the way that hip-hop practitioners use these scratch patterns (when moving through a sample using a pattern such as the autobahn #2 (page 22), the DJ is using the different sonic properties of different parts of the sample to vary the sound produced), merely that the focus has been shifted towards timbral manipulation through the more experimental uses present within my portfolio. The freedom from meter has also allowed me to use repeating groups of these scratches to create gradually slowing and quickening textures, as is particularly evident within *ctrl+alt+dvs part 2*. These fader patterns, that repeat in 3 and 4-note groups, but do so starting from the closed position, are particularly useful for these timbral and gestural ends, since the closed starting position allows an attack to be created at the start of the grouping no matter whereabouts, within the sample, it is played.

As identified in Chapter 4.8, beat-juggling is virtually absent from the experimental turntable tradition. There are, however, several examples within my folio of the efficacy of beat-juggle techniques for developing sounds in ways that meet a variety of compositional priorities. One of the key musical aspects of hip-hop beat juggling is the DJ's ability to shift the listener's attention between different parts of a break, highlighting various aspects of its component sounds. This is equally true when applying beat-juggle techniques to experimental music: *lines that have been drawn on photographs of sculpture* and *tables:nuemes* both demonstrate the use of beat-juggle techniques in order to juxtapose different parts of a source sound in new ways. However, in *Scratch Poetry*, this concept of using beat-juggling to deconstruct sound is actually taken much further than is seen within the hip-hop tradition. In particular, the beat-juggle treatment of the word 'stuff' shows that this area of technique (specifically the looping and tap-pausing aspects of juggling) can be helpful in allowing a performer to direct attention towards the individual sonic components of an audio event. A familiar theme within electroacoustic music is the encouragement of reduced listening by processing sound in such a way as to remove its semantic and causal associations: in *Scratch Poetry*, this compositional end is achieved largely through the use of beat-juggling.

While the beat-juggle area of technique is regarded, within hip-hop practice, primarily as a means to develop rhythm, *Scratch Poetry* demonstrates that beat-juggling can also be an effective timbral device. Other timbral developments, such as delay and phase effects, can also be created using two copies of the same source sound, as demonstrated in my DMC 2011 routine and *ctrl+alt+dvs part one*. While these are not techniques drawn from the familiar vocabulary of beat-juggling, they are nevertheless idiomatic ways of using the duality of the hip-hop instrument to timbral ends. The purpose of beat-juggling changes significantly when used as it is in my experimental folio works: within music that has meter and bar structure, the placement of different parts of a beat onto stronger or weaker beats than those they originally fell on can be central to creating musical interest and developing the source sounds. However, my folio presents juggle techniques within musical styles that do not have these rhythmic constructs of meter, bars, strong beats etc., and so this aspect of musical development, that is usually central within a hip-hop juggle, is no longer present: this is another reason for the timbral aspects of juggling to come to the fore when used within experimental music.

In addition to the ways in which these techniques take on different attributes when abstracted from their roots in hip-hop playing, it can also be seen, throughout my portfolio, that presentation within avant-garde contexts can also lead to change and development within the techniques themselves. One such example of this is my use of beat-juggle looping techniques to impose expanding and contracting 'windows' onto a sound in *tables:nuemes.* This new use for a technical component of beat-juggling has flowed directly from removing aspects of tempo and meter from its performance. Similarly, the idea of including of pushes and drags within a beat-juggle, as presented in *lines that have been drawn on photographs of sculpture* and *Scratch Poetry*, has been developed further than its limited appearance within hip-hop juggling (where the push/drag must always be juxtaposed with other rhythmic content that maintains the overall pulse) to become a more prominent feature, again because the constraints of tempo and meter are no longer present. Playing sections of a sound forwards and backwards at the same time, again from *lines that have been drawn on photographs of sculpture*, is another new beat-juggle technique that would be undesirable within hip-hop playing, since it would result in clashing beats, while within *lines* it serves to thicken the texture of the music.

Another way in which engagement with experimental music scenes has helped my own development as a performer, and consequently my development of instrumental technique as evidenced in the folio, is in the undertaking of collaborative work with a variety of composers. In discussing the processes behind the creation and development of *tables:nuemes, lines that have been drawn on photographs of sculpture* and *Live in Saltaire,* I have identified various ways in which my reactions to the wishes and ideas of the composers involved led to specific innovations in the field of performance practice. Examples include the finger pulses applied to the turntable platter in reaction to Lauren Redhead's indeterminate markings on the score for *lines* (Chapter 7.1), or the various beat-

juggle developments that grew out of discussions and workshops with Alistair Zaldua in the creation of *tables:nuemes* (Chapter 7.3).

Chapter 11: The Impact of Source Material on Technique and Style

Throughout the folio there is deliberate use of a variety of sound-worlds and source materials, from environmental sounds in *Black Mist* and DVS-produced noise textures in *ctrl+alt+dvs part one* to more familiar hip-hop sounds in *ctrl+alt+dvs* (parts two onwards) and acoustic instruments in *lines that have been drawn on photographs of sculpture.* This chapter evaluates the effects these different source sounds have had on the choice and context of playing techniques, and identifies new techniques that have been directly influenced by this experimentation with source material.

Sample duration has a clear influence on playing technique: the ability afforded by a longer sample to manipulate it while travelling forwards for a longer time (rather than the typical scratch convention of returning repeatedly to the same point) is an aspect that has been explored by Marclay, Bell, myself and others. There are certain techniques (the 3-click tug job or autobahn #2, for example) that require enough sample duration for all the fader clicks to take place, and therefore could not be applied to sounds such as a single, short drum hit. The way that longer sounds change throughout their duration can also impact technique: at a basic level, the more interesting a sound's evolution through time, the more desirable that sample will be for use with scratch techniques that travel through the sound. The smoothness of the sound throughout its duration also influences how these techniques are used: if the sound has obvious hitpoints or sudden changes these can be aimed for as specific positions to return to, while a sound without these will foster a freer approach where the performer can cut into the sound in more randomised places. This difference can be seen by comparing *tables:nuemes* and *lines that have been drawn on photographs of sculpture* (keyboard version), which have clear hitpoints in the original sounds, with *Control Signal* or the wind band version of *lines,* which do not.

As well as simply identifying their presence or absence, the organisation of hitpoints within a sound can also influence technique: the usual breaks used by hip-hop turntablists have a regularity in the spacing of drum hits that naturally dictates the tempi likely to occur within juggle or scratch manipulations. Using more irregular sounds, such as the rhythmic environmental textures in *Live in Saltaire*, encourages freer rhythmic manipulation of the sound in performance. It is specifically in the application of beat-juggle techniques to sounds without inherent meter that the clearest effects of varying source material can be seen within my portfolio. Through moving away from drum breaks, and applying the juggle techniques to sounds that either have irregular rhythmic content, or contain smoother textures with no rhythmic content at all, the resulting music is much less likely to follow a strict tempo. The idea of placing expanding and contracting windows across a sound, as discussed in the previous chapter (page 98), is therefore influenced by using these sounds, and comes full circle in *ctrl+alt+dvs part three,* where this idea is reappropriated into the hip-hop sound-world. The use of these sounds also leads to another new beat-juggle technique: the use of beat-juggling as a way to articulate rhythms within smooth textures, as is seen in *Control Signal* and *Black Mist*. The main

juggle constructs of looping, tap-pausing and fills can all be used to create rhythmic content in sounds that originally had none.

There are a number of ways in which using minimal source material has influenced technique within the portfolio. The turntables were originally intended to reproduce full pieces of music, with a wide range of frequencies present in each record played. This is still the case for most turntablism, with beat-juggle routines tending to feature full tracks, and scratching usually being an accompaniment to another record, live band or laptop performer. The limitation of only being able to combine two source sounds at any one time meant that the pieces in which I used more minimal source material tended to deal with this issue in one of two ways: in some pieces, such as *lines that have been drawn on photographs of sculpture, tables:nuemes* and *ctrl+alt+dvs part one & part three,* I used this textural narrowness as a feature of the piece, finding other ways to create musical variation and interest. In *Scratch Poetry, Control Signal* and *Black Mist,* live looping technology was introduced, as a direct result of the minimal nature of the source sounds, allowing me to build larger textures from these component sounds. *Control Signal* is an extreme example of minimal source material, as the whole piece is built from only one sound; in addition to the use of looping technology, this aspect also influenced technique by leading me to use extreme fast and slow movements of the record, in order to create as much pitch variation as possible in the piece. A similar effect on technique can be seen in *ctrl+alt+dvs part one* and *lines that have been drawn on photographs of sculpture* (wind band version): in both of these pieces, all the source sounds have similar frequency spectra. New technical elements can be seen in these pieces, namely the use of 2 and 3-click fader patterns alongside extremes of fast and slow record movement in *Control Signal* and the use of the DVS's internal mode to play a file extremely slowly in *ctrl+alt+dvs part one*, and these developments were clearly influenced by experimentation with the source material used. However, while in *Control Signal* I managed to create a broad spectral range through manipulating the records, *ctrl+alt+dvs part one* remains relatively narrow in this respect. This is due to the source sound for *Control Signal* having a wider spectral range to begin with, and also the fact that a purer tone-based timbre makes the changes in pitch affected by my performance more overt: this is another example of how the intrinsic sonic properties of the source sound influence the techniques that most suit their manipulation. It can also be concluded, from analysing *ctrl+alt+dvs part one,* that a more successful way of creating a wide frequency range within a piece would be to use a wider variety of source sounds in its construction (as in the case of *Black Mist*).

As well as the sonic properties of sounds influencing technique, there is also aesthetic influence from the genre and style of the sounds used. When using avant-garde source material, as in the case of both versions of *lines that have been drawn on photographs of sculpture* or *tables:nuemes,* the implications of freedom from conventional musical devices such as melody and tempo inherent within the source material is another factor that leads me towards a freer, more expressive style of playing than I would employ within a hip-hop performance. The use of poetry as a source sound in

Scratch Poetry leads me to adopt a rhythmic style, at certain points in the piece, that feels conversational in the way it is constructed.

At the beginning of Chapter 10, I outlined why scratching is a particularly appropriate technique for improvised music: within hip-hop playing, however, a beat-juggle is much less likely to be improvised. I believe this is because beat-juggling, as a method for the rhythmic development of a beat, is firstly more likely to be presented in a coherent meter, and have an effective structure in terms of groups of bars, if it is planned, and secondly because juggling is most effective when it results from a prior process of experimentation. The DJ needs to examine the idiosyncrasies of the specific beat, and listen to the effects of transposing certain elements onto stronger/weaker beats etc. before writing a juggle that will give the findings of this process sufficient exposition. In fact, the improvised hip-hop juggle is likely to rely on previously learned patterns, rather than bringing out the beat's individuality, thereby losing a large part of the musical interest generated by a good beat-juggle. There is, however, an interesting shift in the usefulness of beat-juggling for improvised music when using it in the ways in which my folio demonstrates: the rhythms of a juggle with smoother textures can be easily improvised since, firstly, the turntablist is no longer aiming for such specific points in the sound, and secondly, the rhythmic components are all being created in the performance moment rather than being pre-existing rhythmic elements within the source sound. Also, the use of beat-juggling within musical styles that do not require adherence to a particular meter or recognisable bar structure (as explained in Chapters 7 and 8) leads to a situation in which the planning of the juggle's rhythms can be less important. Hence, a combination of both varying the source material and using beat-juggle techniques for avant-garde pieces has resulted in finding new usefulness in this area of technique for improvisational ends.

Chapter 12: New Technical and Sonic Opportunities Afforded by DVS Technology

Chapter 4.8 identified some ways in which DVS is changing the nature of turntable performance. Of particular importance are the way in which cue-points can be used to create new scratch and juggle patterns (as demonstrated by DJ M-Rock) and the potential for DVS to give greater freedom to manipulate pitch and speed independently of one another (as demonstrated by Jon 1st). Easy access of cue points is the main technical impetus behind these developments, as it removes the need to return to the same physical point on the record in order to repeat a specific sound. However, the impact of DVS within the compositional process has had a greater impact on turntable music than its performative features. DVS has greatly reduced the time, expense and difficulty involved in creating custom sounds for turntable performances: if a performer wants, for example, a juggle section to be immediately followed by a particular sample for scratching, it is now an easy matter to create a dedicated sound file for this purpose and begin experimenting with it immediately. This creates a situation in which the sounds to be used can be specifically tailored to the preferred beat-juggle and scratch patterns/techniques of the individual performer. This represents a fundamental departure from traditional working practices: while the purely analogue turntablist takes music found on vinyl as the starting point for building a composition, today's digital battle DJs can create routines in which turntable technique is the starting point, arranging sounds to suit preconceived technical desires. The performances from DJ Unkut and DJ Rafik demonstrate, in their overall structure and sonic content, the way in which DVS has a clear impact in the compositional process. The ease with which sounds can be edited, loaded and experimented with has also been instrumental in facilitating the creation of most of my folio works.

These existing examples of technical development using DVS (Vajra, M-Rock, Jon 1st etc.) led me to focus, instead, on evaluating the new sonic opportunities of this technology, as this was clearly an area in which far less work had previously been done. The common perception of DVS as a simulation of the analogue instrument brings with it connotations of inferiority: my work (and especially the ongoing *ctrl+alt+dvs* project) aims to challenge this perception, proposing instead that DVS-enhanced turntables be viewed as a new instrument. In doing so, I have been able to create and evaluate a sound-world that is specific to DVS and the way that it functions. My initial experiments with the technical malfunction of the system (*ctrl+alt+dvs part one*) revealed some intrinsic qualities of the DVS playback once it has degraded into noise (due, in this case, to insufficient power). The characteristic gritty, distorted timbre of these sounds is the most immediately obvious feature; also they all have similar frequency content, regardless of the sound originally loaded into the system. Rhythm seems to be slightly better preserved: the peaks and troughs of the sounds used in *ctrl+alt+dvs part one* are created by the drum rhythms of the original sounds. The narrow sonic variation in the sounds created in this way had implications for their usefulness in building a piece of

music: using them in conjunction with other sound sources could be a way to remediate this potential weakness.

Hacking of the DVS playback, throughout the rest of the *ctrl+alt+dvs* project, also created interesting results. It was believed, before starting this experimentation, that the process might yield useful timbral results: however, an unexpected outcome was the ability to also create rhythm using the hacking. The grainy distortions and timestretches afforded by processing the signal have similarities to the sounds created without sufficient power, but the use of different processes allowed for much greater sonic variation here. A clearer progression from mild to extreme distortions of the source material was also made possible. A particularly interesting outcome was that the sound resulting from the more extreme processes could be changed in interesting ways through also moving the record on the affected turntable. Instead of the usual back and forth (rub) sound created by moving the record, record movements could instead be used to vary the intensity of the sound without any obvious backward/forward movements being heard. When using the amplitude modulation process, the resulting rhythms were independent of the record movement, allowing me to use record movements to vary the pitch and tempo components of the underlying sound, while that constant pulse remained imposed on top of my record manipulations.

As with other experiments within the portfolio, using the hacked DVS also resulted in changes and developments in my instrumental technique. The motif in which the affected record is played and manipulated, with occasional, single-note interjections from the unaffected side, flows directly from the system's ability to make sounds that are less reliant on the record movements, while the previously discussed rhythmic imposition of the amplitude modulation led to new patterns formed from combining the unaffected record playing at normal speed with more extreme pitch manipulations using the affected record. Another benefit of hacking the playback (rather than, say, processing the output) is that this activity has a processional unity with scratching, since the turntable performer is also hacking (in a physical sense) the playback of the device. This leads, in turn, to a sonic unity between the manipulations of the two performers, with the hacking effectively imitating scratches such as drags and tears. There are weaknesses in the system, notably the unpredictability of its reaction to small changes in signal strength and balance. Also, the interaction with software (which is always subject to changes and updates) makes it harder to draw conclusions regarding the usefulness of the setup in future practice. However, we have demonstrated similar sonic results across different versions of the software, and the *ctrl+alt+dvs DJ set* in particular demonstrates that it was possible to bring this project to a place where turntablist and hacker were working together, reacting to each other's playing as a coherent musical ensemble and producing effective musical textures from the combination of hacking and turntablism.

Chapter 13: Polyrhythm as an Idiomatic Device for Turntable Music

Scratching is an inherently rhythmic act: moving a record backward and forward creates rhythmic articulations in the sound, while the switching on and off of the sound using the crossfader creates attacks in a manner that is also necessarily rhythmic. It is my belief that turntable and mixer technology, and the conventions of hip-hop scratch performance, have certain attributes that contribute towards the recognition of polyrhythm as a particularly natural and idiomatic area for exploration using this instrument. This chapter outlines the two key areas I have identified as pertinent features of scratch performance practice in relation to polyrhythm.

Firstly, there is the potential, within a normal scratch performance, of having three different rhythmic elements occurring concurrently. The unmanipulated record on one turntable can be playing back music that has rhythm and meter: added to this the scratch manipulations comprise record movements and crossfader movements. It naturally follows that each of these three elements can be combined in polyrhythmic ways. My experimentation has focused on creating polymetric scratches using repeating patterns of different numbers of evenly spaced notes, as shown in my technical examples (Folder 6). The scratch itself can be polymetric, as in the case of the boomerang scratch (the record movements repeat every two notes while the fader repeats every three) or my own scratches that develop this idea further, for example the quintarang (where the record movements repeat every two notes while the fader repeats every five). I have taken this idea a step further in the patterns that move beyond simple two-note, back and forth movements of the record, so for example the triclover tear incorporates tears in the record movements to create a pattern that has repeating groups of four in the record hand while the fader repeats in groups of three. By varying the placement and grouping of fader clicks with different record movements, this type of experimentation opens a gateway to a virtually infinite number of new scratch patterns. There is also the possibility, with record and fader movements being potentially independent of each other, of creating polyrhythmic scratches in which the movements of each hand are at different speeds (rather than just different length groupings of the same basic unit of time): while this is technically harder to execute, it is an area I am currently working on in my practice sessions, for presentation at a future date.

The scratch pattern, as a whole, can then also be combined polyrhythmically or polymetrically with the beat that is playing on the other turntable. For example, the 2-click orbit scratch, comprising six sounds, can be played in quavers over a 4/4 beat, thus repeating at different points in the bar. This is an area that has been explored by other practitioners: DJ QBert is known for favouring repeating five-note patterns against a beat in 4/4, while DJ Chile has experimented with a wide variety of repeating patterns against 4/4 beats, playing groupings of five, seven and eleven notes,

among others.[108] However, the possibilities when considering scratch practice as encompassing these three different rhythmic components are more far-reaching: if a scratch that already contains a polymeter is combined with a beat that has another meter again, it is possible to have three different meters all running concurrently. For example, playing the quintarang in quavers against a beat in 3/8 time would result in the overall rhythm created having groups of two, three and five all repeating alongside each other. Similarly, my triquintear scratch comprises groupings of three and five into a pattern that repeats every fifteen notes: if this were played in semiquavers against a beat in 4/4, each successive repetition would occur one semiquaver earlier in the bar each time, in addition to the polymetric variations already inherent within the scratch itself.

There is another aspect of scratching that I believe lends itself particularly well to polyrhythm. It is common for a well-practised scratch manipulation to be felt by the performer as one movement, even though it may result in more than one note being produced. A prime example of this is the crab scratch: the fingers flick past the crossfader in one smooth movement, but three or four distinct sounds are heard as a result. The crab scratch is an obvious example: however, with practise it is possible for the muscle memory of other scratch manipulations to become homogenised in this way also. Taking the 2-click orbital flare as another example, this can be felt as two movements (one forward and one backward), with the crossfader hand instinctively placing the clicks in between the record movements as part of the two smooth actions. The implications of producing more than one note with (phenomenally) a single movement allows for complex note groupings to flow much more easily and naturally than would be possible if the performer were trying to place every note consciously. The examples in the portfolio include 2-click orbits played with the record movements in triplets, creating nine notes in the time of two quavers, and crab flare orbits, also played with the record movements in triplets, creating twelve notes in the time of two quavers. These two areas of polyrhythmic possibility flow naturally from both the nature of the instrument itself, and the established practices of scratch performance: hence I would argue that these methods of creating polyrhythmic scratching are idiomatic devices for the turntable performer. There is much that can still be done to develop both of these ideas: I present them here, in their infancy, in the hope that others will contribute to this development in the future, and shall also be continuing to push polyrhythmic playing in new directions within my own practice.

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[108] DJ Chile, 'Advanced level scratch tutorials', *YouTube* (2012), <http://www.youtube.com/playlist?list=PL058C670AAE1A23B2> [last accessed 14th November 2014]. There is an important difference in the scratch patterns developed by DJ Chile and those I have presented here: Chile has taken existing techniques and combined them to form groupings of different lengths, while I have used the concept of polymeter as a starting point in the creation of the scratch patterns themselves.

Chapter 14: Wider Relevance of this Research

DJ culture is experiencing a period of huge change, especially considering the fact that the performative use of pre-recorded music, using DJ technology of any kind, remains in relative infancy compared to almost any other instrument used in the performance of music. It could even be argued that those performers wedded to the practice of using analogue turntables and vinyl records, within a variety of popular music styles, are experiencing a crisis of identity. These practitioners are witnessing valued, hard won skills moving closer to obsolescence with every technical improvement in the efficacy of digital tools. Common arguments encountered for the older methods being preferable – 'vinyl sounds better' or 'pressing "sync" is cheating' – are difficult to justify in objective terms: beat-matching is, after all, a technical (rather than creative) skill. If technology can instead be used for this task, leaving more time for the actual creative elements of the set (track selection, identifying when to perform the mix, EQ etc.) then surely that way of working is, objectively, better. The newer generation of DJs, who come into the scene without any romantic attachment to the vinyl medium, recognise the absurdity of using a record player, with its associated feedback, rumble, low-level output, potential needle skips and costly media, in a modern nightclub.

In the introduction to Chapter 6, it was mentioned that turntables and a mixer used to be an ideal method for playing an uninterrupted series of records to an audience. This is no longer the case, with a plethora of other solutions available that are less expensive, more compact or have more functionality than the traditional turntable set-up. This research has helped to demonstrate some of the unique properties of the turntable interface, that I believe give it continuing relevance as a tool for expressive musical manipulations. By embracing the physical properties of the record, turntable platter and motor, and focusing on the sounds that are specific to the movements of these elements, my portfolio incorporates a range of sounds and manipulations that can only be achieved with the turntables. My folio also demonstrates the appropriateness of the turntable technology when applied to music that is free of the constraints of fixed tempo and meter: in an age when the turntables are no longer the favoured (or objectively the most suitable) option for the playing of music in strict 4/4 time, the fluidity of the smoothly accelerating and decelerating pitch bends that the instrument encourages are, conversely, entirely at home within the avant-garde.

As well as demonstrating, within the folio, the relevance of hip-hop-derived scratch and juggle techniques, my work with Rough Fields also brings contemporary relevance to the skill of beat-matching: a technique that, due to advancements in technology, is rapidly becoming unnecessary within the electronic dance music scenes that used to rely so heavily upon it. In the second interpretation of *Watery Fable*, in particular, the skill of beat-matching is combined with deliberate attempts to engage with the fluidity of the turntable platter in a way that humanises the sequenced drums. The technique of beat-matching, which would usually involve the performer making fine

adjustments in order to remediate the inaccuracies of the turntable (essentially working against the instrument's physical properties), is presented here in a way that embraces that feature of the technology, turning it into a creative opportunity.

In bringing a range of hip-hop playing techniques to the fore within avant-garde performances, I have demonstrated the opportunities inherent in these techniques for the expressive manipulation of sound, and their effectiveness in fulfilling the compositional desires of these experimental works. It is my belief that the body of work I have presented will foster a greater interest among experimental practitioners in the learning of these techniques, and in particular will lead to further explorations of experimental beat-juggling (an area that will surely benefit from the fresh perspectives of subsequent turntable performers). The creative potential the more crossfader-intensive scratches (that have so far been missing from experimental practice) have for the timbral development of sounds is another thread of the instrument's development that future performers may be inspired to continue. There is wider significance in all of this: scratching and beat-juggling within hip-hop are already niche interests compared with their popularity in previous decades, and they cannot survive as performance techniques if they are to be confined to one particular genre/tradition of popular music. In order to avoid this instrument being consigned to the annals of musicological history, its methods and techniques must find relevance in other styles and scenes: this is of key importance in considering the potential impact of my research.

I discussed, in Chapter 7, the importance of collaborating with composers for my own personal development as a performer. There is also wider significance in having undertaken this work, in that it will foster greater accessibility of the turntables as an instrumental option for composers, encouraging the creation of further repertoire for the instrument. In Chapter 3 it was explained, with reference to Sophy Smith's paper from 2000, that the relationship between performer and composer that exists for the majority of musical instruments has not been present in respect of the turntables.[109] This is a potentially problematic situation for the continuing development of turntablism: to have lasting appeal, any instrument needs to have music written for it. There is also a fresh perspective that comes from non-turntable performers becoming involved in composition for the turntables: performers will always be influenced by their own existing instrumental vocabulary and personal experiences with the instrument when writing new music, while a composer without that practical experience can often help to discover new instrumental capabilities through their freedom from the instrument's history. It is therefore possible to accelerate the development of turntable performance practice through engaging with composers from a variety of different musical traditions, and my folio represents a significant step in this direction.

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[109] Smith, 2000, p.79.

Section D: Appendices

Appendix 1: Notation of scratch techniques mentioned in the commentary

Rub

Chirp

Stabs

Note: all reverse patterns can be derived by reversing the record movements while maintaining the same fader movements, thusly:

Reverse rub

Reverse chirp

Reverse stabs

Reverse patterns will not be notated from this point.

etc.

Various tears (the tear is simply a pause of the record: a multitude of different rhythms and patterns can be created through pausing a different number of times on the forward or backward movements).

Slice

Transformer

Push

Drag

Crab

Crab flare

Euroscratch (or eurofader technique)

1-click flare

2-click flare

3-click flare

Original flare

Scribble
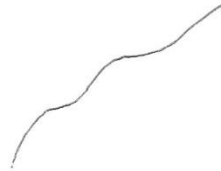
Snake

Boomerang

Delayed flare

Swing flare

2-click tug job

3-click tug job

Autobahn #1

Autobahn #2

3-click autobahn #2

Prism

Butterfly

Quintarang

Septarang

2-click clover tear

12-note swing tear

Triquintear

Note: a small number of scratches mentioned in the text are not notated here. This is because their TTM notation would not differentiate them from another scratch. For example, swipes would look the same as tears. However, in each instance of this, enough explanation of the technique is given in the text to understand what is happening. Common combinations mentioned are also not notated (e.g. swirls, chirp/flares). Again, explanation is given as to how these are created, through combining scratches that are notated above.

Appendix 2: Documentation of Lecture Recital, Interactive Keyboard Symposium, Goldsmiths, University of London, November 2012

Lauren Redhead and Will Baldry, *'lines that have been drawn on photographs of sculpture*: Documentation of Lecture Recital, Interactive Keyboard Symposium' (London, 2012)

lines that have been drawn on photographs of sculpture

Documentation of Lecture Recital, Interactive Keyboard Symposium, Goldsmiths, University of London, November 2012

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Abstract

This piece represents the product of a project which incorporates Lauren Redhead's individual compositional endeavours and Will Baldry's extremely innovative turntable performance practice.

The lecture recital presented at the Interactive Keyboard Symposium comprised new performance of the piece which showcased the role of turntables in contemporary music, the physically performative aspects of Will Baldry's performance, and the open and directed qualities of the music as it exists in the score. This re-working of the piece incorporated piano samples, and therefore represented a re-thinking of piano performance by removing the keyboard as the method through which the player performs and improvises. The performance engenders a reconsideration of the boundaries of the piano, of open notation and of electronic music, and an approach to the physicality of performance and its link to sound which is unique to the turntables as an instrument. We further sought to involve the audience in the performance through a live video link which allowed them to view the work undertaken by the Will Baldry.

In the accompanying text we discuss the collaboration between performer and composer in the composition and realisation of the work, and the 'collaboration' between the piano sound and the turntables/turntablist-as-kinetic-controller that is realised in the performance.

The conception and composition of the work

Lauren Redhead

The project *lines that have been drawn on photographs of sculpture* was initially borne out of discussions between myself and Will Baldry about what a collaborative work between the

two of us might look or sound like. In particular, discussions about the work led to a discussion of the importance of borrowing and distorting practices in both of our artistic work and practices. I thought it interesting to create a situation in which both the score, and the audio material were 'borrowed'. In the case of the score, some of the borrowed material comes from sculpture, which I will discuss in more depth shortly, whilst the original audio material was 'borrowed' directly from another piece of mine, *the enigma machine 2b: [no subtitle]*, although presented in a much distorted fashion.

I found a link with borrowing techniques in sculpture in an artistic practice which involves intervention in sculpture – either art that is created on existing sculpture, the insertion of sculpture or images of sculpture into other artworks, or pictures of sculpture which then become artworks. In these cases, space becomes a central consideration. Jon Wood describes various ways in which this functions,[1] writing that 'such graphic interventions into the works of others create imaginary new third works, poised layer-like not only between curves and histories, but also media and materials.'[2] Furthermore, Wood makes the link between structure and material, writing, 'Barthes has written about photographs as "laminated objects" in which image and referent, photography and sculpture, are hermetically sealed. Over-drawing clearly ruptures this lamination, disturbing this indexical coalition.'[3] In this case, Wood notes that space must not necessarily be considered as a geometry of musical or other works, and it is in fact the interaction of 'the space' of an artwork with extra-spatial elements that meaning is created.

My 'borrowed' sculpture is the work *Across the Board* by Michael Pennie[4], which in my score, is finally revealed as this image on the final page.

_____

[1] Jon Wood, 'Drawing on Sculpture: Graphic Interventions on the Photographic Surface' *Henry Moore Institute Essays on Sculpture*, no. 55 (Leeds: Henry Moore Institute, 2007) pp. 3-4.

[2] ibid. p. 6.

[3] ibid. p. 10. cf. Roland Barthes, *Camera Lucida* (London: Vintage: 2000) pp. 5-6.

[4] This work can be viewed at Michael Pennie, *Personal Website* <http://www.michaelpennie.net/Sculpture/acrosstheboard/Acrosstheboard1.html> [12.05.2013]
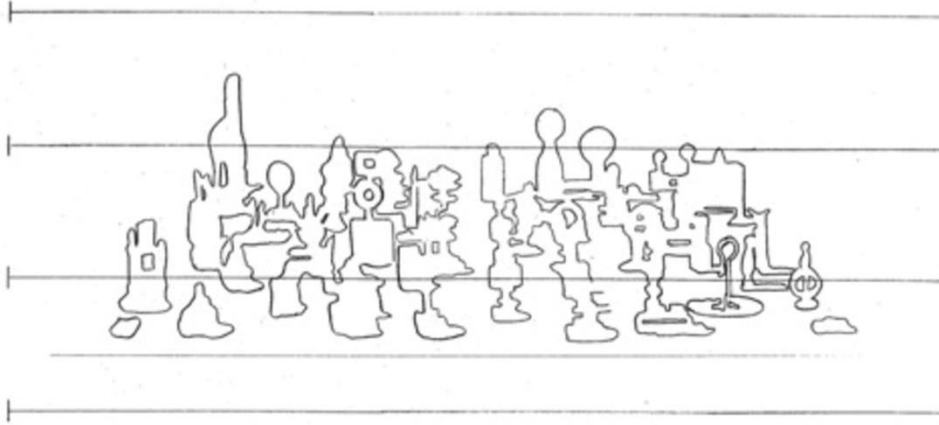
Lauren Redhead, *lines that have been drawn on photographs of sculpture* (2011), score, p.9.

What interests me in the performance of this work by Will Baldry (and the score has also been performed as a stand-alone work by other musicians) is that as well as my interventions in sculpture and my own work, Will Baldry intervenes further through his performance. I included the following note with the score, which sums up the relationship between drawing on sculpture, and the performative acts of making and performing the score:

> The creation of this score is borne out of my reflections on performative writing, and on the relationship between writing and mark-making. It was also partly inspired by Michael Pennie's sculpture `Across the Board.' Pennie describes the time spent making this work as `concerned less with the individual and more with the populace, the suspension [...] of a critical position that would inhibit a period of exploration, a time to extend my formal language and allow for more immediate responses.' This describes well the situation I tried to place myself in in the creation of the score. I regard the score itself as semiautobiographical and although I do not consider such a link to be desirable or necessary in performance, the task of its creation has functioned as an ersatz stream of consciousness. Most often most positive links are made between the ability to write and the possibility for self-

expression, rather than with the latter and the ability to speak. Important for this work is its lack of realisation in writing.[5]

The accompanying video presents a new version of the piece with piano samples, in order to demonstrate how this approach can erode the agency of the piano as an instrument, and particularly the agency of the keyboard as the controller of the piano. In order to maintain the relationship with borrowing and distorting my own work, I took as the material for the samples a short Feldman-style piano sketch I produced as part of a musicological investigation into atonality and beauty.

There are many ways to interpret the score and despite being its composer I would not like to label any as the right one. The notation is open so as to suggest elements of pitch and duration, but also the possibility of an holistic interpretation of the notation as suggesting ideas rather than musical parameters. The interpretations made by turntable artist Will Baldry have taken both of these approaches: some aspects of the notation have been interpreted as specific actions whilst others more holisitically, for example to suggest a change of samples or categories of playing technique. This interpretation in collaboration with a turntable performer also suggests that pitch and rhythm needn't be the focus of any interpretation, necessarily.

The work has also been performed by acoustic contemporary music group, 'Midnight Llama'. Their performance took a more literal interpretation of the symbols, following them in terms of gestural shape. This interpretation is also possible and allowed for within the interpretation.

From my point of view as a composer, the notation should not be considered as a platform for a general improvisation, but an interpretation should engage with the notation itself on some level, even if this is a very broad one.

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[5] Lauren Redhead, *lines that have been drawn on photographs of sculpture* (2011), score, composer's note.

The performance of the work

William Baldry

One of the first impressions I had upon seeing Lauren's score was the sense that there were many instances where the overall shape of a passage, or even entire page, was more important than the individual marks of which they were comprised. (This was an idea that was reinforced when looking into the Michael Pennie sculpture mentioned in the composer's note.) This way of thinking provided me with some interesting challenges in interpreting the piece: for example, when following the final page, I decided to try to create a sense of the listener passing by the same musical material twice from different viewpoints.

Other important decisions arose from the indeterminacy of the score: early on I chose to read pairs of systems as the notation for left and right turntables, feeling that this would allow the score to dictate the interplay between the two sides of my instrument. I also had to decide what it was that I felt certain marks on the score were telling me to do; these decisions were greatly influenced by the sounds provided, which contained a progression of audio processes that gradually took the samples further away from their original versions. For this reason, I decided that my turntable manipulations should follow a similar path and become more transformative throughout the piece. At the start, I followed the shape of the marks on the score and applied them to make small changes to the sound (such as subtle panning, volume changes, or minor alterations in pitch); towards the end these sounds were much more harshly interrupted, chopped up, and generally distorted through physical interventions. I tried, however, always to allow these gestures to be guided by the shapes and textures of the score.

This leads onto another important point: the fact that the sounds provided by the composer were just as influential over my playing as was the score. The compositional style and sonic properties of these sounds had a great impact on my interpretation: for example, these were all quite long sounds (in contrast to the source material I would usually use in a hip-hop performance). This allowed me to move through the sounds and experiment with ideas such as phasing (and other techniques based around letting the record play and disturbing it as it travels through the sound, rather than the usual scratch treatments that continually return to the start of a short sample). When I perform *lines*

that have been drawn on photographs of sculpture, I am allowing the sounds to guide me and constantly listening to hear how they are telling me they should be manipulated; this often involves relinquishing some of the tight control I would usually exercise over my source material, but it feels as though this is in keeping with both the style of the samples and the idea of allowing the 'bigger picture' more prominence than individual movements.

Another consideration for me was to try to disassociate myself (as much as possible) from other graphical notation that I have followed as a turntablist. The standard turntable notation method[6] uses marks similar to some of those in the score: I did not want to fall into the trap of automatically reading these marks in the way I have become accustomed to through reading TTM manuscripts. This meant that I had to pay particular attention, when rehearsing the piece, to analysing my playing and satisfying myself that this was not getting in the way of my producing a faithful interpretation of the piece. Of course, my previous musical experiences and practices will always be apparent in my playing of any piece (perhaps more so when dealing with performance indeterminacy), but this was one area of influence I felt it right to consciously avoid.

This is the second version of the piece that I have performed.[7] It is interesting to compare the two: the aspects of the piece that remain the same in both versions do so mainly because of the score, and the aspects that change do so mainly because of the sounds provided. It is my belief that both interpretations are recognisable as performances of the same piece.

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[6] Details of this method are available here: http://www.ttmethod.com/.

[7] The first, using wind samples, can be viewed here: http://vimeo.com/39252260.

Appendix 3: Score for *lines that have been drawn on photographs of sculpture*

Lauren Redhead, *lines that have been drawn on photographs of sculpture* (Frankfurt: Material Press, 2011).

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lines that have been drawn on photographs of sculpture

lauren redhead

Music for any multiples of one, two, or four instruments
Instrumentation and duration are open

For multiples of one instrument: treat each page of the score as containing four systems

For multiples of two instruments (or two hands, for keyboard or percussion instruments, if desired): treat each page of the score as containing two systems

For multiples of four instruments: treat each page as containing one system

Composer's Note

The creation of this score is borne out of my reflections on performative writing, and on the relationship between writing and mark-making. It was also partly inspired by Michael Pennie's sculpture `Across the Board.' Pennie describes the time spent making this work as `concerned less with the individual and more with the populace, the suspension...of a critical position that would inhibit a period of exploration, a time to extend my formal language and allow for more immediate responses.' This describes well the situation I tried to place myself in in the creation of the score. I regard the score itself as semiautobiographical, and although I do not consider such a link to be desirable or necessary in performance, the task of its creation has functioned as an ersatz stream of consciousness.

Most often most positive links are made between the ability to write and the possibility for self expression, rather than with the latter and the ability to speak. Important for this work is its lack of realisation in writing.
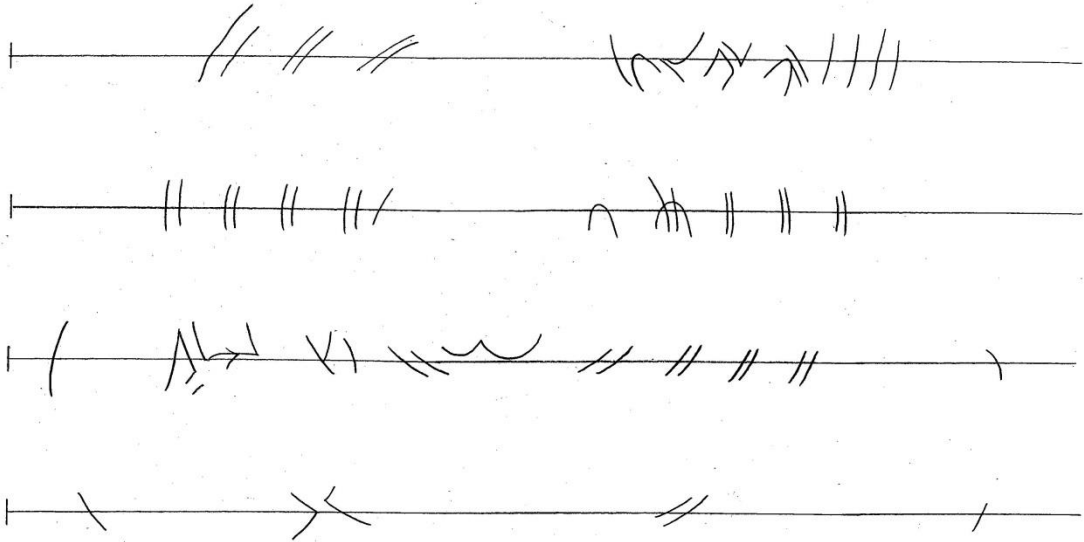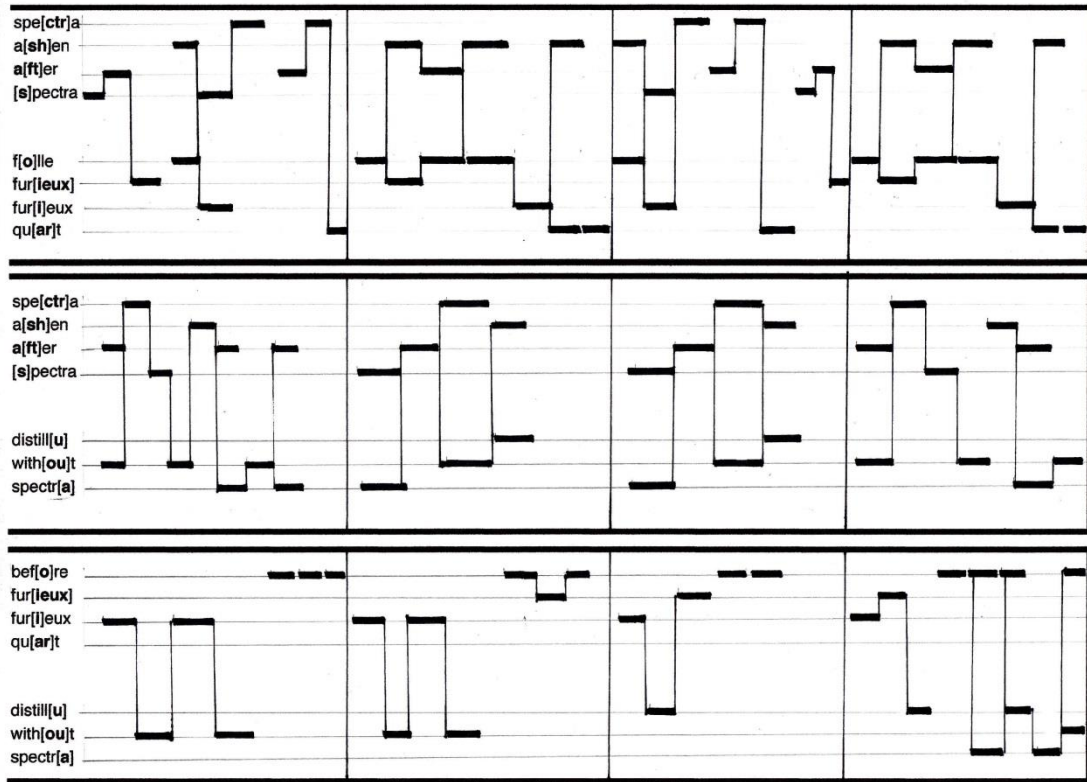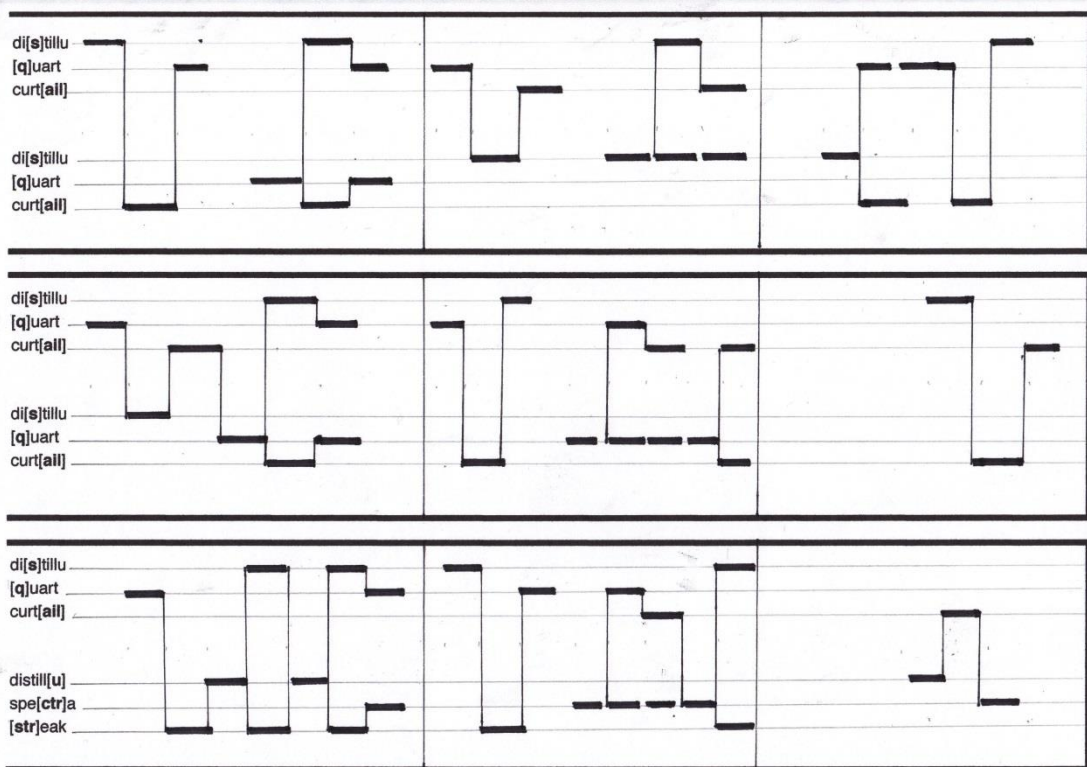
2

3

4

5

6

7

8

9

Appendix 4: Extract from the original score for *tables:nuemes*

Alistair Zaldua, *tables:nuemes* (unpublished draft score, 2014).

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Appendix 4: Extract from the original score for *tables:nuemes*

spe[ctr]a
a[sh]en
a[ft]er
[s]pectra

f[o]lle
fur[ieux]
fur[i]eux
qu[ar]t

spe[ctr]a
a[sh]en
a[ft]er
[s]pectra

distill[u]
with[ou]t
spectr[a]

bef[o]re
fur[ieux]
fur[i]eux
qu[ar]t

distill[u]
with[ou]t
spectr[a]

1

di[s]tillu
[q]uart
curt[ail]

di[s]tillu
[q]uart
curt[ail]

di[s]tillu
[q]uart
curt[ail]

di[s]tillu
[q]uart
curt[ail]

di[s]tillu
[q]uart
curt[ail]

distill[u]
spe[ctr]a
[str]eak

2

Appendix 5: Turntable Transcription Methodology guide

Only a very basic understanding of the TTM system is necessary for understanding the notations contained within this project: the outline given below is sufficient to aid understanding of my notated examples. For a more complete guide, the document *Turntable Transcription Methodology*[110] is available from the web address at the bottom of the page.

TTM is a graphical notation, depicting time along the x-axis and record position along the y-axis. The higher up the y-axis the line drawn on the score moves, the further through the sample the record hand travels. Hence the rub scratch (a simple, faderless back and forth motion of the record) is notated thus:
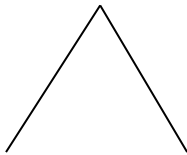
Figure 13: *Rub scratch TTM*

A break in the line indicates that the crossfader is closed, as in the example of the forward stab (only the forward movement of the sample is heard, with all backward movements muted by the fader). Forward stab scratches are therefore notated thus:

Figure 14: *Forward stabs TTM*

A straight horizontal line indicates the record is not moving, as in the tear scratch (in which articulations are created by pausing the movement of the record):

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[110] John Carluccio, Ethan Imboden and Raymond Pirtle, *Turntable Transcription Methodology* (self-published, 2000). Available at < http://www.studioscratches.com/scratchy-100-ttm-turntablist-transcription-method-explained/> [last accessed 23rd June 2016].
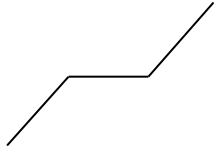
Figure 15: *Tear TTM*

A momentary closing and re-opening of the crossfader (or 'click') is notated by placing a dot on the line, as in the flare scratch (where the sample is cut into two sounds by a fader click):
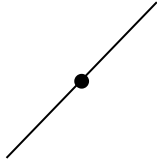

Figure 16: *Forward flare TTM*

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