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Negotiating the Cross-Cultural Implications of the Electric Guitar in Contemporary Concert Music

by

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ABSTRACT

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NEGOTIATING THE CROSS-CULTURAL IMPLICATIONS OF THE ELECTRIC GUITAR IN CONTEMPORARY CONCERT MUSIC

Benjamin Thomas Jameson

Despite its ubiquity in rock and popular music, use of the electric guitar has only become commonplace within 'classical' concert music in recent decades. This increased prominence is partly due to the expanded sonic possibilities that the instrument offers, but also reflects composers' greater willingness to engage with popular music practices. Use of the electric guitar in concert music often involves some form of encounter between contemporary compositional approaches and popular forms of cultural expression, presenting creative possibilities and challenges to composers, performers, listeners and scholars alike.

This research project investigates the cross-cultural implications of employing the electric guitar in concert music through theory, analysis and composition. Case studies of electric guitar works by Tristan Murail and Laurence Crane provide an opportunity to consider how popular music scholarship relating to the electric guitar might figure in analysis of concert music featuring the instrument. These analyses informed the composition of four new works within the included portfolio (provided as scores with accompanying audio/video documentation) that feature the electric guitar or draw upon its related musical idioms, with a specific focus on rock and heavy metal styles.

The portfolio explores a range of contemporary compositional approaches and aesthetics, including spectralist analysis of electric guitar sonorities (which is expanded beyond abstract consideration of sonic properties to include cultural perspectives on guitar idioms), theatrical and choreographic possibilities in electric guitar performance (including reference to the instrument's depiction in recent video games), and the development of extended or non-idiomatic guitar playing techniques. The approaches that I took are analysed and discussed in a series of commentaries that engage with discourses from contemporary composition, popular music studies, cultural studies and other disciplines. Key themes include the electric guitar's gender and racial associations, and its links with notions of musical authenticity.

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DECLARATION OF AUTHORSHIP

I, ...[please print name]

declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

[title of thesis].....

.....

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
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Jameson, B., '"Rock Spectrale": The Cultural Identity of the Electric Guitar in Tristan Murail's *Vampyr!*', *TEMPO*, vol. 69, issue 274 (2015), pp. 22-32.

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Date: .....

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Chapter 1: Introduction

1.1 Engaging with the electric guitar's cultural associations in contemporary composition[1]

Musical instruments are more than just tools for producing sound. They also exist as cultural objects that are given extra-musical significance by their associations with particular repertoires and social contexts. These associations inevitably influence how composers, performers and listeners think about music. The electric guitar is an instrument with a particularly strong cultural identity, and was one of the most iconic musical inventions to appear in the 20th century. Its versatility has allowed it to be used in genres ranging from country to free jazz (not to mention its adoption in various non-western traditions), but it is perhaps most ubiquitous in rock music, along with its associated subgenres and offshoots.

Since the 1950s guitar-driven rock and pop have provided the soundtrack for several countercultural youth movements, leading the instrument to often be associated with values of modernity, youthful rebellion and social upheaval in the popular imagination. André Millard writes that 'the electric guitar is an icon not only because it is all around us but also because it can stand for things other than musical sounds', and notes how these aspects of the guitar's image have been exploited by advertisers and film producers.[2] However, the electric guitar has not always represented progressive or anti-establishment values. Steve Waksman argues that in its role as 'a privileged signifier of white male power and potency' the guitar has also contributed to reinforcing established social orders, such as the marginalisation of women and ethnic minorities, or the influence of commercialism in music.[3] The electric guitar therefore has a complex and

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[1] Portions of this section of text previously appeared in B. Jameson, '"Rock Spectrale": The Cultural Identity of the Electric Guitar in Tristan Murail's *Vampyr!*', *TEMPO*, vol. 69, issue 274 (2015), pp. 22-32.

[2] A. Millard, 'Introduction: American Icon' in Millard (ed.), *The Electric Guitar: A History of an American Icon*, (Baltimore, MD: JHU Press, 2004), pp. 8-12.

[3] S. Waksman, *Instruments of Desire: The Electric Guitar and the Shaping of Musical Experience*, (Cambridge, MA: Harvard University Press, 2001), p. 5, pp. 12-13.

sometimes contradictory cultural identity, which shapes how we understand music performed on this instrument.

Despite (or perhaps because of) its ubiquity in popular culture, the electric guitar has only slowly been accepted into the 'classical' concert hall. Although the first hollow-body electrics were developed in the 1930s, it was not until the second half of the 20th century that composers started to see the instrument's value. In earlier works featuring the electric guitar composers rarely engaged the instrument's associations with popular music or referenced playing styles idiomatic to popular genres. For example, Richard Toop speculates that Stockhausen's decision to use the electric guitar in *Gruppen* (1955-57) may have been influenced by his experiences of American R&B during the post-war occupation of Cologne, but acknowledges that no real stylistic influence from the genre can be seen in the piece's guitar writing.[4] In more recent decades though, as the electric guitar has gained wider acceptance in concert music, its associations with rock and pop have in fact often appealed to composers who wish to engage with contemporary culture. Composers representing a variety of aesthetics, ranging from the punk-minimalism of 'no wave' pioneers Glenn Branca and Rhys Chatham to the psychedelic 'post-spectralism' of the late Fausto Romitelli, have created works involving the electric guitar that are somehow informed by its history in popular music.

Regardless of the ways in which composers engage with the electric guitar, it seems inevitable that the instrument's associations with popular genres, as well as the values that they are understood to represent, will have an important impact on the reception of a piece. These associations may be brought into even greater relief by the electric guitar's presence in concert music, where it may still seem somewhat incongruous to audiences more accustomed to pianos and violins. Performers also have an important role, as their interpretative decisions can emphasise (or deemphasise) certain connotations of the instrument. When considering contemporary repertoire composed for (or influenced by) the electric guitar then, it is important to understand the instrument's popular-cultural identity, and how musicians and audiences draw on this identity to construct meaning in a work.

The purpose of this research project is to further understanding of how composers of contemporary concert music can engage critically with the electric guitar's cultural associations. This is achieved through analysis of existing works for the electric guitar and through the

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[4] Quoted in Z. Banks, *The Electric Guitar in Contemporary Art Music*, (PhD thesis: University of Sydney, 2013), pp. 44-45.

composition of new works that either feature the instrument or draw heavily upon its associated musical idioms. I focus particularly on methods of engaging with rock and heavy metal guitar idioms (either 'positively' or 'negatively' – see section 1.3), because these are the genres in which the instrument has (arguably) achieved its most iconic status, as well as being styles with which I have considerable familiarity. In my work I aim to highlight or question the role that the guitar plays in contemporary society, engaging particularly with discourses surrounding its gendering as a 'masculine' instrument (along with associated racial issues), as well as its contribution to debates relating to authenticity in popular music. These avenues of enquiry are complemented by a strong focus on the role of performers in highlighting particular aspects of the electric guitar's identity.

The remainder of this introduction will establish more precisely the scope and focus of this project. Firstly I will provide a literature review, detailing the existing scholarship concerning this topic. In the following section I outline the structure of the thesis, and the key themes to be discussed. Finally, I provide a brief history of the areas of rock guitar practice that I specifically engage with in my research, in order to contextualise my work.

1.2 Literature review

In conducting my research I have engaged with previous literature concerning the electric guitar's use in concert music. However, despite the increased attention that the instrument has received in recent concert music practice, there is still a lack of academic research that addresses the cultural significance of these developments. In the first part of this review, therefore, I will outline the current extent of the literature regarding this topic, and suggest some areas in which my work will contribute to expanding the field. However, I have also engaged with an important secondary area of literature, concerning the electric guitar's role in popular music. As stated above, a major premise of my research is that engaging with the electric guitar inevitably involves an engagement with its popular-cultural history. An important feature of my work, therefore, is that I have drawn extensively on popular music scholarship to inform my investigations of concert music practice. In the second part of this literature review I provide an overview of the texts that comprise this additional category of research.

1.2.1 The electric guitar in concert music

At present, there is no text that provides a comprehensive study of the electric guitar's role in concert music. However, there are a handful of sources that address particular aspects of the instrument's use. An early example of such a text is John Schneider's *The Contemporary Guitar*, originally published in 1985, but recently reissued in an expanded edition.[5] This book provides useful information for both guitarists and composers about guitar construction, playing techniques and notation, and is unique in giving extensive consideration to the electric guitar alongside its acoustic classical cousin. Similarly, David Laganella's *Composer's Guide to the Electric Guitar* provides comparable, albeit much less substantial, information to Schneider's text.[6]

The guitarist Zane Banks takes a different approach in his recent PhD thesis.[7] Rather than providing specific technical information about the instrument, Banks draws instead on his experience of working with Georges Lentz on the piece *Ingwe* (2009) to suggest possible models for collaboration between composers and guitarists. The thesis also contains information on the history of the electric guitar's use in concert music and a summary of extensive interviews that Banks carried out with notable guitarists and composers, providing valuable insights into the influence of the guitar's popular-cultural associations on concert music practitioners.

The remainder of this category of literature is largely made up of articles and theses that investigate in greater depth specific works featuring the electric guitar. Robert Tomaro's article, titled *Contemporary Compositional Techniques for the Electric Guitar in United States Concert Music*, analyses five works by American composers, and also speculates about the instrument's potential for bridging boundaries between modern popular culture and traditional concert music.[8] Although this article addresses some of the questions that I examine in my work, it is somewhat limited in scope (due to its geographical focus) and dated. However, it has been followed by a handful of additional texts, such as Giacomo Fiore's PhD research on American just intonation guitar repertoire (including several works for electric guitars by James Tenney and Larry

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[5] J. Schneider, *The Contemporary Guitar*, (Lanham, MD: Rowman & Littlefield, 2015).

[6] D. Laganella, *The Composer's Guide to the Electric Guitar*, (Pacific, MO: Mel Bay, 2003).

[7] Z. Banks, *The Electric Guitar in Contemporary Art Music*, (PhD thesis: University of Sydney, 2013).

[8] R. Tomaro, 'Contemporary Compositional Techniques for the Electric Guitar in United States Concert Music', *Journal of New Music Research*, vol. 23, issue 4 (1994), pp. 349-367.

Polansky),[9] Polanksy's own article on Christian Wolff's guitar music,[10] Chris Villars' discussion of Morton Feldman's recently rediscovered 1966 work *The Possibility of a New Work for Electric Guitar*,[11] and theses analysing Steven Mackey's electric guitar works by Paul Ellis and Alec Summers.[12] Like Tomaro though, these authors have focused on electric guitar music by American composers, with little attention being paid to repertoire from other regions. In contrast, the case studies that I have undertaken in the current thesis are both of works by European composers (the French composer Tristan Murail and the Englishman Laurence Crane), which will hopefully contribute to redressing this imbalance in the literature. I also recently published my research on Murail's *Vampyr!* to contribute to this discourse more publicly.[13]

In addition to the above analytical literature, there is also a small body of practice-led research, in which composers and sound artists have outlined their own approaches to the instrument. Agostino Di Scipio has written an article describing his electric-guitar-based installation *Modes of Interference no. 3*, including a consideration of how the guitar's associations with rock music may affect its reception (this text will be referenced in more detail in chapter 6).[14] Likewise, a paper by David Bessell provides an analysis of his spectralist approach to the instrument in his work *Halo,*

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[9] G. Fiore, *The Just Intonation Guitar Works of Lou Harrison, James Tenney, and Larry Polansky*, (PhD Thesis: University of California Santa Cruz, 2013).

[10] L. Polansky, 'Six strings, ten fingers and the heterophonic ideal: Some thoughts on Christian Wolff's recent guitar music' (2014) at *Dartmouth College*, <aum.dartmouth.edu/~larry/published_articles/Polansky.Wolff.Six_Strings.pre.pub.draft.pdf> (accessed 9/3/17).

[11] C. Villars, 'The Story of Morton Feldman's *The Possibility of a New Work for Electric Guitar*' in M. Feldman, *The Possibility of a New Work for Electric Guitar*, (London: Peters, 2015), pp. 8-13.

[12] P. Ellis, *The Creative and Technical Differences in Composing an Electric Guitar Concerto and Classical Guitar Concerto*, (Masters Thesis: California State University, Long Beach, 2010), pp. 8-16; and A. Summers, *Mackey's World: An Analysis of "Troubadour Songs" and "Three Moments" for Large Chamber Ensemble*, (PhD thesis: University of Pittsburgh, 2013), pp. 1-66.

[13] B. Jameson, '"Rock Spectrale": The Cultural Identity of the Electric Guitar in Tristan Murail's *Vampyr!*', *TEMPO*, vol. 69, issue 274 (2015), pp. 22-32.

[14] A. Di Scipio, 'A Constructivist Gesture of Deconstruction. Sound as a Cognitive Medium', *Contemporary Music Review*, vol. 33, no. 1 (2014), pp. 87-102.

Bells and Voices.[15] Finally, in an article co-authored by several researchers based at the University of Paris VIII, Santiago Quintans' work *5 Fragments pour Guitare Electrique* is considered in terms of the composer's engagement with the technological aspects of the electric guitar, and contextualised through an evaluation of the instrument's organological development.[16] The commentaries on my own works that I provide in this thesis will contribute further to this field of practice-based research into the use of the electric guitar in concert music.

1.2.2 The electric guitar in popular culture

While the electric guitar's role in concert music has received limited attention from scholars, its popular-cultural impact has been assessed in several notable publications. These span a number of fields, including popular music studies, cultural studies, sociology, ethnomusicology and even ludomusicology (the study of video game music).

The most significant contribution to this literature is the work of Steve Waksman, whose monograph *Instruments of Desire* evaluates the electric guitar's role in 20th-century popular music, with a particular focus on issues of gender and race, through chapters focusing on a variety of key guitarists and bands.[17] Gender also forms an important aspect of his article *California Noise: Tinkering with Hardcore and Heavy Metal in Southern California*, which relates the 'technological enthusiasm' of guitarists Eddie Van Halen and Greg Ginn to discourses of masculinity.[18] Waksman has additionally contributed a chapter evaluating Van Halen's role as a 'guitar hero' to Andy Bennett and Kevin Dawe's *Guitar Cultures* (a collection of essays regarding

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[15] D. Bessell, 'Formant Synthesis, Granular Synthesis, and Waveshaping in *Halo, Bells and Voices*, Bessell', *Perspectives of New Music*, vol. 45, no. 1 (2007), pp. 236-252.

[16] O. Lähdeoja, B. Navarret, S. Quintans and A. Sedes, 'The Electric Guitar: An Augmented Instrument and a Tool for Musical Composition', *Journal of Interdisciplinary Music Studies*, vol. 4, issue 2 (2010), <www.musicstudies.org/jims201041/Lahdeoja_JIMS_10040203.pdf> (accessed 9/3/17).

[17] S. Waksman, *Instruments of Desire: The Electric Guitar and the Shaping of Musical Experience*, (Cambridge, MA: Harvard University Press, 2001).

[18] Waksman, 'California Noise: Tinkering with Hardcore and Heavy Metal in Southern California', *Social Studies of Science*, vol. 34, no. 5 (2004), pp. 675-702.

the instrument's role in cultures from the USA to Papua New Guinea),[19] and a more general consideration of rock and metal guitar styles in two chapters for *The Cambridge Companion to the Guitar* (which also features chapters on the guitar's role in genres such as blues, jazz and country music).[20]

Several other scholars have contributed surveys of the electric guitar's history, which attempt to account for its prominence in 20th-century culture. André Millard's *The Electric Guitar: A History of an American Icon* (which features chapters by various authors from different fields) touches on several themes in common with Waksman's work, but incorporates a wider range of perspectives – most notably drawing on expertise from the history of technology and business to evaluate the guitar's status as a commercial product.[21] Rebecca McSwain's article *The Power of the Electric Guitar* also describes the sociocultural and technological circumstances that led to the instrument's rise to popularity,[22] while William F. Danaher draws on sociological concepts to explain why certain types of guitar have become particularly iconic.[23] In contrast, Gavin Carfoot focuses more on the influence the electric guitar has had on the development of popular music, which he conceptualises in terms of Jacques Attali's theory of 'noise'.[24] Similarly, Ben Goertzel has

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[19] Waksman, 'Into the Arena: Edward Van Halen and the Cultural Contradictions of the Guitar Hero' in A. Bennett and K. Dawe (eds.), *Guitar Cultures*, (Oxford: Berg, 2001), pp. 117-134.

[20] Waksman, 'The turn to noise: rock guitar from the 1950s to the 1970s' and 'Contesting virtuosity: rock guitar since 1976' in V. A. Coelho (ed.), *The Cambridge Companion to the Guitar*, (Cambridge: Cambridge University Press, 2003), pp. 109-132.

[21] A. Millard, *The Electric Guitar: A History of an American Icon*, (Baltimore, MD: JHU Press, 2004).

[22] R. McSwain, 'The Power of the Electric Guitar', *Popular Music and Society*, vol. 19 (1995), pp. 21-40.

[23] W. F. Danaher, 'The Making of a Cultural Icon: The Electric Guitar', *Music and Arts in Action*, vol. 4, issue 2 (2014), pp. 74-93.

[24] G. Carfoot, 'Acoustic, Electric and Virtual Noise: The Cultural Identity of the Guitar', *Leonardo Music Journal*, vol. 16 (2006), pp. 35-39. See also: J. Attali, *Noise: The Political Economy of Music*, (Minneapolis, MN: University of Minnesota Press, 1985).

written an article evaluating the development of the guitar solo in rock,[25] while Robert M. Poss' *Distortion is Truth* provides a personal reflection on the significance of overdriven guitar timbres.[26] Another important source is Robert Walser's 1993 study of heavy metal, *Running with the Devil*, which features extensive discussion of the guitar's role in the music, including concepts that I have drawn on in my analysis work.[27]

While the above texts generally focus on the electric guitar's role in 20th-century music, Kevin Dawe's book *The New Guitarscape* evaluates its status in the early 21st century, addressing issues such as the increased prominence of female and LGBT guitarists, and the role of new technologies such as the Internet.[28] The experiences of female guitarists have also been the focus of texts such as Mavis Bayton's chapter *Women and the Electric Guitar*,[29] and Monique Bourdage's article *A Young Girl's Dream*,[30] while Mary Ann Clawson has examined the prominence of female bass guitarists in alternative rock.[31] Further articles by Robin M. James and Joshua Hochman take a more radical stance towards the guitar's role in discourses of gender and sexuality, drawing on

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[25] B. Goertzel, 'The Rock Guitar Solo: From Expression to Simulation', *Popular Music and Society*, vol. 15 (1991), pp. 91-101.

[26] R. M. Poss, 'Distortion is Truth', *Leonardo Music Journal*, vol. 8 (1998), pp. 45-48.

[27] R. Walser, *Running with the Devil: Power, Gender, and Madness in Heavy Metal Music*, (Hanover NH: Wesleyan University Press, 1993).

[28] K. Dawe, *The New Guitarscape in Critical Theory, Cultural Practice and Musical Performance*, (Farnham: Ashgate, 2010).

[29] M. Bayton, 'Women and the Electric Guitar' in S. Whiteley (ed.), *Sexing the Groove: Popular Music and Gender*, (London: Routledge, 1997), pp. 37-49.

[30] M. Bourdage, '"A Young Girl's Dream": Examining the Barriers Facing Female Electric Guitarists', *Journal of the International Association for the Study of Popular Music*, vol. 1, no. 1 (2010), <www.iaspmjournal.net/index.php/IASPM_Journal/article/view/334> (accessed 9/3/17).

[31] M. A. Clawson, 'When Women Play the Bass: Instrument Specialization and Gender Interpretation in Alternative Rock Music', *Gender and Society*, vol. 13, no. 2 (1999), pp. 193-210.

feminist concepts and queer theory to suggest a potential for the instrument to be a tool of resistance against masculinist or heteronormative discourses in popular culture.[32]

A final category of literature (that I have drawn on in the discussion of my piece *Construction in Metal*) relates to the *Guitar Hero* and *Rock Band* video games, which have been subject to a number of academic investigations. The most influential of these is Kiri Miller's article *Schizophonic Performance* (later incorporated into the monograph *Playing Along*), which notably highlights how the games' 'schizophonic' model of performance (see chapter 5) challenges the guitar's role in popular culture as a symbol of authenticity.[33] Miller links these ideas to discourses of gender and sexuality in electric guitar scholarship.

Several further articles have evaluated the claim (made by various media commentators) that playing *Guitar Hero* is not a 'real' form of musical performance. These include Dominic Arsenault's practical evaluation of the game and its peripherals in terms of their fidelity to actual guitar playing,[34] but also more abstract consideration of the ontology of performance by Craig Derksen and Darren Hudson Hick.[35] Joshua Tanenbaum and Jim Bizzocchi take a similar approach to Arsenault in evaluating *Rock Band*'s three different types of peripheral.[36] On the other hand, David Roesner's approach is again more theoretical, arguing that *Guitar Hero* provides new

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[32] R. M. James, 'Autonomy, Universality, and Playing the Guitar: On the Politics and Aesthetics of Contemporary Feminist Deployments of the ''Master's Tools''', *Hypatia*, vol. 24, no. 2 (2009), pp. 77-100; J. Hochman, 'Disorienting guitar practice: an alternative archive', *Critical Studies in Media Communication*, vol. 33 (2016), pp. 95-108.

[33] K. Miller, 'Schizophonic Performance: *Guitar Hero*, *Rock Band*, and Virtual Virtuosity', *Journal of the Society for American Music*, vol. 3, issue 4 (2009), pp. 395-429; —*Playing Along: Digital Games, YouTube, and Virtual Performance*, (New York, NY: Oxford University Press, 2012), pp. 85-151.

[34] D. Arsenault, 'Guitar Hero: "Not like playing guitar at all"?', *Loading…*, vol. 2, no. 2 (2008), <journals.sfu.ca/loading/index.php/loading/article/view/32> (accessed 9/3/17).

[35] C. Derksen and D. H. Hick, 'Performance Hero', *Contemporary Aesthetics*, vol. 7 (2009), <www.contempaesthetics.org/newvolume/pages/article.php?articleID=541> (accessed 9/3/17).

[36] J. Tanenbaum and J. Bizzocchi, 'Rock Band: a case study in the design of embodied interface experience', *Sandbox '09: Proceedings of the 2009 ACM SIGGRAPH Symposium on Video Games*, <josh.thegeekmovement.com/?page_id=18> (accessed 9/3/17).

perspectives on the nature of musical performance.[37] Further perspectives on the games have been provided by Mario Dozal, who focuses on the conflict between their commercialism and rock music's supposed anti-establishment values,[38] and David Arditi, who examines the social potential of the games' online modes (drawing on Attali's quasi-utopian concept of 'composition').[39]

1.3 Thesis structure

The main body of this thesis consists of two case studies analysing existing works featuring the electric guitar and three commentaries examining four works of my own that respond to issues raised in my analyses. The scores of my four pieces are provided separately, with audio or visual documentation included. The works considered in this project draw upon a variety of different aesthetics and musical techniques, with the thesis divided into three parts to reflect these broad categories. These main sections are followed by a final conclusion.

The first main part of the thesis investigates the electric guitar's use in spectralist music. This includes the first of the two case studies, which analyses Tristan Murail's *Vampyr!* (1984) for solo electric guitar. In the following commentary, I present two of my own works that draw on spectralist techniques to engage with heavy metal idioms. These pieces, titled *Power Chord Study* (for 'Pierrot' ensemble) and *Power Trio* (for electric piano, electric guitar and drum kit), focus particularly on the use of 'power chords', the most characteristic harmonic structure of heavy rock, investigating not just their timbral properties but also their cultural resonances.

The second part of the thesis concerns work that engages with the theatrical and visual aspects of electric guitar performance. It contains the second case study, an analysis of Laurence Crane's 'music theatre for two performers' *Some Rock Music for Alan Thomas* (2008), which also includes a brief consideration of Crane's earlier solo electric guitar piece *Bobby J* (1999). This is followed by

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[37] D. Roesner, 'The Guitar Hero's Performance', *Contemporary Theatre Review*, vol. 21, no. 3 (2011), pp. 276-285.

[38] M. A. Dozal, 'Consumerism Hero: The "Selling Out" of *Guitar Hero* and *Rock Band*' in M. Austin, (ed.), *Music Video Games: Performance, Politics, and Play*, (New York, NY: Bloomsbury Academic, 2016), pp. 127-152.

[39] D. Arditi, 'Virtual Jam: A Critical Analysis of Virtual Music Game Environments' in Austin, *Music Video Games*, pp. 177-193.

a commentary on my own *Construction in Metal*, for electric guitar and *Guitar Hero* controller, which draws on similar techniques of theatricality to question the electric guitar's role as a symbol of authenticity in popular music.

The final section of the thesis discusses the use of non-idiomatic playing techniques to distance the electric guitar from its cultural associations and consists of just one chapter, a commentary on my *Tapping Piece* for four electric guitars. I argue that, while *Power Chord Study*, *Power Trio* and *Construction in Metal* all represent what might be termed a 'positive' engagement with the electric guitar's genre associations, characterised by stylistic references and quotation, *Tapping Piece* instead represents 'negative' engagement with the guitar, characterised by deliberate avoidance or subversion of idiomatic playing styles. Although there is no separate case study included in this part of the thesis, I cite several precedents to my work in the commentary. This piece is also linked to earlier works in the thesis, both through its use of spectral pitch structures and through the highlighting of physical and visual aspects of playing the guitar.

In addition to the main works outlined above, the case studies and commentaries make reference to other works that provide further context for my arguments. Although focused on the electric guitar specifically, my thesis engages with music for a variety of different instrumental combinations, including solo electric guitar (e.g. *Vampyr!* and *Bobby J*), electric guitar combined with various other instruments and performers (e.g. *Power Trio*, *Some Rock Music for Alan Thomas* and *Construction in Metal*), groups of multiple electric guitars (e.g. *Tapping Piece* and James Tenney's *Septet*, discussed in chapters 3 and 6), and even works that do not feature the guitar at all (e.g. *Power Chord Study*). However, my writing about all these works is linked by my central focus on the electric guitar's cultural associations.

My research in this project has necessarily been somewhat limited in scope, and I have only begun to explore the electric guitar's possibilities for contemporary composers. However, through including a variety of different approaches I hope to outline certain positions from which more thorough investigations of the instrument's potential may begin. The conclusion to this thesis suggests various ways in which the insights I have gained may be extended in future research. In the current project, however, I hope to provide some useful theoretical frameworks with which to approach concert music for the electric guitar, and to outline a perspective that will inform my continuing work.

1.4 Contextualising my references to rock guitar practice

In section 1.1 I explained that my research largely focuses on concert music that engages with rock and heavy metal idioms, arguing that it is in these genres that the electric guitar has been elevated to its most iconic status. I will now clarify which specific areas of rock guitar practice I have chosen to engage with, and which styles have featured most prominently in my research. In my work I have focused largely on rock and metal guitar styles in English-speaking countries from roughly the mid-1960s to the late 1980s. During these decades the electric guitar held a dominant position in popular music, and the rock of the period saw some of the strongest codification of the tropes of the electric guitar as a vehicle for the expression of white masculinity, and as a symbol of musical authenticity. My focus on this area of music history is therefore particularly relevant to the discourses of gender, race and authenticity that I have engaged with in my theoretical and analytical work.

The mid-to-late 1960s saw the emergence of approaches to the electric guitar that would form the basis of rock music practice for the following decades. London was a key site for the development of the instrument's potential, as a number of young British guitarists, including Eric Clapton, Jeff Beck, Jimmy Page and Pete Townshend, became enamoured with American blues and rock 'n' roll and sought to emulate these playing styles.[40] Many key features of their practice were therefore inherited from previous generations of guitarists, including the use of blues-based chord progressions, reliance on pentatonic scale vocabulary in soloing, expressive use of string-bending techniques, and use of 'power chords' (which I investigate in detail in chapter 3) in combination with distortion effects. However, these guitarists' playing was made innovative by their exploitation of new technologies that facilitated unprecedented sonic exploration. Solid-body electric guitar designs had been mass-produced since the early 1950s, but their full potential was unlocked in the 1960s with the development of new high-powered amplifiers by manufacturers such as Jim Marshall, which gave players the ability to introduce into their sound (and control) higher degrees of distortion than ever before.[41]

Gavin Carfoot outlines a gradual assimilation during the 1960s of distortion and feedback (previously considered undesirable side effects of amplification) into the lexicon of sounds that are considered to be 'musical' by players and audiences, demonstrating how new technology was

[40] See Waksman, 'The turn to noise', pp. 114-115.

[41] Ibid, p. 116.

vital to the development of rock guitar's sonic vocabulary.[42] High-powered amplification also complemented flamboyant onstage choreography, such as Pete Townshend's 'windmill' gesture and infamous guitar smashing antics, which confirmed guitars such as the Fender Stratocaster and Gibson Les Paul as part of the essential iconography of rock.[43] These visual and physical aspects of rock performance are an important aspect of the image of the 'guitar hero', and feature prominently in my discussion of Laurence Crane's *Some Rock Music for Alan Thomas* (chapter 4) and my own *Construction in Metal* (chapter 5).

Steve Waksman argues that white British guitarists (and their white American counterparts, such as Mike Bloomfield) were drawing not just on the playing techniques of African-American bluesmen, but also on their own interpretations of an idealised black masculinity, giving the 'macho' characterisation of the guitar hero complex racial connotations.[44] As Waksman notes, the importance of these connotations was amply demonstrated in the reactions of British guitarists when Jimi Hendrix, the predominant virtuoso of the era, arrived in London.[45] Musicians such as Clapton and Townshend admitted to feeling threatened by Hendrix's African-American heritage, which they saw as imparting an authenticity to his playing that their own music could only aspire to, and by his characterisation as a highly sexual performer, which was rooted in stereotypes of exaggerated black masculinity. The gendered and racialised connotations of guitar virtuosity are a key theme of this thesis, and are discussed in a variety of contexts throughout the text.

Rock's popularity continued into the 1970s, leading to increasingly large-scale concert productions by bands such as Led Zeppelin and Deep Purple in the UK and Aerosmith in the United States. This decade also saw the emergence of heavy metal as a distinct genre in the early album releases of Black Sabbath (although there has always been considerable debate among fans as to where the boundaries between hard rock and metal lie).[46] While this band shared the blues roots of their

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[42] Carfoot, 'The Cultural Identity of the Guitar', pp. 35-37.

[43] See Waksman, 'The turn to noise', pp. 116-117.

[44] Waksman, *Instruments of Desire*, pp. 4-5.

[45] Ibid, pp. 196-203.

[46] For a consideration of Black Sabbath's role in codifying heavy metal and their relationship to other heavy rock bands, see E. Rivadavia, '1970: The Year Heavy Metal Was Born' at *Ultimate Classic Rock*, <ultimateclassicrock.com/heavy-metal-born-1970/> (accessed 21/7/17). The user comments are typical of fan debates surrounding genre classifications in rock and metal.

peers, their music was given a darker, 'heavier' sound by their more exclusive focus on minor modalities (including dissonant intervals such as the tritone), their use of higher degrees of distortion (and later detuned guitars), and lyrics referencing war, drug addiction and the occult.[47] My piece *Power Chord Study* prominently features a quotation from Sabbath's *Snowblind*, a song from their fourth album. In chapter 3 *Power Chord Study* is considered both in terms of spectralist analysis of guitar timbre and in relation to the role of power chords in the 'masculinist' discourse of metal music. The 1970s also produced the experimentation of progressive rock, which saw musicians engaging with wider influences from classical music and jazz, which were integrated into complex extended forms.

Despite the huge popularity of rock in the 1970s, this era also saw the spread of increasing criticism of the extravagant, impersonal spectacles of arena rock, and greater awareness of the genre's gender bias towards men.[48] An important early academic critique of rock (originally published in 1978) is Simon Frith and Angela McRobbie's *Rock and Sexuality*, which coined the term 'cock rock', and has been influential on recent scholars of popular music and gender.[49] The critique of rock's 'elitist' and exclusionary connotations also found musical expression in the mid-1970s emergence of punk rock in New York and London. This subgenre's deliberately amateurish approach has widely been understood as a rejection of the elevation of virtuoso musicians – particularly guitarists – in the mainstream rock of the era, and an attempt at establishing a more egalitarian relationship between performers and audiences.[50] Although the best-known 1970s punk bands (such as the Ramones, the Sex Pistols and The Clash) were male-dominated, the scene generally was more welcoming of non-male musicians, and featured several female-dominated bands such as The Slits or The Raincoats.[51] Punk has not been a major focus of my research, due

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[47] For a more detailed account of the rise of heavy metal in the 1970s, see Walser, *Running with the Devil*, pp. 8-11, although it should be noted that Walser generally uses a relatively inclusive definition of the genre that features some bands (such as Led Zeppelin, Aerosmith or AC/DC) whose status as metal would be disputed by many fans (and often indeed the bands themselves).

[48] See Waksman, 'The turn to noise', pp. 118-121.

[49] S. Frith and A. McRobbie, 'Rock and Sexuality' in S. Frith and A. Goodwin (eds.), *On Record: Rock, Pop, and the Written Word*, (London: Routledge, 1990), pp. 371-389.

[50] See Waksman, 'Contesting virtuosity', pp. 122-123.

[51] See Clawson, 'When Women Play the Bass', p. 195.

to its deemphasising of guitar virtuosity, but chapter 6 of this thesis does feature some discussion of the 'anti-virtuoso' tendencies of punk and alternative rock in relation to my *Tapping Piece*.

The mainstream success of the first wave of punk was ultimately short-lived, and one of the key features of rock in the late 1970s and 1980s was in fact a resurgence of guitar virtuosity, and an increasing obsession with advances in technical ability. This movement was kick-started by the emergence of Eddie Van Halen, whose sheer speed on the guitar (using techniques such as two-handed 'tapping' on the fretboard) was unprecedented. His recordings with the band Van Halen spawned a legion of imitators, who played in many of the most successful groups of the next decade, often using 'superstrat' guitar designs inspired by Van Halen's own homemade guitars.[52] As the obsession with fast playing (often dubbed 'shredding') continued, several guitarists (such as Randy Rhoads or Yngwie Malmsteen) reengaged with the classical music influences explored by previous generations to inspire their development of guitar technique.[53] The virtuoso rock of the 1980s forms a key context for my investigation of Tristan Murail's *Vampyr!* (in chapter 2), which was composed at the height of the shred craze in 1984, and my analysis of the piece highlights issues relating to virtuosity and its masculinist connotations during this era.

During the 1980s hard rock and heavy metal achieved unprecedented commercial success through concert tours and album sales. Metal in particular continued to develop through its splintering into a variety of subgenres, including thrash metal (which I refer to in my analysis of *Vampyr!* and in relation to my *Power Trio* in chapter 3), death metal, glam metal, black metal and many others.[54] However, in the early 1990s the resurfacing of punk's 'DIY' aesthetic in the 'grunge' movement that originated in Seattle once again challenged the significance of virtuosity in rock guitar practice. While grunge featured more guitar soloing than the original punk movement, its most prominent guitarists displayed self-consciously amateurish and noisy playing

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[52] See Waksman, 'Into the Arena' for a detailed analysis of Van Halen's role in repopularising virtuosity in rock. Of particular note is Waksman's hypothesis that the role of the guitar hero in this era was to counteract the homogenising of musical experience enacted in the spectacles of arena rock, providing an element of personal expression and a conduit for a more intimate connection with the audience (p.119, pp. 130-131).

[53] This 'neoclassical' style is the subject of a chapter in Walser's *Running with the Devil*, pp. 57-107.

[54] See Walser, *Running with the Devil*, pp. 11-16.

styles that made the shredders of the 1980s seem dated and unfashionable.[55] Nirvana's Kurt Cobain, the most celebrated grunge guitarist, also expressed distaste for the macho trappings of rock guitar stardom and ambivalence towards the gender politics expressed in the rock music of earlier eras.[56]

It is often alleged that grunge effectively ended the era of the guitar hero. It is certainly true that, while guitar-based music has been subject to continued media attention since 1990, the most prominent styles have often tended to be various subgenres of punk, indie or alternative rock that do not celebrate the technical skills of their guitarists so overtly (for example the 'Britpop' and pop punk of the mid-to-late 1990s). Some guitarists in these styles are undoubtedly skilled musicians and songs may even feature guitar solos, but the emphasis is rarely on showcasing virtuosity for its own sake, with a greater emphasis often placed on more general 'song-writing' abilities than individual instrumental skill. While hard rock and heavy metal have retained a dedicated fan base and are sometimes featured in radio and television broadcasts, they have never achieved the same cultural prominence that they experienced in the 1980s (although one exception is the 'nu metal' subgenre, a cross-fertilisation of metal with alternative rock and hip hop that experienced mainstream success in the late 1990s and early 2000s, but largely eschewed guitar solos and technical skill). In addition, electronic production methods have become at least as prominent as, if not more than, 'traditional' instrumental performance, in popular music styles such as hip hop and various forms of electronic dance music, challenging the view that the electric guitar is a symbol of musical authenticity.[57] The guitarists of the 1960s, 1970s and 1980s therefore have arguably had the greatest role in defining the popular image of the electric guitar and its musical paradigms, thus explaining my focus on the music of these decades in my own work.

Guitar virtuosity, however, continues to be celebrated within dedicated subcultures, and occasionally receives attention in the mainstream media. In the 21st century the Internet (particularly the video sharing site YouTube) has provided a forum for guitar enthusiasts to share their music and new technical developments.[58] Another important recent development is the

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[55] See Waksman, 'Contesting virtuosity', pp. 128-129.

[56] See Hochman, 'Disorienting guitar practice', p. 101.

[57] See Waksman, 'Contesting virtuosity', pp. 129-132.

[58] For a discussion of the Internet's role in contemporary guitar culture, see Dawe, *The New Guitarscape*, pp. 101-107.

popularity of the *Guitar Hero* and *Rock Band* video game series, which simulate rock guitar performance through rhythmic button pressing. These games demonstrate the continuing prominence of the electric guitar in popular culture, but also raise questions relating to its role as a symbol of authenticity. In my piece *Construction in Metal* (discussed in chapter 5) I adapt the plastic guitar peripheral from *Guitar Hero* to function as a musical instrument in order to investigate these notions of authenticity further. Music games have also solidified the 'canonic' status of many of the bands and guitarists referenced above by featuring their recordings prominently, alongside a select few contemporary tracks. This wide-ranging attitude to rock history parallels my own approach in *Construction in Metal*, in which I quote and sample various tracks from different rock styles recorded between the 1960s and 1980s, and also Laurence Crane's use of samples in *Some Rock Music for Alan Thomas* (see chapter 4).

The above chronology gives a summary of key developments in rock guitar practice since the 1960s, and indicates some areas of this history that I focus on in this thesis. It will be noted that my historical focus shifts markedly depending on the relevance of different styles of rock to the themes addressed in each chapter. In the first section of the project I focus on a specific era of rock (in my comparison of Murail's *Vampyr!* with virtuoso 1980s rock) or playing style (in my examination of heavy metal guitar practice), while in the second section I take a broader approach, alluding to various different eras and subgenres of rock guitar (particularly in reference to their visual performance practices). In contrast, in the third section I characterise my work as in some sense negating the electric guitar's association with any of the repertoires described above. This varied approach suits my aim in this research project, which is not to provide a comprehensive account of electric guitar practice (whether in popular or concert music), but instead to highlight some areas in which composers may creatively engage with the instrument's cultural history.

Section A: The Electric Guitar in Spectralist Music

Chapter 2: Case Study: Tristan Murail – *Vampyr!*[59]

2.1 Overview

As the electric guitar has slowly gained acceptance into concert music practice, certain key works have played an important role in establishing its credibility as an instrument suited to contemporary composition. These pieces demonstrate the abilities of the instrument and constitute the early foundations of a 'canon' of notable electric guitar works. The existence of this germinal canon gives the electric guitar a greater aura of respectability (through its association with well-known composers) and provides an established repertoire for guitarists to draw upon. One of the best known of these works is Tristan Murail's *Vampyr!*, a piece for solo electric guitar that was composed in 1984, which has remained one of the most popular and frequently performed works for the instrument into the present day.

A large part of *Vampyr!*'s appeal lies in the piece's engagement with techniques and timbres from rock guitar, which can seem like something of an anomaly in Murail's oeuvre of 'spectralist' works. However, my research has shown that the piece does in fact owe much to spectralist principles. In keeping with the spectralist attitude towards exploring the qualities of sound, Murail frames his engagement with rock as an interest in the timbral possibilities of the genre, and claims to dislike the actual music. Murail's focus on timbre suggests that he did not fully consider the cultural implications of his borrowings from rock guitar, making the piece an interesting case study for my research project. On the one hand, Murail's synthesis of musical vocabulary from rock and spectralism is technically quite successful. However, there is also a possibility that these borrowings create additional meanings in the music (that the composer may or may not have intended) due to the influence of the electric guitar's cultural associations, which are strongly evoked by the piece's affinities with contemporary rock of the 1980s.

This case study investigates how these associations can affect performers' and audiences' understanding of *Vampyr!*, through a discussion in four main parts. Firstly (in section 2.2) I provide some contextual information about *Vampyr!*'s composition. This is followed (in 2.3) by a

[59] A version of this chapter was published as B. Jameson, '"Rock Spectrale": The Cultural Identity of the Electric Guitar in Tristan Murail's *Vampyr!*', *TEMPO*, vol. 69, no. 274 (2015), pp. 22-32.

musical analysis that demonstrates the ways in which Murail draws upon rock influences. As well as conventional approaches to analysing Murail's work, I borrow some interesting concepts that popular music scholars have developed for analysing rock music. In the third part of the discussion (section 2.4), I consider the implications of the work's rock allusions from a wider cultural perspective, drawing on a variety of research investigating the cultural significance of the electric guitar. The last main section of this chapter (2.5) considers the role of performers in highlighting the cultural associations of the guitar, and is followed by a brief conclusion (section 2.6) that draws together my arguments and provides a link to the following commentary on own my works *Power Chord Study* and *Power Trio*.

2.2 Tristan Murail, spectralism and rock music

Tristan Murail is one of the most prominent in the group of French composers who have developed various compositional approaches commonly called 'spectralist' music. In the 1970s and 1980s Murail and his contemporaries developed techniques that take the raw material of sound itself as the basis of a composition. Typically they would use sophisticated computer analysis of musical sounds and timbres to generate harmonic spectra, which are the basis of their pitch constructions, thus negating the traditional distinction made between harmony and timbre. Other parameters such as orchestration and rhythm are often also governed by this concern with translating the measurable qualities of sound into compositional decisions. Spectralist composers therefore tend to have an abstract, almost scientific focus on the qualities of their musical materials, rather than on any cultural references (such as stylistic allusions to other genres). With this in mind Murail's engagement with rock idioms in *Vampyr!* may seem rather uncharacteristic of his spectralist aesthetic, but the piece is not without precedent in his oeuvre. One notable precursor of *Vampyr!*'s engagement with external stylistic influences is the classical guitar piece *Tellur* (1977), in which Murail utilised techniques from flamenco guitar, such as *rasgueado* strumming, to create complex sonorities that are not achievable with standard classical guitar technique.[60] *Vampyr!* was also not the first time that Murail had used the electric guitar, which he included in his chamber works *Ligne de non-retour* (1971) and *Les Nuages de Magellan* (1973). More recently he composed *Contes Cruels* (2007), for two electric guitars and orchestra. Nevertheless, in comparison with the main body of Murail's work *Vampyr!* is quite an unusual piece, as its references to rock guitar styles are so clear that they almost overshadow the 'spectralist' aspects of the composition.

[60] See T. Alla, *Tristan Murail, la couleur sonore*, (Paris: Éditions Michel de Maule, 2008), p. 91.

Vampyr! was originally composed as part of the chamber music cycle *Random Access Memory* (1984-87), although it is now better known as a stand-alone solo piece. Murail has stated that in *Random Access Memory* he wanted to 'attempt a kind of synthesis or hybridisation between rock music and [his] personal musical language'.[61] Murail's interest in rock seems to have been linked to his fascination with timbre, as he explained in a BBC interview that was broadcast with a performance of *Random Access Memory*:

> 'I don't know much about it [rock music] and I'm afraid I don't like it very much, but I'm interested by a few aspects of it. Sometimes the sound itself is very interesting… but of course the language of it is so simple.'[62]

Murail's claim that he dislikes and is not knowledgeable about rock music is surprising given his level of engagement with the genre. It is possible that he may have been exaggerating, as later in the interview he seems to express admiration for the 'cosmic rock' of Tangerine Dream and Pink Floyd, although he denies any influence from the 'very much commercialised' contemporary rock of the 1980s.[63] However, although much of *Random Access Memory* does indeed evoke the sound world of synthesiser-driven progressive rock, *Vampyr!* itself seems to my mind to actually have much in common with trends in mainstream 1980s rock guitar, and particularly the new emphasis on virtuosity embraced by many guitarists in this decade. Whether or not Murail intentionally took influence from 1980s rock, *Vampyr!*'s speedy and intricate melodic lines and use of special effects such as 'whammy bar' techniques have much in common with the flashy soloing of guitarists like Eddie Van Halen, and these resonances are likely to influence an audience's perception of a performance.[64]

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[61] Quoted in Alla, *Tristan Murail*, p. 152. I am grateful to Christopher Evans for his help in translating this quotation from the original French into English (the responsibility for any errors is mine).

[62] *Music in Our Time*, BBC Radio 3, 13 October 1988.

[63] Ibid.

[64] A 'whammy bar' is a lever attached to the bridge of some electric guitars that allows the player to bend the pitches of notes and chords. These units are also commonly referred to as tremolo bars (something of a misnomer), or vibrato bars.

The performance notes to *Vampyr!* give a detailed technical description of the desired sound quality from the electric guitar, and show the particular aspects of its timbre that Murail was drawn to:

> 'The desired sound is rather like that of the solo guitar as played by Carlos Santana, Eric Clapton etc. It is more a question of achieving the saturation effect of a valve amplifier than a real fuzz which is too close to mere noise. The pitches should therefore be quite clearly discernible. This means holding back on saturation in order to avoid parasite noises and unwelcome resonances. Nonetheless the compression effect should be retained thus enabling the notes to be held sufficiently long.'[65]

Murail describes the long sustain made possible on the electric guitar by distortion and feedback. It also seems likely that he would be interested in the complex patterns of higher partials created in the signal by distortion effects. With Clapton and Santana, Murail again prefers to refer to 1960s and 1970s rock musicians for his sonic reference, although the actual musical language of the piece does not show their influence so clearly.

2.3 *Vampyr!* – an analysis

In *Vampyr!* Murail achieves his 'synthesis' of rock and his established musical language by combining spectral pitch structures with references to the gestural vocabulary of rock guitar. The clearest example of this can be seen throughout the first of the piece's two main formal sections (which are neatly delineated by a double bar line halfway through the score). The majority of the pitch material in this section is based on a gradual exploration of a single harmonic spectrum. Although Murail's use of this spectrum is rather more simplistic than in many of his other works, it provides a clear link to his established harmonic language. However, against this organically developing, unified structure Murail creates discontinuity in the surface texture by juxtaposing references to various rock guitar styles. The strongly contrasting opening gestures of the piece introduce this dynamic from the outset (see ex. 2.1). The first gesture is a dissonant dyad of G# and A, played in the highest register of the guitar and decorated with a whammy bar glissando, while the second is a simple rhythmic motif played on the open low E string. The differences between these materials are abundantly clear. On the one hand the dyad is high in pitch, harmonically unstable and rhythmically undefined (there being only one impulse, with the exact duration not specified), while on the other hand the repeated Es are low in pitch, harmonically

[65] T. Murail, *Vampyr! – pour guitare électrique*, (Paris: Henry Lemoine, 2004), p. 3.

stable (E in fact acts as a fundamental pitch for the piece) and strongly rhythmic. In terms of stylistic references, the dissonant dyad brings to mind comparison with rock guitarists' use of special whammy bar techniques to create pyrotechnic sound effects, giving the material a 'virtuosic' character. The powerful repeated low Es seem to represent instead the raw, almost primitivist quality that is also often highly prized in rock. [66]

The contrast between these two materials also reflects the division in rock between the roles of 'lead' guitar (represented by the dyad) and 'rhythm' guitar (represented by the low E rhythmic motif). In his study of heavy metal, Robert Walser describes the relationship between rhythm section and lead guitar as a 'dialectic… between the potentially oppressive power of bass, drums, and rhythm guitar, and the liberating, empowering vehicle of the guitar solo'.[67] Although the piece lacks the rhythmic reinforcement of bass guitar and drums, this so-called dialectic is also played out in *Vampyr!*, as throughout the piece Murail creates contrasts between materials with a 'rhythm guitar'-like character – harmonically stable, rhythmically rigid and low in pitch – and 'lead guitar' materials that are more harmonically exploratory and exploit the higher register of the instrument. These lead guitar phrases are often notated with feathered beams to allow the player rhythmic flexibility that simulates the freedom of a rock guitar solo. Of course in a solo piece it is impossible for the relationship to be performed simultaneously (as in a rock band), so Murail displaces the roles of rhythm and lead guitar and juxtaposes them 'horizontally' rather than 'vertically'. They are often placed in an antagonistic relationship, with rhythm guitar interjections interrupting the continuity of the more fluid lead guitar phrases.

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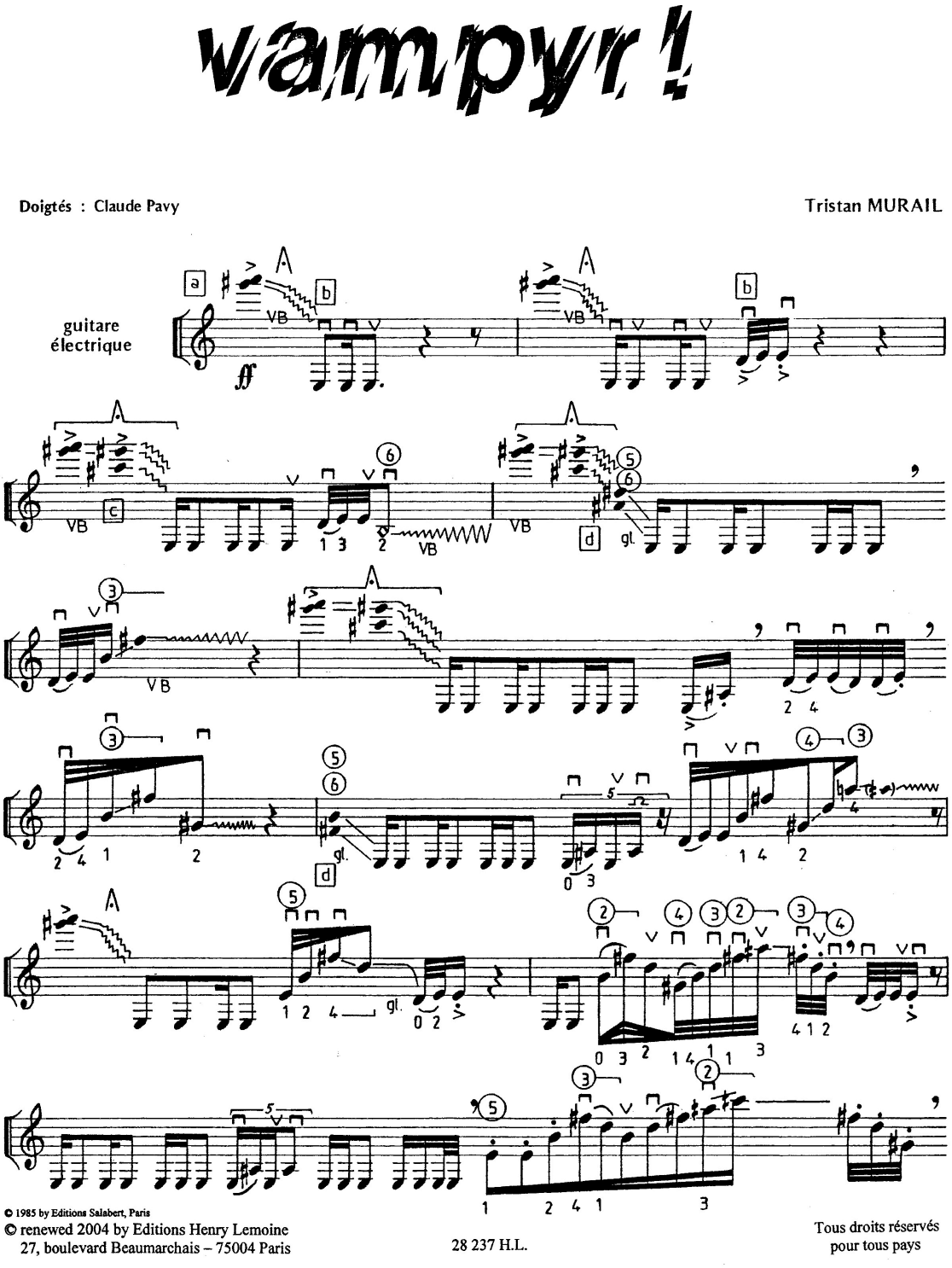
[66] In terms of musical semiotics, these references can be considered *icons* of the rock guitar styles they invoke (a term originating in the work of Charles Sanders Peirce), as the association is created through resemblance of musical characteristics, such as timbre, rhythmic content or pitch structures. While some aspects of the 'object' (i.e. rock music) being signified are lost in the translation to a spectralist idiom (most notably the lack of full rock band instrumentation), the musical gestures generally retain enough characteristics in common with rock guitar to create this connection for a suitably informed listener.
See T. Turino, 'Signs of Imagination, Identity, and Experience: A Peircian Semiotic Theory for Music', *Ethnomusicology*, vol. 43, no. 2 (1999), pp. 226-227.

[67] R. Walser, *Running with the Devil: Power, Gender, and Madness in Heavy Metal Music*, (Hanover NH: Wesleyan University Press, 1993), pp. 53-54.



Ex. 2.1: *Vampyr!*, first page of the score.

The dissonant dyad and low E rhythmic motif alternate throughout the opening bars of the piece, with variations and new materials gradually being added. A slur or 'hammer-on' motif from D to E (first seen in bar 2 – see ex. 2.1) is particularly important, as it will be developed further in the second half of the piece. Here it has the character of a recurring rhythm guitar riff, with a 'bluesy' quality imparted by the use of the ♭VII degree. Another secondary motif is a tritone from E to A# (introduced in bar 5), an interval particularly associated with heavy metal. After the first few bars new lead guitar materials gradually emerge and replace the dyads, while the rhythm guitar materials recur less often and eventually disappear. The lead guitar materials systematically explore pitches taken from the harmonic series of the E that has been established as a fundamental. Although an E is the lowest note of the guitar's range in standard tuning, Murail actually uses the pitch an octave below (E_2) as his fundamental, presumably as this creates a more useful spacing of the available partials (spectralist composers commonly use low fundamental pitches for this reason).[68]

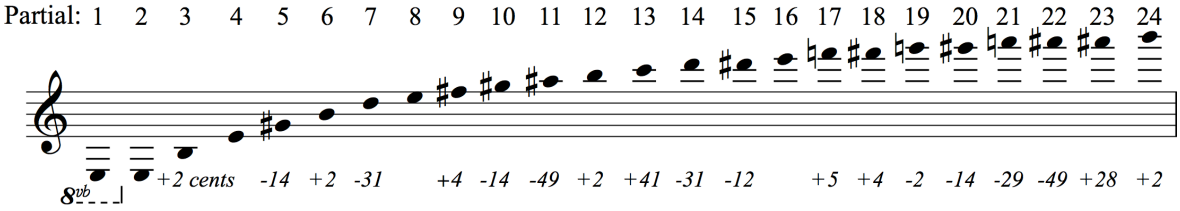
Ex. 2.2a shows the first 24 partials of the harmonic spectrum derived from this E. The partials are notated as the nearest equal-tempered pitches, with deviations from equal temperament shown below in cents. Murail uses the guitar's ability to bend notes to more closely match the tuning of some of these partials, raising A_5 and C_6 by a quartertone each to approximate the 11^{th} and 13^{th} partials, as well as introducing a quartertone between A_6 and $B♭_6$ to represent the 22^{nd} partial (an octave repetition of the 11^{th} partial). Murail presumably only approximates the partials to the nearest quartertone because of the difficulty in achieving any greater degree of accuracy relying purely on string-bending techniques (and he does in fact substitute the closest equal-tempered pitches for certain partials in some of the more intricate passages). Ex. 2.2b shows this quartertone approximation of the spectrum.

Murail's use of the spectrum corresponds with a gradual expansion of the pitch range of the lead guitar material. Throughout the first section of *Vampyr!* Murail increases the number of partials used, generally moving upwards through the spectrum. Ex. 2.2c outlines the order in which the partials are introduced (omitting octave repetitions of pitches unless they are given particular melodic prominence and excluding the dyads, which are somewhat independent of the other lead guitar material). As the material develops, Murail also introduces various inharmonic pitches that do not correspond strictly to the spectrum, although these are fairly minor digressions from the

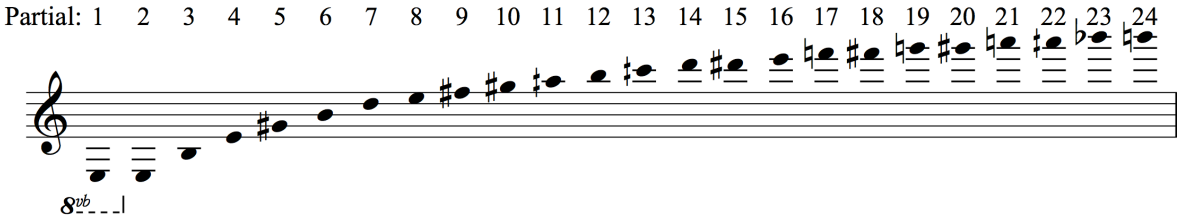
[68] In this chapter, when identifying pitches in specific octaves I refer to the pitches as written in the score, which follows the convention of notating guitar music an octave higher than the sounding pitch. Ex. 2.2 also follows this convention to allow easy comparison.

overall harmonic framework. The eventual goal of the pitch expansion is the 24th partial, B_6, near the very top of the guitar's range, which is reached via repeated string bends and emphasised with Van Halen-esque 'tremolo picking'. This completion of Murail's harmonic schema is followed by a noisy climax using chord glissandos, natural harmonics, and techniques borrowed from rock guitar including a whammy bar 'dive-bomb' (swiftly lowering the pitches of a chord as far as possible) and pick scrapes.

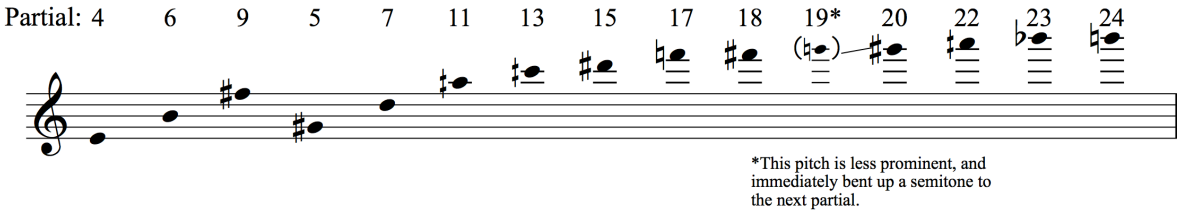
2.2a: Harmonic spectrum on E



2.2b: Quartertone approximation of E spectrum used in *Vampyr!*



2.2c: Outline of the introduction of partials in 'lead guitar' (first section)

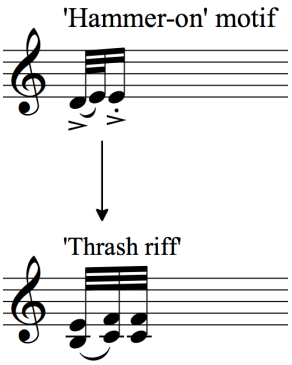


Ex. 2.2: Use of the harmonic spectrum on E in the 'lead guitar' materials of the first section of *Vampyr!*

In the second section of *Vampyr!* Murail reverses the relationship between the rhythm guitar and lead guitar materials, with the rhythm guitar gradually becoming more prominent again and interrupting the lead guitar excursions with increasing frequency. The lead guitar features extensive use of natural harmonics, which are juxtaposed with 'normal' fretted notes in the same area of the fretboard (the pitch structure here seems to be influenced to a large extent by the layout of the fretboard, rather than using the harmonic spectrum on E). In places Murail exploits ambiguities of intonation between different natural harmonics, and between the harmonics (which produce more or less just intervals in relation to the pitches of each open string) and

fretted notes (which, slight discrepancies aside, are essentially equal-tempered) to create subtle and interesting dissonances. This exploitation of the acoustic properties of the instrument seems characteristic of Murail's attitude towards exploring the possibilities of sound.

On the other hand, the rhythm guitar materials make a clear stylistic reference to rock. These materials are still strongly centred on E and are derived from the 'hammer-on' or 'blues riff' motif heard near the start of the piece (see ex. 2.3). Instead of single notes though, the motif now uses perfect fourths, a type of power chord (the iconic harmony of rock guitar), and use of the ♭II interval suggests a Phrygian mode. This mode has been used in several styles of rock and metal to evoke a dark or 'heavy' atmosphere but, as Robert Walser observes, it is particularly common in speed or 'thrash' metal.[69] Murail's use of the mode here has clear similarities to thrash metal rhythm guitar styles, which typically consist largely of power chords arranged in relentless and repetitive rhythmic patterns. This association with the 'heavier' side of rock emphasises the more prominent role of the rhythm guitar in this section. The score also reinforces this 'thrash riff' with ad-lib additional guitar and bass parts. Although these are rarely used in performances, guitarists often simulate their effect by adding extra distortion to their sound with pedals, underlining the motif's association with heavy metal (which usually features higher levels of distortion than mainstream rock). The thrash riff takes on an increasingly important role in the second half of *Vampyr!*, as it recurs more and more often and is given greater weight through a simple process of rhythmic extensions. This resurgence of the rhythm guitar role is what drives the piece towards its eventual conclusion, when the most extended entries of the thrash riff lead to a quasi-cadenza passage and a final lead guitar flourish, followed by another noisy climax and whammy bar dive-bomb.



Ex. 2.3: Transformation of the 'hammer-on' motif into the 'thrash riff' in the second section of *Vampyr!*

[69] Walser, *Running with the Devil*, pp. 46-47.

2.4 The cultural implications of the electric guitar in *Vampyr!*

The preceding analysis of *Vampyr!* demonstrates some of the ways in which Tristan Murail achieved a 'synthesis' of musical techniques from rock and his spectral harmonic language. I will now turn my attention to the wider cultural significance of Murail's rock allusions, and suggest how musical meanings may be constructed in relation to the genres that he references. It is interesting to compare *Vampyr!* with the contemporary rock of the 1980s, which featured a resurgence of guitar virtuosity after punk had made overt displays of musical skill unfashionable in the mid-1970s. An important aspect of this new drive towards virtuosity was a reengagement with influences from 'classical' music, led by guitarists such as Randy Rhoads (of Ozzy Osbourne's band) and Yngwie Malmsteen. These appropriations enriched the musical vocabulary of 1980s guitarists, but were also motivated by a desire to capture some of the cultural prestige of classical music, a prestige that is validated by its perceived sophistication and complexity.[70] Malmsteen in particular invited comparison between his musical achievements and those of the great composer-virtuosos of the past, such as Niccolò Paganini, in order to create a 'guitar hero' persona that is strongly inflected with 19th-century ideals of the transcendent virtuoso. He seems to implicitly accept the pre-eminence of the classical tradition over popular music, and is infamous for his elitist attitude towards other rock musicians.[71]

Tristan Murail's ideas about combining rock and classical music have some interesting and perhaps surprising similarities to those of these so-called 'neoclassical' guitarists. In the aforementioned BBC interview regarding *Random Access Memory* Murail is rather disparaging of rock, describing it as 'simple' or even 'poor', and asking 'would it be possible to do some really interesting rock music?'[72] Taking this interview at face value, Murail seems to suggest that, like Yngwie Malmsteen, he accepts the conventional hierarchy of 'classical' and 'popular' music, and wants to elevate rock to a higher level of artistic achievement by combining it with more prestigious 'learned' compositional approaches. The implied elitism of this attitude may seem

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[70] Although these guitarists in fact most often engaged with Baroque and, to a lesser extent, Romantic repertoires, I deliberately use the somewhat anachronistic term 'classical music' here in its more general modern usage to evoke this perceived social prestige. Robert Walser discusses the classical influence on 1980s rock in much greater detail in chapter 3 of *Running with the Devil* (pp. 57-107).

[71] See Walser, *Running with the Devil*, p. 57, pp. 93-102.

[72] *Music in Our Time*, 13 October 1988.

problematic to some, but this parallel between Murail's rhetoric and that of some 1980s guitarists is nonetheless worth highlighting, as it demonstrates that *Vampyr!* has more in common with its contemporary rock than the composer admits.

Because of the parallels between *Vampyr!* and the virtuoso rock of the 1980s, the piece evokes certain ideals that are coded into rock conceptions of guitar virtuosity. A key theme in studies of the electric guitar is its widely acknowledged gendering as a 'masculine' instrument. Throughout the instrument's history displays of exceptional skill in playing the electric guitar have tended to be socially coded as expressions of male achievement, and the trope of the electric guitar as a 'phallic' object is commonly accepted in both academic and popular narratives. This is particularly true in rock guitar styles, which often rely on overtly masculine performance gestures.[73] By so clearly alluding to the rock model of guitar virtuosity, *Vampyr!* also engages with the masculine connotations of the electric guitar, and it is possible that several of its other musical characteristics could be interpreted as 'male' because of this association.[74]

In his performance notes Murail makes it clear that the piece should be played with 'all the energy of rock music and that includes the appropriate number of decibels'.[75] Both Robert Walser and Mavis Bayton have described how loud, distorted guitar sounds are a literal and figurative representation of power, a trait that is commonly associated with masculinity in patriarchal

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[73] In the 1980s several female electric guitar virtuosos did come to prominence, such as Jennifer Batten (who played with Michael Jackson's band). However, these guitarists were notable exceptions in a rock scene that was still largely male-dominated.

[74] In semiotic terms, this possible association between *Vampyr!* and masculinity could be described as *indexical*. In contrast to *icons*, which refer to the object they represent through their resemblance to some aspect of the original, *indices* are related to their objects through 'co-occurrence in actual experience' (Turino, 'Signs of Imagination, Identity, and Experience', p. 227). So, for example, smoke is an *index* of fire, and choral music could *index* the church or Christianity. Similarly, while Murail's references are *icons* of various styles of rock guitar, they can also be considered *indices* of the social contexts in which these genres are commonly experienced, and in turn of their associated values. The associations that any given listener may have in relation to rock music will of course depend on their personal experiences of the genre, but the fact that it is largely disseminated through the mass media is likely to homogenise perceptions (Turino, p. 236), allowing me to make more general statements here.

[75] Murail, *Vampyr!*, p.3.

western society.[76] In my analysis I also linked *Vampyr!*'s representation of lead and rhythm guitar roles to Walser's heavy metal 'dialectic'. Walser argues that this dialectic, as a musical representation of 'controlling power and transcendent freedom', is an important part of the appeal of rock and metal to young male audiences, who seek to identify with these qualities.[77] In more general terms, the musical rhetoric throughout the piece is strident and assertive, with bold gestures and strong contrasts of materials. Although there is nothing inherently 'male' about these qualities, traditionally they have often been interpreted as such in musical analysis, and in light of the electric guitar's gender associations are likely to be understood this way in *Vampyr!*.

In Steve Waksman's analysis of the electric guitar's male associations, the instrument's gendering also takes on a racialised aspect. Drawing on the examples of several bands and musicians, Waksman details how white rock guitarists' adoption of the musical vocabulary and playing techniques of African-American blues musicians was supplemented by their appropriation of idealised notions of black masculinity.[78] In *Vampyr!* the blues influence behind rock guitar is somewhat nullified by the use of spectral pitch structures, but traces of this heritage may still be perceived (whether intended or not) in the 'blues riff' motif near the start of the piece, and more generally in the use of string-bending techniques. Murail's use of microtonal pitch bending is an interesting parallel to blues guitar's expressive pitch inflections that is, however, deployed in service of very different aesthetic principles. In addition, although I have focussed on parallels between *Vampyr!* and contemporary 1980s rock (which was generally dominated by white performers), listeners may also perceive the influence of earlier guitar virtuosos such as Jimi Hendrix, whose reception by white audiences and musicians was often conditioned by established racist stereotypes of black male hypersexuality.[79] These observations further complicate the ways in which the electric guitar is perceived in *Vampyr!*, as complex interactions of both gendered and racialised meanings may influence an audience's understanding of the piece.

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[76] Walser, *Running with the Devil*, pp. 41-43;
M. Bayton, 'Women and the Electric Guitar' in S. Whiteley (ed.), *Sexing the Groove: Popular Music and Gender*, (London: Routledge, 1997), p. 43.

[77] Walser, *Running with the Devil*, pp. 108-110.

[78] S. Waksman, *Instruments of Desire: The Electric Guitar and the Shaping of Musical Experience*, (Cambridge, MA: Harvard University Press, 2001), pp. 4-5, pp. 217-229, pp. 244-248.

[79] Ibid, pp. 187-205.

2.5 The importance of performance

It must be acknowledged, however, that the extent to which these gendered and racialised associations are perceived in *Vampyr!* depends on the nature of any given performance. The piece does seem to be performed more often by male than by female guitarists, which perhaps emphasises its association to masculinity. The archive of concerts on Murail's website, while far from a complete list, records 37 performances of *Vampyr!* by male guitarists, but only 11 by female performers (as well as several other concerts listed for which the name of the guitarist is not known), suggesting that the gendering of the electric guitar as a 'male' instrument has a similar influence in New Music as it does in rock.[80] Although it is rare to see a performance by a female guitarist, it is possible that such a performance could challenge, subvert or even nullify the gender associations of the electric guitar. It also seems reasonable to suggest that the perceived ethnicity of a guitarist may have an influence on the piece's meaning for some audiences, although it is perhaps more difficult to speculate as to the exact effect of this factor. Regardless of their gender or ethnicity though, a guitarist can have a large influence on the audience's understanding of the music through the various decisions, both deliberate and involuntary, they make about how to perform the piece. Although the purely musical aspects of a performance (such as the choice of guitar timbre and interpretation of dynamics, rhythm and articulation) are important, I will focus here on the visual presence of the guitarist. There are a multitude of factors that can affect the way a performance is perceived, such as the guitarist's clothing, their performance stance (whether standing up or sitting), their choice of equipment (different brands and designs of guitars and amplifiers are often associated with certain genres), their movements and gestures in performance, and even their facial expressions. Mavis Bayton argues that even such a seemingly small decision as how high to wear one's guitar on the body can have a large influence on how macho an image the performer projects.[81]

There are several performances of *Vampyr!* available on YouTube that provide examples of the different extents to which guitarists engage with the piece's rock references (and thus its

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[80] It is interesting to note, however, that the number of performances by female guitarists does appear to have increased in recent years. The list of performances of Murail's work can be found at <www.tristanmurail.com/en/concerts.php?all> (accessed 9/3/17).

NB that I capitalize the term 'New Music' throughout this thesis to distinguish its use to refer to a particular field of concert music, rather than to recently composed music in general.

[81] Bayton, 'Women and the Electric Guitar', pp. 43-45.

'masculine' character). An example of a guitarist who seems to embrace the rock heritage of the electric guitar relatively openly is the Canadian Adrian Verdejo.[82] Verdejo's performance (with the Erato Ensemble) is slightly unusual, as it is placed in a Halloween-themed skit also featuring Charles Ives' song *Slugging a Vampire* (the guitarist wears fake teeth to take on the character of the vampire from Ives' song). This suggests that his rock-inflected stage presence may be deliberately ironic, but he nonetheless provides a good demonstration of how a guitarist can engage with rock performance practices (and tongue-in-cheek theatricality is in fact a common feature of live performances in some styles of rock). Verdejo's long hair certainly helps him to look the part of a rock guitarist (although it seems unlikely that he grew it especially for the performance!). He plays an Ibanez guitar that is a variation on the 'superstrat' design popularised by Eddie Van Halen in the 1980s, thus emphasising the association of *Vampyr!* with virtuoso rock.[83] Verdejo also makes many bodily gestures throughout the performance that emulate the onstage movements of rock guitarists, such as twisting his body in response to the music or gesturing with the neck of the guitar to give visual emphasis to certain moments.

In contrast, Italian guitarist Flavio Virzì is less theatrical.[84] Unlike Verdejo, who stands during his performance, Virzì chooses to sit in a position similar to classical guitar posture, thus emphasising his connection to more conventional New Music performance practice. However, despite his avoidance of overt rock gestures, Virzì's performance somehow also seems to hint at a 'macho' rock character, in part because of the nature of the music, but also because of subtle visual elements such as the (presumably involuntary) grimaces that Virzì makes during certain passages, similar to the gurning that rock guitarists sometimes indulge in. Like Verdejo, Virzì uses an Ibanez superstrat-style guitar, the connotations of which I have described. On the other hand though, another thing these performances have in common is that both guitarists wear simple black clothing, identifying themselves again with New Music practices, where all black is a common

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[82] Verdejo's performance can be found at <www.youtube.com/watch?v=D34DdWXXoLo> (accessed 9/3/17).

[83] Van Halen built several homemade guitars that combined the body shape and whammy-bar-equipped bridge of the Fender Stratocaster with thicker sounding 'humbucker' pickups that are more closely associated with the Gibson company. Van Halen's popularity soon led to many guitar companies, including Ibanez, creating production models that incorporated these innovations.

[84] Virzì's performance can be found at <www.youtube.com/watch?v=4kshdlU2hD8> (accessed 9/3/17).

dress code signifying an ideal of the performer less open to overt personal expression. This contrasts with, for example, the Belgian guitarist Hughes Kolp, who wears more casual clothing that would not look out of place at a rock gig.[85]

2.6 Conclusions

These examples demonstrate how much a performer can influence an audience's perception of the electric guitar's cultural identity in a contemporary work like *Vampyr!*. However, they also show that even when guitarists do not overtly engage with the piece's rock associations a performance is still likely to be perceived as representing notions of masculinity. My intention in highlighting these associations is not to make a value judgement as to whether they are desirable or not. While the gendering of the electric guitar is certainly problematic, the figure of the highly skilled male guitar hero, whether viewed positively or negatively, has an iconic cultural status. *Vampyr!*'s assimilation of the rock ideal of virtuosity into Murail's more rigorous compositional manner is a large part of what makes it such a compelling piece.

However, I do argue that *Vampyr!* demonstrates why it is important to be aware of these types of associations when composing music for the electric guitar. Although Murail's synthesis of rock gestures and spectral pitch structures is technically successful, I do not believe that he fully considered the cultural implications of this musical fusion. Murail's claim that he is only interested in the timbral qualities of rock seems to suggest a wish to separate these desirable qualities from the associated cultural baggage of a genre that he claims to dislike, but my analysis has shown that this is clearly impossible. Whether Murail intended to or not, his piece clearly evokes the cultural associations of the electric guitar through its affinity with the contemporary rock music of its era, and in my opinion the composer would have been wise to consider these associations more carefully, not just to avoid potentially unwanted connotations, but also to enrich the work through wider engagement with contemporary popular culture. I find the cultural politics of Murail's implicitly elitist attitude towards rock music rather problematic, with his comments about the impoverished musical language of rock standing in stark contrast to the energy and excitement that engaging with the genre lends his work.

In the next chapter, I will present two works of my own that attempt an engagement between spectralist techniques and rock guitar idioms (specifically those of heavy metal) in a similar

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[85] Kolp's performance can be found at <www.youtube.com/watch?v=8Ylixaq-Zhs> (accessed 9/3/17).

manner to *Vampyr!*. However, I argue that in these works my engagement with rock is implemented in such a way as to highlight not only the timbral qualities of the electric guitar, but also its cultural associations. This is achieved through the use of 'power chords', a ubiquitous harmony in many rock and metal guitar styles. As my commentary will highlight though, these chords are not just a harmony, but also contribute to shaping the distinctive distorted timbres of rock, as well as having particular cultural resonances due to the role that they play in the genre's masculinist discourse. By applying certain techniques developed by spectralist composers to power chord sonorities, I attempt to highlight, subvert or question these resonances, and thus achieve the greater depth of engagement with the electric guitar's cultural identity that I feel *Vampyr!* lacks. My analysis of various performances of *Vampyr!* will also provide a useful theoretical background to the second part of this thesis, which shifts focus to works that more overtly highlight the visual or theatrical resonances of the electric guitar to supplement their engagement with its musical idioms.

Chapter 3: Commentary: *Power Chord Study (after Black Sabbath)* and *Power Trio*

3.1 Why power chords?

Tristan Murail's *Vampyr!*, as analysed in the previous chapter, engages with the sonorities of rock guitar from the perspective of a spectralist preoccupation with timbre. Although, as I have argued, the piece demonstrates many parallels with contemporary 1980s rock guitar, which is likely to lead audience members to understand *Vampyr!* in terms of allusions to the electric guitar's genre and cultural associations (in addition to purely sonic concerns), Murail frames his engagement with the guitar purely in terms of an abstract fascination with its tonal qualities. Another composer who has more recently explored the electric guitar from this perspective is the late Fausto Romitelli. The presence of distorted electric guitar (as well as electric bass and keyboards) is a characteristic feature of many of Romitelli's ensemble works, including *Professor Bad Trip* (1998-2000), *Audiodrome – Dead City Radio* (2003) and *An Index of Metals* (2003). However, his most important contribution to the electric guitar repertoire is the virtuosic solo piece *Trash TV Trance* (2002).[86]

Although Romitelli's engagement with the timbres of rock music is an important characteristic of his mature style, he appears to have believed that the exploration of these timbres should be abstracted from engagement with stylistic idioms from popular music. This position is clearly expressed in Romitelli's programme notes for *Professor Bad Trip*:

> 'I have tried to incorporate into my writing a particular aspect of sonic research in the domain of rock: the complex interplay between electroacoustic sound processing and instrumental gesture; I have no interest, on the contrary, in the harmonic and melodic structure of rock, which has never been able to free itself of certain tonal or modal clichés.'[87]

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[86] See P. Slinckx, 'La musique de Fausto Romitelli' at *Pierre Slinckx*, <pierre.slinckx.net/romitelli.pdf> (accessed 9/3/17), pp. 17-19. A performance of *Trash TV Trance* can be found at <www.youtube.com/watch?v=5NLvaJ-UXrA> (accessed 17/7/17).

[87] F. Romitelli, '*Professor Bad Trip*: présentation', reproduced in A. Arbo (ed.), *Le corps électrique: Voyage dans le son de Fausto Romitelli*, (Paris: L'Harmattan, 2005), p.136 (translation my own).

Romitelli expresses a similar attitude towards rock music to Murail's, framed purely in terms of an interest in timbre, with rock's harmonic and melodic idioms seen as unworthy of a learned composer's attention. However, a central tenet of the spectralist aesthetic is to investigate links between timbre and other musical parameters, including harmony. The use of techniques such as 'instrumental synthesis' (see section 3.2.1) demonstrates that the distinctions between these parameters are often superficial. This fact is equally relevant to rock guitarists, for whom achieving a desirable 'tone' from their equipment is often just as important as their note choices in cultivating a distinctive musical personality. While rock guitarists may draw on a relatively limited harmonic vocabulary, the infinite variety of timbres made available by the electric guitar can impart very different emotional, stylistic and cultural resonances to musical gestures.

Understanding these subtleties can give new meaning to the supposedly 'cliché' harmonic language of rock guitar. One of the most common harmonies in rock, in which the relationship between harmony and timbre can be particularly clearly observed, is the 'power chord', comprised of just two notes separated by the interval of a perfect fifth (sometimes thickened by doubling the root an octave above, or inverted to a perfect fourth). Although simple, this basic harmonic relationship can yield more complex sonorities through the use of distortion, as Robert Walser describes:

> 'Power chords result from distortion of the chord voicings most often used in metal and hard rock, an open fifth or fourth played on the lower strings. Power chords are manifestly more than these two notes, however, because they produce resultant tones…
>
> The strongest resultant tone is produced at the frequency that is the difference between the frequencies of the main tones. If, for example, the open A string on the guitar (which vibrates at a frequency of 110 cycles per second, or 110 Hz) and the E above it (165 Hz) are played as a power chord, then the A an octave lower (165-110=55 Hz) will sound very prominently as a resultant tone...
>
> Distortion also results in a timbral change towards brightness, toward a more complex waveform, since distorting a signal increases the energy of its higher harmonics. Power chords, on the other hand, produce powerful signals below the actual pitches being sent to the amplifier. Thus, the distorted guitar signal is expanded in both directions: the higher harmonics produced by distortion add brilliance and edge (and what guitarists sometimes call 'presence') to the sound, and the resultant tones produced by the

interval combinations of power chords create additional low frequencies, adding weight to the sound.'[88]

Walser's description indicates that the term 'power chord' does not simply describe a harmony, but also a timbral effect linked to electric guitar amplification. He describes the phenomenon known as 'harmonic' distortion, which strengthens higher harmonics in the signal, increasing the brightness of the timbre.[89] Another important type of distortion is 'intermodulation' distortion, which results in additional pitches at the sum of, or difference between, frequencies already present in the signal.[90] When playing more complex chords, these phenomena can create quite dissonant or 'inharmonic' spectra, due to the combination of partials derived from relatively distantly related fundamentals. In contrast, power chords use a very simple harmonic relationship (a tempered fifth differs by only approximately two cents from the just ratio of 3:2), which results in a more consonant or 'harmonic' spectrum. Distortion effects thus result in a unique relationship between harmony and timbre, in which the choice of intervals played by the guitarist can have an unusually large effect on the spectral complexity of the resulting sonority.

The properties of power chords described above have made them a key element in constructing the masculinist discourses articulated by rock and heavy metal. For Walser, guitar distortion is semiotically linked with the concept of power, both through its literal connection to excessive electrical amplification and through analogy with the human body, which produces aural distortion by overloading the vocal chords during screams and shouts.[91] Power chords create a richer, more intense distorted timbre, complementing the male power fantasies often expressed in rock and metal lyrics.

These observations on various aspects of power chords led me to compose two pieces, titled *Power Chord Study* and *Power Trio*, that explore their potential in the context of notated concert

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[88] R. Walser, *Running with the Devil: Power, Gender, and Madness in Heavy Metal Music*, (Hanover NH: Wesleyan University Press, 1993), p. 43. NB Walser simplifies some of the frequency relationships cited in the discussion of difference tones, referring to just rather than tempered intervals.

[89] See G. D. White and G. J. Louie, *The Audio Dictionary*, (Seattle, WA: University of Washington Press, 2005), pp. 177-178.

[90] Ibid, pp. 201-203.

[91] Walser, *Running with the Devil*, pp. 41-42.

music. In these pieces I have drawn upon ideas from spectralist works by composers such as Murail, Gérard Grisey and James Tenney in order to examine the ways in which power chords represent a conflation of harmony and timbre. However, I have also included ideas that are less representative of a rigidly spectralist aesthetic, in order to engage with the cultural resonances of power chords. In both pieces I have made clear references to heavy metal guitar idioms, in order to highlight and examine the association of power chords with musical representations of masculine power and intensity.

The integration of heavy metal with spectralist techniques was previously explored by the drone metal band Sunn O))), who collaborated with composer Eyvind Kang for their album *Monoliths and Dimensions* (2009).[92] The album combines the band's detuned, slow-paced riffs with arrangements for various acoustic instrumentation (as well as a female choir) that draw on influences from spectralist composers such as Grisey.[93] As described in a press release:

> 'The album is not "SUNN O))) with strings" or "metal meets orchestra" material. The band took an approach concentrating on more of allusion toward the timbre of feedback and the instruments involved.'[94]

Although this album was an influence on my work, the above quotation suggests that, like Murail and Romitelli, the musicians were primarily concerned with exploring timbre, rather than the cultural implications of power chords that I have highlighted above and attempted to engage with in my research.

The remaining sections of this chapter describe each of my power-chord-inspired pieces in turn, and explain how I constructed materials and forms by applying spectralist techniques to metal guitar idioms. In addition to analysing the pieces' technical means, I will reflect on the cultural

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[92] Southern Lord, 2009.

[93] See T. L. Burns, 'Stephen O'Malley: Drone Oracle' at *Resident Advisor*, <www.residentadvisor.net/features/1607>; and J. Stannard, 'Sunn O))) Exclusive Interview Transcripts: Stephen O'Malley' at *The Wire*, <www.thewire.co.uk/in-writing/interviews/sunno_exclusive-interview-transcripts_stepheno_malley> (both accessed 9/3/17).

[94] Quoted in T. Arthur, 'Sunn O))) Reveals New Album "Monoloths And Dimensions" [sic] Details' at *Metal Underground.com*, <www.metalunderground.com/news/details.cfm?newsid=42310> (accessed 9/3/17).

implications of their stylistic references, and explain how these associations influenced the pieces' composition through elucidation of my decision-making processes at key moments.

3.2 *Power Chord Study (after Black Sabbath)*

3.2.1 Overview

Power Chord Study (2015), for piccolo, clarinet in B♭, violin, violoncello and piano, represents an attempt to translate familiar gestures from rock guitar into an acoustic chamber music context. This approach was inspired by the 'instrumental synthesis' techniques of French spectralist composers such as Murail and Grisey, in which harmonies and orchestrations are derived from computer analysis of instrumental timbres. Pitches are selected and allocated to different instruments according to their prominence within the spectrum under analysis. A notable example of this technique is the opening section of Grisey's *Partiels* (1975) for 18 musicians, in which a complex texture is generated from the partials produced by a low trombone E.[95]

The musical materials in *Power Chord Study* were similarly inspired by spectral analysis of guitar power chords, although I took a less 'scientific' approach in my construction of harmonies. Because the piece is written for a small ensemble, it would be impossible to fully reflect the complexity of timbre created by guitar distortion. In addition, electric guitar timbres vary greatly depending on the equipment and exact settings used. These factors would make any attempt at a fully 'accurate' representation of electric guitar timbre somewhat quixotic.[96] I therefore adopted a freer approach to the concept of instrumental synthesis, creating harmonies inspired by, rather than directly constructed from, power chord sonorities. Harmonies were selected from the spectra produced by power chords, but the choices of which specific pitches to use were decided according to my own judgement of which produced the most desirable effects.

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[95] See F. Rose, 'Introduction to the Pitch Organisation of French Spectral Music', *Perspectives of New Music*, vol. 34, no. 2 (1996), pp. 8-9.

[96] Of course, the aim of instrumental synthesis is not to truly replicate the original timbre under analysis, but to create new textures inspired by this timbre through the combination of instrumental sonorities that already represent complex spectra in themselves.

Another sense in which I diverged from typical spectralist practices was my quotation of popular material.[97] Almost the whole of *Power Chord Study* is derived in some way from quotations of the Black Sabbath song *Snowblind*.[98] The primary quotation used in the piece is taken from *Snowblind*'s main power-chord-based riff. Rather than treating power chords as abstract musical objects then, the piece also references the original context in which they appeared, and therefore their importance as signifiers of 'power' within a masculinist musical discourse.

The following sections of this chapter (3.2.2-3.2.5) provide an analysis of *Power Chord Study*, detailing its form (with each portion of text relating to one of its four sections) and the compositional techniques used. This analysis also explains the rationale behind various compositional decisions at key moments – most importantly the use of the strongly contrasting 'piano interlude' material in the second and fourth sections. It is followed by a conclusion, summarising the key aspects of *Power Chord Study* and suggesting how its heavy metal references may be linked to wider cultural concerns relating to the electric guitar's popular image.

3.2.2 Opening section – 'main riff'

The 'main riff' quotation from *Snowblind* can be clearly seen in the opening section of the piece, where it is continually reiterated and developed throughout the first 69 bars. The harmonic language that I developed, fusing heavy metal modality with extended spectral harmonies, is also strongly evident. After a brief opening flourish, the quotation is played in bars 3 and 4 by the strings, with the piano doubling in several octaves (compensating for the loss of volume and 'weight' inherent in the translation to acoustic instrumentation). The quotation (which is modified slightly from the original song by transposition, and by a shift of rhythmic emphasis) is comprised of five power chords outlining a modal E minor tonality.[99]

In bars 4-8 the final power chord is sustained, and then decorated with the addition of higher pitches representing a selection of the harmonics that would be introduced by amplifier

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[97] According to Thomas Turino, quotations are a form of *iconic* sign (see chapter 2, footnote 66). T. Turino, 'Signs of Imagination, Identity, and Experience: A Peircian Semiotic Theory for Music', *Ethnomusicology*, vol. 43, no. 2 (1999), pp. 226-227.

[98] From the album *Vol. 4*, (Vertigo, 1972).

[99] Specifically the implied mode is dorian, although the second half of the riff (which is not directly quoted) contradicts this by using the ♭VI scale degree.

distortion. My choice of pitches in these harmonies was informed by spectral analysis of the original Black Sabbath song, as well as recordings that I made myself of guitar power chords. Fig. 3.1 shows a spectrogram of *Snowblind*'s opening power chords. Although it may not be immediately clear from this image, upon closer analysis the various electronic and acoustic phenomena described earlier in this chapter (difference tones, harmonic distortion and intermodulation distortion) can clearly be seen in these spectra. I discovered that the effect of these phenomena is essentially to create a harmonic spectrum with its 'fundamental' an octave below the lowest note of the power chord (the difference tone of the two pitches in the chord effectively becomes an artificial fundamental), although the use of a tempered fifth leads to some slight variation in the tuning of partials. In this sense the distortion shifts the spectrum downwards, due to the addition of extra frequencies by difference tone and intermodulation effects – often these frequencies are more or less an octave lower than pitches that would occur in the spectrum without intermodulation. In my construction of harmonies then, I decided to work largely 'by ear', but to use pitches that loosely correspond to the harmonic series of the ersatz 'fundamental' of the underlying power chords.[100]

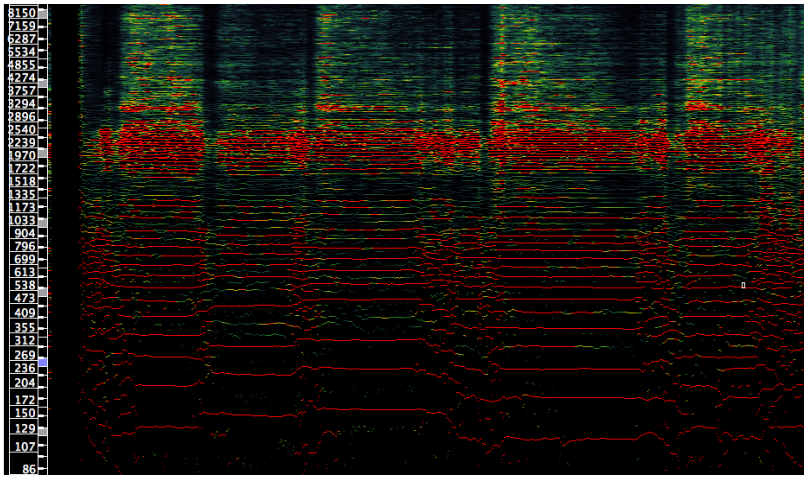


Fig. 3.1: Spectrogram showing the opening power chords of Black Sabbath's *Snowblind* (X axis=time, y axis=frequency). Produced using Queen Mary University's *Sonic Visualiser* – see C. Cannam, C. Landone, and M. Sandler, 'Sonic Visualiser: An Open Source Application for Viewing, Analysing, and Annotating Music Audio Files', *Proceedings of the ACM Multimedia 2010 International Conference*, <www.sonicvisualiser.org/sv2010.pdf> (accessed 9/3/17).

[100] This looser approach to analysing pitch relationships seemed appropriate for *Power Chord Study*, in which microtonal pitches are only approximated to the nearest quartertone. For *Power Trio* I was able to specify pitches to a much higher degree of accuracy, and was thus more rigorous in my analysis of power chord spectra.

Ex. 3.1a shows the opening page of the score with the riff quotation in bars 3-5. Ex. 3.1b shows an analysis of the 'distortion' harmonies from bars 4-8 in terms of their relationship to a fundamental of E_2 (each pitch is annotated to suggest which partial from within the harmonic series it could be related to, and to show the deviation from said partial in cents). The piano chords are derived from lower partials of the spectrum (generally rounded to the nearest semitone), while the violin, cello and piccolo introduce a selection of higher partials, including quartertone pitches. The violin and cello pitches are played as artificial harmonics, creating a timbre somewhat reminiscent of guitar feedback, and the entries of partials are staggered.[101] In bar 6, the clarinet enters with a modified imitation of the riff quotation, which is developed into an ascending line that extrapolates the intervals of the riff into a kind of non-octave-repeating scale pattern. As this ascending line accelerates rhythmically, it is doubled heterophonically by the piano, leading into the next statement of the quotation.

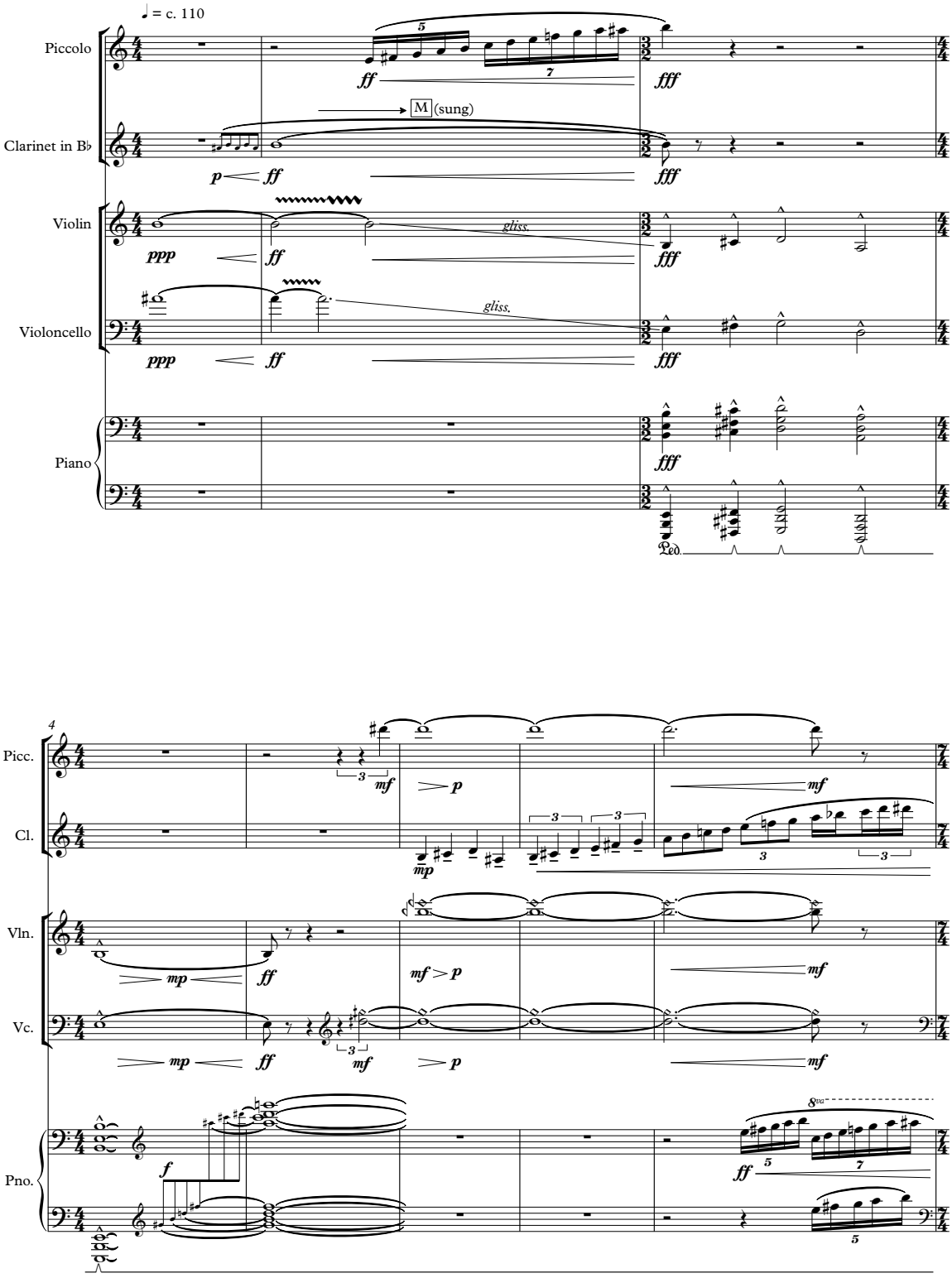
Throughout the rest of this first section of the piece there are many more statements of the 'riff' quotation, decorated with variations on the material described above. The quotation itself is also varied, with techniques including rhythmic variations (e.g. bar 9), superimposition of power chords to create more complex harmonies (e.g. bar 10), and the addition of a 'tail' motif to the riff in bars 21-22. This tail uses power chords on the ♭VI and ♭VII degrees (decorated with 'distortion' harmonies played by the piano) to paraphrase the harmonies featured in the second half of the original Black Sabbath riff (but omitted from the initial quotation), and is later extended through rhythmically asymmetrical repetition or 'looping' in bars 46-49 and 60-65. To heighten the feeling of tension created over the course of many repetitions, the riff is transposed to the new keys of F# minor in bar 30 (after a brief silence and reprise of the opening flourish) and G minor in bar 51. There is also a gradual process of temporal compression in the material throughout this section, as the delay between the onset of the power chords and the introduction of the distortion harmonies becomes shorter, and the ascending clarinet line is altered to reach its peak pitch increasingly quicker. The piano additionally begins to introduce further distortion pitches higher in the spectrum, effectively 'filling in' some of the pitch space between the notes played by the strings and piccolo.

[101] In contrast with the approaches of composers who take a more rigorous approach to instrumental synthesis (such as Grisey in *Partiels*), the rhythmic proportions of partials are *not* derived from spectral analysis, but chosen intuitively (allowing for variation later in the piece).

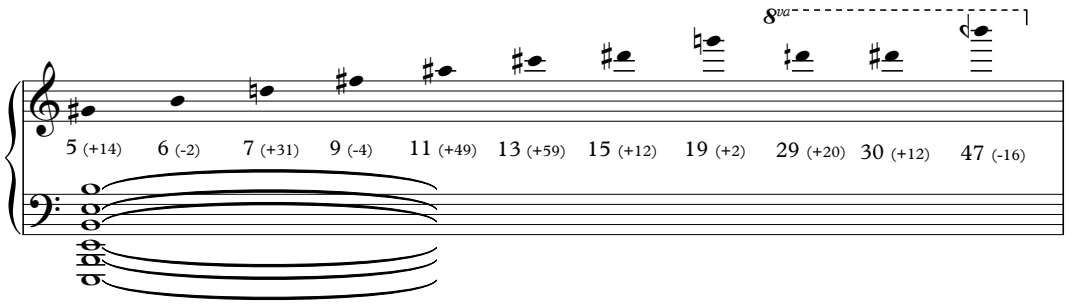
(Score in C)

Power Chord Study (after Black Sabbath)

Ben Jameson 2014-15



Ex. 3.1a: The opening bars of *Power Chord Study*, showing the riff quotation in bars 3-5.



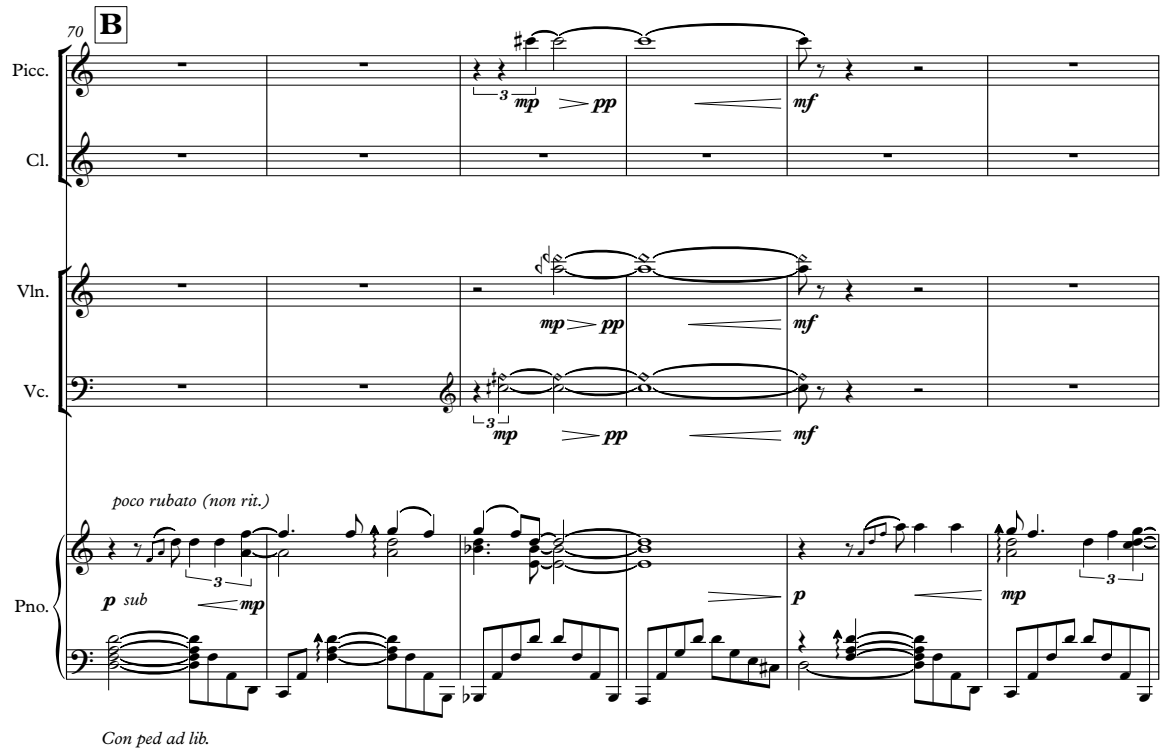
Ex. 3.1b: Analysis of 'distortion' harmonies in bars 4-8 in relation to E_2 fundamental. Partial numbers and deviation of tempered/quartertone pitches from actual tuning of partials shown.

The extremely repetitive nature of this section has several potential effects for the audience. On a more superficial level, it evokes the manner in which riffs are generally used in metal songs, where brutal repetition creates a feeling of intensity and power, although the constant variation in the material is perhaps somewhat alien to most heavy metal. On a deeper perceptual level though, the repetition may also begin to somewhat negate the initial referential qualities of the material (as listeners become more accustomed to it over time), causing the audience to focus more on its inherent properties and internal variation, rather than on the 'novelty' of its stylistic allusion. This shift in focus creates an expectation that the material will continue to be repeated and developed, which helps to 'set up' the surprising contrast that will come at the beginning of the next section of the piece, and give the sudden change in material more impact.

3.2.3 Piano interlude

In bars 67-69 the riff quotation is extended with an ascending pattern of gradually accelerating power chords that unexpectedly leads to an abrupt change of both texture and tonality. The following section (bars 70-84, see ex. 3.2 for an extract) is based on a second quotation from *Snowblind*, taken from the short melodic interlude that precedes the song's guitar solo (1'40"-2'13" in the original track). The pentatonic vocal line and guitar arpeggios of the original are interpreted as a solo piano texture, expressing an unambiguously functional D minor tonality, in contrast to the hybrid of modal and spectral harmonies in the previous section. However, soon this piano texture is juxtaposed with a continuation of the distortion harmonies associated with the main riff, played by the strings and piccolo in bars 72-74, 76-78 and 80-84. These figures maintain the general shape and rhythmic profile of the voicings used in the previous section, but are no longer clearly linked to the underlying harmony. This incongruity provides an opportunity to re-examine the distortion harmonies in a different musical context, estranging them from the

sound world in which they have previously become familiar to listeners. The interlude provides contrast and relief from the relentlessly driving repetition of the previous section but is only short lived, as the distortion harmonies begin to trigger changes in the piano's left hand accompaniment that soon lead to a collapse of the texture and a return to the main riff material in bar 85. A short transitional passage based on the main riff (bars 85-88) then leads into the next section.



Ex. 3.2: Piano interlude, bars 70-75.

The brevity of this piano interlude and its highly contrasted character in relation to the surrounding material mean that at this point it is likely to be heard as something of a confusing 'non-sequitur' in the piece's form. While the treatment of the 'main riff' retains many of its original qualities, including its rhythmic vitality and 'powerful' musical rhetoric, the quoted material in this second section is more thoroughly transformed in character, and given an air of affected sentimentality that is somewhat at odds with the nature of the original Black Sabbath song from which it is taken. This 'sentimental' quality (which almost borders on kitsch) is offset and made somewhat ironic by the intrusions of the distortion harmonies from the previous section, undermining the seemingly 'serious' or direct nature of the piece's engagement with heavy metal idioms. This begins to create a sense of detachment or distancing from the 'macho' genre of heavy metal, and anticipates the more critical attitude taken towards the quoted material later in the piece. Although the strong contrast that the piano interlude represents to the

first section of *Power Chord Study* may initially seem strange or confusing, in the piece's final section it becomes clear that this material is vital to the overall structure of the piece, with the interaction between the distortion harmonies and the piano texture being a key element that is explored in more detail.

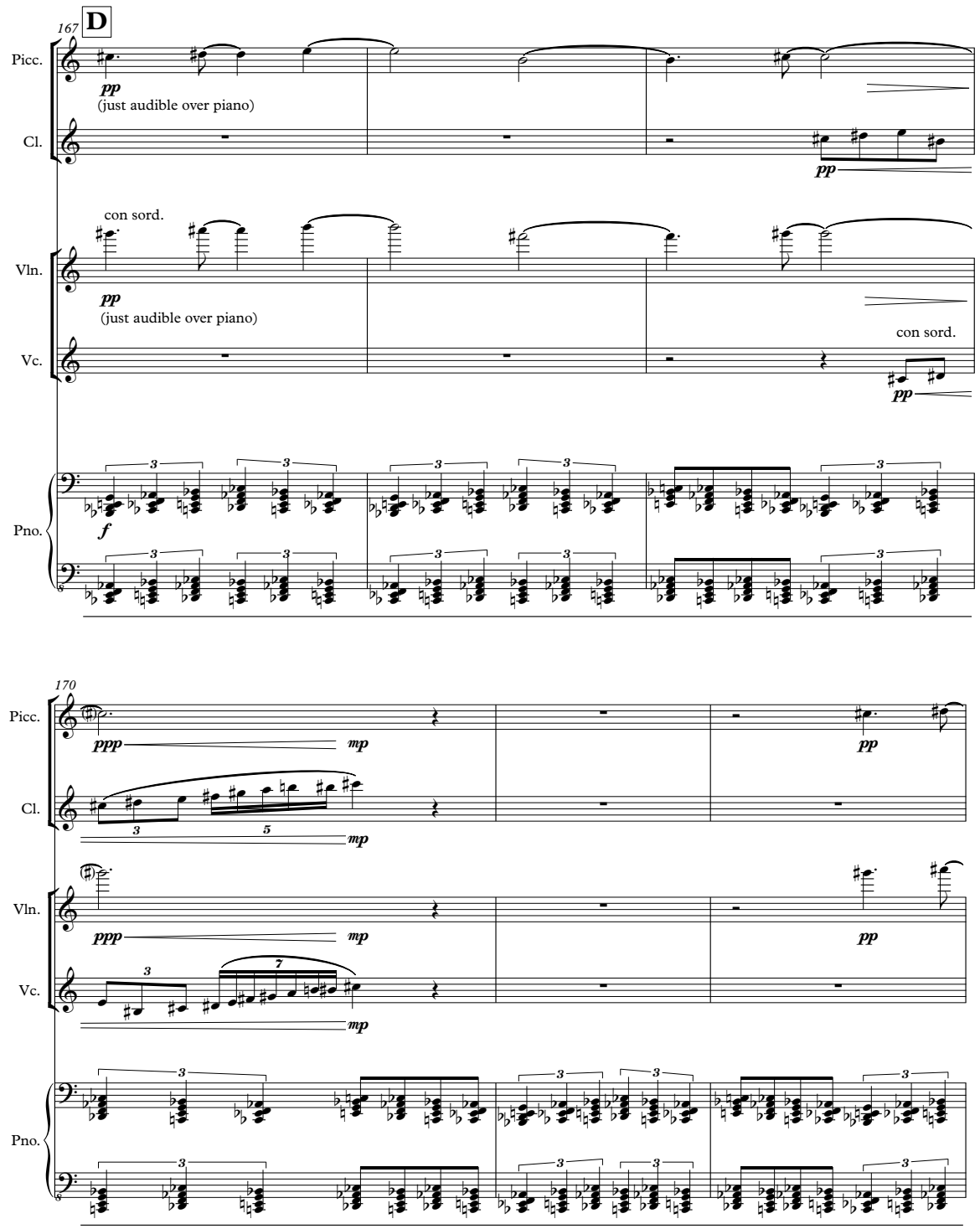
3.2.4 Introducing inharmonicity

The next section of *Power Chord Study* returns to the original main riff quotation, initiating a series of complementary processes and transformations of the material. These processes are still inspired by the idea of 'distortion', but the concept is implemented in a more figurative sense, as the material is gradually broken apart and denatured through rhythmic and registral dislocation, and increasingly dissonant harmonies. Spectralist formal designs are often predicated on an opposition of 'harmonicity' (pitch structures that are closely aligned with the structure of the harmonic series) and 'inharmonicity' (pitch structures that contradict the harmonic series). The opening of Grisey's *Partiels* is a clear example of this approach. As discussed above, the piece begins with an orchestral texture derived from the analysis of a trombone pedal E. The initial spectrum is 'harmonic' because the pitches approximate those present in the harmonic series. However, over the course of several repetitions of this structure it is gradually transformed by the downward transposition of partials into lower octaves, where they would not naturally be present in the harmonic series, creating a gradual trend towards inharmonicity.[102]

As discussed above, power chords inherently produce spectra with a high degree of harmonicity, due to the close mathematical relationship between their fundamental frequencies. The idea of introducing inharmonicity to these structures would therefore seem an effective method for transforming and developing my power-chord-based material. The approach I took in the third section of *Power Chord Study* was strongly influenced by the spectralist ideas described above, but once again with the principles applied rather more loosely. Like Grisey, I used registral shifts in the overtone-derived harmony to create an increasingly inharmonic texture, but the manipulation of pitches is less methodical, and more intuitively controlled. The end goal of the various processes set in action in this section is a texture in which the power chords have been shifted from a low register to a high register, while the 'distortion' pitch material is found in a very low range, where it is no longer perceived as an extension of the power chords and has an extremely dissonant effect, even to the point of noise. In other words, the power chords and the distortion harmonies have 'swapped' their roles in the texture. This can be seen in bars 167-195

[102] See Rose, 'Introduction to the Pitch Organisation of French Spectral Music', pp. 8-11.

of the score, where the power chord riff is played in rhythmic augmentation by the violin and piccolo (now in C# minor – the original key of *Snowblind*) several octaves higher than the initial statements, with the piano playing a rumbling chordal ostinato based on similar pitch structures to the distortion chords that it played earlier in the piece, although now right at the bottom of the instrument's range. Ex. 3.3 shows this texture.



Ex. 3.3: 'Swapped' texture in bars 167-172.

The transformation of the material to reach this texture is achieved through the interaction of various different processes. Most obviously, the basic power chord riff is put through a further series of transpositions in several stages. At each point of transposition the overall tonal centre is shifted downwards by a semitone, beginning with a shift from the original key of E minor to E♭ minor in bar 106, then to D minor in bar 140, and finishing with the final shift to D♭/C# minor in bar 160.[103] However, while in the piano part the riff is simply transposed down by one semitone after each change of tonal centre, the violin and cello (later replaced by the piccolo) instead transpose the riff upwards by a major seventh each time, creating a widening dislocation in register between strings and piano. This is complemented by a similar process of rhythmic dislocation between the parts, heightening the sense of the material being 'distorted'. A heterophonic and quasi-canonic effect is created between the strings and piano by increasing the length of some notes and decreasing others. This process begins in bar 92 with very subtle alterations in the piano part, but soon progresses to a more noticeable lack of synchronisation (e.g. bars 95 and 98). Beginning in bars 110-111 the rhythmic alterations also start to affect the strings, as the distortion chords (i.e. their artificial harmonics) begin to be extended across the bar line, delaying the onset of the riff in relation to the piano and leading to increasingly extreme rhythmic dislocation between the instruments.

The upward expansion of the strings' version of the riff into a higher register is counterbalanced with a gradual introduction of the distortion harmonies into the lower registers of the piano, achieved via a descending triplet chordal gesture (which is reintroduced as part of the transition from the piano interlude in bar 88, after an earlier appearance in bar 25). The descending chords become part of the main riff material beginning in bar 91, where they function as a gesture linking each instance of the distortion pitches to the next statement of the riff. After the key change to E♭ minor the gesture is extended with further chords, descending lower in the piano's range (e.g. bar 109). The number of chords in the descending gesture continues to increase, until in bars 153-154 it spans more than four octaves of the keyboard. Finally, the descending overtone chords come to completely dominate the power chords from which they are theoretically derived, and from bar 160 are transformed into the rumbling ostinato over which the highest-register version of the power chord riff is overlaid by the violin and piccolo.

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[103] In the following section, I have been pragmatic in my use of enharmonic accidentals to ensure the notation is as easy to read as possible. The violin and piccolo are notated as if in C# minor, while the piano chords are notated as if in relation to a D♭ fundamental.

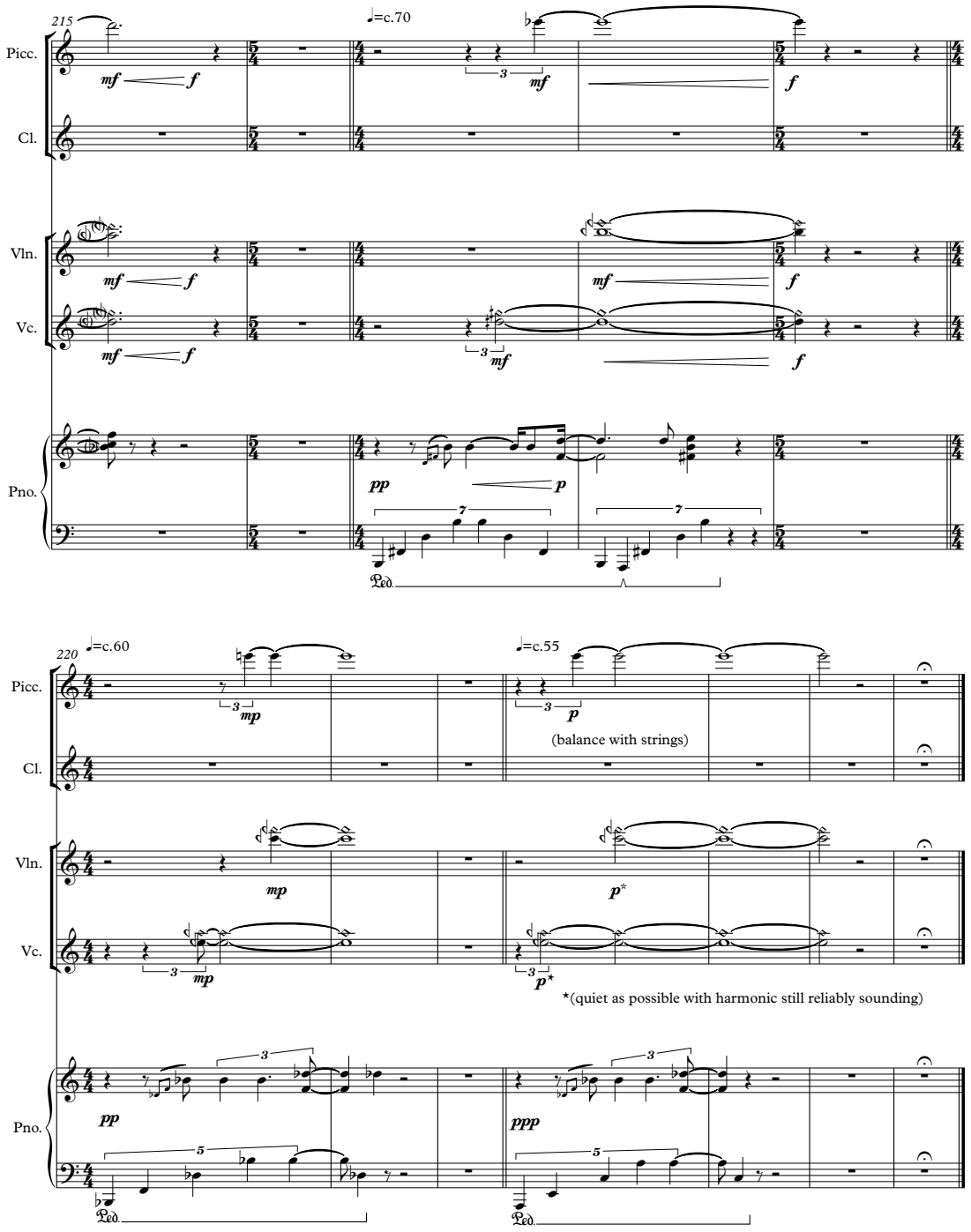
The processes described above (complemented by some auxiliary details, such as the continued rhythmic contraction of the clarinet material, and the extension of the 'looping' tail motif added to the riff in the opening section) lead to the texture of bar 167, in which the roles of the power chords and the distortion harmonies are swapped in the texture. In this section the power chords lose their 'powerful' quality, becoming barely audible over the piano ostinato. While the overtone harmonies originally had a sense of being a detail or consequence of the underlying power chords, they now become a separate entity independent of the riff, and threaten to almost completely obscure it. The violin and piccolo's high-register power chords are answered by the clarinet and cello, playing canonic echoes of the ascending line that has characterised the clarinet part throughout the piece. After two statements the riff begins to fade away, repeating the 'tail' motif in increasing rhythmic augmentation. However, in bars 191-195 the instruments begin to crescendo again, with the rhythmic values becoming shorter, leading to a transition into the final section of the piece.

3.2.5 Piano interlude reprise

At this point in *Power Chord Study* the main thematic material (namely the power chord riff from *Snowblind*) has been thoroughly explored, but the piece does not quite feel at an end. Although the possibilities of the 'main riff' seem to be nearly exhausted, the role of the 'piano interlude' material, which has thus far only been heard very briefly in the second section, is still unclear, and its inclusion presents a formal 'problem' that seems to require some form of resolution. Returning to this material therefore would seem a natural way in which to conclude the piece (although it was necessary for me to find an imaginative way in which to re-engage with it, so as not to seem too predictable or obvious). *Power Chord Study* thus concludes with a brief reprise of the piano interlude, subjecting it to similar processes of distortion and denaturing to those applied to the main riff. In the earlier appearance of the interlude a relationship is set up in which the distortion harmonies played by the strings and piccolo trigger changes in the piano part. This relationship is explored more fully when these materials reappear in the final section of the piece.

Throughout the last few minutes of *Power Chord Study*, the piano plays eight statements of various fragments of the pentatonic melody with its arpeggio accompaniment. Each of these statements is interrupted by different versions of the distortion chords, which now have the function of causing the piano to stop playing. Although the first statement of the melody (bars 196-199) is allowed to reach the end of the phrase before being cut off, subsequent statements are ended increasingly prematurely, with the final statement (bar 223) only consisting of the first bar of the melody. The distortion also begins to trigger changes in the content of the piano material itself. The effects include a distortion of the rhythmic relationship between left hand and

right hand (beginning in bar 206, and achieved through the introduction of 'irrational' rhythms), shifts of key (transposing the material down by a semitone at a time), and a gradual slowing of the tempo. The final piano statement also features bitonality between B♭ minor in the right hand and A minor in the left, completing the dislocation of melody and accompaniment. Once again, the idea of 'distortion' is applied in a more figurative sense, through the denaturing and decay of musical material, rather than in the literal sense of guitar distortion applied at the start of the piece. *Power Chord Study* draws to a close with this gradual fading away and destruction of musical material (ex. 3.4 shows the closing bars of the piece).



Ex. 3.4: The closing bars of *Power Chord Study*.

3.2.6 Conclusions

Power Chord Study is an attempt at drawing influence from the timbres and harmonies of heavy metal guitar in the context of notated concert music for traditional acoustic instrumentation. This is achieved through the use of techniques inspired by the spectralist aesthetic of composers such as Tristan Murail and Gerard Grisey. By applying these techniques to one of the most common pitch structures of rock – the power chord – the piece explores the hidden complexities of distorted guitar sonorities, and suggests that power chords are as much timbre as they are harmony. Quotations from the band Black Sabbath reference the original musical context in which these power chords were heard, and the semiotic significance of these chords as literal and metaphorical representations of power, intensity and masculinity.

However, I believe that the manner in which power chords and the idea of distortion are used in this piece also serves to somehow question or subvert their cultural association with male hegemony, and the coding of the electric guitar as a macho instrument. Although the use of quotation at the beginning of *Power Chord Study* clearly invokes the 'masculine' gestures of heavy metal music, the processes of distortion and denaturing that are applied to this material later in the piece change its character considerably. I am referring particularly to the section beginning in bar 167, in which the texture from the piece's opening section has been 'swapped', with the power chord riff now sounding very weak in the upper register and liable to be overpowered or drowned out by the low-register piano ostinato, which ironically is derived from the 'distortion' harmonies that originally decorated the riff. This inversion of roles seems to subvert the idea that distortion is inherently expressive of power, and uses the effect instead to portray the quoted material as impotent and weak.

The 'piano interlude' material complements this critique of the masculine coding of power chords and metal riffs. At its first occurrence in the second section of the piece, the ironically sentimental nature of this material provides a strong contrast to the seemingly more direct engagement with heavy metal's macho character in the initial 'main riff' material, and creates a sense of distancing from the genre's association with male potency. When it recurs in the final section of the piece it engages more explicitly with the associations of distorted timbres, as the distortion harmonies trigger changes in the piano material that seem to represent a loss of strength, or even sickness and decay. This image of distortion as a weakening rather than a strengthening force subverts its links to excesses of amplification and power, and by extension to the masculinist discourses of rock and metal.

Power Chord Study represents something of a departure for me, as it is my first attempt at assimilating ideas from spectralism into my work. However, I also combine these spectralist ideas

with my own existing interests, in order to present a more unique approach to engaging with rock music. A narrower spectralist aesthetic concerned entirely with timbre would not so easily allow for the use of quotation in my piece, or the hybridisation and juxtaposition of spectral harmonies with modal and tonal pitch constructions. As well as focusing on typical spectralist concerns with timbre and harmony, my treatment of material also deals with more conventional motivic development, as well as my predisposition towards repetitive riff-like structures. The form of the piece is also something of a hybrid, combining a more conventional approach based on harmonicity and inharmonicity with cruder juxtapositions of contrasting materials.

I feel that this hybridisation of spectralist approaches with other elements was largely successful, and has resulted in a piece with arresting and unique sonorities combined with an effective formal structure. Nonetheless, in some respects I feel that I was still rather conventional in my approach, particularly to form. By relying on the opposition of harmonicity and inharmonicity commonly deployed by spectralist composers, I ensured that the structure of my piece would be rather transparent, with a clear trajectory from coherence and stability towards instability and dissonance. The insertion of the 'piano interludes' within this formal plan provides something of a complication to this clear structure, but the overall design of the piece is still fairly straightforward.

These observations prompted me to consider whether other formal designs would be possible in conjunction with this kind of musical material inspired by power chords. I wanted to compose another piece using the idea of harmonies based on power chords, without having to rely on formal designs based on harmonicity and inharmonicity. As discussed earlier in this chapter, power chords actually produce a rather harmonic spectrum, because of the close frequency relationship between the fundamental pitches. In this sense, my introduction of inharmonicity to the texture in *Power Chord Study* is somewhat artificial and arbitrary, as the inharmonic pitches I use are not strictly derived from guitar sonorities. I became interested in the idea of composing a piece that would draw on power chord sonorities without having to introduce these arbitrary inharmonic elements, requiring a more novel approach to form. The piece that I wrote in response to these considerations was *Power Trio*, which is described below.

3.3 *Power Trio*

3.3.1 Overview

Power Trio was composed for an ensemble of electric piano, electric guitar and drum kit in 2016. Like *Power Chord Study,* this piece uses pitch materials derived from power chords, but with a slightly more abstract approach to the manner in which they are deployed. In *Power Chord Study*, the relationship of the spectral pitch materials to power chords is made clear from the very beginning of the piece. In *Power Trio*, however, I also explore the idea of obscuring (rather than highlighting) this relationship, using a two-part formal design. In the first half of the piece, microtonal pitch materials (played by the electric piano) derived from spectral analysis of power chords feature prominently. These materials are juxtaposed with heavy metal guitar riffs (featuring extensive use of power chords) and drum beats, but the texture is managed in such a way that the materials are understood by the audience as unrelated, rather than being linked through their common use of pitch structures relating to power chords. As this first section progresses, there are some sonic 'clues' that hint at this relationship, but it is not until roughly halfway through the piece that the two strands of material are fully unified, leading to a second section in which the piano material is clearly articulated as an extension of the electric guitar's power chords. This formal design allowed me to achieve a satisfying and varied musical narrative without arbitrarily introducing inharmonicity to the pitch structure, and to base the whole piece essentially around a single harmonic spectrum.

My approach in *Power Trio* represents a shift in focus away from the models of European spectralism and an engagement with other influences, particularly with the spectralist music of James Tenney. Robert Wannamaker argues that much of Tenney's oeuvre from the 1970s till his death in 2006 represents a distinctive North American approach to spectralism that features various parallels with European spectralism, but also differs in several key aspects.[104] One important feature is Tenney's seeming indifference towards the use of inharmonic spectra, which he generally eschews in favour of thorough exploration of the possibilities of the harmonic series. This focus on the harmonic series is aided by the relatively strict intonational accuracy that Tenney requires from performers, in order to allow the listener to differentiate between much

[104] R. Wannamaker, 'The Spectral Music of James Tenney', *Contemporary Music Review*, vol. 27, no. 1 (2008), pp. 91-92.

larger collections of distinct partials within a spectrum.[105] These characteristics were particularly influential on *Power Trio*, as they suggested new formal and technical means with which to explore spectral pitch structures, without the use of inharmonic spectra. The use of electric piano in this piece (retuned via MIDI) allowed me to easily achieve a similar degree of intonational accuracy to that required by Tenney in many of his works, and thus to explore a much richer harmonic field than in *Power Chord Study*. In the first section of the piece, the rhythmic elaboration of this pitch structure is controlled through a durational system inspired by Tenney's use of rhythmic analogues to harmonic series frequency relationships (see section 3.3.3 below).

Like *Power Chord Study*, *Power Trio* is differentiated from its spectralist models by the manner of its engagement with popular genres, which involves more direct appropriation of idiomatic materials than precedents such as *Vampyr!* (not to mention Tenney's works, which rarely feature stylistic references) in order to more thoroughly examine their cultural connotations. Although there is no explicit use of quotation, the presence of electric guitar and drum kit in *Power Trio* allowed me to more fully explore heavy metal idioms, in order to reinforce the semiotic connection of power chords with their culturally embedded connotations of power and masculinity. These connotations are then placed into a different light by the surprising juxtaposition of heavy metal gestures with material that is more typical of New Music, and their use in a novel formal design.

The following sections of this commentary (3.3.2-3.3.4) will provide an analysis of *Power Trio*, outlining how the piece's two strands of material (the spectral piano material and the metal riffs) are constructed and interconnected to articulate the piece's two-part formal structure. First (in 3.3.2) I will explain how the piano and guitar were retuned to reflect the piece's juxtaposition of spectral and tempered intonational systems. Following this (in 3.3.3-3.3.4) each of the piece's two sections will be considered in turn, with the transition between them being an important focal point. As with *Power Chord Study*, this formal analysis is followed by a conclusion (3.3.5) that suggests how the piece may be understood from a cultural perspective.

[105] See ibid, pp. 123-124 for a more substantial list of characteristics that differentiate Tenney's music from that of European spectralist composers.

3.3.2 Tuning

The crux of *Power Trio* is the microtonal tuning system that I created for the electric piano, which is derived from the spectrum produced by a low C# power chord played on a detuned electric guitar through a distorted amplifier. By analysing a spectrogram of this chord I derived a preliminary spectrum of pitches from which to draw my harmonic materials for *Power Trio*, with pitches measured to the nearest whole cent in relation to equal temperament. This initial spectrum contained 127 pitches, from which I selected a smaller collection to use in the piece. In the interest of practicality of performance I decided that each key of the piano would remain within a quartertone of its usual tempered pitch, and selected 51 pitches to make up the main harmonic field of the piece, 41 of which require keys on the piano to be retuned (ranging between 2 and 50 cents sharp or flat). I generally aimed to select pitches that yield a relatively even spacing between the higher partials, and avoided octave repetitions within the spectrum where possible (although this was unavoidable to an extent in the lower register).[106] Table 3.1 shows this collection of 51 pitches, indicating which retunings (if any) from equal temperament are required for each piano key, and the derivation of each pitch (in some cases a pitch may be explained either as a harmonic of C# or of G# – in these cases I have preferred to relate the pitches to the fundamental that results in the lowest partial number).

The electric guitar is also retuned, but remains in equal temperament. The tuning used is a 'drop C#' tuning (low to high: C#, G#, C#, F#, A#, D#). Detuning the guitar to reach lower pitches and thus to achieve a 'heavier' sound is common in heavy metal. By using this tuning, I created a stronger reference to metal techniques and idioms, and thickened the sound of the instrument (which lacks its usual reinforcement from a bass guitar). The juxtaposition of spectral and tempered tuning systems in *Power Trio* also strengthens the sense of there being two independent strands of material, and helps disguise the relationship between these strands in the first section.

[106] In some cases the spectrum produced near octave repetitions, which only differed by 1 cent – the human ear cannot easily perceive frequency differences this small, so in these cases I elected to 'correct' one of the pitches by a cent to create an exact octave repetition.

Piano key	Retuning (cents)	Derivation
$C\#_2$	0	$C\#_2$, 1st partial (fundamental)
$G\#_2$	0	$G\#_2$, 1st partial (fundamental)
$C\#_3$	0	$C\#_2$, 2nd partial
$E\#_3$ (F_3)	-14	Intermodulation pitch
$G\#_3$	0	$G\#_2$, 2nd partial
B_3	-31	IM pitch
$C\#_4$	0	$C\#_2$, 4th partial
$D\#_4$	+2	$G\#_2$, 3rd partial
$E\#_4$ (F_4)	-14	$C\#_2$, 5th partial
G_4	-50	IM pitch
$G\#_4$	0	$G\#_2$, 4th partial
A_4	+39	IM pitch
B_4	-31	$C\#_2$, 7th partial
$B\#_4$ (C_5)	-14	$G\#_2$, 5th partial
$C\#_5$	0	$C\#_2$, 8th partial
D_5	+4	IM pitch
$D\#_5$	+2	$G\#_2$, 6th partial
E_5	-3	IM pitch
$E\#_5$ (F_5)	-14	$C\#_2$, 10th partial
$F\#_5$	-31	$G\#_2$, 7th partial
G_5	+26	IM pitch
$G\#_5$	0	$G\#_2$, 8th partial
A_5	-29	IM pitch
$A\#_5$ ($B\flat_5$)	+4	$G\#_2$, 9th partial
B_5	+29	IM pitch
$B\#_5$ (C_6)	+44	IM pitch
$C\#_6$	0	$C\#_2$, 16th partial
D_6	-49	$G\#_2$, 11th partial
$D\#_6$	-46	IM pitch
E_6	+41	$G\#_2$, 13th partial

Table 3.1: Harmonic spectrum and tuning system used for the electric piano in *Power Trio*. Note that some pitches are notated enharmonically (as indicated) in the score.

Piano key	Retuning (cents)	Derivation
E#$_6$ (F$_6$)	+28	IM pitch
F#$_6$	+11	IM pitch
G$_6$	-12	G#$_2$, 15th partial
G#$_6$	-36	IM pitch
A$_6$	+5	G#$_2$, 17th partial
A#$_6$ (B♭$_6$)	-27	IM pitch
B$_6$	-2	G#$_2$, 19th partial
B#$_6$ (C$_7$)	+15	IM pitch
C#$_7$	+26	IM pitch
D$_7$	+28	G#$_2$, 23rd partial
D#$_7$	+26	IM pitch
E$_7$	-27	G#$_2$, 25th partial
E#$_7$ (F$_7$)	-36	IM pitch
F#$_7$	-10	IM pitch
G$_7$	+45	G#$_2$, 31st partial
G#$_7$	+18	IM pitch
A$_7$	-11	IM pitch
A#$_7$ (B♭$_7$)	+20	IM pitch
B$_7$	+42	G#$_2$, 39th partial
B#$_7$ (C$_8$)	+29	G#$_2$, 41st partial

Table 3.1 (cont.)

3.3.3 Analysis – section 1

In the first section of *Power Trio* (which lasts for approximately half of the piece's 12-minute duration) a strong juxtaposition is created between the two different strands of material, played by the piano on one hand, and the guitar and drums (which operate as one unit throughout most of the piece) on the other. This juxtaposition disguises the relationship between these materials (i.e. their common link to the idea of power chords), and creates an impression that they are completely unconnected, or even diametrically opposed in nature. Although the parts are rhythmically coordinated in the score, and there is a general increase in activity in both strands of material over the course of six minutes, there is nonetheless a sense that each strand is following its own logic independently of the other.

The material played by the piano is comprised of a slowly unfolding pointillist texture, which gradually introduces a collection of pitches from the spectrum outlined above. It is composed according to a system that draws on James Tenney's use of rhythmic analogues to harmonic series frequency relationships in several works.[107] The example of this technique most relevant to my guitar-based research project is the *Septet* (1981) for six electric guitars and electric bass. This piece is a typical Tenney exploration of the harmonic series, which inspires not just the pitch ratios but also the rhythmic relationships between the instruments. Tenney uses a series of increasingly complex 'irrational' rhythms that represent the same mathematical relationships to the 'fundamental' rhythmic duration (a minim), as the relationships of each frequency in a harmonic series to its fundamental pitch.[108]

In *Power Trio* I also used a system of deriving rhythmic values from the frequency relationships within the C# power chord spectrum. However, while in Tenney's piece the rhythmic structure is clearly audible, serving an almost didactic purpose, I took several measures to obscure the workings of my system, which, although it creates a vague sense of underlying structure, also has a feeling of 'randomness'. The aperiodic quality of the resulting material reinforces its contrast with the more highly ordered guitar and drum kit materials (see below), and avoids revealing to the listener too clearly the underlying spectral logic of the piano tuning (and thus its potential connection to the guitar's power chords). To compose this material, I first selected a subset of my 51-pitch spectrum, omitting the fundamental pitches of C# and G# (as well as their octave repetitions), and also eliminating any other pitches that are an octave repetition of a lower pitch in the spectrum (for example F_4 and F_5). This left me with a 37-pitch spectrum, with the absence of any fundamental(s) obscuring the relationship to the C# power chord. In order to simplify the implementation of my system, I treated all the pitches as relating to a fundamental of $C\#_1$ (as noted in the analysis of *Power Chord Study*, this pitch, one octave below the lowest note of the power chord, acts as a kind of ersatz fundamental to the spectrum), and noted their approximate frequency relationships to this pitch. I then assigned each pitch a duration based on these ratios.

In contrast to Tenney's *Septet*, in which the rhythmic values associated with each pitch in the spectrum become gradually shorter and faster in proportion to the increasingly higher

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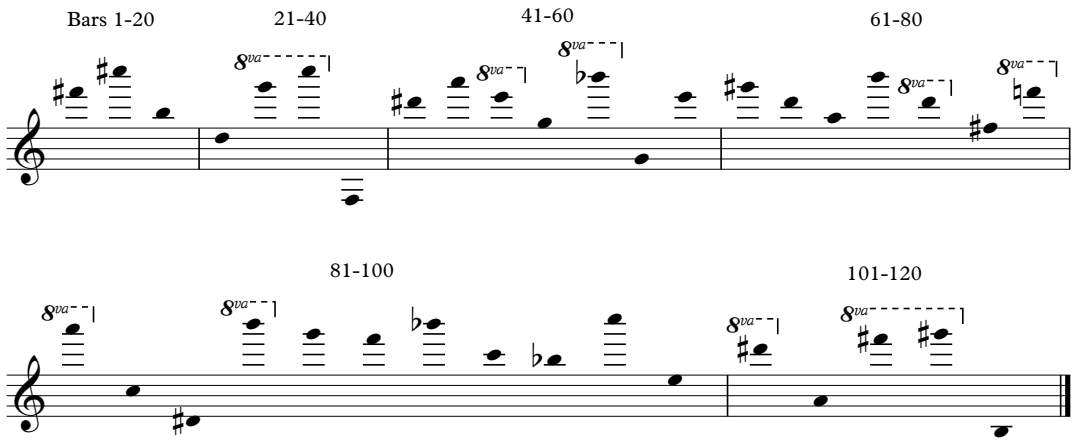
[107] For further examples to that discussed here, see Wannamaker, 'The Spectral Music of James Tenney', pp. 101-108.

[108] See G. Fiore, *The Just Intonation Guitar Works of Lou Harrison, James Tenney, and Larry Polansky*, (PhD thesis: University of California Santa Cruz, 2013), pp. 85-100.

frequencies of the partials, in *Power Trio* the rhythmic values generally become longer with each higher partial, creating a *harmonic duration series* (the durations increase in the same proportions as harmonic series frequencies). However, these durations are modified further through a system of adjustments for each octave of the spectrum to ensure a more even distribution of rhythmic activity throughout the piano's register (this also helps to create the sense of 'randomness' in the system). Each octave of the spectrum is assigned a 'base' rhythmic value that is halved for every successive higher octave (see table 3.2). To calculate the duration assigned to each partial, I multiplied the relevant base value by the partial number of the pitch in question (in relation to $C\#_1$). This produced a series of durations between 4 and 8 semibreves in length, with the higher partials forming more complex rhythms in relation to the 4/4 pulse.

Each partial uses its assigned duration exclusively throughout the first section of the piece. However, the pitches are only gradually introduced, according to a 'filter' that slowly expands from allowing only one pitch to all 37. Each pitch's first occurrence takes place at some multiple of its assigned durational value (measured from the start of the piece). Further statements of the pitch then occur at every subsequent multiple of its assigned duration (the sustain pedal is used throughout, allowing notes to decay naturally).[109] The order in which the pitches are introduced (see ex. 3.5) creates a progression from a very widely spaced spectrum to an increasingly closer arrangement of pitches, allowing the frequency relationships to become clearer to the listener.



Ex. 3.5: Order in which partials are introduced in the first section of *Power Trio*.

[109] After completing the composition of this section, I did notice a small number of incorrectly placed pitches. However, I did not feel that these 'mistakes' affected the overall random impression created by the texture, and generally chose not to 'correct' them. In addition, some rhythms were modified slightly to avoid any impossible to play chords in the piano part.

Pitch (deviations from equal temperament shown in cents)	**Base rhythmic value**	**Partial no.** (in relation to theoretical $C\#_1$ fundamental)	**Assigned duration** (bars of 4/4 time)
$E\#_3$ (F_3) -14	Semibreve	5	5
B_3 -31		7	7
$D\#_4$ +2	Minim	9	$4\,{}^{1}/_{2}$
G_4 -50		11	$5\,{}^{1}/_{2}$
A_4 +39		13	$6\,{}^{1}/_{2}$
$B\#_4$ (C_5) -14		15	$7\,{}^{1}/_{2}$
D_5 +4	Crotchet	17	$4\,{}^{1}/_{4}$
E_5 -3		19	$4\,{}^{3}/_{4}$
$F\#_5$ -31		21	$5\,{}^{1}/_{4}$
G_5 +26		23	$5\,{}^{3}/_{4}$
A_5 -29		25	$6\,{}^{1}/_{4}$
$A\#_5$ ($B\flat_5$) +4		27	$6\,{}^{3}/_{4}$
B_5 +29		29	$7\,{}^{1}/_{4}$
$B\#_5$ (C_6) +44		31	$7\,{}^{3}/_{4}$
D_6 -49	Quaver	33	$4\,{}^{1}/_{8}$
$D\#_6$ -46		35	$4\,{}^{3}/_{8}$
E_6 +41		39	$4\,{}^{7}/_{8}$
$E\#_5$ (F_6) +28		41	$5\,{}^{1}/_{8}$
$F\#_6$ +11		43	$5\,{}^{3}/_{8}$
G_6 -12		45	$5\,{}^{5}/_{8}$
$G\#_6$ -36		47	$5\,{}^{7}/_{8}$
A_6 +5		51	$6\,{}^{3}/_{8}$
$A\#_6$ ($B\flat_6$) -27		53	$6\,{}^{5}/_{8}$
B_6 -2		57	$7\,{}^{1}/_{8}$
$B\#_6$ (C_7) +15		61	$7\,{}^{5}/_{8}$
$C\#_7$ +26	Semiquaver	65	$4\,{}^{1}/_{16}$
D_7 +28		69	$4\,{}^{5}/_{16}$
$D\#_7$ +26		73	$4\,{}^{9}/_{16}$
E_7 -27		75	$4\,{}^{11}/_{16}$
$E\#_7$ (F_7) -36		79	$4\,{}^{15}/_{16}$
$F\#_7$ -10		85	$5\,{}^{5}/_{16}$
G_7 +45		93	$5\,{}^{13}/_{16}$
$G\#_7$ +18		97	$6\,{}^{1}/_{16}$
A_7 -11		101	$6\,{}^{5}/_{16}$
$A\#_7$ ($B\flat_7$) +20		109	$6\,{}^{13}/_{16}$
B_7 +42		117	$7\,{}^{5}/_{16}$
$B\#_7$ (C_8) +29		123	$7\,{}^{11}/_{16}$

Table 3.2: Durational values assigned to pitches in the first section of Power Trio.

This piano texture is juxtaposed with more disruptive material played by the guitar and drums, which makes clear stylistic references to heavy metal and implies a secondary rhythmic pulse at twice the tempo of the piano material (although it is doubtful whether a clear pulse will be perceived in the piano texture, considering its aperiodic nature). The guitar uses a distorted timbre, and relies heavily on power chords and 'dark' harmonic intervals that are commonly featured in metal riffs, such as minor seconds and tritones. Although the material is strongly tonally centred on C#, the guitarist is instructed to mute the strings with the palm of his or her right hand (excluding a few accented chords), in order to produce a staccato effect (commonly used in metal rhythm guitar) that avoids conveying an overly strong sense of pitch, thus helping to obscure the harmonic relationship with the piano part.

The statements of this material are placed unevenly throughout the duration of the first section of the piece. The first entry does not occur until a full two minutes have elapsed, and is followed by a further stretch of solo piano material of approximately a minute's duration, while the gap between the second and third entries (the latter of which leads directly into the second section of the piece) is much shorter. This spacing of the entries accentuates the opposition between the two strands of material. The first entry (in bars 41-53) consists of simple (but unpredictable) rhythmic fragments. This material, occurring after two minutes of peaceful, often unassuming piano material, functions as a major disruption of the sound world that the listener has become accustomed to, completely altering any preconceptions about the nature of the piece and its potential development. It is clear that this material would not have the same effect if it appeared at the start of the piece, where it would simply be heard as part of the work's initial premise, rather than as a foreign element or interruption. The first entry of the guitar and drums thus presents a clear formal 'problem', with its seemingly irreconcilable juxtaposition of materials, but is followed by a further long passage of the solo piano material, to enigmatic effect – no solution to the problem is provided, or even hinted at.

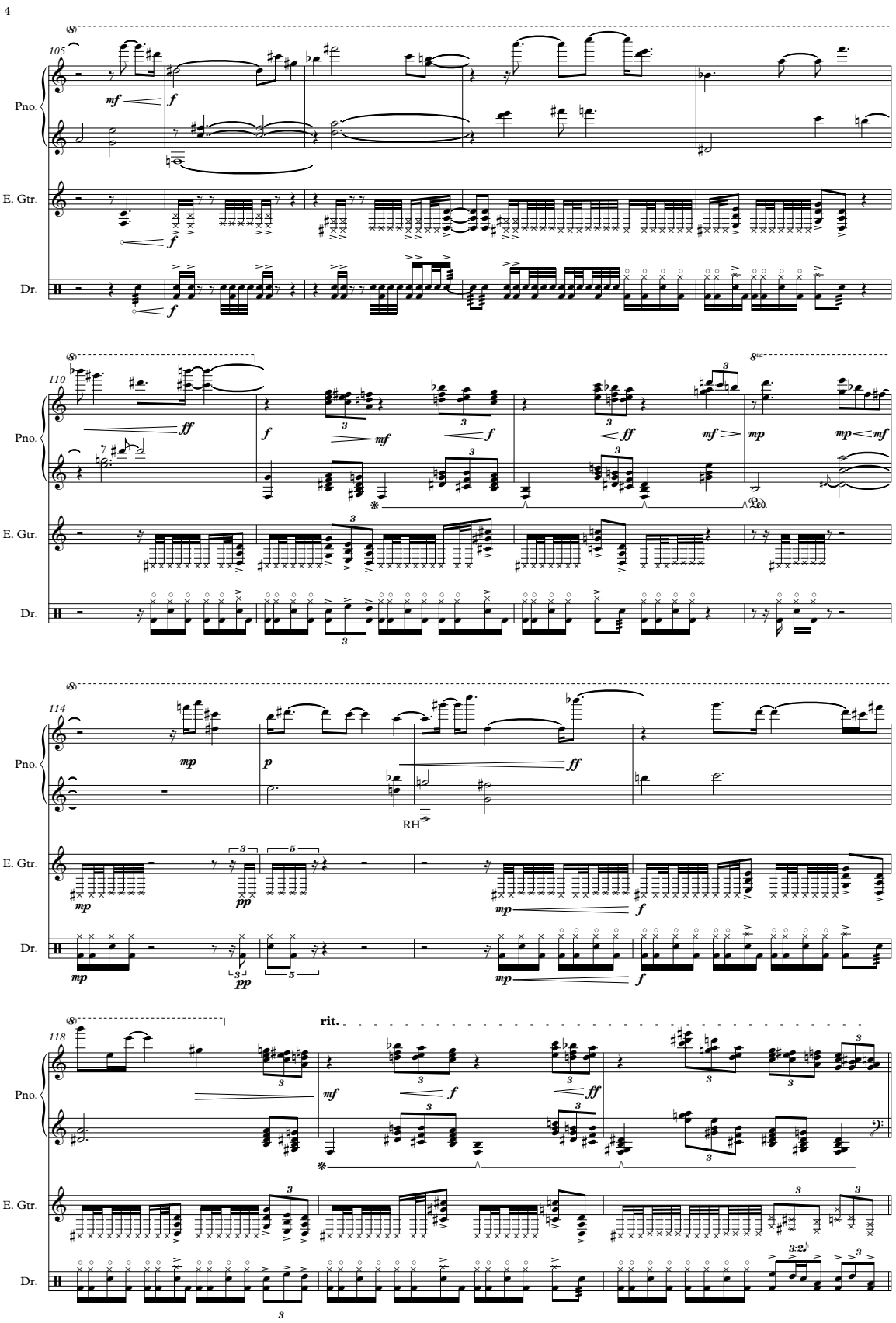
In the second and third statements (bars 76-93 and 101-120 respectively) the initial rhythmic fragments are extended and developed into a more continuous 'thrash metal'-style riff, and a typical metal drum beat.[110] The less sporadic nature of this material and shorter interlude between the two entries help create a feeling of growing intensity and momentum, leading towards the transition into the second section of the piece. The listener is now also given some

[110] A more idiomatic thrash metal drum beat would include double pedal bass drum techniques but, as a simpler drum kit was used for the first performance of *Power Trio*, I modified the beat to be playable with single pedal techniques.

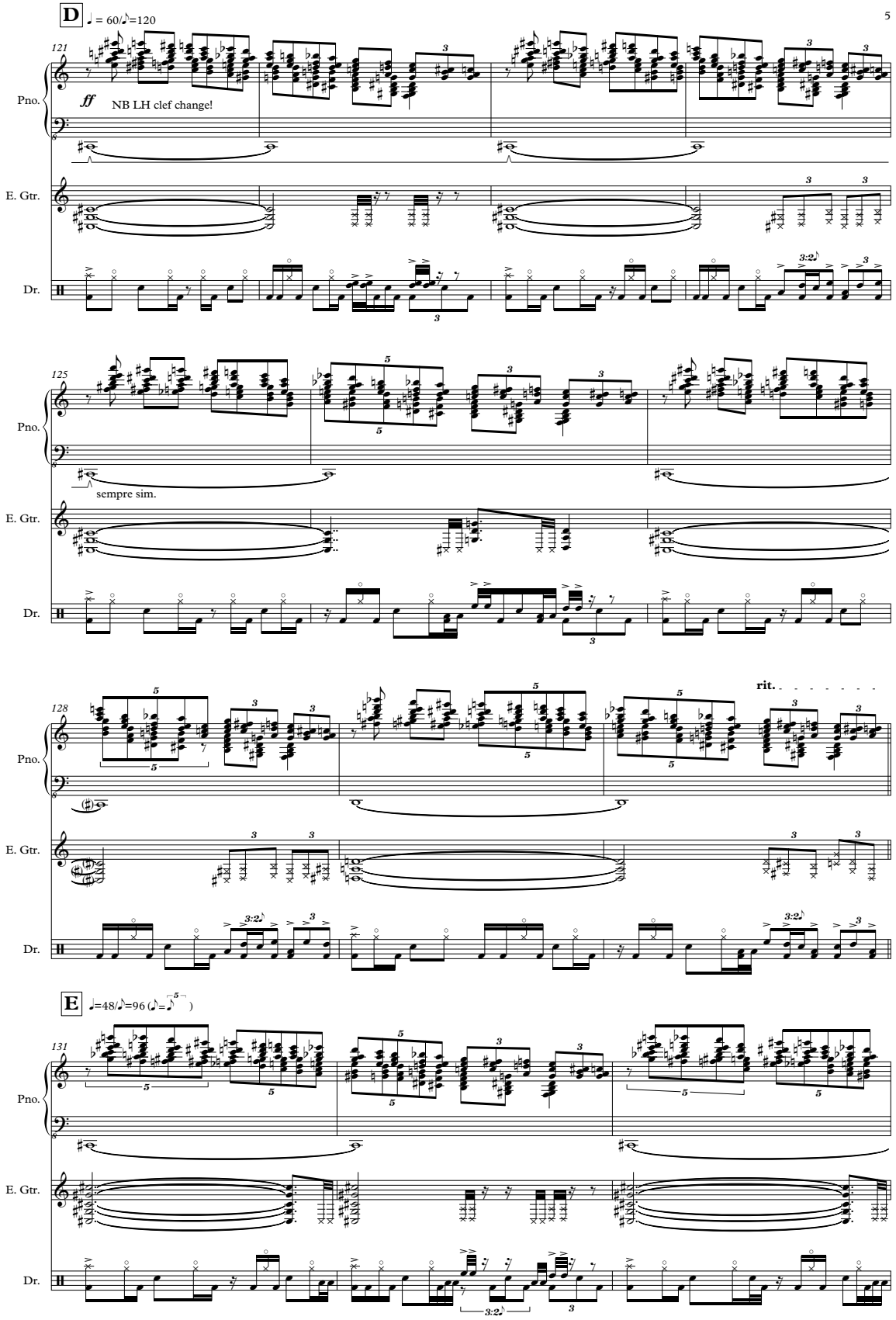
hints as to how the two conflicting strands of material will be reconciled. In bars 89 and 111 the piano unexpectedly adopts a triplet quaver rhythm from the guitar riff, playing descending chordal gestures that anticipate the material to be explored in the second half of the piece (this material simply replaces the systematically composed material that would have otherwise occurred in these bars). These moments introduce the ideas that will lead to the transition into the second section, and suggest a closer link between the two strands of material. However, in both statements the riff and drum beat soon disintegrate (in bars 91 and 112 respectively) into short fragments that gradually fade out and become rhythmically distorted. The piano simply returns to the pointillist material as if nothing untoward has happened. In the final entry though, this fragmentation of the riff material does not lead to its total disappearance, and instead is developed further to effect the transition into section two. In bar 116 the riff is reintroduced, fading back in to its original *forte* dynamic. The piano once more takes up its triplet chordal gestures, which are extended further than before, and drive the transition into the second section in bars 119-120. This transition is aided by a *ritardando*, with a new triplet gesture from the guitar and drums in bar 120, played in rhythmic unison with the piano chords, signalling the change of texture.

3.3.4 Analysis – section 2

The transition from the first section into the second is the single most important moment in the form of *Power Trio*. The new material introduced in the second section (from bar 121) unifies the contrasting strands from the first half of the piece into one single texture, featuring long sustained C# power chords played by the electric guitar paired with thick, cascading piano chords descending through the power chord spectrum. The link between the spectral tuning system of the piano and the guitar's chords is thus made abundantly clear for the first time in the piece, resolving the tensions created by the juxtaposition of materials in the first section, and the formal 'problem' posed by the first entry of the guitar and drums in bar 41. This moment of transition between *Power Trio*'s two primary textures represents a long-awaited 'revelation' of the piece's underlying logic. The transition, along with several bars of the music that precedes and follows it, is shown in ex. 3.6.



Ex. 3.6: Bars 105-133 of *Power Trio*, showing the transition between the piece's two sections, and the first metric modulation in section two.


D
♩ = 60/♪=120
5
121
Pno.
ff
NB LH clef change!
E. Gtr.
Dr.
125
sempre sim.
128
rit.
E
♩=48/♪=96 (♪=♪ 5)
131

Ex. 3.6 (cont.)

The new pairing of guitar and piano is underpinned by a steady rock drum beat, punctuated with rhythmic fills that mimic the guitar's decorations of the sustained chords. The piano also provides bass support to the guitar, adding pitches an octave below the lowest notes of the power chords – these could be thought of as representing the strong difference tones created by power chords, or alternatively as replacing the role of the bass guitar that usually features in rock and metal. In order to avoid monotony in the harmony, additional power chords occasionally replace the sustained C# power chords (D5 in bars 129-130, E5 in bars 139-142, and G5 in bars 164-167), creating a more dissonant effect through the mismatching of their spectral content with the piano harmonies (this represents my only extensive use of 'inharmonic' pitch structures in the piece).

Before long the material described above begins to go through a process of metric modulations that sustain variety and interest in this texture. The second section of *Power Trio* begins at ♩=60, three quarters of the original tempo of ♩=80, with the piano chords in a simple quaver rhythm (although triplets are added at the end of each two-bar pattern). However, starting in bar 126 a new rhythmic pulse begins to creep into the piano part through the introduction of quintuplets. These quintuplets become increasingly prominent, eventually initiating a metric modulation in bars 130-131 (this can be seen in ex. 3.6), in which the overall tempo of the three parts slows down, but in such proportion that the piano quintuplets now follow the same pulse as the original quaver pattern. The effect is as if the guitar and drums have slowed down, but the piano remained at the original tempo. The process continues in bars 133-138, as triplets gradually replace quintuplets in the piano material, leading to a second metric modulation in bars 138-139. Again, the overall tempo slows such that the piano triplets now proceed at the same speed as the quintuplets in the previous tempo. This process of metric modulations is complemented with a gradual expansion in the range of the piano's chords. At the start of the second section, these chords only extend up to $G\#_6$ (-36 cents), although the collection of available pitches is expanded from the 37 of section one to include all C#s, G#s and octave doublings as well. As the tempo slows, however, and new rhythmic divisions are added to the piano part, its descent begins from increasingly higher pitches in the spectrum. The path of the piano's descent also becomes less predictable, gradually mutating from smooth, mostly stepwise motion to include increasingly angular leaps.

The process of metric modulations is unexpectedly interrupted in bars 143-157 with a return to material from the first half of the piece. At this point the tempo has reached ♩=40, half the original tempo of section one. The riff material from the guitar and drums' initial entry (with some alterations) is presented at this new tempo, which changes its character considerably. This is paired with a reprise of the pointillistic piano material, which is essentially a continuation from the end of the first section (composed using the same process), although the rhythmic values are

halved so that the perceived tempo of the material is the same as before (thus the rhythmic relationship between the strands of material is reconfigured). This reprise interrupts the continuity of the essentially predictable processes that characterise the second half of the piece, creating uncertainty as to what will happen next. It is unclear whether the process of metric modulation has been fully completed, and whether the piece will now end with this return to previous ideas. The reprise soon proves to be a false one though, as, after an apparent fading away (with the instruments progressively dropping out) in bars 151-156, a floor tom roll leads back into the more sustained power chord material and descending piano chords.

Once this texture has been reintroduced, the previously interrupted rhythmic process soon continues with a third metric modulation in which septuplets replace triplets in bars 161-162. The metric modulations continue to be complemented by an upward expansion of the piano's range, and increasingly disjunct patterns of chords. The texture is interrupted once again in bars 168-171, with a short drum solo based on material from the previous reprise of the first section again functioning as a 'false return', but another more extended drum roll soon leads to the fourth metric modulation (bars 172-173), which reduces the tempo so that semiquavers now follow the same pulse as septuplets in the previous tempo. At this tempo (♩=30), the piano finally reaches the highest pitch in the spectrum (C_8+29 cents), and returns to a simpler stepwise pattern of chords. In bars 174-176 the pulse slows twice more to reach a final tempo of ♩=20, but during these tempo changes the piano retains a semiquaver pulse, so that it finally is allowed to slow down in synchronisation with the other instruments. These final tempo shifts complete an overall tempo schema for the piece (illustrated in table 3.3) that ends with the instruments playing at a quarter of the original tempo of ♩=80.

Bar nos.	Tempo (bpm)	Fraction of original tempo
1-120	80	1
121-130	60	$^3/_4$
131-138	48	$^3/_5$
139-161	40	$^3/_6$ ($=^1/_2$)
162-172	34	$^3/_7$
173-174	30	$^3/_8$
175	24	$^3/_{10}$
176-177	20	$^3/_{12}$ ($=^1/_4$)

Table 3.3: Tempo schema in *Power Trio*.

3.3.5 Conclusions

In *Power Trio* I developed a different approach to the idea of composition based on power chord sonorities than that which I took in *Power Chord Study*. The use of retuned electric piano presented new technical means with which to explore spectral pitch structures, and the use of the electric guitar itself (supported by the drum kit) allowed me to more fully integrate idiomatic material from heavy metal music. By developing a unique two-part form I was able to avoid a reliance on the dichotomy of harmonicity and inharmonicity, and instead was able to construct my whole piece from one harmonic spectrum, derived from analysis of a guitar power chord. This form relies on obscuring any audible relationship between the electric guitar's power chords and the spectral pitch material played by the piano in the first half of the piece, then subsequently revealing the connection between the two strands of materials, to dramatic effect, in the second section.

I am satisfied with the strong contrast that this piece provides to *Power Chord Study*, creating a markedly different form and distinctive musical textures out of essentially the same principles. While both pieces are effectively structured, I feel that the form of *Power Trio* is more compelling and unique than that of its companion piece. Although the works are linked by their invocation of heavy metal guitar, the use of actual electric guitar and drums in *Power Trio* perhaps invests these riffs with deeper significance. The strong juxtaposition between the material played by the guitar and drums and the pointillist piano material in the first section of the piece seems to dramatise the relationship of the former two instruments, strongly associated with rock and pop, to New Music.

Although, admittedly, the electric piano has weaker associations with 'classical' music than its acoustic cousin, the microtonal material it plays in *Power Trio* is more likely to create associations with experimental concert music traditions than with popular music. The guitar and drums are made to feel like 'outsiders' to this world, due to the antagonistic relationship between the two strands of material and the 'interrupting' nature of their sporadic entries. This antagonism also seems to highlight again the idea of heavy metal as an expression of power or masculinity, as the strident, aggressive qualities that create this association are brought into relief, almost to a grotesque extent, by their juxtaposition with the serene neutrality of the piano music. The sledgehammer brute force of this material seems almost antithetical to the aesthetic with which it is forced to interact. In contrast, however, the final section of the piece presents a more optimistic view, reconciling textures and idioms associated with rock and metal with technical means from contemporary concert music. In this way the piece seems to provide a secondary

cultural commentary on the electric guitar's place in concert music, beyond the purely spectralist fascination with the instrument's timbre.

My experiments with the application of spectralist techniques to electric guitar timbres have been fruitful, but I have not yet exhausted the possibilities of this avenue of research. As I have frequently alluded to in this commentary, the spectra produced by power chords are inherently harmonic, due to the close frequency relationship between the two pitches in the chord. Other interval combinations and chords played by an electric guitar with distortion will produce very different, and potentially much more complex, spectra. It is easy to imagine that future pieces could be constructed around the exploration of these spectra, whether derived from chords that, like power chords, have particular cultural resonances, or from more abstractly chosen interval combinations. In addition, further pieces could perhaps explore the potential to translate the timbres produced by other electric guitar effects (such as wah-wah, phaser, flanger, etc.) into spectral textures. This thought provided some inspiration to the composition of my *Tapping Piece*, and will be discussed in more detail in my commentary on this work (chapter 6).

One aspect that is notably lacking from both *Power Chord Study* and *Power Trio* is a consideration of the visual or theatrical elements of electric guitar performance. Like *Vampyr!* these are concert music pieces with no visual component specified by the composer, although the performers may of course make their own interpretative choices (perhaps similar to those detailed in my analysis of *Vampyr!*) that will surely affect the perception of the work.[111] In my next commentary I will discuss a piece, *Construction in Metal*, that tackles these issues of performance head on, through the use of choreography and the introduction of a novel new musical 'instrument'. However, in order to provide a background for these discussions I will first consider a work by Laurence Crane, *Some Rock Music for Alan Thomas*, that also engages with the theatrical implications of the electric guitar's cultural history.

[111] Indeed, in the workshop that yielded the recording of *Power Trio* included with this thesis, the guitarist often felt compelled to 'get into' the piece by making vigorous gestures with the guitar neck in the manner of a rock guitarist (despite the fact that he chose to remain seated for the performance).

Section B: Theatrical Approaches to the Electric Guitar

Chapter 4: Case Study: Laurence Crane – *Some Rock Music for Alan Thomas*

4.1 Overview

In chapter 2, I analysed how Tristan Murail achieves a 'synthesis' of rock guitar idioms and spectralist techniques in his solo electric guitar work *Vampyr!*. *Vampyr!* represents a very direct mode of engagement with popular music, in which the timbral and gestural vocabulary of rock is closely integrated with the composer's existing compositional approach, minimising the perception of difference between genres. As interviews with the composer show, however, he gave little consideration to the cultural implications of his stylistic appropriation. I argued that this represents something of a 'missed opportunity' because, as my analysis shows, the electric guitar's popular-cultural associations have an important impact on an audience's perception of the work.

English composer Laurence Crane's *Some Rock Music for Alan Thomas* (2008) presents a different model of engagement with the electric guitar. This piece also references the instrument's rock heritage, but it does so in a manner that seems more cognisant of rock's extra-musical associations with particular social contexts and cultural ideals. Rather than smoothly assimilating gestures from rock guitar into his own established style, Crane highlights the juxtaposition of borrowed popular materials with their new concert music context, creating an ironic distance between composer, audience and material that serves to foreground the electric guitar's cultural associations, while also making it possible for these associations to be questioned or critiqued. Although the piece makes even more direct references to rock than *Vampyr!* (particularly due to its use of quotation and 'sampling' of rock recordings), it seems to have less in common with the performance practices of rock itself, and the treatment of borrowed material often highlights its 'foreign' nature.

Just as *Vampyr!*'s references to rock music are somewhat anomalous within Murail's oeuvre, *Some Rock Music…* also (at least superficially) seems to represent something of a departure for Crane. The composer describes his piece as a 'music theatre for two performers', and it includes visual and physical elements that both reinforce and subvert its references to the conventions of the rock 'gig'. One of the performers is an electric guitarist, while the second carries out a variety

of actions, including singing, playing recordings from an iPod, and performing 'air guitar'. These theatrical and referential qualities contrast with Crane's main body of instrumental works, which he has described as essentially 'abstract' in nature (see section 4.2). However, although this may superficially differentiate *Some Rock Music…* from Crane's other works, there are precedents to the approach that he takes in this piece, and my analysis will show that the formal development of material throughout the work is in several ways consistent with his established style. In addition, *Some Rock Music…* is representative of a wider trend in contemporary music toward engagement both with popular-cultural material and other art forms.

In this case study I will argue that *Some Rock Music for Alan Thomas* engages with electric guitar idioms in a manner that both highlights and subverts the instrument's association with rock culture. My argument is divided into three sections, with a final conclusion and epilogue. In the first section (4.2) I provide background information about Laurence Crane's musical aesthetic, and briefly examine a previous work for electric guitar, *Bobby J*. In the second section (4.3) I provide a formal analysis of *Some Rock Music…*, and in the third (4.4) I examine its theatrical and visual components. In the conclusion (section 4.5) I reflect on the cultural implications of Crane's engagement with rock guitar, before the epilogue (4.6) highlighting how *Some Rock Music…* fits into broader compositional trends and discourses.

4.2 The electric guitar in the music of Laurence Crane

Crane's music has become associated with the use of familiar, archetypal (usually diatonic) musical materials – often drones, triads or simple stepwise melodies – which are placed in new formal contexts to reveal a previously unseen potential or beauty. Tim Parkinson writes:

> 'The familiar sound or image is abstracted by being placed in a new clean and often isolated context, like a museum glass case. Its innate value is respected by it remaining alone, unornamented and unaffected during the course of the piece by any development or transformation, the image staying as and where it is by being gently reiterated or prolonged so that it holds our full attention. The clear structure is held in functions so that we can observe the original material only from one or two other angles. Consequently any tonality inferred is abstracted and becomes non-functional and non-subservient to any dialectic.'[112]

[112] T. Parkinson, 'Laurence Crane' at *Untitled Website*, <www.untitledwebsite.com/words/53> (accessed 9/3/17).

Crane himself has endorsed similar metaphors, comparing his work to sculpture and visual art.[113] The majority of his music is instrumental, and he states that 'all my instrumental pieces are, without exception, completely abstract. For me, there is no such thing as extra-musical "inspiration"'.[114] I understand Crane's use of the term 'abstract' here to refer to a conception of a musical work as an autonomous structure, without explicit references to any external content or contexts, such as particular musical genres, social structures, or political and philosophical ideas (and will therefore use the term in this sense throughout this chapter). It is possible that listeners may project their own stylistic associations onto Crane's musical materials (particularly given their archetypal nature), and his work does of course show the influence of various composers within the experimental music tradition, but in terms of the composer's own intentions these associations are incidental to a piece's construction. Philip Thomas links Crane's work to that of English experimentalists such as Howard Skempton or John White, as well as to the neoclassicism of Satie or Stravinsky, but notes that his music rarely features the elements of parody and historical or stylistic references that often appear in these models.[115] The abstract nature of Crane's work sometimes seems to be contradicted by the titles of pieces, which often refer to particular people or scenarios in a seemingly descriptive (and often humorous) fashion, but the composer is keen to emphasise that these are purely functional, with no relationship to the style or character of a piece.[116]

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[113] See J. Saunders, 'Interview with Laurence Crane' in Saunders (ed.), *The Ashgate Research Companion to Experimental Music*, (Farnham: Ashgate, 2009), pp. 243–252. Interview also on Saunders' website: <www.james-saunders.com/interview-with-laurence-crane/> (accessed 9/3/17).

[114] Ibid.

[115] P. Thomas, 'The Music of Laurence Crane and a Post-Experimental Performance Practice', *TEMPO*, vol. 70, issue 275 (2015), p. 10, p. 12.

[116] Saunders, 'Interview with Laurence Crane'.

Aside from *Some Rock Music for Alan Thomas*, Crane's other substantial contribution to the electric guitar repertoire is *Bobby J* (1999), an eight-minute solo piece that exemplifies several typical traits of the composer's work.[117] In contrast to the later piece, it is conceived as a completely abstract instrumental work. The musical material of *Bobby J* (see ex. 4.1) is on the face of it very simple, being comprised entirely of semibreve chords at a slow tempo of ♩=40, each of which is articulated as a *crescendo dal niente* using a volume pedal (see dynamic marking in the opening bar). The chords are largely triadic, with a few added sixths and sevenths, and mostly diatonic to the key of C major, although any sense of functional tonality is subverted somewhat by the intrusion of major triads and seventh chords on B♭ (the ♭VII degree of C). After a repeated initial 16-bar sequence, a variation on the same harmonies is introduced, which features fuller voicings in a higher register. The highest voice of each chord outlines a simple descending melody. This second sequence is also repeated, but with the addition of a low C pedal (played on the detuned 6th string of the guitar). Finally (on page 2 of the score – not shown), the piece returns to the original 16-bar sequence of chords, which is this time only played once.

The materials Crane uses in *Bobby J* are, typically for his music, spare and archetypal, featuring triadic harmonies, stepwise melodic motion and a simple pedal point. The harmony references the common diatonic language of Western music, but in a static fashion, avoiding functional progressions or overt references to any external style or genre. These characteristics enhance the sense of the piece as a purely abstract construction. *Bobby J* is an excellent demonstration of how the 'sculpture' metaphor described by Parkinson relates to Crane's music, as the same essential material (the initial 16-bar chord sequence) is repeated and subjected to examination from multiple auditory 'angles' through the revoicing of the sequence and introduction of the pedal point. Despite these variations, the material undergoes scant development in any traditional sense, with the piece ending in exactly the same place that it started.

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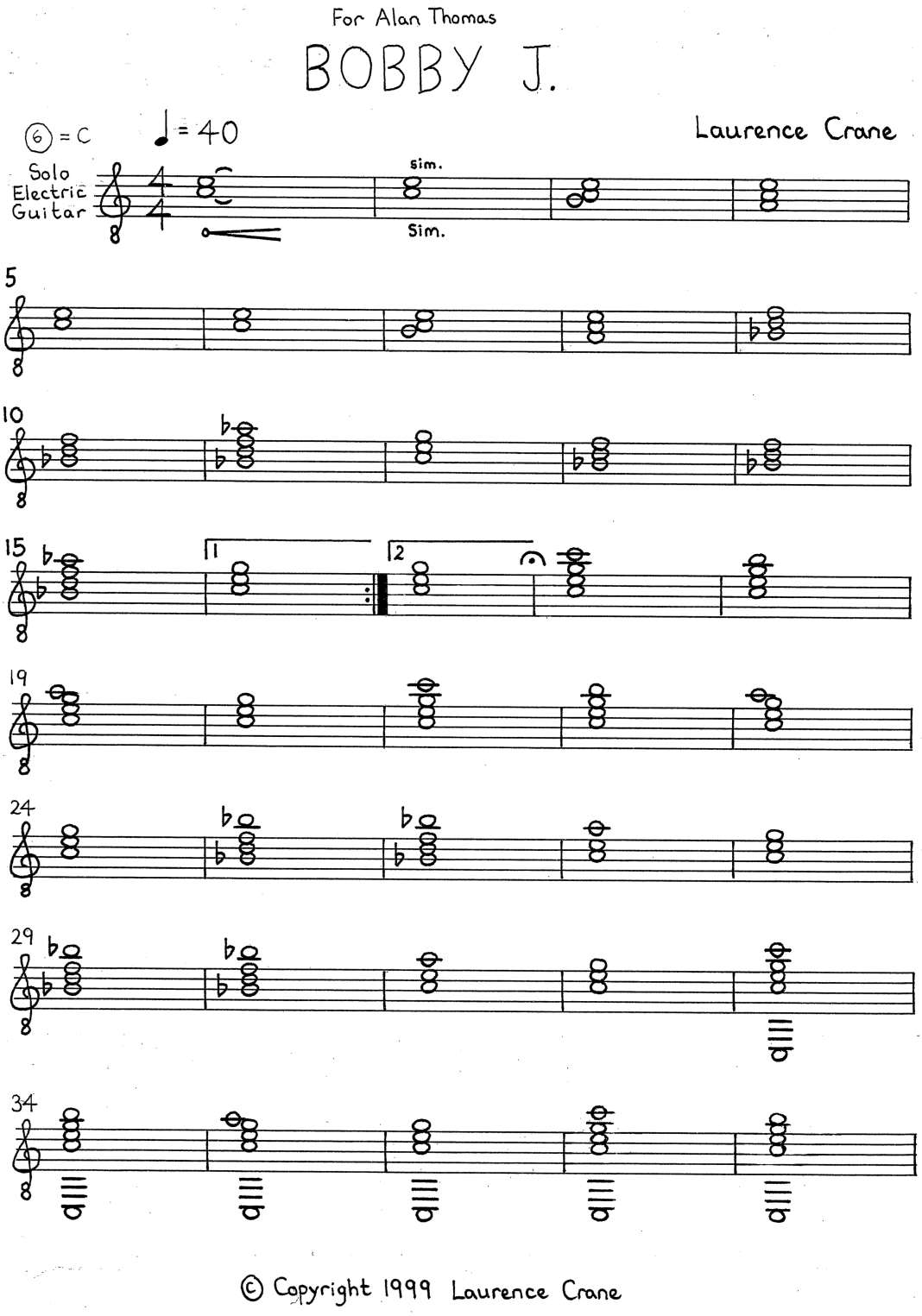
[117] *Bobby J* is named after the American cyclist Bobby Julich and, like *Some Rock Music…*, dedicated to Alan Thomas, guitarist for the ensemble *Apartment House*, with whom Crane has had a long association.



Ex. 4.1: The first page of Laurence Crane's *Bobby J.*

The treatment of the electric guitar in *Bobby J* is also worthy of attention. It is played in a manner that deliberately eschews typical guitar idioms, creating an ambivalent relationship to its cultural associations. The use of the volume pedal significantly alters the timbre of the guitar, smoothing out its usual quick attack, and removing the inharmonic transient frequencies from the start of notes that create the instrument's characteristic 'twang'.[118] In addition, several of the chord voicings used, although perfectly playable, are relatively unidiomatic to the instrument, featuring closely stacked thirds and seconds that require potentially difficult stretches from the fretting hand. Although the novelty of these features should perhaps not be overstated – volume swells are, for example, a fairly common technique in some popular music genres – the combination of volume pedal timbral manipulation with such unusual chord voicings does seem to represent an avoidance of overt references to idiomatic guitar styles (popular or otherwise), which reinforces the 'abstract' nature of the piece.[119] *Bobby J* seems to display what might be called a 'negative' engagement with the electric guitar's cultural associations, characterised by subversion or avoidance of its connections to popular genres.[120] In contrast, *Some Rock Music for Alan Thomas* (like *Vampyr!*) may be characterised as 'positive' engagement with the instrument's popular-cultural image, due to its clear identification of the guitar with rock music idioms. This concept of 'positive' and 'negative' engagement with the guitar will be explored in more detail in chapter 6, in relation to my *Tapping Piece.*

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[118] See J. Schneider, *The Contemporary Guitar*, (Lanham, MD: Rowman & Littlefield, 2015), pp. 46-49.

[119] A comparable approach to guitar writing can be seen in Crane's 2003 piece for electric guitar, cello, percussion and piano, *John White in Berlin*. The final section of the piece (bars 141-201) features similar use of volume pedal swells with unusual chord voicings. The remainder of the piece features extensive use of the ebow (a device that excites the guitar strings electromagnetically to allow infinite sustain), again in conjunction with the volume pedal. The guitar writing is thus contrived so that the audience never hears the attack of the guitarist's pick or fingers on the strings.

[120] Of course, this does not necessarily imply any antipathy towards rock or the electric guitar on Crane's part.

4.3 *Some Rock Music for Alan Thomas* – an analysis

Initially, *Some Rock Music for Alan Thomas* may seem to be in opposition to the compositional aesthetic described above.[121] Its theatrical elements clearly contrast with Crane's purely instrumental works like *Bobby J* and, more significantly, the references to rock made throughout the piece seem at odds with Crane's 'abstract' approach and usual avoidance of stylistic allusion. Even the piece's title makes its referential quality clear, despite Crane's insistence that the names of works do not describe their musical content. However, *Some Rock Music…* is not a completely isolated phenomenon in Crane's output. Theatrical elements have occurred in other works, such as the recent *Gli Anni Prog* (2014) for bass flute and piano, which features the performers reciting an Italian phrase from a book about the band Genesis and ringing a bell placed on the piano frame.[122] The use of pre-recorded media in *Some Rock Music…* could be related to the increasing use of drones and noise elements that Philip Thomas identifies in Crane's works from the years 2001-2007.[123] Thomas also links *Some Rock Music…* to the composer's mid-1980s encounter with the music of Chris Newman, which informed a 'pop duo' that Crane formed with Andrew Renton.[124] In addition, *Some Rock Music…* shares many characteristics in common with Crane's 'abstract' approach to instrumental composition, including techniques of varied repetition, use of silence, avoidance of conventional development of material, and formal juxtaposition. The following analysis will illustrate how Crane constructs an abstract musical form that serves to highlight the juxtaposition between his rock materials and their appearance in a concert music context.

The form of *Some Rock Music…* – outlined in table 4.1 – is constructed around a series of recurring strands of material, variously assigned to either one or both of the performers.[125] The most

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[121] A performance of *Some Rock Music for Alan Thomas* by Thomas and Crane can be seen at <www.youtube.com/watch?v=odRWbMH1MxE> (accessed 9/3/17).

[122] A performance by Crane and Manuel Zurria can be seen at <www.youtube.com/watch?v=VSqoM3zT8ZA> (accessed 9/3/17).

[123] Thomas, 'The Music of Laurence Crane', p. 6.

[124] Ibid, p. 11.

[125] Due to the flexibility of the score, the timings in table 4.1 have been taken from the cited YouTube video of Crane and Alan Thomas performing *Some Rock Music…*. There are several minor deviations from the timings in the score, and the optional repeat in bars 162-177 is not taken.

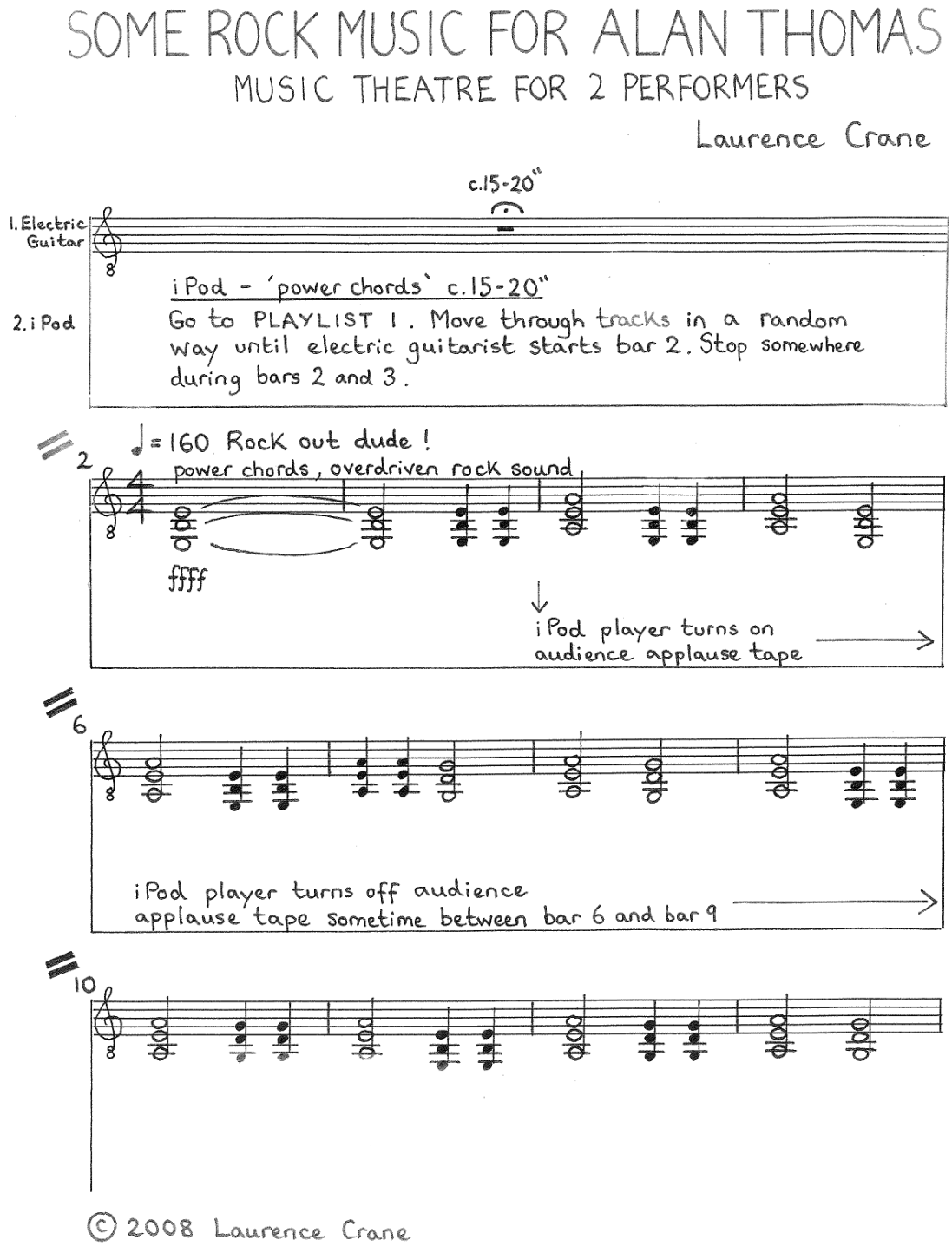
important of these strands (labeled B) is played by the guitarist, and invokes the character of a rock riff through the use of power chords, repetition, and a strong rhythmic pulse. This material is interpolated with a series of musical and theatrical set pieces that often act as interruptions or diversions from the flow of the 'riff'. The most important of these set pieces are the three designated as material A, which feature the second performer randomly cycling through several playlists of recordings on an iPod. The placement of this material at significant moments in the piece – at its beginning, halfway point and end – seems to divide the overall structure into a larger two-part form.

Material	**Description**	**Bars**	**Timing**
A	Power chord samples.	1	0-16"
B	Power chord riff, initially with audience noise. 'Yeah' refrain in bar 44.	2-65	17"-2'03"
C	Tuning/sound check.	66	2'04"-2'18"
B	Power chord riff, beginning with refrain, and introducing half tempo in bar 99.	67-110	2'19"-3'31"
D	Rock quotation 1.	111	3'32"-3'49"
B	Power chord riff, with *ritardando* and feedback (optional – not used in YouTube performance with Alan Thomas). Overlaid with power chord samples. Rock fragments introduced in bar 128.	112-128	3'50"-4'45"
A	Power chord samples and rock fragments.	129	4'46"-5'25"
B	Power chord riff, with 'counting in' and altered refrain. Ends with 'rock out'.	130-190	5'26"-7'19"
D	Rock quotation 2.	191	7'20"-7'53"
A	Power chord samples, rock fragments, audience noise and air guitar, with sustained ebow note.	192	7'54"-9'06"

Table 4.1: The form of *Some Rock Music for Alan Thomas*.

The piece begins with performer two cycling through a playlist of pre-recorded guitar power chords, allowing them to play for a second or two at most before moving on to the next track. These samples serve to unequivocally announce the piece's invocation of rock tropes, but also represent the estrangement of the power chords from their typical rock context and associated semiotic meanings (which were discussed in the previous chapter). By abstracting these chords to short snatches of recorded material, and placing them in an unusual, semi-aleatoric format, Crane starts to create a 'distancing' effect between the material and its presentation. Soon the guitarist enters with a loud, distorted power chord on E, before commencing the riff-like material (which is initially paired with a recording of audience applause, signaling the beginning of an imaginary gig). The initial 'riff' (shown in ex. 4.2) consists entirely of power chords on E, G and A, repeated in a constantly varying pattern. While the harmonic rhythm of two chords per bar remains constant, the order in which chords occur is unpredictable, and their rhythmic presentation likewise alternates irregularly between minims and repeated crotchets.

This material clearly invokes the character of rock riffs, but also differs from the norms of rock in order to highlight its incongruity in a concert music context. Crane's disorientating use of constantly varied iterations of the same idea contrasts strongly with the more consistent and predictable repetition of riffs in rock, and his rhythms, with the chords always falling squarely on the beat, lack the syncopation and rhythmic interest that usually characterise a truly effective riff. In addition, Crane inserts an unexpected silence in bar 22, creating a sudden disruption to the continuity of sound that is rarely heard in popular music. This silence also serves to engage the listener more fully in anticipating how the riff may continue to develop – it raises the possibility of a more substantial change in the nature of the material, meaning that the subsequent return to the basic pattern functions as a somewhat ironic anticlimax. These alterations and deviations seem calculated to direct attention to the juxtaposition between the 'rock' material and its unconventional treatment, which owes more to Crane's established style than to popular genres. Despite its referential quality, the material is in other ways quite typical of Crane's music, being constructed of simple, archetypal (or even banal) harmonies, in a rather bare texture.



Ex. 4.2: The opening bars of *Some Rock Music for Alan Thomas*, showing the 'riff' material.

The ‘riff’ material forms a more or less continuous strand throughout the first half of the piece, with the interpolated set pieces forming ‘interruptions’ or juxtapositions that nonetheless have little impact on the long-term formal trajectory (after each interruption the guitarist simply continues with the riff material from the point where it was previously halted). Variations on the riff sustain interest but, in a manner typical of Crane’s treatment of musical materials, its essential character is never substantially altered or organically ‘developed’ in a conventional sense. For example, in bar 37 a D power chord is introduced, and the guitarist settles into a more consistent pattern of repetition, outlining a leap of a minor seventh from the E power chord. In bar 44 (after another unexpected pause) the second performer joins with a repeated refrain of just one word – ‘yeah’ – set to the pitch D. The absurd banality of this refrain seems to reflect Crane’s commitment to using the most basic musical materials, and perhaps also satirises rock clichés. The D power chord continues to be incorporated into the guitar part after the refrain gives way to a continuation of the earlier more unpredictable riff material in bars 71-86, which now features more frequent use of short, destabilising rests, that have a similar function to the earlier sudden silence in bar 22. Another method used to vary the material (although the interest here actually comes from an unexpected *lack* of variation) can be seen in bars 91-110, where the guitarist gets ‘stuck’ in a repeating loop of G and A power chords (with a temporary halved tempo in bars 99-102 hinting at later developments).

The two short theatrical set pieces that interrupt the riff in this first section of the piece reference various aspects of live rock performance, although their placement within the overall form seems to deliberately ignore their conventional function in rock. This creates a sense of knowing irony in Crane’s attitude towards his allusions, and suggests that the logic behind the piece’s formal structure is essentially abstract, which seems to contradict the material’s referential qualities. The first of these set pieces (material C) occurs in bar 66, when the ‘yeah’ refrain is abruptly cut off, allowing the guitarist to feign tuning their instrument, while the second performer imitates a ‘sound check’, using an onstage microphone. The sense of irony stems from the fact that these actions would usually precede the start of a performance, yet here they occur a full two minutes into the piece, which seems to cast the material that has occurred thus far as a sort of ‘false start’. The second set piece (material D) occurs in bar 111, and is the first of two in which the performers quote classic rock songs of their own choice, perhaps satirising rock’s preoccupation with its own past that is expressed through ‘cover’ versions. However, by condensing this quotation to a short 15-20 second fragment it is reduced to a simulacrum of the original performance that is likely to be heard not as a true ‘cover’, but as a strange intrusion to the musical texture.

After this second interruption the guitarist continues the ‘looping’ version of the riff, alternating between G and A power chords, with a gradual *ritardando* leading to a halved tempo of ♩=80

(hinted at previously in bars 99-102) and increasing augmentation in the rhythmic values of the chords, during which the guitarist can optionally introduce feedback to the signal by holding the guitar in front of its amplifier (see ex. 4.3). This *ritardando* is complemented by the reintroduction of the iPod, cycling randomly through a playlist of G and A power chords, interacting with the guitar in a kind of quasi-aleatoric heterophony. The power chord samples seem to act as a destabilising influence, causing the gradual breakdown of the riff material that draws the first half of the piece to a close. The second performer continues to cycle through recordings with the iPod, but now adds short clips from various classic rock tracks. The samples now represent explicit intertextual references, as the audience is likely to recognise at least some of these recordings and understand their significance as archetypal works of the rock canon.[126] The decontextualisation of the power chord samples is reversed somewhat, although we are only permitted to catch short glimpses of their function in actual rock music, much in the same manner as the quotation in bar 111 reduces a rock classic to a short 'sound bite'.

In bar 130 the second half of the piece begins with a count in ('1, 2, 3, 4, 5, 6') from performer two, introducing a substantially altered reprise of the riff material's first incarnation (the beginning of which can be seen in ex. 4.3), featuring a different pattern of chords and rhythms, and including a playful allusion to Deep Purple's ubiquitous *Smoke on the Water* riff in bars 139-141. The crowd noise sample also reappears in bar 142, perhaps emphasising that the piece is entering a new section. A second count in ('1, 2, 3, 4') announces the return of the 'yeah' refrain in bar 150, which is now varied further by the introduction of new pitches. Beginning in bar 162 some of the 'yeah's are now sung on As and Gs, as well as the original Ds. Longer, sustained 'yeah's on A in bars 178-181 and 186-189 signal the end of the refrain, leading to a guitar flourish that parodies the common rock practice of 'rocking out' on one chord to finish a song.

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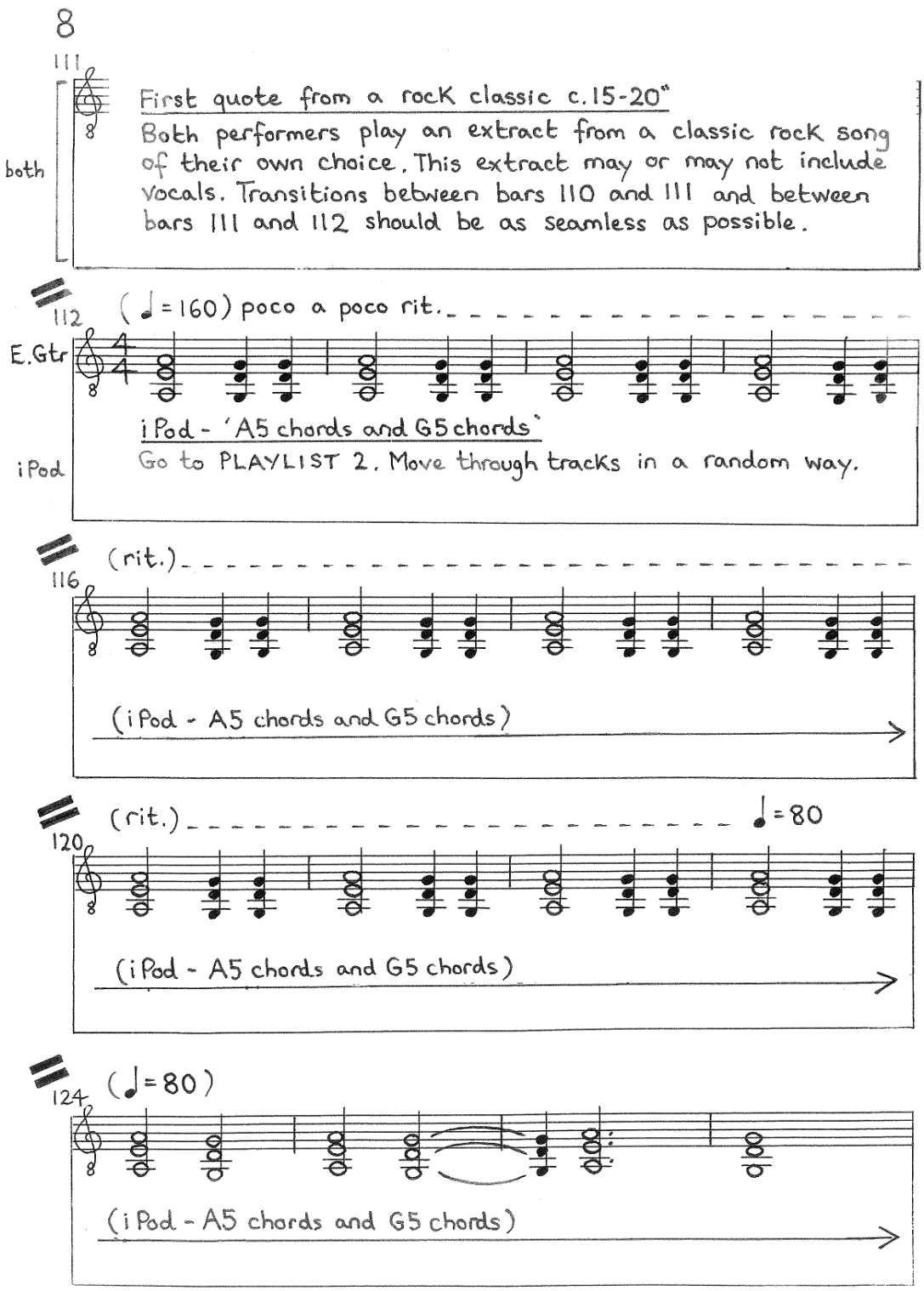
[126] While Turino considers quotations to be *icons* (see chapter 3, footnote 97), Danuta Mirka argues that samples (which she defines as reproducing 'all qualities of the object save its shape and size') are in fact *indices*, as the relation between sample and object is based on their 'contiguity' rather than on resemblance. Although she discusses the concept in the context of 18th-century 'sampling' of styles and genres, her argument also seems applicable to modern techniques of electronic sampling.
D. Mirka, 'Introduction' in Mirka (ed.), *The Oxford Handbook of Topic Theory*, (Oxford: Oxford University Press, 2014), p. 32.



Ex. 4.3: 'Rock quotation 1' and *ritardando* power chord 'loop'.

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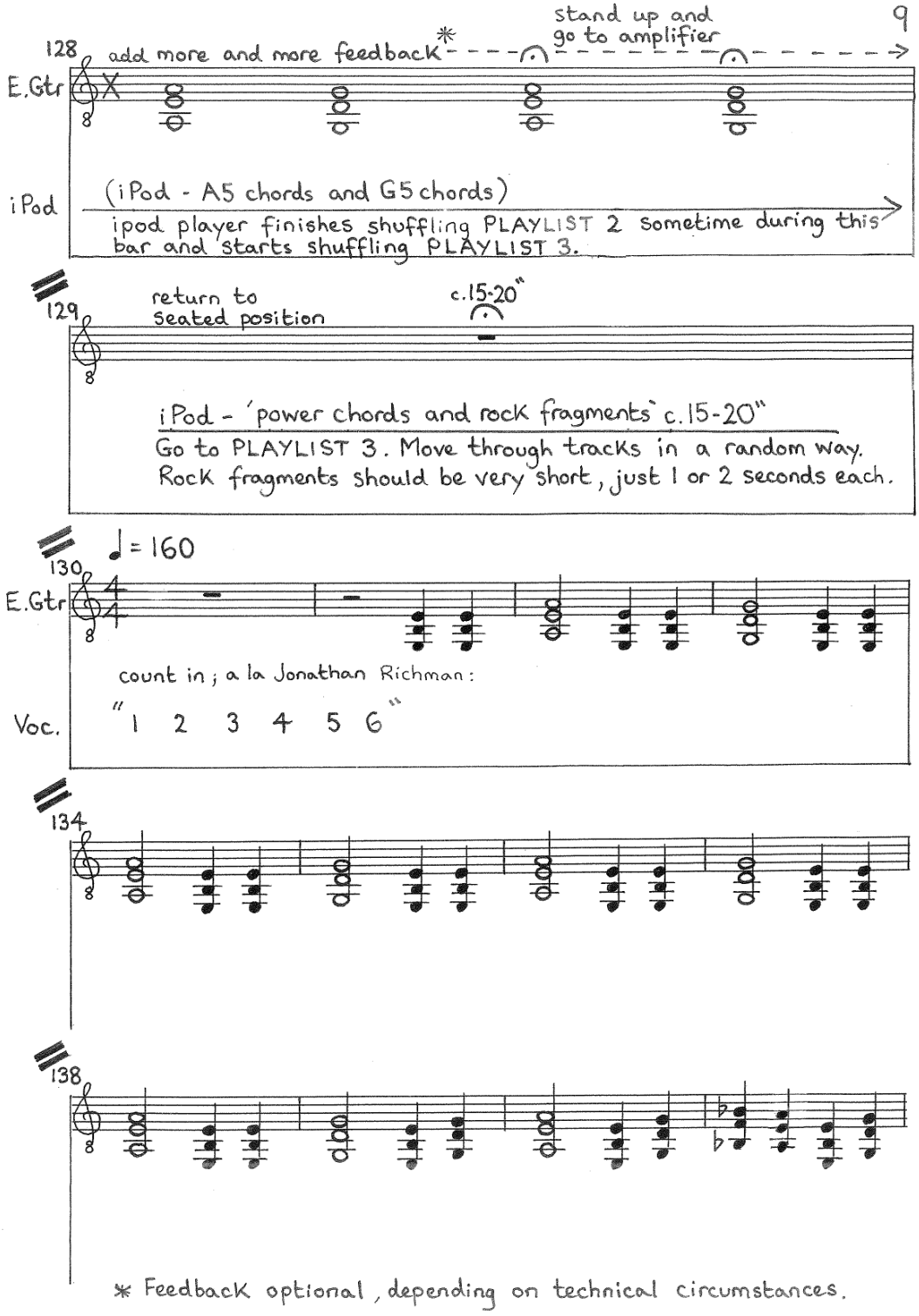
128
add more and more feedback*
stand up and go to amplifier
9
E.Gtr
iPod
(iPod - A5 chords and G5 chords)
ipod player finishes shuffling PLAYLIST 2 sometime during this bar and starts shuffling PLAYLIST 3.
129
return to seated position
c.15-20"
iPod - 'power chords and rock fragments' c.15-20"
Go to PLAYLIST 3. Move through tracks in a random way.
Rock fragments should be very short, just 1 or 2 seconds each.
130
♩= 160
E.Gtr
count in; a la Jonathan Richman:
Voc.
" 1 2 3 4 5 6 "
134
138
* Feedback optional, depending on technical circumstances.

Ex. 4.3 (cont.)

Like the previous theatrical set pieces, this 'rocking out' gesture is also used in an ironic manner that ignores its conventional function in rock, as, despite its coding as an ending gesture, it is in fact immediately followed (with no intervening pause) by an extended coda (bars 191-192). The first part of the coda features the performers quoting a second, different classic rock track to their previous choice, before the reintroduction of the power chord samples and rock song fragments, now paired with the crowd noise recording (apparently signifying the end of the performance). The second performer is instructed to allow each recording to play for slightly longer than before, again presenting a more extensive 'window' on each reference made, although the discontinuous and random nature of playback still creates the 'distancing' and decontextualising effects described above. Against these recordings, the guitarist simply sustains a long note with an ebow (perhaps as an easily controllable way to simulate feedback at lower volume levels). At some point the second performer stands up and performs 'air guitar' to one of the recordings, imitating the actions of enthusiastic rock fans. This action is made somewhat subversive by its placement of the performer in a role that is usually taken by audience members, who honour their 'guitar heroes' by imitating their physical movements.[127] The piece ends with the second performer halting playback of the various audio recordings in synchronisation with the guitarist ending their sustained note.

Despite the somewhat unusual position of *Some Rock Music for Alan Thomas* within Laurence Crane's oeuvre, the form described above is in several ways typical of the style he has developed in his more conventional instrumental music. For example, the treatment of the guitar 'riff' material uses techniques of varied repetition while avoiding traditional 'development' – an approach that is common to many of his pieces. As in *Bobby J*, this approach to material suggests a comparison to Parkinson's 'sculpture' metaphor of viewing the same object from multiple angles. On a macroscopic formal level, the abrupt juxtapositions of material in this piece, with the interpolated set pieces often acting as unexpected interruptions of the musical flow, have much in common with several of Crane's larger-scale works.

Crane describes his instrumental compositions as completely abstract in conception, and despite the referential qualities of the material in *Some Rock Music…* its placement within the form often seems to owe as much to abstract musical considerations as it does to rock conventions. For example, the placement of the 'sound check' material two minutes into the piece seems to deliberately ignore its usual function as a preparation for a performance. Likewise, the inclusion

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[127] See D. Weinsteen, *Heavy Metal: The Music and Its Culture*, (Boulder, CO: Da Capo Press, 2000), p. 59.

of a coda after the guitarist's 'rocking out' power chord flourish contradicts the gesture's semiotic coding as representing the end of a song. Crane plays with and subverts the conventions of the rock concert in other ways, such as his depiction of the performer in the role of 'fan' through the use of air guitar gestures. These techniques serve to create a feeling of ironic distance between the 'rock' material and its new concert music context. The next section of this case study will show how the theatrical aspects of the piece complement this distancing effect, and also subvert the conventions of rock by placing idiomatic materials in unexpected performance contexts.

4.4 'Music theatre' and performance

In my analysis of *Vampyr!*, I discussed how variables in the interpretative decisions made by guitarists can affect audience perceptions of the electric guitar's associations. Factors such as the performers' stances and physical movements or their choices of equipment and clothing can all contribute to the piece's perceived engagement (or lack thereof) with the electric guitar's cultural identity. I also alluded to the impact that the gender identity or perceived ethnicity of a performer may have on a piece's reception. In the case of *Some Rock Music for Alan Thomas* the identity of the performers seems to be a particularly important consideration, given that the piece's title links it specifically with the guitarist Alan Thomas, and that the composer himself is often involved with performing the work. It is certainly significant that both Crane and Thomas are white men, the demographic most associated with rock guitar performance. Although it seems unlikely that Crane chose Thomas as a performer specifically because of his gender or ethnicity (they had a long association before the composition of this piece), one might speculate that their appearance on stage may contribute to highlighting (perhaps ironically) the electric guitar's associations with expressions of white masculinity. On the other hand, if musicians of different genders or ethnicities performed the piece, this could perhaps cause it to be read in more explicitly political terms as a commentary on rock guitar's exclusionary connotations (see the following chapter for a further discussion of the importance of performer identity in determining how a work is understood).

Regardless of who is performing the work, there are many ways in which their interpretation can influence the audience's perception of the piece, which will largely parallel those outlined in my analysis of *Vampyr!*. For example, Alan Thomas's choice of instrument in the YouTube performance I have cited, a Fender Stratocaster (or a similar-looking design), is an archetypal rock guitar, which will highlight the instrument's association with the genre particularly strongly, perhaps with a focus on more traditional 'classic rock' styles. In contrast, for a performance at the 2014 Huddersfield Festival (also with Crane), Norwegian guitarist Anders Førisdal used a more modern seven-string guitar design, which creates a potential association to heavy metal.[128] In addition, the score itself allows for some flexibility in the performers' choices of sampled recordings and rock quotations. Indeed, Thomas and Førisdal seem to an extent to support the genre associations of their chosen instruments in their use of quotations (of course, Crane will likely also have been involved in choosing the songs to be referenced, and sings along with several of them). While Thomas focuses squarely on 1970s hard rock acts with his use of riffs by Thin Lizzy and Lynyrd Skynyrd, Førisdal draws on a wider variety of styles, including the likes of David Bowie and Mott the Hoople, but also expanding to 'heavier' bands such as Black Sabbath, Iron Maiden and Megadeth.[129] In his performance with Førisdal, Crane also introduced further, unnotated theatrical elements to the piece, inflating then 'smashing' a plastic guitar, and parodying Bob Dylan's *Subterranean Homesick Blues* video with cue cards.

However, within these parameters the extra-musical connotations of *Some Rock Music…* seem to be more fixed than those of *Vampyr!*. The piece's explicit intertextual references make its association with rock even clearer than Murail's more general gestural and timbral allusions, and its designation as 'music theatre' implies a greater control over the performers' physical and visual signification. Ironically though, the context in which these references are made seems to be further removed from actual rock performance practice than many performances of *Vampyr!* (such as that of Adrian Verdejo, analysed in chapter 2). The performers are seated and despite the theatrical nature of the piece their actual physical movements are somewhat limited. Excluding the extra flourishes added for the Huddersfield performance, the only moments when the score explicitly calls for overt physical actions are the guitarist's standing up to produce feedback from

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[128] This performance can be seen at <www.youtube.com/watch?v=5g2VkldR72g> (accessed 9/3/17).

[129] None of these bands are in fact particularly known for the use of seven-string guitars, but are nonetheless considered to be stylistic precursors of more recent artists who are associated with extended-range instruments.

the amplifier in bar 128 (which is optional, depending on technical circumstances) and the second performer's 'air guitar' during the coda (which I have already posited as a rather ironic gesture). For most of the piece the performers seem to have as much in common with classical chamber musicians as rock stars. This 'classical' resonance extends to the obvious visual presence of a music stand on stage, from which the performers are clearly reading, in contrast to rock's historically oral tradition (although many rock guitarists now read either standard notation or tablature, it is almost unheard of for any form of score to be used in live performance).[130] Classical music performance practices are in many ways antithetical to a rock aesthetic. Deena Weinsteen notes in her study of heavy metal that:

> 'Metal musicians are at the opposite pole from the members of a string quartet, whose formal and restrained bodies reflect a formal and restrained musical sensibility… The heavy metal performer [in contrast] must translate the powerful, loud, and highly energetic music into his body movements and facial expressions.'[131]

As highlighted in my analysis of *Vampyr!*, the electric guitar's cultural power stems as much from its visual associations as from its musical character. For example, Mavis Bayton's description of the instrument's 'phallic' image demonstrates how the physical gestural language of rock complements the masculinist discourse articulated by its music and lyrics.[132] The theatrical aspects of *Some Rock Music…*, such as the use of 'air guitar', invoke the visual practices of electric guitar performance, but on the whole the piece seems to subvert these associations as much as it reinforces them. By placing the musicians in a seated, chamber-music-like performance context, Crane denies them access to much of the expressive physical content of rock, creating an atmosphere of concentration and discipline more closely associated with concert music performance practice. This juxtaposition serves to further highlight the 'distancing' effect created

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[130] Admittedly most performers of *Vampyr!* also tend to play with the score visible on stage. For more on rock's development from oral to literate tradition, see J. Schwartz, 'Writing Jimi: Rock Guitar Pedagogy as Postmodern Folkloric Practice', *Popular Music*, vol. 12, no. 3 (1993), pp. 281-288.

[131] Weenstein, *Heavy Metal*, p. 63.

[132] M. Bayton, 'Women and the Electric Guitar' in S. Whiteley (ed.), *Sexing the Groove: Popular Music and Gender*, (London: Routledge, 1997), pp. 43-45.

by the contrast between the piece's material and its formal context.[133] As I will suggest below, this distancing creates a potential for the electric guitar's cultural associations to be questioned or challenged, providing a rich subtext to the 'abstract' structures of the piece.

4.5 Conclusions

Some Rock Music for Alan Thomas is a somewhat unusual work within Laurence Crane's oeuvre. While his main body of work is characterised by abstract instrumental compositions, *Some Rock Music…* makes explicit stylistic references to rock guitar, through the use of quotation and 'sampling', through the invocation of idiomatic materials such as power chords, and through theatrical references to visual aspects of rock performance. However, these references are placed within a formal context that often prioritises abstract musical considerations over the material's conventional function in rock in defining structure. In addition, although the piece is sometimes evocative of the physical conventions of rock performance, its performance style owes as much to traditional chamber music as to popular music. By placing rock references in this unexpected context, Crane highlights the electric guitar's genre associations while simultaneously subverting them. The question remains, however, as to what effect this subversion may have on an audience's understanding of *Some Rock Music...*, and whether any 'meaning' can be read into the piece's use of the electric guitar.

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[133] This sense of distancing or irony could perhaps be related to the Peircian semiotic categories of *rhemes* and *dicents*. According to Turino, 'a *rheme* is a sign that is interpreted as representing its object as a qualitative possibility', while a *dicent* is 'a sign which is understood to represent its object in respect to actual existence'. He particularly relates these concepts to performance, arguing that most popular music performances (and, we might add, some performances of concert works, including perhaps some of those performances of *Vampyr!* discussed in chapter 2) are understood to be *dicent-indices* of the emotional or intellectual states of the musicians (i.e. a true representation of their inner attitudes). In contrast, any expressive cues in *Some Rock Music…* are more likely to be interpreted *rhematically*. In other words, although the piece's *iconic* and *indexical* references to rock music create associations with particular musical and social values, the performance is framed in such a way that audiences are unlikely to believe that the performers or composer necessarily share these values.
T. Turino, 'Signs of Imagination, Identity, and Experience: A Peircian Semiotic Theory for Music', *Ethnomusicology*, vol. 43, no. 2 (1999), pp. 229-230, pp. 237-239.

On its surface, *Some Rock Music…* seems to display an attitude of affectionate parody towards rock, and for some audience members this may be the primary level on which the piece is enjoyed. On the other hand, this does seem a somewhat superficial reading, and it is perhaps worth looking for any deeper significance. As noted in previous chapters, the electric guitar has many rich cultural associations, both positive and negative. These include its association with freedom, youth culture and rebellion, but also with the rearticulation of established hegemonic values of white male dominance. By invoking the guitar's role in the masculinist discourse of rock, Laurence Crane also highlights these associations. The use of elements such as power chords, coded as expressions of male potency, and references to rock classics (largely performed by men) identify the instrument clearly with this aesthetic, which is even more strongly highlighted (where it may normally be taken for granted) by the electric guitar's incongruous presence in the 'classical' concert hall. However, Crane's 'distancing' approach to his rock allusions, placing them in an unexpected formal context and drawing on chamber music performance practices, also works to subvert the associations of this material. Although contemporary concert music has its own (currently much-debated) issues with gender representation, its performance practice is much less focused on overt macho display than rock. Through placing rock guitar references in a chamber music context, the instrument's associations with aggressive masculinity may be called into question.

It is unclear, though, whether this piece is intended as any sort of explicit critique of rock. The form of the work, after all (as outlined above), can been described as essentially abstract, and owes much to Crane's typical compositional practices and techniques. Another more conservative reading of the piece could be as a simple reimagining of the potential of familiar materials in an unexpected context, similar to the common interpretation of Crane's work as a repurposing of archetypal objects, with the triads and drones of other works simply replaced by power chords and other rock clichés. However, regardless of whether the composer intended any extra-musical significance to his rock references, they do create a rich subtext that enhances an audience's engagement with the work. In *Some Rock Music…*, the genre references are so strong that they seem to elevate the electric guitar's cultural associations to compositional material in their own right. The instrument's connotations are highlighted and incorporated into an ironic play and juxtaposition of elements, without necessarily being linked to a clear political or social agenda. The piece seems to invite us to consider and question the electric guitar's cultural identity, without necessarily imposing a particular narrative or viewpoint.

4.6 Epilogue – 'New Discipline'

Although the employment of theatricality and genre references in *Some Rock Music for Alan Thomas* is somewhat atypical of Laurence Crane's music, it is representative of certain contemporary trends in New Music towards engagement with both popular culture and other art forms, including particularly those that recognise the physical aspects of performance. These developments have prompted a growing discourse, as composers theorise the significance of these new approaches. Most notably, Jennifer Walshe has coined the term 'New Discipline' to refer to what she calls a 'way of working', rather than a style, in which 'we understand that there are people on the stage, and that these people are/have bodies'.[134] Although Crane is not a composer normally associated with this term, his work is often programmed alongside composers who are, and in *Some Rock Music...* he seems to engage to some extent with similar considerations of physical performance and the role of the body, in order to convey the extra-musical connotations of the work.

In the next chapter I will consider one of my own works, *Construction in Metal*, which engages with similar ideas of physicality in performance. The piece references popular culture through the use of rock idioms and the electric guitar, but also through reference to recent popular video games. Like Crane and composers who work within the New Discipline, I draw on elements that are not usually considered musical in order to engage more effectively with contemporary culture.

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[134] J. Walshe, 'The New Discipline', *MusikTexte*, vol. 149 (2016), <musiktexte.de/WebRoot/Store22/Shops/dc91cfee-4fdc-41fe-82da-0c2b88528c1e/MediaGallery/The_New_Discipline.pdf> (accessed 9/3/17).

Chapter 5: Commentary: *Construction in Metal*

5.1 *Guitar Hero*: authenticity, schizophonia and virtual guitars

In previous chapters, I have investigated how contemporary composers may engage with the electric guitar's gender and (to a lesser extent) racial associations in their work. In this chapter, however, I will engage with a different (albeit related) aspect of the instrument's cultural identity: the role that it has played in discourses of authenticity in popular music. The electric guitar has often been used to challenge existing ideals of musical authenticity – perhaps most famously when Bob Dylan 'went electric' at the 1965 Newport Folk Festival, questioning folk purists' idealised notions of an authentic musical community focused around acoustic instruments. However, Gavin Carfoot writes that:

> 'Despite the aforementioned clash between "folk ideology" and "rock revolution", the electric guitar has usually held the lauded mantle of authenticity in popular music. Indeed, the electric guitar holds a rarefied place in rock criticism as an icon of mass resistance and a symbol of authentic, artistic expression.'[135]

In my piece *Construction in Metal* (2015), I explore notions of rock authenticity through engagement with the music video game series *Guitar Hero*.[136] These games have highlighted the continuing prominence of the electric guitar in popular culture, but have also been perceived as a challenge to the instrument's 'authentic' status. The original *Guitar Hero* allowed gamers to 'play' along with classic rock tracks by pressing buttons on special guitar-shaped plastic controllers in time with a musical backing, triggering sections of a pre-recorded guitar track. Later, the rival *Rock Band* series and subsequent *Guitar Hero* releases also allowed players to perform the roles of

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[135] G. Carfoot, 'Acoustic, Electric and Virtual Noise: The Cultural Identity of the Guitar', *Leonardo Music Journal*, vol. 16 (2006), p. 36.

[136] The first *Guitar Hero* game was developed by Harmonix and published by RedOctane in 2005, with *Guitar Hero II* appearing in 2006. Due to subsequent changes of ownership, from *Guitar Hero III* (2007) onwards the series was developed by Neversoft and published by Activision, while Harmonix developed the rival *Rock Band* series (also from 2007) for MTV Games.

singer and drummer, but it is the guitar controller that has been the focus of most attention.[137] The games have received considerable criticism in the press, often focusing on the 'fakeness' of the interface, in comparison with 'real' guitars.[138]

Several academic studies have also addressed questions of authenticity in relation to *Guitar Hero*. These have ranged from practical consideration of the fidelity of the game's imitation of 'real' guitar playing to more abstract evaluation of the ontology of performance.[139] Although such studies often ultimately come to the conclusion that the games are in some sense a form of legitimate performance, the very fact that these questions are asked points to their status between clearly real or fake musicianship. Derksen and Hick note that, while one can easily think of clear cases of genuine performance ('a musician playing a song perfectly, note for specified note, under ideal circumstances and on the instrument intended by the composer') and of non-performance ('merely hitting "play" on a CD player'), *Guitar Hero* does not easily fit into either category.[140]

Kiri Miller argues that *Guitar Hero*'s controversial status is a consequence of its 'schizophonic' model of musical performance.[141] 'Schizophonia' can be defined as 'the separation of sound from

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[137] For a more detailed description of *Guitar Hero* and *Rock Band* gameplay, see K. Miller, 'Schizophonic Performance: Guitar Hero, Rock Band, and Virtual Virtuosity', *Journal of the Society for American Music*, vol. 3, no. 4 (2009), pp. 396-398.
The bulk of the text of this article also appears in Miller, *Playing Along: Digital games, YouTube, and Virtual Performance*, (Oxford: Oxford University Press, 2012), pp. 85-151. In these footnotes, I refer to the article only for the avoidance of confusion.

[138] For examples of this criticism, see Miller, 'Schizophonic Performance', p. 396, p. 401, pp. 404-406. The drum kit and microphone peripherals allow for closer approximation of the musician's interactions with the equipment they are modeled on, and have thus attracted less criticism.

[139] For the former, see D. Arsenault, 'Guitar Hero: "Not like playing guitar at all"?', *Loading…*, vol. 2, no. 2 (2008), <journals.sfu.ca/loading/index.php/loading/article/viewArticle/32>.
For the latter, see C. Derksen and D. H. Hick, 'Performance Hero', *Contemporary Aesthetics*, vol. 7 (2009), <www.contempaesthetics.org/newvolume/pages/journal.php?volume=27>
(both accessed 9/3/17).

[140] Derksen and Hick, 'Performance Hero'.

[141] Miller, 'Schizophonic Performance', pp. 400-401.

the image and gesture that are associated with the causality of that sound'.[142] While 'authentic' live rock performances emphasise the guitarist's physical effort required to produce the sound that the audience hears, the action required to trigger sounds in *Guitar Hero* (pressing buttons) is clearly not at all linked to the original means by which the pre-recorded music that plays back was created. This disconnect emphasises the artificiality of the gamer's performance, no matter how real the skills required at harder difficulty levels. Miller further argues that *Guitar Hero*'s focus on replicating an identical rendition with each play through of a given track is antithetical to the individualistic, improvisatory model of creativity celebrated in rock guitar.[143] She also highlights links between rock ideals of authenticity and the gender associations of the electric guitar:

> 'For many *Guitar Hero* commentators, though, there seems to be a transparent connection between playing a real guitar and being a real man. A fake guitar implies a false masculinity, and the "star power" tilt creates an offensively fake erection.'[144]

Drawing on this connection between authenticity and gender, Miller compares *Guitar Hero*'s schizophonic dissociation of physical gesture and sound source with the separation of biological sex and performed gender identity enacted in drag performance. For Miller, *Guitar Hero* represents a kind of 'rock drag' that both celebrates and threatens notions of authenticity in rock.[145]

Kevin Dawe also writes about video game guitars, as part of a wider discussion of 'virtual' representations of the instrument.[146] Dawe argues that modern technology closes the gap between 'real' and 'virtual' instruments, asking 'is the controller for the computer games series *Guitar Hero* a guitar or a "guitar"?'[147] Dawe points out that attempts to design more realistic

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[142] K. Collins, *Playing with Sound: A Theory of Interacting with Sound and Music in Video Games*, (Cambridge, MA: MIT Press, 2013), p. 19.

[143] Miller, 'Schizophonic Performance', p. 414.

[144] Ibid, p. 420. 'Star power' refers to a gameplay mechanism, activated by raising the neck of the controller, which rewards accurate performance with bonus points.

[145] Ibid, pp. 419-422.

[146] K. Dawe, *The New Guitarscape in Critical Theory, Cultural Practice and Musical Performance*, (Farnham: Ashgate, 2010), pp. 87-108.

[147] Ibid, pp. 96-97.

versions of the controllers (that look and feel like actual instruments) have blurred the distinction between the 'real' guitar and its imitation considerably.[148] Dawe also considers the possibility that the guitar's cultural significance can be evident when the instrument itself is not physically present:

> 'There are times when the guitar seems to disappear altogether, existing as an idea, its importance not exactly immaterial but its signature and potential influence carried in the sights and sound of other media (from YouTube to advertising images, from the digital samples on home keyboards to video games). But the solid object that is or was the guitar also disappears in 'air guitar'. Or does it?'[149]

The idea that a 'virtual' electric guitar can actually be a stronger representation of the instrument's cultural status than a 'real' guitar was a key influence on *Construction in Metal*. David Roesner argues that *Guitar Hero* shifts focus towards the 'paratexts' of rock performance, especially the clichéd visuals and physical gestures of the genre.[150] As I have argued in previous chapters, these visual paratexts are crucial to constructing the cultural associations of rock music and the electric guitar. As an abstraction of the 'idea' of the guitar, an imitation of its physical form without its functionality, the *Guitar Hero* controller focuses our attention on the cultural baggage that the instrument carries, which we often take for granted in performances involving an actual electric guitar.

5.2 *Construction in Metal*: technological setup and research perspectives

Construction in Metal uses hardware associated with the *Guitar Hero* games in order to investigate the concept of authenticity in musical performance. The piece's technological setup is thus an important factor in defining its musical parameters. An Xbox 360 guitar controller is adapted with computer software to function as a 'schizophonic' instrument, that triggers samples

[148] Ibid, pp. 97-98.

[149] Ibid, p. 93.

[150] D. Roesner, 'The Guitar Hero's Performance', *Contemporary Theatre Review*, vol. 21, no. 3 (2011), pp. 282-283.

of guitar music from classic rock tracks (one for each of the five 'fret' buttons).[151] A sample is triggered by holding down the appropriate fret button while simultaneously clicking the 'strum bar' on the guitar body up or down (see the performance notes in the score for a diagram of the controller). Playback can be stopped prematurely by releasing the fret button, or restarted by clicking the strum bar repeatedly to create a 'stuttering' effect. Additional control over the playback speed of samples (and thus also their pitch) is provided by the controller's whammy bar. This setup mimics the schizophonic model of the *Guitar Hero* games. However, unlike the games, in which each fret button can be linked to different music at different points in a song, throughout *Construction in Metal* each of the five buttons always triggers the same sample. This emphasises the 'fake' quality of the controller by revealing its limited capacity for sound production. In addition, bass guitar and drums can be heard in several of the samples, further highlighting the schizophonic nature of the performance – because these instruments cannot be seen on stage, there is a disjuncture between the visual and audible aspects of the piece.

The controller is paired with an actual electric guitar in a deliberate juxtaposition of 'real' and 'fake' instruments, with both players additionally enacting choreography based on clichéd rock stage movements. Like *Guitar Hero*, this choreography highlights the visual paratexts of rock, and thus its cultural associations, which are elevated from their status as subtext to play a more prominent role in the discourse of the work. The piece is comprised of three main categories of material – 'live' musical material, pre-recorded samples and physical gestures – that seem to be placed in a continuum of more or less accurate representations of rock guitar performance. The live guitar sounds seem likely to be judged most authentic, while the choreography initially seems most inauthentic or 'fake', with the samples falling somewhere between the other two. The musical argument of *Construction in Metal* is carried out largely through restructuring of the implied hierarchy between these elements. This allows me to explore similar questions to those addressed by studies of *Guitar Hero*, regarding the nature of authentic musical performance, and of reality and virtuality, or 'fakeness', in musical instruments. My aim is not to provide definitive answers to these questions, but to practically investigate their implications, both within the context of electric guitar culture and more generally. This ambiguity is reflected in my analysis,

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[151] My experiments with this setup were aided immensely by Colin Munro's Xbox controller driver for Mac OS X, from <www.tattiebogle.net/index.php/ProjectRoot/Xbox360Controller>, and by Brian Westbrook's *Miditar Hero* Max patch, from <miditarhero.wordpress.com> (both accessed 9/3/17). I am also grateful to Mark Knoop, who developed his own SuperCollider patch to interface with the controller for our performances together.

which presents several possible interpretations at key points, and which emphasises the importance of performance in determining how the work is understood.

The remainder of this commentary will describe how I explore ideas of authenticity in *Construction in Metal* and set the work in a wider aesthetic context. Firstly (in section 5.3) I describe some precedents to my work. Secondly (in 5.4 and 5.5) I provide an analysis of the piece, focusing on how it creates relationships between materials that challenge hierarchies of authenticity. In section 5.6 I look at some ideas relating to the importance of individual performances in creating different meanings. Finally (in 5.7), this chapter concludes with a reflection on the wider significance of issues raised by *Construction in Metal*.

5.3 Precedents to my work

Although (as far as I am aware) no other composer has used the specific combination of electric guitar, game controller and choreography that I employ in *Construction in Metal*, I am not the first to reference *Guitar Hero* in a concert music context. In 2011, for example, Shiva Feshareki composed a short concerto for the game peripheral, titled *GH Konzert – The Retro*.[152] The controller is placed as a soloist in a self-consciously 'classical' music context, creating a provocative juxtaposition of 'highbrow' art and modern popular culture. In contrast, for his *Piano Hero* series Stefan Prins translates *Guitar Hero*'s schizophonic mechanism to another instrument with its own cultural baggage, in order to 'update' and 'recontextualise' the piano for the 21st century.[153] In *Piano Hero #1* (2011-12), Prins uses a MIDI keyboard to control pre-recorded audio and video samples of pianist Frederik Croene stroking, scraping and banging the inside of a piano with various objects.[154] For *Piano Hero #2* (2011, rev. 2013/16), the pianist plays both acoustic

[152] See I. Hewitt, 'Guitar Hero rocks the classical world', *The Daily Telegraph*, 15 December 2011, <www.telegraph.co.uk/culture/music/classicalmusic/8956886/Guitar-Hero-rocks-the-classical-world.html> (accessed 9/3/17).

[153] S. Prins, 'Program notes – *Piano Hero*' at *Stefan Prins, Composer and Performer*, <www.stefanprins.be/eng/composesInstrument/comp_2011_01_pianohero.html> (accessed 9/3/17).

[154] A performance of *Piano Hero #1* can be found at <vimeo.com/62792761> (accessed 9/3/17).

piano and the schizophonic MIDI keyboard setup.[155] This juxtaposition of 'real' and 'fake' pianos parallels my own 'duet' of electric guitar and game controller, particularly as visual elements are also incorporated (although in Prins' piece this is in the form of video rather than choreography). In *Piano Hero #3* (2016), Prins continues to employ the combination of acoustic piano, MIDI keyboard and live electronics, albeit without the video element from the previous piece.[156]

Despite any similarities between *Construction in Metal* and the works mentioned above, however, I would suggest that the most important precedent to my work is Laurence Crane's *Some Rock Music for Alan Thomas*. *Construction in Metal* features several elements in common with Crane's piece, including the use of quotation and sampling from classic rock tracks, and the invocation of visual and physical elements of rock guitar performance (although the choreography in my piece is more extensive). Aside from similarities of technical means though, *Construction in Metal* demonstrates deeper affinities with *Some Rock Music…* in its mode of engagement with rock guitar's cultural associations. Both pieces take a critical attitude to their source materials, placing them in an unfamiliar context in order to create an effect of ironic distance.

In my analysis of *Some Rock Music…*, I argued that the piece owes as much to classical chamber music performance conventions as it does to rock stagecraft. Although *Construction in Metal*'s links to concert music practice are weaker, it also demonstrates various characteristics that are antithetical to the rock aesthetic. In contrast to rock's valorisation of spontaneous expression in visual performance (whether real or affected), my choreography is strictly predetermined, rigidly rhythmically coordinated and highly repetitive. As with *Some Rock Music…*, the predetermined nature of the work's content has been emphasised in some performances by the presence of a music stand on stage (although my original intention was for the piece to be memorised). The performers are instructed (except for a few key moments) to replicate gestures as exactly as possible, and to aim for an inexpressive, almost robotic performance style.

The rigid choreography is complemented by repetitive musical material that hints at the rhythmic flow usually characteristic of rock, but rarely achieves it, due to the use of irregular patterns, unexpected silences and other interruptions. These defamiliarising devices are comparable to those used by Crane in his treatment of the guitar 'riff' material in *Some Rock Music*…. Like Crane I

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[155] A performance of *Piano Hero #2* can be found at <vimeo.com/67093231> (accessed 9/3/17). Coincidentally, this piece was composed for Mark Knoop, who played the *Guitar Hero* controller part in *Construction in Metal*'s first performances.

[156] A performance of *Piano Hero #3* can be found at <vimeo.com/183198560> (accessed 9/3/17).

emphasise the incongruity of the manner in which the piece's 'rock' materials are presented in order to create a critical distance between these references and my own authorial voice, which allows me to comment more freely on the cultural associations of the instrument and the nature of rock authenticity. Even the title of the piece – a pun on the name of a 1939 percussion work by John Cage – helps to create a sense of irony in the treatment of popular material, by juxtaposing a reference to the genre of heavy metal with an acknowledgment of the piece's experimental musical heritage.

As noted in the epilogue to the previous chapter, visual and theatrical concerns have become a significant focus in New Music for the concert hall over the past decade. In 2016, Jennifer Walshe stimulated much discussion with her coining of the term 'New Discipline' to describe this trend, articulating her arguments in an artistic manifesto written for the Borealis Festival, and later published in the *MusikTexte* journal (along with articles by various other composers who work in this area).[157] Several of the composers whom Walshe associates with the New Discipline influenced my approach in *Construction in Metal*.[158] These composers often use materials that are not conventionally considered 'musical', yet organise them in a manner that owes much to musical principles of rhythm, counterpoint and form. For example, Jesse Marino's *Rot Blau* (2009) features two performers wearing coloured wigs and gloves (with lights – placed in the performers' mouths – used in the second section) and seated side by side at a table, with their actions comprised mostly of various hand and head movements, facial expressions and occasional vocal noises. However, despite the 'non-musical' nature of the piece's materials, its elements are structured using a score drawing upon traditional musical notation (albeit combined with specially designed symbols), demonstrating that considerations of rhythm are important to the piece's development.[159] In a similar way, for *Construction in Metal* I combined conventional notation of

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[157] English translations of Walshe's editorial and all other articles are available at *MusikTexte*, <musiktexte.de/MusikTexte-149> (accessed 24/7/17).

[158] *Construction in Metal*'s interdisciplinary engagement with theatrical or choreographic concerns and aspects of digital popular culture could perhaps also be related to Marko Ciciliani's concept of 'Music in the Expanded Field', which he outlined in a lecture at the 2016 Darmstadt summer course, available at <voicerepublic.com/talks/wide-is-the-new-deep> (accessed 9/3/17).

[159] A video of *Rot Blau*, with the score included, can be seen at <www.youtube.com/watch?v=bJwcWRUTZcU> (accessed 9/3/17).

rhythms with new symbols to indicate choreographic gestures, in order to incorporate the physical aspects of the performance into its musical structure.

My approach was also influenced by Matthew Shlomowitz's *Letter Pieces* (2007-), in which sonic gestures are integrated with physical movement in a highly rhythmic manner.[160] Shlomowitz allows the performers freedom to create the actual content of the piece, and simply specifies the relationships between different gestures and categories of material.[161] The treatment of each individual gesture is hence rather static or 'sample-like', with focus being directed on changing relationships rather than on internal variation in the material itself. As noted above, relationships between categories of material are also important parameters in *Construction in Metal*. Because my ability to create variation in the material for the *Guitar Hero* controller was very limited, Shlomowitz's approach was a useful model for creating interest in static or repetitive structures through varying these relationships. Shlomowitz describes his use of choreography, which features an emphasis on rhythmic precision and generally avoids expressivity, as 'the automaton approach'.[162] This aspect of his work was also an important influence on the quasi-'robotic' nature of the performance style I call for in *Construction in Metal*.

5.4 Analysis part one – repetition and imitation

The form of *Construction in Metal* is comprised of three main sections (bars 1-118, 119-201, and 232-398), with a transition between sections two and three (bars 202-231). The musical discourse is articulated largely through the restructuring of an implied hierarchy between three main elements – 'live' music, samples and choreography. However, the most dramatic reconfiguring of this hierarchy is reserved for the latter stages of the piece. In the first and second sections the relationships are questioned in subtler ways.

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[160] For example, *Letter Piece no. 8 (Sit Up Stand Down)*, which can be seen at <www.youtube.com/watch?v=1NNINAn7BeM> (accessed 9/3/17).

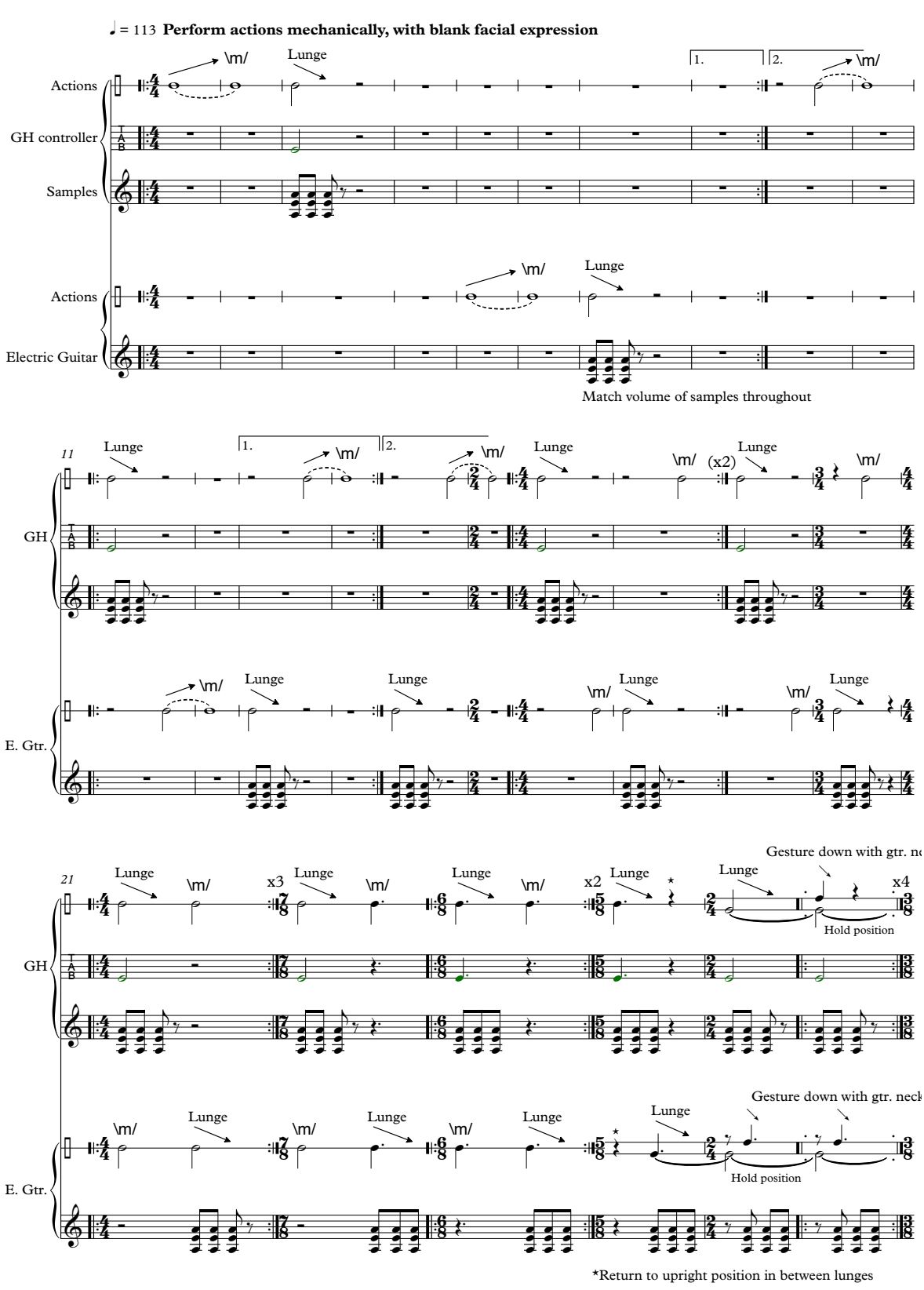
[161] See T. Rutherford-Johnson, '10 for '10: Matthew Shlomowitz' (interview with Shlomowitz) at *Johnson's Rambler*, <johnsonsrambler.wordpress.com/2010/11/21/10-for-10-matthew-shlomowitz/> (accessed 9/3/17).

[162] M. Shlomowitz, 'The Automaton Approach', *MusikTexte*, vol. 149 (2016), <musiktexte.de/WebRoot/Store22/Shops/dc91cfee-4fdc-41fe-82da-0c2b88528c1e/MediaGallery/Shlomowitz.pdf> (accessed 9/3/17).

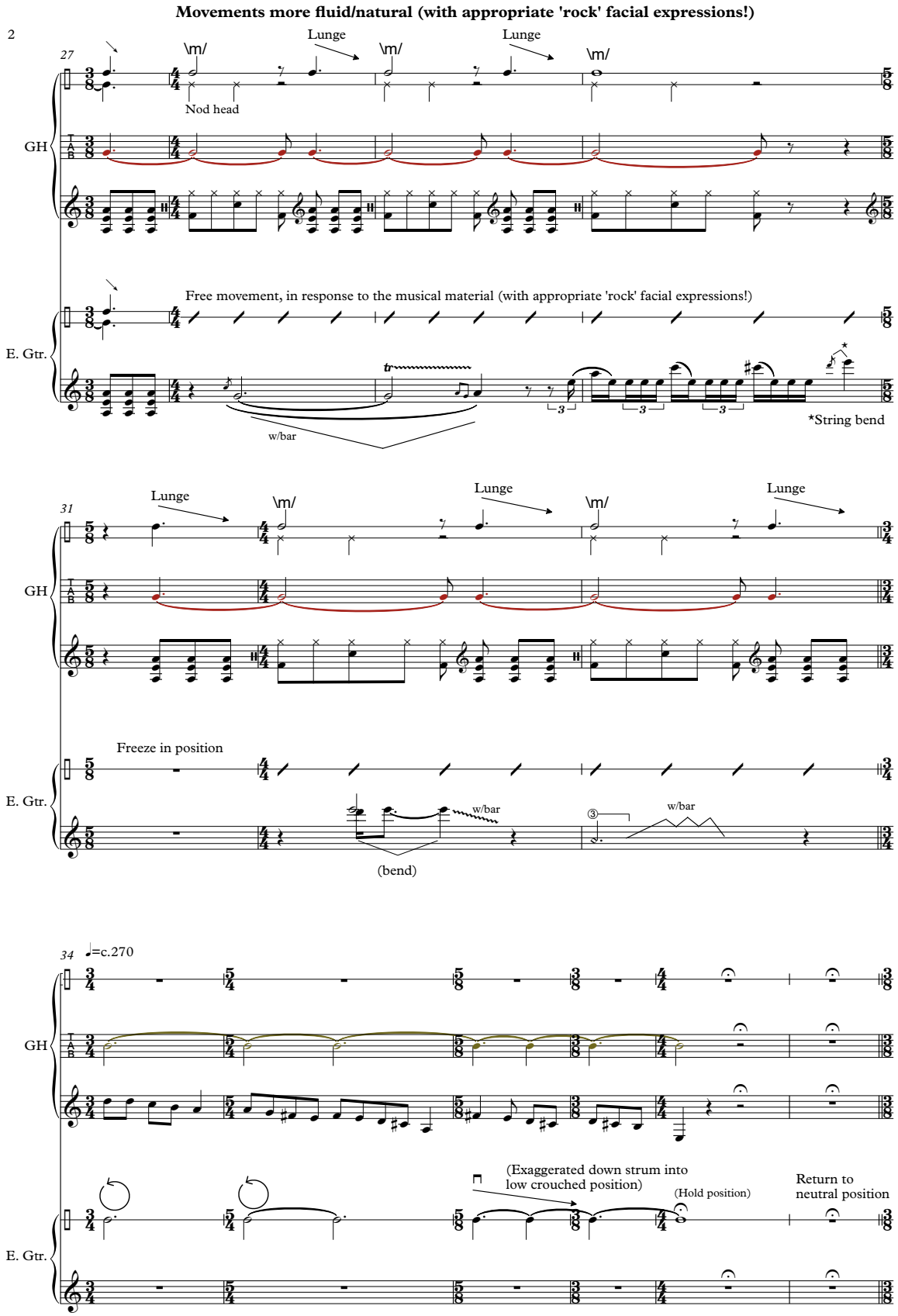
This questioning begins right at the start of the piece (see ex. 5.1a), where the relationship between live music and samples (or 'real' and 'virtual' guitars) is explored through juxtaposition and repetition. The initial musical material for both instruments is based on one short sample of three power chords, taken from the opening of AC/DC's *Highway to Hell*.[163] This is paired with two simple choreographic gestures: the raising of the 'devil horns' hand symbol often displayed at heavy metal concerts, and a lunge forward with the left leg. The piece begins with the *Guitar Hero* performer slowly raising the horns gesture, before lunging forward while triggering the AC/DC sample (bars 1-3). The electric guitarist then imitates these gestures, this time playing the three chords 'for real' (bars 5-7). Conventionally, these 'live' power chords might be considered more authentic than the sampled versions triggered by the controller. However, the assumption that the controller is simply an imitation of the 'real' guitar is called into question, because it is actually the 'real' guitar that imitates the samples rather than vice versa.

This imitative quality is reinforced through extensive repetition throughout the first 26 bars, with the musical and choreographic gestures gradually being brought closer together through rhythmic diminution. Soon, however, the piece seems to assert a more conventional relationship between the live guitar and samples. In bars 24-26 the sampled and 'real' power chords start to overlap rhythmically, and the choreography changes to simpler downward gestures with the guitar necks. In bar 27 the two performers reach rhythmic unison (both in the music and choreography), and the sample triggered changes to a second version of the same three power chords, that also includes the entry of the drums from *Highway to Hell*. This new sample begins to loop in a relatively stable 4/4 pattern (with one minor interruption), and the audience finally hears 'free material' (i.e. not imitation of the samples) played by the electric guitarist, who emulates various tropes of rock guitar virtuosity (particularly the use of the whammy bar). In bars 28-33 (see ex. 5.1b) the two instruments fall into a texture of 'lead guitar' and sampled accompaniment, in which the 'real' guitar seems more authentic due to its ability to produce any combination of notes, in contrast with the more limited samples. The 'real' guitarist's greater range of expression is also emphasised by giving the performer temporary freedom to choose their own choreography, in contrast to the *Guitar Hero* performer, who continues to perform the lunges and horns gestures (albeit now with rock-appropriate facial expressions and head nodding in time with the beat).

[163] From the album of the same name (Atlantic, 1979).



Ex. 5.1a: The opening bars of *Construction in Metal*.



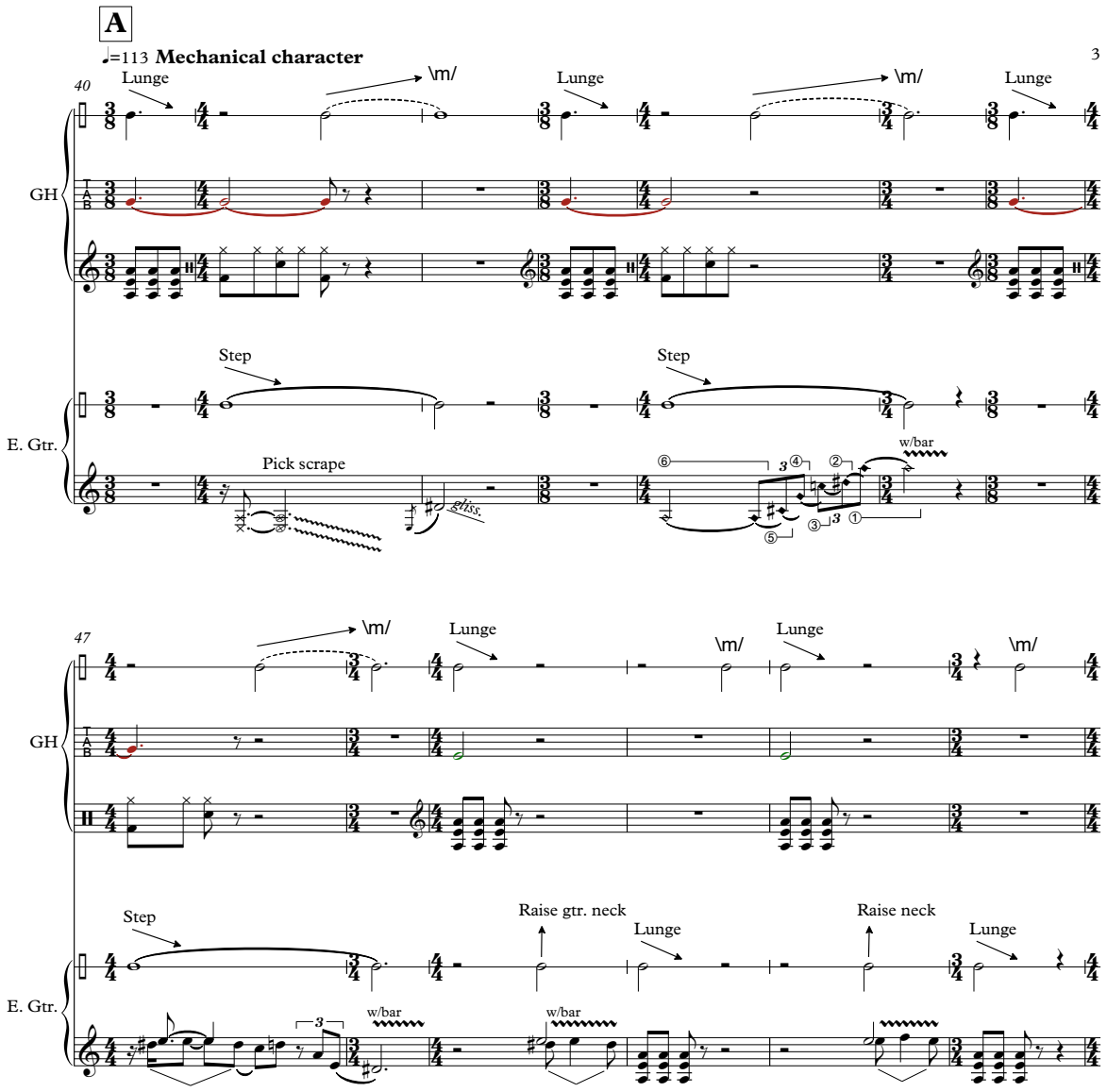
Ex. 5.1b: 'Looping section' with lead guitar/accompaniment texture, followed by 'schizophonic' interruption.

Thus far, the choreography has generally maintained some clear connection to the music, and is therefore somewhat lacking in independence (this includes the free-choice choreography, which must be created 'in response to the musical material'). Gestures typically embody musical parameters, such as the lunges (which give emphasis to the power chords), or the *Guitar Hero* performer's rhythmic head nodding in bars 28-33. The main exception is the horns gesture, which is not linked to a specific sonic reference. In general though, an apparent (if somewhat illusory) causal connection between the performers' physical exertion and the music produced is asserted, and the schizophonic nature of the controller is not overly emphasised. In bars 34-38 (see ex. 5.1b), however, this relationship between sound and visual is markedly transgressed. The musical texture is suddenly interrupted by the third sample, a rhythmically complex single-note run (with the guitar doubled by bass and drums) taken from Rush's *The Spirit of Radio*.[164] This is paired with a jarringly schizophonic 'windmill' gesture made by the electric guitarist, bearing no relation to the actual movements required to produce the notes in the recording. This dramatically calls into question the relationship between the visual and audible elements of the piece, potentially leaving the audience uncertain of the veracity of the performance they are seeing.

Following this interruption (throughout bars 40-105) the focus returns to the AC/DC samples, with the material now becoming more fragmented. Each instance of a sample is separated by several beats of rests, and playback is prematurely cut off at unpredictable moments. The electric guitar continues to play 'free' material, but this also takes on something of a 'sample-like' quality, through the use of short, disconnected gestures (see ex. 5.2). Like Crane's use of inserted silences and unpredictable patterns of repetition in *Some Rock Music for Alan Thomas*, these devices help distance the 'rock' material from its usual musical context, creating the sense of ironic detachment described above that facilitates engagement with the cultural implications of the genre. The choreography, in contrast, re-establishes a clear connection between musical and visual elements through a return to the devil horns and lunge gestures (e.g. bars 41-43 in the *Guitar Hero* part), as well as the introduction of new gestures – such as stepping forward, and raising the guitar neck vertically (e.g. bars 47-49 in the electric guitar part) – that also largely follow the music. Several times (in bars 49-60, 72-85 and 88-105), the guitars return to imitative power chord material from the piece's opening (with varied choreography), which suggests a potential return of the more continuous looping passage from bars 27-33. This return is, however, denied in the first two instances (bars 61-62 and 86-87 – see ex. 5.3), with an interruption by a new sample of feedback from Jimi Hendrix's *Foxy Lady* and an associated gesture of raising the

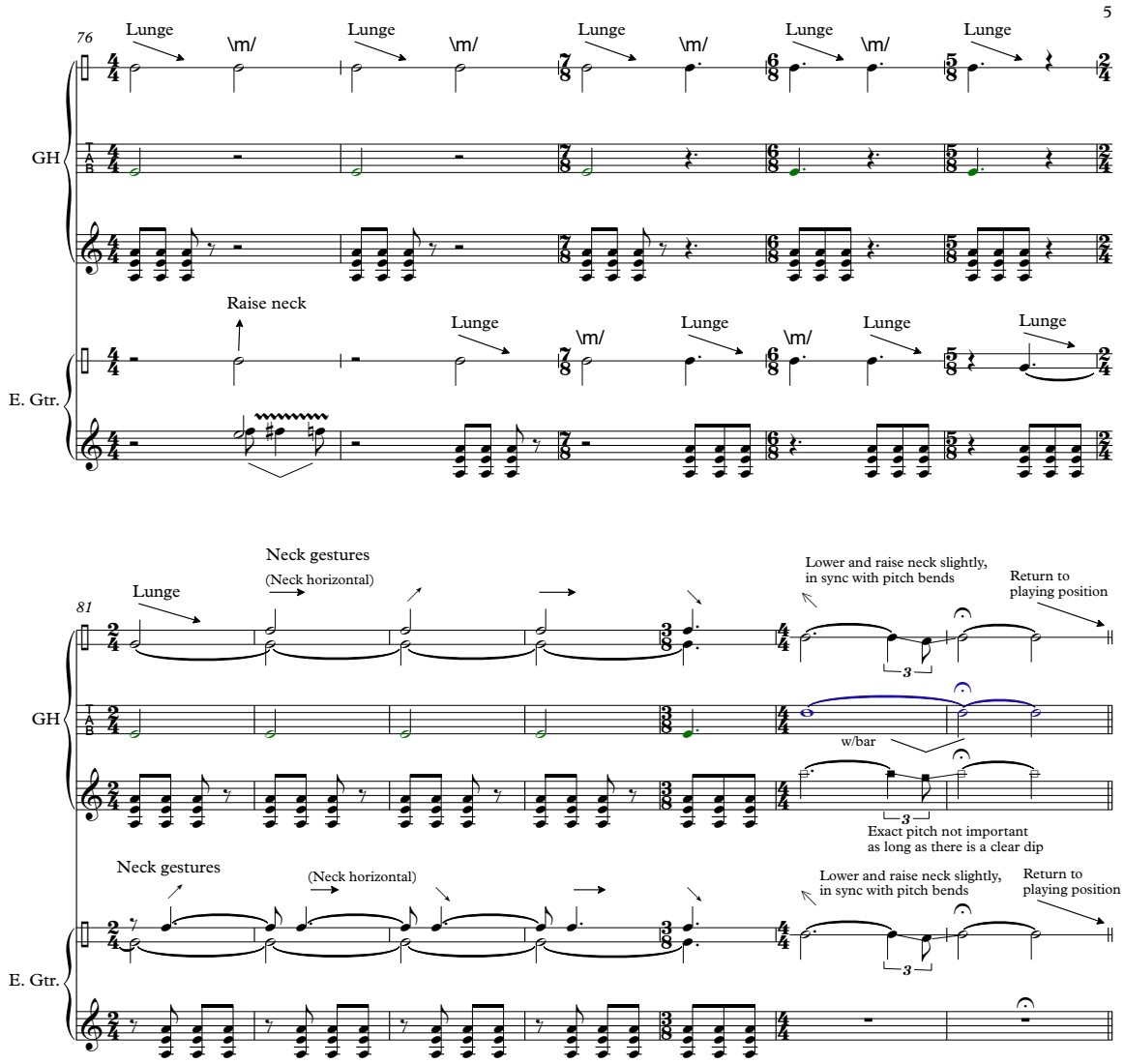
[164] From the album *Permanent Waves*, (Anthem, 1980).

guitar across the body.[165] It is not until after the third instance of the imitative chords that the *Highway to Hell* sample once again settles into a stable looping pattern (in bars 106-112), supporting similar 'lead guitar' material to that in bars 27-33. However, this continuity is again interrupted (in bars 113-117) with the second appearance of the Rush sample and 'windmill' gesture, which draw the first section of *Construction in Metal* to a close.



Ex. 5.2: Use of 'sample-like' fragmented material in the second section of *Construction in Metal*.

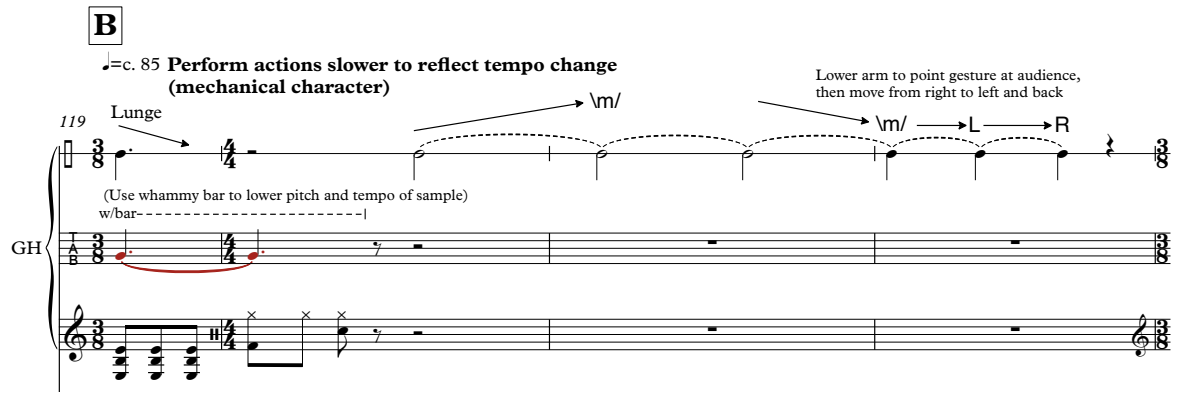
[165] *Foxy Lady* from the album *Are You Experienced*, (Track, 1967).



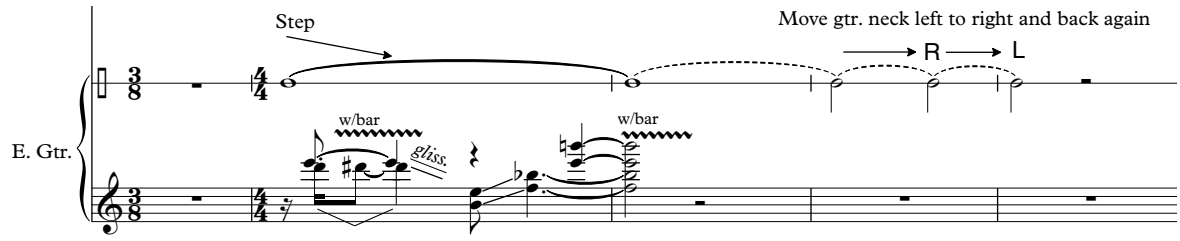
Ex. 5.3: Return to imitative power chords, interrupted by feedback sample.

Throughout the second section of *Construction in Metal* (bars 119-201), the fragmentation of material initiated in the first is continued. The AC/DC samples continue to feature prominently, but the controller's whammy bar is used to lower the pitch by a perfect fourth and reduce the tempo (see ex. 5.4a). The 'sample-like' fragments of electric guitar continue in a similar vein, but are appropriately slowed down and feature increased harmonic dissonance (see ex. 5.4b). The slower tempo and my insertion of progressively longer rests emphasises the sense of discontinuity, which is complemented by further use of the Rush sample and windmill as interruptions, first in bars 128-132 and again in bars 145-149, where the roles of the performers are switched (with the guitarist quoting the sample and the *Guitar Hero* performer enacting the windmill). The increasing prominence of this gesture throughout the first two sections of the

piece foreshadows the choreography's more independent role in the latter stages. By breaking the causal link between visuals and music, the possibility is laid open for a subsequent greater separation of these elements. Aside from these interruptions, the choreography continues to develop the 'devil horns' gesture, by having the *Guitar Hero* performer lower their arm to point it at the audience, and moving it across the front of their body (see ex. 5.4a). The electric guitarist mirrors these gestures with the guitar neck (ex. 5.4b). These movements become gradually slower, and involve increasingly extended moments when the performers 'freeze' in position (e.g. bars 181-182), creating a sense of the material becoming dysfunctional and losing energy. Although the guitars revisit the earlier imitative power chords (in bars 151-159 and 183-190), at this slower tempo they do not have the rhythmic momentum to return to the continuous looping of previous sections. After two failed attempts (which devolve, as before, into feedback), in bars 197-201 the guitars repeat the chords and horns gesture several times, before freezing in position, ready for a transition to the piece's finale.



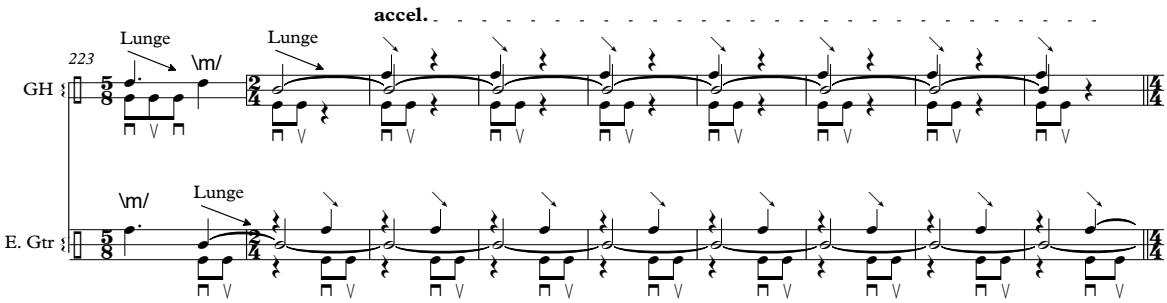
Ex. 5.4a: Use of the whammy bar to lower the playback speed of samples, and modification of the 'devil horns' gesture (bars 119-122).



Ex. 5.4b: Increased dissonance in the electric guitar part, and mirroring of the horns gesture with the guitar neck (bars 134-138).

5.5 Analysis part two – questioning authenticity

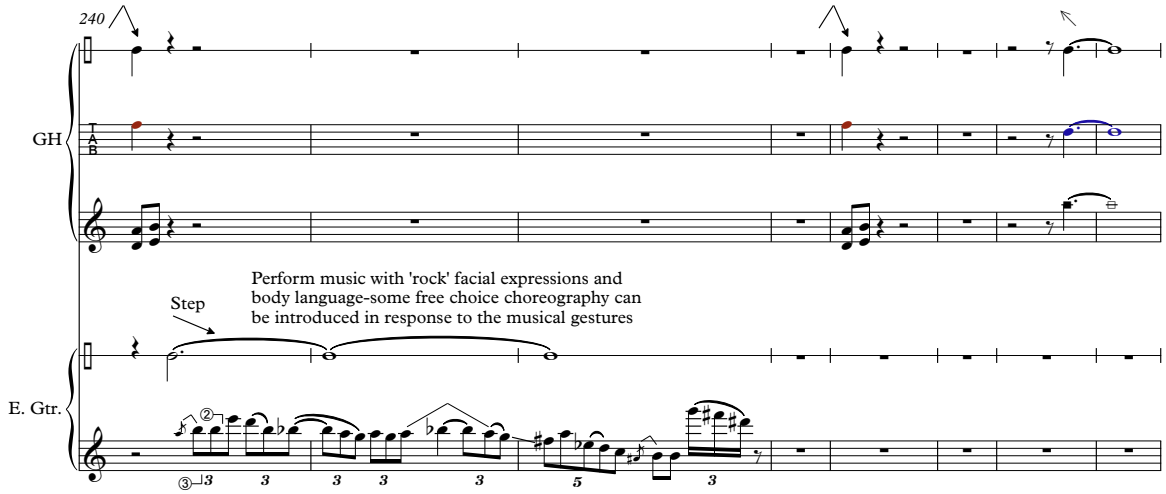
Thus far in the piece (in sections one and two), the hierarchy between the three strands of material has been subtly questioned, through imitation between samples and live guitar, and through schizophonic choreographic gestures. However, the third and final section features the most dramatic changes in this hierarchy. These actually begin to take effect in the transitional passage between sections two and three (bars 202-231). Here the 'dysfunctional' treatment of the material from the previous section is extended even further, as the two guitars are now completely silenced. The performers continue the choreography from the end of section two, with mimed strumming replacing the power chords. The schizophonic split between sound and visuals initiated with the windmill gestures is completed, as the choreography now exists completely independently of the music. However, because by now the audience have become used to the association between musical and visual gestures, it is possible that they will still imagine sounds even when they are not audible. The choreography may actually be able to generate musical material for the audience, if only in their minds. This raises the question of whether the choreography may actually be authentic performance, due to its ability to represent rock music through its visual paratexts, even without the associated sonic elements. Equally though, for some the fact that this choreography still relies on its associations with musical gestures may actually highlight its inauthentic nature as an imitation of 'real' performance.



Ex. 5.5: Transition into the final section via accelerando of mimed strumming.

The transition leads into the faster third section (bars 232-398) with a simple accelerando of the strumming gestures (see ex. 5.5). Initially the final section seems to return to a typical 'lead guitar with accompaniment' paradigm. The *Guitar Hero* controller plays a clearly accompanying role to the electric guitar's free material, which is formed in parody of a typical blues-rock solo (see ex. 5.6). This section introduces a new sample of two ascending power chords, taken from Black

Sabbath's *War Pigs*,[166] which represents a similarly paradigmatic counterpart to the AC/DC samples heard earlier in the piece. This sample is paired with the already familiar Hendrix feedback extract, and both are allocated an associated choreographic gesture. For the *War Pigs* sample it is a small jump in the air, while the feedback retains the gesture of raising the guitar across the body. These are engaged in a 'call-and-response' dialogue (see ex. 5.6) with the guitarist's solo phrases (which are supported again by free-choice choreography). The effect of gradually reducing rhythmic durations between samples is again used, to somewhat comic effect, as the performer is forced to jump up and down more rapidly while the samples become closer together.

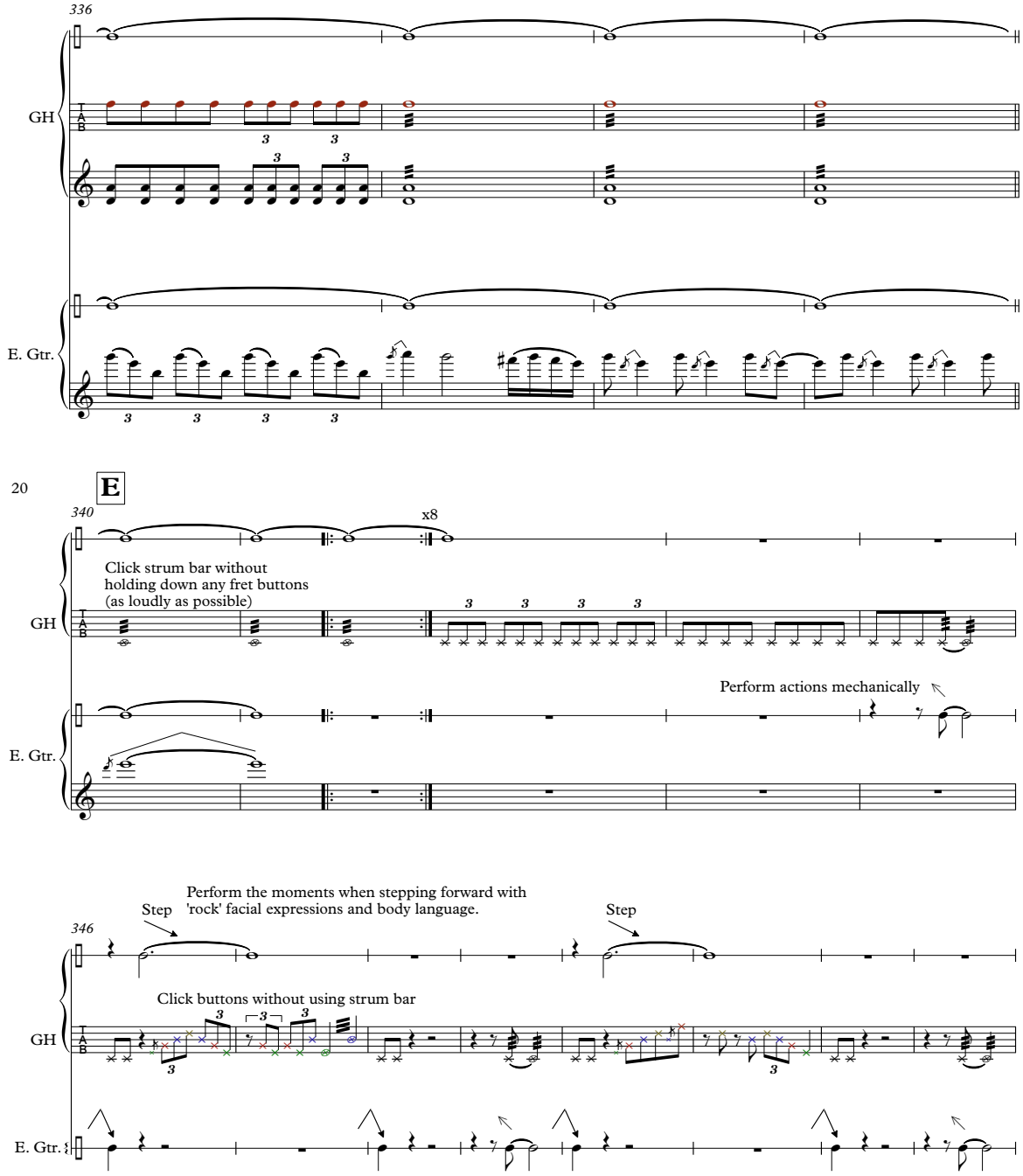


Ex. 5.6: Call and response between controller and electric guitar.

Eventually this device leads to a final dramatic reversal of the roles of the performers. As the *War Pigs* samples are brought rhythmically closer together, the performer uses the 'stuttering' effect achieved by retriggering the sample partway through playback (in bars 309-310, 322-324 and 335-339). This is paired with an intensification of the solo guitar material, achieved through repetition of clichéd motifs. The climactic moment occurs in bar 340, as the *Guitar Hero* performer suddenly removes their finger from the fret button while continuing to rapidly move the strum bar up and down, producing acoustic clicking noises, but no longer triggering samples. What follows (as shown in ex. 5.7) is a section that reverses the roles of 'lead guitar' and accompaniment, as the *Guitar Hero* controller reproduces a version of the electric guitar's solo material (and rhythmic evocations of the samples) that is all performed as clicking noises produced with the fret buttons

[166] From the album *Paranoid*, (Vertigo, 1970).

or the strum bar. The electric guitarist accompanies this by performing the choreography associated with the *War Pigs* and feedback samples, but *not* reproducing them audibly.



Ex. 5.7: Reversal of the roles of electric guitar and *Guitar Hero* controller.

This is the moment where my initial questions regarding authenticity in performance are most clearly addressed. The reversal of roles between the instruments challenges the notion that the game peripheral is less 'real' because of its restricted sound production abilities. While the assumption has been that the electric guitar's ability to play 'free' material makes it more

authentic, this section demonstrates that the controller does have some ability to produce music that is not constrained by the limitations of the sample-triggering mechanism. It is no longer functioning as a 'virtual' or 'schizophonic' instrument, but is producing 'real' live sound. Of course, some audience members may feel that this section merely highlights the controller's reliance on technological mediation, due to the somewhat inelegant nature of the music produced. However, one might also argue that the electric guitar itself is equally reliant on technological artifice, and that the sounds produced by the controller are in a sense *more* 'real', because they do not rely on this artifice.

The silencing of the electric guitar in this section calls into question its authentic status. Some may feel that the choreography reduces the instrument's role to a prop in an 'air guitar'-style imitation that is unlikely to be viewed as an authentic performance. In contrast, others may question whether the physical elements of rock performance could actually be considered authentic in isolation from the music. As in the transition between section two and three, the choreographic gestures are potentially able to evoke the sounds they were associated with earlier in the piece (particularly as the *Guitar Hero* performer uses the strum bar to imitate the rhythm of the Black Sabbath sample each time the guitarist performs its associated choreographic gesture). For some, this may support the notion that the visual elements of the piece have their own agency independently from musical gestures, while for others it may conversely reinforce their reliance on sonic references for their meaning.

Regardless of each individual's viewpoint though, by concluding the piece with this reversal of roles I aim to leave the audience in some doubt as to which of the performances they have seen is truly the most 'authentic', and whether there is such a thing as a 'real' or 'fake' musical instrument. Although multiple interpretations are possible, it is clear that *Construction in Metal* raises questions of authenticity, even if it does not provide definitive answers. Like *Some Rock Music for Alan Thomas*, rock's paratexts are invoked, but I do not impose a specific narrative. Instead, the contested nature of rock authenticity is foregrounded through the musical discourse, to be ironically negotiated throughout the piece.

5.6 The role of the performer

In my analysis of *Some Rock Music for Alan Thomas*, I discussed the role of the piece's theatrical elements in altering audience perceptions of its relationship to rock. In this commentary I have already (in section 5.3) drawn a parallel between the 'classical' resonances of *Some Rock Music…*'s performance practice and *Construction in Metal*'s 'robotic' choreography, both of which distance the pieces from their rock models by contradicting the genre's spontaneous visual aesthetic. I will

now focus on ways in which individual performances can create different perspectives on *Construction in Metal*'s rock references. This focus is particularly salient given the ambiguities of meaning noted above, that allow for multiple interpretations. Although the physical aspects of a performance are quite strictly determined, the performers do have some freedom to highlight or subvert the piece's links to rock culture. For example, in the premiere performance, by Mark Knoop (*Guitar Hero* controller) and myself (electric guitar), both performers wore t-shirts featuring images of famous rock bands, emphasising *Construction in Metal*'s invocation of rock's visual paratexts. In addition, like Alan Thomas I played a Fender Stratocaster, a guitar design strongly associated with rock. In contrast, in a more recent performance with Máté Szigeti taking the *Guitar Hero* role I attempted to create a more ambiguous relationship to rock performance practice. In this realisation of the work both performers instead wore all black clothing (although I still used my Stratocaster), and we attempted to more clearly highlight the role of notation in the piece by making the music stand from which we were reading more prominent on stage, as well as considering the importance of page turns in emphasising our reliance on the score. This performance may have (in a similar manner to Crane's invocation of chamber music practice in *Some Rock Music…*) emphasised more fully the incongruity of using rock materials in a concert music context and intensified the sense of irony in the piece.[167] However, the importance of these interpretative choices has already been covered in detail in previous chapters, so I will now analyse in more depth an aspect of performance that was alluded to in relation to *Some Rock Music…*: the identities of the performers themselves.

Jennifer Walshe, in a statement regarding her 'New Discipline' manifesto, highlights the importance of the performer's body in determining how their actions are received, noting that 'an oboist playing *forte* against a violin playing *piano* is not the same as a male performer singing loudly over a female performer, or a white female performer talking loudly over a performer of colour'.[168] Similarly, in my analysis of *Some Rock Music…* I noted that because the piece was written for specific performers the identity of these performers is potentially quite significant for the audience's understanding of the work. *Construction in Metal* was also composed with particular performers in mind – myself and Mark Knoop – and therefore it would seem relevant to

[167] Videos of both the performances mentioned are included in the portfolio submission with this thesis.

[168] J. Walshe, 'A Body is Not a Piano', *MusikTexte*, vol. 149 (2016), <musiktexte.de/WebRoot/Store22/Shops/dc91cfee-4fdc-41fe-82da-0c2b88528c1e/MediaGallery/MT_Statement_J_Walshe.pdf> (accessed 9/3/17).

consider how Knoop's and my physical appearance on stage may be perceived. Like Thomas and Crane, Knoop and I are both white men (as indeed is Szigeti, although our nationalities are all different), which is likely to highlight the cultural linking of the electric guitar with white masculinity. Although other factors – such as the difference between us in age, or audience members' familiarity with Knoop's work as a pianist – may also affect how we are perceived, this aspect of our identities seems particularly significant because of the way that *Guitar Hero* highlights links between notions of rock authenticity and masculinity (see section 5.1). Although *Construction in Metal* often subverts preconceived ideas surrounding authenticity in guitar performance, it could be argued that it actually reinforces links between authenticity and masculinity, at least in performances by two white male musicians. Although this was not my intention, it does seem to be a limitation in my attempt to reconfigure notions of authenticity.

Although Knoop, Szigeti and I are thus far the only musicians who have played *Construction in Metal*, future realisations by other performers could open up different interpretations. In my analysis of *Some Rock Music…*, I noted that performances by musicians of differing gender identities or ethnic backgrounds could potentially highlight the exclusionary connotations of the electric guitar's 'white male' image more strongly. This would seem to also be the case with *Construction in Metal*. These considerations take on a particular nuance when one takes into account the manner in which *Construction in Metal* establishes, at least initially, a hierarchy between more or less authentic forms of performance, and between 'real' and 'fake' musical instruments. Although these hierarchies are later challenged, they may lead to different interpretations of the piece in relation to the identity of the performer who plays each instrument.

Let us take as an example a hypothetical performance by one male and one female performer (assuming that aside from considerations of gender they are of the same ethnicity, age, etc.). In one scenario, the male performer could play the Xbox controller and the female musician the electric guitar. This performance might be viewed as questioning links between 'authentic' guitar playing and masculinity, as the female musician is the 'real' guitarist, while the male performer is relegated to a plastic imitation. This questioning may then be viewed differently towards the end of the piece, depending on how the reversal of roles between the two instruments is understood (whether as a reinforcement of the peripheral's 'fake' status or as an illustration that it is more authentic than previously thought). On the other hand, if the performers' roles were swapped, with the male musician taking the electric guitar and the female performer the controller, this could be perceived as reinforcing the objectionable myth that only men can play 'real' guitars, although again the final section may suggest a different interpretation. Of course, taking account of other possible variables in the performers' identities – particularly ethnicity – one sees

potential for an even greater variety of configurations and meanings. *Construction in Metal* is therefore not entirely fixed in its interpretation, and the way in which it is understood is likely to depend on the circumstances of any given performance, as well as the personal perspectives of each audience member.

5.7 Conclusions and reflections

Construction in Metal is an exploration of issues of authenticity in rock guitar performance. Conventional notions of what constitutes 'authentic' performance are questioned by juxtaposing a 'real' electric guitar with the 'fake' plastic instrument used in the *Guitar Hero* games, as well as choreography based on rock stage moves. An implicit hierarchy of more or less legitimate forms of performance is thus created, before it is then subverted through restructuring the roles of 'live' music, samples and choreography throughout the piece. The piece does not provide definitive answers to its questions of authenticity, but rather highlights their significance through practical exploration of their implications. Audience members may have varying interpretations, which are likely to be affected by the circumstances of a performance, including the identities of the performers.

The questions raised by this piece are particularly pertinent to the culture of the electric guitar, which has often served as a symbol of authenticity in popular music. Of course, discourses of authenticity are important in many genres (which often do not feature guitars at all), but the electric guitar is a particularly potent symbol. This is perhaps because of its unique combination of primitive and advanced technology. Paul Théberge notes that, unlike a truly electronic instrument like a synthesiser (in which the sound production mechanism functions independently of the user interface, evoking Miller's schizophonia), the electric guitar retains 'a more-or-less direct relationship between player, technique, and instrument',[169] with the player's physical connection to the strings maintaining a link to conventional musicianship, despite the technological artifice of the pickups and amplifier. As popular music increasingly relies on electronic production methods that do not conform to established notions of musical ability, the continuing prominence of the electric guitar has represented a link between traditional methods and the digitalised modern music industry. While *Construction in Metal* specifically investigates notions of authenticity in rock, the questions it raises have a wider relevance in modern culture, as musicians explore the boundaries between 'real' and 'virtual' performance.

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[169] Quoted in S. Waksman, *Instruments of Desire: The Electric Guitar and the Shaping of Musical Experience*, (Cambridge, MA: Harvard University Press, 1999), p. 8.

Section C: 'Negative' Engagement with the Electric Guitar

Chapter 6: Commentary: *Tapping Piece*

6.1 'Negative' engagement with the electric guitar's cultural associations

Thus far in this thesis, I have described three of my works that engage with the electric guitar: *Power Chord Study*, *Power Trio* and *Construction in Metal*. These pieces examine the instrument from a number of perspectives, but they all engage with the guitar's popular-cultural associations in what might be termed a 'positive' manner. All three pieces (similarly to *Vampyr!* and *Some Rock Music for Alan Thomas*) draw to some extent upon popular guitar idioms in order to highlight and comment on their associated values. In contrast the final work I will present, *Tapping Piece*, engages with the electric guitar in what I term a 'negative' manner, characterised by avoidance, subversion or negation of the instrument's associations with popular music. Although, as I outline below, my approach may be linked with certain 'anti-virtuoso' trends in alternative rock guitar, *Tapping Piece* deliberately eschews the techniques and idioms of mainstream rock in order to subvert the genre's valorisation of masculinity and the heroic individual achievement of the lead guitarist. Despite their contrasting approaches, however, both the 'positive' and 'negative' models of engagement acknowledge the large impact that the electric guitar's cultural associations have on the way that it is perceived. The 'negative' approach's subversion of the instrument's associations is effective precisely because it represents a deviation from preconceived notions of what the guitar represents.

I previously referenced the 'negative' model of engagement with the electric guitar in my consideration of Laurence Crane's *Bobby J* (see section 4.2). In *Bobby J* the composer avoids overtly linking his piece to existing guitar idioms by using relatively unusual chord voicings, and alters the instrument's characteristic timbre by using a volume pedal to remove the attack from its envelope. Crane's approach to the guitar matches his personal aesthetic, in which he generally eschews stylistic references to other music (with *Some Rock Music for Alan Thomas* being a clear exception). Another example of a composer who engages the electric guitar's associations in a 'negative' manner is Christian Wolff. Larry Polansky writes that:

> 'Christian's music is rarely (thankfully), "idiomatic" for the guitar. It seldom refers to, depends upon, or even acknowledges guitar techniques, or whatever musical genres a player might have learned or be familiar [with].'[170]

Polansky acknowledges that Wolff does allude to vernacular music in what Polansky calls 'indiscernible quotation', but his writing for the guitar is often characterised by radical avoidance of traditional practice. As in much of Wolff's work, idiosyncratic use of notation is a key part of this strategy. For example, in the solo electric guitar piece *Another Possibility* (2004) Wolff often notates chords and contrapuntal passages that are impossible to play using conventional techniques, forcing the guitarist to devise novel solutions such as picking hand fretting techniques.[171] The final section of the piece features an unusual tablature-like notation, in which each note is allocated to a particular string but exact pitches are not specified.[172] This encourages the performer into a gestural style of playing that precludes engagement with any conventional concept of guitar technique or virtuosity and requires the development of new attitudes and approaches.

Of course, approaches to the electric guitar that subvert traditional playing techniques are not unique to concert music. Punk and alternative rock guitarists' rejection of virtuosity has often been read as a response to the elevation of the 'guitar hero' in 1970s and 1980s rock, and an attempt to return the genre to more egalitarian values. Joshua Hochman describes various idiosyncratic techniques developed by the likes of Sonic Youth, Nirvana and St Vincent as 'disorienting guitar practices', drawing on queer theory to link these practices to a rejection of both established concepts of virtuosity and of the masculinist, heteronormative discourses they are commonly understood to represent.[173] The most radical guitar techniques, however, can be found in the work of improvisers such as Fred Frith or Keith Rowe. These guitarists are best known

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[170] L. Polansky, 'Six strings, ten fingers and the heterophonic ideal: Some thoughts on Christian Wolff's recent guitar music' (2014) at *Dartmouth College*, <aum.dartmouth.edu/~larry/published_articles/Polansky.Wolff.Six_Strings.pre.pub.draft.pdf> (accessed 9/3/17), p. 2.

[171] Ibid, pp. 3-4.

[172] Ibid, pp. 13-20.

[173] J. Hochman, 'Disorienting guitar practice: an alternative archive', *Critical Studies in Media Communication*, vol. 33, no. 1 (2016), pp. 95-108.

for their development of 'prepared guitar', which involves using a variety of everyday objects to coax previously unimagined sounds out of the instrument. The guitar is commonly laid flat on a table (or in Frith's case, in the guitarist's lap), subverting the 'phallic' connotations of rock guitar's performance stance. Rowe, taking inspiration from Jackson Pollock, has explicitly equated this new performing position with a rejection of guitar tradition:

> 'Pollock, for example, laid the canvas on the floor which broke the link with European easel painting in one swoop… If I did the same thing with the guitar, if I laid it down, I would achieve a whole number of things which were my objective at the time: a break with the past, the possibility of developing a completely new language.'[174]

Techniques from avant-garde improvisation have also entered into notated concert music, in pieces such as Marko Ciciliani's *Black Horizon* (2009), for two tabletop guitars played by four percussionists, which features many techniques familiar from the work of Frith, Rowe, et al.[175]

In *Tapping Piece* (2016), for four electric guitars, I take a similar approach to the guitarists and composers described above, developing an unconventional way of playing the guitar in order to subvert its associations. Like many improvisers, I remove the instrument from its usual playing position, laying it flat on a table, and reimagine it as a percussion instrument. However, rather than developing an extensive lexicon of percussive techniques (as an improviser might), I focus largely on one extremely rudimentary method of playing. The performers play their guitars by striking the bodies of the instruments with drumsticks, creating a 'droning' effect that subverts conventional notions of both guitar technique and timbre. The primitivist nature of this technique owes as much to the 'punk' attitude of Sonic Youth (who are indeed known for their use of drumsticks in conjunction with the guitar as noise-making devices) as it does to the more sophisticated approach of Fred Frith.

Although *Tapping Piece* contrasts with the other pieces in my portfolio due to its 'negative' engagement with the electric guitar, it draws on several technical and aesthetic ideas in common with the previous three works. Like *Power Chord Study* and *Power Trio*, the piece's pitch structures are informed by spectralist principles, and the work also features consideration of

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[174] Quoted in J. Schneider, *The Contemporary Guitar*, (Lanham, MD: Rowman & Littlefield, 2015), p. 232.

[175] A performance of *Black Horizon* can be found at <www.youtube.com/watch?v=YQkJ0JFFNvQ> (accessed 9/3/17).

physical aspects of performance, like *Construction in Metal*. The remainder of this commentary will explain these parallels, while further demonstrating how *Tapping Piece* represents a 'negative' approach to the electric guitar. The text is divided into three sections with a final conclusion. Firstly (in section 6.2) I will describe the technical setup for *Tapping Piece*. Secondly (in 6.3) I will link its spatial organisation to comparisons with recent sound art installations. In the third section (6.4) I will provide an analysis of the piece's structure, and finally in the conclusion (section 6.5) I will examine how it links in with the wider themes of my thesis.

6.2 Technical setup

Tapping Piece's setup presents the audience with a different visual perspective on the electric guitar and makes possible new timbres. Each performer is given an electric guitar (laid flat on a table), an amplifier, a volume pedal and a pair of drumsticks. The performers play by striking the wood of the guitars' bodies with the drumsticks in a constant semiquaver rhythm, and at an unchanging intensity (in order to produce a *mezzo piano* dynamic unamplified). This causes the strings to vibrate without clearly defined individual attacks, resulting in a 'drone' sound from the amplifier that combines with the percussive acoustic sound of the drumsticks.

The guitars are each tuned to a different set of partials from the harmonic series of a low fundamental at 33Hz (approximately C_1), ranging from the 2^{nd} to the 15^{th} partial (the missing fundamental should be heard as a difference tone if the other partials are tuned accurately). This tuning system is outlined in table 6.1. Guitar 4 is the lowest tuned, using only partials 2 and 3, with their octave repetitions (i.e. the 4^{th}, 6^{th} and 8^{th} partials). Guitars 3, 2 and 1 then progressively add higher partials and remove lower ones. Guitar 1 (the highest tuned) features all the odd numbered partials between 5 and 15 (guitars 1 and 2 use capos to achieve higher pitches). This results in a series of increasingly dissonant chords that, however, fuse into one unified timbre when all four guitars are played simultaneously.

The pedals are used to control the relative amplified volumes of each guitar (although they do not, of course, affect the acoustic volume of the drumsticks hitting the guitars), resulting in constant variation of the combined timbre. For much of the piece the volume pedals are used to create a 'sweep' of frequencies, moving through the spectrum from low to high (or vice versa) in a manner somewhat analogous to the functioning of a wah-wah pedal (although the band of frequencies that sound at any given time is somewhat wider than in a typical wah-wah sonority).[176] My use of this effect was indeed, as discussed in the conclusion to chapter 3, inspired

[176] See Schneider, *The Contemporary Guitar*, p. 53.

by the idea of representing guitar effect timbres using spectralist techniques, but (unlike the pieces in that chapter) the reference may not be discernible to the audience.

Guitar	String	Partial no.	Frequency (Hz)
1 (capo 12th fret)	1	15	495
	2	13	429
	3	11	363
	4	9	297
	5	7	231
	6	5	165
2 (capo 3rd fret)	1	11	363
	2	9	297
	3	7	231
	4	5	165
	5	4	132
	6	3	99
3	1	10	330
	2	7	231
	3	6	198
	4	5	165
	5	3	99
	6	2	66
4	1	8	264
	2	8	264
	3	6	198
	4	4	132
	5	3	99
	6	2	66

Table 6.1: Guitar tunings in *Tapping Piece*.

There are some notable precedents to my approach to the guitar in *Tapping Piece*. The guitar's inherent flexibility of tuning has made it an attractive instrument for composers interested in microtonal, just-intonated or spectral harmonies. Although there have been several attempts to modify the fretboard for tuning systems other than equal temperament, such as Harry Partch's 'Adapted Guitars' or the Lou Harrison just intonation resonator guitar,[177] composers have been equally ingenious in adapting the standard guitar for their own purposes. James Tenney's *Septet* (1981) for six electric guitars and electric bass, which was previously mentioned in chapter three in relation to its rhythmic structure, was particularly influential on my tuning system in *Tapping Piece*. Some of the guitarists in the *Septet* are required to detune their higher strings by several cents, allowing them (by fretting certain notes on the retuned strings) to achieve more accurate intonation of the piece's two harmonic spectra (derived from A and E fundamentals). Although each player is only capable of accurately performing a handful of pitches, Tenney's tuning system gives him access to the first 12 partials of the A spectrum, and the first 8 of the E spectrum.[178] In *Tapping Piece* the playing technique does not allow for the strings to be fretted (except for the use of capos), meaning that more extreme retuning is required to achieve the desired pitches, but both pieces share a common approach of dividing the intervals of a harmonic series between differently tuned instruments in a guitar ensemble.

My setup also has something in common with Glenn Branca's approach in works such as his Symphony no. 3 '*Gloria*' (1983). In this piece, Branca began to move away from the conventional (although unusually tuned) electric guitars he had employed in earlier works towards the use of custom-made instruments, using guitar strings and pickups attached to planks of wood. These instruments were played, in a manner not unlike *Tapping Piece*, by striking the strings (rather than the instrument body) with mallets. In the third symphony, the instruments are individually tuned to the first 127 pitches of a harmonic series, allowing the composer to create extremely complex

[177] For information on Partch's guitars, see H. Partch, *Genesis of a Music*, (New York, NY: Da Capo Press, 1979), pp. 203-207. For information on the Lou Harrison resonator guitar, see G. Fiore, *The Just Intonation Guitar Works of Lou Harrison, James Tenney, and Larry Polansky*, (PhD thesis: University of California Santa Cruz, 2013), pp. 21-39. For a wider survey of microtonal guitar designs and music, see Schneider, *The Contemporary Guitar*, pp. 141-210.

[178] See Fiore, *The Just Intonation Guitar Works of Lou Harrison…*, p. 73.

chords.[179] While Branca's larger ensemble allowed him to experiment with more sophisticated pitch structures than the quartet used in *Tapping Piece*, and his use of custom instruments may preclude engagement with the electric guitar's visual associations, his symphony nonetheless represents an important precedent to my approach to the guitar, both in terms of tuning system and playing technique.

6.3 The electric guitar as 'installation'

The first performance of *Tapping Piece*, in March 2016, took place at the John Hansard Gallery in Southampton. I was inspired by this performance space to consider more carefully the spatial distribution of the performers, in order to make the piece 'site specific'. The guitars were placed in the four corners of the room, with the audience in the middle, observing the performance from much the same perspective that they would view the art works in the gallery. This enhanced the audience's perception of the piece's sonic elements, creating a 'quadraphonic' field that allowed the role of each guitar to be more clearly differentiated, but also produced a greater awareness of the visual aspects of the performance, allowing the piece to take on some of the nature of an art installation.[180]

The electric guitar's cultural status has led several artists to develop installations exploiting its sonic and visual resonances. The most celebrated of these is perhaps Christian Marclay's *Guitar Drag* video installation (2000), which depicts an amplified electric guitar being dragged across a Texas landscape by a pickup truck, paralleling the racist lynching of James Byrd Jr.[181] However,

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[179] See B. Bridges, 'Glenn Branca Interview' at *Brian Bridges – Composer, Academic, Electronic Musician & Sound Artist*, <brianbridges.net/wp-content/uploads/2013/05/Glenn-Branca-interview-MPhil-edited.pdf>, pp. 1-2; and B. Olewnick, 'Glenn Branca: Symphony No. 3 "Gloria"' at *All Music*, <www.allmusic.com/album/glenn-branca-symphony-no-3-gloria-mw0000095918> (both accessed 9/3/17).

[180] The performance notes in the score detail an alternative 'stereo' spatial distribution for the performers, although I consider the 'quadraphonic' arrangement to be preferable. However, NB that the recording supplied with my portfolio is a multi-tracked demonstration version, recorded in stereo.

[181] For an in-depth discussion of *Guitar Drag's* cultural resonances, see C. Kase, '"This Guitar Has Seconds to Live": *Guitar Drag*'s Archaeology of Indeterminacy and Violence', *Discourse*, vol. 30, no. 3 (2008), pp. 419-442.

more relevant to *Tapping Piece* are installations that bring the guitar physically into the gallery space. These include recent works such as Céleste Boursier-Mougenot's *From Here to Ear* (1999-), in which a flock of birds are allowed to 'play' electric guitars by freely flying around the exhibition space and using the strings as perches,[182] and Stewart Hurwood's *Lou Reed Drones* (2013-), which uses Reed's guitars and amplifiers to create feedback soundscapes reminiscent of his 1975 album *Metal Machine Music*.[183] Here, though, I will focus on Agostino Di Scipio's work *Modes of Interference no. 3* (2007), as the composer and sound artist has recently published an article discussing his approach to the guitar in *Contemporary Music Review*.[184]

In *Modes of Interference no. 3*, like *Lou Reed Drones*, Di Scipio uses feedback as the primary means for sound production, but he takes a more critical attitude to the effect's associations with rock music. In this installation, three or more guitars and amplifiers are placed around the space and induced to produce feedback in response to the ambient noise of the room and the sounds of the other guitar/amplifier units. The interaction between units is mediated by computer software that applies signal processing to ensure continual variation.[185] Like *Tapping Piece* the spatial arrangement of the guitars is important, as audience members are permitted to move freely between them (although some versions have by necessity featured a more traditional concert-like arrangement, with the guitars on a stage). Di Scipio challenges the association of feedback with loud rock music by stressing that the volume should not be set too high, as this could cause the system of guitars and amplifiers to settle into a constant state. For Di Scipio, rock's emphasis on the power of amplified guitars is 'literally the empowerment of a relationship of domination',[186]

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[182] See Anon., '70 birds play guitar in new art exhibit at Montreal Museum of Fine Arts', *CBC News Montreal*, 23 November 2015, <www.cbc.ca/news/canada/montreal/birds-guitars-exhibit-montreal-fine-arts-1.3331646> (accessed 9/3/17).

[183] See Anon., 'Interview: Stewart Hurwood on Lou Reed Drones' at *Brighton Festival*, <brightonfestival.org/news/interview_stewart_hurwood_on_lou_reed_drones/> (accessed 9/3/17).

[184] A. Di Scipio, 'A Constructivist Gesture of Deconstruction. Sound as a Cognitive Medium', *Contemporary Music Review*, vol. 33, no. 1 (2014), pp. 87-102.

[185] Ibid, pp. 90-95.

[186] Ibid, p. 98.

so his use of amplification and feedback to instead create a system in a state of fragility represents a challenge to this view of the technology:

> 'The concept of amplification is thus cleared of any sense of power, and is rather offered to the listener as a necessary matching or tuning of forces; as a balancing factor in the mediations between different agencies.'[187]

Di Scipio also reflects on the 'phallic' visual resonances of the electric guitar. While he believes that these connotations are still (perhaps ironically) present in his work due to the upright positioning of the guitars, by removing the physical effort and agency of the guitarist Di Scipio argues that the association of the instrument with an 'image of individual achievement and mastery' is subverted.[188] His approach therefore seems to have much in common with my concept of 'negative' engagement with the electric guitar, which is often characterised by such attempts to subvert established ideals of guitar technique or virtuosity.

Tapping Piece shares a number of points of connection with *Modes of Interference no. 3*, although there are significant differences between them. While Di Scipio deliberately minimises human intervention, my piece conversely highlights the physical and mental effort of the performers required to play the piece. However, these devices are in one sense used to achieve similar ends, in that both represent a deliberate eschewal of conventional guitar technique that might link the works to established musical idioms. In addition, Di Scipio's contention that his work challenges the individualism of rock guitar playing also resonates with my piece's division of musical labour within the ensemble. Like the guitar/amplifier units in *Modes of Interference*, the four players in *Tapping Piece* are limited in their individual capabilities, but when combined become more than the 'sum of their parts' through the possibility for interaction between them. While the guitars do not sound particularly interesting in isolation, when all four are combined they fuse into a much richer timbre. The limitations of the playing technique are thus overcome through working as an ensemble, rather than through individual virtuosity.

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[187] Ibid, p. 99.

[188] Ibid, pp. 96-97.

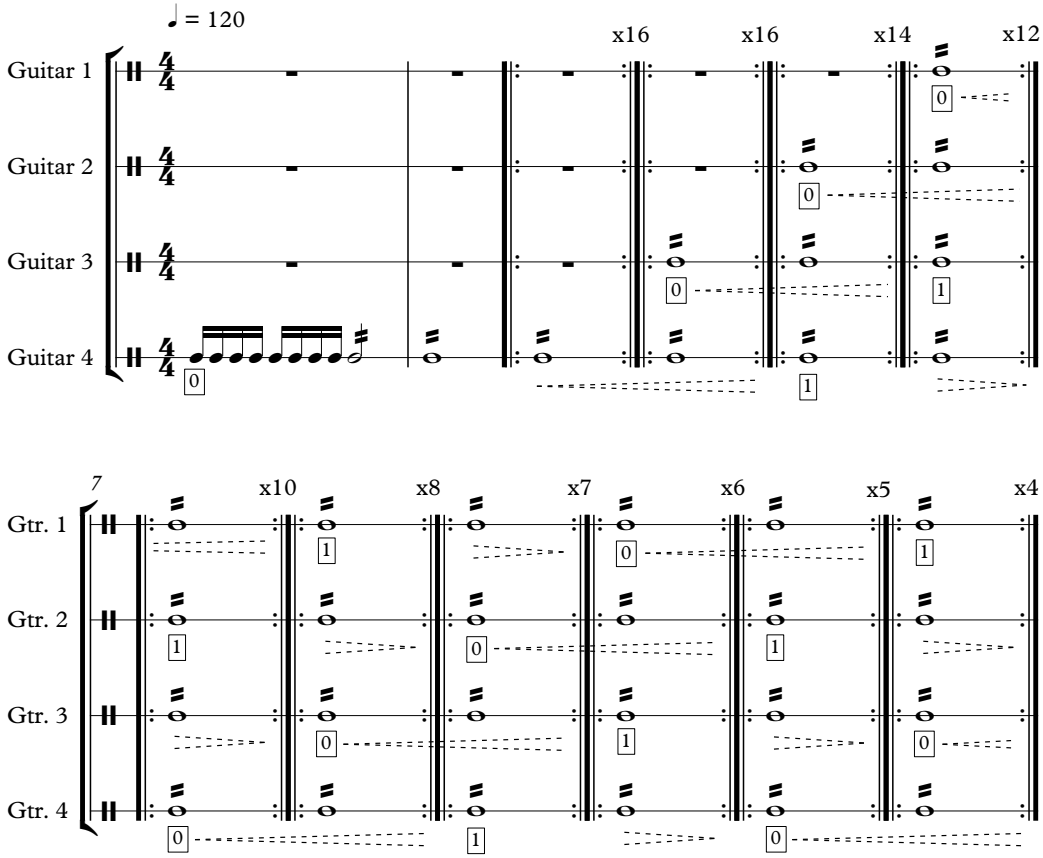
6.4 *Tapping Piece* – an analysis

Tapping Piece, then, highlights similar ideas to previous electric-guitar-based installations, which develop new ways of producing sound from the instrument, as well as engaging its status as a physical artefact. The piece is, of course, still essentially a concert work. This is emphasised for the audience by the physical presence of musicians (who play from notation), the closed nature of the piece's form (in contrast with sound installations, that can often play continuously), and a sense that the players are performing a musical task with a definite goal. These factors are likely to direct the audience towards a listening paradigm associated with composed music, in which musical parameters are understood as resulting from decisions made by the composer. However, despite this the installation-like quality of *Tapping Piece* is also emphasised by certain characteristics of the score itself.

In composing the piece I wanted to focus the audience's attention on the physical experience of the performance as much as on my own agency as composer. Much of the piece is therefore concerned with simple, slowly unfolding processes that seem to operate almost independently of any human input. Although in the middle section I do begin to intervene more overtly to shape the material's development (gradually causing a breakdown in the musical processes at play), in latter sections I return to a less interventionist attitude toward my material, and reinitiate similar processes to those used earlier in the piece. In general, I thought of the technical and spatial setup of the piece (along with its unique sonorities) as being the essential 'material', while the score itself acts as a 'framing' device (drawing now upon a different visual art metaphor) in which to present this material.

The purest example of an apparently self-regulating process in *Tapping Piece* can be seen in the first section (bars 1-29). The piece begins with a series of staggered entries from each of the guitars, proceeding from the lowest in pitch (guitar 4 – entering in bar 1) to the highest (guitar 1 – entering in bar 6). Each performer introduces a semiquaver pulse with the drumsticks (which continues throughout almost the entire piece), and slowly brings the amplified volume up from fully 'off' to fully 'on' with the pedal. The player then remains at full volume for several bars, before effecting a *diminuendo* back to zero amplified volume, and subsequently beginning the entire procedure again. These *crescendi* and *diminuendi* are staggered so that they create a series of 'sweeps' upwards through the spectrum (as described in section 6.2), from the lower partials to the highest. The spatial positioning of the guitars and amplifiers enhances this effect, as from the audience's perspective the sound is constantly moving around the room in a clockwise direction. The amount of time it takes for each 360°cycle to be completed is gradually reduced, as the *crescendi* and *diminuendi* decrease in length. The initial cycle length (see ex. 6.1) is 44 bars (bars

5-8, including repetitions), but by the fifth cycle (bars 30-33), which marks the beginning of the piece's second section, the cycle length has reduced to just four bars, and remains constant for several further cycles. This whole process takes approximately four and a half minutes to complete, and its simplicity allows the audience to concentrate on the unique timbres produced by the four guitars, while directing their attention also to the physical aspects of the performance through the spatialisation of sound. Their awareness of my compositional agency is thus minimised.

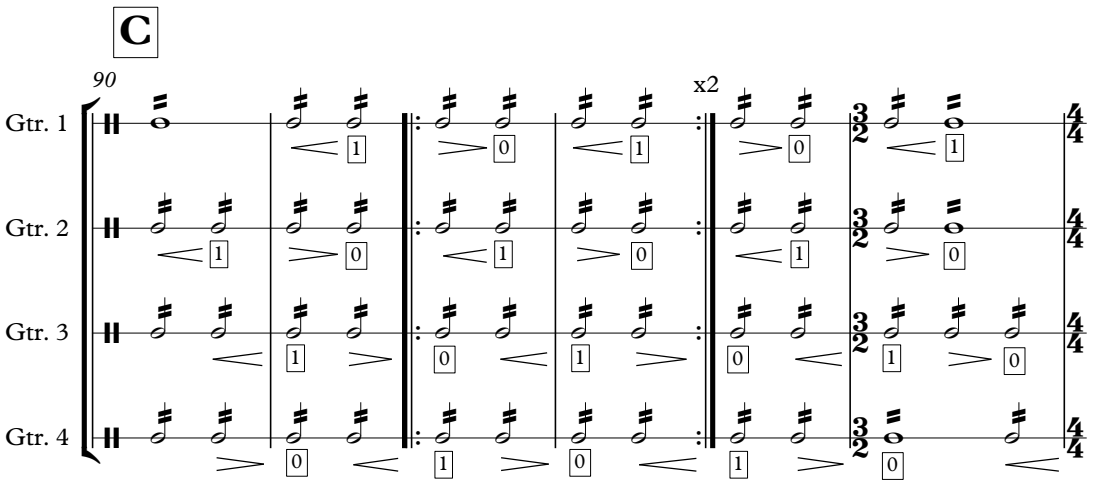


Ex. 6.1: Opening bars of *Tapping Piece*, showing the first two 'cycles' of the low to high 'sweep' through the spectrum.

From bar 34 onwards I begin to intervene increasingly overtly in the piece's unfolding processes. During the next four minutes, the audience become gradually more aware of the human agency behind developments in the musical material, as they occur increasingly frequently and abruptly. This may be somewhat surprising at first, after listeners have become accustomed to the more gradual processes of the first section. However, my intervention initially only takes the form of minor 'glitches' in the 'cycling' of the sound around the room, as extra bars are inserted to give the impression that the sound is momentarily 'stuck' in the corner occupied by guitar 1 (these occur in bars 37-38 and bars 46-47). The glitches lead to a more substantial change in bar 57,

when the cycle reverses to an anticlockwise direction (i.e. the 'sweeps' through the spectrum now proceed from the highest partials to the lowest). As the cycles continue in this new direction, the glitches also continue, now occurring in the corner where guitar 4 is placed (in bars 68-69 and 77-79).

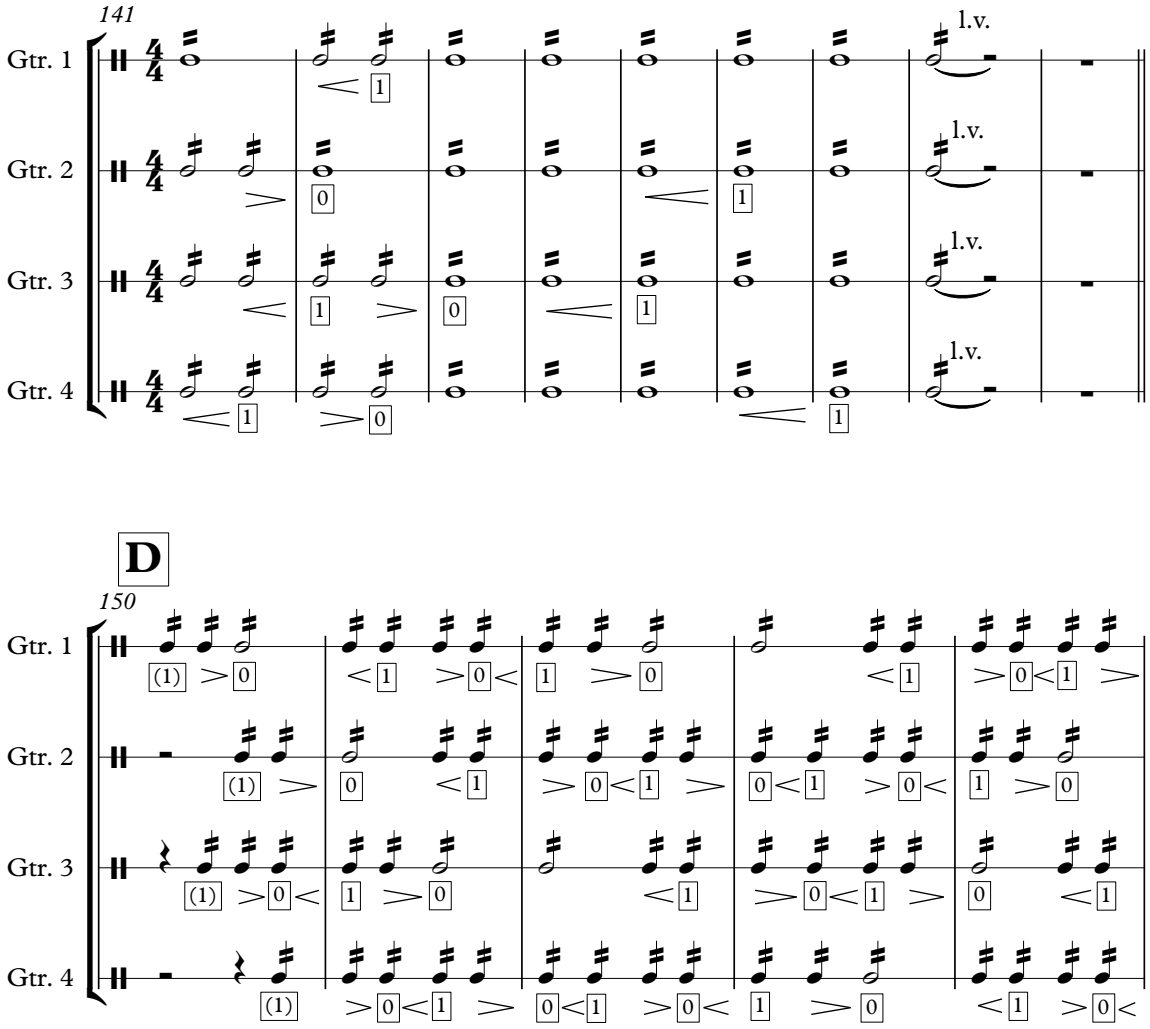
This second set of glitches eventually leads to a much more dramatic change in the cycling process in bar 90. Not only does the cycle length now halve to two bars, the path of motion changes from a simple circle around the room to include diagonal motion between the opposite corners (for example, bars 92-93 represent one cycle of this pattern – see ex. 6.2). Timbrally speaking, the effect is no longer of a steady 'sweep' through the spectrum, but a more erratic emphasising of different regions. In bar 101 the cycle again reverses, before several different patterns of motion are explored in increasingly close succession in bars 117-142. These always feature all four guitars in each cycle, but never return to the simple clockwise or anticlockwise patterns of previous sections. Changes of pattern continue to be effected through the glitches (e.g. bars 99-101, bars 126-128). The rate at which the patterns change gradually increases, until a climactic moment in bars 142-149 (see ex. 6.3), when all four guitars are allowed to sound at full volume simultaneously for the first time, leading to a sudden pause in the semiquaver rhythm (the first and only such pause in the piece).



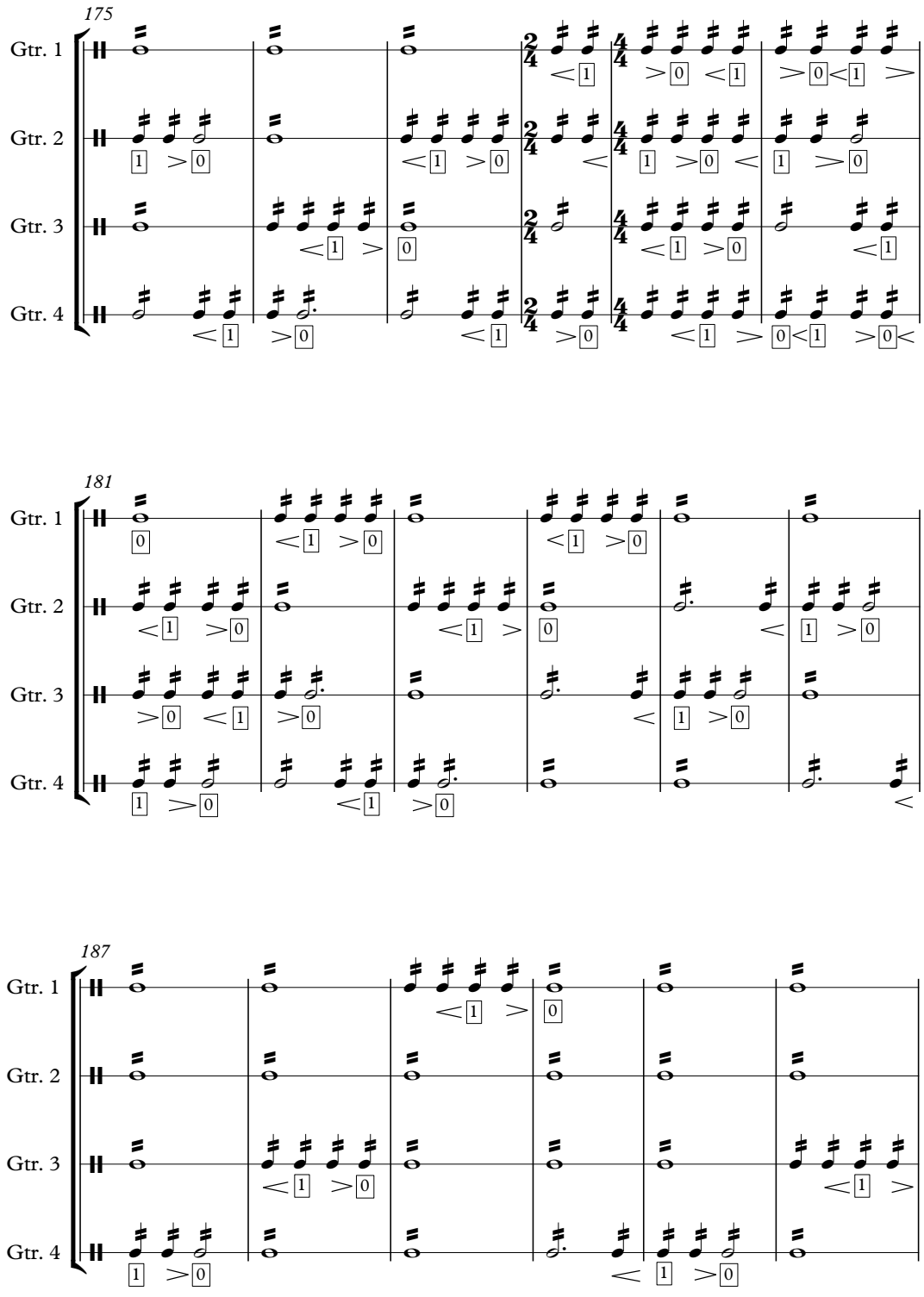
Ex. 6.2: Introduction of a shorter cycle length and a more complex pattern.

After this pause, the most dramatic distortion of the piece's initial texture unfolds from bar 150 onwards (shown in ex. 6.3). The cycle length again halves, to only one bar, and the sound is now thrown around the four corners of the room in random patterns that change every bar. The effect is of disorientation and confusion, with the guitars no longer blending clearly into one timbre. The shorter patterns seem more clearly rhythmic than in previous sections, and the patterns are

clearly being determined by my compositional decisions, rather than by some independent process. This texture is subsequently broken down even further, beginning in bars 163-166, where the *crescendi* and *diminuendi* are spaced further apart rhythmically, exposing the acoustic sound of the drumsticks on the guitars in the gaps between bursts of amplified sound. This 'spacing out' of the individual guitars becomes more pronounced in bars 172-178, and then is taken to even greater extremes from bar 181 onwards (see ex. 6.4), as the percussive sounds gradually come to dominate the texture, while the amplified drone noise is only heard in short, isolated bursts. From around bar 197, the lower-pitched guitars begin to 'drop out' of the texture (they are still heard acoustically, but their amplified sound disappears), eventually leaving only guitar 1 effecting a brief volume pedal swell every four bars (bars 207-210).



Ex. 6.3: The piece's only pause in the semiquaver rhythm, leading to a new 'random' pattern.



Ex. 6.4: 'Spacing out' of the individual guitars.

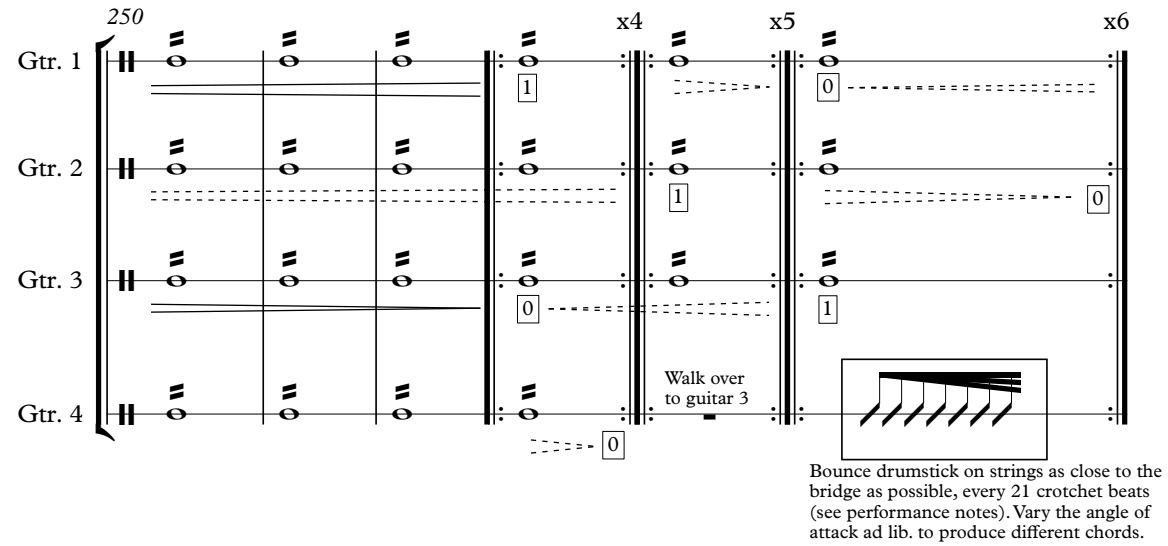
This breakdown of the texture represents the fullest extent of my intervention in the piece's initial, seemingly organic process. It is followed, though, by a gradual return to the original process, albeit now played out in reverse. Over the course of several four-bar cycles (bars 215-227) guitars 3, 2 and 1 are reintroduced to the texture, leading to a return of the 'sweeping'

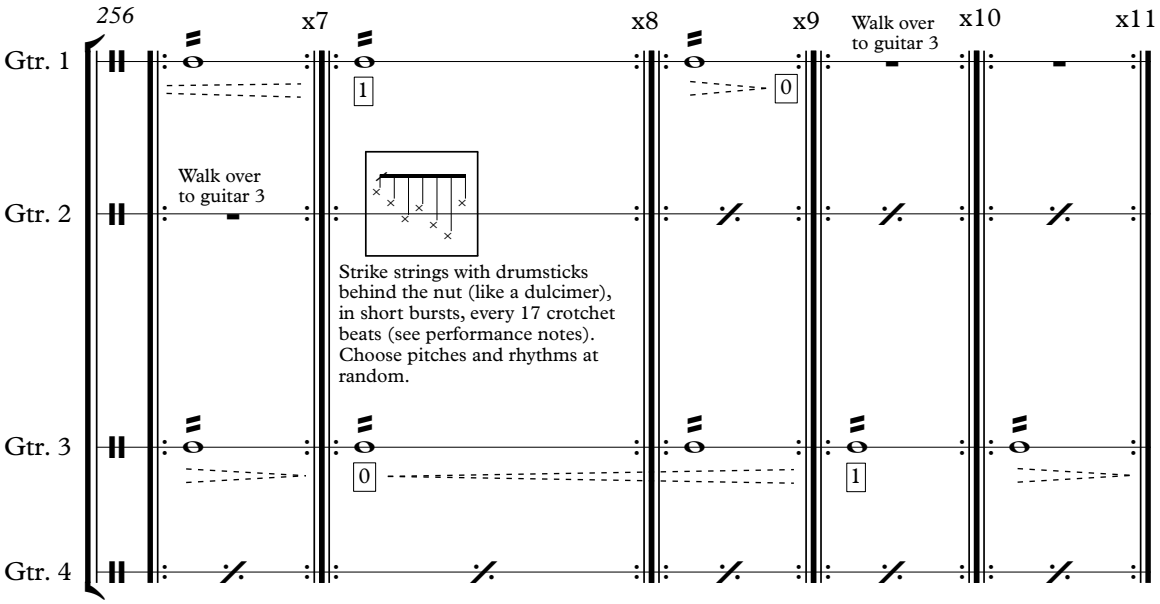
timbral effect, with its circular motion of the sound around the room (now anticlockwise, from the highest-pitched guitar to the lowest) in bars 228-235. The initial cycle length of four bars is, in a process mirroring that at the start of the piece, gradually increased over the course of several cycles (bars 236-252). This perhaps creates an expectation that the piece will simply end with a mirror image of its opening. However, this expectation is sidestepped by the introduction of unexpected new elements in the final section, which provide a reprieve from the continuous texture that has characterised most of the work.

By this point the audience is likely to have become accustomed to *Tapping Piece*'s unique sound world, and although the spatial distribution of the players has drawn attention to the visual elements of the performance, they have appeared to carry out much the same actions (continually striking the guitars with the drumsticks) throughout the piece. In order to create a contrast to these minimal technical means, then, in the closing section the performers take on a more active role by moving around the performance space, as well as introducing new playing techniques. The tension created by the piece's limited musical paradigm is thus resolved by the introduction of new elements, which eventually establish a rather different paradigm in a kind of coda. Beginning in bar 254 (see ex. 6.5), the performers playing guitars 4, 2 and then 1 cease their semiquaver rhythms, dropping out of the blended spectral timbre. They each in turn walk over to guitar 3, and begin performing a series of new techniques on this guitar with their drumsticks, while performer 3 continues their semiquaver rhythms and volume pedal swells (continuing to follow a pattern of temporal expansion). The 'quadraphonic' sound field is thus collapsed to a 'monophonic' single source, and the previously isolated performers are brought physically together in a more obvious visual representation of the ensemble cooperation that has characterised the piece.

The new techniques that are introduced, which include bouncing a drumstick on the strings near the bridge, striking the strings behind the nut, and effecting a glissando with a drumstick, are the first time that the performers have directly interacted with the strings of any of the guitars, and thus create strikingly direct timbral effects, in contrast to the droning sounds that have characterised the rest of the piece. Each performer determines the rhythmic placement of their gestures by counting a set number of crotchet beats between events, creating a random pattern of temporal relationships between the three techniques. Because all four performers are playing the same guitar, the techniques they use may interact in various ways to affect the overall

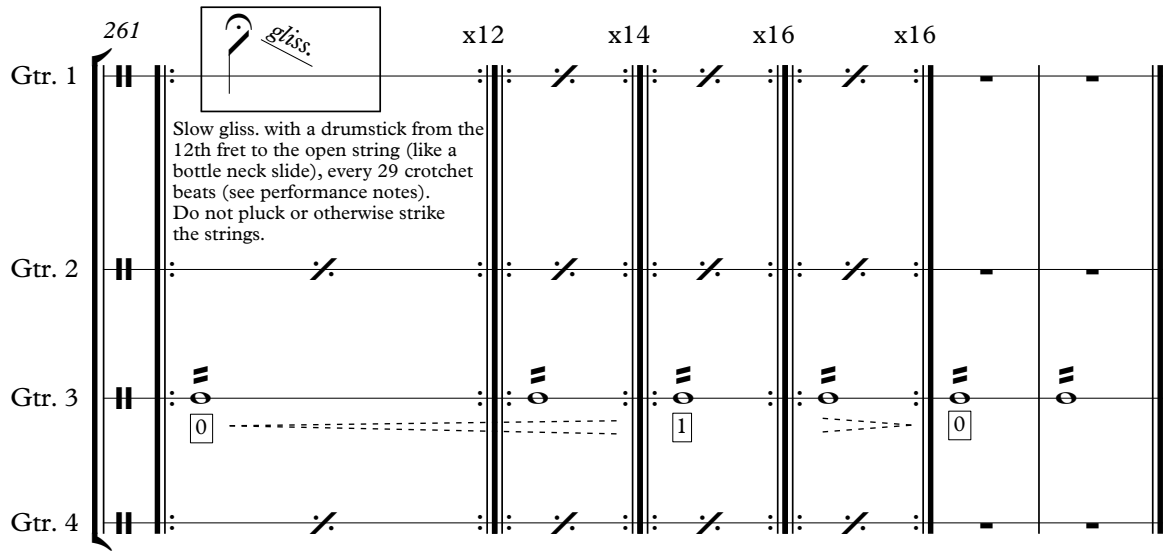
timbre.[189] The element of chance inherent in this notation once again deemphasises my agency as composer, as the work draws to a close. While this new material may initially seem like it could signal the beginning of another extended section, it soon becomes clear that the piece is ending, as guitar 3 fades in and out for the last time in bars 261-266.





Ex. 6.5: Guitarists 4, 2 and 1 moving to guitar 3 and introducing new playing techniques.

[189] NB These effects are not present in the supplied recording, in which the various stick techniques were overdubbed separately.



Ex. 6.5 (cont.)

6.5 Conclusions and reflections

Tapping Piece represents a different type of engagement with the electric guitar to the other works presented in this thesis. While other pieces engage with the instrument's cultural associations 'positively', deliberately drawing on idiomatic material from popular guitar styles, *Tapping Piece* represents a 'negative' engagement with these same idioms, which attempts to subvert the guitar's popular identity. This subversion is achieved through the use of a novel playing technique that severs links with established notions of instrumental skill, and the placement of guitars in a physical performance context that precludes any of the usual visual rhetoric of electric guitar performance. This rejection of stylistic norms takes on an extra dimension when one considers the cultural associations of the electric guitar. The association of the instrument with ideas such as authenticity and masculinity is tied very much to the blues-based virtuosity that represents the fundamental vocabulary of many guitar styles, as well as to the physical choreography of live performance. By removing the guitar from around the player's neck and placing it on a table, and by eschewing accepted standards of technique for a primitive percussive approach, these associations are thus also subverted and questioned.

Despite the marked differences between this piece and my other works, though, *Tapping Piece* does draw upon various techniques that have been explored in previous chapters. The tuning system of the guitars is derived from similar spectralist principles, basing pitch structures around the harmonic series, to those explored in *Power Chord Study* and *Power Trio*. In addition, the piece also demonstrates an awareness of the physicality of the performers that owes something to the choreographic approaches of *Construction in Metal*. While *Tapping Piece* does not call for

as many overt physical actions from the performers as the previous work, the spatial arrangement of the performance area and the performers' movement around the space create an 'installation'-like atmosphere that highlights the electric guitar's status as a cultural artefact. By emphasising this status, greater import is given to the piece's reimagining of the guitar's possibilities.

My inclusion of *Tapping Piece* in this thesis is intended to demonstrate the wide variety of approaches to the electric guitar that are made possible by an awareness of its cultural identity. While I have hardly begun to explore the possibilities provided by 'positive' engagement with the guitar, this piece demonstrates another contrasting avenue of investigation that may prove fruitful in my future work. It also demonstrates that engaging with the electric guitar's cultural status does not require a composer to always draw upon popular music idioms. Rather, it is possible to develop new approaches to the instrument that are unburdened by its past history, while still maintaining an awareness of how this history affects perceptions of the guitar. Any piece composed for the electric guitar will be viewed through the lens of the audience's prior experiences with the instrument. What links all four pieces presented in this thesis, despite their divergent approaches, is that they are enriched by an understanding of these preconceptions.

Chapter 7: Conclusion

7.1 Summary

In this thesis I have sought to further the understanding of how the electric guitar's associations with popular music influence its reception and use in contemporary concert music. Drawing on literature from popular music and popular culture studies, I have gained an insight into the connotations that the instrument has been inscribed with throughout its history in rock and pop. These include its gendering as a 'male' instrument, which is often linked to racial connotations of 'whiteness', and the role the guitar has played in debates over musical authenticity. These concepts have been explored extensively in relation to popular music, but have received less attention from scholars of concert music. In my research, therefore, I have approached the issue of concert music for the electric guitar in a manner informed by engagement with these discourses.

In my two case studies of existing electric guitar works by Tristan Murail and Laurence Crane I have drawn upon analytical techniques relating to popular music, as well as discourses of gender and race, in order to gain a better understanding of how these works' references to rock music may be understood by audiences. In my composition work I have drawn on these insights to create new works that critically engage with the electric guitar's cultural identity. In doing so, I have explored a variety of New Music techniques and aesthetics, including spectralist approaches to pitch and 'New Discipline'-informed theatricality. I have also focused on the role of performers in highlighting or subverting the guitar's associations. Three works in my portfolio – *Power Chord Study*, *Power Trio* and *Construction in Metal* – engage with rock music 'positively' through the use of quotation or stylistic references, in order to highlight or question the associated values of the genre. In contrast, *Tapping Piece* represents a 'negative' engagement with the electric guitar, and deliberately eschews idiomatic playing techniques in order to instead subvert the instrument's genre associations.

Despite my eclectic approach, all of these works are linked by the fact that their impact on an audience relies on a shared awareness of the electric guitar's cultural associations. Although composers frequently engage with popular music idioms in their works for electric guitar, I believe that it is important to consider more deeply the cultural implications of such stylistic references. In this thesis I have suggested the potential for a more critical engagement with the electric guitar, informed by a rigorous investigation of popular music scholarship, as well as by discourses

more closely linked to New Music. The remainder of this conclusion will be concerned with suggesting potential ways in which this project could be further expanded upon.

7.2 Future avenues of research

7.2.1 Further development of compositional approaches already investigated

In chapter 3 I suggested some ways in which my spectralist investigations of electric guitar timbre may be pursued further in future compositions. I speculated that the exploration of distorted timbres could be extended beyond using power chords as generative pitch structures, or that I might use spectralist techniques to explore guitar effect timbres other than distortion. As noted in chapter 6, the latter idea provided some inspiration in developing *Tapping Piece*. However, although spectralist concepts have thus far presented the most immediate opportunities for development, other techniques that I have engaged with also suggest potential for additional investigation.

Construction in Metal suggests further avenues for developing the *Guitar Hero* controller's potential as a musical instrument. Future work with the peripheral could, for example, expand its musical capabilities to allow for a greater variety of samples and sounds to be used. Alternatively, this could be achieved by the use of multiple controllers, perhaps including the drum kit controller. I could also focus on expanding the choreographic approaches to the guitar developed for *Construction in Metal*.

The 'negative' form of engagement with the guitar's cultural associations through non-idiomatic playing techniques demonstrated in *Tapping Piece* also suggests further possibilities for exploration. While a number of other composers and guitarists have already explored this aspect of the instrument in some detail, it is an approach with an almost infinite potential, due to the wide variety of extended playing techniques that are conceivable. In future pieces, I could continue to explore novel ways of approaching the instrument, while maintaining an awareness of how subverting its associations may affect audiences' perceptions of a work.

7.2.2 Investigating the electric guitar's role in other concert music styles and aesthetics

In the case studies included in this thesis I have necessarily focused my attention on composers whose work relates closely to my own practice. The electric guitar, however, has been employed in other areas of contemporary musical practice, which would require consideration to give a more holistic picture of the instrument's role in concert music.

A wider investigation of the electric guitar's role in the concert hall could potentially focus on some of the earliest repertoire featuring the instrument from the 1950s and 1960s. This repertoire includes works by notable composers of the post-war European and American avant-gardes, such as Bruno Maderna (*Studi per il 'Processo' di Kafka*, 1950), Luciano Berio (*Nones*, 1954), Karlheinz Stockhausen (*Gruppen*, 1955-57), Morton Feldman (*The Possibility of a New Work for Electric Guitar*, 1966 – the earliest known solo work for the instrument by a composer in the 'classical' tradition), Christian Wolff (*Electric Spring I-III*, 1966-67) and George Crumb (*Songs, Drones, and Refrains of Death*, 1968).[190] Analysis of these works might focus on composers' reasons for incorporating the electric guitar into their music, and consider the extent to which they may have been influenced by encounters with popular music. However, in some cases inconsistencies of nomenclature make it unclear whether composers specifically intended for an electric guitar to be used, or whether their scores really call for amplified acoustic guitar.[191]

In the 1970s and 1980s composers began utilising the electric guitar in new approaches to composition. The instrument's role in spectralist music has already been covered in the first section of this thesis, although several other works in this style featuring the guitar (such as Hugues Dufourt's *Saturne* of 1979) could be considered in future research. Another example of a compositional approach that has been largely absent from my research thus far, despite producing several notable works, is minimalism. Steve Reich, for example, has composed perhaps the best-known concert work for electric guitar, *Electric Counterpoint* (1987) for guitar and tape or guitar ensemble.[192] In addition, several so-called 'post-minimalist' composers have notably employed the instrument, such as Lois V. Vierk in her *Go Guitars* (1981), for five electric guitars.[193] The electric guitar has continued to feature particularly prominently in minimalist and post-minimalist music throughout the 1990s and early 21st century, appearing in works by composers

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[190] For a more detailed summary of the early history of the electric guitar in concert music, see Z. Banks, *The Electric Guitar in Contemporary Art Music*, (PhD thesis: University of Sydney, 2013), pp. 30-42.

[191] Ibid, pp. 42-43.

[192] A performance of *Electric Counterpoint* can be found at <www.youtube.com/watch?v=MOAS6ik796s> (accessed 17/7/17).

[193] A performance of *Go Guitars* can be found at <www.youtube.com/watch?v=YtMUToq3SD0> (accessed 17/7/17).

such as Julia Wolfe (e.g. *Lick*, 1994, and *Big Beautiful Dark and Scary,* 2002) and Michael Gordon (e.g. *Trance*, 1995, and *for Madeline*, 2009).

Another aspect of minimalist music that is particularly relevant to my research focus is the work of Rhys Chatham and Glenn Branca (whose Symphony no. 3 was referenced briefly in chapter 6). Both these composers have explored explicit engagement between minimalism and punk rock in works for varying groups of electric guitars, basses and drums. Chatham's seminal *Guitar Trio* (1977), for example, combines the harmonic and rhythmic simplicity of punk with the process-orientated formal approaches of minimalism and an interest in just intonation that Chatham inherited from his mentor La Monte Young.[194] Chatham and Branca have both composed works for large orchestras of electric guitars, which have received relatively little analytical attention (although this is perhaps partly due to the difficulty of acquiring scores for their music).[195]

The years since 1990 have seen the greatest increase in the rate at which new compositions for the electric guitar have appeared, as younger generations of composers come to prominence who are more familiar with the instrument from growing up with rock and pop. In addition, increasing numbers of guitarists are able to perform notated music on the instrument, whether they come from a classical, jazz or popular music background. While it would be impractical here to catalogue the electric guitar's role in all aspects of recent concert music practice, there are some areas in which the instrument has been particularly prominent.[196]

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[194] See B. Bridges, 'Rhys Chatham Interview' at *Brian Bridges – Composer, Academic, Electronic Musician & Sound Artist*, <brianbridges.net/wp-content/uploads/2013/05/Rhys-Chatham-interview-MPhil-edited.pdf>, pp. 8-11.
A performance of *Guitar Trio* (featuring the composer) can be found at <www.youtube.com/watch?v=alxmPf5VeJI> (both accessed 17/7/17).

[195] A limited amount of research into these composers' work has been published. For example, see L. J. Rizzuto, 'The Post-Minimal Punk: A Study of Rhys Chatham and A Crimson Grail', *Mosaic Journal of Music Research*, vol. 3 (2013) – this online journal appears to now be defunct, but the article can be found at: <www.academia.edu/23581056/The_Post-Minimal_Punk_A_Study_of_Rhys_Chatham_and_A_Crimson_Grail> (accessed 17/7/17).

[196] For a more comprehensive catalogue of contemporary works featuring the electric guitar (as well as bass guitar and acoustic guitars), see K. Heim and S. Josel, *Sheer Pluck – Database of Contemporary Guitar Music*, <www.sheerpluck.de> (accessed 17/7/17).

Some of the most important figures in popularising the electric guitar's role in concert music have, like Chatham and Branca, been guitarists themselves who perform their own work. These composer-guitarists – including Steven Mackey, Elliott Sharp, Larry Polansky and Nick Didkovsky in the United States and Tim Brady in Canada – often have backgrounds in musical styles other than concert music (such as rock, metal, jazz or free improvisation), and their music could be analysed with a focus on the influence that this experience might exert on their work. For example, Mackey's early musical experiences were as a self-taught rock guitarist, before he chose to focus instead on classical guitar when he decided to become a composer. However, later in life he picked up the electric guitar again (initially to improvise) and it eventually became a key aspect of his artistic practice.[197] Several of Mackey's works feature the electric guitar in a soloist's role alongside more traditionally 'classical' instrumentation, such as the string quartet (*Troubadour Songs* and *Physical Property*, 1992) or symphony orchestra (in the concerto *Tuck and Roll*, 1999). His work might therefore be analysed in terms of a cross-cultural exchange between classical and popular traditions.[198]

Of course, there are also many composers for whom the electric guitar is not a central aspect of their artistic practice, but who have still contributed notable works to its repertoire. There are currently several prominent contemporary music ensembles that feature the electric guitar (such as, for example, Ictus in Belgium, Ensemble Nikel in Israel or the Bang on a Can All-Stars in the USA), as well as an increasing number of accomplished electric guitar soloists (such as Berlin-based American Seth Josel or Dutch guitarist Wiek Hijmans) and electric guitar quartets (including Zwerm in the Netherlands/Belgium, Krock in Sweden and Dither in New York). This means that composers are much more likely to be presented with opportunities to write for the instrument than their 1950s and 1960s predecessors. Works featuring the electric guitar thus encompass the full breadth of contemporary concert music practice. In his PhD research, guitarist Zane Banks has catalogued works featuring the electric guitar that correspond to a variety of different aesthetic and stylistic trends, including 'modernism, post-modernism, electronic music, minimalism, new-simplicity, new-complexity, spectralism, microtonal music, third-stream, improvised music, sound

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[197] See Banks, *The Electric Guitar in Contemporary Art Music*, pp. 66-75.

[198] This aspect of Mackey's work has been addressed in some recent PhD and Masters theses. See P. Ellis, *The Creative and Technical Differences in Composing an Electric Guitar Concerto and Classical Guitar Concerto*, (Masters Thesis: California State University, Long Beach, 2010), pp. 8-16; and A. Summers, *Mackey's World: An Analysis of "Troubadour Songs" and "Three Moments" for Large Chamber Ensemble*, (PhD thesis: University of Pittsburgh, 2013), pp. 1-66.

art, noise music and intercultural art music/stylised "world-art music" (such as tango, bossa nova etc)'.[199]

These works demonstrate varying levels of engagement with the electric guitar's popular-cultural history. Some, such as Fausto Romitelli's *Trash TV Trance* (2002, which was mentioned in chapter 3) strongly reference rock and pop idioms. Other examples of this type of engagement include Dai Fujikura's *Abandoned Time* (2004), for electric guitar and ensemble, which features rock techniques such as string bending and two-handed 'tapping', and Georges Lentz's *Ingwe* (2007), an hour-long solo work combining the expressive blues-derived gestural language of rock with the composer's esoteric harmonic and rhythmic vocabulary.[200] In contrast, Alexander Schubert's *Your Fox's a Dirty Gold* (2011) focuses more on the visual significance of the instrument, which is adapted with sensors to allow the performer (who is a singer rather than a guitarist) to trigger electronic sounds with their bodily movements.[201] The piece presents a juxtaposition of the classical tradition of the female soprano and the conventionally 'macho' stage presence of rock guitarists that might be analysed with reference to the gender connotations of the instrument. In other pieces, however, the guitar's cultural associations may be less of a primary concern, and composers may instead be motivated by more abstract musical considerations. For example, some composers have continued the tradition of exploring the guitar's potential for microtonality through scordatura, in works such as Larry Polansky's *II – V – I* (for one or two electric guitars, 1997) and Christopher Fox's *The Grain of Abstraction* (for electric guitar and tape/CD, 1999).[202]

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[199] Banks, *The Electric Guitar in Contemporary Art Music*, p. 272.

[200] Zane Banks discusses his experiences of working with Lentz on *Ingwe* in his thesis (ibid, pp. 137-221).
A recording of *Abandoned Time* (with the score) can be found at <www.youtube.com/watch?v=fBuBjiwIKx0> (accessed 17/7/17).

[201] A performance of *Your Fox's a Dirty Gold* can be found at <www.youtube.com/watch?v=nJ7Ygns2f9Q> (accessed 17/7/17).

[202] For an analysis of *II – V – I*, see G. Fiore, *The Just Intonation Guitar Works of Lou Harrison, James Tenney, and Larry Polansky*, (PhD Thesis: University of California Santa Cruz, 2013), pp. 189-193.
A recording of *The Grain of Abstraction* can be found at <foxedition.wordpress.com/new-work/> (accessed 17/7/17).

Often though, a composer's use of the guitar may refer to timbres and techniques associated with rock even if they are not primarily motivated by engagement with popular music influences. For example, Michael Beil's *Along* (2011) is a continuation of the composer's work in multimedia composition, combining the guitar with electronics and live video.[203] However, the work uses distorted timbres throughout, and features techniques such as string bends and right hand tapping that are likely to be evocative of rock guitar for audiences. Likewise, the guitar writing in Chaya Czernowin's *Sahaf* (2008, for saxophone, electric guitar, percussion and piano) also features use of distortion, and rock and blues techniques such as string bends, bottleneck slide playing and whammy bar manipulation, but these do not seem to be intended as explicit stylistic references.[204] Despite the presence of other instruments (particularly the saxophone) that may also be associated with popular genres, these 'rock' techniques seem to be used more as a means to explore unique sonorities for their own sake.

Regardless of the extent to which a work can be linked with popular music practices, however, I have argued throughout this thesis that all concert music featuring the electric guitar is likely to be at least partially interpreted as a form of cross-cultural engagement. In chapter 6 I argued that even works that seem to actively eschew typical electric guitar idioms might still be understood in terms of their 'negative' engagement with popular culture. Analysis of all the works mentioned above could therefore benefit from the application of the research perspectives that I have developed during this project.

7.2.3 Engaging with popular electric guitar idioms other than rock

In this project I have focused on concert music that engages with the specific popular genres of rock and heavy metal. This choice was partly a matter of personal taste, but also of practicality – rock is the genre in which the electric guitar has played its most celebrated role, and thus is most readily linked with the instrument by audiences. However, the guitar has been used in many other musical contexts, including for example blues, country, jazz, funk and reggae, not to mention several non-western musical genres (such as the adoption of electric guitars played with slide

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[203] A performance of *Along* can be found at <www.youtube.com/watch?v=4ooDElwdPUQ> (accessed 17/7/17).

[204] A recording of *Sahaf* (with the score) can be found at <www.youtube.com/watch?v=AjIiJo5Gzo0> (accessed 17/7/17).

techniques by Hindustani classical musicians).[205] Engaging with idioms beyond rock in my work could open up new musical possibilities, providing a wider view of the electric guitar's global status and creating new perspectives on the instrument's cultural identity (such as, for example, the racial connotations highlighted by African-American blues and jazz).

7.2.4 Extending my focus on gender and racial issues in concert music for the electric guitar

In this thesis I have engaged extensively with discourses regarding the gender and racial associations of the electric guitar. However, the majority of the works that I have discussed have been by white male composers, since these works have generally related most closely to my own compositional practice. In future, I intend to expand the remit of my research to analyse works by a more diverse range of composers (some examples of notable works by female and non-white composers are given in section 7.2.2), and investigate the issue of diversity and representation in concert music for the electric guitar more generally. These issues connect very clearly with important current discourses in contemporary music (as highlighted, for example, by the recent *Gender Research in Darmstadt* project),[206] while also providing a strong link to the popular culture studies literature that I have engaged with. It appears less immediately clear how these ideas could be explored through composition, but perhaps the focus given in this thesis to the role of performers could provide a starting point for further investigation of how musicians of different gender identities and ethnic backgrounds relate to the electric guitar.

7.3 Final reflection

The electric guitar's links with issues of gender and diversity are symptomatic of the wider role that it has played in modern popular culture. Through its prominent role in 20th- and 21st-century popular music the instrument has become coded with many of the values that this music represents, which often reflect or react to the values held by society as a whole. This project has investigated how the sociocultural values that the electric guitar has been coded with in rock and pop have affected its reception in the concert hall. However, the potential of this instrument in

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[205] See M. Clayton, 'Rock to Raga: The Many Lives of the Indian Guitar' in A. Bennett and K. Dawe (eds.), *Guitar Cultures*, (Oxford: Berg, 2001), pp. 179-208.

[206] See Anon., *Grid – Feminist Activism During Darmstädter Ferienkurse 2016*, <griddarmstadt.wordpress.com> (accessed 9/3/17).

contemporary concert music has only just begun to be explored. In recent years, many composers have become increasingly interested in engaging with the wider world of contemporary society and everyday life outside the concert hall. As the electric guitar has become such a familiar cultural symbol, it would seem to represent an ideal tool with which to pursue these interests. As composers in the 21st century seek to engage more fully with the world around them the electric guitar can represent a link, as a musical instrument and a physical artefact, between the rarefied environment of the concert hall and the popular culture that audiences are familiar with from their everyday lives.

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UNIVERSITY OF SOUTHAMPTON

FACULTY OF HUMANITIES

Music

Volume 2 of 5

Negotiating the Cross-Cultural Implications of the Electric Guitar in Contemporary Concert Music

by

Benjamin Thomas Jameson

Thesis for the degree of Doctor of Philosophy

September 2017

Accompanying material – score for *Power Chord Study (after Black Sabbath)*

Ben Jameson

Power Chord Study

(after Black Sabbath)

for piccolo, clarinet in B♭, violin, violoncello and piano

Power Chord Study **– Performance Notes**

Dynamics

The piccolo, violin and cello are required to play long notes (including string harmonics) in high registers throughout the piece, with varying dynamic markings. Some of these notes may not 'speak' easily at lower dynamic levels. If any of the quieter dynamics in the piece cause certain notes to be excessively difficult to produce, the performers should use their discretion in adapting the dynamics to allow these notes to sound securely. However, care should be taken to maintain the original dynamic contours (crescendos and diminuendos), and to ensure that these altered dynamics are balanced with the rest of the ensemble appropriately.

Clarinet multiphonics

The clarinet part includes several multiphonics, which are simply indicated as one pitch with an arrow and the letter 'M' (boxed text) above. This indicates that the player should choose a multiphonic that can easily be produced and 'emerge' out of the notated pitch. The desired sound quality is a rough, dissonant multiphonic. In some cases, I have specified that the multiphonic should be produced by singing into the clarinet, rather than through air pressure and fingerings. In these instances, the player should take care to ensure that the multiphonic has a similar quality to the other multiphonics, and is sounded at an appropriate volume (the technique used may be closer to shouting into the clarinet than singing!). If there are any other places in the score where I have asked for multiphonics that are not possible using conventional methods, then this 'singing' technique should be used also.

(Score in C)

Power Chord Study (after Black Sabbath)

Ben Jameson 2014-15

♩ = c. 110

Piccolo

Clarinet in B♭

Violin

Violoncello

Piano

Picc.

Cl.

Vln.

Vc.

Pno.

9

Picc.

Cl.

Vln.

Vc.

Pno.

14

Picc.

Cl.

Vln.

Vc.

Pno.

18

Picc.

Cl.

Vln.

Vc.

Pno.

22

Picc.

Cl.

Vln.

Vc.

Pno.

27

A

Picc.

Cl.

Vln.

Vc.

Pno.

ff *fff*

p *ff* *fff*

M (sung)

ppp *ff* *fff*

gliss.

ppp *ff* *fff*

gliss.

fff

Ped.

31

Picc.

Cl.

Vln.

Vc.

Pno.

mf *p*

mp

mp *ff*

mf *p*

mp *ff* *mf* *p*

f

mf

8va

35

Picc.

Cl.

Vln.

Vc.

Pno.

38

42

Picc.

Cl.

Vln.

Vc.

Pno.

45

Picc.

Cl.

Vln.

Vc.

Pno.

48

Picc.

Cl.

Vln.

Vc.

Pno.

fff

fff

fff

Ped.

52

Picc.

Cl.

Vln.

Vc.

Pno.

3

mf

mp

f

mf

mf

mp

f

mp

f

8va

f

8va

8va

ff

55

Picc.

Cl.

Vln.

Vc.

Pno.

58

Picc.

Cl.

Vln.

Vc.

Pno.

62

Picc.

Cl.

Vln.

Vc.

Pno.

66

Picc.

Cl.

Vln.

Vc.

Pno.

mp

ff

Ped.

70

B

Picc.

Cl.

Vln.

Vc.

Pno.

poco rubato (non rit.)

p sub *mp*

p

mp

Con ped ad lib.

76

Picc.

Cl.

Vln.

Vc.

Pno.

accel.

81

Picc.

Cl.

Vln.

Vc.

Pno.

mf

f

pp

3

6

5

ff

fff

secco

gliss.

M (sung)

rit.

♩=c.140

85

Ped.

C

A tempo (♩=c.110)

89

Picc.

Cl.

Vln.

Vc.

Pno.

fff

mf

ff

3

8va

91

Picc.

Cl.

Vln.

Vln.

Pno.

mf

fff

6

7

(8)

Ped.

93

Picc.

Cl.

Vln.

Vc.

Pno.

95

Picc.

Cl.

Vln.

Vc.

Pno.

97

Picc.

Cl.

Vln.

Vc.

Pno.

100

Picc.

Cl.

Vln.

Vc.

Pno.

105

Picc.

Cl.

Vln.

Vc.

Pno.

109

Picc.

Cl.

Vln.

Vc.

Pno.

112

Picc.

Cl.

Vln.

Vc.

Pno.

Ped.

114

Picc.

Cl.

Vln.

Vc.

Pno.

117

Picc.

Cl.

Vln.

Vc.

Pno.

cresc.

ff

fff

Ped.

123

f

ff

126

Picc.

Cl.

Vln.

Vc.

Pno.

ff

fff

M

fff

fff

mp

mp

mp

dim.
poco a poco

130

Picc.

Cl.

Vln.

Vc.

Pno.

ppp

ppp

ppp

136

Picc.

Cl.

Vln.

Vc.

Pno.

fff

Ped.

142

Picc.

Cl.

Vln.

Vc.

Pno.

f

ff

fff

M

3

7

Ped.

145

Picc.

Cl.

Vln.

Vc.

Pno.

148

Picc.

Cl.

Vln.

Vc.

Pno.

151

Picc.

Cl.

Vln.

Vc.

Pno.

f

ff

3

7

154

fff

M

Ped.

157

Picc.

Cl.

Vln.

Vc.

Pno.

Ped.

Ped.

Ped.

160

Picc.

Cl.

Vln.

mf

fff

Vc.

mf

fff

Pno.

Ped.

163

Picc.

Cl.

Vln.

Vc.

Pno.

167 **D**

Picc.

pp
(just audible over piano)

Cl.

pp

con sord.

Vln.

pp
(just audible over piano)

Vc.

con sord.

pp

Pno.

f

170

Picc.

Cl.

Vln.

Vc.

Pno.

173

Picc.

Cl.

Vln.

Vc.

Pno.

177

Picc.

Cl.

Vln.

Vc.

Pno.

ppp mp

pp mp

3 5

ppp mp

3 7

pp mp

3

180

Picc.

Cl.

Vln.

Vc.

Pno.

pp

pp

3

183

Picc.

Cl.

Vln.

Vc.

Pno.

dim. poco a poco…

dim. poco a poco…

186

Picc.

Cl.

Vln.

Vc.

Pno.

(dim.)

(dim.)

(dim.)

(dim.)

190

Picc.

Cl.

pppp

Vln.

pppp

Vc.

Pno.

3

193

rit.

Picc.

Cl.

mf

Vln.

mf

Vc.

Pno.

3

E

196 ♩=c.90

Picc.

Cl.

Vln.

Vc.

Pno.

pp

3 *mp* *mf*

senza sord.

mp *mf*

senza sord.

3 *mp* *mf*

p *mp*

(ord.)

⋆

⋆(Release pedal gradually)

201

Picc.

Cl.

3 *mp* *mf*

Vln.

Vc.

mp *mf*

3 *mp* *mf*

Pno.

p *mp*

Ped.

205

♩=c.80

Picc.

Cl.

Vln.

Vc.

Pno.

Ped.

210

Picc.

Cl.

Vln.

Vc.

Pno.

Ped.

215

Picc.

Cl.

Vln.

Vc.

Pno.

♩=c.70

mf f

3 mf

f

pp p

7

Ped.

220

♩=c.60

3 mp

♩=c.55

3 p

(balance with strings)

mp

p*

*(quiet as possible with harmonic still reliably sounding)

ppp

5

UNIVERSITY OF SOUTHAMPTON

FACULTY OF HUMANITIES

Music

Volume 3 of 5

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Thesis for the degree of Doctor of Philosophy

September 2017

Accompanying material – score for *Power Trio*

Ben Jameson

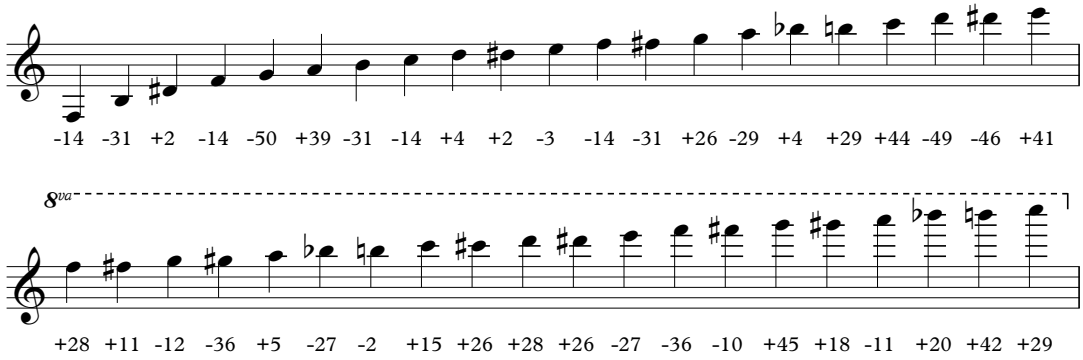
Power Trio

for electric piano, electric guitar and drum kit

Power Trio **– Performance Notes and Tech Setup**

Electric Piano

For this piece, some of the piano's pitches are retuned to correspond with the overtones of a low C# power chord on the electric guitar (the piano is used as a MIDI controller in conjunction with a sampler instrument in *Logic* – the file can be supplied on request). These pitches are notated as normal, but will sound between 2 and 50 cents sharp or flat. For reference, below is a table showing the retuned pitches (deviations from equal temperament given in cents).



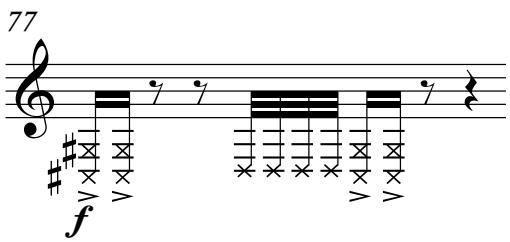
The piano should be amplified so as to be evenly balanced in volume with the other instruments.

Electric Guitar

The guitar's strings are all detuned by a semitone from standard tuning, then the lowest string detuned by a further tone (3 semitones in total), resulting in a 'drop C#' tuning: (low to high) C#, G#, C#, F#, A#, D#. The guitar sound used for this piece should be a typical metal rhythm guitar tone, using fairly heavy distortion, with slightly 'scooped' mid frequencies. The bridge pickup should be used throughout. Variations in dynamics should be achieved through a combination of picking strength and the guitar's volume control (or a volume pedal) – lower dynamic levels will therefore result in a less distorted sound. Where crescendos *dal niente* and diminuendos *al niente* are written, these should also be achieved using either the guitar volume control or a volume pedal.

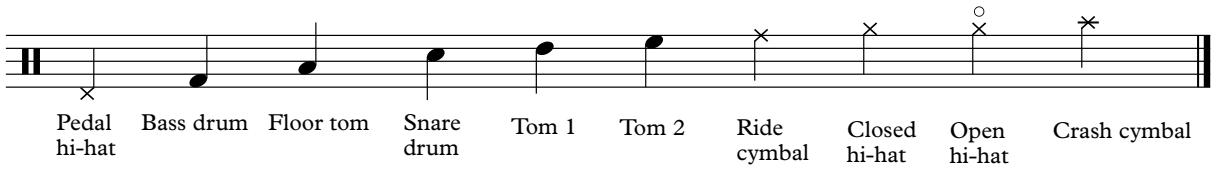
Where cross note heads are used, the notes should be played with the palm of the right hand muting the strings near the bridge, to produce the characteristic staccato sound of metal rhythm guitar.

For example:



Drum Kit

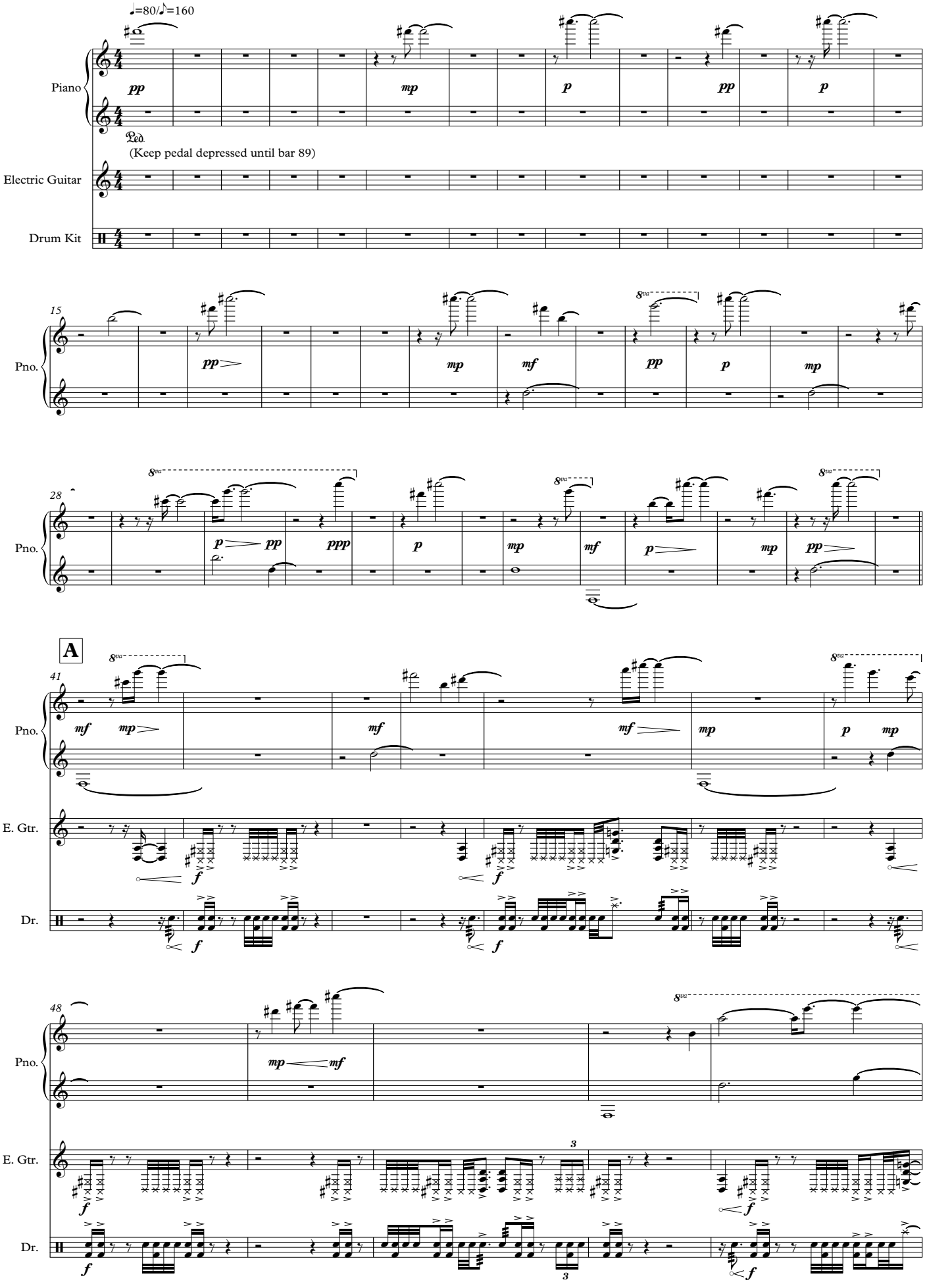
The drum kit part is notated according to the following legend:

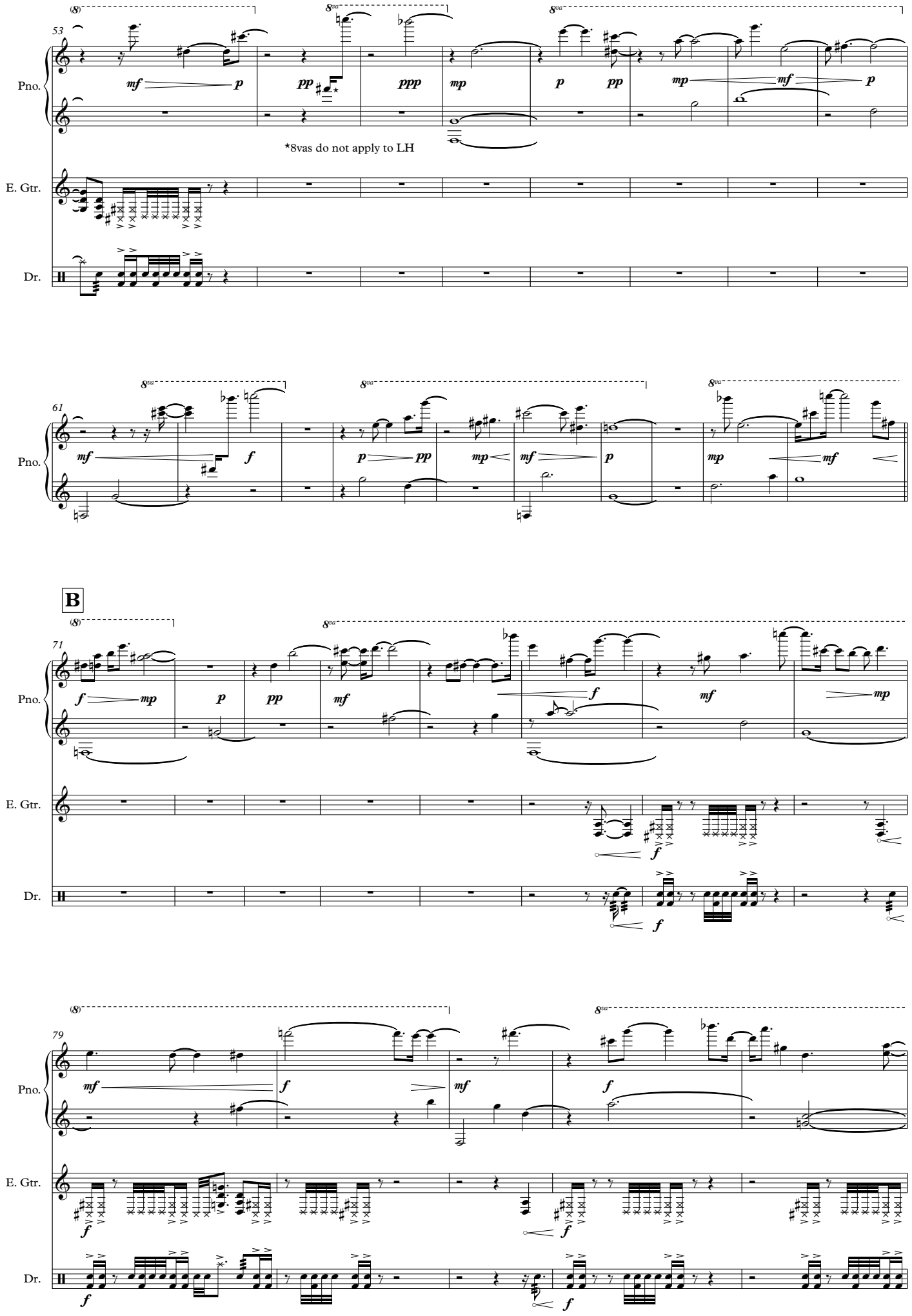


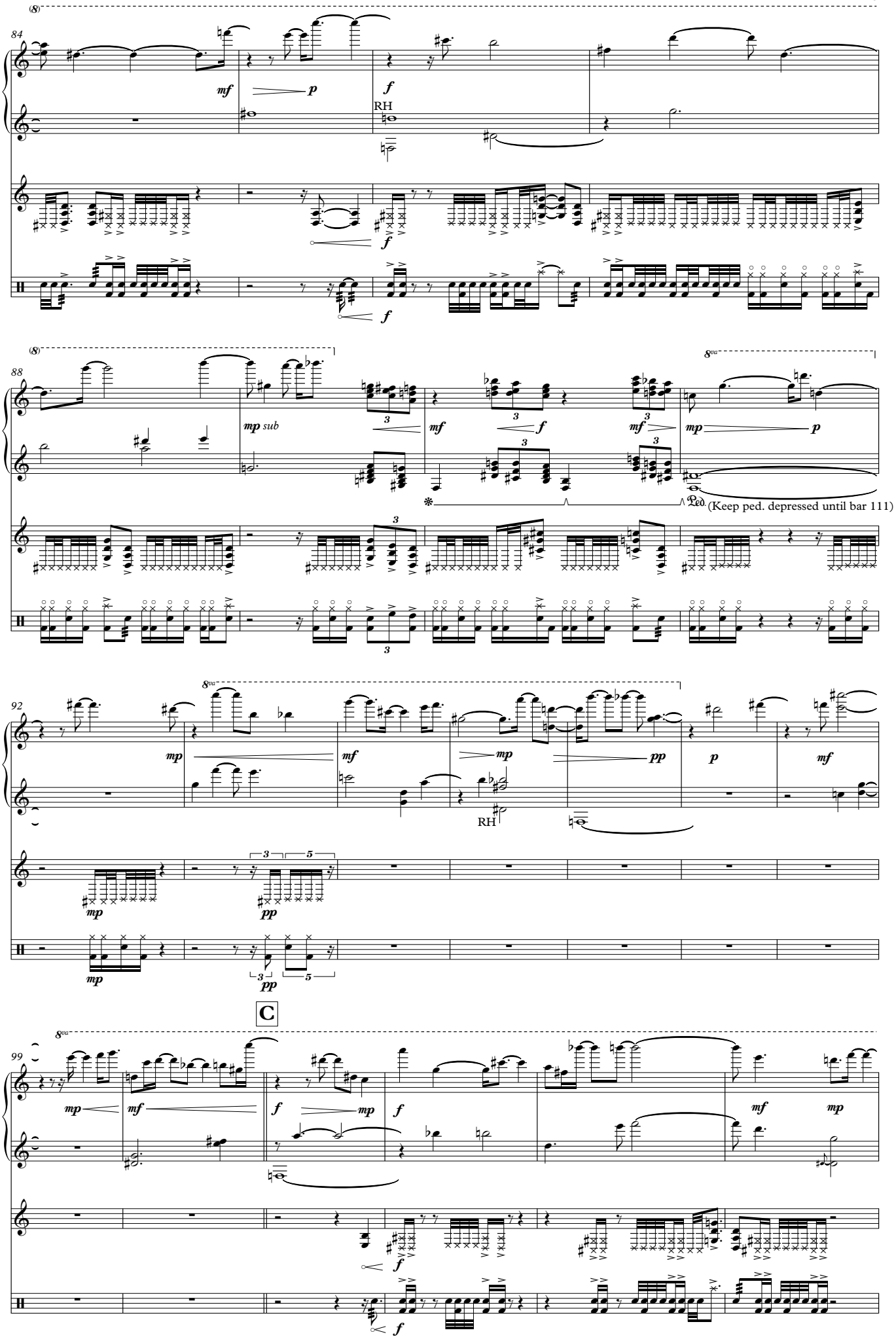
Score in C

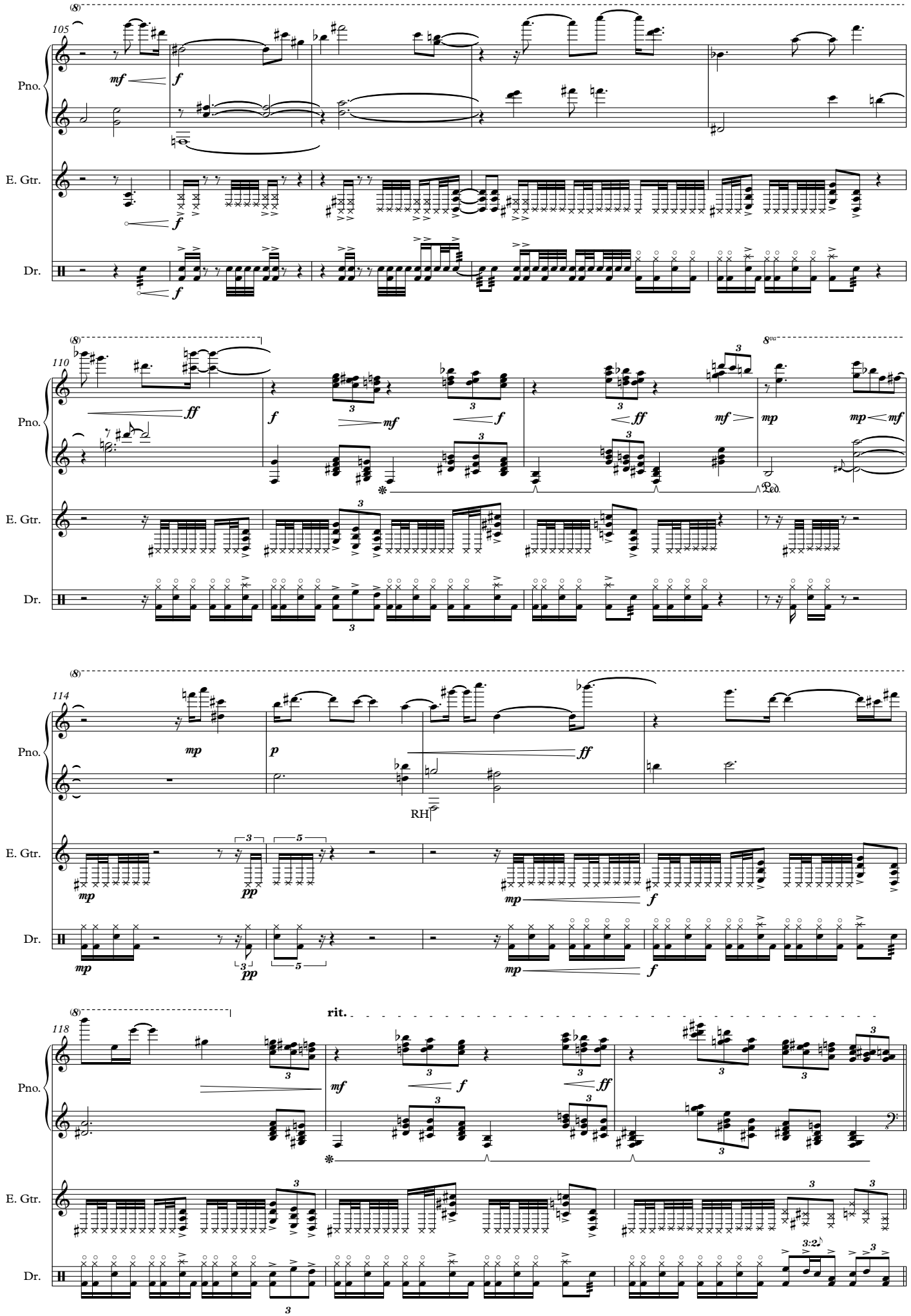
Power Trio

Ben Jameson 2016




53
Pno.
E. Gtr.
Dr.
*8vas do not apply to LH
61
71
B
79


84
Pno.
E. Gtr.
Dr.
mf
p
f
RH
88
mp sub
mf
f
mf
mp
p
8va
Ped.
(Keep ped. depressed until bar 111)
92
mp
mf
mp
pp
p
mf
RH
C
99
mp
mf
f
mp
f
mf
mp


105
Pno.
E. Gtr.
Dr.
110
114
RH
118
rit.

D ♩ = 60/♪=120

121

ff NB LH clef change!

Pno.

E. Gtr.

Dr.

125

sempre sim.

Pno.

E. Gtr.

Dr.

128

rit.

Pno.

E. Gtr.

Dr.

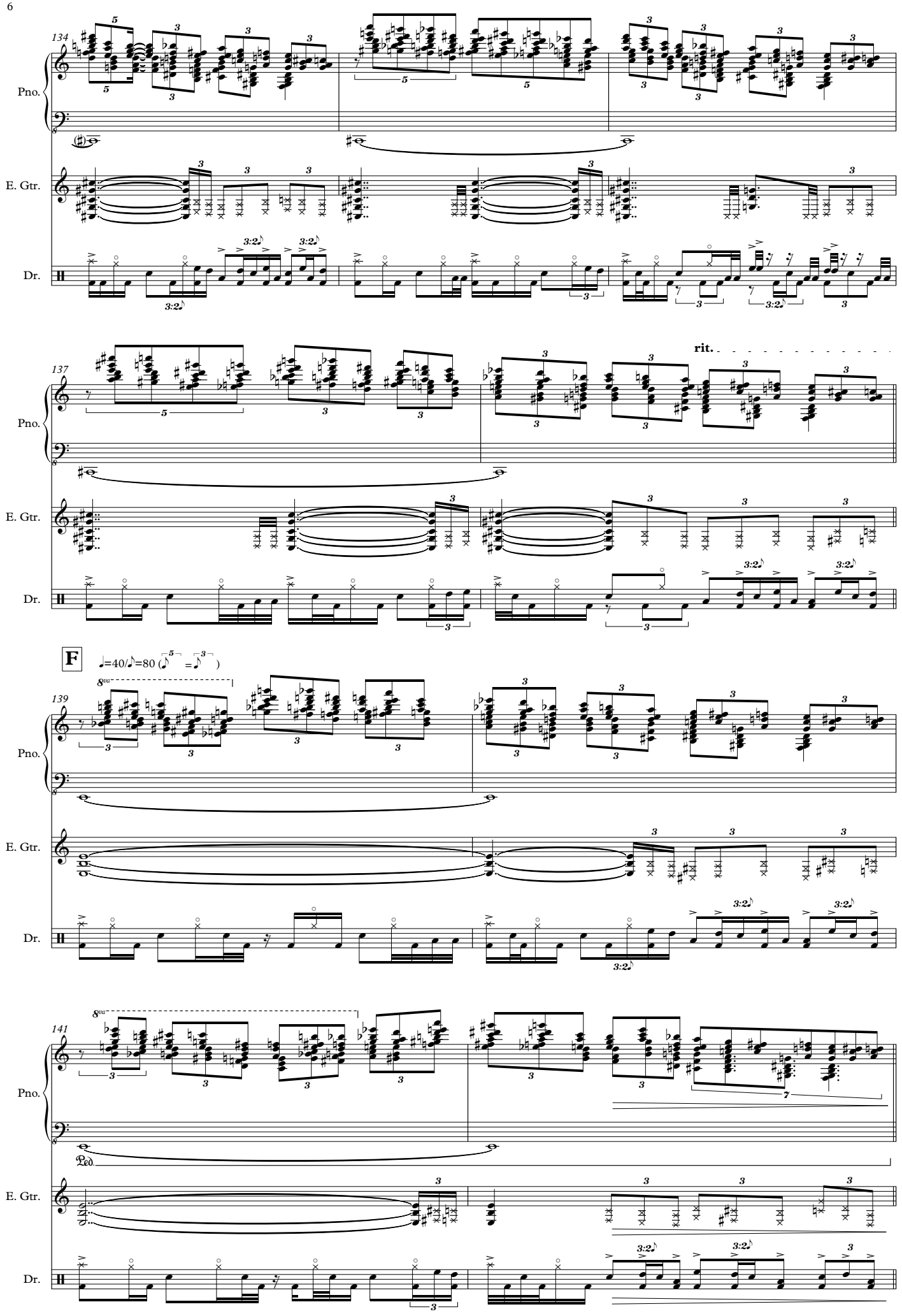
E ♩=48/♪=96 (♪=♪)

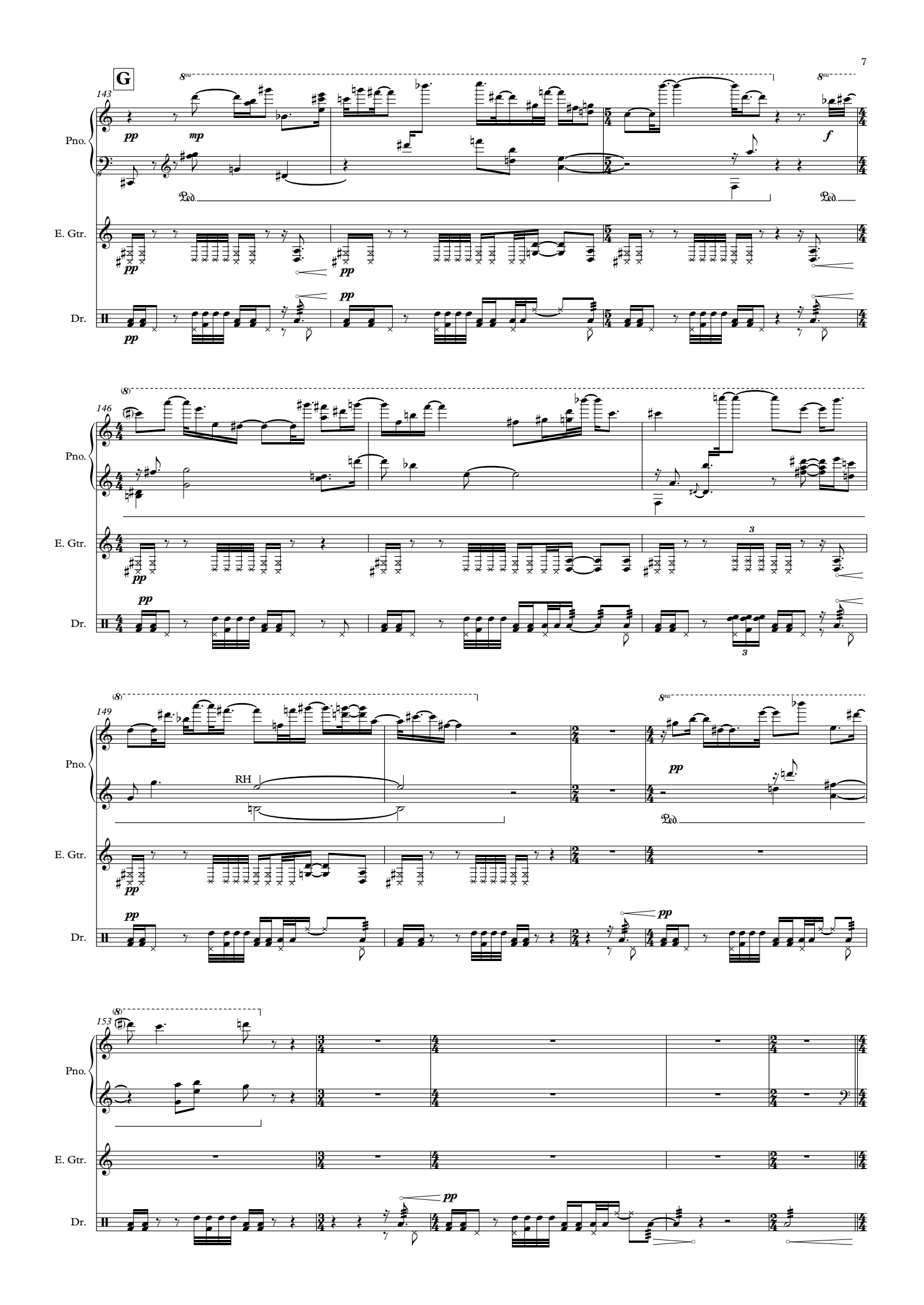
131

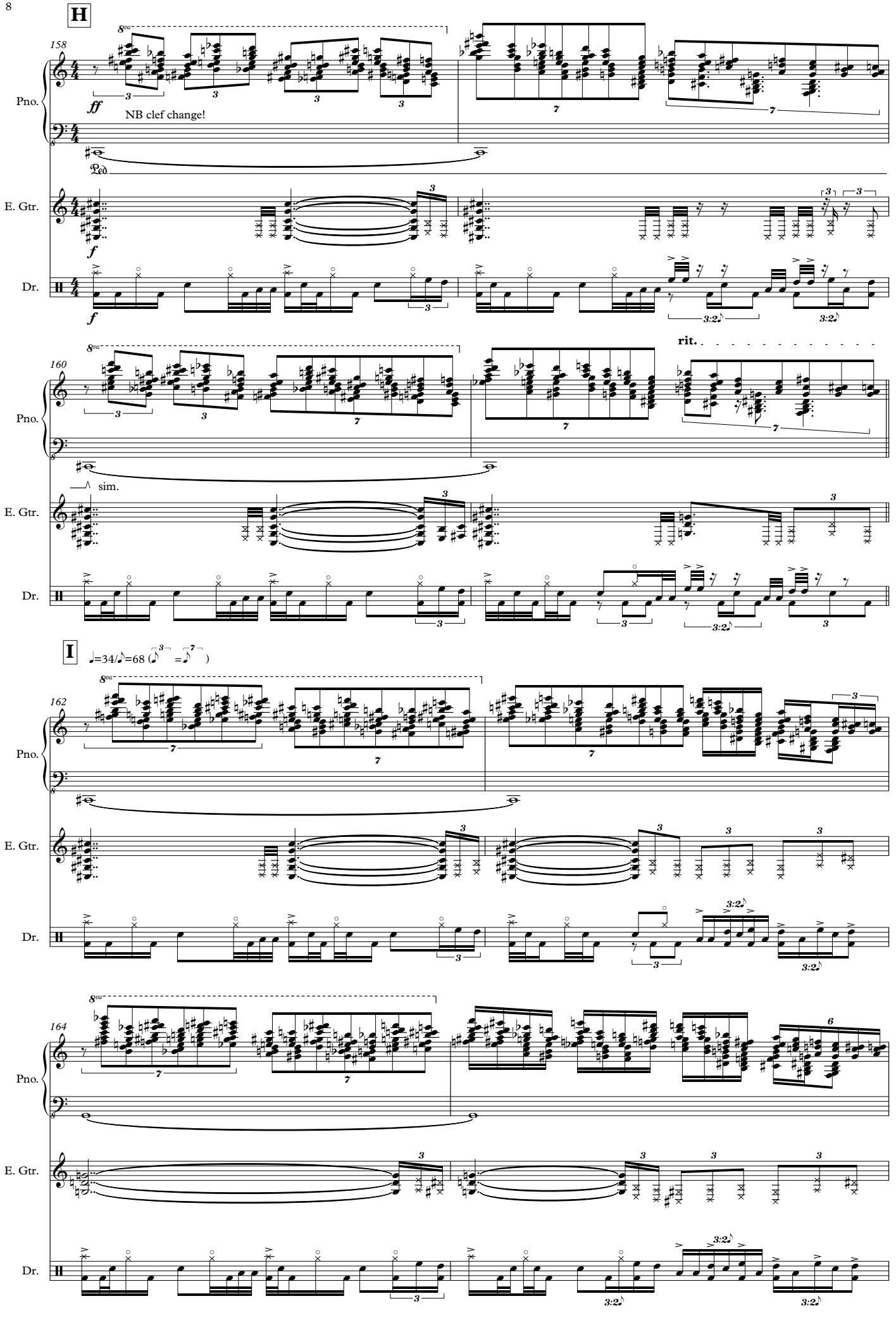
Pno.

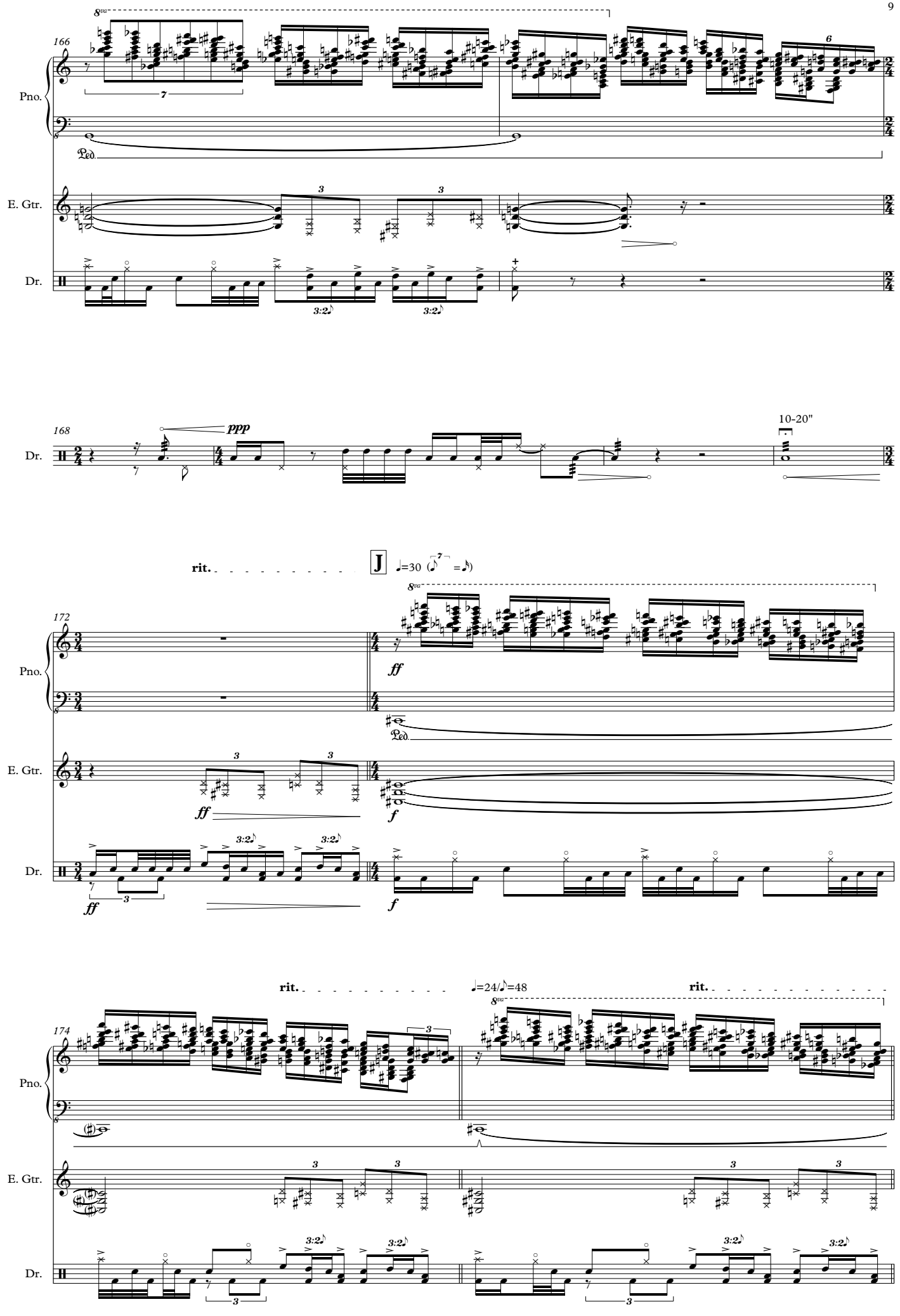
E. Gtr.

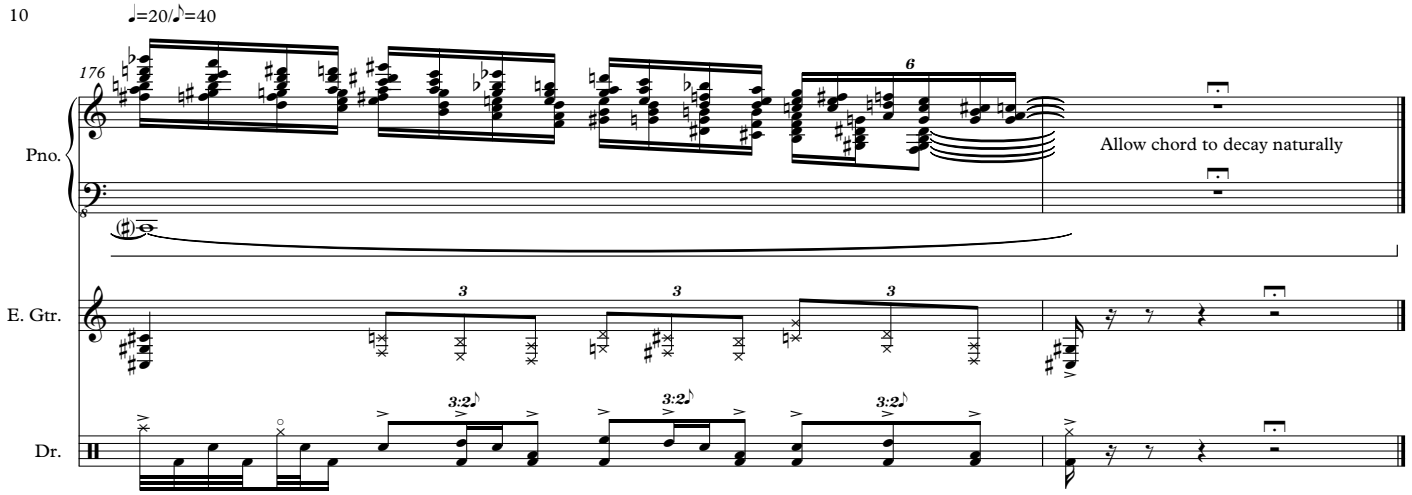
Dr.


134
Pno.
E. Gtr.
Dr.
137
rit.
F
♩=40/♪=80 (♪⁵ = ♪³)
139
8va
141
Ped.


G
143
Pno.
E. Gtr.
Dr.
pp
mp
f
Ped.
146
149
RH
153


H
158
8va
ff
NB clef change!
Pno.
Ped.
E. Gtr.
f
Dr.
f
3:2
160
rit.
sim.
I
♩=34/♪=68 (3 = 7)
162
164
6


166
Pno.
E. Gtr.
Dr.
168
ppp
10-20"
rit.
J
♩=30 (♪7 =♪)
172
ff
f
174
♩=24/♪=48


♩=20/♪=40
176
Pno.
E. Gtr.
Dr.
6
3
3
3
3:2♪
3:2♪
3:2♪
Allow chord to decay naturally

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Music

Volume 4 of 5

Negotiating the Cross-Cultural Implications of the Electric Guitar in Contemporary Concert Music

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Thesis for the degree of Doctor of Philosophy

September 2017

Accompanying material – score for *Construction in Metal*

Ben Jameson

Construction in Metal

for electric guitar and *Guitar Hero* controller

Construction in Metal **– Performance Notes**

Guitar Hero controller – technical setup and notation

In *Construction in Metal* the *Guitar Hero* Xbox 360 controller is used to trigger and manipulate samples from well-known rock recordings. The controller's USB dongle allows it to be connected to a computer, through which this sample triggering can be programmed and controlled (advice on suitable software can be provided on request). The computer's audio output should be played through some form of amplifier, preferably one that has a similar appearance to a guitar amplifier.

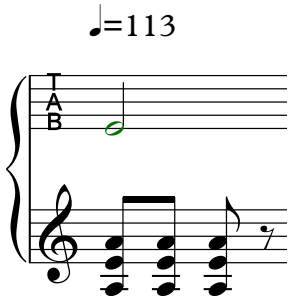
There are five samples, one for each of the controller's 'fret' buttons (the audio files can be supplied on request). Each sample is triggered by holding down the appropriate fret button and clicking the 'strum bar' up or down (see below). Releasing the fret button before the end of the sample stops playback, and a button can also be held down while the sample is repeatedly triggered with the strum bar for a 'stuttering' effect. It takes some practice to get used to coordinating the left and right hands in order to trigger the samples reliably and accurately. The controller's whammy bar is also sometimes used to alter the playback speed and pitch of certain samples, and should be configured so that it lowers the pitch by a perfect fourth when fully depressed (the playback speed is thus reduced by approx. 25%).

The performer using the controller has their part notated on three staves:

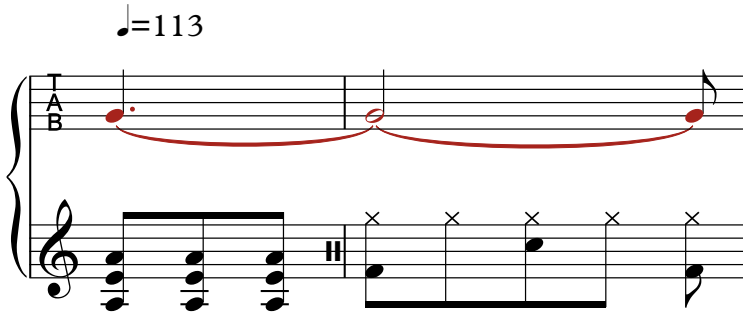
- The upper stave indicates choreography (explained in the final section of these notes).
- The middle stave indicates button presses on the controller, using a kind of colour-coded tablature. Each line on the stave represents one of the fret buttons.
- The lower stave represents the content of the samples, in standard notation.

Below is a description of the five samples, with musical examples demonstrating how they appear in the score:

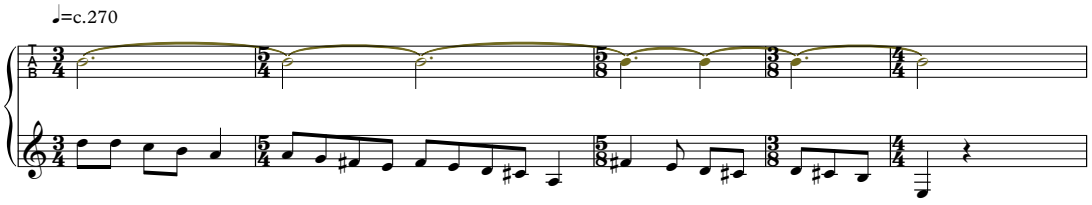
Sample 1 (green button – closest to the headstock): A short extract of three power chords from the beginning of AC/DC's *Highway to Hell*. This sample is sometimes slowed down and lowered in pitch by depressing the whammy bar.



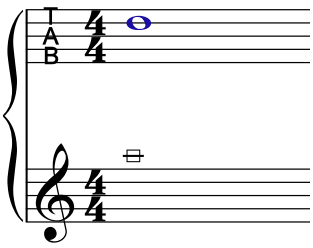
Sample 2 (red button): An extended version of the previous extract, featuring the three power chords and a drum beat. The length of this sample is often varied by releasing the fret button early, and it is also slowed down and lowered in pitch with the whammy bar.



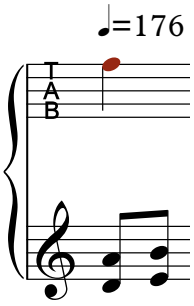
Sample 3 (yellow button): A rhythmically complex single note line taken from Rush's *The Spirit of Radio*. Only the guitar is shown in the notation (it is doubled by bass and drums).



Sample 4 (blue button): A sample of feedback taken from Jimi Hendrix's *Foxy Lady*. The feedback pitch is notated as a rectangular note head. This sample is often manipulated using the whammy bar to create dips in pitch and glissandi.

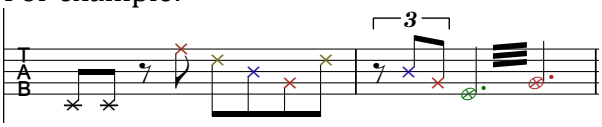


Sample 5 (orange button – closest to the guitar body): Two ascending powerchords taken from Black Sabbath's *War Pigs*. The bass and drums are not shown in the notation. This sample is often used with the 'stuttering' effect described above.



In the final section of the piece, cross note heads are used to indicate that the fret buttons should be pressed without using the strum bar, to create button clicking noises. These cross note heads are also used on a ledger line below the stave to represent strum bar clicks (without any fret buttons being held down).

For example:



<u>Electric guitar – setup and notation</u>

The electric guitarist should use a 'classic rock' style overdrive sound, similar to that in the AC/DC samples. Pedals may be used to obtain this timbre, but these should not be visible to the audience or manipulated during the performance (although the guitar's volume knob should be used to silence the instrument during extended passages of rests). A noise suppression unit may be useful to avoid extraneous noise during choreographic gestures.

The electric guitar part is notated on two staves:

- The choreography appears in the upper stave (see below).
- The musical elements of the part appear in the lower stave, using standard notation (following the normal conventions of guitar music, with text instructions clarifying any unusual or ambiguous symbols).

Choreography

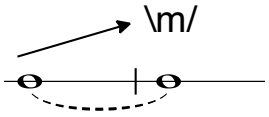
The choreographic movements are based on clichéd rock gestures and air guitar movements, and notated on a one-line stave that occasionally expands to two or three lines where multiples actions are performed simultaneously. Standard musical notation is used to indicate durations of actions, with various symbols above the stave representing the gestures to be performed. Rests indicate that the performer should adopt a neutral position, standing upright with the left hand on the guitar neck and the right hand resting on the guitar body as if ready to play. Generally speaking all actions should be performed mechanically (with each instance being as similar to the others as possible), and with a neutral facial expression, but there are moments where the performers are asked to become more fluid and expressive in their movements (and to adopt appropriate 'rock' facial expressions).

Below is a summary of the symbols used, and the gestures they represent (text is also used throughout the score to clarify the notation):

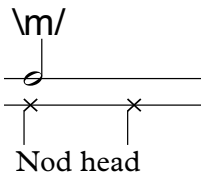
The 'devil horns' gesture:

\m/

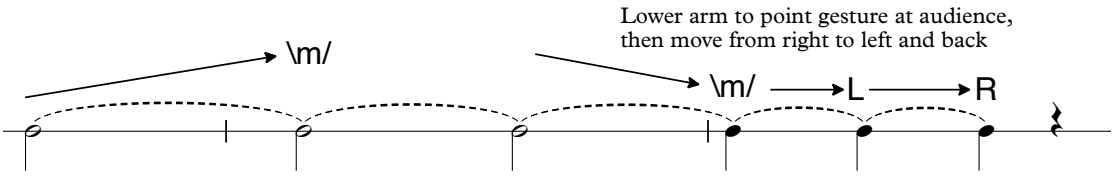
- The right hand index and little fingers are extended from a closed fist (the guitarist will need to find some way of incorporating the pick into this gesture) with the arm raised above the performer's head (and slightly to the right of vertical).
- The gesture should generally be maintained for the entirety of the notated duration, although there are some instances where it may be necessary to move the arm slightly earlier to prepare for the next action.
- Sometimes an arrow is used to indicate that the gesture should be raised slowly, with the raising of the arm lasting for the duration indicated below the arrow (the dotted tie indicates that two gestures are separate but linked to each other), e.g.:



- Where the arrow is not used, the gesture should be raised instantly.
- Sometimes the performer is require to nod their head while holding the \m/ gesture – this is shown with text and cross note heads in a second voice to indicate the rhythm, e.g.:

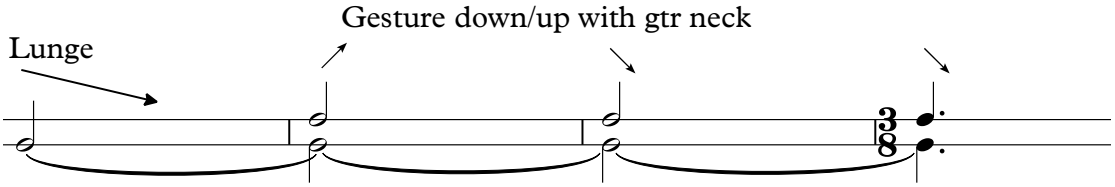


- Later in the piece, the performer using the controller is required to lower the 'devil horns' gesture to point it at the audience, and to move the arm across the body. This is indicated using arrows, text and the letters L and R to indicate movement to the left and right, e.g.:



Lunging:

- The performer lunges forward and slightly to the left with the left leg.
- Often the performer is required to hold their lunged position and perform further gestures with the guitar neck (which should be performed by twisting the torso rather than simply moving the arms). These gestures are shown in a second higher voice, and indicated with arrows and clarifying text, e.g.:



- The following arrows are used for these neck gestures:

 – Gesture downwards with neck

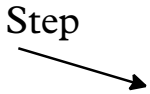
 – Gesture upwards with neck

 – Move neck to horizontal position

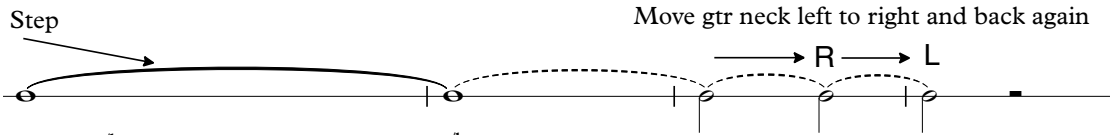
 – Swivel torso to face neck backwards (away from audience)

 – Swivel torso to face neck forwards (towards audience)

Stepping:



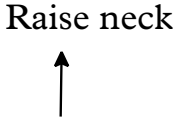
- A slightly less dramatic version of the 'lunge' – the performer should simply step forward slightly with the left leg.
- This movement sometimes leads to a further gesture in which the guitarist is required to swing the guitar neck in front of their body to the right and left. This is indicated with arrows and the letters L and R to represent left and right, e.g.:



The 'windmill':

- The performer holds the instrument out from the body slightly to the left, and performs an exaggerated circular 'upstroke' strumming motion.
- This symbol always comes in twos, and is followed by a second symbol, which indicates performing an exaggerated 'downstroke' motion, ending with the performer in a low crouched position:

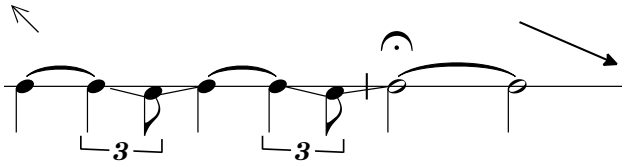
Neck raises:



- The performer simply raises the neck of the guitar slightly.

Guitar raise across body:

- The guitar neck is lifted across the body to be roughly parallel to the performer's right shoulder.
- A second downward arrow indicates that the instrument should be returned to a playing position.
- In some cases, the performer is required to lower and raise the guitar neck slightly, in synchronisation with changes in the pitch of the current sample. This is indicated with glissando lines in the notation, demonstrating the required rhythm of these movements, e.g.:



Mimed strumming:

- Conventional 'downstroke' and 'upstroke' symbols are used to indicate mimed strumming motions.

Jumping:

- The performer should jump in the air, timing their landing to roughly coincide with the beginning of the indicated duration.
- In most cases the performer should also gesture downwards slightly with the guitar neck, although where the performer is required to jump several times in a row with no rests this is not necessary (instead the last of each series of jumps should be given emphasis with a neck gesture).

<u>Disposition of performers</u>
The performers should stand side by side, facing the audience, and with the electric guitarist on the audience's right. The performers' amplifiers and other equipment should be arranged directly behind them.

Construction in Metal

Ben Jameson 2014-15

♩ = 113 **Perform actions mechanically, with blank facial expression**

Actions

GH controller

Samples

Actions

Electric Guitar

Match volume of samples throughout

11

GH

E. Gtr.

21

GH

E. Gtr.

*Return to upright position in between lunges

Movements more fluid/natural (with appropriate 'rock' facial expressions!)

2

27

Lunge

Lunge

\m/

\m/

\m/

Nod head

GH

E. Gtr.

Free movement, in response to the musical material (with appropriate 'rock' facial expressions!)

tr

w/bar

*String bend

31

Lunge

Lunge

Lunge

\m/

\m/

GH

E. Gtr.

Freeze in position

w/bar

w/bar

(bend)

34 ♩=c.270

GH

E. Gtr.

(Exaggerated down strum into low crouched position)

(Hold position)

Return to neutral position

A

♩=113 **Mechanical character**

40

GH

E. Gtr.

Lunge \m/ Lunge Lunge \m/ Lunge

Step Step

Pick scrape gliss. w/bar

47

Step \m/ Lunge Raise gtr. neck Lunge Raise neck Lunge \m/

w/bar w/bar

53

Lunge \m/ Lunge \m/ Lunge \m/ Lunge

Lunge \m/ Lunge \m/ Lunge Lunge

57

Lunge

Gesture down/up with gtr. neck

Lift neck across body

Return to playing position

GH

Gesture up/down with gtr. neck

Lift neck across body

Return to playing position

E. Gtr.

63

Lunge

\m/

Lunge

\m/

Lunge

GH

Step

Step

E. Gtr.

Pinch low E and A strings together and
gliss. down neck (pitches approximate)

w/bar

* Use node slightly
behind 2nd fret
(10th partial)

70

\m/

Lunge

\m/

Lunge

\m/

GH

Step

Raise neck

Lunge

Raise neck

Lunge

E. Gtr.

w/bar

76

GH

Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/ Lunge

E. Gtr.

Raise neck Lunge \m/ Lunge \m/ Lunge Lunge

81

GH

Lunge Neck gestures (Neck horizontal) Lower and raise neck slightly, in sync with pitch bends Return to playing position

3

w/bar

3

Exact pitch not important as long as there is a clear dip

E. Gtr.

Neck gestures (Neck horizontal) Lower and raise neck slightly, in sync with pitch bends Return to playing position

3

88

GH

Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/

E. Gtr.

Raise neck Lunge Raise neck Lunge Raise neck Raise neck

94

Lunge \m/ Lunge \m/ Lunge \m/ Lunge Lunge Neck gestures

GH

Lunge \m/ Lunge \m/ Lunge Lunge Neck gestures

E. Gtr.

100

Swivel neck backwards Swivel neck forwards

GH

Swivel neck forwards Swivel neck backwards

E. Gtr.

Movements more fluid, with facial expressions

106

Lunge \m/ Lunge \m/ \m/

Nod head

GH

Free movement, in response to the musical material

E. Gtr.

w/bar

110

Lunge

\m/

Lunge

\m/

Lunge

GH

E. Gtr.

w/bar

w/bar

113 ♩=c. 270

lunga

lunga

GH

E. Gtr.

B

♩=c. 85 **Perform actions slower to reflect tempo change (mechanical character)**

119

Lunge

\m/

Lower arm to point gesture at audience, then move from right to left and back

\m/ L R

(Use whammy bar to lower pitch and tempo of sample)

w/bar

GH

Step

Pick scrape

w/bar

E. Gtr.

123

Lunge

\m/

\m/ → L → R

Lunge

GH

w/bar

w/bar

Step

E. Gtr.

gliss.

gliss.

w/bar

3

3

3

w/bar

128

♩=c. 270

GH

E. Gtr.

134

♩=c. 85

Lunge

\m/

\m/ → L → R

Lunge

GH

w/bar

w/bar

Step

Move gtr. neck left to right and back again

→ R → L

E. Gtr.

w/bar

gliss.

w/bar

140

\m/ \m/ L R

Lunge

GH

w/bar

w/bar

E. Gtr.

Step

R L

5

w/bar

5

w/bar

145

♩=c. 270

(Exaggerated down strum into low crouched position)

Return to neutral position

GH

E. Gtr.

151

♩=c. 85

Lunge \m/ Lunge \m/ Lunge \m/

GH

w/bar w/bar w/bar

E. Gtr.

Raise neck Lunge Raise neck Lunge Lunge

156

Lunge \m/ Lunge Lunge

GH

w/bar w/bar w/bar

w/bar gliss.

E. Gtr.

Lunge \m/ Lunge

162

Lunge \m/ \m/ L R Lunge

GH

w/bar w/bar

Step R R L

E. Gtr.

w/bar w/bar

169

\m/ \m/ L R

GH

w/bar

Step R R L

E. Gtr.

w/bar w/bar

175

Lunge

\m/

\m/

L

R

w/bar

GH

Step

R

L

E. Gtr.

3

④ 5 ②

3

③

③

⑥

w/bar

183

Lunge

\m/

Lunge

\m/

Lunge

\m/

w/bar

w/bar

w/bar

GH

Raise neck

Lunge

Raise neck

Lunge

Lunge

E. Gtr.

188

Lunge

Lunge

3

3

3

w/bar

w/bar

GH

w/bar

3

3

3

gliss.

Lunge

E. Gtr.

193

Lunge \m/ Lunge \m/

w/bar- - - - - - - - | w/bar- - - - - - - - |

GH

Raise neck Lunge Raise neck Lunge

E. Gtr.

197

Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/

w/bar- - - - - - | w/bar- - - - - - | w/bar- - - - - - | w/bar- - - - - - |

GH

Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/ Hold position

E. Gtr.

C

202

GH

Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/ Lunge Lunge

Mime strumming

E. Gtr

Raise neck Lunge Raise neck Lunge Lunge \m/ Lunge Lunge

Mime strumming

210

GH

Raise neck Lunge Raise neck Lunge

E. Gtr

Lunge \m/ Lunge \m/

217

GH

Raise neck Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/ x2

E. Gtr

Lunge Lunge \m/ Lunge \m/ Lunge \m/ Lunge \m/ Lunge

223

accel.

GH

Lunge \m/ Lunge

E. Gtr

\m/ Lunge

D

♩=176 Jump in the air, landing on the beat
and gesturing with guitar neck

232

GH

E. Gtr.

240

Perform music with 'rock' facial expressions and
body language-some free choice choreography can
be introduced in response to the musical gestures

Step

GH

E. Gtr.

248

Step

GH

E. Gtr.

256

GH

E. Gtr.

Step

Step

264

GH

E. Gtr.

Step

Step

Step

270

GH

E. Gtr.

molto rubato

274

GH

E. Gtr.

(String bends)

280

GH

E. Gtr.

Step

288

GH

E. Gtr.

Step

296

GH

E. Gtr.

Step

Step

5

tr

5

302

GH

E. Gtr.

Step

Step

5

5

5

307

GH

E. Gtr.

Hold slightly
crouched position

3

3

5

5

5

5

5

310

GH

E. Gtr.

w/bar

315

GH

E. Gtr.

Step

Step

Step

321

GH

E. Gtr.

Hold position

w/bar

327

GH

E. Gtr.

Step

Step

Step

333

Hold position

336

E

340

x8

Click strum bar without
holding down any fret buttons
(as loudly as possible)

GH

E. Gtr.

Perform actions mechanically

346

Step

Perform the moments when stepping forward with
'rock' facial expressions and body language.

Step

Click buttons without using strum bar

GH

E. Gtr.

354

Step

Step

GH

E. Gtr.

360

Step

Step

Step

GH

E. Gtr.

366

GH

E. Gtr.

374

Step

Step

Step

GH

E. Gtr.

380

GH

E. Gtr.

385

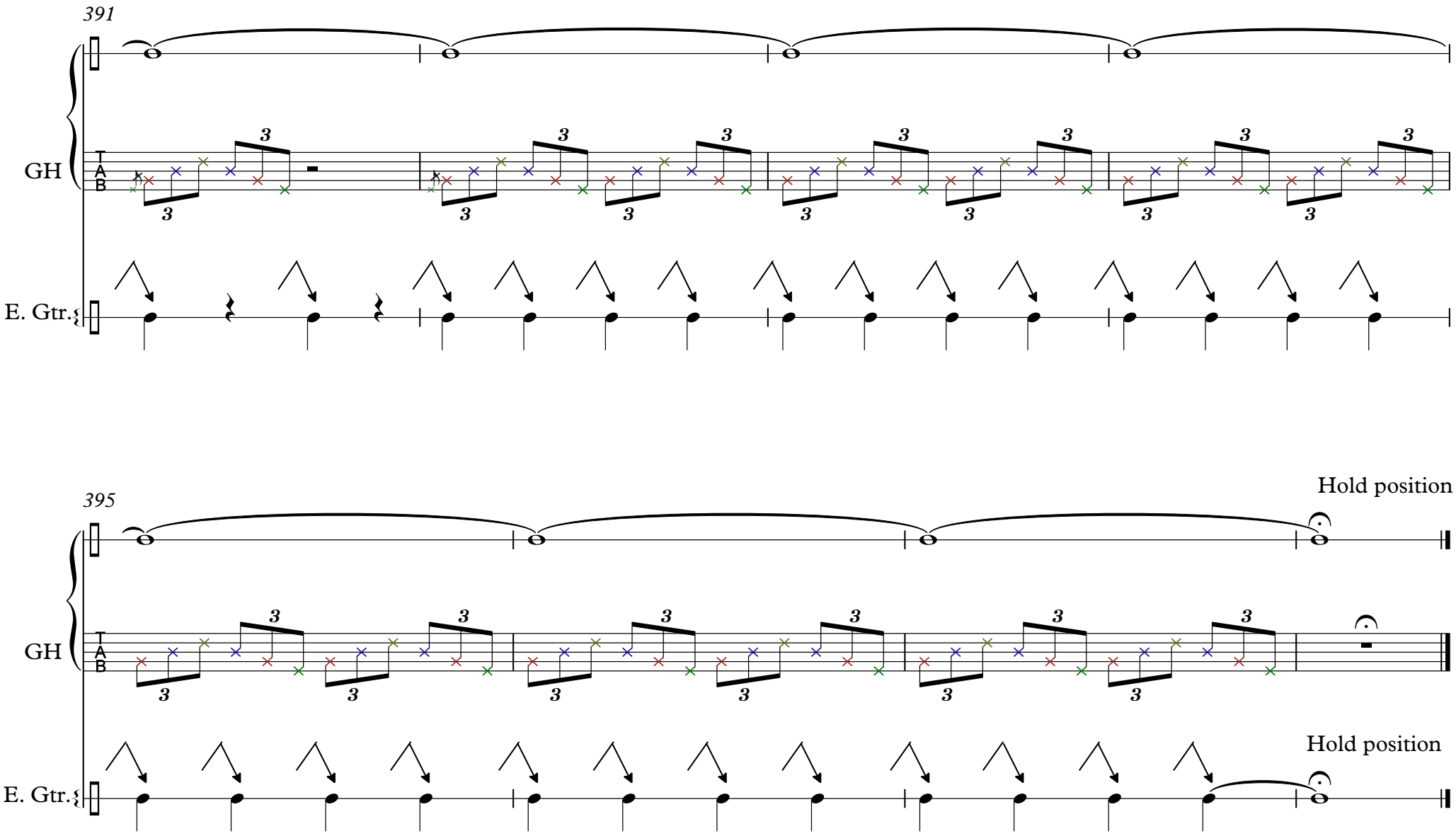
Step

Step

Step

GH

E. Gtr.


391
GH
E. Gtr.
395
Hold position
GH
Hold position
E. Gtr.

UNIVERSITY OF SOUTHAMPTON

FACULTY OF HUMANITIES

Music

Volume 5 of 5

Negotiating the Cross-Cultural Implications of the Electric Guitar in Contemporary Concert Music

by

Benjamin Thomas Jameson

Thesis for the degree of Doctor of Philosophy

September 2017

Accompanying material – score for *Tapping Piece*

Ben Jameson

Tapping Piece

for any four performers playing electric guitars

Tapping Piece – Performance Notes

Equipment
Each performer is equipped with the following:

- Solid-body electric guitar (a cheap Stratocaster copy would be ideal), laid flat on a table.
- Guitar amplifier. The power rating should be chosen to match the size of the venue – the sound of the guitars should fill the space without being uncomfortably loud.
- Volume pedal.
- Instrument cables to plug the guitar into the volume pedal and amplifier.
- Two drumsticks.
- Guitars 1 and 2 also require capos.

Ideally, the four performers should use identical or similar equipment. This is particularly important with the volume pedals, as the audio taper varies significantly between different models. The bridge pickups of the guitars should be used throughout the piece, and their sonorities should be matched as closely as possible through adjusting amplifier settings, etc.

If required, a click track can be provided.

Tunings
Each guitar is tuned to a different subset from the partials of a low fundamental frequency of 33Hz (C_1 rounded to the nearest whole Hz). Higher string gauges will aid tuning stability for the lower-pitched guitars. Audio files of the tuning pitches can be provided.

Guitar 1
The open strings should be tuned to:

- String 1 (the highest string) – 247.5Hz
- String 2 – 214.5Hz
- String 3 – 181.5Hz
- String 4 – 148.5Hz
- String 5 – 115.5Hz
- String 6 (the lowest string) – 82.5Hz

The capo should then be attached at the 12th fret, resulting in the following pitches (some fine tuning will be required, due to the change in tension caused by the capo):

- String 1 – 495Hz (15th partial)
- String 2 – 429Hz (13th partial)
- String 3 – 363Hz (11th partial)
- String 4 – 297Hz (9th partial)
- String 5 – 231Hz (7th partial)
- String 6 – 165Hz (5th partial)

Guitar 2
The open strings should be tuned to:

- String 1 – 305.2Hz
- String 2 – 249.7Hz
- String 3 – 194.2Hz
- String 4 – 138.7Hz
- String 5 – 111Hz
- String 6 – 83.2Hz

The capo should then be attached at the 3rd fret, resulting in the following pitches (some fine tuning will be required):

- String 1 – 363Hz (11th partial)
- String 2 – 297Hz (9th partial)
- String 3 – 231Hz (7th partial)
- String 4 – 165Hz (5th partial)
- String 5 – 132Hz (4th partial)
- String 6 – 99Hz (3rd partial)

Guitar 3

- String 1 – 330Hz (10th partial)
- String 2 – 231Hz (7th partial)
- String 3 – 198Hz (6th partial)
- String 4 – 165Hz (5th partial)
- String 5 – 99Hz (3rd partial)
- String 6 – 66Hz (2nd partial)

(No capo)

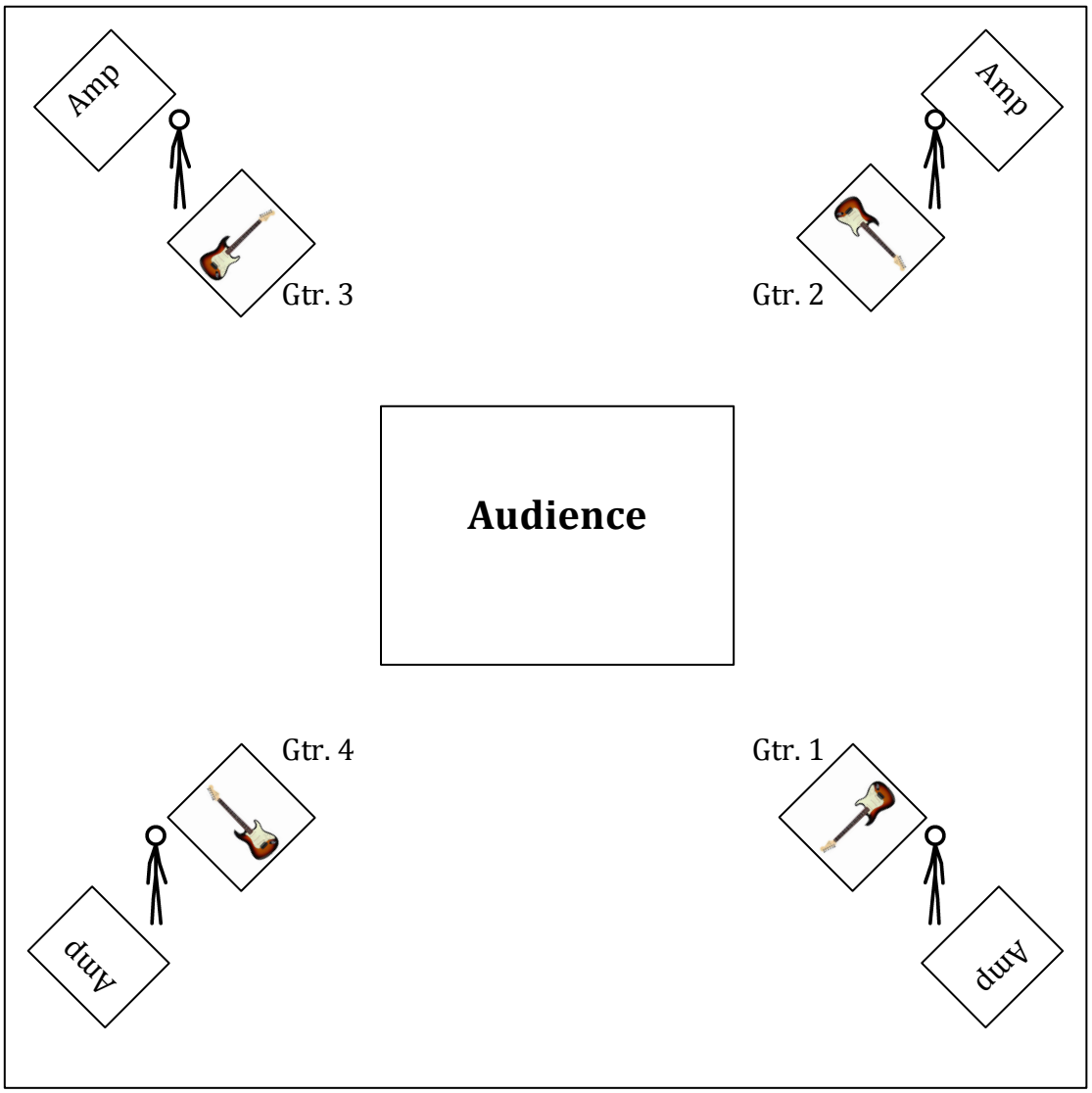
Guitar 4

- String 1 and string 2 – 264Hz (8th partial)
- String 3 – 198Hz (6th partial)
- String 4 – 132Hz (4th partial)
- String 5 – 99Hz (3rd partial)
- String 6 – 66Hz (2nd partial)

(No capo)

Disposition of performers

There are two possible arrangements of the performers. In the first (and preferred) arrangement, they are situated in the four corners of a room, with the audience in the middle, creating a 'quadraphonic' sound field. The performers face the audience, with their amplifiers behind them. Going around the room clockwise, the guitars should be in the following order: 4, 3, 2, 1, e.g.:



If the above arrangement is not possible in the given concert space, then the piece can be performed in a 'stereo' version instead, with the performers arranged in a line or semicircle, facing the audience. From left to right (from the audience's perspective), the guitars should be placed in the following order: 4, 3, 2, 1. The guitars and amplifiers should be sufficiently spaced as to create a broad stereo field, and to allow the individual instruments to be more clearly distinguished.

Playing technique/notation

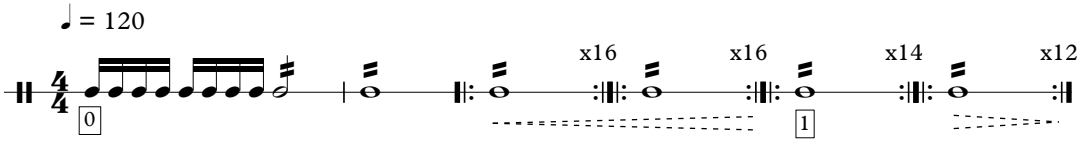
Throughout the majority of the piece all four performers strike the wooden part of the guitars' bodies with the drumsticks, using the thicker ends of the sticks. They maintain a constant semiquaver rhythm, which is notated on a one-line stave for each instrument.

The intensity with which the instruments are struck should remain constant throughout (with no emphasis given to downbeats), and equal between the musicians. The unamplified volume of the stick strikes should be *mezzo piano*.

The relative amplified volumes of the resulting 'droning' sounds are controlled using the volume pedals. These dynamics are notated with conventional crescendos and diminuendos, and boxed numbers:

0 indicates the pedal is fully 'off' (in the heel position)
1 indicates it is fully 'on' (in the toe position).

A dotted crescendo or diminuendo indicates that the change in dynamic occurs across the full duration of a set of repeated bars. For example, in the passage below, from the beginning of the piece, guitar 4 plays the first two bars with the volume pedal fully 'off', followed by a 32-bar crescendo, a 14pbar passage with the volume fully 'on', and a 12-bar diminuendo.



Last part of the piece

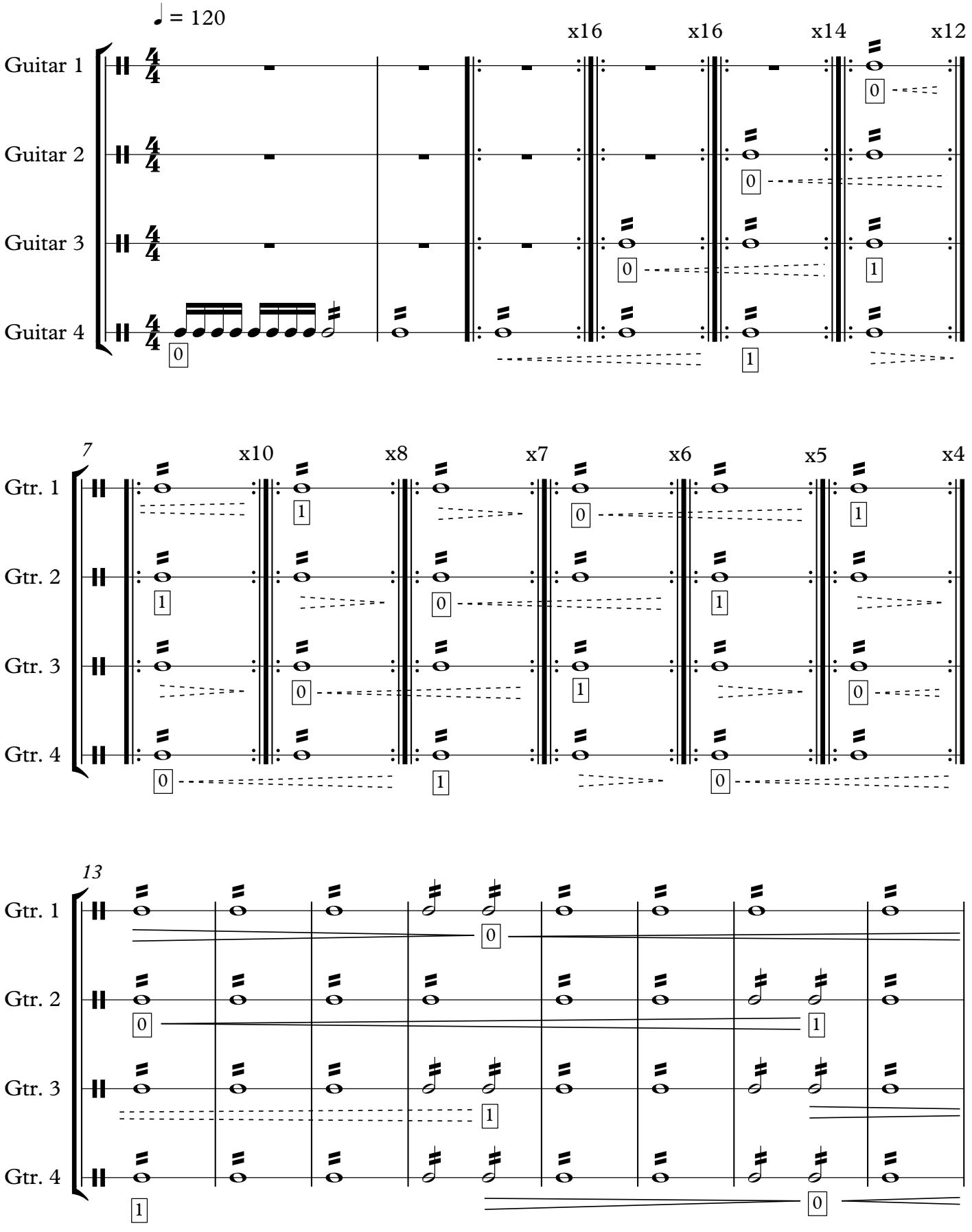
In the final part of the piece, performers 1, 2 and 4 cease playing their own instruments and move, in turn, to guitar 3 (the piece ends with all musicians performing on guitar 3). Each player performs a specific action on the strings of guitar 3, coordinated by counting the number of crotchet beats between each event (the counting should commence from the *start* of each action).

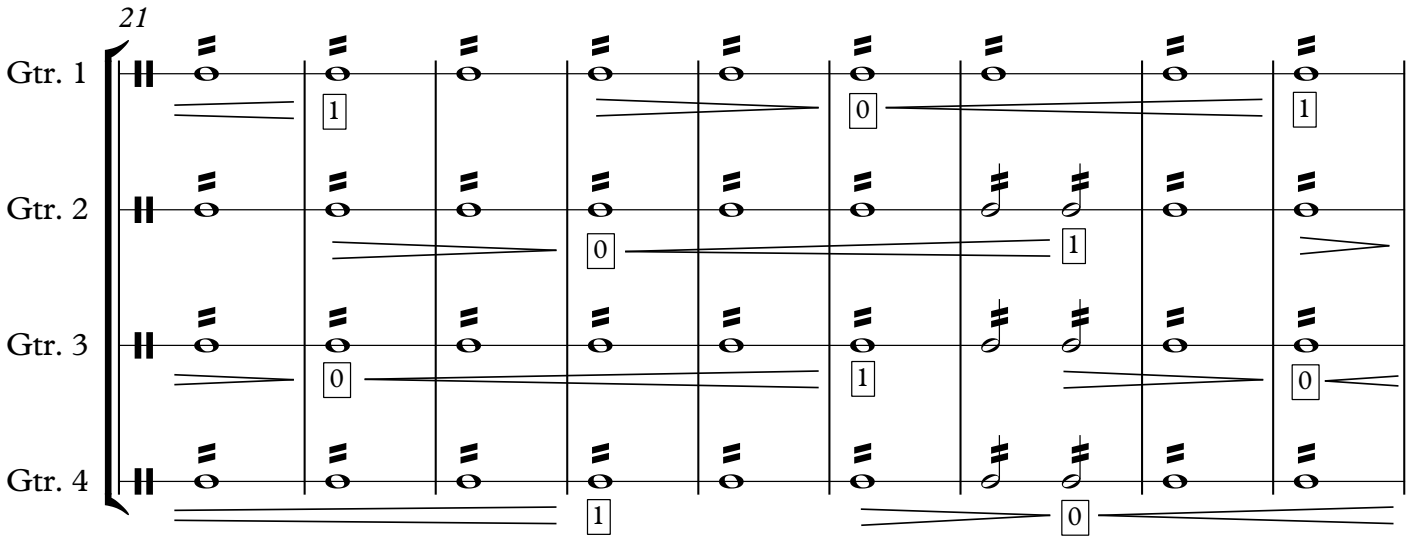
The performers may begin their actions at any time immediately after the point in the score at which they are notated, but once the actions have commenced they continue regularly at the specified time intervals until the end of the piece.

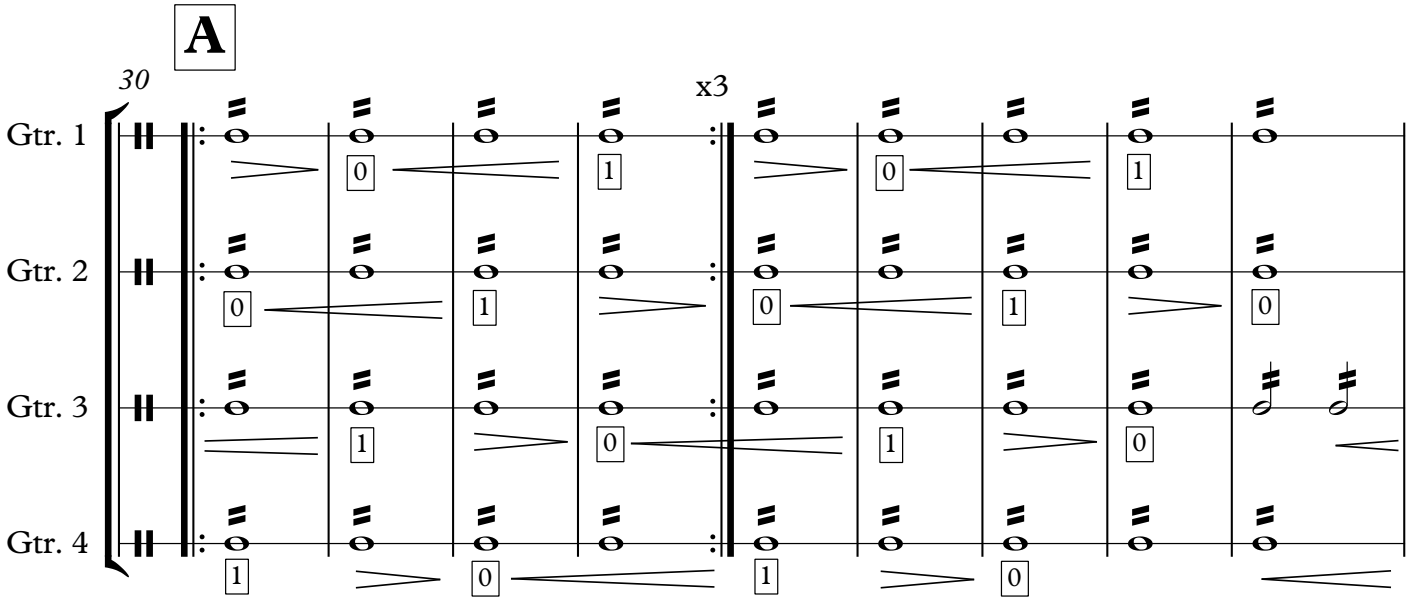
If any performer takes longer than the prescribed number of bars to walk to guitar 3 (particularly if the piece is performed in a larger venue), they should commence their actions as soon as they are in position.

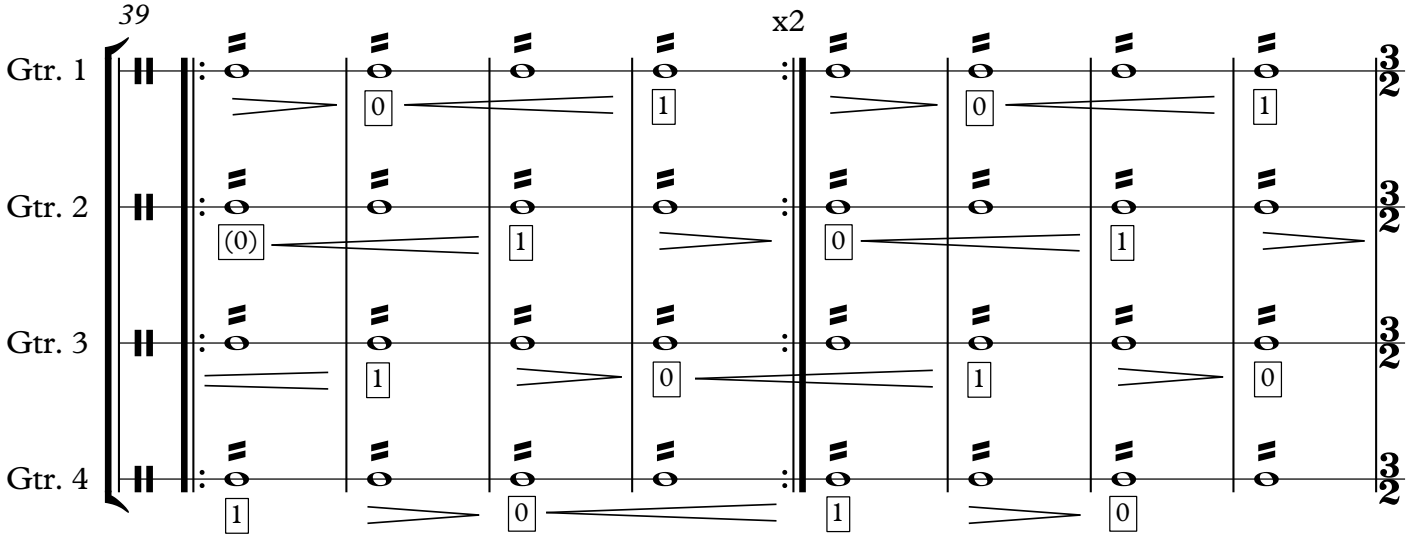
Tapping piece

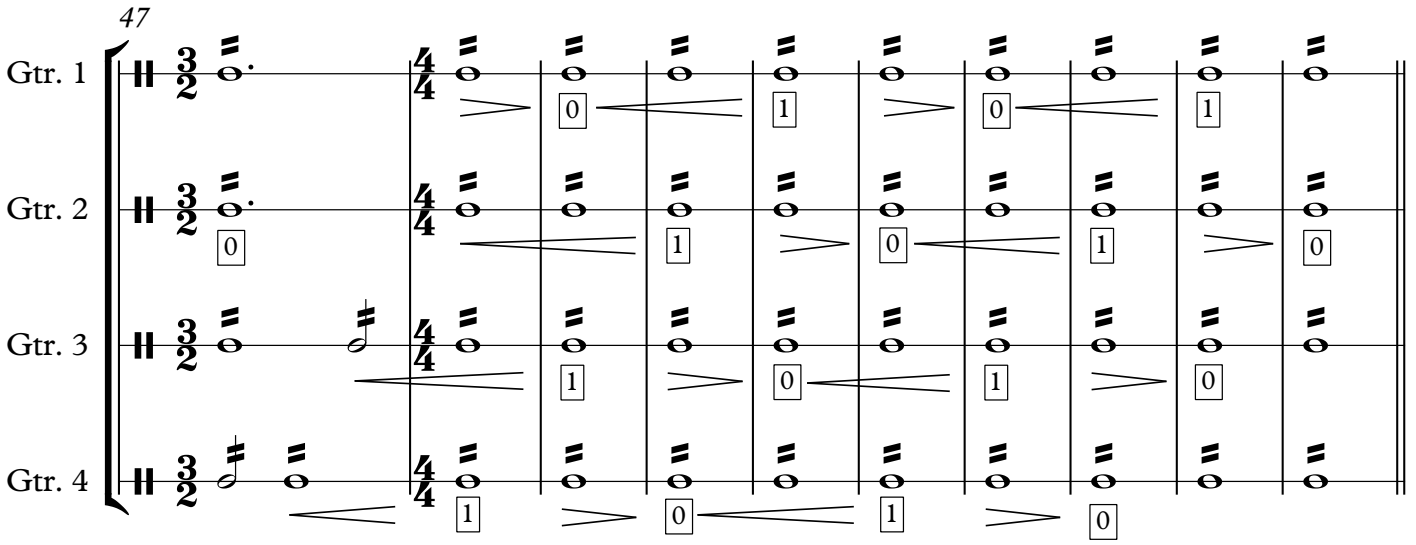
Ben Jameson 2015-16



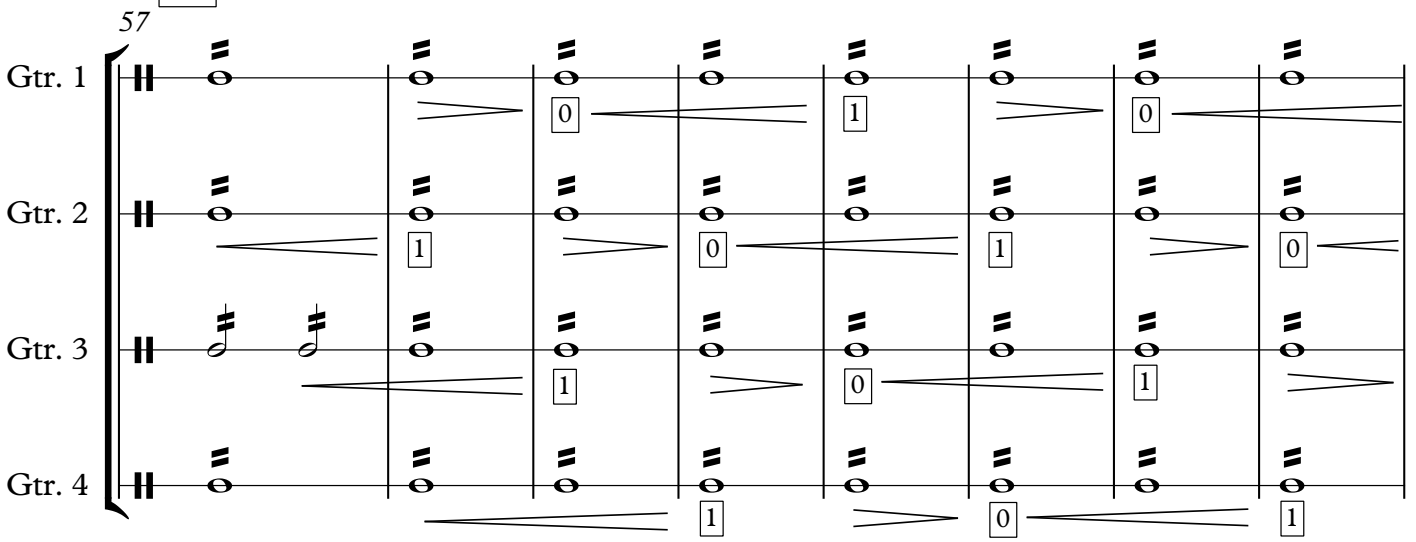

21
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

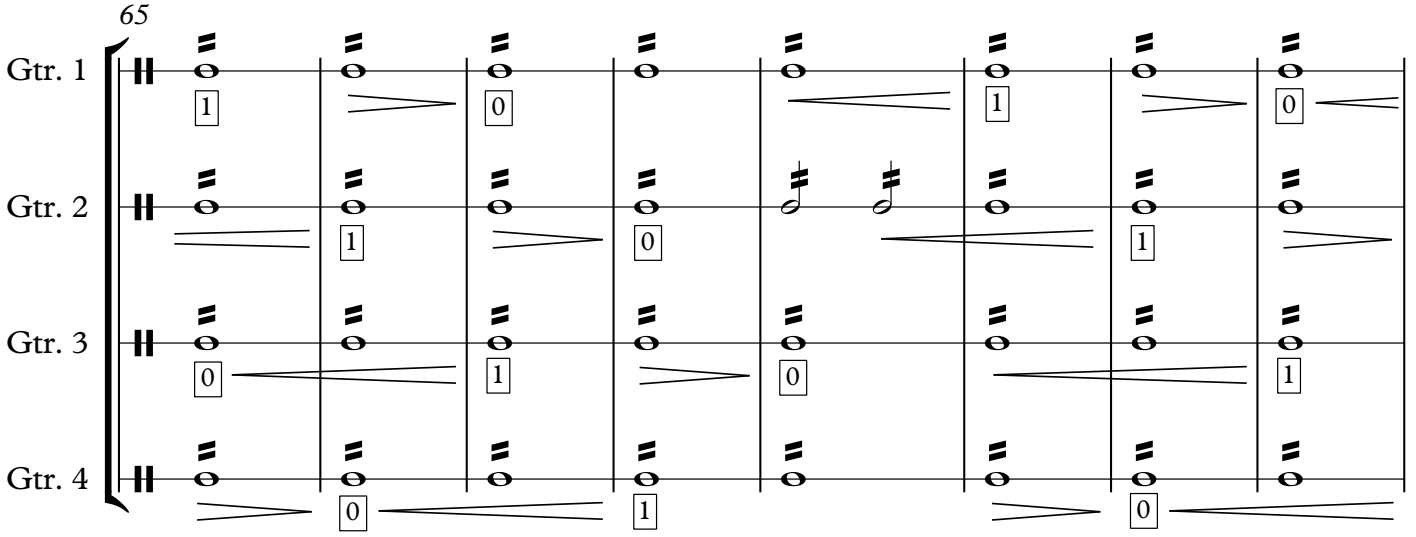

A
30
x3
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

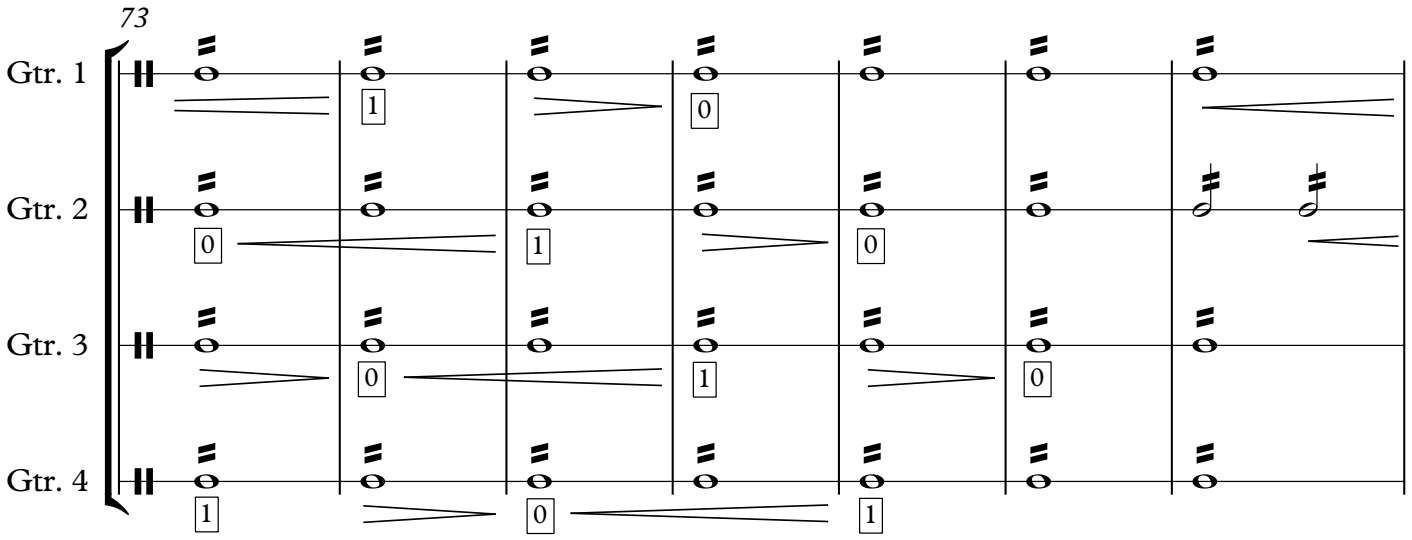

39
x2
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

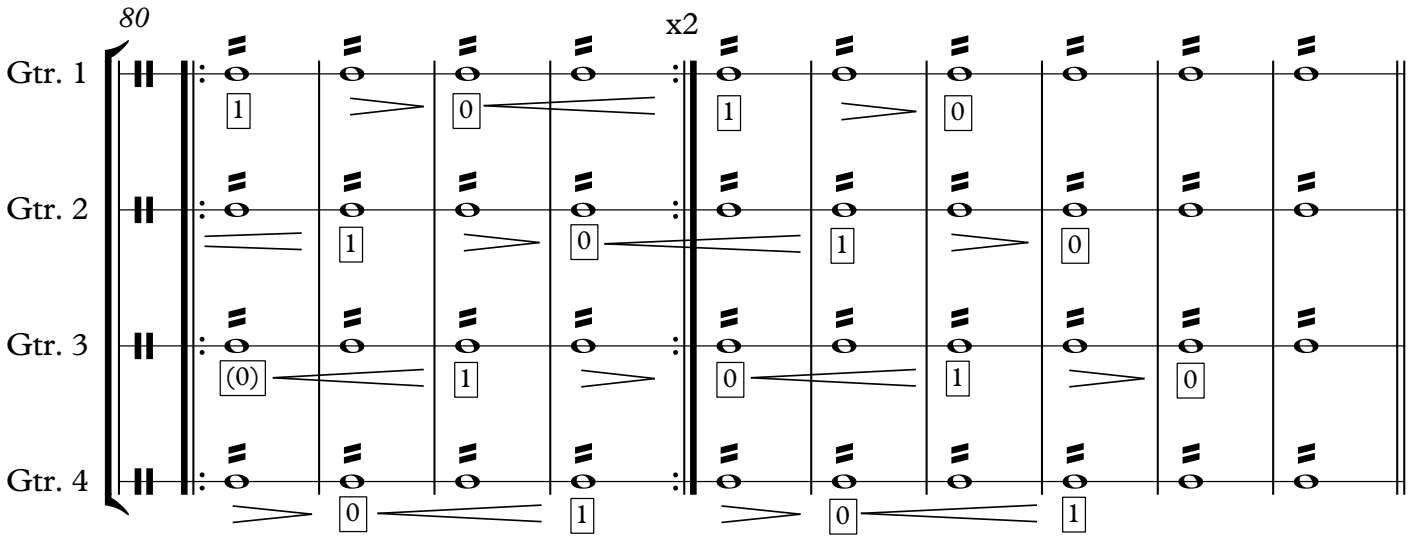

47
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

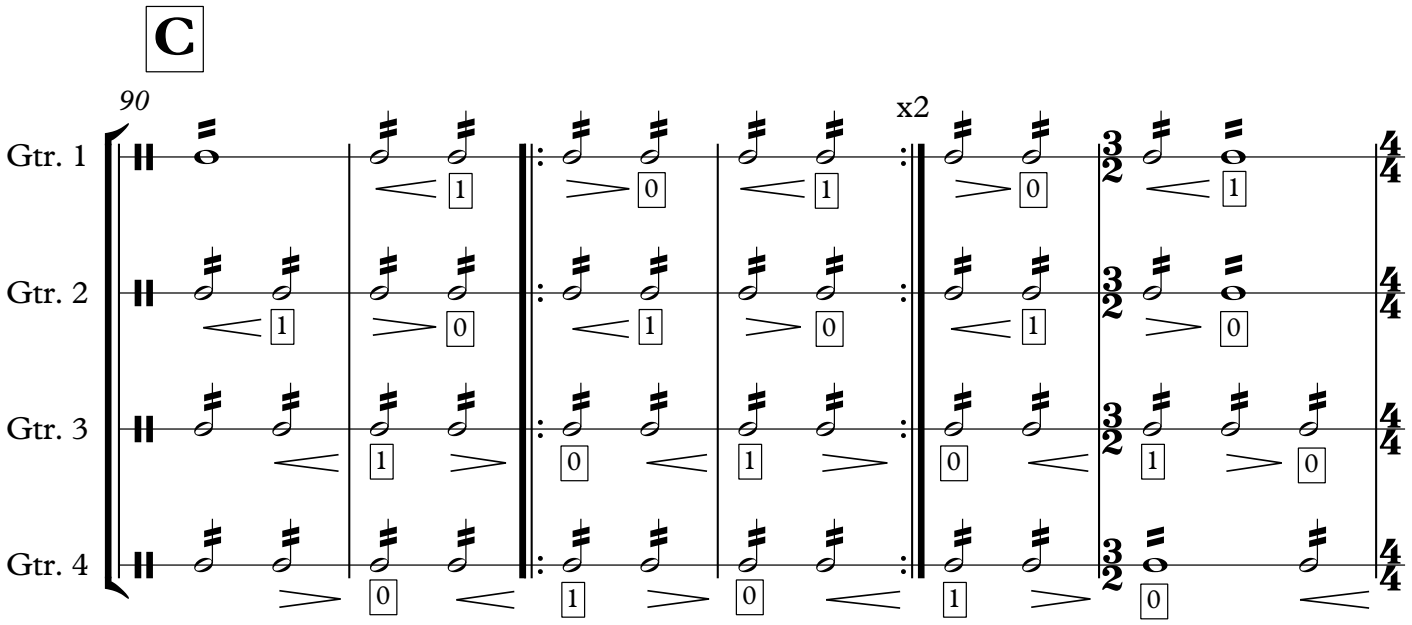
B

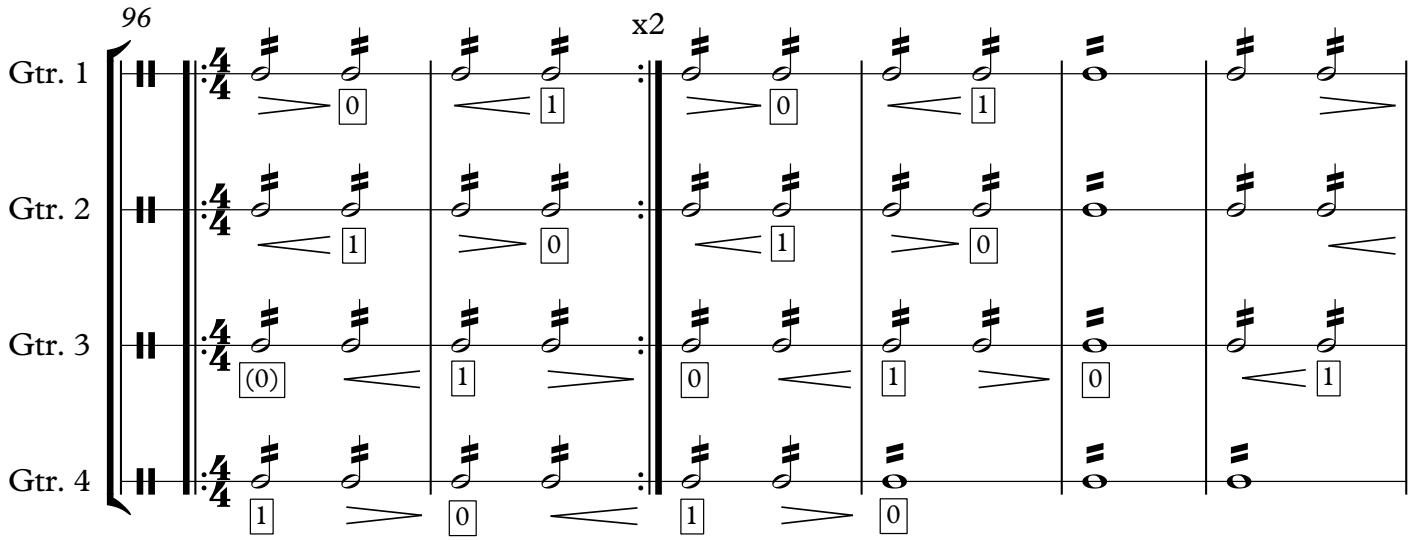

57
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

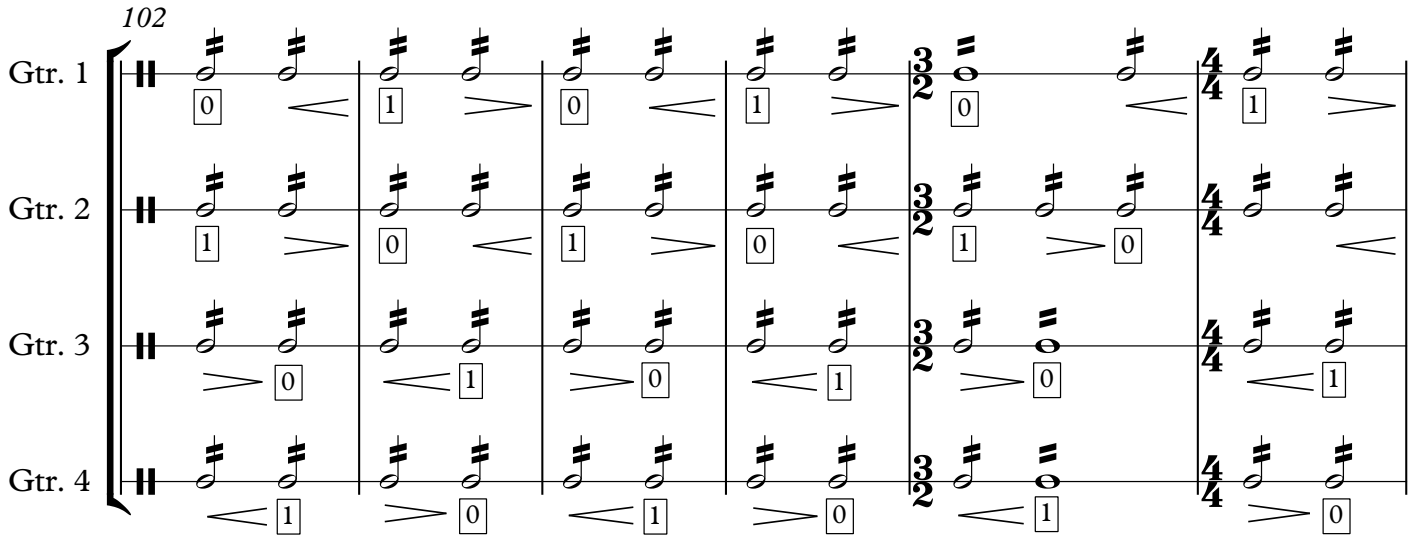

65
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

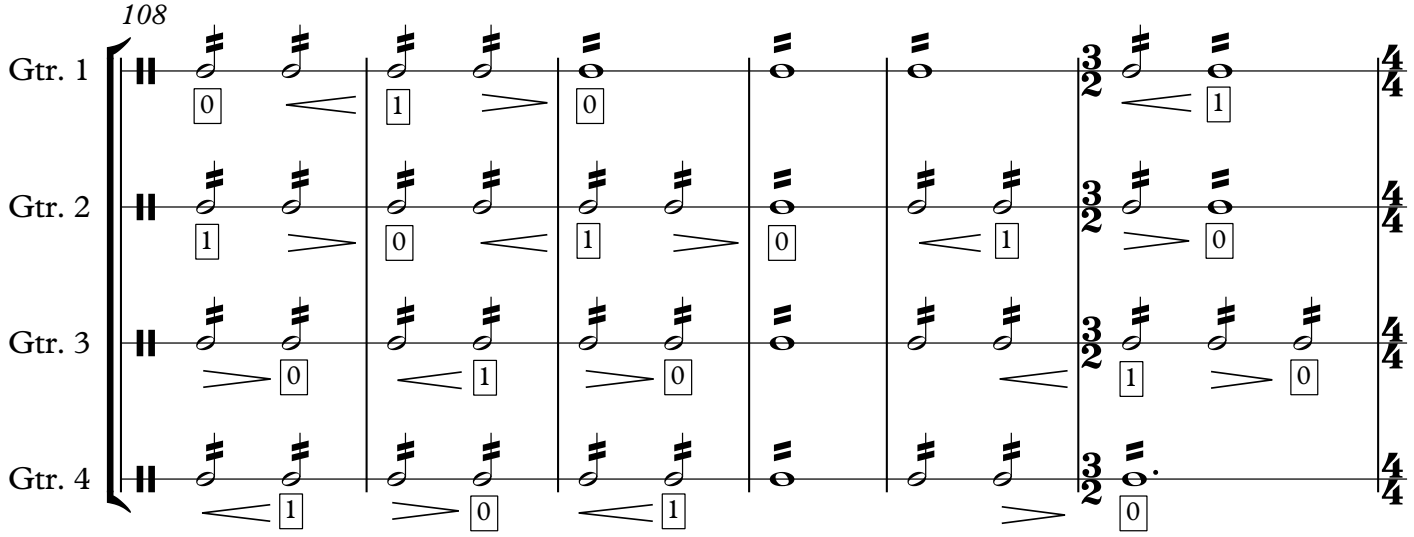

73
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

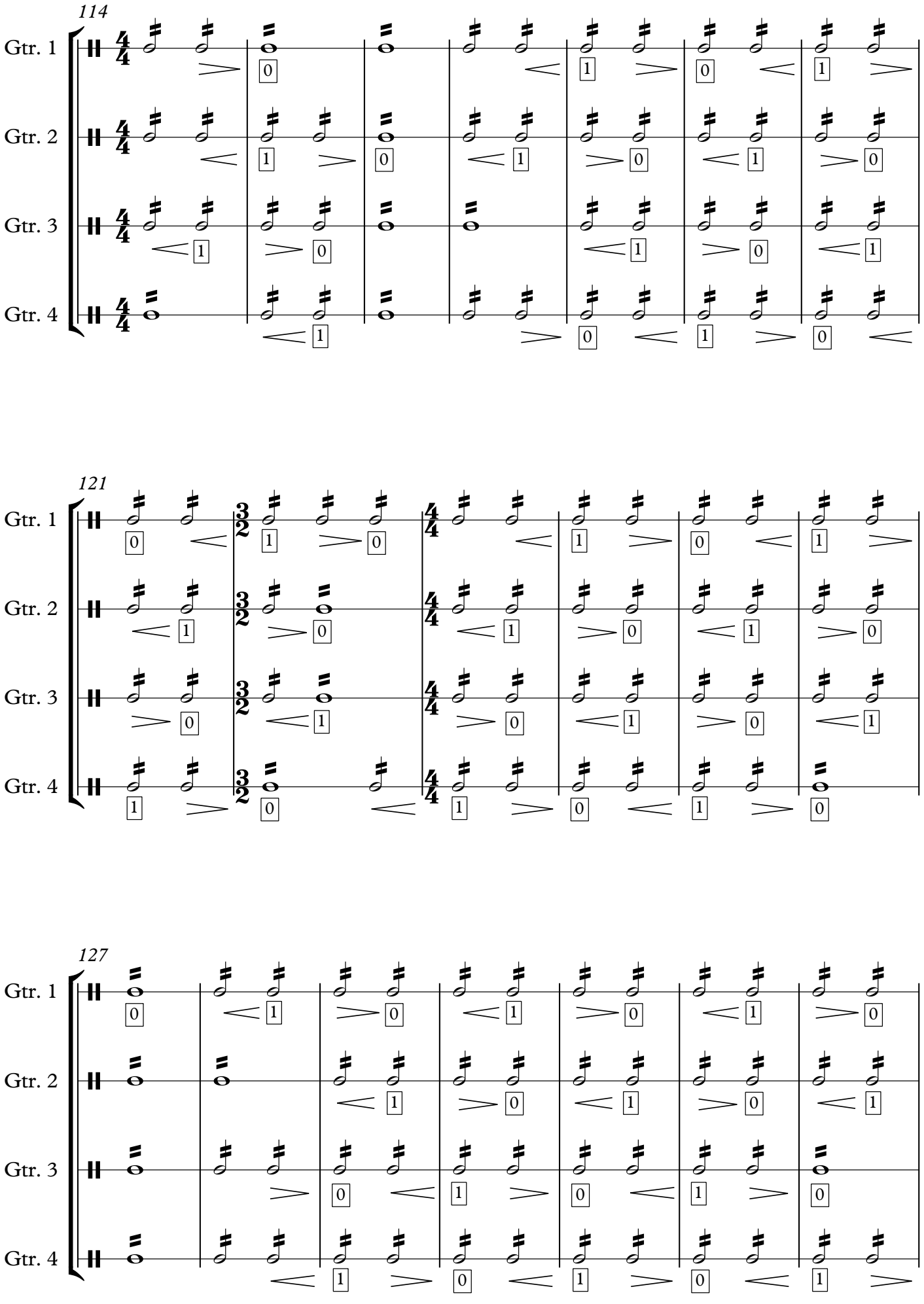

80
x2
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

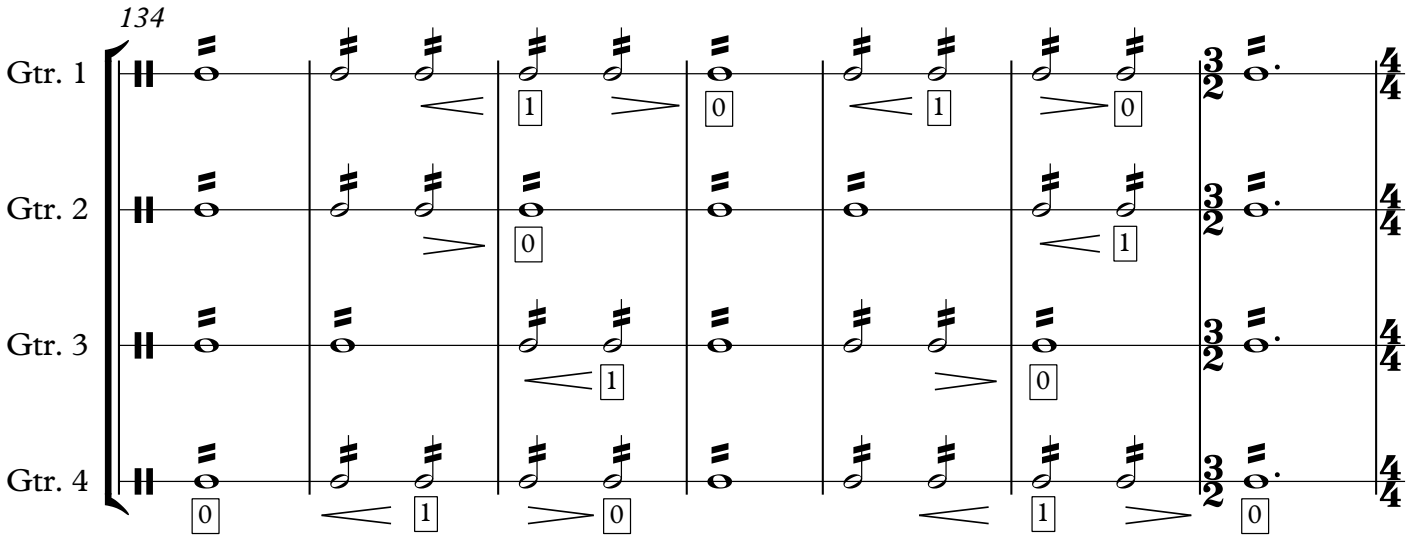

C
90
x2
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

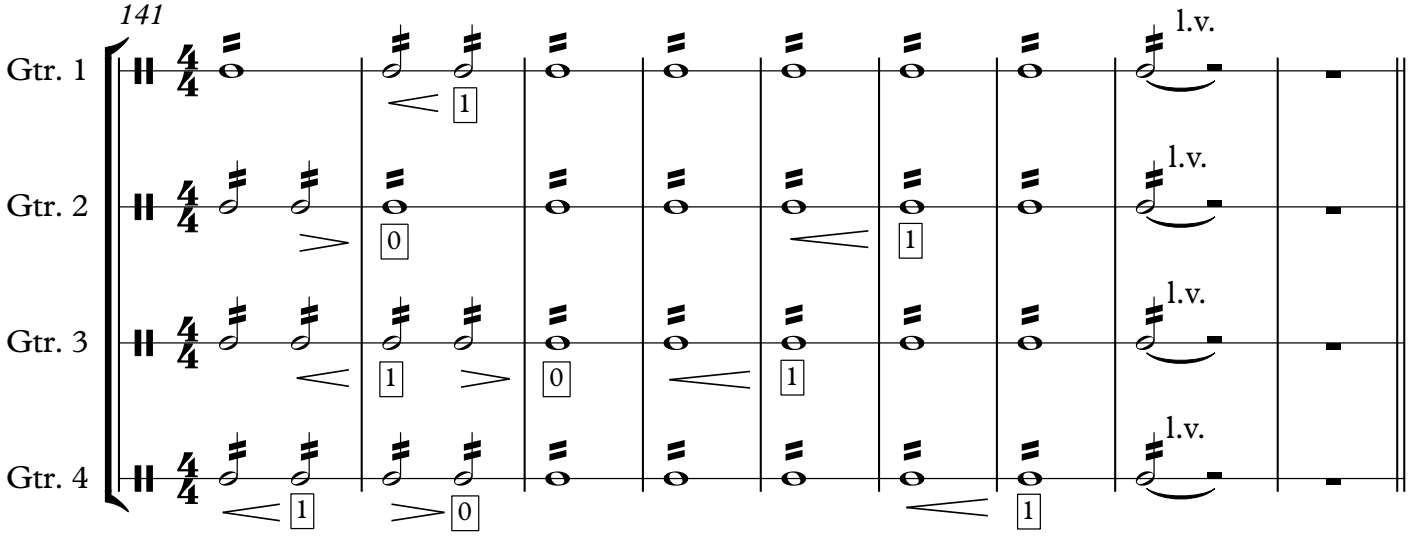

96
x2
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

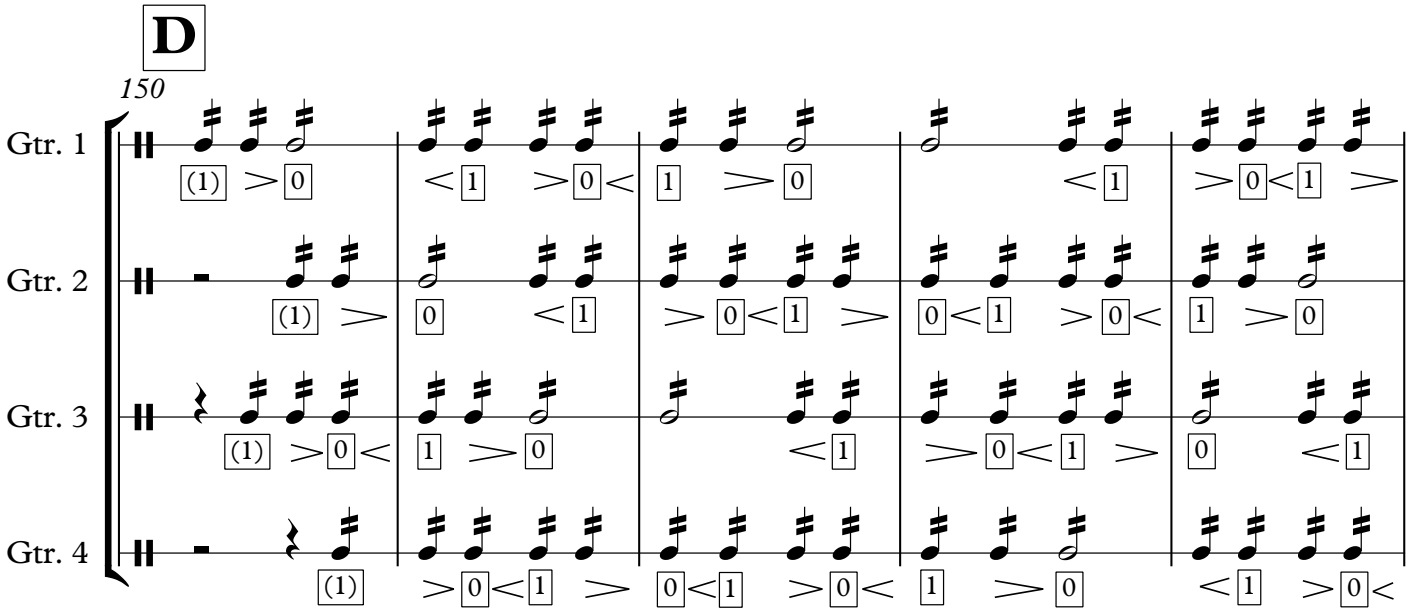

102
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

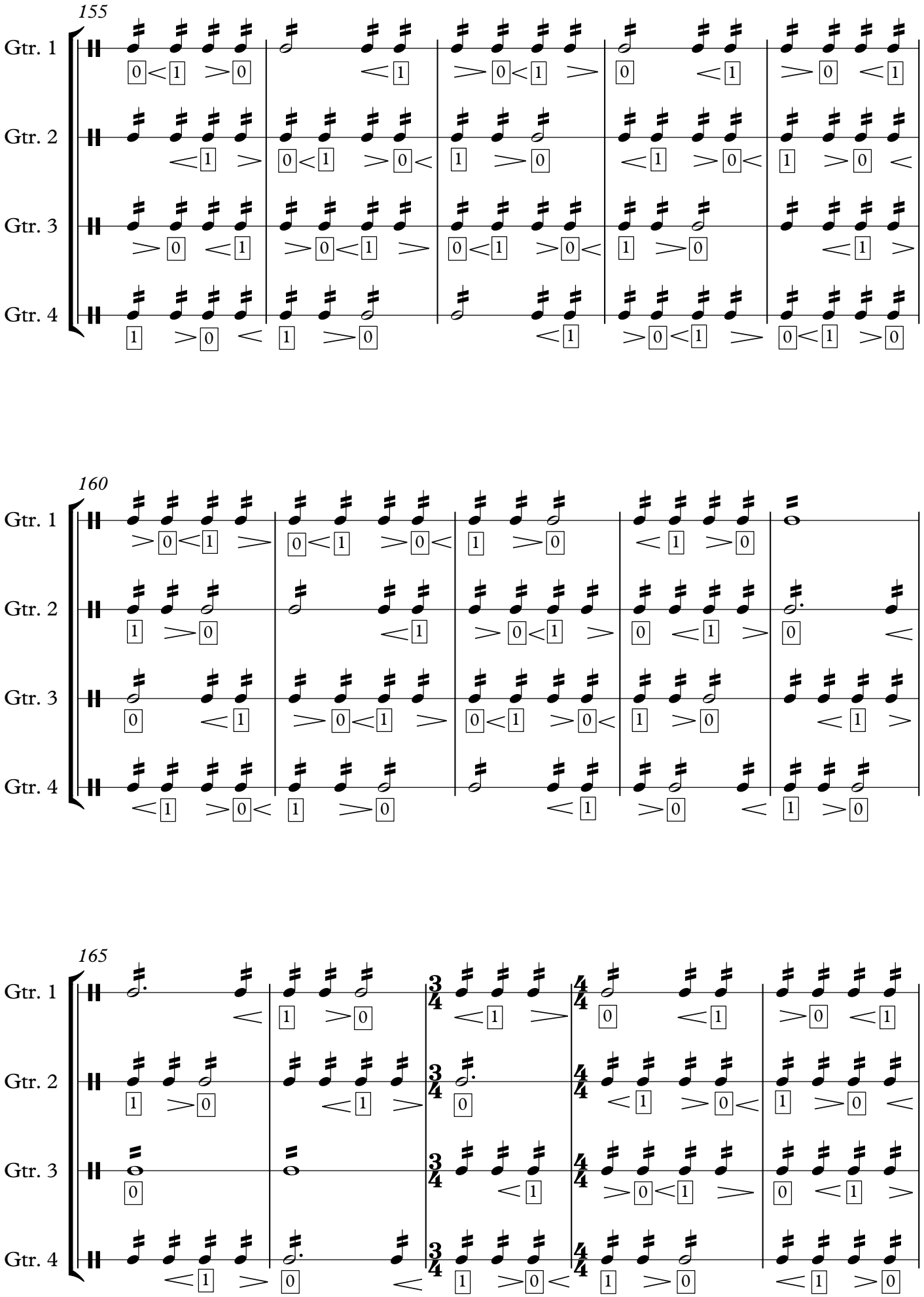

108
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

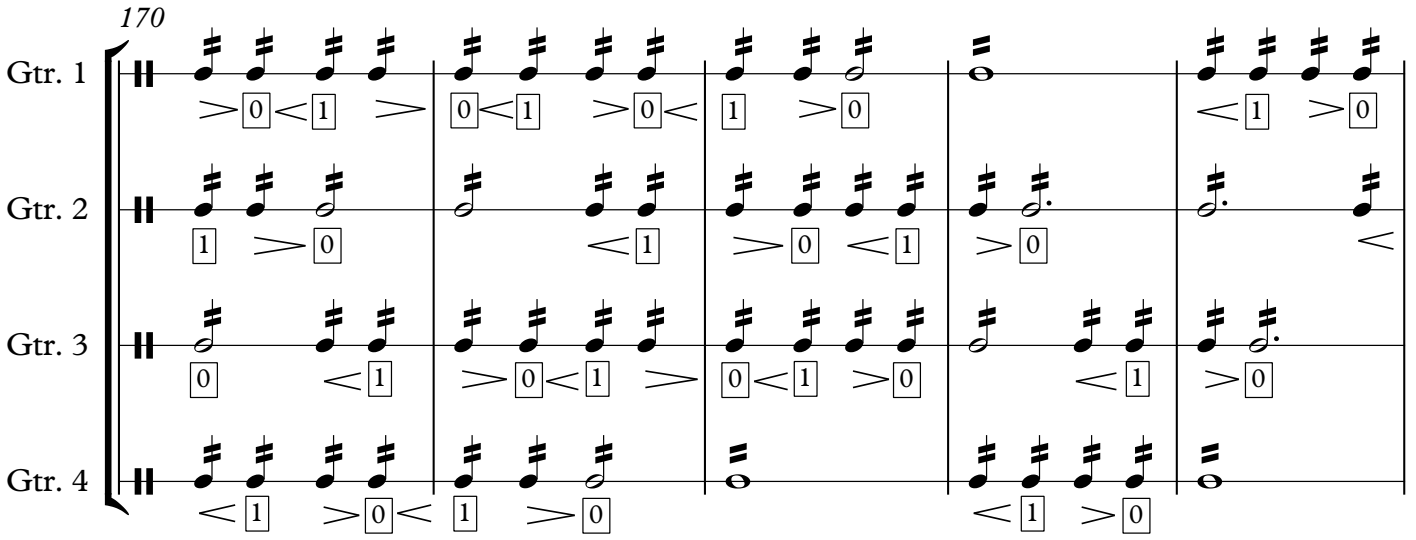

114
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
121
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
127
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

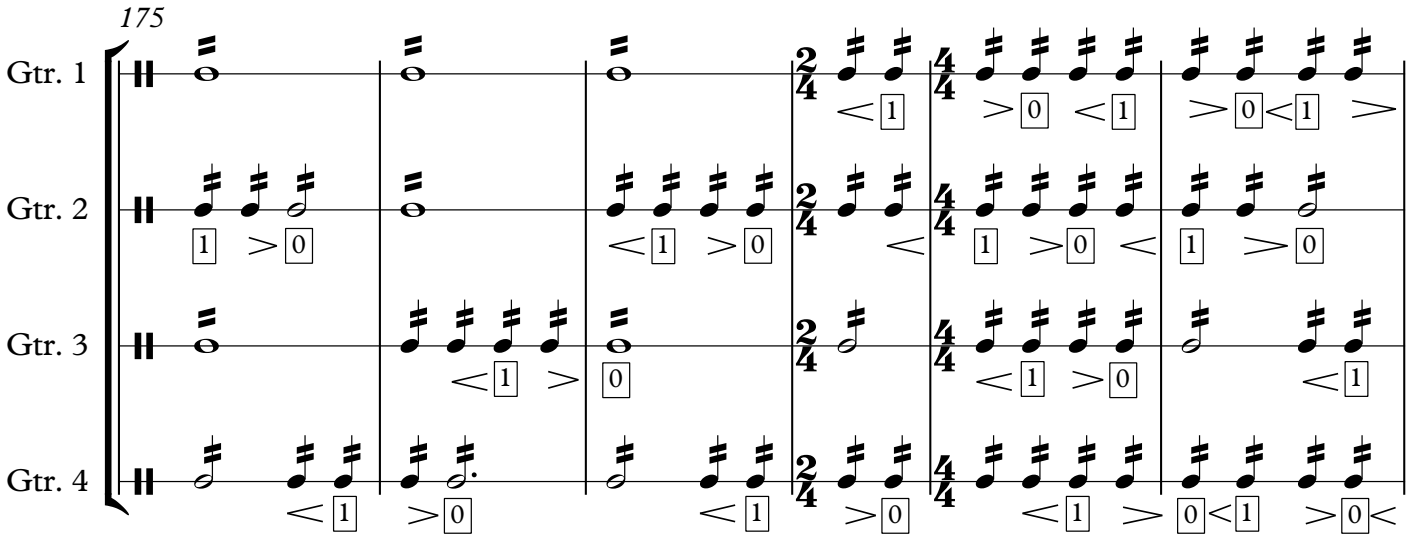

134
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

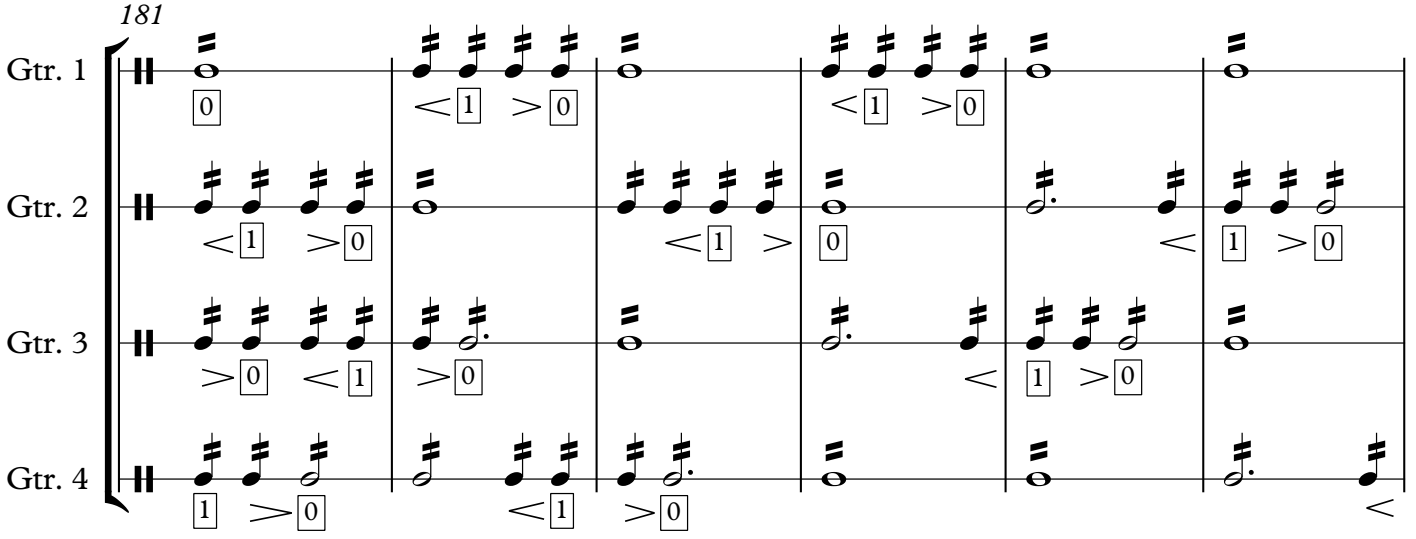

141
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
l.v.

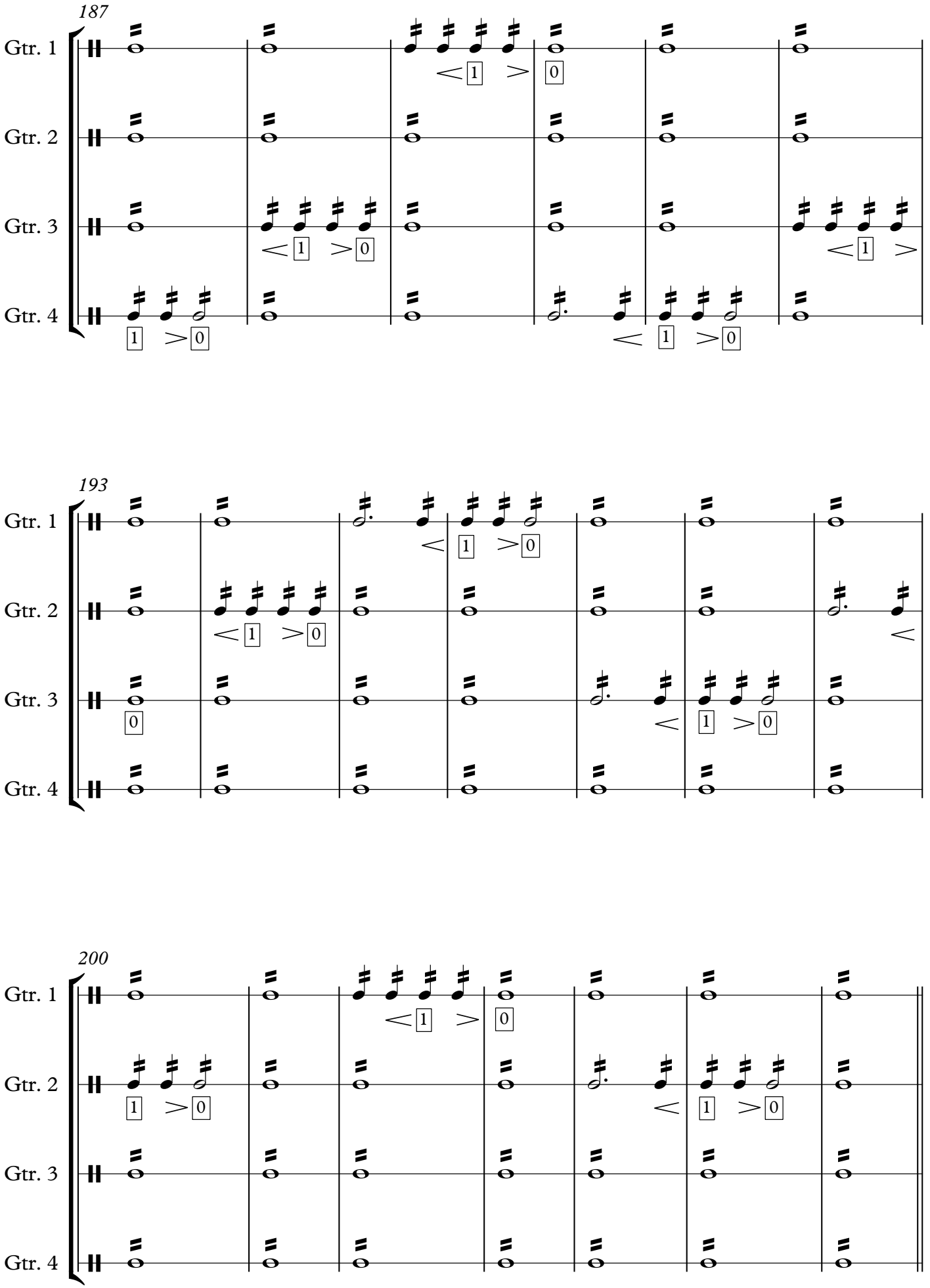

D
150
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4


155
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
160
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
165
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4


170
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4


175
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4


181
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4


187
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
193
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
200
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4

E

207

x3

Gtr. 1

Gtr. 2

Gtr. 3

Gtr. 4

215

x2

Gtr. 1

Gtr. 2

Gtr. 3

Gtr. 4

223

Gtr. 1

Gtr. 2

Gtr. 3

Gtr. 4

232

Gtr. 1

Gtr. 2

Gtr. 3

Gtr. 4

241

Gtr. 1

Gtr. 2

Gtr. 3

Gtr. 4

250

x4

x5

x6

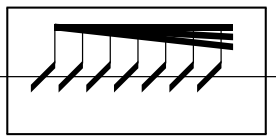
Gtr. 1

Gtr. 2

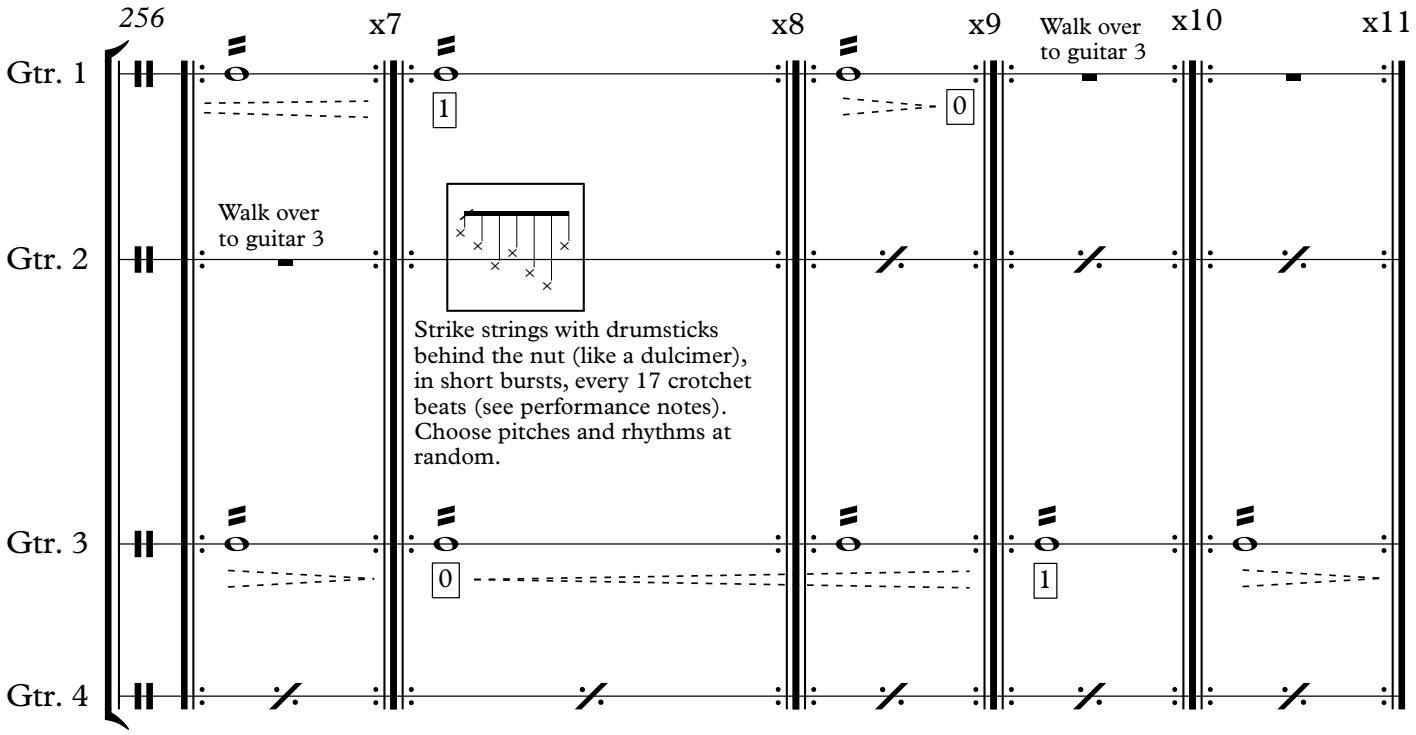
Gtr. 3

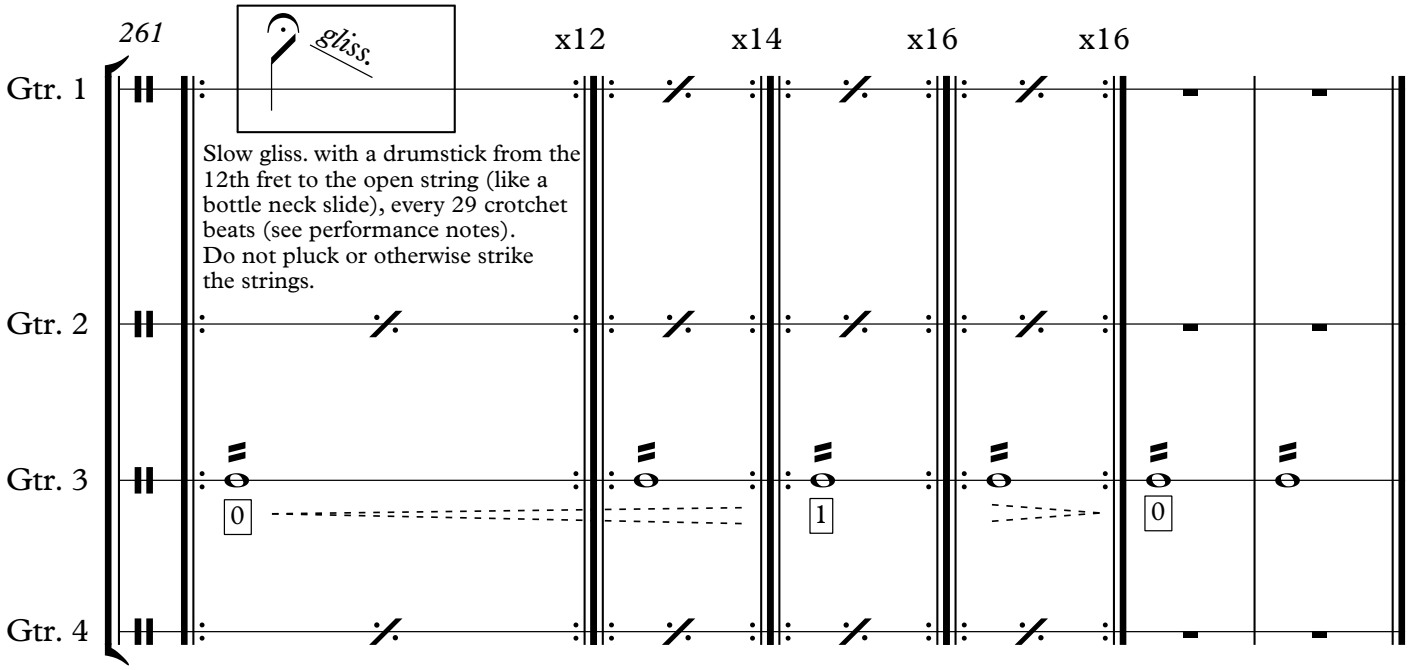
Gtr. 4

Walk over
to guitar 3



Bounce drumstick on strings as close to the bridge as possible, every 21 crotchet beats (see performance notes). Vary the angle of attack ad lib. to produce different chords.


256
x7
x8
x9
Walk over
to guitar 3
x10
x11
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
Walk over
to guitar 3
Strike strings with drumsticks
behind the nut (like a dulcimer),
in short bursts, every 17 crotchet
beats (see performance notes).
Choose pitches and rhythms at
random.


261
gliss.
x12
x14
x16
x16
Gtr. 1
Gtr. 2
Gtr. 3
Gtr. 4
Slow gliss. with a drumstick from the
12th fret to the open string (like a
bottle neck slide), every 29 crotchet
beats (see performance notes).
Do not pluck or otherwise strike
the strings.