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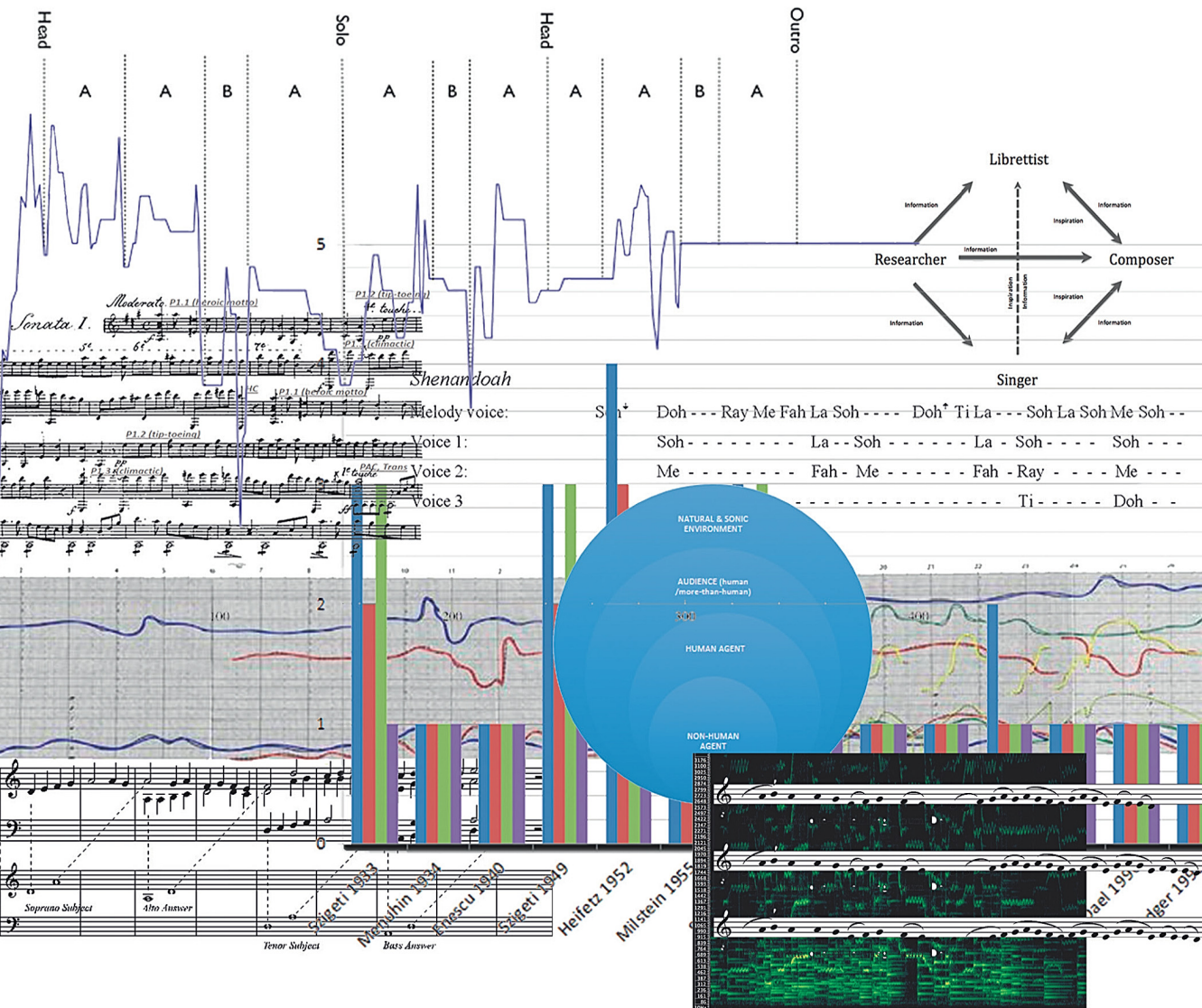
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Emerging Discourses of Analysis and Music Performance [Editorial]

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With the advent of performer-scholars within Australian Universities, as well as the rise of performance-related doctoral research, the intersections between analytical knowledge and performance, or the application of analysis to music performance, are constantly being re-evaluated and reinvented, with many practitioners moving beyond the traditional paradigm of applied score analysis (the so-called 'page to stage' approach).[1] This collection of papers presents several strands of analytical discourse, including: (1) the analysis of music recordings, particularly in terms of historical performance practices; (2) reinventions of the 'page-to-stage' paradigm, employing new analytical methods; (3) analytical knowledge applied to pedagogy, particularly concerning improvisation; and (4) so-called 'practice-led' research.[2]

The notion that music analysis is relevant to music performance has been a persistent meme in the later twentieth century, although the idea is not immune from contestation—particularly objections against any presumed *a priori* superiority of knowledge gained through traditional forms of score analysis, or, alternatively, objections against assertions of only *one* correct musical interpretation.[3] Nicholas Cook offers a clear corrective, insisting that analysis is also an interpretative act—which he refers to as "performative."[4] Similar concerns underlie Kerman's 1980 critique, which suggests that the apparent objectivity of analysis is a façade, and that rather it should be considered a kind of "formalistic criticism."[5] The idea of analysis as performative, and indeed interpretative, has also been recently taken up by Jeffrey Swinkin, who attempts a

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[1] Cook applies this term in his recent monograph *Beyond the Score: Music as Performance* (Oxford: Oxford University Press, 2013), 37. He states that he borrows the term from theatre studies, particularly Susan Melrose, *A Semiotics of the Dramatic Text* (London: Macmillan, 1994).

[2] For a classic definition, see Carol Gray (in "Inquiry Through Practice: Developing Appropriate Research Strategies in Art and Design," *No Guru No Method Conference Proceedings* (Research Institute, University of Art and Design, Helsinki, 1998), 1, http://carolegray.net/Papers%20PDFs/ngnm.pdf.

[3] Much of this literature is listed in footnotes 1-2 of the paper by Paul Hopwood, and in footnotes 6 and 8 of the paper by Jonathan Paget. A strong example of restrictive dogma was Schenker's assertion that "each work of art has only one true rendition," in *The Art of Performance*, ed. Heribert Esser, transl. Irene Schreier Scott (New York: Oxford University Press, 2000), 77. Quoted in Nicholas Cook, *Beyond the Score: Music as Performance*, 37.

[4] Nicholas Cook, "Analysing Performance and Performing Analysis," in *Rethinking Music*, ed. Mark Everist (Oxford: Oxford University Press, 1999), 255ff.

[5] Joseph Kerman, *Musicology* (London: Fontana, 1985), 67. Of course, Kerman particularly had in mind certain schools of musical analysis (namely Schenker and set theory) that had dominated the American academy in the decade prior and whose analytical dogma had an apparent rigour that aspired towards an objectivity that is ultimately illusory.

thought-provoking reconceptualisation of the epistemological foundations of analysis and its relevance to performance.[6] For Swinkin, "we need analysis to tell us not what a piece *is* but rather what it could *be*; . . . not how we already hear a piece or how we should hear it, but rather how we plausibly *could* hear it."[7]

While the hegemony of Schenker and set theory has waned, and theorists no longer entertain pretensions of superior knowledge, musical analysis remains integral, and indeed indispensable to musicology.[8] Nevertheless, as Sally Macarthur recently notes, questions persist with regard to the nature and role of music analysis, its persistent air of positivity, and neglect of historical or cultural considerations:

> Music analysis has been preoccupied with structure and with methods designed to determine how the music works. This focus has portrayed it as positivist and lacking the social and cultural critique that has become standard in new musicology.[9]

Another criticism levelled at music analysis is its apparent preoccupation with the musical score and indeed with abstract theoretical conceptions of musical works, which can be quite disconnected from the actual experience of listening or performing music. Paul Hopwood's paper "Music Analysis and the 'Drastic' Challenge" addresses this ongoing epistemological concern, examining the "gnostic" versus "drastic" dichotomy posed by Carolyn Abbate.[10] As Hopwood expounds, "the drastic experience of music, goes the argument, is active, time-dependent and manifests itself in material acoustic phenomena; whereas 'gnostic' experiences are metaphysical approaches that encourage a retreat from the actual business of music into technical and hermeneutic abstractions of the 'work.'"[11] Pivotal to this discussion is the potential reframing of analysis to include the examination of music as a performed phenomenon, a call echoed by Nicholas Cook in suggesting multiple strands to music analysis: theorist's analysis, performer's analysis, and performance analysis.[12]

Given the fore-mentioned realignment of analytical enquiry to include music as a performed phenomenon, it is no coincidence that a tremendous growth area in recent decades has been the analysis of recordings, which are treated as primary source

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[6] Jeffrey Swinkin, *Performative Analysis: Reimagining Music Theory for Performance* (Rochester: University of Rochester Press, 2016).

[7] Swinkin, *Performative Analysis*, 39.

[8] See Christian Martin Schmidt, transl. Richard Evans, "Music Analysis: Not Universal, Not Almighty, But Indispensable," *Music Analysis* 21 (2002): 23-27.

[9] Sally Macarthur, "Renovating Music Analysis," *Musicology Australia* 38, no. 2 (2016): 185.

[10] Carolyn Abbate, "Music—Drastic or Gnostic?," *Critical Inquiry* 30, no. 3 (2004): 505–36.

[11] Paul Hopwood, "Music Analysis and the 'Drastic' Challenge."

[12] Cook, *Beyond the Score: Music as Performance*, 33-90.

evidence for the discussion of performance practice in an historical context. In this emerging field, a number of different approaches are demonstrated here, from the identification of broader aesthetic trends (as seen in the paper by Krista Low, "Changing Aesthetics and Cello Performance: 1920-1960"); or criteria-referenced studies of changing performance practices over time (such as in the paper by Adrian Yeo and Jonathan Paget, "A Longitudinal Study of Performance Practices in Recordings of Bach's Violin Sonata BWV1003"); the use of spectrograms as a tool for gaining insight into aspects of performance such as rubato, vibrato, or portamento (as in Alix Hamilton's paper "A Portal into the Past: Lionel Tertis's Recording of the Arnold Bax Viola Sonata"); or the use of other more-sophisticated technologically-based tools to investigate potential rhythmic complexities in an improvised ensemble context (as in the paper by Lindsay Vickery and Stuart James, "The Enduring Temporal Mystery of Ornette Coleman's *Lonely Woman*").

The application of analytical knowledge in the pedagogy of improvisatory practices is another growth area, with several relevant papers here, including those by Carol Williams ("The Tonary as Analytical Guidebook for the Performance of Chant"), Stewart Smith ("From Matrix to Model: Conceptualising Improvised Counterpoint at the Organ"), and also Robin Ryan ("Beyond the Buzzword: Eco-Improvisatory Music in Theory and Application")—who conceptualises a kind of "multi-species musicking," whereby performers improvise and interact with the musical sounds of birds and other animals. Also relevant here is the paper by Nicholas Bannan, "Darwin, Fux, and Schenker in the Primary Classroom," which discusses the notion of "Harmony Signing"—a method of using quasi-improvisatory polyphonic singing along with hand signals as a component of aural training.

That there is potential for reinvention of the more traditional 'page to stage'[13] paradigm is demonstrated through Jonathan Paget's paper "Recent Sonata Theory and the Performance of Early Nineteenth-Century Guitar Sonatas," which explores interpretative application of recently-developed theoretical understandings of sonata form, namely those of Hepokoski/Darcy[14] and William Caplin.[15]

So-called 'practice-led' methodologies are also becoming increasingly mainstream in the performing arts in Australian Universities. Such approaches are necessarily pluralistic in methodology and typically place creative practice (such as musical performance or composition) at the forefront as a progenitor and vehicle for research enquiry.[16] The term 'artistic research' is arguably a more apt label (and is increasingly

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[13] See footnote 1.

[14] James A. Hepokoski and Warren Darcy, *Elements of Sonata Theory : Norms, Types, and Deformations in the Late Eighteenth-Century Sonata* (Oxford; New York: Oxford University Press, 2006).

[15] William Earl Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven* (New York: Oxford University Press, 1998).

[16] See footnote 2.

prevalent within music) as this formulation privileges neither practice nor theory in the complex inter-related nexus of artistic knowledge. Nevertheless, these approaches embrace both objectivity and subjectivity. As noted in the description of the recent publication *Perspectives on Artistic Research in Music*, artistic research "comes from inside the practices and exists in a space that accommodates both objective and subjective observation, and analysis, because the researcher is the practitioner."[17] Work that is representative of such approaches (in these proceedings) includes Emma Jayakumar's paper "Facilitating Creative Synergy: An Analytical Approach to the Operatic Creative Process;" that by Cat Hope, "Reading 'Free Music:' Adapting Percy Grainger's 'Free Music' Scores for Live Performance;" and Lucas O'Brien's "Otakar Ševčík's Op. 18 as a Prescribed Method for Attaining Expert Performance."

It is hoped that these contributions will contribute to advancing our understanding of the continuing relevance of analysis to music performance, and the complex ways in which they inform each other, presenting several emergent analytical discourses that continue to develop the field of musicology in ever new and exciting directions.

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[17] See https://rowman.com/ISBN/9781498544825# (accessed 24 Feb 2017). The book is *Perspectives on Artistic Research in Music*, ed. Robert Burke and Andrys Onsmon (Lexington Books, 2017).

Music Analysis and the "Drastic" Challenge

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Introduction

In the last three decades the practice of music analysis has been subject to serious critical pressure: from the mid 1980s and through the 1990s as a result of academic trends associated with the "new musicology;"[1] and more recently, and more profoundly, from scholars who question the way analysis treats, or perhaps more correctly fails to account for, that most fundamental musical experience, performance.[2] Some of the clearest and most influential expressions of that critique can be found in Carolyn Abbate's "Music—Drastic or Gnostic?"[3] Abbate's title derives from a distinction drawn by Vladimir Jankélévitch in his 1961 monograph *La Musique et l'Ineffable*, which Abbate translated and published in 2003. The drastic experience of music, goes the argument, is active, time-dependent and manifests itself in material acoustic phenomena; whereas "gnostic" experiences are metaphysical approaches that encourage a retreat from the actual business of music into technical and hermeneutic abstractions of the "work" (a term to which we shall return shortly). In this brief paper I will address Abbate's challenge by concentrating on the first paragraph of her article, which introduces her most important and telling points, and is thus a suitable surrogate for her argument more generally. Ultimately I will suggest that there is a hint in this paragraph, something of an open door, through which a place might be found for analysis even within the kind of radically changed musicological landscape that Abbate proposes.

Of the six sentences in the opening paragraph, five are questions:

What does it mean to write about performed music? About an opera live and unfolding in time and not an operatic work? Shouldn't this be what we do, since

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[1] Some of the most prominent examples of this critique may be found in Joseph Kerman, "How We Got into Analysis, and How to Get Out," *Critical Inquiry* 6, no.2 (Winter 1980): 311–31; Joseph Kerman, *Musicology* (London: Fontana, 1985); Alan Street, "Superior Myths, Dogmatic Allegories: The Resistance to Musical Unity," *Music Analysis* 8, no. 1 (1989): 77–124; Lawrence Kramer, *Music as Cultural Practice: 1800–1900* (Los Angeles: University of California Press, 1990); Kevin Korsyn, "Brahms Research and Aesthetic Ideology," *Music Analysis* 12 (1993): 89–103; Lawrence Kramer, *Classical Music and Postmodern Knowledge* (Berkeley: University of California Press, 1995); Kevin Korsyn, "The Death of Musical Analysis? The Concept of Unity Revisited," *Music Analysis* 23, nos. 2–3 (2004): 337–51. There are many other examples that might be cited.

[2] Suzanne Cusick, "Feminist Theory, Music Theory and the Mind/Body Problem," *Perspectives of New Music* 32, no. 1 (1994): 8–27; Christopher Small, *Musicking: The Meanings of Performing and Listening* (Middlebury: Wesleyan University Press, 1998); Nicholas Cook, "Between Process and Product: Music and/as Performance," *Music Theory Online* 7, no. 2 (2001); Daniel Leech-Wilkinson, "Compositions, Scores, Performances, Meanings," *Music Theory Online* 18, no. 1 (2012); Nicholas Cook, *Beyond the Score: Music as Performance* (Oxford: Oxford University Press, 2013).

[3] Carolyn Abbate, "Music—Drastic or Gnostic?," *Critical Inquiry* 30, no. 3 (2004): 505–36.

we love music for its reality, for voices and sounds that linger long after they are no longer there? Love is not based on great works as unperformed abstractions or even as subtended by an imagined or hypothetical performance. But would considering actual performances simply involve concert or record reviews? And would musicology—which generally bypasses performance, seeing meanings or formal designs in the immortal musical work itself—find itself a wallflower at the ball?[4]

Four principal issues arise from this paragraph: first, the distinction between performed music and the musical "work;" second, the nature of the activities Abbate has in mind when she speaks of "meanings or formal designs;" third, the possibility alluded to in her final question that musicology (including analysis) might ultimately have to fall silent in order to do justice to music-as-performed; and fourth, the way in which the word "linger" operates to undermine Abbate's argument.

Performed Music Versus the Musical "Work"

Abbate's third question is entirely rhetorical.[5] She argues that we should, of course, acknowledge the drastic, time-dependent nature of music, and practice a form of musicology which "at its most radical allows an actual live performance (and not a recording, even of a live performance) to become an object of absorption."[6] By contrast the gnostic approach to music, Abbate argues, focuses on the musical "work," a term that arises three times in this one paragraph. The concept of the work as Abbate uses it reached perhaps its most comprehensive and decisive expression in Lydia Goehr's book *The Imaginary Museum of Musical Works*.[7] Under Goehr's formulation the musical work is the idea that a piece of music somehow exists independently of performance, that there is such a thing as "Beethoven's Ninth" regardless of whether or not one is listening to it. Goehr traces the development of the idea of the autonomous, abstract musical work to the late eighteenth and early nineteenth centuries, and argues that it remains particularly prevalent in musicology. It goes without saying that the methodology of traditional and familiar music analysis treats the score as if it were a representation of the music itself. Such analysis is thus dependent on the concept of the abstract musical work.

There are manifold problems which Abbate identifies as arising from practising musicology as an investigation of works of music in the gnostic sense. The gnostic attitude "bypass[es] the uncanny qualities that are always waiting nearby in trying to domesticate

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[4] Ibid., 505.

[5] One is reminded of Paul de Man's demonstration of the utility of reading rhetorical questions literally. In one way, this entire paper is the product of an application of de Man's deconstructive strategy to Abbate's third question; see Paul de Man, "Semiology and Rhetoric" in *Allegories of Reading: Figural Language in Rousseau, Nietzsche, Rilke, and Proust* (New Haven and London: Yale University Press, 1979), 3–19.

[6] Abbate, "Music—Drastic or Gnostic?," 506.

[7] Lydia Goehr, *The Imaginary Museum of Musical Works* (Oxford: Oxford University Press, 1992).

what remains nonetheless wild."[8] At the same time it privileges a notion of "knowledge based on semiosis and disclosed secrets, reserved for the elite and hidden from others."[9] It gives the false impression that embedded in music is a kind of magical reservoir of "otherwise lost information, revelations about human kind or its societies that no other art can transmit."[10] While Abbate acknowledges that maintaining a certain gnostic distance between oneself and music can help to leave open the range of available meanings and experiences, she argues that it can also, on the other hand, "foreclose much that is of value, both intellectually and morally, in encountering a present other at point-blank range."[11] Not only would a musicology based on performance avoid these difficulties; it might bring considerable benefits. "The experience of performed music," she writes, "may well assist to free us from the devastating hegemony of the word."[12] Finally Abbate suggests that performed music's presence is somehow, and in some sense, a promise of life.[13]

It can seem difficult to argue against Abbate on these points. How can one really cavil with the suggestion that analysis should deal with that which is most unique and wonderful about music, its experience in/as performance? Nevertheless there is one respect in which Abbate's distinction between music-as-performed and the musical work seems open to further development or, indeed, to a degree of contradiction: she is not as clear as she might be as to what constitutes performance.

To begin with, it is clear that Abbate does not regard listening to a recorded performance as a drastic experience. Why this is so is not entirely clear from her essay, but is seems to emerge from the proposition that "the very fact of recording … alter[s] a basic chemistry, making the event an artefact, handheld and under control, encouraging distance and reflection."[14] This immediately brings to mind, as an objection to Abbate's argument, recent scholarship by Nicholas Cook and Daniel Leech-Wilkinson that pays extremely close attention to nuances in the recorded performances of early twentieth-

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[8] Abbate, "Music—Drastic or Gnostic?," 508.

[9] Ibid., 510.

[10] Ibid., 524.

[11] Ibid., 532.

[12] Ibid.

[13] Ibid., 533. See also the passage at 534–535: "Music is ineffable in allowing multiple potential meanings and demanding none in particular, above all in its material form as real music, the social event that has carnal effects. The state engendered by real music, the drastic state, is unintellectual and common, familiar in performers and music lovers and annoying non-musicologists, and it has value. When we cannot stare such embarrassing possibilities in the face and find some sympathy for them, when we deny that certain events or states are impenetrable to gnostic habits, hence make them invisible and inaudible, we are vulnerable. For, denying mystery, the perplexing event, the reticence such things may engender, means being prey to something that comes to call at its nocturnal worst, as coercive mysticism and morbid grandiloquence."

[14] Ibid., 534.

century pianists and, it seems to me, stands as an exemplary demonstration of the ways in which analysis of music can take place by way of engagement with recordings, paying the drastic experience its full due. Listening to recorded music is perhaps the archetypal musical experience of our time, and many will no doubt say that a recording can be every bit as "physically brutal, mysterious, erotic, moving, boring, pleasing, enervating, or uncomfortable, generally embarrassing [or] subjective"[15] as listing to live music. Indeed, by many criteria, what distinguishes a good recording from a poor one is the sense that it is able to bring of the live performance. A good recording brings a sense of the drastic. It is not clear why Abbate is so firm in maintaining this boundary.

The difficulties with basing her argument on something called "performance" are made clear in the first concrete example Abbate gives in her essay. She describes the experience of accompanying a singer in a lecture-recital in a performance of "Non temer, amato bene" from Mozart's *Idomeneo*, and reports how, while playing, she self-consciously tried to ask herself the kinds of questions that arise from a gnostic, hermeneutic attitude to the score: where amongst the notes to locate an Enlightenment sensibility or subjectivity, the sense of absolute monarchy, or Idomeneo's secret sexual agitation so frequently said to be implicit in this work? Unsurprisingly Abbate found that posing these questions meant nothing to her in her capacity as a performer: indeed there was something preposterous about the attempt. So far, so unobjectionable. However she proceeds to suggest that the difficulties the performer faces in adopting a gnostic approach apply equally, albeit with less force, to listeners:

> . . . [I]f performing is a case weighted towards the drastic, moving to listening allows no vastly greater reflective distance or safer haven from the presence of musical sound. Listening as a phenomenon takes place under music's thumb.[16]

Granted, listening takes place in the moment, and is to a real extent time-dependent and carnal. To that extent it is drastic in Jankélévitch's sense. However there is something fundamentally different about listening as opposed to performing, which involves the application of great skill, craft and intense concentration, and thus requires a kind of mental activity quite distinct from that of the audience. To conflate these two activities under the term "performance," and to argue for "music-as-performed" is to gloss too quickly over a significant distinction. I will return to some of the consequences of this unhelpful obfuscation shortly. For now, let us turn to another key phrase in Abbate's first paragraph: "meanings or formal designs."

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[15] Ibid., 513–14.

[16] Ibid., 512.

"Meanings or Formal Designs"

As the last sentence of the paragraph makes clear, Abbate regards musicology that focuses on meanings or formal designs as highly problematic: this composite phrase stands for the two kinds of musicology she is arguing against. The distinction Abbate draws between meanings and formal designs is between a musicology that adopts a hermeneutical approach and attempts to trace embedded meaning in music—the kind of approach typical of the new musicology of the 1990s—and more traditional formal and structural analysis. Much of her argument for performance is directed against the hermeneutical "new musicological" approach. Indeed for much of the essay Lawrence Kramer seems to be the unnamed bugbear,[17] and the hermeneutic approach receives the most sustained criticism (which is perhaps ironic given that Abbate's *Unsung Voices* (1991) is generally considered one of the foundational texts for the new musicology.) Perhaps Abbate felt that the case against analysis had already been made, for instance in Joseph Kerman's 1980 article "How We Got Into Analysis and How to Get Out"[18] and his 1985 monograph *Musicology*.[19] Her criticism of analysis certainly resembles Kerman's, namely, that analysis does not "get at what used to be called the music itself" and that, as a species of formalism, its "rush to descriptive taxonomies" and highly developed technical apparatus ultimately distances the analyst from real music.[20] Though analysts might cite their detailed engagement with the score as a kind of surrogate for the immediacy of musical experience, Abbate suggests they have "no business doing so. Like hermeneutics [analysis] is routinely fixated upon works and inattentive to actual performances."[21] Thus Abbate's critique is directed against both the new musicological procedure of locating historical and cultural meaning within a musical work, and the older, less fashionable practice of music analysis, particularly insofar as it is focussed on form and harmonic structure.

There are several points to be made here. First, Abbate was not the first to lump analysis together with a hermeneutical approach to musical meaning, and to criticise both on the same basis. In the course of the now famous exchange with Lawrence Kramer conducted in Volume 53 of the journal *Current Musicology*, Gary Tomlinson suggested that:

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[17] Karol Berger also notices the significance of the unnamed Lawrence Kramer as a target of Abbate's criticism, and, he adds, Abbate also seems to take aim at Susan McClary and Theodor Adorno. Karol Berger, "Musicology According to Don Giovanni, Or: Should We Get Drastic?", *The Journal of Musicology* 22, no. 3 (Summer 2005): 495.

[18] Kerman, "How We Got into Analysis, and How to Get Out."

[19] Kerman, *Musicology*.

[20] Abbate, "Music—Drastic or Gnostic?", 530–31.

[21] Ibid., 531.

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> . . . [W]e need to move away from the whole constraining notion that close reading of works of music, of whatever sort, is the sine qua non of musicological practice. . . . It is not enough to cast our close readings in the light of new methods—narratological, feminist, phenomenological, anthropological, whatever. For it is the act of close reading itself that carries with it the ideological charge of modernism.[22]

Thus, even as early as 1993, Tomlinson foresaw a fundamental difficulty with the new musicology, namely, that it was every bit as reliant on an abstract concept of the musical work as was the practice of formalist analysis that it sought to displace.

Second, the criticism that all music analysis is a kind of formalism should not be accepted without significant scrutiny. In a direct response to Kerman's plea for a "more humane" musicology, a musicology that turned away from, among other things, the empty formalism and cultural insularity of music analysis, Kofi Agawu accused Kerman of being a poor historian.[23] Kerman's broad-brush characterisation of the entire practice of music analysis as "formalist" failed to acknowledge that the practice of music analysis had always been fragmented and diverse, and contained many strands that sat uneasily with the idea of formalism.[24] Kerman's critique, and by extension, Abbate's critique, therefore attacks a "straw man" constructed for the purpose of an argument, but which is not necessarily a valid representation of actual analytical practice.

A formalist view regards music as autonomous, distinct from the world, abstract, transcendental. The formalism of music analysis is often said to be manifest in the way that it seeks to demonstrate the organic unity and the structural integrity of music, and in the way that it explicitly or implicitly makes claims that such musical structures somehow represent or embody transcendental truths. However this kind of thinking may in fact commit a serious error of logic. As Julian Horton suggests,[25] prominent postmodern thinkers including Jacques Derrida, Jean-François Lyotard, Jean Baudrillard and Richard Rorty, "seem to be concerned, in different ways, with moving reason from the domain of truth to the domain of discourse."[26] That is, the idea of truth is generated by a form of language based on a particular kind of reasoning. Analytical truths, in this sense, are a function of style rather than transcendent qualities. It is not valid, therefore, to criticise music analysis on the basis that it makes claims to some transcendent truth, when in reality all it claims is to generate "truths" that are specific to its own modes of inquiry. To

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[22] Gary Tomlinson, "Musical Pasts and Postmodern Musicologies: A Response to Lawrence Kramer," *Current Musicology* 53 (1993): 18–24.

[23] Kofi Agawu, "Analyzing Music under the New Musicological Regime," *Music Theory Online* 2, no. 4 (1996).

[24] Agawu, "Analyzing Music under the New Musicological Regime," 16–22.

[25] Julian Horton, "Postmodernism and the Critique of Musical Analysis," *The Musical Quarterly* 85, no. 2 (2001): 342–66.

[26] Horton, "Postmodernism and the Critique of Musical Analysis," 351.

criticise music analysis as formalist is to make the category error of equating "the rational in music-analytic terms . . . to the rational as an instrument of post-Enlightenment philosophy."[27]

For these reasons it is valid to question Abbate's characterisation of analysis as formalist, and therefore to question whether it really presents the kinds of problems she describes and seeks to overcome by urging a turn to the drastic.

"Wallflower at the Ball"

At several points Abbate raises the possibility that paying due regard to the drastic nature of musical experience might mean something of an end point for musicology as we know it:

> In practical terms, [fixing upon actual live performances] would mean avoiding the tactile monuments in music's necropolis—recordings and scores and graphic musical examples—and in the classroom this is nearly impossible. In some larger sense it might even mean falling silent, and this is difficult to accept because silence is not our business, and loquacity is our professional deformation.[28]

Happily for academic musicologists, Abbate concludes that "a taste for the drastic need not dictate silence;"[29] however, she sounds the warning that it is not sufficient to turn to performances and treat them as "just another object awaiting decipherment, a recordable text subject to some analytical method yet to come."[30] Such an approach would simply be to transfer one's focus from the abstract musical "work" to the abstract musical "performance," in respect of which, presumably, musicology would commit all the same crimes of formalism and hermeneutics all over again.

Unfortunately, the solutions Abbate proposes to the conundrum are frustratingly vague. Worse still are the examples she gives at the conclusion of her essay of the kinds of writing about musical performance that meet her demands for an engagement with the drastic nature of the experience. In each case she describes unique and personal reactions to specific performances: the way her memories of 9/11 supplied the meaning of an unusual sound in an opera by Laurie Anderson; and the experience of hearing the tenor in *Die Meistersinger* struggle with a failing voice at a critical moment. One is struck by the profoundly subjective nature of these examples. They are essentially incontrovertible personal experiences and as such appear to have only a marginal place in academic discourse. If an engagement with the drastic means writing like this, then

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[27] Ibid., 346.

[28] Abbate, "Music—Drastic or Gnostic?," 510.

[29] Ibid., 513.

[30] Ibid.

essentially we may well be doomed to silence. The last point may provide something of a way forward.

"Linger"

As indicated at the outset of this paper, the idea that musical performance can "linger" can be understood in a way that significantly undermines Abbate's argument. Here she is suggesting that performed music is uniquely valuable because its qualities linger in the mind. But if a performance lingers, has it not become, simply by virtue of being remembered and considered after it has gone, precisely the abstract object of the gnostic attitude? Karol Berger reminds us of Augustine's description of the temporal experience:

> The mind not only marks attentively what happens in the present moment, it also expects what will happen in the future and remembers what has happened in the past. The experience is the gradually enriched palimpsest consisting of the superimposed layers of the constantly diminishing expected future, the ever-changing marked present in which the expectations are confirmed or disproved and thus instantly transformed into memories, and the ever growing remembered past.[31]

On this formulation, which can hardly be gainsaid, there is something reflective, distancing, indeed *gnostic* inextricably bound up with the drastic experience. One inevitably reflects on what has been and what might yet be even in the moment one is subject to what is. While listening, an audience member's mind shifts through a range of registers: from contemplating the skill of the performer and the beauty of the sound, to the historical context of the work, its similarities to and difference from other works, to other performances and recordings of the work that he or she has heard, and even to such mundane matters as what the soloist is wearing and what is for dinner. And yes, one of the registers of audience thought during a performance may well be directed at matters traditionally the subject of music analysis: form and melody/harmony.

Here we may draw something of a conclusion, a suggestion as to how analysis can engage with music in a way which does not fall foul of Abbate's legitimate concerns and criticisms of the gnostic approach. If analysis is to engage more directly with music-as-performed (and it seems logical that it does), it must almost certainly be concerned with listeners rather than performers. "Performance" is an unhelpful term that conflates and confuses two quite separate activities. Further, there seems no reason not to include the experience of listening to recorded music. Abbate's proposed exclusion of discussion of recordings from academic discourse seems to be a strategy designed to privilege one form of cultural consumption over its more widely practised alternative; and to permit musicology to focus only on live music may well be to perpetuate an unsustainable bias

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[31] Berger, "Musicology According to Don Giovanni," 497.

towards high culture. Such analysis as is practiced need not inevitably be "formalist," focussed on large-scale structural/harmonic organisation. There are plenty of ways to analyse music that do not aim at formalist ends.[32] And to the extent that it is so focussed, perhaps it should better be understood as simply a phrase regimen, a mode of discourse that facilitates an engagement with the score, but not one that makes a claim for transcendental truth beyond its own terms. Finally, music analysis should perhaps be regarded as a method by which we can give expression to one important but far from exclusive way to engage with music, an exploration of the way we can listen to music's structure, its gestures, its texture and harmony. Analysis might give expression, in acceptable academic discourse, to the way in which we can engage with the wonder and beauty of music's drastic moment.

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[32] For example, consider Naomi Cumming, "The Subjectivities of 'Ebarme Dich'," *Music Analysis* 16, no. 1 (1997): 5–44.

Changing Aesthetics and Cello Performance 1920–1960

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A number of scholars see the 1920s as a turning point in relation to instrumental playing styles. The rejection of overly romantic modes of performance coincided with the ascendency of a playing style that sought to represent the letter of the notation over its interpretation. Performers of the era were, as noted by Bruce Haynes, characterised by their "formal clarity, emotional detachment, order and precision" whilst at the same time rejecting the romantic style's "excessive rubato, its bluster, its self-indulgent posturing and its sentimentality."[1] Similarly, Richard Taruskin characterises this emerging modernist performance style as "text centred, hence literalistic" and "impersonal, hence unfriendly to spontaneity."[2] Robert Philip's examination of early recordings identifies how these values were manifested in performance as a move "towards greater power, firmness, literalness, clarity and control and evenness of expression, and away from informality, looseness and unpredictability."[3]

While such observations encompass the general instrumental practices of the time, sources of the period which specifically concern the cello, including treatises, memoirs, and of course sound carriers, register a similar aesthetic shift and most describe the modernisation of cello technique. Nevertheless, an examination of the views of cellists during this time reveals varied and often conflicting approaches. This article examines the attitudes towards performance practice of influential cellists of the period, thereby contributing to an understanding not only of the music and emotional climate of the time, but also of the inherited influences of such aesthetic changes today.

Hugo Becker (1863–1941) and Julius Klengel (1859–1933) were both at the forefront of German cello pedagogy in the early twentieth century and embody two opposing schools of thought. Of the two cellists, Becker was, as noted by David Johnstone, more aware of the aesthetic changes occurring during his lifetime, hence it was he who moved more decisively towards modernising cello technique.[4]

Becker's 1929 treatise *Mechanik und Ästhetik des Violoncellospiels*, written in collaboration with physiologist Dago Rynar, outlines practices that are consistent with

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[1] Bruce Haynes, *The End of Early Music* (Oxford: Oxford University Press, 2007), 49.

[2] Richard Taruskin, *Text and Act: Essays on Musical Performance* (Oxford: Oxford University Press, 1995), 111.

[3] Robert Philip, *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance* (1900-1950) (Cambridge: Cambridge University Press, 1992), 229.

[4] David Johnstone, "Hugo Becker–The German Transition to the Modern Age," Johnstone–music.com, accessed October 10, 2014, http://www.johnstone-music.com/articulos/music/6013/vlc12-article-hugo-becker-the-german-transition-to-the-modern-cello-age-/.

Philip's observation of the trend towards more controlled expression. In particular, Becker recommends the regulation of certain expressive devices to avoid overly sentimental playing, which he believed had (regrettably) come to be expected of cellists.[5] He establishes three main rules for the execution of portamento. First, every portamento should be accompanied by a diminuendo, particularly for large intervals and slow left hand slides. Second, consecutive portamenti are prohibited; and third, vibrato should accompany a descending portamento "wherever great passion, sorrow, deep emotion or the expiration of vital force is to be illustrated."[6] Becker also describes the absence of vibrato as having a powerful emotional effect, implying that it is otherwise to be used continuously[7]—another characteristic identified by Philip as prevalent by the 1920s.[8]

Becker's section on rubato is one of the most substantial in the treatise and it is, indeed, the first detailed discussion of the device in the cello literature, perhaps reflecting an attempt to regulate its use (which had arguably been pushed to extremes by the height of his own career). He emphasises the importance of rhythm as the foundation of music and advocates the manipulation of tempo and pulse in accordance with the character of the phrase. Accelerandi should occur at the climax of the phrase to evoke the character of "storming, driving or of a situation of fleeing,"[9] whereas ritardandi may occur at points of rest, signifying "reflection, reserve, hesitation, deliberation," or in preparation for the climax to illustrate struggle.[10]

Such practices also align with what Haynes describes as the modern style, which, he writes, was established by the end of World War II.[11] However, far from advocating the "emotional detachment" which Haynes also attributes to this style, Becker's treatise conveys a desire to elevate a physiological understanding of cello technique to one of equal standing, rather than being superior to, the subjective realm of artistic expression.[12]

In contrast to the more authoritarian approach of Becker, students of Klengel recall his emphasis on fostering a sense of individuality amongst his pupils.[13] Klengel's ideas regarding technique may be deduced mainly from his substantial output of studies and technical exercises which emphasise left-hand agility but which have little to offer on

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[5] Hugo Becker and Dago Rynar, *Mechanics and Aesthetics of Violoncello Playing* (Vienna: Universal Edition, 1929), 250.

[6] Ibid., 244.

[7] Ibid., 251.

[8] Philip, *Early Recordings*, 101.

[9] Ibid., 199.

[10] Ibid., 200.

[11] Haynes, *The End of Early Music*, 48.

[12] Becker and Rynar, *Mechanics and Aesthetics of Violoncello Playing*, 1-2.

[13] Annette Morreau, *Emmanuel Feuermann* (New Haven: Yale University Press, 2003), 14.

the subject of interpretation, as if to suggest that this should be left to the discretion of the player.[14]

Indeed, the styles of his students vary widely. Emanuel Feuermann (1902-1942), one of Klengel's most prominent pupils, places far greater emphasis on technical accuracy than his mentor. Annette Morreau observes a distinct departure by Feuermann from "lugubrious slides and slow vibrato" of the "old style" in his 1927 recording of Chopin's E flat Nocturne.[15] In this recording, Feuermann demonstrates cleaner articulation, a finely focused sound, more accurate intonation and the selective use of portamento.[16] In fact, Feuermann had expressed concern for the condition of German music pedagogy in the 1930s, in particular, the tendency to revere music as an art form at the expense of technique. Instead, like Becker, he advocates the importance of great technique as a vehicle for great artistry.[17] Feuermann's views also conflict with the romantic privileging of personal expression. He writes:

> Is not the composition the property of the composer, which is handed to us, the players, only for the purpose of realization, an alien property that we must look after with the greatest conscientiousness and love and input of all our mental and material powers? . . . Every intentional emphasis of one's own personality is a crime against the composition in which only one personality must intentionally be expressed: that of the composer.[18]

In contrast to Feuermann, Gregor Piatigorsky (1903-1976) studied both with Klengel and briefly with Becker but was far more influenced by Klengel's emphasis on individuality and the importance of personal feeling in performance. Piatigorsky writes:

> What an absurdity to say, "Here is a performer who excludes himself" or to insist, "A performer plays Beethoven well only if he himself disappears." If he disappears, he is a corpse. No-one disappears. The performer is a human being. His judgements may be right or wrong but through them he is always there.[19]

Piatigorsky's advice regarding the use of expressive devices similarly encouraged the individuality of the performer, especially with regard to vibrato, which he considered to be the means through which this individuality could best be conveyed. Thus, he advises

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[14] This is most evident in the three volumes of Klengel's *Daily Studies* (Moscow: Muzgiz, 1939).

[15] This work for solo piano was arranged for cello by Friederich Grützmacher.

[16] Morreau, *Emmanuel Feuermann*, 298.

[17] Without this approach, Feuermann warns that "the student will be constantly reminded of the seriousness, the majesty, the nobility of the artistic profession, while technique or mechanism will be rejected with contempt." Ibid., 273.

[18] Ibid., 277.

[19] Terry King, *Gregor Piatigorsky: The Life and Career of a Virtuoso Cellist* (Jefferson, North Carolina: McFarland & Company, 2010), 252.

performers to use the device according to personal taste but with sensitivity to the context in which it is used:

> . . . [O]ne cannot vibrate successfully without having a definite musical idea behind the vibrato . . . . He who has only one vibrato for all types of expression is certainly grossly underdeveloped.[20]

He offers similar advice regarding portamento, writing that the device may again be used according to personal taste, but that "the musical phrase must guide the decision."[21] However, as one of Piatigorsky's students recalls, his interpretations were not purely subjective but were always informed by careful study of the score:

> He [Piatigorsky] was a very gifted and instinctive player, and always played from his heart, but he was also very interested in finding original editions and manuscripts. He strove to play in an "authentic" manner, way before it was fashionable.[22]

Becker and Klengel's contemporaries in England were William Whitehouse (1859-1935) and Herbert Walenn (1870-1953), both of whom appear to favour the romantic approach.[23] Margaret Campbell summarises Walenn's approach as involving "minimal technical instruction and concentration more on musical matters."[24] In his 1930 memoir, Whitehouse rarely expresses his views on playing style; however he repeatedly praises the late-romantic style of the violinist Joseph Joachim, especially for his interpretations of Bach, but criticises the restriction of rubato in contemporary performances:

> (Bach) must have been an out and out revolutionary virtuoso! and not a dry-as-dust person as some would have us believe. Hence the argument in favour of a warm elastic impulsive playing of his works, subject of course to a due sense of proportion- in place of the machine-like regularity that some players adopt![25]

This contrasts with Becker's views, discussed above, which specifically condemn elasticity and impulsiveness in Bach, suggesting that Whitehouse's style was exactly that which Becker opposed.

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[20] King, *Gregor Piatigorsky*, 259.

[21] Ibid., 259.

[22] Ibid., 241.

[23] Walenn founded the London Cello School which, as well as being a training facility for aspiring professionals and soloists, accepted young beginner cellists and amateurs as his students. Whitehouse taught at three major institutions: the Royal Academy of Music, Royal College of Music, and King's College, Cambridge.

[24] Margaret Campbell, "Masters of the Twentieth Century," in *The Cambridge Companion Guide to the Cello*, ed. Robin Stowell (Cambridge: Cambridge University Press, 1999), 76.

[25] William E. Whitehouse, *Recollections of a Violoncellist* (London: Strad Office, 1930), 96.

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In North America, Felix Salmond (1888-1952) was an influential teacher at the Julliard School and the Curtis Institute. Whitehouse names Salmond as one of his favourite pupils, suggesting that they shared similar views on interpretation. Indeed, Bernard Greenhouse (1916-2003) who studied with Salmond for four years, describes Salmond as "a product of the old school" and "a fine artist but his technique was very limited."[26] This suggests that Salmond subscribed to a more romantic approach rather than the modern preoccupation with technique that was shared by Becker and Feuermann.

However, for Greenhouse and many other cellists of the period it was Pablo Casals (1876-1973) who made the most lasting impression as both a teacher and performer.[27] The American cellist Leonard Rose (1918-1984), another student of Salmond, describes Casals's ideas regarding style and technique as definitive innovations for cello playing:

> The cello was rather late in developing as a solo instrument. . . . We had to wait for Pablo Casals to come along to really master and improve the contemporary techniques, fingerings and of course style—he was a great artist and musician. [28]

Casals appears to have been the most successful in synthesising both the old and new styles,[29] and this perhaps accounts for his popularity. Whilst Casals did not write a method book, his ideas regarding technique and interpretation are explored by David Blum,[30] Juliette Alvin,[31] and David Cherniavsky[32]. Alvin proposes that Casals's technical innovations evolved to advance the expressive capabilities of the instrument, thus bridging the divide between the emotional and the intellectual, the romantic and the modern:

> The whole of Casals's technique is based on music. Its scientific beauty arises from the fact that he has discovered the exact meeting point of the musical needs of the artist, the physical possibilities of the hand, and the inherent nature of the instrument. His technique is not only result of musical genius served by

[26]Tim Janof, "Conversation with Bernard Greenhouse," Internet Cello Society (1998), accessed October 12, 2014, http://www.cello.org/Newsletter/Articles/greenhouse.htm.

[27] Ibid.

[28] "A Lesson with Leonard Rose: 1978," YouTube video, 1:47, posted January 19, 2013, https://www.youtube.com/watch?v=ZZCZwvcbSjM.

[29] Philip, *Early Recordings*, 105.

[30] David Blum, *Casals and the Art of Interpretation* (London: Heinemann Educational Books, 1977).

[31] Juliette Alvin, "The Logic of Casals's Technique," *The Musical Times* 71, no. 1054 (1930): 1078-1079, http://www.jstor.org.ezproxy.library.uwa.edu.au/stable/914302.

[32] David Cherniavsky, "Casals's Teaching of the Cello," *The Musical Times* 93, no. 1315 (1952): 398-400, http://www.jstor.org.ezproxy.library.uwa.edu.au/stable/934445.

magnificent intellect, but also the fruit of ceaseless industry, indomitable will and patience.[33]

Casals also insisted that interpretation must go beyond the score, expressing frustration towards the purely objective approach emerging at the time:

> How curious this fetish of objectivity is! And is it not responsible for so many bad performances? There are so many excellent instrumentalists who are completely obsessed by the printed note, whereas it has a very limited power to express what the music actually means.[34]

Students of Casals were also less divided in their approaches than those of Klengel, and tend to echo Casals's views. One of the most detailed explorations of technique and interpretation of the period is provided by Casals's student and assistant at the École de Normale in Paris, Diran Alexanian (1881–1954). Casals provides the preface to Alexanian's treatise, *Traité théorique et pratique du violoncelle*, suggesting that its ideas were in accordance with his own. Casals praises the volume for its unprecedented modernising of cello technique and for debunking many of the "superannuated prejudices" of previous treatises. He is particularly enthusiastic about its aim to equip the reader with a technique which informs and enhances musical expression:

> [N]owhere in it is there to be found a precept of which the application, sustained by artistic taste, would not contribute to the formation of a technique . . . capable of adapting itself to the subtle diversity of expression of the same instrumental formula, according to its various "musical situations."[35]

Alexanian attempts to regulate the use of certain expressive devices but is more explicit than Becker in his description of technical implications for their execution. His account of portamento was, to that time, the most detailed and also the first to explain how to avoid sliding in ways other than simply shifting quickly.[36] He recommends exercises to master the avoidance of ascending and descending portamento when shifting on two strings, and with a change of bow. Portamento between large intervals should be used only if the interval is ascending and even then, "very parsimoniously, and only in case a musical necessity demands it."[37]

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[33] Alvin, "The Logic of Casals's Technique," 1078.

[34] J. Ma Corredor, *Conversations with Casals,* trans. Andre Mangeot (New York: E.P. Dutton and Co, 1956), 183.

[35] Pablo Casals, "Preface" in Diran Alexanian, *Traité Théoretique et Pratique du Violoncelle,* (Paris: A. Z. Mathot, 1922), 4.

[36] George William Kennaway, "Cello Techniques and Performance Practices in the Late Nineteenth and Early Twentieth Centuries" (PhD diss., University of Leeds, 2009), 146, http://etheses.whiterose.ac.uk/2718/1/uk_bl_ethos_509818.pdf.

[37] Alexanian, *Traité Théoretique*, 57.

While Alexanian is more emphatic than Casals about the continuous use of vibrato which he recognises as a departure from the "old school," he advocates Casals's use of a varied vibrato.[38] He also offers more regulated instructions for its use than Piatigorsky: "spaced and supple" for a *piano* dynamic, and "rapid and nervous" when playing *forte*, with a reduction in width of the vibrato as the register ascends.[39] Alexanian permits its absence in only three situations: (1) fast passages where it is not possible to vibrate on every note; (2) situations requiring a "dull sonority;" and (3) when providing a harmonic voice that would interfere with the melodic line if coloured.

The influence of Casals was also profoundly felt by many twentieth-century virtuoso performers, including Gaspar Cassadó (1897-1966), Maurice Eisenberg (1900-1972), Antonio Janigro (1918-1989), Edmund Kurtz (1908-2004), and Paul Tortelier (1914-1990). Cassadó describes the "indelible impression" made by Casals's playing during his early studies with him. Cassadó particularly valued Casals's ability to "improvise" in performance and to spontaneously change elements of his interpretation, a quality associated with the romantic aesthetic:

> Many essential points of the interpretation can't be fixed once and for ever, though a player must imagine them in his mind. But in the process of a performer's interpretation there appears a new factor: inspiration, enthusiasm borne of a moment. It is possible to assert that a great performer is an improviser at the same time. He never performs the same composition twice in the same way."[40]

Literature concerning the interpretation and technical approach of Janigro and Kurtz is limited; there is, however, a record of Eisenberg's ideas in his 1957 treatise *Cello Playing of Today* which reiterates the importance placed by Casals on interpretation informed by good technique and considered phrasing. The volume is even endorsed by Casals himself:

> This book should be invaluable to advanced, talented students, who will find within its pages much that will help them to comprehend the reasons for actions which, although, perhaps, accomplished by them instinctively, require conscious understanding if they are to be applied to the utmost advantage. . . . I like especially the way in which the technique is considered in relationship to interpretation, the recurring emphasis laid on such points as phrasing and

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[38] Alexanian maintains that the "old" perception of the vibrato as a symptom of "the lack of control of the pureness of sound" was "based upon an inexactitude." Instead, he writes: "The vibrato is an expressive undulation; principally on the violoncello, this undulation allows of the singing of a phrase, with the charm and intensity of a warm and well-coloured voice." Ibid., 96.

[39] Ibid., 96-97.

[40] Gaspar Cassadó, cited in Lev Ginzburg, *History of the Violoncello* (New Jersey: Paganiniana Publications, 1983), 164.

vocalization, and the use of the illustrations to clarify details without unnecessary verbal explanation.[41]

The significance of Casals's influence on Tortelier is indicated in Blum's volume *Paul Tortelier: A Self-Portrait*, which devotes an entire chapter to a discussion of Tortelier's relationship with Casals. In this chapter, Tortelier confirms his support for many of Casals's ideas including his condemnation of militant objectivity in performance:

> Over the last decades there has been a tendency towards "authenticity," towards "respect." Sometimes a critic throws a brick at you for doing something that's not marked in the score or that's not orthodox. . . . We mustn't be too afraid of making the music ours. We should know that we are participants; otherwise there will always be a barrier between the composer and ourselves.[42]

Casals was one of the most innovative and influential cellists of the early twentieth century. His longevity and active international performing and recording career allowed him to transmit his ideas across several generations of cellists until his death in 1973. This had far-reaching implications for the way in which the aesthetic shift described by Taruskin and Haynes affected cellists of the period. Their accounts of 'impersonal' interpretations, 'emotional detachment,' and aversion to spontaneity conflict with the ideas expressed above. Like Casals himself, those cellists who studied with him appear to support elements of the romantic approach to interpretation whilst also observing the need for technical proficiency.

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The preceding analysis has shown that the move away from the nineteenth-century romantic style and aesthetic was never a clear departure; rather it resulted in a multiplicity of attitudes towards the various aspects of musical interpretation. Consistent with general instrumental practices of the time, some cellists advocated the more restricted use of expressive devices such as rubato, portamento, and continuous vibrato. Significantly, several treatises placed greater emphasis on technique, and represent significant advances in the formalisation and codification of cello technique, advances that were highly influential through the course of the twentieth century. However, the romantic style, though in decline, continued in the teachings of cellists such as Salmond, Walenn, and Whitehouse, who privileged emotional expression and individuality. Indeed, the most widely disseminated and influential views, particularly those of Casals and his pupils, successfully integrated aspects of both the modern and romantic styles. For many

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[41] Maurice Eisenberg, *Cello Playing of Today* (London: The Strad, 1957), xvii.

[42] David Blum, *Paul Tortelier: A Self-Portrait* (London: Heinemann, 1984), 153.

cellists, the art of music-making therefore lay not in confinement to the score, or in technical perfection that risked "emotional detachment," but in investigation, a high level of technical skill, and the sensitive and considered (albeit more restrained) use of expressive devices.

A Longitudinal Study of Performance Practices in Recordings of Bach's Violin Sonata BWV1003

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Introduction

Performance practice in Bach is a controversial topic: the conflicting points of view of teachers, lecturers, and examiners represent a confused position. Whom does one believe? Is there only one correct interpretation—and if so, how do we judge the correctness, or otherwise, of our interpretation? The study of musical performance, and particularly of the recorded legacy, is an emerging field with important contributions from, among others, Robert Philip,[1] Timothy Day,[2] Daniel Leech-Wilkinson,[3] Nicholas Cook,[4] Bruce Haynes,[5] Neal Peres da Costa,[6] Eitan Ornoy,[7] and Dorottya Fabian.[8] The systematic analysis of recorded musical performances can be an invaluable tool in understanding changing musical tastes—in contextualising interpretative decisions and how they relate to broader aesthetic trends. The point of departure here is Bruce

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[1] Robert Philip, *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance 1900-1950* (Cambridge: Cambridge University Press, 1992); Philip, *Performing Music in the Age of Recording* (New Haven: Yale University Press, 2004).

[2] Timothy Day, *A Century of Recorded Music: Listening to Musical History* (New Haven: Yale University Press, 2000).

[3] Daniel Leech-Wilkinson, "Recordings and Histories of Performance Style" in *The Cambridge Companion to Recorded Music*, eds Eric Clarke, Nicholas Cook, Daniel Leech-Wilkinson and John Rink (Cambridge: Cambridge University Press, 2009).

[4] Nicholas Cook, "Methods for Analysing Recordings," in *The Cambridge Companion to Recorded Music*, eds Eric Clarke, Nicholas Cook, Daniel Leech-Wilkinson and John Rink (Cambridge: Cambridge University Press, 2009).

[5] Bruce Haynes, *The End of Early Music: A Period Performer's History of Music* New York (Oxford University Press, 2007).

[6] Neal Peres Da Costa, *Off the Record: Performing Practices in Romantic Piano Playing* (New York: Oxford University Press, 2012).

[7] Eitan Ornoy, "Recording of J.S. Bach's G Minor Adagio for Solo Violin: A Case Study," *Journal of Music and Meaning* 6 (Spring 2008). See also the co–authored article with Fabian in footnote 8.

[8] Dorottya Fabian, *Bach Performance Practice 1945-1975* (Aldershot: Ashgate, 2003); Dorottya Fabian, *A Musicology of Performance: Theory and Method Based on Bach's Solos for Violi*n (Cambridge: Open Book Publishers, 2015); Dorottya Fabian and Eitan Ornoy, "Identity in Violin Playing on Records: Interpretation Profiles in Recordings of Solo Bach by Early Twentieth-Century Violinists," *Performance Practice Review* 14, no. 1 (2009); Dorottya Fabian, "Towards a Performance History of Bach's Sonatas and Partitas for Solo Violin: Preliminary Investigations," accessed 15 November, 2016, https://www.researchgate.net/publication/277715943_Fabian_D_2005. First published in *Essays in Honor of László Somfai: Studies in the Sources and the Interpretation of Music* (Lanham, Maryland: Scarecrow Press, 2005).

Haynes's book *The End of Early Music,*[9] in which he categorises three distinct approaches to the performance of Baroque music in the twentieth century: romantic, modern, and period (or Historically-Informed Performance)—a conceptual framework that has been considerably influential. This study investigates Haynes's hypothesis by analysing fourteen different recordings of Bach's Solo Violin Sonata in A minor BWV1003, spread chronologically across the twentieth century

Haynes notes that "the main attributes of the romantic style are: portamento; extreme legato; lack of precision; tempos that are usually slower; lack of distinction between important and unimportant beats…; melody-based phrasing; exaggerated solemnity; concern for expression; controlled use of vibrato; agogic accents (emphatic lingering); [and] rubato."[10] Comparing this to the modern style, Haynes states:

> The most obvious attributes of the modern style are inherited from romantic style: the "seamless" legato, long-line phrasing, and a lack of beat hierarchy. But the modern style is mostly defined by the romantic traits that it suppresses. . . . It does not usually inflect or shape notes. . . .[11]

Similarly, Haynes cites the modernist "obsession with precision,"[12] the ubiquitous application of vibrato,[13] a studied metric regularity,[14] a striving for absolute equality [of accentuation],[15] "limited flexibility in tempo,"[16] and the eschewing of overt expression, noting that "bringing tears to anyone's eyes is not a priority."[17] He also reiterates Taruskin's point that Stravinsky was an influential advocate of this objective approach, one that emphasizes textual fidelity and relegates the role of the performer to a "selfless transmitter."[18] Addressing the period style, on the other hand, Haynes notes:

> The attributes of period style like phrasing by gesture, dynamic nuance, inflection (individual note-shaping), tempo rubato, agogic accents and note

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[9] Haynes, *The End of Early Music.* See also Sam Nester, "Modern Performance Trends in Bach's Sacred Music: Changing Tastes in the Performance of Bach's *Weihnachtsoratorium, an Exploration of the Rhetorical Style*" (honours thesis, Edith Cowan University, 2009), 2-8, http://ro.ecu.edu.au/theses_hons/1323/.

[10] Haynes, *The End of Early Music*, 51.

[11] Ibid., 57.

[12] Ibid.

[13] Ibid., 54.

[14] Ibid., 60.

[15] Ibid., 58.

[16] Ibid., 57.

[17] Ibid., 52.

[18] Ibid., 57.

placing, pauses, and beat hierarchy all tend to run counter to the predictable, the automatic, the machine-like regularity of modern style.[19]

Haynes's descriptions, ad hoc as they are, form the primary basis for this study.

The Parameters for Observation

The A minor violin sonata (BWV1003) by Johann Sebastian Bach (1685–1750) was chosen for the purposes of this chronological comparative study due to the availability of historic recordings, sourced from libraries and also from the personal collection of Dorottya Fabian, to whom we owe a debt of thanks for her generous assistance. The choice of recordings was also partly mitigated by what was available to the researchers within the time-frame of the project. Nevertheless, an attempt was made to choose a manageable selection of recordings of roughly even chronological spread, as shown in Table 1. All of these exist in the era of electrical recording (post 1925), and hence none is severely compromised in terms of sound quality.[20]

Although Table 1 lists performances in chronological order of the date of recording, the dates (birth and death) of the performers are also noted. Leech-Wilkinson has argued that "on the whole most recorded musicians for whom we have a lifetime's output seem to have developed a personal style early in their career and to have stuck with it fairly closely for the rest of their lives."[21] Eitan Ornoy makes similar claims, noting the significance of the time period in which a performer received his/her musical education.[22] We could therefore note a few outliers, such as Menuhin, whose 1934–36 recording was made very early in his career (indicating that he belongs to a later generation), to some extent Sitkovetsky (for the same reason), and also the two later recordings by Szigeti. It is acknowledged that the inclusion of three recordings by Szigeti does slightly distort the data, but it also enabled investigation into the extent to which Leech-Wilkinson's hypothesis may be true—that performers' interpretative choices remain largely set throughout their career.

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[19] Ibid., 58. Haynes, Ibid., 61-63 also discusses another sub-category, described as "strait style," which is a version of period style that is technically correct, but with no soul, "competent but boring, "restrained and temperate."

[20] Pre-1925, acoustic recording was used. This involved a horn (constructed of either stiff fabric or wood) that concentrated the vibrations of the sound down to the point of a needle, and the transfer of these vibrations onto a wax etching. Because of the limit in the frequency range, the sound was stripped of harmonics and overtones, resulting in a "dull" timbre. The earliest "electric" recordings (with the introduction of the microphone), were also somewhat compromised, with early microphones procuring a thin, somewhat metallic timbre. See Gordon Mumma et al, "Recording," in *The New Grove Dictionary of Jazz*, 2nd ed., ed. Barry Kernfeld (Oxford Music Online, http://0-www.oxfordmusiconline.com.library.ecu.edu.au/subscriber/article/grove/music/J371600).

[21] Leech-Wilkinson, "Recordings and Histories of Performance Style," 250.

[22] Ornoy, "Recording of J.S. Bach's G Minor Adagio for Solo Violin: A Case Study," 5.

Table 1. The selected recordings of Bach's Solo Violin Sonata in A minor, BWV 1003

Violinist	Dates	Recording Label and Catalogue No.	Recorded Date
Joseph Szigeti	1892–1973	Biddulph: LAB 153	1933
Yehudi Menuhin	1916–1999	EMI Reference (mono): CHS 763035 2	1934–36
George Enescu	1881–1955	Instituto Discografico Italiano: IDIS 328/29	1940
Joseph Szigeti	As above	Music and Arts: CD4774	1949
Yascha Heifetz	1901–1987	BMG Classics (RCA) 09026 61748-2	1952
Nathan Milstein	1904–1992	EMI ZDMB: 6479323	1955
Joseph Szigeti	As above	Vanguard Classics: ATM-CD-1246 Artemis Classics	1955
Henryk Szeryng	1918–1988	SONY (AAD mono): 01-046721-10	1965
Joseph Suk	1929–2011	EMI Classics Double fforte: 5 73644 2	1971
Dmitry Sitkovetsky	b.1954	C130852H Orfeo	1985
Itzhak Perlman	b. 1945	EMI Classics 7 49483 2	1986
Christiane Edinger	b. 1945	Naxos: 8.55057	1991
Lucy Van Dael	b. 1946	Naxos: 8.554423	1996
Rachel Podger	b. 1968	Channel Classics CCS 12198	1999

The analysis of musical recordings is an emerging field for which there is as yet no clear methodological consensus. For this study, a number of criteria were chosen in order to define the parameters of observation (Table 2)—an approach that has also been employed by Fabian in her recent book, *A Musicology of Performance.*[23] These criteria were chosen because they were judged to be the most significant based on readings of the secondary literature.[24] Table 3 offers a profile of our expectations for Haynes's three approaches, based on his somewhat ad hoc descriptions, correlating them with our chosen observation criteria. A question mark is indicative of instances where Haynes's comments shed little light.

The approach to observation was dependent on the personal judgements of the researcher as listener (a role completed by Adrian Yeo), so a degree of subjectivity was inevitable. Nevertheless, this study aspires to rigour in its approach to observation, creating a mix of both qualitative and quantitative data. Quantitative data is derived from personal judgments for the purposes of graphical display. The results of these

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[23] Fabian, *A Musicology of Performance.*

[24] Including Leopold Auer, *Violin Playing as I Teach It* (Butler & Tanner, 1921); John Butt, *Bach Interpretation: Articulation Marks in Primary Sources of J.S. Bach* (Cambridge: Cambridge University Press, 1990); Dorottya Fabian, *Bach Performance Practice, 1945-1975: A Comprehensive Review of Sound Recordings and Literature* (Aldershot: Ashgate, 2003); Eitan Ornoy, "Recording of J.S. Bach's G Minor Adagio for Solo Violin: A Case Study," Journal of Music and Meaning 6 (Spring 2008); Philip, *Early Recordings and Musical Style.*

observations form the core of this paper, and are presented point by point. At the conclusion, the validity of Haynes's conceptual model will be discussed.

Table 2. The observation criteria

1. Tempo
    a. What is the metronome mark by movement?
2. Tempo flexibility
    a. What kind(s) of tempo fluctuations are used?
    b. How often do they occur?
3. Accentuation
    a. To what degree does the performance emphasise the metrical hierarchy (accented strong beats)?
    b. What part of the chord does the performance emphasise and whereabouts on the beat? (i.e. is it always the top note and is it always played on the beat?)
    c. How do the performers play the chords? (i.e. rolled or as double-stops)
4. Articulation
    a. Does the performance articulate small motives or longer phrases?
    b. Is the performance varied or uniform (e.g. all legato) in its approach to articulation?
    c. What sorts of articulations are used?
5. Use of portamento
    a. To what degree is portamento used?
    b. How and when is portamento used?
6. Vibrato
    a. What sort of vibrato is used? (in terms of width and speed)
    b. How frequent is the vibrato used?
7. Ornamentation
    a. Is additional ornamentation employed?
    b. What sort of ornamentation is used?
    c. Does the performance reflect an understanding of the improvisational nature of the much notated music?

Table 3. A profile of expectations across Hayne's three schools (where R=Romantic, M=Modern, P=Period), by criteria

	TEMPO	TEMPO FLEXIBILITY	RHYTHMIC ALTERATIONS	ACCENTUATION	ARTICULATION	PORTAMENTO	VIBRATO	ORNAMENTATION
R	Slower than usual	Much rubato	Emphatic lingering	Lack of beat hierarchy	The long-line phrase	Common	Controlled use	?
M	Not as slow	Unyielding tempos	None	Lack of beat hierarchy	"Seamless legato"	Rare	Continuous and aggressive	Emphasis on textual fidelity
P	?	Some rubato	Agogics or notes inégales possible	Follows beat hierarchy	Brings out the smaller motifs	Presumed rare	Controversial	Added ornamentation

Tempo

Figure 1 records the various tempi in a line-graph format in order to make a convenient visual comparison across the fourteen recordings. Tempo was measured using a stopwatch in a similar approach to that used by Eitan Ornoy,[25] charting the average over three separate time-trials. For ease of data display, the *Grave* and *Andante* were taken to have a quaver beat, whereas the tempi of the *Fuga* and the Allegro were considered as having a crotchet beat.

Whilst a wide range of tempi is exhibited, it is difficult to ascertain any clear chronological pattern. Donnington, whose views represent a late-twentieth century expression of the period (or HIP) approach, suggests that most baroque slow movements need to be played faster, and that most fast movements need to be played slower than expected (thereby achieving less extremes of tempo).[26] This is, to some extent, true of the chronologically later recordings. Edinger (curiously) is an outlier, being the slowest in every movement. Apart from these, no clear trends emerge. This is consistent with the findings of Fabian in 2005, who reports no significant chronological trend in tempo, reporting that "performance tempo has not changed as radically as other aspects of

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[25] The tempo at the beginning of the movement (comprising two bars) was calibrated three times to the hundredth-of-a-second in order to derive a mean estimate of the tempo. The tempo of the crotchet beat was then calculated by dividing the number of beats in the timed segment by the average time of the played fragments. See Ornoy, "Recording of J.S. Bach's G Minor Adagio for Solo Violin," 10.

[26] Robert Donington, *The Interpretation of Early Music*, revised ed. (New York: W.W. Norton & Co., 1992), 387.

interpretative vocabulary."[27] In a later study (2009), Ornoy and Fabian also table a detailed account of tempo differences (quantitatively compared by standard deviation) across nine different recordings of the A minor sonata, of which seven were included in this study. Again, no significant patterns emerged.[28]
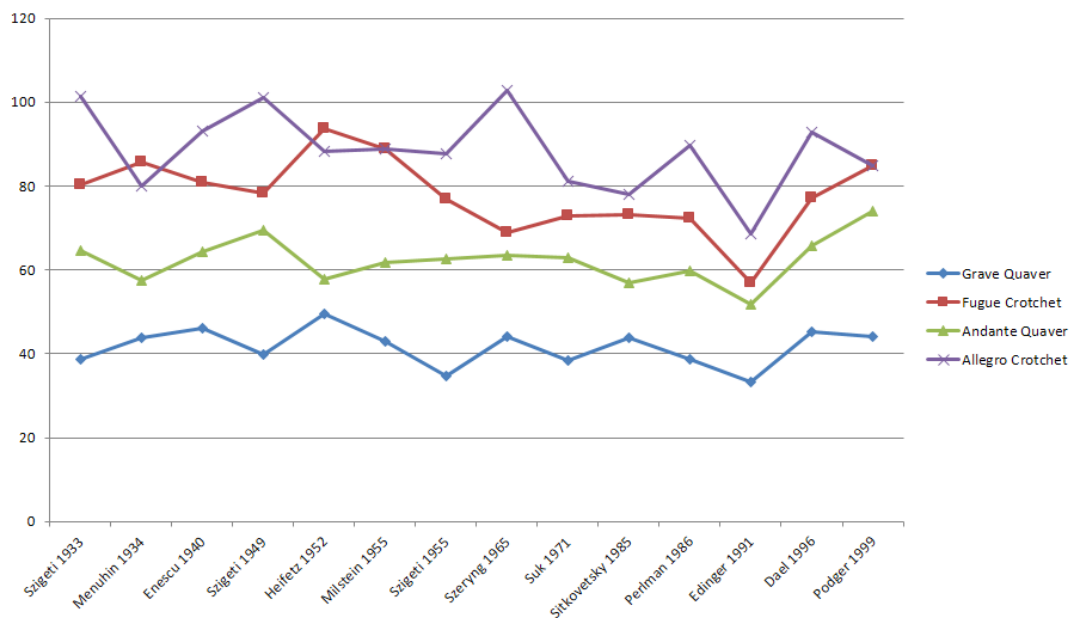
Figure 1. Tempi

Tempo Flexibility

Figure 2a presents the various types of tempo flexibility across all movements of BWV1003 and distinguishes between: (a) many fluctuations, by phrase; (b) a flexible melody over a strict bass, and (c) few fluctuations. Figure 2b charts the degree of ritardando employed at cadences, represented on a numerical scale.

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[27] Fabian, "Towards a Performance History of Bach's Sonatas and Partitas for Solo Violin," 21.

[28] Fabian and Ornoy, "Identity in Violin Playing on Records," 25.

Figure 2a. Tempo flexibility

	Szigeti 1933				Menuhin 1934				Enescu 1940				Szigeti 1949				Heifetz 1952				Milstein 1955				Szigeti 1955				Szeryng 1965				Suk 1971				Sitkovetsky 1985				Perlman 1986				Edinger 1991				Van Dael 1996				Podger 1999			
	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro
Many fluctuations (by phrase)	●								●				●												●								●																●				●			
Flexible melody; Strict bass																					●	●							●				●	●	●		●	●			●	●	●				●		●	●	●		●	●	●	
Few fluctuations	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●

Figure 2b. Amount of ritardando at cadences

Legend: ■ Grave ■ Fuga ■ Andante ■ Allegro

1 – Little or no amount
2 – Some amount used occasionally
3 – Moderate amount
4 – Liberal amount
5 – Excessive amount

Figure 2a illustrates that it is only in the *Grave* that any of the recordings manifest significant tempo fluctuation, apart from ritardando at cadences. With the exception of Sitkovetsky (1985), it is the earliest and latest recordings that show the most tempo fluctuation. Earlier recordings such as Szigeti, 1933 and Enescu, 1940 combine both tempo fluctuation in the *Grave* with a moderate to liberal amount of retardation at cadences, and are arguably reflective of Hayne's romantic classification. By contrast,

recordings by Milstein (1955), Szeryng (1965), Suk (1971) and Perlman (1986), were sparing in their use of tempo fluctuation in the *Grave*, but employed a liberal amount of retardation at cadences. Overall, their sparing use of tempo fluctuation reflects Haynes's modern school, but the retardation at cadences points appears to be somewhat of an exception to the rule.

It could be noted that both Menuhin (1934) and Heifetz (1952) preserve a comparatively straight approach in both their use of tempo flexibility and their minimal use of ritardando at cadences, and are thus also indicative of Haynes's modern category. In the case of Menuhin, it needs to be borne in mind that (despite his early position in the graphs) he belongs to a subsequent generation, an observation supported by the data presented here, which places him unequivocally in the modern camp.

On the other hand, late twentieth-century violinists Van Dael (1996) and Podger (1999) also have quite a liberal approach to rubato, although this is anchored by a regularity of the bass that makes their approach qualitatively different from the earliest recordings (such as Szigeti, 1933, and Enescu, 1940). Another point of difference is their minimal use of ritardando at cadences. In terms of the more restrained use of ritardando at cadences, Edinger also falls into the "occasionally only" category, as with Van Dael and Podger. But his recording is different in that his *Grave* is less free in its use of rubato, as if he is unable to shake off modernist tendencies.

Accentuation

Figure 3 shows a series of systematic observations regarding: (i) arpeggiation; (ii) the placement of the melody or the bass on the beat; and (iii) the accentuation of metric hierarchy. A number of interesting trends can be observed:

1. The ubiquity of the double-stopped arpeggiation (second last row) is quite noticeable up until the mid 1990s. Although there are multiple ways of arpeggiating a chord in the Baroque style,[29] there is no historical evidence for this "bottom two—top two" execution.
2. Recordings in the mid-twentieth century displayed little or no emphasis on metric hierarchies, reflecting a modernist orientation.
3. While performances recorded in the early half of the century tend to place the melody on the beat, there was in the mid-century a gradual shift towards putting the bass on the beat, and expressively delaying the top line.

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[29] Anthony Burton, *A Performer's Guide to Music of the Baroque Period* (London: The Associated Board of the Royal Schools of Music (Publishing) Limited, 2002), 78.

Figure 3 (Accentuation)

	Szigeti 1933				Menuhin 1934				Enescu 1940				Szigeti 1949				Heifetz 1952				Milstein 1955				Szigeti 1955				Szeryng 1965				Suk 1971				Sitkovetsky 1985				Perlman 1986				Edinger 1991				Van Dael 1996				Podger 1999			
	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro
Plays chord bass to treble	•	•	•		•	•	•		•	•	•		•	•	•		•		•		•	•	•		•	•	•		•		•		•		•		•		•		•	•	•		•		•		•	•	•		•		•	
Plays chord treble to bass																			•												•				•				•												•						
Every note has equal weight																					•		•	•					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•												
Follows the metrical structure	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				•				•	•	•	•			•						•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				
Bass on the beat																					•								•		•		•		•		•		•				•		•		•		•		•					
Melody on the beat	•		•		•		•		•		•		•		•		•		•		•				•		•		•										•																	
Double-stops the chords (broken)	•		•		•		•		•		•		•		•		•		•		•		•		•		•		•		•		•		•		•		•		•		•													
Arpeggiates the chords																																																					•		•		•		•

Figure 3. Accentuation

Articulation

Figure 4 tabulates the results of observing whether articulation was applied at the level of the motive, short phrase, or longer phrase, or whether a seamless legato was achieved. Across the first half of the twentieth century, all performers articulated longer phrases rather than smaller motifs, conforming to the expectations of the romantic style.

Figure 4 (Articulation)

	Szigeti 1933				Menuhin 1934				Enescu 1940				Szigeti 1949				Heifetz 1952				Milstein 1955				Szigeti 1955				Szeryng 1965				Suk 1971				Sitkovetsky 1985				Perlman 1986				Edinger 1991				Van Dael 1996				Podger 1999			
	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro	Grave	Fuga	Andante	Allegro
Articulates smaller motives																					•																												•	•	•	•	•		•	•
Seamless Legato																					•		•	•					•	•			•	•	•	•	•	•	•	•	•	•	•	•												
Articulates longer phrases	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•					•	•	•	•				•													•	•	•	•								

Figure 4. Articulation

The graph appears to show a shift in Milstein's 1955 recording towards a seamless legato (of even larger spans), which remained the trend for the mid-twentieth

century recordings and reflects modernist characteristics. Milstein's *Fuga* is an outlier, concentrating on smaller motives. The prevailing seamless legato lasted until Edinger (1991), who (in somewhat of a throwback to a romantic approach) shows the articulation of longer phrase groups, which are thus not completely seamless. The last two listed recordings of Van Dael (1996) and Podger (1999) are characteristic of HIP, where the articulation of smaller motives is typical.

In hindsight, the attempt to differentiate between the articulation of long phrases (the long line) and a *completely* seamless legato is a problematic distinction that is fraught with subjectivities. It is suggested that the earlier performances employed dynamic shaping more markedly in the service of phrase shaping, whereas mid-century recordings tended to exhibit greater dynamic equality throughout the phrase. On the other hand, Ornoy and Fabian have illustrated a detailed analysis of the dynamic nuances in Heifetz's and Milstein's recordings of the *Andante*, and have demonstrated how much expressive subtlety there is, even in a purportedly modernist approach like that of Milstein.[30]

Portamento

Figure 5 shows the total amount of portamento observed, using a numerical scale (as shown in the legend, quantified by subjective judgment). Through these results, one can see that from Szeryng's recording in 1965 onwards, many of the performers chose to use little or no portamento, thereby displaying a modernist influence. In early twentieth-century recordings such as Szigeti and Heifetz (in particular), the use of portamento is more widespread, indicating a more romantic influence. On the other hand, the performances of Van Dael and Podger also use almost no portamento, which is characteristic of both the modernist and HIP profiles.

Haynes claimed that the modernist school led to the sudden demise of portamento in the 1930s. However, these results (at least at first glance) indicate that portamento did not disappear quite so quickly. In this area, the influence of the romantic school continued to be felt well throughout the century.

It should be remembered that there are three different Szigeti recordings included in this project (1933, 1949, and 1955). Clearly, Szigeti's use of portamento did not evolve significantly over time; rather, he retained the more liberal use of portamento indicative of an earlier era. It should also be noted that Heifetz's recording of 1952 occurred towards the latter half of his career (when he was already fifty one). As Philip

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[30] Fabian and Ornoy, "Identity in Violin Playing on Records," 11.

and Ornoy suggest, the dates of the formative experiences of a musician are arguably a more significant predictor of their style than the actual date of the recording.[31]
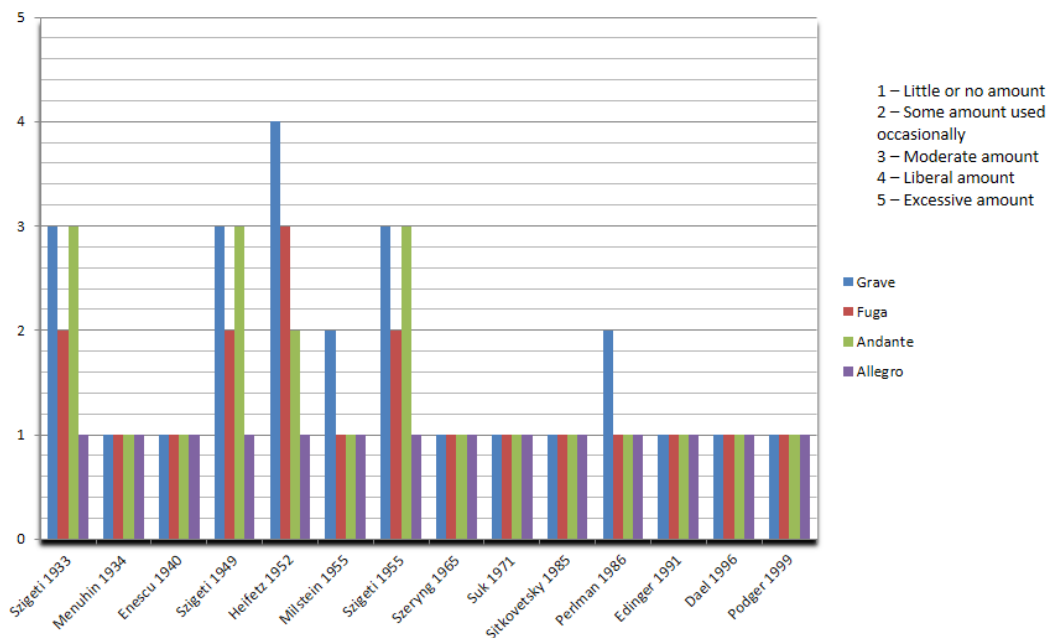

Figure 5. Portamento

Vibrato

Haynes suggests that for the modernist style, vibrato becomes somewhat of an addiction, labeling it "the MSG of music." He notes that "in modern style, vibrato is an integrated element of tone quality, used continuously and aggressively, resulting in a constant feeling of activity and nervousness."[32] Similarly, Katz suggests that "continuous vibrato be understood as a response to the exigencies of sound recording"—in other words to compensate for perceived tonal deficiencies of recorded sound, and to "obscure imperfect intonation."[33] Similarly, the early romantic style has been linked to a more restrained use of vibrato.[34]

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[31] Leech-Wilkinson, "Recordings and Histories of Performance Style," 250; Ornoy, "Recording of J.S. Bach's G Minor Adagio for Solo Violin: A Case Study," 5.

[32] Haynes, *The End of Early Music*, 54.

[33] Mark Katz, "Aesthetics out of Exigency: Violin Vibrato and the Phonograph," in *Music and Technology in the Twentieth Century*, ed. Hans-Joachim Braun (Baltimore: The John Hopkins University Press, 2000), 179. Cited in Fabian, "Towards a Performance History of Bach's Sonatas and Partitas for Solo Violin," 7.

[34] See Haynes, *The End of Early Music*, 52 where reference is made to the "controlled use of vibrato" in the romantic style. Likewise, Philip notes that "the other striking feature of early twentieth-century string playing is its sparing and shallow vibrato." See Robert Philip, "The Recordings of Edward Elgar (1857–

Figure 6 presents the use of vibrato in just the *Grave* and *Andante* movements, where differences were most easily observed. What can be said is that mid-century performers such as Heifetz (1952), Milstein (1955), Suk (1971), and Perlman (1986) do demonstrate a point of difference from the early recordings in their use of a faster vibrato. Only Heifetz (1952), Milstein (1955), and Perlman (1986) are classified as using a "continous" vibrato. But, in hindsight, the adoption of distinct categories such as whether vibrato is used "continously" or to "decorate" was problematic. It was often difficult to categorize performers as possessing one characteristic or another, as their use of vibrato can adjust subtly throughout the recording. There is clearly a spectrum of practice, and there was often a fine line between these categories. What is striking is the degree of restraint evident, even in mid-century recordings, with the vast majority of recordings using a "moderate vibrato" and one that is as much decorative (or selective) rather than completely continuous. Hence, for this criterion, the differences between mid-century players, and those of the preceding generation, are slight—which is somewhat contrary to the observations, by Haynes and others, that vibrato grew markedly mid-century.

	Szigeti 1933		Menuhin 1934		Enescu 1940		Szigeti 1949		Heifetz 1952		Milstein 1955		Szigeti 1955		Szeryng 1965		Suk 1971		Sitkovetsky 1985		Perlman 1986		Edinger 1991		Van Dael 1996		Podger 1999	
	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante	Grave	Andante
Slow Vibrato																												
Moderate Vibrato	•	•	•	•	•	•	•	•		•		•	•	•	•	•		•	•	•			•	•	•	•		
Fast Vibrato									•		•						•				•	•						
Used continuously									•		•											•						
Used to decorate	•	•	•	•	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•		•	•	•	•		

Figure 6. Vibrato

On the other hand, there was a more distinct break between the modern and period group here: between the approach of Perlman (1986), and the three latest recordings (Edinger, Van Dael, and Podger), which showed a more moderate and restrained use of vibrato. While Van Dael's use of vibrato was comparatively sparse, her tone was expressively nuanced in other ways, such as in the use of inflections of the bow. Podger, on the other hand, used almost no vibrato at all, indicative of a hard-line

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1934): Authenticity and Performance Practice," *Early Music* 12, no. 4 (1984): 483. See also Philip*, Early Recordings and Musical Style*, 97.

approach typical of the 1980s and 1990s, where HIP exponents played with a predominantly straight tone, and treated vibrato as a selective ornamental device.[35] Having said this, Podger's sound is far from being wooden or cold, as the resonance of her instrument and the beauty of her phrasing are plainly evident (bowing, of course, has a lot to do with this).

Ornamentation

Figure 7 illustrates the tabulated observations of ornamentation for the *Grave* and *Fuga*. Observations of ornamentation were focused on three principal questions: is additional ornamentation added, how are trills executed, and does the execution of small rhythmic values reflect an improvisational quality? Note that we are not speaking about an improvisational quality in the movement more generally, but only whether trills are executed with an air of freedom, or delivered mechanically (with equal strength and weight).

	Szigeti 1933		Menuhin 1934		Enescu 1940		Szigeti 1949		Heifetz 1952		Milstein 1955		Szigeti 1955		Szeryng 1965		Suk 1971		Sitkovetsky 1985		Perlman 1986		Edinger 1991		Van Dael 1996		Podger 1999	
	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga	Grave	Fuga
Adds no additional ornamentation					●				●	●					●	●												
Adds additional ornamentation	●	●	●	●		●	●	●			●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●
Trills starting on the upper note																	B	B	B	O	B	B	O	O	O	O	O	O
Trills starting on the principal note	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●												
Reflects improvisational nature	●	●	●	●	●	●	●	●	●	●			●	●	●	●							●	●	●	●	●	●

Figure 7. Ornamentation (where B=before the beat and O=on the beat)

Results for this criterion were quite telling, clearly demonstrating three schools of performance practice. Trills performed starting on the upper note and on the beat (as suggested by Dolmetsch) are seen in Edinger, Van Dael, and Podger, and are obviously a defining facet of the historically-informed school. Suk, Sitkovetsky, and Perlman all execute trills beginning on the upper note but starting before the beat (modernist?), while all the earlier recordings performed trills starting on the principal note. Suk,

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[35] This attitude towards vibrato has somewhat softened, but the debates continue. See, for example, Judith Malafronte, "Vibrato Wars," *Early Music America* 21, no. 2 (Summer 2015): 30-34.

Sitkovetsky, and Perlman also exhibit a certain modernist heaviness and equality of tone, detracting from the improvisational air of small rhythmic values.

Conclusion

Table 4 summarizes the trends observed across all seven criteria, noting the evidence for and against Haynes's hypothesis. Overall, a moderate correlation with the hypothesis was observed, with some significant exceptions in evidence. While a certain number of exceptions in terms of individual performers is to be expected, observed trends that do not conform neatly to Hayne's tripartite division are of particular interest.

Table 4: Summary of Trends

	Evidence For	Evidence Against	Other
Tempo		Little or no clear trends emerge.	
Tempo flexibility	Strong evidence for a mid-century modernist group.	Mid-century violinists still use considerable ritardando at cadences.	
Accentuation	Mid twentieth-century recordings equalize notes.		The double-stopped arpeggiation persists until the mid 1990s; Early twentieth-century recordings place the melody on the beat, shifting mid-century towards placing the bass on the beat.
Articulation	All early twentieth-century violinists articulate longer phrases; Mid-century there is a slight shift towards seamless legato; Articulation of small motives is seen in the latest two violinists.		
Portamento	Portamento was common in the early twentieth-century and phased out.	Its demise was more gradual than Haynes claims, although the late recordings of Szigeti and one by Heifetz might be anomalous.	
Vibrato		The marked increase in the scale of vibrato use mid-century was not strongly observed.	
Ornamentation	Clear changes in approach to ornamentation across the twentieth century.		

In particular, it is interesting to note that the demise of portamento appears to be more gradual here than anticipated from Haynes's claims. However, the late performances of Szigeti and Heifetz suggest that their formative experiences were from an earlier era. Of similar interest is that the great majority of the recordings were moderate in their application of vibrato; the anticipated marked increase in the scale and intensity of vibrato (according to Haynes's claims) was not strongly observed. Likewise, Haynes's generalisation that the romantic style should exhibit slower tempos was also not evident. The sparing use of rubato by early violinists is intriguing, but at present it is not possible to ascertain if this was a general feature of interpretation or one employed principally in the interpretation of Bach's music. Of some interest is the way that most of the mid-century recordings present evidence of the continued liberal application of ritardando at cadence points, suggesting that this is an exception to the general rule of limited tempo flexibility in the modern style.

The evidence presented confirms that playing styles do not change overnight: rather, they constantly, and subtly, change over time.[36] These observations suggest that we should use caution in applying specific dates to periods of change (as Haynes has also noted).[37]

Haynes's hypothesis of three principal approaches is a useful generalisation, notwithstanding the fact that further complexities are sure to be revealed as research in this area unfolds. Of particular note here is Fabian's most recent study, *A Musicology of Performance*,[38] which suggests that in the present era there is a diversification and re-integration of stylistic trends, with the mainstream (modern) and HIP styles mixing and blending—particularly among younger generations of players. She questions the limitations inherent in attempts to classify players according to over-generalised categories ("putting them in a box," so to speak), and suggests alternative models of accounting for complexity (referencing Deleuze's "philosophy of difference")[39] that borrow from mathematical theory to propose musical performance as a complex dynamical system.[40]

Ultimately, this study highlights the subjectivity and complexity of analysing musical performance. One of the potential pitfalls is the temptation to fall back on modernist rhetoric, and to assume an evolutionary model of development from naive to better-informed. The fact that older recordings can still entertain, charm, and thrill us, reveals that music is a complex endeavour that fiercely resists classification.

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[36] Philip, *Early Recordings and Musical Style*, 49.

[37] Haynes, *The End of Early Music*, 49.

[38] Fabian, *A Musicology of Performance,* 197.

[39] Ibid., 52.

[40] Ibid., 56.

A Portal into the Past: Lionel Tertis's Recording of the Arnold Bax Viola Sonata

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Throughout the flowering of European musical Romanticism in the nineteenth century, England operated as a comparative backwater. Although the English were the most prodigious consumers of music, for a numbers of reasons—well rehearsed in the secondary literature—very few composers of stature emerged. However, the years from around 1880, and continuing through the turn of the twentieth century, saw a surge in English musical activity, both in quantity and quality. A new generation of composers and performers strove to establish a native practice to rival the more fashionable Continental music scene. Arguably, England was experiencing a cultural revival with an increase in activity in music education, academic research, as well as performance and composition by English musicians. Historians commonly refer to this movement as the English Musical Renaissance.[1]

This fertile environment allowed leading violist Lionel Tertis (1876–1975) to bring the "Cinderella" of the orchestra out from the shadows. Through his performance, teaching, and composing, Tertis was a powerful advocate and urged many composers such as York Bowen, Rebecca Clarke, Eric Coates, Harry Danks, Benjamin Dale, Watson Forbes, Max Gilbert, and Bernard Shore to write for his beloved instrument. He thus became largely responsible for a massive influx of virtuosic works into the viola catalogue.[2] Tertis developed strong relationships with these composers, and contributed greatly to pushing the boundaries of the instrument and its music. One person strongly influenced by Tertis's enthusiasm was the English-born composer and poet Sir Arnold Bax (1883–1953).[3]

As a young student, Bax met Tertis at the Royal Academy of Music in 1901. Tertis had recently been appointed Professor of Viola, and Bax found himself surrounded by a circle of promising young pianist/composers studying under the keen Wagnerian Frederick Corder (1852–1932).[4]

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[1] See, for example, Thomas James Tatton, "English Viola Music, 1890–1937" (DMA diss., University of Illinois at Urbana-Champaign, 1976); Meirion Hughes, *The English Musical Renaissance and the Press, 1850-1914 : Watchmen of Music* (Aldershot: Ashgate, 2002); Meirion Hughes and R. A. Stradling, *The English Musical Renaissance, 1840-1940: Constructing a National Music*, 2nd ed. (Manchester: Manchester University Press, 2001).

[2] Lionel Tertis, *My Viola and I : A Complete Autobiography* (London: Kahn & Averill, 1991); Maurice W. Riley, *History of the Viola* (Ypsilanti: Eastern Michigan University Press, 1980).

[3] Lewis Foreman, *Bax : A Composer and His Times* (London: Scolar, 1983), 28.

[4] Ibid., 28.

Over the years, Bax and Tertis collaborated extensively and Bax was to write four works for the virtuoso violist throughout his career.[5] The most significant of these was his Sonata for Viola and Piano, a work that constitutes the focus of this paper. Like the Viola Concerto (later re-named *Phantasy for Viola and Orchestra*), the Sonata was dedicated to Tertis. This three-movement work was completed in 1922 and premièred at the Aeolian Hall in London on 17 November that year, performed by Tertis with Bax at the piano.[6]

Bax is often described as having had a lifelong enthusiasm for Ireland, and spent as much time as he could exploring the country. It is said that the Viola Sonata may have been one of his last tributes to Ireland and its people, after being tormented by the loss of so many loved ones in the Easter Rising and the events of the First World War.[7] Although the sonata does not sit in Bax's deemed "Celtic years," its Celtic influence (a feature so regularly associated with his early works)[8] is still very much present, with its haunting autumnal melodies and quasi-modal harmonies.

In May 1929, through the encouragement of the English music critic and musicologist Ernest Newman, Tertis and Bax recorded the Viola Sonata for the Columbia Gramophone Company.[9] This recording, which was not released until 1981, provides a portal into the past—offering a rare insight into the combined musical powers of two inspired performers.[10] It also documents early twentieth-century performance practices, and as such is the primary focus of this paper, which provides an analysis of the playing styles embedded in the recording (as well as comparison with a more recent recording by Doris Lederer and Jane Coop).[11] The analysis will draw upon the earlier work of Brown[12], Cook[13], Haynes[14], Leech-Wilkinson,[15] and Philip,[16] and will focus upon four musical

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[5] Graham Parlett, *A Catalogue of the Works of Sir Arnold Bax* (London: Clarendon Press, 1999).

[6] Ibid., 161.

[7] Lewis Foreman, compact disc liner notes for *Bax: Viola Sonata, Legend, Trio in One Movement, Concert Piece*, Julian Rolton (piano), Laurance Jackson (Violin), Martin Outram (Viola), recorded in Suffolk, February 20-22, 2005, Naxos 8.557784, 2006.

[8] Mark Fitzgerald and John O'Flynn, *Music and Identity in Ireland and Beyond* (Burlington, VT: Ashgate, 2014).

[9] Lewis Foreman, *Bax : A Composer and His Times* (London: Scolar, 1983), 250.

[10] *The Art of Lionel Tertis*, with Lionel Tertis (viola), Arnold Bax (piano), recorded in London, 1929, Heritage HTGCD261, 2014.

[11] *Music of Arnold Bax and York Bowen*, with Doris Lederer (viola) and Jane Coop (piano), Centura CRC2660, 2010, Arnold Bax Viola Sonata, tracks 5-7.

[12] Clive Brown, "Bowing Styles, Vibrato and Portamento in Ninteenth-Century Violin Playing," *Journal of the Royal Music Association* 112 (1988), 97-198.

[13] Nicholas Cook, "Changing the Musical Object: Approaches the Performance Analysis" in Zdravko Blazekovic and Barbara Dobbs Mackenzie, *Music's Intellectual History: Founders, Followers and Fads* (New York, RILM, 2009.

[14] Bruce Haynes, *The End of Early Music: A Period Performer's History of Music from the Twenty-First Century* (Oxford: Oxford University Press, 2007).

elements: tempo, rubato, vibrato, and portamento. Differences between the two recordings will be highlighted through a series of spectrograms. Simply put, a spectrogram is a visual representation of the spectrum of frequencies, or pitch content (the vertical axis) as they vary over time (the horizontal axis). The discussion will focus primarily on aspects of string performance and technique.

Figure 1 is a spectrogram of a small part of the first movement of the sonata as performed by Tertis and Bax, beginning at the upbeat to bar 76 and running for eighteen seconds. Aligning the spectrogram visually with the recording reveals a number of interesting characteristics. The image shows separated instrumentation as the piano is represented primarily in the lower part of the frequency spectrogram—with straighter, clearer lines than the wavering frequencies seen in the viola. When looking at the viola line, we see that each note comprises a zig-zag-like element indicating a fluctuation of frequency on an individual note. The width and speed of this fluctuation allows us to analyze the nature of the vibrato employed. The spectrogram also provides a vivid visual depiction of portamento, with a large angled line indicating increases or decreases in the frequency of the glissando-like movement between two consecutive notes (see Figure 2).
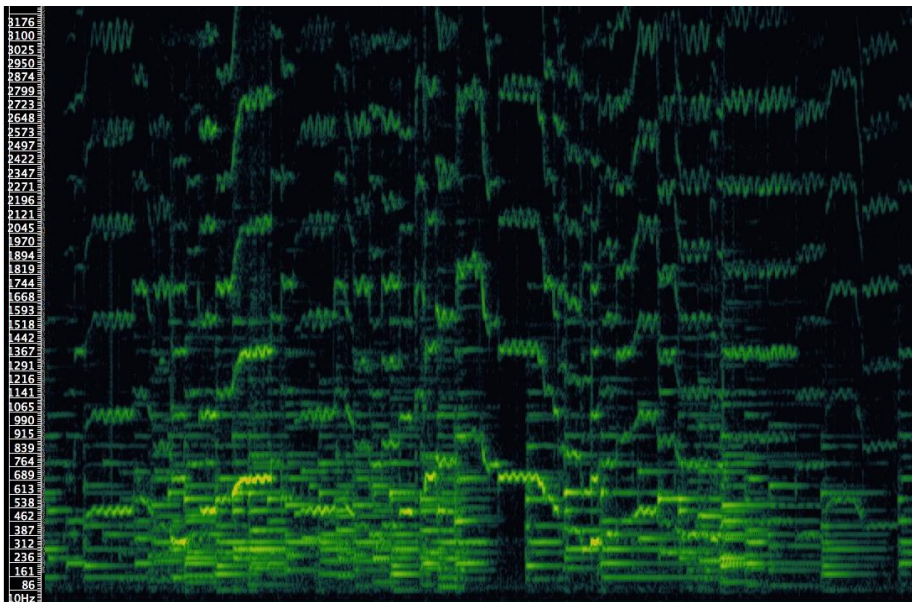

Figure 1. A spectogram of the recording by Tertis and Bax

[15] Daniel Leech-Wilkinson, "Recordings and Histories of Performance Style," in *The Cambridge Companion to Recorded Music* (Cambridge: Cambridge University Press, 2009).

[16] Robert Philip, *Early Recordings and Musical Style: Changing Tastes in Instrumental Performance, 1900-1950* (Cambridge: Cambridge University Press, 1992).
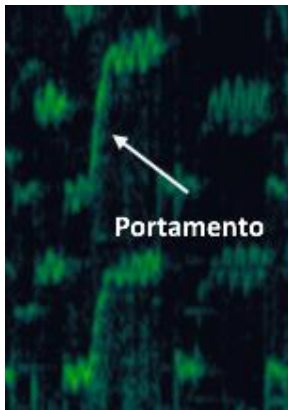
Figure 2. An example of the portamento as seen in the spectrogram of the recording by Tertis and Bax

Figure 3 is a spectrogram that begins at the upbeat to bar 76 of the first movement, now performed by Doris Lederer and Jane Coop. This excerpt also runs for exactly eighteen seconds, allowing us to compare the vibrato in both recordings. Surprisingly, the speed of vibrato does not seem to vary greatly between the two recordings. However, the images clearly indicate that Tertis's vibrato is much wider than that of Lederer, as his [Tertis's] oscillation covers a wider range of frequencies on the spectrogram. The spectrogram images also vividly illustrate that Lederer's use of portamento is far more subtle and less frequent than that employed by Tertis.
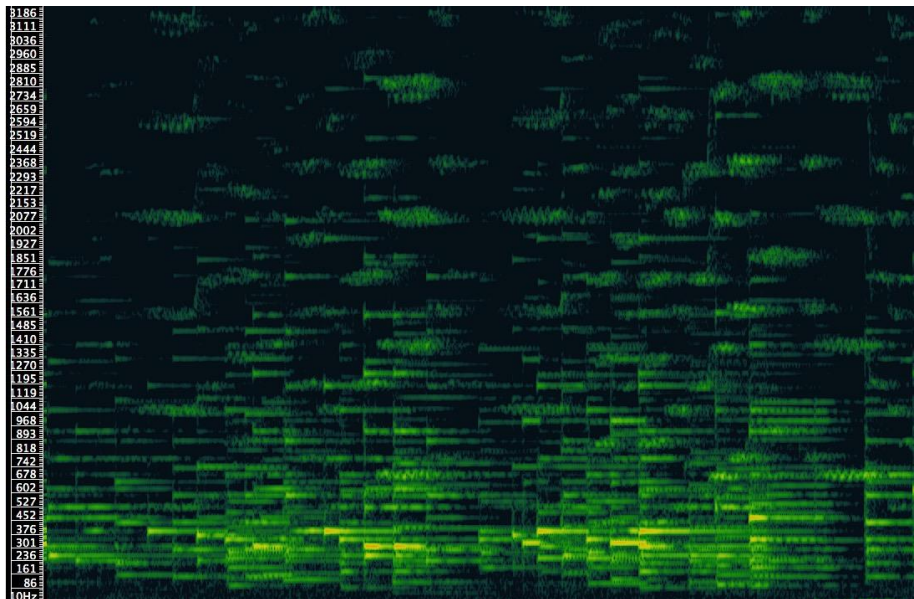

Figure 3. A spectrogram of the recording by Lederer and Coop

These spectrograms can also be used to illustrate the amount of rubato employed in the recordings (see Figures 4 and 5). To do this, a series of points is created on the

image, representing the down beat of each bar. The distances between these points is then translated into a vertical graph to more vividly illustrate the fluctuations in tempo (wider spaced lines means slower, narrow spacing means faster). The higher the line on the graph, the slower the tempo (thus, the vertical graph is an inversion of tempo). As Leech-Wilkinson suggests in a description of this methodology, it is as if you were cycling up and down hills: as the graph gets higher the tempo slows, and then it speeds up on the descent.[17] Because the tempo varies between the two recordings, I have stretched out the image of Tertis's recording to visually align the two graphs, thereby making for easier comparison.
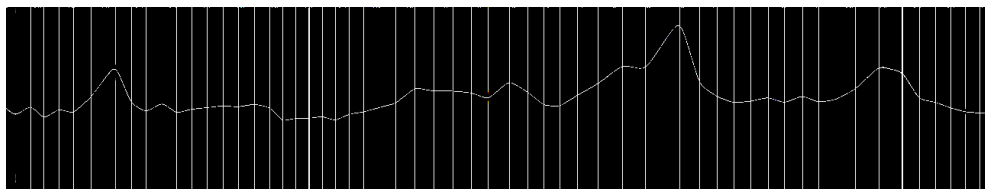

Figure 4. A graph of rubato used in the recording by Tertis and Bax
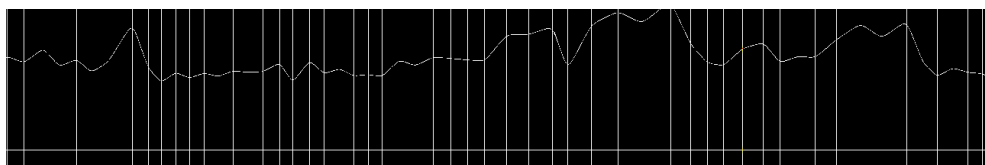

Figure 5. A graph of the rubato used in the recording by Lederer and Coop

It is clear that although the rubato in the two recordings occurs in roughly the same places throughout the movement, the 1929 recording sits at a more consistent tempo overall, with a more drastic tempo variation when rubato is put into place—particularly when slowing down at the ends of phrases. The next stage in this research would be to take the data obtained from the spectrogram and to re-analyze the score, identifying the potential musical (or interpretative) motivations underlying these tempo fluctuations. Due to limitations of space, this step is beyond the scope of this paper.

A further point of interest is how these two recordings differ in tempo. Lewis Forman, in his book *Bax: A Composer and his Time,*[18] discusses the Bax recording and relates that the performers were somewhat dissatisfied with the final result—as both felt they performed the first and last movement of the work substantially faster than their normal practice. This is a common response when performers listen back to their own

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[17] Daniel Leech-Wilkinson, "Making Music with Alfred Cortot: Ontology, Data Analysis," in *Gemessene Interpretation: Computergestützte Aufführungsanalyse im Kreuzverhör der Disziplinen* (Klang und Begriff; Vol.4, 2011), 142.

[18] Foreman, *Bax : A Composer and His Times*, 28.

recordings, and it reminds us of the need to question the interpretative accuracy attributed to these early recordings. Surprisingly, after comparing a number of modern recordings of the first movement of the sonata, the Tertis and Bax recording sits almost a full 10bpm faster on average than other recordings. Comparisons of several significant recordings of movements one, two, and three are shown below in Table 1 and Table 2.[19]

Table 1. Comparisons of the tempos used across segments of movement 1, over five different recordings

	Tertis/Bax (1922)	Primrose/Cohen (1937)	Outram/Rolton (2006)	Lederer/Coop (2010)	Williams/Norris (2015)
Mvt 1: Recording Length	7:51	11:12	9:14	11:04	9:17
b. 1-10	60	42	55	52	55
b. 22-26	110	75	100	95	108
b. 38-50	100	80	95	72	82
b. 85-90	80	58	68	61	75
b. 136-138	100	88	80	75	100
b. 152-160	80	56	70	55	70
Average Tempo	**88.33**	**66.5**	**78**	**68.33**	**81.6**

Table 2. Comparisons of the overall tempos for movements two and three, over five different recordings

Mvt. 2: Recording Length	**5:54**	**6:55**	**6:08**	**7:09**	**6:18**
Mvt.3: Recording Length	6:35	8:55	7:19	8:29	6:55

For a string player, the other most noticeable difference between these two recordings (that of Tertis/Bax and Lederer/Coop) is the amount and type of portamento used by the violist. Portamento is intimately connected with the performer's chosen fingerings, and the shifting decisions made by the performer create a particular soundscape unique to that fingering.

Tertis's approach can be seen in his published editions of viola works by Benjamin Dale, a colleague of Bax at the Royal Academy of Music and a composer who was also strongly influenced by Tertis.[20] These editions contain Tertis's suggested fingerings and bowings; and they illustrate an approach that would be deemed unsafe or risky by today's standards. Typically, modern performers search for fingerings that are guaranteed to work 100% of the time, allowing for consistency and accuracy in intonation. Tertis's fingerings, however, appear to be chosen primarily for their musical effect rather than

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[19] To do this, I highlighted distinct bar numbers from the score that sat evenly (that is, had minimal tempo fluctuations). I then went through these bars in each recording and made an approximation of the tempo marking within the bars in question. An overall average for the movement was then calculated.

[20] Foreman, *Bax: A Composer and His Times*, 12.

their technical reliability. Even William Primrose (1904-1982), one of the most well-regarded violists of the twentieth century, often felt that Tertis's fingerings were quite "bizarre." After considering the more unusual shifts found within Tertis's editions, Primrose notes:

> While I might not agree, in the final judgment I sensed that he had arrived at a system of fingering that evoked the sonorities and the rather exclusive beauties of the viola as distinct from the violin. . . .[21]

Tertis chose fingerings to produce the colour he wanted to express. The differing physical characteristics of each finger (and string) affords each note a unique quality of tone and vibrato. Tertis also chose fingerings in order to stay on one string for big leaps, thereby creating a consistency of sound. Choosing to use this type of shifting, and in particular staying on the same string for large intervals, encourages and creates more portamento as both the physical contact with the instrument and the musical line are sustained (and not broken by a string crossing). Another approach was to employ alternate shifts when the music is repeated, in order to create new colours and timbres. Tertis specifically relates this strategy in his 1938 treatise:

> Whenever possible use a different string for the repetition of a phrase—for the sake of the altered colour and general vitality of effect which the variation in the method employed affords. If this is not possible and the repetition can only be played on the same string, use all your ingenuity to give the repetition as much alteration of fingerings as you can, for the important effect of variety. [22]

An example of Tertis's approach to fingering can be seen in Figure 5—a short excerpt from the "Romance" from Benjamin Dale's Suite for Viola and Piano.[23] In the absence of a published record of Tertis's fingerings for the Bax Sonata, analysing the recording of the work reveals a similar approach. The same colour, texture, and lines are evident—findings which are also consistent with other research in this area, particularly that of Robert Philip on portamento in orchestral playing.[24]

A close examination of the fingerings employed in Dale's "Romance" (Figure 5) demonstrates Tertis's use of different shifts, and different strings, over a repeated motive to create colour variation and arguably to facilitate the accelerando with increasing energy. The dotted quaver to semiquaver motive over the A-flat octave is repeated four times, each time using a different fingering. The first time Tertis leads from the "C" string

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[21] David Dalton, *Playing the Viola: Conversations with William Primrose* (Oxford: Oxford University Press, 1989), 114.

[22] Lionel Tertis, *Beauty of Tone in String Playing* (Oxford: Oxford University Press, 1938), 8.

[23] Benjamin Dale, *Suite for Viola and Pianoforte. Op. 2*, ed. Lionel Tertis (London: Novello and Co, 1914).

[24] Robert Philip, *Early Recordings and Musical Style*, 179-204.

taking the A-flat up on the G string before returning down to first position. The second time, he chooses not to shift at all, simply crossing the string in position. The third time, he again crosses to the D string but this time allows for a shift into third position, before returning to first position to take full advantage of portamento up to the final A-flat on the same string. Each repetition of the motive gives the listener a new perspective on how the figure could be played. The use of shifting not only creates colour variation across the motive, but also exploits portamento to increase tension throughout the passage (in synchronisation with the accelerando).

Figure 6. An example of Tertis's fingerings in the "Romance" from Dale's *Suite for Viola and Piano*

The information from Tertis's editions, recordings, and writings[25] can be correlated, affording us a more complete picture of his performance practice. A precise replication of Bax and Tertis's interpretative decisions is almost feasible. We can adjust our tempo and rubato to what has been demonstrated on record, and copy the fingerings and bowings provided by Tertis (where applicable), facilitating the replication of similar tone colours. We could also strive to replicate the specific type of piano, and obtain a copy of the unusually large viola used by Tertis (which may be beyond the physical capabilities of many players). But, how far should we take this? What if we don't necessarily like what we hear?

In most historic music, we can never really know what original performances sounded like. Here, we are provided with a rare first-hand glimpse. Thus, these recordings can potentially challenge the epistemological foundations of our (sometimes unquestioned) assumptions with regard to authenticity and the 'composer's intentions.' Is this original performance imbued with a special prescriptive authority? Or are some aspects of the recording (and edition) ones that could be considered idiosyncratic to the performers, and not necessarily to be taken as authoritative models to follow? The authority of the composer over their work is often an unquestioned assumption in classical music, which stands in contradistinction to much postmodern scholarship. For Roland Barthes, for instance, writing on literature, once an author's thoughts are written on the page and published, the author's opinions and interpretations are considered

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[25] In Tertis, *The Beauty of Tone in String Playing*, we learn how much Tertis valued perfect intonation, continuous vibrato, and legato (with the bow clinging to the string at all times).

"dead."[26] The unique element in music is that although the work is written down and conserved from the composer's hand, every time it is performed it is reinvented. Taruskin was one of the first to raise some of these questions, and to suggest alternate understandings of authenticity, such as the "authenticity of conviction."[27] A deeper investigation of this discussion is beyond the scope of this paper, but it is important (at the very least) to acknowledge the questions arising.

The Bax-Tertis recording offers us not only a unique glimpse into the performance practices of the early-twentieth century, but also access to something like an intimate conversation between two significant musical personalities. The extent to which this performance is representative of historical performance practices in the early twentieth century more generally requires further investigation. Nevertheless, the recorded performance of Bax and Tertis provides fascinating insights into the performance practices and interpretative strategies used in Bax's Sonata for Viola and Piano. The observations of the tempo settings of Tertis and Bax can open our ears to different possibilities. Likewise, the awareness of the portamento used by Tertis can free us from the constraints of the modern soundscape, encouraging us to explore less conventional fingerings in a search for colour variation. These insights potentially deepen our understanding of the musical language, allowing us to translate and interpret the score with greater acuity and confidence.

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[26] Roland Barthes, "The Death of the Author," www.tbook.constantvzw.org/wp-content/death_authorbarthes.pdf.

[27] Ibid., 72.

The Enduring Temporal Mystery of Ornette Coleman's *Lonely Woman*

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Introduction

Lonely Woman from Ornette Coleman's groundbreaking 1959 album *The Shape of Jazz to Come* brought a completely fresh form of musical texture to jazz. The texture in which a fast-paced rhythm section, and in stark contrast, a slow moving and highly rubato hymn-like melody is established, has led to descriptions of the music being "completely free of meter,"[1] "rhythmically elastic"[2] or "freely pulsating in time."[3] In Coleman's musical output, *Lonely Woman* became the template for a set of works, such as *Broken Shadows* (1971) and *What Reason Could I Give?* (1971), which Peter Wilson has categorized as the "Coleman Ballad" group. There have been numerous transcriptions of *Lonely Woman*, although the complexities of the unusual two-stream nature of the rhythmic and melodic material are typically avoided in favour of what Westendorf describes as "an approximation of reality"[2] (often in 4/4).

This discussion seeks to unravel the relationship between the rhythm section and the melodic instruments in *Lonely Woman*, using digital analysis tools. The research explores the role of synchrony in forming what has been properly described as a "unified performing aesthetic"[4] of "seemingly opposing musical elements in juxtaposition against one another."[5]

The Shape of Jazz to Come[6] was released on Atlantic records in 1959, and featured Don Cherry on Trumpet, Ornette Coleman on Alto Saxophone, Charlie Haden on Acoustic Bass, and Billy Higgins on drums. The recording session for the album took place on 22 May 1959 at the Radio Recorders in Hollywood, California. The album opens with *Lonely Woman*, a work apparently written five years earlier while the twenty-four-year old Coleman was working in a department store.[7] During an interview, Coleman spoke of the origin of the composition:

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[1] Nathan A. Frink, "An Analysis of the Compositional Practices of Ornette Coleman as Demonstrated in His Small Group Recordings During the 1970s" (MA diss., University of Pittsburgh, 2012), 41.

[2] Lynette Westendorf, "Analyzing Free Jazz" (PhD. diss., University of Washington, 1994), 82.

[3] Frink, "An Analysis of the Compositional Practices of Ornette Coleman," 68.

[4] Westendorf, "Analyzing Free Jazz," 64.

[5] Frink, "An Analysis of the Compositional Practices of Ornette Coleman," 11.

[6] Ornette Coleman, *The Shape of Jazz to Come*, with Don Cherry (trumpet), Ornette Coleman (alto saxophone), Charlie Haden (double bass), and Billy Higgins (drums), recorded May 22, 1959, Atlantic 1317, 33⅓ rpm.

[7] John Litweiler, *Ornette Coleman: A Harmolodic Life* (New York: Da Capo Press, 1994), 36.

Before becoming known as a musician, when I worked in a big department store, one day, during my lunch break, I came across a gallery where someone had painted a very rich white woman who had everything that you could desire in life, and she had the most solitary expression in the world. I had never been confronted with such solitude, and when I got back home, I wrote a piece that I called "Lonely Woman.[8]

Whilst most transcriptions of *Lonely Woman* have favoured what Westendorf[9] describes as "an approximation of reality" or an indication that the horn[10] players are to play freely, these suggestions imply that the metric relationships and interactions between the players were mostly the outcome of chance. Table 1 summarises the tempo, meter and performance instructions of four of the best-known transcriptions. As can be seen, there are differences in interpretation, most notably the number of beats and underlying tempo. While some variation is not unknown in transcriptions of improvised music, these potential discrepancies are the result of major disagreements relating to extremely fundamental parameters derived from a single recording. The disagreements would seem to reflect the ambiguity of pulse in *Lonely Woman.*

Table 1. Comparison of meter and tempo markings in four transcriptions of *Lonely Woman*
NOTE: Block's analysis does not include a transcription of the B section. The number in brackets shows the number of beats if Block had assumed that the missing section were thirty two beats.

	Time Sig.	Tempo	Instruction	No. of Beats
Schuller (1961)[11]	2/2	c. 88	Very Freely	276
Block (1990)[12]	4/4			186 (218)*
Westendorf (1994)[13]	2/2	c. 84	Very Freely	276
Ville (2009)[14]	4/4	c. 160	Melody is played freely against time	245

Ornette Coleman's double quartets in the album *Free Jazz* (1961)[15] suggest a more precise and intentional approach to multi-metre, polyrhythm, and metric

[8] Jacques Derrida, "The Other's Language: Jacques Derrida Interviews Ornette Coleman, 23rd June 1997," *Genre* 37, no. 2 (2004): 328.

[9] Westendorf, "Analyzing Free Jazz," 64.

[10] The jazz term denoting all blown instruments.

[11] Gunter Schuller, *A Collection of the Compositions of Ornette Coleman* (New York: MJQ Music, 1961), 17-19.

[12] Steven Block, "Pitch-Class Transformation in Free Jazz," *Music Theory Spectrum* 12, no. 2 (1990): 196.

[13] Westendorf, "Analyzing Free Jazz," 64-65.

[14] V. Ville, "Lonely Woman," Free Jazz Institute, accessed November 14, 2015, http://freejazzinstitute.com/uploads/20100220081822_HalfNelson.pdf.

modulation. In *Free Jazz* drummer Billy Higgins is driving one rhythm section on the right channel of the audio recording in a 4/4 swing feel, whilst the other rhythm section on the left channel is driven by Ed Blackwell, simultaneously grooving with a double-time straight-eighth bebop feel. As discussed by Andrew Fogliano, these two strata of time-scales maintain a precise metric relationship throughout, although further metric modulations are implied when the bass player (in the right channel) begins to play in 3/4 during the work, creating a 3:2 hemiola.[16] Despite the two different time scales evident, these two temporal structures are closely related, and perceptually tend to sound quite synchronous and fused. This would appear to align closely with Frink's[17] description of a "unified performing aesthetic" of "seemingly opposing musical elements in juxtaposition against one another." In the case of *Lonely Woman*, the rhythmic texture presents a more mysterious and distant metric relationship where the temporal layers are perceived as being more independent.

In 1990, Albert Bregman—a researcher involved in experimental psychology, cognitive science, and Gestalt psychology—proposed a framework of auditory perception that he coined Auditory Scene Analysis (ASA).[18] This framework proposes several key inference processes that may inform the way in which we, as listeners, perceive poly-tempo in works such as Coleman's *Lonely Woman*. The theory of ASA suggests that listeners tend to group together sounds that are perceptually similar, and segregate sounds that are perceptually dissimilar.[19] Arguably, what is most relevant in *Lonely Woman* is the perception of horizontal organisation, most specifically the perception of metre in both the horns and the drums, and their relative synchrony versus asynchrony. More recent research in ASA has suggested that different auditory cues may be inferred via parallel neural channels.[20] A principle known as "temporal coherence" has been used to describe how coherent parallel auditory streams may be grouped as a single stream, whereas low coherence between inferred parallel streams would otherwise be perceived as more than one stream. For example, Steve Reich's *Piano Phase* (1967) tends to fall into

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[15] Ornette Coleman, *Free Jazz*, with Ornette Coleman (alto saxophone), Don Cherry (pocket trumpet), Scott LaFaro (double bass), Billy Higgins (drums), Eric Dolphy (bass clarinet), Freddie Hubbard (trumpet), Charlie Haden (double bass), and Ed Blackwell (drums), recorded December 21, 1960, Atlantic SD 1364, 33⅓ rpm.

[16] Andrew Fogliano, "Collective Improvisation: Conversation, Interaction and Direction in the Music of Ornette Coleman and Jason Rigby" (Hons diss., Wesleyan University, 2009), 21.

[17] Frink, "An Analysis of the Compositional Practices of Ornette Coleman," 11.

[18] Albert S. Bregman, *Auditory Scene Analysis* (Cambridge, MA: MIT Press, 1990).

[19] Brian Moore and Hedwig Gockel, "Factors Influencing Sequential Stream Segregation," *Acta Acustica, United with Acustica* 88 (2002): 320–332.

[20] Mounya Elhilali, Ling Ma, Christophe Micheyl, Andrew J. Oxenham, and Shihab A. Shamma, "Temporal Coherence in the Perceptual Organization and Cortical Representation of Auditory Scenes," *Neuron* 61 (2009): 317–329; Shihab A. Shamma, Mounya Elhilali, and Christophe Micheyl, "Temporal Coherence and Attention in Auditory Scene Analysis," *Trends Neurosci* 34 (2011): 114–123.

a single stream when the ostinatos are in rhythmic synchronization, but tend to expand into multiple streams when musical phrases are transitioning in phase. Research by Daniel Pressnitzer et al has aimed to draw parallels between visual illusions and auditory illusions such as "bistability,"[21] a cognitive phenomenon in which certain visual or auditory stimuli can be perceived in multiple ways.[22] Bregman has also remarked that auditory streaming presents a striking parallel with apparent motion, a visual stimulus that is "bistable."[23] Pressnitzer and Hupé also suggest that temporal dynamics observed in auditory stream segregation are similar to those of bistable visual perception, stating that the mechanisms mediating multistable perception might be shared across sensory modalities.[24]

Perhaps one of the closest visual analogies to the auditory streams present in *Lonely Woman* is the Ponzo Illusion (see Figure 1), which shows that the perception of an object's length is influenced by its contextual surroundings. The lack of "temporal coherence" evident in *Lonely Woman* may contribute toward perceiving the time as having a certain elasticity, and may also support notions attributed to free jazz such as "free" time. The phenomenon of auditory "bistability" may also contribute toward explaining whether or not the horns and the drums are perceived as performing in synchrony or asynchrony.

Figure 1. The Ponzo optical illusion

Ake claims that "Early boppers developed their own "mystery" language as a means of distancing themselves from "unhip" outsiders."[25] A tendency to revert to mysterious explanations of performance practice have also contributed to the problem surrounding the interpretation of metre and rhythm in *Lonely Woman*. In an interview with George Russell from the documentary *Ornette: Made in America*,[26] it is claimed that

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[21] Daniel Pressnitzer, Clara Suied, and Shihab A. Shamma, "Auditory Scene Analysis: The Sweet Music of Ambiguity," *Frontiers in Human Neuroscience* 5 (2011): 158.

[22] Sensory 'bistability' has also been described as the alternating dominance and suppression of multiple competing interpretations of ambiguous sensory input.

[23] Bregman, Auditory Scene Analysis.

[24] Daniel Pressnitzer and Jean-Michel Hupé, "Temporal Dynamics of Auditory and Visual Bistability Reveal Common Principles of Organization," *Current Biology* 16 (2006): 1351–1357.

[25] David Ake, "Re-Masculating Jazz: Ornette Coleman, 'Lonely Woman' and the New York Jazz Scene in the Late 1950s," *American Music* 16, no. 1 (1998): 28.

[26] George Russell, cited in *Ornette: Made in America*, directed by Shirley Clarke (New York: Milestone Films, 1984), videocassette.

this quartet of Coleman, Cherry, Haden and Higgins used to begin performances in perfect time and tempo without using an introductory count or even a subtle nod of the head. Indeed, the word "telepathic" is often evoked in discussions of their interaction.[27] In addition to the "superhuman" capabilities attributed to this quartet, Coleman, from 1972, described his unique compositional approach as "harmolodics"—a quasi-philosophical set of approaches that he claimed to be compiling into an explanatory text for much of his life.[28] Most of his descriptions of the system are found in the liner notes to his records. The following extract from the sleeve notes of Coleman's 1972 album *Skies of America,* is typical:

> Harmolodics can be used in almost any kind of expression. You can think harmolodically. You can write fiction and poetry in harmolodic. Harmolodics allows a person to use a multiplicity of elements to express more than one direction. The greatest freedom in harmolodics is human instinct.[29]

Not surprisingly these "unknowable" qualities have conspired to encourage analysis to end with phases such as "completely free of meter," "freely pulsating time,"[30] or "rhythmically elastic."[31]

In another description of harmolodics, however, Coleman defines it as a system in which "rhythms, harmonies and tempos are equal in relationship and independent melodies at the same time."[32] We will demonstrate in this analysis that *Lonely Woman* does indeed exemplify a precarious balance between independence and interdependence in the functions (lead, solo, rhythm section etc.) of the four instruments. The paper attempts to chart a course between the precise measurement of events in the recording that arguably contribute to the perception of tempo and the more human domains of rubato, musicianship, and the physical constraints of performance by examining the only definitive and determinate document of the work, the 1959 recording.

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[27] Michael B. Cogswell, "Melodic Organization in Four Solos by Ornette Coleman" (M.Mus diss., University of North Texas, 1989), 59; Frink, "An Analysis of the Compositional Practices of Ornette Coleman," 44.

[28] Ornette Coleman, cited in Jari Perkiömäki, "Lennie and Ornette Searching for Freedom in Improvisation Observations on the Music of Lennie Tristano and Ornette Coleman" (D.Mus. diss, University of the Arts Helsinki, 2002), 10.

[29] Ornette Coleman, *Skies of America*, with Ornette Coleman (alto saxophone) and the London Symphony Orchestra conducted by David Measham, recorded April 17-20, 1972, Columbia KC 31562, 33⅓ rpm.

[30] Frink, "An Analysis of the Compositional Practices of Ornette Coleman," 41, 68.

[31] Westendorf, "Analyzing Free Jazz," 81.

[32] Ornette Coleman, liner notes for *Dancing in Your Head*, with Ornette Coleman (alto saxophone), Bern Nix (first lead guitar), Charlie Ellerbee (second lead guitar), Rudy McDaniel (bass guitar), Shannon Jackson (drums), Robert Palmer (clarinet), and Master Musicians of Jajouka, recorded January 1973–December 1975, Horizon SP722, 33⅓ rpm.

Analysis Methodology

Since the definitive version is a recording, an analysis of *Lonely Woman* relies on the ability to detect necessary performance details in both the horn section and the rhythm section from the recording itself. In the original recording, the loudness of the horns often mask details in Billy Higgins performance on drum kit. Whilst in a stereo mix-down, one does not have the ability to necessarily change the relative loudness of one instrument in the mix without affecting everything else, there are a number of other techniques in the practice of audio engineering that can be of use, such as phase cancellation and mid-side processes. For sound sources that have been recorded in mono, and panned centre in the mix, these elements can be phase–cancelled out of the mix by reversing the phase of one channel and mixing down to mono. In the case of *Lonely Woman*, it is possible to remove the bass and drums almost entirely by applying this phase cancellation technique, leaving only the trumpet and alto saxophone. Similarly, it is possible to reduce the level of the horns substantially by leaving only the mid and not the side components of a mid-side matrix. Upon listening, this appears to leave just a mono mix of the remaining microphones, what sounds like a figure-of-eight microphone placed in front of the drums, and an acoustic bass microphone representing an even balance of the bass and drums, and some of the horns.

A number of software tools have been used for analysing the temporal relationships of the work. Time-domain analysis techniques generally fall into a number of sub-categories: loudness analysis (i.e. peak RMS), log attack time, temporal centroid, zero-crossing rate, segmentation analysis, and transient analysis.[33] Such techniques as transient analysis have been used for beat detection of an audio source, and these methods either fall into real-time[34] or non-real-time approaches. A non-real-time approach has been adopted for this research,[35] and has been used to track changes precisely in tempo in the rhythm section, and to note onsets in the horn section throughout the work. This process has also been useful in identifying moments where the horns and rhythm section are in synchrony.[36] A real-time approach such as Tristan Jehan's

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[33] Giovanni De Poli and Luca Mion, "From Audio to Content," in *Algorithms for Sound and Music Computing, for Computer Science Class in Sound and Music Computing*, ed. Giovanni De Poli and Federico Avanzini (CreativeCommons Attribution-NonCommercial-ShareAlike license, 2006), under "Informatica Musicale: dispense anno 2007-2008 e 2006/07," http://www.dei.unipd.it/~musica/IM06/Dispense06/riferimenti06.html.

[34] In computer science, real-time operating systems are those that respond to input immediately. Refer to Christopher G. Morris, ed., *Dictionary of Science and Technology* (Elsevier Science & Technology: Academic Press, 1992).

[35] Avid *ProTools* software has been used with its "tab-to-transient" and "identify beat" functions.

[36] It is possible to place markers on the timeline to indicate significant structural moments.

beat~ object[37] in *MaxMSP* allows for tracking these tempo changes on-the-fly. Another solution is Adam Stark's Beat Tracking Evaluation Toolbox.[38]

Rhythmic Analysis of *Lonely Woman*

There are several key questions that are worth addressing. Firstly, should we assume that all performers are performing freely? Can we assume that previously notated versions have accurately represented the relative tempi of horns and bass versus the drum kit? Are all musical elements elastic in time, or some more strict than others? Is there a strict metric relationship between the different parts, and can it be quantified? Finally, is the synchrony between the horns themselves determined by the bar structure of the drums, by some other technological means, or can it simply be attributed to sheer musicianship?

Explorations in cross-rhythm, implied time, and metric modulation became useful devices in jazz rhythm sections of the early 1960s. Examples include John Coltrane's ensemble featuring McCoy Tyner, Jimmy Garrison, and Elvin Jones, as well as Miles Davis's ensemble featuring Herbie Hancock, Ron Carter, and Tony Williams. This was not only influenced by the syncopation and polyrhythm already evident in jazz, but also by other influences taken from Latin, Cuban, and Brazilian music. Common rhythmic interrelationships explored included 6:4, 2:3, 4:3, 9:6 metric relationships, as well as polyrhythms such as 3/4 in 4/4 time, or 4/4 in 3/4 time.[39] However, in the context of poly-tempo work, and with exception to examples in Western Art Music such as Charles Ives, Karlheinz Stockhausen, and Henry Brant, Ornette Coleman might be considered an innovator by placing these techniques in the spotlight in jazz music as early as 1959 in his album *The Shape of Jazz to Come*.

From the outset it would appear that the horns are playing a stately 120 BPM whilst the drummer is playing a fast breakneck bebop-style groove in 4/4 at approximately 320 BPM; mathematically this would represent a more distant metric relationship of 8:3, however the extent to which this might represent a deliberately cultivated polyrhythm is difficult to determine. This metric displacement is most evident in the B section of the head where the trumpet appears to be playing 3/4 per note whilst the drummer is playing two bars of 4/4. However, an analysis of the tempo of the drummer indicates a tempo that is pushing and pulling against the other elements. Of the 401 bars of 4/4 in the drums (see Figure 2), the tempo sits between 299 and 337 BPM,

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[37] Tristan Jehan, "Event-Synchronous Music Analysis/Synthesis" (paper presented at the 7th International Conference on Digital Audio Effects, Naples, Italy, 2004).

[38] Matthew Davies, Norberto Degara, and Mark Plumbley, "Evaluation Methods for Musical Audio Beat Tracking Algorithms," Queen Mary University of London, Centre for Digital Music, Technical Report C4DM-TR-09-06 (2009). See also http://www.adamstark.co.uk/beat-tracking-evaluation-toolbox/.

[39] John Riley, *Beyond Bop Drumming* (New York: Manhattan Music, 1997).

often stabilizing at approximately 327 BPM and an average mean tempo of approximately 325 BPM. Significant shifts in tempo are evident at sectional changes, for example the first B section in the head where the tempo drops down to almost 315 BPM, and the beginning of the solo section where the tempo again shifts down to 315 BPM.

By time-stamping the 4/4 bar structure in the drums, taking into consideration these natural tempo shifts, it is possible to map out where the horn entries line up with this metric structure, and how each phrase is extended or shortened throughout. Whilst phrases 1 and 2 of the head tend to shorten through the length of the work, phrases 3 and 4, on the other hand, tend to become elongated, allowing for expressive rubato in the alto saxophone and for further interaction between the horns and the rhythm section. For example, Billy Higgins emphasises a metric modulation of 1:3 by stretching the swing ride-rhythm from the crotchet pulse, to an implied dotted minim pulse, implying a tempo of 109 BPM from the then stabilised tempo exhibited (327 BPM). This 109 BPM is relatively close to the hypothesized 120 BPM suggested in the horns.
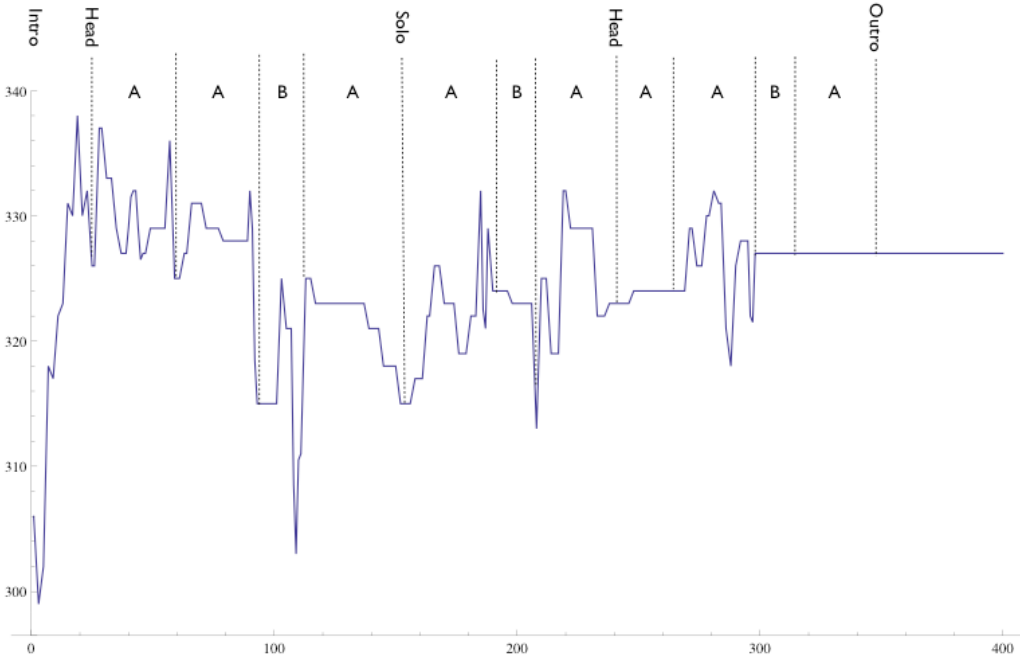

Figure 2. Tempo-tracked changes in *Lonely Woman*

Table 2. Shortening and elongation of phrases in the head of *Lonely Woman*

	Head 1	Head 1 1st Repeat	Head 1 2nd Repeat	Head 2	Head 2 1st Repeat 1	Head 2 2nd Repeat
Phrase 1 (beats)	10	10	10	9	8	9
Phrase 2 (beats)	8	8	8	7	8	7
Phrase 3 (beats)	11	11	12	11	11	11
Phrase 4 (beats)	11	10	10	11	10	11
Phrase 5 or 6 (beats)	10	10	10	9	9	12 + CODA
TOTAL Beats	50	49	50	47	46	50 + CODA

The horns themselves are written in a harmonic minor key with blue notes on the 3rd and 5th degrees of the scale, similar to the New Orleans-like blues found in Jimmy Cox's *Nobody Knows When You're Down and Out* (1923), which was popularised by jazz singer Bessie Smith, and in Joe Primrose's *Saint James Infirmary Blues* (1929). Arguably a reason for the appropriation of the saxophone by jazz players was the instrument's vocal quality, and the relative ease with which the pitch of any given note can be manipulated or 'bent," thus imitating the flexibility of the human voice. For musicians who had the sounds of the blues firmly in their inner ears, the saxophone's vocal quality, and its capacity to imitate these 'blue" vocal lines, would have appeared very attractive; indeed, the 'moaning" and 'wailing" sounds that distinguish the blues would later become iconic of the saxophone itself.[40] Charlie Haden, on double bass, provides a harmonic underpinning for the work, the part often involving two-note chords, and emphasising the tonic and dominant relationships, establishing a clear sense of tension and release throughout the work. Each entry of the A section (see Figure 3) appears to have a different alignment with the drums, but there are some clear similarities in each 'variation."

In this first instance of the A section of the head, the horns and bass appear to come in a little after the downbeat, more closely lining up with beat 2. If we are to assume the horns are playing a different tempo at 120 BPM, this would approximate a 14:5 metric relationship, what would be considered by most musicians as too complex to be practically attempted. This suggests, rather, that it was more a matter of synchronising arrival points. We could also argue this section from the perspective of the tempo of the horns in 3/4 (as quantized by the rhythmic subdivisions of the drums shown in Figure 4).

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[40] Stephen Cottrell, *The Saxophone* (New Haven: Yale University Press, 2013), 186; Coleman, "Skies of America."

Figure 3. A note-for-note transcription of the first A section in the head from the perspective of the drums

Figure 4. A note-for-note transcription of the first A section in the head from the perspective of the horns

However, the horns tend to play quite freely, particularly Don Cherry's entries on the trumpet, and the interpretation of these lines, particularly given jazz rhythmic language and phrase structure, are arguably open to interpretation. This is further supported by how the nuances and rhythmic phrasing are varied each time. The third playing of the head, from the point of view of the drummer's metric structure, is a little more in synchrony. This repeat initially constitutes a 13:5 metric relationship, a slower metric relationship than before, and also a relationship that is too complex to be systematically attempted, again suggesting that the relationship is the byproduct of attempts to synchronise arrival points. This altered metric relationship is supported by the reduction in tempo as Billy Higgins slows after the first playing of section A versus the first repeat of A (see Figure 5).

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Given the amount of phrasing variation, and the tempo elasticity of the drums, it is difficult to assume what the definitive version of the head is. The variability of jazz rhythmic phrasing, like inegale in French Baroque music, has many variations of rhythmic nuance ranging from strict duplet and trochaic triplet-like figurations, to double dotted rhythms. Analyses of the metric proportions between the drummer's tempo and the horns at 120 BPM tend to settle most commonly on an 8:3 metric relationship, or an approximation of such a relationship. The opening phrase of the head thus might read more appropriately as shown in Figure 6.
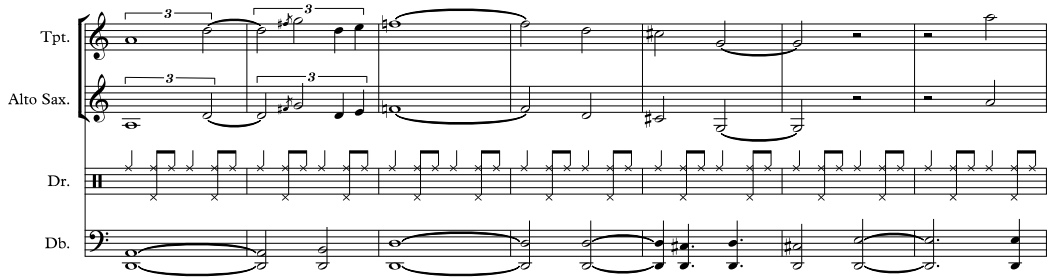

Figure 5. A note-for-note transcription of the A section repeat in the first head from the metrical perspective of the drums

Figure 6. A note-for-note transcription of the A section repeat in the first head from the metrical perspective of the horns

Identifying the synchrony between both elements requires one to make some assumptions. The tempo changes, and the metric structure in the drums, is something more indisputable, given the idiomatic approaches to playing the instrument and the clear 4/4 bar structure that is evident in Billy Higgins's performance. However, the question ultimately is whether or not the synchrony between the horns themselves is determined by the bar structure of the drums or by some other means. Separating the recording of the horns allows one to observe the phrasing structure in the horns in isolation. The beginnings of horn phrases and accents tend to land very closely to a 120

BPM tempo map. What is most surprising is that this synchrony between the horns and a 120 BPM click remains relatively consistent throughout, most evident in the B section of each playing of the head. Nevertheless, there is no evidence to suggest that any synchronization devices were used, and this would seemingly move against the grain of traditional jazz performance practice, not to mention established notions of "free jazz." Furthermore, research into the auditory perception of tempo has conclusively suggested that 120 BPM is a more commonly perceived tempo in music (see Figure 7), and this would support the idea that 120 BPM may more likely be attributed to *Lonely Woman*.[41]
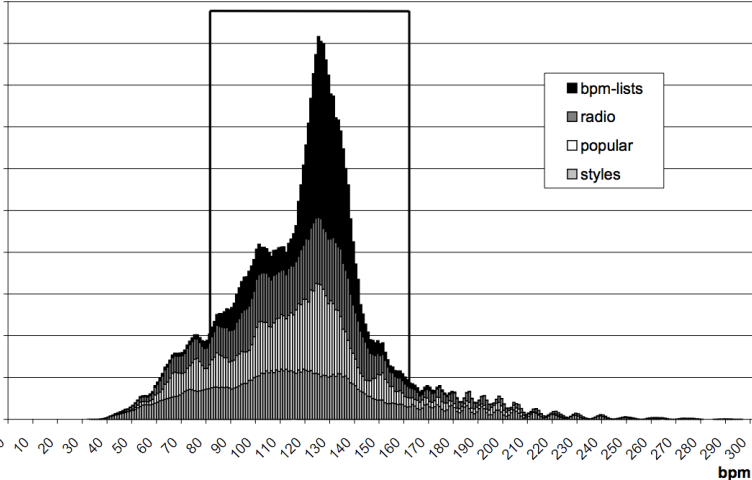

Figure 7. Distribution of the tempi as perceived in four sets of musical pieces. The black frame indicates the 'preferred octave' (Source: Moelants, 2002)

In applying a consistent 120 BPM click to the variable time-stamps of the drum part, it is possible to see how these different temporal structures align. These have been filtered to all metric events that occur within the duration of 50 milliseconds. Whilst the application of the 120 BPM click may be novel, there are a strong number of events that line up, particularly the accents in the B section. This is clearly demarcated by Billy Higgins, where he plays fills and accents that anticipate or punctuate horn entries or changes in the sectional form. Most importantly, these points of synchrony line up with key structural changes such as the repeat of the head, statements of phrases in the head, the statement of the B section, the tacet just before the second repeats of section A, the demarcation and entrance into the alto solo, the demarcation of the return of section A in the alto solo, punctuation of specific rhythms by the drummer during the alto solo, and

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[41] Dirk Moelants, "Preferred Tempo Reconsidered," *Proceedings of the Music Perception and Cognition Conference* (2002): 580-583.

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the statement of each phrase in the coda. Figures 8a and 8b illustrate these changing relationships across *Lonely Woman*'s complete form.
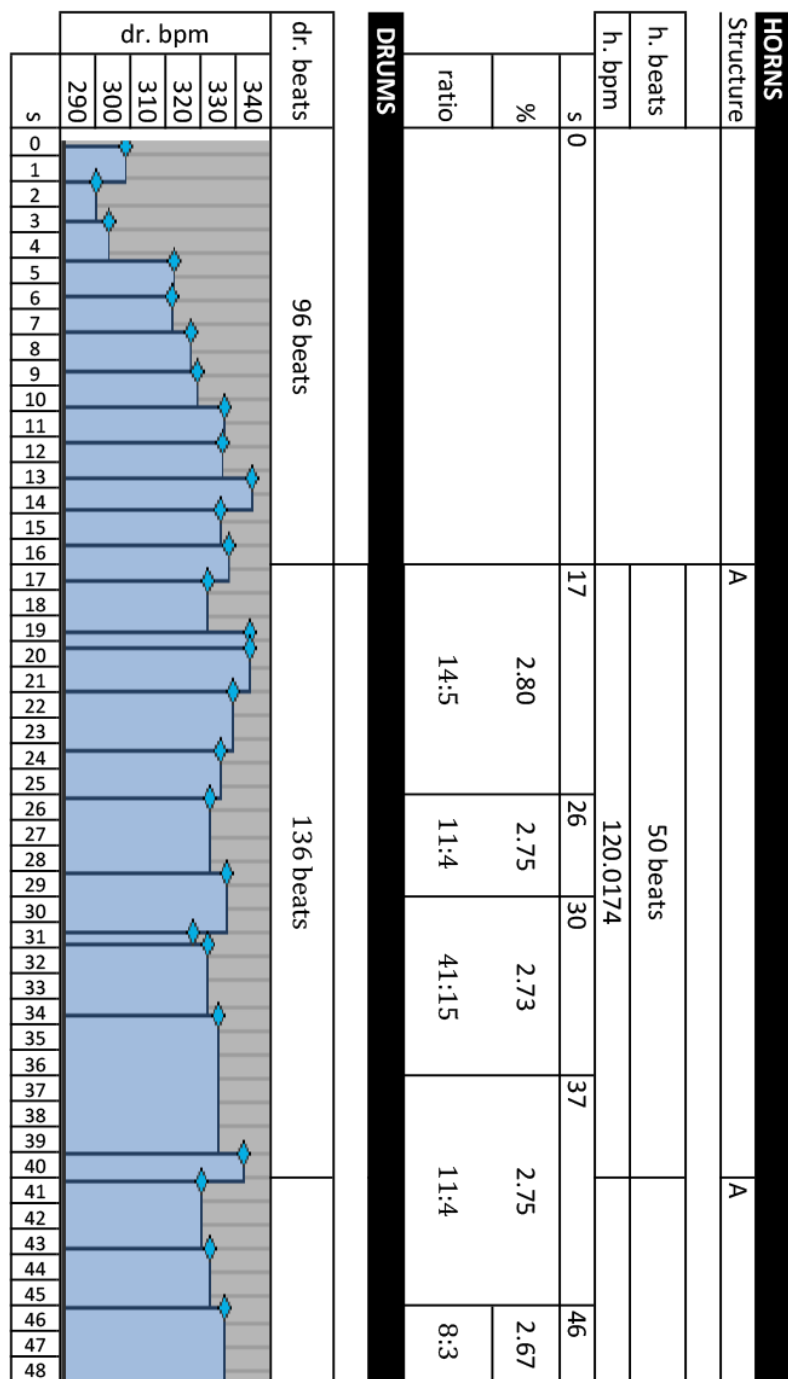
HORNS					
Structure	A			A	
h. bpm	120.0174				
h. beats	50 beats				

% (s)	ratio
s 0	
17	14:5
26 — 2.80	11:4
30 — 2.75	41:15
37 — 2.73	11:4
46 — 2.75	8:3
2.67	

DRUMS		
dr. beats	96 beats	136 beats
dr. bpm	290–340 (chart)	

Figure 8a. An overview of metric relationships between the horns and drums in *Lonely Woman* in bars 1-48
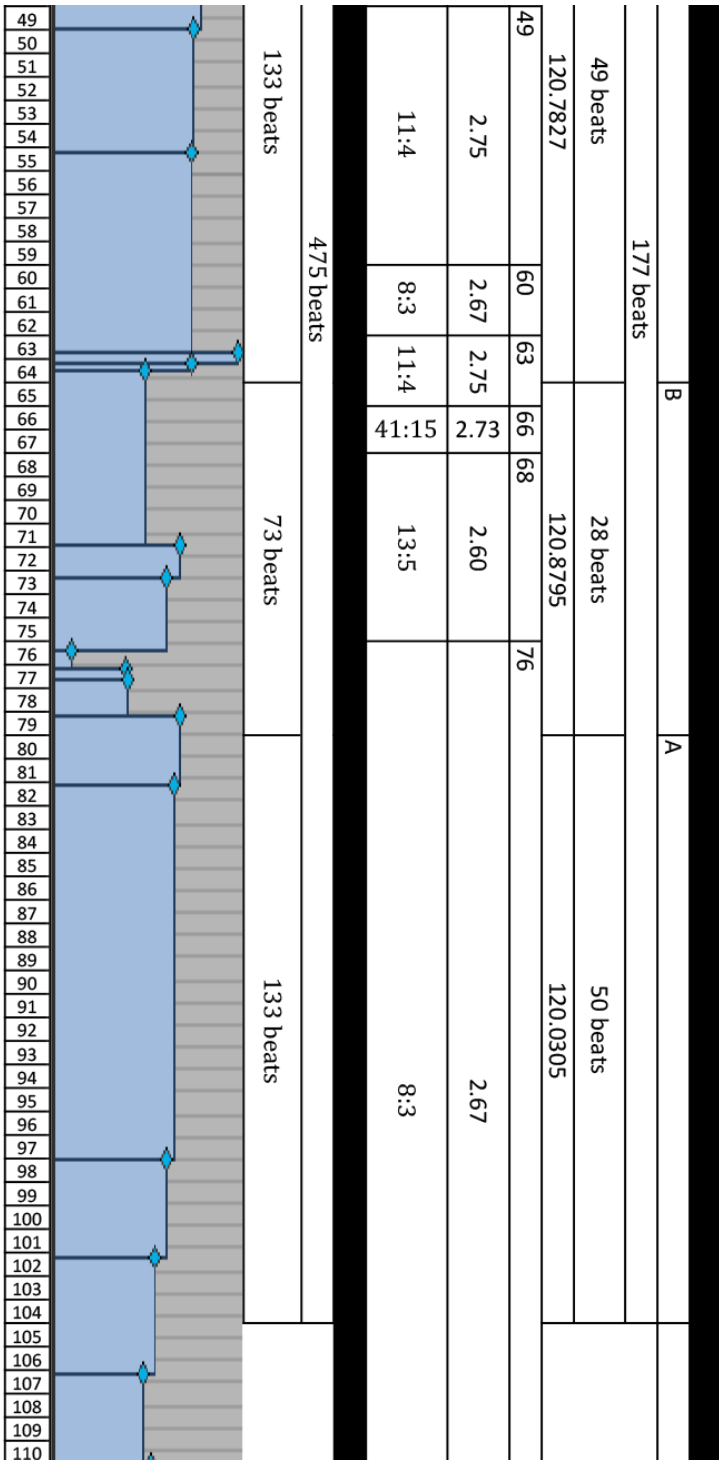
Figure 8b. An overview of metric relationships between the horns and drums in *Lonely Woman* in bars 49-110

Conclusion

This discussion seeks to precisely unravel the relationship between the rhythm section and the melodic instruments in the 1959 recording of *Lonely Woman*, using digital analysis tools. It aims to uncover the role of synchrony and asynchrony in forming what has been properly described as a "unified performing aesthetic" of "seemingly opposing musical elements in juxtaposition against one another."

Returning to some of the research questions proposed earlier: should we assume that all performers are performing freely? Some of the conclusions of this research would suggest that we cannot assume that all performers are necessarily performing freely. On the other hand, given the apparent complexity of some of the resultant polyrhythms, it is still reasonable to assume that they are formed accidentally. Can we assume that previously notated versions have accurately represented the relative tempi of horns and bass versus the drum kit, and are all musical elements elastic in time, or some more strict than others? We can state unequivocally that previous transcriptions have not accurately represented all elements, and that includes the relative tempi of the horns versus the drum kit, and the relative role of the bass in bridging between these two tempo structures. The problem is that these relationships are always in flux due to the tempo shifts in Billy Higgins's performance, which means that each version of the head is considered quite unique based on variable metrical relationships. What is the metric relationship between the poly-tempi exhibited, and how consistent and reliable is this observation? It is possible to see over-arching tempo and metric relationships within phrases (distinguished by synchronized points of arrival), and the average mean tempo ratio tends to fall mostly in an 8:3 metric relationship. Finally, is the synchrony between the horns themselves determined by the bar structure of the drums, by some other technological means, or by sheer musicianship? Without any evidence of time-synchronising devices, the phrase synchrony explored in the performance in *Lonely Woman* seems to be attributable to the high degree of musicianship in the ensemble. Billy Higgins masterfully pushes and pulls the time in order to manipulate the tempo to land more closely in synchrony with the phrasing of the horns.

The Tonary as Analytic Guidebook for the Performance of Chant

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A tonary is a liturgical book in which the antiphons of the office and mass, as well as responsories and other chants, are classified according to the eight psalm tones.[1] This was essential before the development of precise pitch notation as it provided a guide for the memorisation of the psalmodic endings of each of the eight tones, thus facilitating the link between the specific antiphons and psalms selected to celebrate the many feasts of the Western Christian Church. The earliest tonaries appeared in the eighth century and continued, though with diminishing frequency, through the fourteenth century, even though by then precise pitch notation was readily available. The examples that I examine in this paper all appear in the British Library manuscript, Harley 281,[2] and were collected at the end of the popularity of the tonary, in the early fourteenth century.[3] They are the twelfth-century *Tonale Sancti Bernardi* (a Cistercian tonary in dialogue form),[4] the thirteenth-century *Tractatus de tonis* of Petrus de Cruce (Amiens, secular use)[5] and the early fourteenth-century *Tractatus de tonis* of Guy of Saint-Denis (Paris, Benedictine monastic use).[6] This final work is presented in two parts. The first part provides the analytical substructure of the working of the eight tones, and the second puts these principles into practice with exemplary use of more than 400 chants.

There are several reasons why it is important to investigate the tonary. First among them relates to the theme of this symposium, "Analysis and Performance in Music," since the tonary provides one of the earliest expressions in the West of the fundamental relationship between theory and practice. Guy of Saint-Denis underlines the

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[1] Grove Music Online, s.v., "Tonary," by Michel Huglo, accessed 6 November, 2016, http://www.oxfordmusiconline.com.ezproxy.library.uwa.edu.au/.

[2] Hereafter MS H281.

[3] This manuscript is described in *The Theory of Music: Manuscripts from the Carolingian Era up to C. 1500 in Great Britain and in the United States of America*, ed. Christian Meyer, vol. 4 (Munich: G. Henle, 1992), 74–78.

[4] Anonymous, *Tonale sancti Bernardi*, in Christian Meyer, "Le tonaire cistercien et sa tradition," *Revue de Musicologie* 89 (2003): 57–92 (the tonary runs between pp. 77 and 92).

[5] Petrus de Cruce, "Tractatus De Tonis," in *Petrus de Cruce Ambianensi Tractatus de tonis*, ed. Denis Harbison (Rome: American Institute of Musicology, 1976).

[6] Guy of Saint-Denis, "Tractatus De Tonis," in *Guido von Saint-Denis Tractatus de tonis: Edition und Studien*, ed. Sieglinde van de Klundert (Bubenreuth: Hurricane Publishers, 1998). See also Constant J. Mews, Carol J. Williams, John N. Crossley and Catherine Jeffreys, eds, *Guy of Saint-Denis: Tractatus De Tonis* (Kalamazoo: ARC Medieval Press, forthcoming).

essential nature of this relationship in the prologue to his *Tractatus de tonis* in the following words:

> Indeed, because I wish to provide something useful not just for simple brothers but also for the more advanced and subtle among them, I have divided the present book into two principal parts. The first is about the tones in relation to theory or speculation about them. . . . This difficult and subtle [part] is for the more studious and advanced. In the second, I will deal with praxis, that is, the operation of these things more figuratively and by examples easier for the simpler and the young. This is so that those who perchance are not able to grasp the subtlety of the first part to the full are at least able to delight in the clarity of the examples[7] in the second part.[8]

The question of whether theory is the accumulation and distillation of practice, or practice the ultimate expression of theory, forms the intellectual substrate on which the tonary is formed.

Perhaps equally important is the contribution that a study of the tonary can make to the history and practice of memory, given that the monks were expected to chant the material of the liturgical year from memory.[9] This exercise of ritualised memory was an important part of monastic devotions. By the end of the Middle Ages there were more than 3000 antiphons; add to this around 70 introits, 118 graduals, 100 alleluias, 18 tracts, 107 offertories and 150 communions, as well as the Office Propers and it might amount to "seventy five or eighty hours of memorised matter. This would correspond to the selection of Beethoven's instrumental works plus the full Wagnerian canon."[10] In the performance of much of this liturgy, the smooth connecting of one piece of chant to the next is crucial; the tonary provides the key to this connecting process, and for the singer it unlocks access to the corpus of memorised plainchant.

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[7] The examples in the second part that Guy refers to include more than 400 references to, or notated examples of, chant—a considerable challenge.

[8] "Verum quia non solum simplicium fratrum immo etiam provectorum magisque inter eos subtilium utilitati deservire cupio. libellum presentem in duas partes principales distinxi. In prima videlicet de tonis quantum ad theoriam sive speculationem eorum artificialiter quodammodo vel scientifice et per consequens cum omnis ars atque scientia ut alibi scribitur sint de bono et difficili difficilius atque subtilius pro studiosioribus ac provectis. In secunda vero quantum ad praxim idest operationem ipsorum figuraliter magis et per exempla atque facilius pro simplicioribus et parvulis tractaturus. Ut qui forte prime partis subtilitatem capere ad plenum non potuerunt. saltem in secunde partis exemplari planitie delectentur." Klundert, Guido de Sancto Dionysio, *Tractatus*, II:2.

[9] Anna Maria Busse Berger, *Medieval Music and the Art of Memory* (Berkeley: University of California Press, 2005), 48. For documented evidence of the expectation that the monks of Notre Dame recited chant from memory through the seventeenth-century see Craig Wright. *Music and Ceremony at Notre Dame of Paris, 500–1550* (Cambridge: Cambridge University Press, 1989), 325–29.

[10] Kenneth Levy, *Gregorian Chant and the Carolingians* (Princeton, N.J.: Princeton University Press, 1998), 175–6, cited in Anna Maria Busse Berger, *Medieval Music and the Art of Memory*, 49.

Since we generally assume that if you can write something down you don't need to commit it to memory, the question remains of the continuing practice of the performance of the body of chant by memory.[11] With the invention of the staff by Guido of Arezzo (ca. 1030) and the development of unambiguous pitch notation soon thereafter, the enduring function of the tonary, as a mnemonic aid, should be questioned as well. There are a number of explanations for the continuing tradition, not least among them the concept of ritualised devotion associated with the daily performance of prayer as an essential part of monastic life, referred to above. In addition, the high cost of candles and obscurity of dark chapels often made reading difficult, if not impossible.[12] Finally, there existed the belief—still with us today—that performance from memory is of greater value than that from the score.[13] Berger makes the interesting point that the invention of writing does not automatically put an end to memorisation.[14] In fact the tonary in its written and notated form provides evidence of the process of memory.

A tonary was a practical document since in every service specific antiphons had to be attached appropriately to their full cursive psalms for the Office or to selected passages from them in the Mass. In the Vespers service for example, on any day of the week there were four "ordinary" psalms and literally hundreds of ever changing "proper" antiphons that had to be matched in daily worship. The tonary provided quick access to this material and was indispensable in providing the psalmodic endings for each of the eight tones. The first task for a singer was to commit to memory the structural fundamentals captured in the Table 1 below:

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[11] This assumption rests on a wealth of scholarship on the relation between literacy and orality in the Middle Ages. Amongst many studies see Brian Stock, "Medieval Literacy, Linguistic Theory, and Social Organization," *New Literary History: A Journal of Theory and Interpretation* 16 (1984): 13–29; Leo Treitler, "Orality and Literacy in the Music of the Middle Ages," *Parergon: Bulletin of the Australian and New Zealand Association for Medieval and Renaissance Studies* 2 (1984): 143–74; Brian Stock, *Listening for the Text: On the Uses of the Past* (Philadelphia: University of Pennsylvania Press, 1996); and Mark Chinca and Christopher Young eds, *Orality and Literacy in the Middle Ages: Essays on a Conjunction and its Consequences in Honour of D.H. Green* (Turnhout, Belgium: Brepols, 2005).

[12] See Craig Wright, *Music and Ceremony at Notre Dame of Paris, 500–1550,* 328. Wright points out that there was little natural light at Notre Dame and that candles would have been required to read at all. As well, the records of payments leave no doubt that singers must have sung by heart.

[13] This is a personal observation based on many years as a performer and concertgoer; also see Chia-Jung Tsay, "Sight Over Sound in the Judgment of Music Performance," in *Proceedings of the National Academy of Sciences of the United States of America* 110 (2013), 14580–14585.

[14] Anna Maria Busse Berger. *Medieval Music and the Art of Memory*, 47–8.

Table 1. Structural fundamentals of the tones

			Range (nominal)	Mode Final	Psalm tone
Protus	Authentic	Mode 1	D – d	D	a
	Plagal	Mode 2	A – a	D	F
Deuterus	Authentic	Mode 3	E – e	E	(b) c
	Plagal	Mode 4	B – b	E	a
Tritus	Authentic	Mode 5	F – f	F	c
	Plagal	Mode 6	C – c	F	a
Tetrardus	Authentic	Mode 7	G–g	G	d
	Plagal	Mode 8	D – d	G	c

Note that there is a distinction between modes and tones; modes were conceived abstractly in terms of functional relationships, as in range and finishing notes or finals, while the tones were melody types and part of a formula family, a set of concrete, characteristic turns and cadences arising out of a long oral tradition.[15] Mode is a theoretical abstraction whereas tone is a collection of practical outcomes.

The usual order of listing chants in the antiphoner followed the sequence of the liturgical calendar starting with the First Sunday of Advent and provided the material that would be sung on any specific day of that calendar. Tonaries provided a different and more practically oriented means of access to this material by reorganising the liturgical order of the antiphoner with a classification into the eight tones. Here the chant is classified hierarchically, firstly by mode, then within each mode, the antiphons may be arranged liturgically, alphabetically or by the pattern of the termination, the *differentia.* This clever organisation facilitated the performance of the psalms of the Office. Each antiphon was sung with a complete psalm to which was usually appended the short doxology after which the antiphon was reprised, thus:

Antiphon—Psalm in all verses—Gloria Patri—Antiphon

Each antiphon was classed in one of the eight modes according to the *final* of the melody and it was the mode of the antiphon that determined the choice of psalm tone for the accompanying psalm. The final cadence of the psalm intonation had to lead back to the beginning of the framing antiphon, but since the antiphon could start on any of several pitches apart from the final, a range of possible terminations, the *differentiae*, was provided, from which the cantor would make the most appropriate choice. As an

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[15] This distinction is pointed out very succinctly in Richard Taruskin, "Retheorizing Music: A New Concept of Mode," chap. 3 in *Music from the Earliest Notations to the Sixteenth Century* (Oxford: Oxford University Press, 2010), accessed October 30, 2016, http://www.oxfordwesternmusic.com.ezproxy.lib.monash.edu.au/view/Volume1/actrade-9780195384819-div1-003002.xml.

example, consider the liturgical requirement to frame the psalm *Domine dominus* with the antiphon, *Prophete predicaverunt*. A cantor trained in the Benedictine tradition of Saint-Denis would know that this is in the first tone and that he must therefore follow the first iteration of the antiphon with the psalm intonation of the first tone. He might also know that the psalm must terminate using the first *differentia* in order to reconnect it smoothly to the opening of the antiphon to complete the liturgical statement. The *Tractatus de tonis* by Guy of Saint-Denis describes this process with clarity, by firstly providing the "way of intoning upon psalms" in the first tone as it begins and as it illustrates the mediant:

Pri - mus to - nus sim - pli - ci - ter sic in - ci - pit et sic me - di - a - tur.

The psalm intonation of the first tone may end in a number of different ways, but the first way of ending, the first *differentia*, is presented by Guy thus:

Et sic fi - ni - tur. E   u   o   u   a   e

Guy continues: "And this *differentia,* in our way of speaking ought to be assigned to those antiphons that . . . beginning from D-solre, at first descend to C-faut and then re-ascend above in this way." [16]

Antiphona

Pro - phe - te pre - di - ca - ve - runt

The diligent cantor now has all the information he needs to rehearse and present this antiphon with its psalm.[17]

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[16] Guy of Saint-Denis, "Tractatus De Tonis," 68–69.

[17] The role of cantor seems to have been quite onerous and involved the selection and ordering of the sung elements of the liturgy in the daily cycle of the Hours. The cantor would rehearse his brother monks and teach the material to the boys as well as oversee the performance and take whatever solo passages were required. Ready access to a tonary would have been essential. For further information on the role of the cantor, see Susan Boynton, "Training for the Liturgy as a Form of Monastic Education," in *Medieval Monastic Education,* eds George Ferzoco and Carolyn Muessig (London: Leicester University Press, 2000), 7–20.

To achieve the practical goal of matching up psalms and antiphons, stylistic generalisations had to be made about the antiphons on the basis of observation. Classifying the antiphons was thus an early exercise of musical analysis, analysis being the breaking down of an observed whole, a chant, into its functionally significant parts. A tonary is the ground over which theory and practice meet, thus tonaries summarise in practical form decisions made on the basis of theory.

The earliest tonaries served as prefaces or appendices to antiphoners or graduals and were simple lists of antiphons grouped according to the psalm tones. With the growth in size and complexity of the chant corpus, these "list" tonaries also grew until they occupied a complete and separate section of the antiphoner with which they were bound. Ultimately, these tonary sections were separated from the host antiphoner, due to misadventure perhaps, or because they could more conveniently function as a cross reference tool in this way. As simple lists, these early tonaries could only function as adjuncts to antiphoners but with the addition of some fundamental music theory and definitions of terms they became self-contained works. These "treatise" type tonaries were also included in collections of musical treatises, as are the three tonaries from MS H281 examined here, producing a particularly focussed anthology "on the tones."[18] These three include definitions of terms, a range of mnemonic devices and verses summarising the rules concerning intonation and psalmody, and practical advice for the seamless performance of antiphons with their psalms. In manuscript and chronological order they are the *Tonale Sancti Bernardi,* a twelfth-century Cistercian tonary not attached to any particular location; the thirteenth-century *Tractatus de tonis* of Petrus de Cruce, a secular tonary for the use of Amiens Cathedral; and the fourteenth-century *Tractatus de tonis* of Guy of Saint-Denis, a Benedictine tonary specifically attached to the Abbey church of Saint Denis, the royal necropolis, and a reliquary for some remnants of Gallican chant.

The anonymous Cistercian *Tonale Sancti Bernardi* is a product of the liturgical reforms of Bernard of Clairvaux (1090–1153), and adopts the systematic application of Guido Augensis's *Regule* in reducing the number and complexity of the psalm tone endings.[19] The tonary is organised as a dialogue between master and student, and in essence forms a catechism of the fundamentals of theoretical understanding. Moreover, and in accordance with the dialogue genre, the *Tonale Sancti Bernardi* assumes the student has no prior knowledge in relation to either theory or practice. The treatise opens with the student asking "Quid est tonus" ("what is a tone?") This question, and the other

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[18] See Constant J. Mews, Catherine Jeffreys, Leigh McKinnon, Carol J. Williams, & John N. Crossley, "Guy of Saint-Denis and the Compilation of Texts About Music in London," British Library, Harl. Ms. 281." *Electronic British Library Journal* (2008) article 6, http://www.bl.uk/eblj/2008articles/article6.html.

[19] See Guido Augensis, "Regule De Arte Musica," in the edition of C. Maître, ed. *La réforme cistercienne du plain-chant. Etude d'un traité théorique* (Beernem, Belgium: Brecht, 1995).

Dorothy-Dixer-style questions that follow, allows the master not only the chance to pontificate, but also to systematically scaffold the student's knowledge starting from first principles. The definitions section of the *Tonale Sancti Bernardi* displays several features distinctive to the Cistercian liturgy: a) that unity of the tone must be maintained and median and final cadences should use, respectively, the reciting tone (*tuba* or dominant) and the final without exception; b) that melodies should be modified so that their normal range would lie within the octave and their outer limits would never exceed a ten–note ambitus; and c) that there should be the minimum of options for variety, hence the restraint on the number of *differentia*.

By contrast, Petrus de Cruce in his tonary assumes depth of understanding of both theory and practice, and through the use of mnemonic devices and verses provides only the most cursory of reminders of procedure. Consequently, the tonary proper is a simple list of notated incipits. The secular practice of the Cathedral of Amiens summarised in this tonary is different in detail from that of the monastic orders and that of other cities. Petrus was clear about this when, in a discussion about the varying numbers of *differentiae*, he writes: "Indeed, the usages of cities which are diverse give *differentiae* in various ways, since at this time, one gives more, another less."[20] That Amiens had an atypical secular use distinct from monastic practices was recognised by Guy of Saint-Denis in a discussion of the performance of the Gloria at Matins:

> And note that this way of singing … is commonly observed by monks, although there is a different use among other churchmen. The church of Amiens, however, according to the tonary of Master Petrus de Cruce and the examples that he puts there, and ourselves, seems to conform rather to our use [i.e. that of Benedictine Saint-Denis] and that of other monks.[21]

Guy of Saint-Denis held him in high esteem as, within a discussion about limiting of the number of invitatories to seven, Guy considers the position of "Master Petrus de Cruce, who was the finest cantor and particularly observed the practice of the church of Amiens."[22] Guy's estimation of Petrus as the "finest cantor" is repeated some years later by Jacobus in the *Speculum musicae*, for he praises "that influential cantor, Petrus de Cruce, who composed so many beautiful and fine songs."[23]

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[20] "Usus enim civitatum qui diversi sunt dant eis differentias diversimodo, tum quia unus plus, alter vero minus," Petrus de Cruce. "Tractatus De Tonis," vii.

[21] "Et nota quod iste modus cantandi . . . communiter a monachis observatur, licet ab aliis ecclesiasticis viris aliter habeantur in usu. Ambianensi tamen ecclesia secundum tonos magistri Petri de Cruce et exempla que ponit ibidem nostro potius et ceterorum monachorum usui quo ad hoc conformari videtur et nos isti." Klundert, Guido de Sancto Dionysio, *Tractatus* II:78 (MS H281 f. 82v).

[22] "[E]t magistrum petrum de cruce qui fuit optimus cantor et ambianensis ecclesie consuetudinem specialiter observavit," Klundert, Guido de Saincto Dionysio, *Tractatus* II:133 (MS H281 f. 95v).

[23] "Nam ille valens cantor, Petrus de Cruce, qui tot pulchros et bonos cantus composuit …" Jacobus Leodiensis, "Speculum Musicae," in *Jacobus Leodiensis, Speculum musicae*, ed. Roger Bragard (Rome:

Guy's own tonary, put together for the brethren at the Abbey of Saint-Denis, is a far more substantive exposition of the tones than either the *Tonale Sancti Bernardi* or Petrus de Cruce's work. It is organised into two parts, the first of which is concerned with theoretical issues, the second with practical examples. His exposition on the tones is based firmly on the authority of monastic tradition primarily as established by Guido of Arezzo and Boethius, but combining the authority of the ancients with those of certain moderns, among them Johannes de Garlandia, Johannes de Grocheio and Petrus dqe Cruce. Guy establishes a position of some importance in the history of chant, particularly for the fragmentary Gallican chant,[24] as the principal treasure of the Abbey of Saint Denis was to be found in its collection of unique liturgical books; it was also revered for its function as the necropolis for French kings.

Though these three tonaries were constructed at different times to serve distinctly different singers they, somewhat surprisingly, all transmit virtually the same suite of mnemonic *aides-memoires.* Equally surprising is the stability of transmission in relation to localised detail. In the usual process of manuscript transmission—whereby the scribe is principally reliant on the sense of sight—there are changes from copy to copy, whether this be due to scribal error or the result of notational "improvements," amongst many possible types of change. This degree of change is strangely absent from these tonaries, and it seems that the well-trained memory overrides the other senses. This is not without interest. A case in point is the presentation of the "model" antiphons; antiphons based on New Testament texts as a literary elaboration of the numbers of the modes, thus:

i) Primum quaerite regnum Dei (Matthew vi.33)

ii) Secundum autem simile est huic (Matthew xxii.39)

iii) Tertia die est quod haec facta sunt (Luke xxiv.21)

iv) Quarta vigilia venit ad eos (Matthew xiv.25)

v) Quinque prudentes intraverunt ad nuptias (Matthew xxv.10)

American Institute of Musicology, 1973), VII.17, 36. The fact that Jacobus uses very similar wording to that of Guy of Saint-Denis in the writing of Petrus de Cruce is further support for the contention that Jacobus had access to MS H281 during his time in Paris and may have been acquainted with Guy. For a full treatment of this see Constant J. Mews, Catherine Jeffreys, Leigh McKinnon, Carol J. Williams, & John N. Crossley. "Guy of Saint-Denis and the Compilation of Texts About Music in London, article 6. Though interesting, the debate about whether Jacobus hailed from England, Spain or Liège as presented in Margaret Bent, *Magister Jacobus de Ispania, Author of the Speculum musicae* (Oxford: Routledge, 2015) and contested by Rob Wegman, "Jacobus de Ispania and Liège," *Journal of the Alamire Foundation* 8 (forthcoming) is irrelevant here.

[24] For the persistence of the Gallican liturgy see Craig Wright, *Music and Ceremony at Notre Dame of Paris, 500–1550,* passim, but particularly chapter 2, "Aspects of Parisian Chant and Liturgy" and its subsections "Traces of a Gallican Liturgy" and "Vestiges of Gallican Chant," 41–59. For the Gallican connection to Saint-Denis, see Anne Walters Robertson, *The Service-Books of the Royal Abbey of Saint-Denis: Images of Ritual and Music in the Middle Ages (*Oxford: Clarendon Press, 1991).

vi) Sexta hora sedit super puteum (John iv.6)

vii) Septem sunt spiritus ante thronum Dei (Revelation iv.5)

viii) Octo sunt beatitudines (Matthew v.3–11)

These antiphons end with the same melismas (*neumae*) as the intonation formulae and serve as touchstones by which the mode of a chant could be determined. Each of our tonaries use these model antiphons. The examples for the first tone are from f.36r for the *Tonale Sancti Bernardi*; f. 53r for Petrus de Cruce's tonary and finally f. 80r for the tonary of Guy of Saint-Denis:

Pri - mum que-ri- te__ reg- num De-i

Pri - mum que-ri- te__ reg- num De-i

Pri - mum que-ri- te__ reg- num De-i

The only distinction between these three lies in the melisma; the *Tonale Sancti Bernardi* has a slightly shorter *neuma* as befits its Cistercian call for brevity and simplicity; Petrus de Cruce allows a leap (the rising 4th) which the Benedictine use of Guy fills with stepwise movement. This level of identity can be seen with the other seven model antiphons as well as in the quite extensive range of other mnemonic devices and verses which form the core of these tonaries.

Looking back at these works from a culture which makes little call on developed memory, we are reminded again of the chasm of difference which lies between us and them. The hardest concept to come to grips with in the study of these works is that, though they are transmitted to us in written form, they are absolutely reliant on a richly developed memory, since the classification system reordering the antiphons into modal order—fundamental to the tonary—was in itself an elaborate mnemonic. It reminded the singer of elements already known and committed to memory. Of course, further study is needed to clarify this material; it is clearly of cultural significance.

From Matrix to Model: Conceptualising Improvised Counterpoint at the Organ

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Introduction

As remarkable as their surviving keyboard works are, contemporary accounts of the organ improvisations of such figures as Bach, Handel, and Weckmann often point to their even greater powers of creativity *ex tempore*.[1] What were the patterns that went through the heads of these composer-improvisers that enabled them to furnish instantaneous polyphony and fully-formed structures? By what means were organists able to conceive complex stretto patterns and constitute, and remember, workable countersubjects? How could a double fugue, or a ricercare with four subjects, be conjured on the spot?

Perhaps even more remarkable than any of these individual feats is the fact that these skills were the domain not only of the greatest players, but were in fact common to all organists seeking a job.[2] Professional keyboard players were by necessity improvisers, and their job was to emulate styles and models so fluently that their improvisations were unable to be differentiated from fully written works.[3] They learned their craft through good teaching, methodical application and immersive study, and at the centre of this industry were the mutually dependent pillars of analysis and emulation. Improvised performance was born through emulation, and emulation was effected through analysis.

Speaking to a recent international conference on historical improvisation pedagogy, Thomas Christensen's keynote address reminds us that today, classical music is almost exclusively an art of *interpretation*.[4] He describes our recent "fetishism for notational fixity" as having "overshadowed—if not completely effaced"—the central role

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[1] Chapter Four of Forkel's *Life of Bach* remains the most vivid account of Bach's organ improvisation: see Hans David, Arthur Mendel and Christoph Wolff, *The New Bach Reader: A Life of Johann Sebastian Bach in Letters and Documents* (New York: W.W. Norton, 1998), 437–41. Handel's improvisations are discussed in Stanley Sadie and Anthony Hicks, *Handel: Tercentenary Collection* (Ann Arbor: UMI Research Press, 1987), 271–79; and an account of Mathias Weckmann as an improviser, recorded by his pupil Johann Kortkamp, is given in Kerala J. Snyder, *Dieterich Buxtehude: Organist in Lübeck*, rev. ed. (Rochester, N.Y.: University of Rochester Press, 2007), 228.

[2] For a discussion of organists' trials, see Peter Williams, *The Organ Music of J.S. Bach*, vol. 3 (Cambridge: Cambridge University Press, 1980): 43–47.

[3] William Porter makes a convincing case for improvisations of the Hamburg Organ School to be no different from their written counterparts. See William Porter, "Hamburg Organists in Lutheran Worship," in *The Organ as a Mirror of Its Time: North European Reflections, 1610-2000*, ed. Kerala J. Snyder (Oxford: Oxford University Press, 2002), 60–77.

[4] The conference, *Con la Mente e con le Mani: Improvisation from 'cantare super librum' to partimenti*, took place at the Fondazione Giorgio Cini in Venice, from 9–11 November 2013. Details, including abstracts of the presentations, can be found at http://www.mentemani.org/Conference_2013/Abstracts.html.

improvisation played in the past.[5] Happily, at least in some quarters, the tide appears to be turning, for in addition to a number of scholars publishing in the field, practical initiatives—such as the Smarano International Organ Academy, and various tertiary organ programmes teaching improvisation—are seeing a new generation of organists being trained in historical improvisation practices.[6]

This paper contributes to this activity by focusing on the thought processes and *aide memoire* devices improvisers might employ in order to create polyphonic structures. I focus on the relationship between polyphonic abstractions (*matrices*) and their realisation in fully-worked counterpoint (*models*), and here I am guided by the work of Michael Callahan and William Porter.[7] In particular, I seek to explain the relationship between visualising the *matrix* ''in the minds eye,'' and at the same time "feeling under the fingers'' the resultant counterpoint of the *model*. By describing the process *from the inside* I hope to say something useful about an area that is habitually silent in the historical treatises.

My approach is also influenced by David Sudnow's classic phenomenological account of learning to improvise Jazz at the piano.[8] With the insights of a professional ethnographer and social psychologist, Sudnow's *Ways of the Hand* perceptively describes the process of improvisation as the melding of musical imagination, the memorization of formulae and the subtle activation of learned hand positions. For me, success in improvising counterpoint is similarly dependant on simultaneously controlling the mind and taming the hand. In the discussion that follows I focus on two improvisational tasks: constructing fugal expositions, and improvising paired counterpoint.

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[5] An abstract of Christensen's address, *The Improvisatory Moment*, can be found at http://www.mentemani.org/Conference_2013/Abstracts.html.

[6] A good selection of recent studies appears in a special issue of *Philomusica on-line: Rivista del Dipartimento di Musicologia e Beni Culturali* 11, no. 2 (2012): http://riviste.paviauniversitypress.it/index.php/phi/issue/view/117. For a number of years now the *Fondazione Accademia Internazionale di Smarano* has presented a summer organ academy devoted to historical improvisation. Amongst the most prominent tertiary organ programmes offering courses in historical improvisation are The Royal Academy of Music and the Royal College of Music (London), the Eastman School of Music (Rochester, New York), and McGill University (Canada).

[7] Michael Richard Callahan, "Techniques of Keyboard Improvisation in the German Baroque and Their Implications for Today's Pedagogy" (PhD diss., University of Rochester, 2010). Instead of matrices and models Callahan uses the rhetorical terminology *elaboratio* and *decoratio*. See also William Porter, "Observations concerning contrapuntal improvisation," *GOArt Research Reports* 3 (2003).

[8] David Sudnow and Hubert L. Dreyfus, *Ways of the Hand: A Rewritten Account* (Cambridge, Mass.: MIT Press, 2001).

Matrix and Model in Fugal Expositions

In a recent article in *Eighteenth-Century Music*, Bruno Gringras points to the gulf between realising a fugue from a partimento bass and actually improvising one from scratch.[9] Nowhere is this more apparent than in the exposition, where traditionally things are most contrapuntally dense. There are a number of ways to approach this task, but for me, the most practical approach is to visualise the entire exposition as a single entity—that is, an entity that is graspable in its entirety in one single thought. The visualised object is the *matrix*, and this contains all the information the improviser needs to flesh out the *model*. Figure 1 shows the matrix I would visualise when improvising an exposition with the following characteristics:

1. The ''key'' is centred on D (either mode 1, D major or d minor);
2. The order of the voices enters from top to bottom (S-A-T-B);[10]
3. The subject spans scale degrees 1-5, which in turn require an answer spanning 5-1;[11]
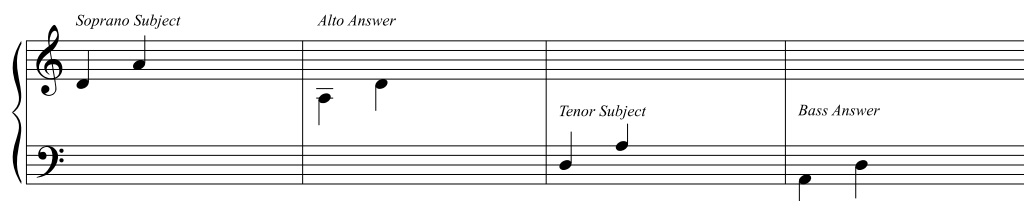4. There is no regular countersubject.

Figure 1. A matrix for the improvisation of a fugal exposition

The matrix is the skeletal form of the exposition. It shows the order of the voices and the correct starting and finishing notes of each subject and answer.[12] These elements

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[9] Bruno Gingras, "Partimento Fugue in Eighteenth-Century Germany: A Bridge Between Thoroughbass Lessons and Fugal Composition," *Eighteenth Century Music* 5 (2008): 51–74.

[10] In relation to the order of the entries, the simplest plan, by a considerable margin, is either S-A-T-B or B-A-T-S. In the former, the lowest sounding voice at any one time contains either the subject or the answer, and in the latter, the subject or the answer is always in the highest part. Were one to dispense with the difficulties of improvising (and remembering) a regular countersubject, and armed with a fluency in improvising 'filler' harmony/counterpoint, improvising a S-A-T-B exposition is essentially akin to harmonising a bass, and improvising a B-A-T-S exposition is essentially harmonising a melody.

[11] This paradigm is the most common form of 'tonal answer.' In the sixteenth and early seventeenth centuries a subject spanning the *diapente* was answered by its complementary *diatessaron* (and vice versa). In the later Baroque this morphed into the rule whereby subjects starting in the tonic and modulating to the dominant (1-5) were given an answer starting in the dominant and ending in the tonic (5-1) [and vice versa].

[12] William Renwick's *Analyzing Fugue: A Schenkerian Approach* (New York: Pendragon Press, 1995) demonstrates the relationship between subjects and answers and offers a taxonomy of types. The subject and answer pair in the matrix conforms to paradigm fourteen (see p.70).

can be considered the axioms of the exposition, and as such they are immovable lest the edifice crumble. The matrix can be fleshed out in various ways in order to create a variety of musical foregrounds (models).

Figure 2. Fleshing out the matrix's subjects and answers

Four subject-answer pairs are shown in figure 2, and whilst each pair reveals a different and distinctive musical foreground, they are in fact all models of the same matrix (figure 1). Subject 1 is treated as a slow modal fugue (or with the addition of an F# in bar 1 and a G# in bar 2 it could further transform to a tonal fugue in D). Subject 2 is similar to many fugues *sur la trompete* in the French Classical repertoire. Subject 3, an Italianate string-style allegro, in taken from Handel's partimento fugue no.3 (here transposed from F),[13] and the fourth example is taken from the Victorian hymn tune *Nicea* by John Bacchus Dykes.[14]

Armed with a workable subject-answer pair, the improviser must now "fill in" the rest of the exposition. Figure 3 shows a fully worked exposition using the first subject-answer pair from Figure 2 and the oblique lines between the two systems show the relationship between matrix and model. Essentially, subjects and answers are "harmonised" by first-species filler counterpoint, and provided the improviser has acquired a fluency in this procedure, improvising this type of exposition is a relatively straightforward task.

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[13] George Frideric Handel and David Ledbetter, *Continuo Playing According to Handel: His Figured Bass Exercises*. Early Music Series, (Oxford: Oxford University Press, 1989): 44–61.

[14] John Bacchus Dykes, "Nicea," Hymnary.org, accessed December 6, 2016, http://www.hymnary.org/tune/nicaea_dykes.

Figure 3. The matrix and the model

In my experience, two further elements need to be in play in order to achieve success: the prioritisation of the mind in dealing with essential (matrix) and non-essential (filler) material, and an awareness of the physical sensations of the hand as it relates to the matrix unfolding. It is only through the process of actually improvising an exposition that one discovers how important it is to keep the matrix material always at the forefront of the mind. Were I to improvise the above example, almost all of my concentration would go on making sure each subject and answer started and finished on the correct pitch. Helping me to achieve this, and underpinning that which would be going through my head, would be the physical sensation of feeling the span of each subject (a fifth) and answer (a fourth) within each hand.[15] Conversely, the filler material—which, of course is the largest part of the texture—would need very little attention, as its generation would be assured through years of playing commonplace sequences, species counterpoint and the like.

Matrix and Model in Sancta Maria

The ability to fix in the mind's eye various contrapuntal abstractions is also key to improvising paired imitation as taught by Thomas de Sancta Maria (c.1510–1570). Sancta Maria's 1565 improvisation treatise *Libro Llamado El Arte de Taner Fantasia* is the single most sustained exposition of how to improvise renaissance polyphony.[16] After several hundred pages on ''filler'' material—that is constructing duos, harmonising scalic lines in three and four parts, working through consonance and dissonance treatment, diminutions, and species counterpoint, the culmination of the treatise, and certainly the most revealing part, is the section on imitation.

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[15] The importance of hand placement and musical content is addressed in Matthew J. Hall, "Keyboard Techniques as a Contrapuntal Structure in J.S. Bach's Clavier Works," *Understanding Bach* 10 (2015): 85–107, http://bachnetwork.co.uk/ub10/ub10-hall.pdf.

[16] Thomas de Sancta Maria, *The Art of Playing the Fantasia,* trans. Almonte C. Howell and Warren E. Hultberg (Pittsburgh: Latin American Literary Review Press, 1991).

Figure 4 sets out Sancta Maria's model fantasia using paired canonic entries (a style most often associated with Josquin)[17].

Figure 4. *Fantasia* **by Thomas de Sancta Maria (c.1500–1590)**

How might such a work be improvised? Once again, the secret lies in training the mind to differentiate between filler material and material that is crucial to the contrapuntal edifice. Sancta Maria's fantasia is constructed using two separate pairs of imitative entries. Pair A first appears in the lower two voices in the first three bars, and two bars later the same music is repeated in the soprano and alto. Consequently, improvising the first eight bars of this fantasia involves:

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[17] For a discussion of paired imitation see Peter Schubert, "Counterpoint Pedagogy in the Renaissance," in *The Cambridge History of Western Music Theory*, ed. Thomas Christensen (Cambridge: Cambridge University Press, 2002) esp. 503–533.

1. Constructing and memorising pair A;
2. Providing filler material between the end of the first paired entry and the beginning of the second paired entry;
3. Being able to place pair A in the soprano and being able to improvise a ''filler'' T/B below.

Pair B first appears in the upper two parts between bars 15-20, and is repeated between bars 20-15, and partially repeated between bars 25-27. Consequently, improvising the later half of this fantasia involves:
1. Providing filler material between bars 9-15;
2. Constructing and memorising pair B, and being able to place it either in the upper two voices or the lover two voices, and where necessary (eg. bb.21-22) provide filler material above or below;
3. Being able to round the fantasia off with a few bars of filler material.

It is extremely likely that improvisers committed to memory contrapuntal combinations such as the above and drew freely upon them in their improvisations. Again, success depends upon being able to prioritize the points of imitation in the foreground of the mind, whilst allowing filler material ''just to happen.''

What is not immediately obvious from the above music is the relationship between the two imitative pairs to their respective matrices and models. The middle system of Figure 5 shows Sancta Maria's paired imitation A. Its matrix is shown on the bottom system and a further elaboration (model) is given in the top stave.

Figure 5. Paired imitation A

From this we can clearly see how the improviser is able to generate multiple subjects from the one matrix.

Figure 6 shows the paired imitation B. In this case we can see that Sancta Maria's point of imitation is actually the matrix itself. The upper two staves represent how this matrix can be decorated.

Figure 6. Paired imitation B

It will also be noted that both pairs of imitation are strictly imitative. In pair A, the *comes* follows the *dux* at the interval of a fifth above after two notes, and in pair B the *comes* follows the *dux* a fifth below, after two notes. In chapter 33 of his treatise, Sancta Maria gives rules in order to affect canonic imitation at the fourth and fifth, both above and below. These rules were identical to those memorised by choirboys at this time to generate the species of improvised vocal polyphony known as *contrapunto al mente*. Given that Sancta Maria's Renaissance readership would have been young organists, almost all of whom would have been trained as choirboys, it is not difficult to imagine how familiar such procedures would have been to Renaissance organists.[18]

Figure 7 shows how the imitative pair at A might be further extended. The secret as to how this is achieved—indeed the secret to how imitations are conceived and controlled—lies in which intervals are permitted in the subject, and which are not. In this case, to effect an imitation at the fifth above after two notes, the matrix is can rise a second and fall a third.[19]

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[18] This area is thoroughly explored by Philippe Canguilhem: see in particular "Singing Upon the Book According to Vicente Lusitano," *Early Music History* 30 (2011): 55–103; and Philippe Canguilhem et al, *Chanter sur le livre à la Renaissance: Les traitées de contrepoint de Vicente Lusitano* (Turnhout: Brepols, 2013).

[19] Morley makes a similar point: see Julian Grimshaw, "Morley's Rule for First-Species Canon," *Early Music* 34 (2006): 661–66.

Figure 7. Extension of imitative pair at A

Over many years now, I have systematically practiced improvising these, and similar, contrapuntal combinations. Any success I have met with has invariably involved *visualising* the material and *feeling* the same material under the fingers. For example, in the case of Figure 7 above, I would first seek to master the matrix. In doing this I would practice the *dux* with the left hand and the and the *comes* with the right. Then I would practice the imitation *within the hand*, first with the left hand then with the right, where each hand learns to play both the *dux* and the *comes*. I physically try to experience and remember what is like to *feel* each combination under the fingers. The tactile experience of taking two parts in the one hand, for example—whereby the sinews of the hand are literally stretched over the counterpoint—is part of the memorization and assimilation process. For me, it is the dual engagement of the hand and the mind that allows me to fully internalise the material.

As there is almost nothing written on this in contemporary treatises, it is impossible to tell whether my own experiences are simply of my own making or if they are similar to those practices adopted by improvisers in the past. A tantalising clue, however, is given in Werckmeister's treatise *Harmonologia Musica* (1702). Being a working organist himself, Werckmeister's goal was to make the craft of improvisation as simple and as practical as possible. To this end he talks about hand positions (*Griffe*), and also manages to affect an ingenious contrapuntal *tour de force*—namely stretto in four parts—largely conceived by the player controlling and remembering hand positions.[20]

Although the improvised fugues, ricercares and canzonas of past masters have long since vanished into the ether, residual traces of this music can, if one looks hard enough, still be found, and the most obvious evidence stems from sources such as partimento fugue collections and the treatises dealing with improvisation—such as those by Werckmeister and Sancta Maria. However, the most overlooked body of evidence may in fact rest in the many thousands of surviving keyboard works from the past. Our default

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[20] See Michael R. Dodds, "Columbus's Egg: Andreas Werckmeister's Teachings on Contrapuntal Improvisation in *Harmonologia musica* (1702)," *Journal of Seventeenth-Century Music* 12, no. 1, par. 4 and 6, accessed December 6, 2016, http://www.sscm-jscm.org/v12/no1/dodds.html.

position, that all surviving keyboard music was expressly written to be performed or interpreted, needs to be seriously questioned.[21] Many collections of short German fugues, literally thousands of French Baroque organ versets, and countless Italian toccatas, were published not as repertoire to be played—but as models to be studied, internalized, and emulated *ex tempore.*

It is surely in the active and immersive study of such examples that the skills of improvised counterpoint can be hoped to be resurrected. Moreover, as my experience has shown, fluency and mastery of the material is also dependent upon a dynamic and multisensory approach that engages the eye, the ear, the hand and the mind. In Italian, the word *contrapunto* in fact refers to the practice of *contrapunto al mente* mentioned above.[22] Literally "counterpoint in the head," this was largely an improvisatory practice that, at its highest levels, allowed keyboard players the headspace to improvise densely wrought ricercares, and groups of singers to improvise in four-part canon without any previous planning. Today, if it's taught at all, counterpoint is usually tagged on to a course of tonal harmony, and it's usually taught from a dense and impenetrable textbook. This pedagogically fallow and anachronistic pedagogy has seen generations of students practice contrapuntal exercises at the desk with pen and paper in the same typically slow and laborious manner. Most find it difficult and, because it's often so far removed from their own experience of music, perhaps a little pointless or tedious. Such an approach does not represent at all how the subject was practised and conceived in the past. Previously, counterpoint was manifest in singing, thinking, playing, writing and improvising. Consequently, once learned, it stuck for good.

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[21] See chapter 10 of Ibo Ortgies PhD dissertation, "Die Praxis der Orgelstimmung in Norddeutschland im 17. und 18. Jahrhundert und ihr Verhältnis zur zeitgenössischen Musikpraxis" (PhD diss., University of Gothenburg, 2004/revised 2007).

[22] For a summary of the most recent literature see Peter Schubert, "From Improvisation to Composition: Three 16th Century Case Studies," in *Improvising Early Music: The History of Musical Improvisation from the Later Middle Ages to the Early Baroque,* ed. Dirk Moelants (Luven: Luven University Press, 2014), 94 (footnote 3).

Beyond the Buzzword: Eco-Improvisatory Music in Theory and Application

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In the words of David Rothenberg:

> There is so much more music out there in the natural world than that made by humans alone. If weare to make sense of that music as improvisers, we'll need to find some way to join in.[1]

Introduction

This paper highlights the centrality of nature to musical performance by theorising aspects of eco-improvisatory practice that are only superficially understood. The melodies and rhythms of more-than-human species have long manoeuvred their way into human composition as concrete musical ideas, yet questions surround the use of nature within improvisational space. What are the aims, processes, supposed benefits, and onsite disadvantages of eco-improvisatory practice? Is it just an extra musical proposition, or could it derive from music's supposed roots in nature? How can indeterminate music be measured? And if nature is the cutting-edge referent, why do some so-called eco-improvisations take place in abiotic environments?

Ingram's view that "music, amongst all the arts, has a special affinity with ecological ideas"[2] adds currency to Boyle and Waterman's recent call for the construction of appropriate frameworks and methodologies for an ecology of musical performance.[3] Ecomusicology[4] informs a holistic musicology with ecocriticism. The buzzword "eco"[5] commands agency across many scholarly disciplines, but for the purposes of this paper it encapsulates the personal ecological language created as an improviser purposefully tunes in to the soundscape of a physical site.

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[1] David Rothenberg, May 27, 2011.

[2] David Ingram, *The Jukebox in the Garden: Ecocriticism and American Popular Music Since 1960* (Amsterdam: Rodopi, 2010), 11.

[3] W. Alice Boyle and Ellen Waterman, "The Ecology of Musical Performance: Towards a Robust Methodology," in *Current Directions in Ecomusicology: Music, Culture, Nature*, eds. Aaron S. Allen and Kevin Dawe (New York: Routledge, 2016), 25, 31. Boyle and Waterman note that scientific ecology (the study the interrelationships among organisms and their physical environment) is distinct from the political movement of environmentalism.

[4] Ecomusicologists consider musical and sonic issues related to ecology and the natural environment. See Aaron S. Allen, "Ecomusicology," in *The Grove Dictionary of American Music*, ed. Charles Hiroshi Garrett (New York: Oxford University Press, 2014).

[5] The prefix "eco" derives from the Greek *oikos*, signifying that the world at large is our "house."

This paper contributes to a pedagogy for the eco-improvisatory dynamic in its most idiosyncratic form: that in which human musicians improvise *in* or *out* of "sync" with the acoustic presence of more-than-human life. It is a practice steeped in possibilities such that electronic intervention is enabling these parallel sound worlds to cohere. While acknowledging this paradox, I draw on personal exposure to the practice in Australia and abroad to focus on the music for its own integrity. I posit that ecological resilience and momentum between species must come into play for this random art form to thrive. In this sense, resilience becomes a question of musical response or uptake,[6] bounced back and forth between the human and the more-than-human. To demonstrate this trope, the paper focuses on live and technologised performances by the American clarinetist and philosopher David Rothenberg.

Summary Framework

Early efforts to connect human and more-than-human soundworlds came from soundscape studies and acoustic ecology. R. Murray Schafer founded the World Soundscape Project in 1971 (since 1993 the World Forum for Acoustic Ecology) as an initiative for managing sonic environments. Other individuals made unique contributions. David Lumsdaine, for instance, captured over 3,000 recordings of outback-Australian soundscapes before the noise of the twenty first century overtook them.[7] Since birds are a primary metaphor for eco-improvisation (however strange their language is to humans),[8] there remains speculation that eco-improvisatory practice may be the perpetuation of an ancient musical discourse between man and nature, inspired by avian utterance.[9]

Based on Schafer's observation that the authority accorded to the concert as the nodal point for musical stimulation has withered,[10] new paradigms are required for analysing environmental musical phenomena. To (re)situate the improvising musician in ecological terms, we must veer towards a view that "changes the boundaries between

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[6] Andrew Munro, "Discursive Resilience," *M/C Journal* 16, no. 5 (2013), accessed October 20, 2013, http://journal.media-culture.org.au/index.php/mcjournal/article/viewArticle/710.

[7] Nicola LeFanu, "David Lumsdaine: A Biographical Appreciation," *The Music of David Lumsdaine*, accessed April 9, 2015, http://www.davidlumsdaine.org.uk/biog.php.

[8] Taylor notes that twenty three composers have credited the phrases of the Pied Butcherbird (*Cracticus nigrogularis*) as their source of inspiration—a bird that is believed to have considerably predated the human species in Australia. See Hollis Taylor," Anecdote and Anthropomorphism: Writing the Australian Pied Butcherbird," *AJE: Australian Journal of Ecocriticism and Cultural Ecology* 1 (2011/2012): 3, 17.

[9] Steven Feld theorises sound across species to research eco-aesthetic co-evolution (Feld, lecture delivered at the Sir Zelman Cowan School of Music, Monash University, Victoria, May 6, 2015).

[10] R. Murray Schafer, "Music and the Soundscape," in *The Book of Music and Nature: An Anthology of Sounds, Words, Thoughts*, eds. David Rothenberg and Marta Ulvaeus (Middletown, Connecticut: Wesleyan University Press, 2001), 65.

what is music and what is not."[11] Bernie Krause expanded human knowledge of natural sound worlds by recording over 15,000 animal species,[12] and Paul Winter introduced audiences to "the great symphony of wildlife" through the beauty of improvised classical, jazz, and indigenous musical traditions.[13]

Introducing David Rothenberg

Building on Winter's foundation, David Rothenberg (b.1962) explores more-than-human sound as an improvising jazz clarinetist whose philosophical descriptions shape the way his recordings are appreciated.[14] Rothenberg purposes to "integrate the musical, the natural, and the improvised."[15] His writings likewise project nature's resilience as a basin of attraction for improvising musicians who desire to have their works

> . . . sound as if they live, as breathing, pulsing beings, which . . . at their best achieve a life of their own, sailing beyond their creators and contexts. When could one think that a work might be alive? If it moves and surprises, teaches the listener, player, or composer something new with every change; if it seems to have not only its own intelligence but also an inner ability to move or transform in unexpected ways.[16]

"Eco-improvisation" implies an eco-poetically considerate form of engagement with nature, to which end Rothenberg broaches the axes of possibility and impossibility as an "interspecies musician" or "interspecies improviser." The author prefers to conceptualise the process via which Rothenberg and others share music with animal life as *multispecies musicking*, not least because his performances dovetail with Small's

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[11] David Rothenberg, *Why Birds Sing: A Journey into the Mystery of Bird Song* (New York: Basic Books, 2005), 217.

[12] Bernie Krause, *The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places* (Little: Brown, 2012).

[13] Winter released his seminal album *Common Ground* in 1978, using a live wolf during concert tours (*Common Ground,* Paul Winter Consort, A&M Records SP-4698, 1978, 33⅓ rpm. Re-released by A & M Records, CD3344, 1989, compact disc.

[14] I have corresponded intermittently with Rothenberg since the 2003 combined conference of the Australia & New Zealand Musicological Societies. I gratefully acknowledge his generous supply of materials and prompt responses to my queries.

[15] David Rothenberg, *Sudden Music: Improvisation, Sound, Nature* (Athens, Georgia: University of Georgia Press, 2002), 300. Rothenberg's goals resonate with the deep ecology theory of his mentor Arne Næss, namely that human existence is dependent on the diverse organisms within the natural world, each of which plays a role in the natural economy of the biosphere.

[16] David Rothenberg, "Introduction: Does Nature Understand Music?" in *The Book of Music and Nature: An Anthology of Sounds, Words, Thoughts*, eds. David Rothenberg and Marta Ulvaeus (Middletown, Connecticut: Wesleyan University Press, 2001), 5.

notion of "musicking" (music-making).[17] The co-constitutive slant of "multispecies" equally situates humans and more-than-humans as biological species subject to the grand scheme of nature, whereas "interspecies" might be understood as deflating more-than-human subjectivities.[18] Without being overly prescriptive, I will attempt to define and describe some general principles underpinning multispecies musicking.

Multispecies Musicking: Towards a Performance Pedagogy

Live multispecies musicking is mysterious real-time composition, the components of which are sound, environment, and a shared co-presence between species. Arons and May conceptualise human group performance as a live, phenomenological field akin to an ecosystem in its connectedness and interdependence,[19] but we can only go so far in applying the templates of human musicking to the more-than-human domain without becoming anthropomorphic.

Operating within a certain radius, the human musician enters vital physical space (an autonomous open-air arena or underwater zone) to construct a sonic network with the more-than-human. Whether celestial, terrestrial, or marine in setting, and whether evolving by day or by night, this characteristically unstable one-off encounter is non-notatable in a traditional sense on account of its freedom and openness to the value of all sound. Self-generated performances might begin with a sonic ripple from a natural element such as wind or water. Ideally, a bird or animal—as lead musical persona—will vocalise a pre-existent repertoire of calls from its distinct niche, inspiring the human musical shaping of the occasion. The music is thus produced spontaneously as a chance-based leap into the unknown.

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[17] Chris Small, "Musicking: A Ritual in Social Space: A Lecture delivered at the University of Melbourne June 6, 1995," MUSE: Musicians United for Superior Education, accessed January 23, 2017, http://www.musekids.org/musicking.html.

[18] This is a view shared by Canadian ecomusicologist Andrew Mark (email message to author, April 23, 2015).

[19] Wendy Arons and Theresa J. May, eds, *Readings in Performance and Ecology* (New York: Palgrave Macmillan, 2012). The notion of a musical ecosystem was anticipated by Thoreau (1817–1862). See Jeff Todd Titon, "Why Thoreau?" in *Current Directions in Ecomusicology: Music, Culture, Nature*, eds Aaron S. Allen and Kevin Dawe (New York: Routledge, 2016), 71. Titon addresses Thoreau's prophetic ideas about the "earth-song," echo, experiential hearing, "unpremeditated music," and music as "the sound of the circulation in Nature's veins."
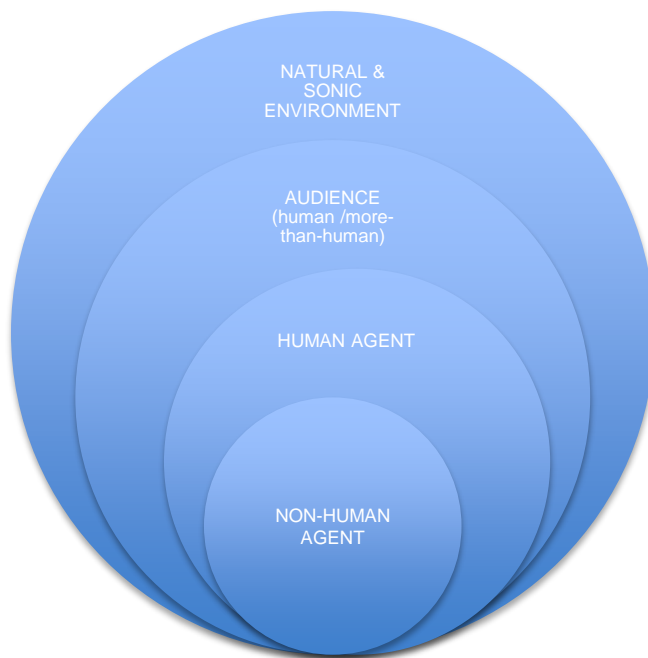
Figure 1. A spatial model for multispecies musicking

Figure 1 represents the shared domain of multispecies musicking as a quasi-theatrical network in which the human is musically energised to take up fragments of a more-than-human musical code. Each site-specific network is situationally defined by its parameters of space, time, and agency. Sound might arrive from a multiplicity of topographical points. If an audience is present the sonic experience will vary according to their location, not least because vegetation characteristics affect acoustics.[20] The toughest audience will be nature itself, unimpressed by and unanswerable to human miniscule efforts. All outdoor performance venues are subject to the vagaries of the elements, thus fluctuations in weather potentially minimise the sonic coherence of the exercise.

Multispecies musicking relies on, and develops, intuitive musicianship and, above all, listening acumen. A practised background in improvisation is advantageous, but a virtuosic vocabulary has no place in the scheme: "If you're listening, you will not overpower the place you're in but will make your peace with it," writes Rothenberg.[21] He usually just introduces himself and any other musicians to the sounds and context of an environment to hear what they do without a studied plan.[22] This involves picking up on

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[20] Boyle and Waterman, "The Ecology of Musical Performance," 30, 32.

[21] Rothenberg, *Sudden Music* 258 (2001 version).

[22] Rothenberg, email message to author, April 14, 2015. Rothenberg has also used open scoring on occasion.

the structure and inflection of the sounds of an unknown musical world. Rothenberg advises: "If you're ready to play, just play a little, try things out, announce your intention. Leave space, mostly space, plenty of silence, for the other species to admit you."[23] While variously fruitful and frustrating, exhilarating and disorientating, multispecies musicking is a valuable crucible for initiating new combinations of sound.

Rothenberg's imagination lies open to the unexpected. He might try call-and-response with a bird in fragmentary conversation, leap across a widely separated interval, or emit *frissons* and other wisps of sound that are unrelated to the storehouse of jazz clichés. Such devices abound in a complex live recording from Lamington National Park, Queensland, entitled "Sheer Frustration, Really."[24] Sharing in the performance are George, a wild Albert's Lyrebird (*Menura alberti*); David Rothenberg (clarinet); and four Green Catbirds (*Ailuroedus crassirostris*, a species of bowerbird). George imitates the catbirds *meowing* from the trees as part of his alien soundtrack of calls and shrieks, while Rothenberg imitates George's learned "imitations" in disconnected phrases. As Borgo notes, good improvisers develop action by accepting the actions of others as dramatic "offers" and either return a complimentary offer, or re-voice an existing offer.[25]

Rothenberg visited Victoria's Healesville Wildlife Sanctuary in June 2004 with flutist Michael Pestel to interact with a Superb Lyrebird (*Menura novaehollandiae*) at the height of the mating season when the male was unlikely to stop singing. The live recording "Trio Menura"[26] commemorates their conversation with the lyrebird. During the month, the author arranged for the Ganai-Kurnai Elder and gumleaf player Uncle Herb Patten to improvise with Rothenberg and Pestel in concert.[27] Patten understood how humans and lyrebirds could shape each other's sonic presence: a Superb Lyrebird had once tuned in to and mimicked the gumleaf when he had lain still under a mountain

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[23] David Rothenberg, "Interspecies Improvisation," draft dated May 27, 2011, 7 (copy supplied to the author). The article was recently published in *The Oxford Handbook of Critical Improvisation Studies*, Vol. 1, eds. George E. Lewis and Benjamin Piekut (Oxford University Press, 2016), available at http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195370935.001.0001/oxfordhb-9780195370935-e-23.

[24] *Why Birds Sing*, David Rothenberg, Terra Nova Music, TN0501, 2005, compact disc. A description of Lyrebird George and the track's recording in June 2004 is provided in Rothenberg's book *Why Birds Sing*, 211-214; 220-227.

[25] David Borgo, "Sync or Swarm: Musical improvisation and the Complex Dynamics of Group Creativity," accessed May 2, 2015, http://www.academia.edu/1337728/Sync_or_Swarm_Musical_improvisation_and_the_complex_dynamics_of_group_creativity.

[26] *Why Birds Sing*, compact disc, Track 1.

[27] Augustine Centre and Borderland workshop concert, Hawthorn, Victoria, June 6, 2004. Rothenberg mentions Patten's leaf birdcalls in *Why Birds Sing: A Journey into the Mystery of Bird Song*, 222.

bush and blown the Koori Lone Whistle signal.[28] Arguably, since lyrebirds imitate any sound around them, it is normal for them to accept human-induced sound.

Evaluating Multispecies Musicking

Rothenberg's practices nevertheless spark thoughtful questions about multispecies musicking. Ingram has interrogated the notion that birds participate with him on an equal basis,[29] echoing similar concerns raised by evolutionary biologists represented in the British Broadcasting Corporation documentary *Why Birds Sing* (2007).[30] While, in my view, too much human input diminishes the co-constitutive agency of the more-than-human, these radical eco-improvisatory practices provide unique pathways to comprehending the biota through the arts.

To pre-empt human improvisation from being seen as presumptuous or invasive, Rothenberg gives each participant—human and more-than-human—as much room as possible to expand musically. In return, he has learned to respond nimbly to any sounds and changes in direction initiated by the more-than-human.[31] I asked Rothenberg whether he ever feels like an interloper. He replied that he tries "to make a music that no one species could make alone … to do something where each animal (including the human) learns from each other, and starts to change the music they do."[32] This is demonstrated in an online MP3 recording in which the male humpback whale (*Megaptera novaeangliae*) is able to quickly match new pitched, musical sounds it has never heard before.[33]

Sound spectrograms (sonograms) have allowed Rothenberg to analyse his duets with whales in terms of identifying their musical order and meaning in real time. Hoare points out that the obsessions of creative individuals like Rothenberg can reveal inner truths as they attempt to push at the barriers between human history and natural

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[28] The Koori men of New South Wales and Victoria disclose their identity to one another through this freemason-like signal. Detailed descriptions of Patten's eco-improvisatory practices on the gumleaf may be found in Robin Ryan, "A Spiritual Sound, A Lonely Sound: Leaf Music of Aboriginal Australians, 1890s-1990s" (PhD diss., Monash University, 1999).

[29] Ingram, *The Jukebox in the Garden*, 227-229.

[30] "Why Birds Sing," YouTube video, 14:55, British Broadcasting Corporation documentary (2007), posted February 20, 2011, https://www.youtube.com/watch?v=f_cqJsdnOrg.

[31] Based on Rothenberg, *Sudden Music*, 9 (2001 version). [NOTE: page number now included]

[32] Rothenberg, email to author, April 13, 2015.

[33] See David Rothenberg, "To Wail With a Whale Anatomy of an Interspecies Duet," *Trans Revista Transcultural de Música* 12 (2008), accessed January 23, 2017, http://www.sibetrans.com/trans/articulo/97/to-wail-with-a-whale-anatomy-of-an-interspecies-duet. See also David Rothenberg, *Thousand Mile Song: Whale Music in a Sea of Sound* (New York: Basic Books, 2008).

history.[34] In a serendipitous example of how multispecies musicking is ripe for analysis, Rothenberg discovered that the swarm tone of the 17-year periodical cicada *Magicicada septindecim* lies between C and C#.[35] More broadly speaking, making music with other species can make nature more valuable and more worthy of our care and attention. Rothenberg contends:

> A music greater than the sensibility of one species alone might slightly show us a way to live better with nature and not destroy our planet with rampant human aesthetics, saving the Earth while there is still time.[36]

Multispecies musicking thus resonates with Eisenberg's *Earth Jazz* metaphor for environmental harmony, namely that men and nature both play and listen to each other, alternate solos, and improvise in the manner of jazz musicians.[37] In the "flow-experience" articulated by Csikszentmihalyi, "technique all but disappears,"[38] but to achieve "flow" with the incomprehensible sound and language of another species is a near impossible task. The "White-Crested Laugh*"* is a classic exception.

In this impromptu performance at the National Aviary in Pittsburgh, the musicians were a White-Crested Laughing Thrush, David Rothenberg (clarinet), and Michael Pestel (flute).[39] Explaining how he and the caged thrush negotiated their cues around each other's arpeggio "laughs,"[40] Rothenberg writes:

> When music starts to happen *between* humans and birds, you don't have to peel apart the categories of *man-made* and *natural*—the interaction appears and grows before we comprehend it …it's the sound that counts, the rapport.[41]

According to my hearing of the excerpt, musical resilience is maximised by the strong positionality of the thrush (seasoned to singing structured duets in the wild); and two proficient wind players so committed to performing with the thrush that a rare and

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[34] Philip Hoare, "Whale Music in a Sea of Sound," *The Telegraph* (London), July 25, 2008, accessed January 23, 2017, http://www.telegraph.co.uk/culture/books/non_fictionreviews/3555453/Whale-music-in-a-sea-of-sound.html.

[35] David Rothenberg, *Bug Music: David Rothenberg's Insect Choir*, Vimeo, accessed January 23, 2017, https://vimeo.com/68859004. Working in Virginia in spring 2012, Rothenberg and his son examined the cicada swarm tone, swarm intelligence (SI) and dynamics of collective musical improvisation. The result was the live track "Magicicada Unexpected Road" (*Bug Music*, with David Rothenberg, Robert Jürjendal, Timothy Hill, Umru Rothenberg and Charles Lindsay, Terra Nova TN1309, 2013, compact disc).

[36] Rothenberg, "Interspecies Improvisation," 22.

[37] Evan Eisenberg, *The Ecology of Eden* (New York: Alfred A. Knopf, 1998).

[38] Mihaly Czikszentmihalyi, *Flow: The Psychology of Optimal Experience* (New York: Harper & Row, 1990).

[39] *Why Birds Sing*, Track 9, recorded at the National Aviary, Pittsburgh, USA, March 2000, compact disc.

[40] Rothenberg, *Why Birds Sing*, 7; 214.

[41] Ibid., 10.

mysterious coupling is formed across species. This demonstrates how (where a bird's learned behaviour relates naturally to human learned behaviour, in an extended pattern of interaction) evocative juxtapositions emerge, as melody and rhythm pass from one milieu to another. In this instance, a velvety-timbred clarinet and silvery-toned flute complement the thrush's full, limpid expression.[42]

Eco-Improvisation and Electronic Mediation

It is advantageous for these epiphanies of sound to be recorded, even though none can faithfully reproduce live eco-improvisatory events. Recordings furnish open-ended possibilities for the entry of a third creative force: an electronic environment.[43] Digital formats hold the key to integrating the evanescent and patchy musical practice of multispecies musicking as its sounds are stretched and looped in retrospective technological shaping of the original creative rendering.

In stretching the conventional boundaries of musical combination, digital formats thus create original musical streams—albeit imagined musical futures. Drawing on relevant electro-acoustic examples by Rothenberg and others, the remainder of this paper briefly illustrates how a new, expanded improvising dynamic might lie open to artistic, narrative, and/or activist interpretations.

In "Beezus, Beeten, Breep,"[44] for example, Rothenberg improvises on clarinet to samples of bird and insect sounds. He integrates these using a live percussionist and live electronic treatments that unashamedly modify the essence of the more-than-human contribution. Rothenberg explains:

> Sometimes I have used purely electronic sounds that seem to *outbug* the real work of bugs, so close to the oscillators and filters of electronic music are the mechanisms of our ancient little friends. You won't always be able to tell what is entomological and what is technological. That matters not. As Aristotle taught us, technology finishes what nature has begun.[45]

Rothenberg recently played bass clarinet and clarinet along with live nightingales (*Luscinia megarhynchos*) in the parks of Berlin. His colleague Korhan Erel sampled the birds live with an iPad, then worked in the studio using a laptop with various controllers.

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[42] For a sonogram analysis of a duet between clarinet and White-Crested Laughing Thrush, see David Rothenberg, "Interspecies Improvisation."

[43] Electro-acoustic compositions deliver ecological messages when electro-mechanical sounds impact the perception of natural acoustic events.

[44] *Why Birds Sing*, Track 3, recorded live at Tampere College of Art, Finland, October 2003, compact disc.

[45] Rothenberg, liner notes for *Bug Music*, compact disc.

The album *Berlin Bülbül*[46] features live human/nightingale encounters and clarinet items mixed with "electronic mysteries" influenced by the musical mind of the nightingale.[47] For example, "The Night the War Ends" is a live "duet" recorded at midnight in Treptower Park. Rothenberg repeats a nightingale's chirp and contributes bluesy runs, the whole item developing against an electronic background with live sampling including audible traffic sounds and sirens.

The English flautist Stephen Preston has researched birdsong for new improvisatory models (duetting, chorusing, aggression, defining territory, and courtship) to engage acoustic and electro-acoustic performers in "ecosonics," as he coins it. In Preston's view, these models "offer a way of approaching the affective relationship between many living creatures and their sonic and social environments."[48]

The Canadian duo ~*spin*~ created *Birding—An Eco-Improvisational Performance* for amplified flutes (Ellen Waterman) and a computer (James Harley). Harley spatialised Waterman's flute sound (an icon of birds) around eight speakers.[49] The duo expresses a concern for the environments evoked by their recorded sounds in a programme note:

> What begins as a delicate pastoral soundscape quickly evolves into a darkly chaotic sonic environment that points to the fragility of the wetlands and primary forest where Harley recorded the birds.

For Waterman,

> … the most beautiful thing about the piece is the way that both the piccolo and the bird samples become so distorted, metallic, and otherworldly sounding … it points to the mindfulness or presence of co-creation in improvised music where musicians are responding both to the sounds they are making and to the acoustics of the environment in which they are making it.[50]

Australian composer Robert Burrell has harnessed electro-acoustics, live performance, and Malaysian avian motifs to manipulate what he describes as

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[46] *Berlin Bülbül*, David Rothenberg and Korhan Erel, Terra Nova Music TN1511 and Gruen 159, 2015, compact disc. A film and book (University of Chicago Press) are to follow. *Bülbül* means "nightingale" in Turkish.

[47] Excerpts may be heard at: David Rothenberg, "My Big Night Out Playing With the Nightingales of Berlin," Pacific Standard, http://www.psmag.com/books-and-culture/jamming-with-the-nightingales-of-berlin; and "Berlin Bülbül, David Rothenberg and Korhan Erel live with birds," YouTube video, 2:50, posted March 20, 2015, https://www.youtube.com/watch?v=72PKRimqL3c.

[48] "Stephen Preston Ecosonics," accessed May 1, 2015, http://www.stephenpreston-ecosonics.com/ecosonics.html. The forms and structures for the improvisations are founded on research into bioacoustic communication, particularly birdsong and non-verbal human interactions.

[49] ~spin~ work at the University of Guelph, Ontario in an advanced digital audio production and performance studio. The Canadian Music Centre distributes ~spin~'s DVD in 5.1 surround sound.

[50] Ellen Waterman, email message to author, March 29, 2015. The author was privileged to witness a performance of the work in New Orleans in 2012.

"interspecies-consciousness-transfer,"[51] while Gabriel Rimoldi di Lima of Brazil—in a piece simply entitled *Eco-Improvisation*—constructs an augmented instrument using increased transverse flute plus extra devices (sensors) which he calls "the metaflauta." The objective, in the composer's words, is "to extend the original sound-expressive possibilities of the instrument through electronic resources capable of exploring the expressive gestures of the performer as musical potential."[52] Musical improvisation is thus used as an "exploratory resource metaflauta," understood also from an ecological bias in which performers and technological interfaces act as subsystems of the acoustical environment.[53]

What, then, is an ecologically progressive musical improvisation? A provisional answer might be: the extent to which an improvisation sustains ecology by allowing the *genius* of the site to resonate, or to "speak from inside the soundscape," as Westerkamp would put it.[54] Eco-improvisation can lead us to appreciate the larger acoustic entity and the dramatically different natural sounds of ecosystems in which the healthier the habitat, the more "musical" the polyphony of the creatures that occupy them.[55]

Conclusion

As a preliminary contribution to the pedagogy of multispecies musicking, this paper focused on the critical presence of wildlife in the work of David Rothenberg, whose performances, recordings and books provide a clear ontological definition and syntax: birds, insects and whales model a seamless expression of ecosystem in open stage for the human development of wide listening practice, intuitive musicianship, sensitivity to soundscape, and extended instrumental techniques.

It is in improvisatory musical performance that relationships between humans and their environments most cogently enrich ecology. Eco-improvisers harness nature's

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[51] Robert Burrell, "Becoming, Interspecies-consciousness-transfer, Live Performance with Electro-acoustics and Music Composition," paper presented at Ecomusicologies 2013: Ecosystems and Ecocriticism, Queensland Conservatorium, Griffith University, Brisbane, November 22-23, 2013.

[52] Gabriel Rimoldi di Lima, *Eco-Improvisation: An Approach to Technological Mediation in Context of Musical Digital Interfaces* (PhD. diss. in progress, Universidade Estadual de Campinas, SP, Brazil), accessed April 30, 2015, http://www.bv.fapesp.br/en/bolsas/155081/eco-improvisation-an-approach-to-technological-mediation-in-context-of-musical-digital-interfaces/. Each system sound generation associated with MDI is modelled as Intelligent Agent, with the decisions taken by each guided by its history of interaction, and by environment.

[53] Ibid.

[54] Hildegard Westerkamp, "Speaking from Inside the Soundscape," in *The Book of Music and Nature: An Anthology of Sounds, Words, Thoughts*, eds. David Rothenberg and Marta Ulvaeus (Middletown, Connecticut: Wesleyan University Press, 2001), 143–152.

[55] Titon, "Why Thoreau?," 78.

resilience on location. They might record natural sounds for use in concert improvisations or re-invigorate recordings from natural environments in real-time electronic environments. Futuristically, the salience of technology may lie in its capacity to augment musical portrayals of healthy and degraded ecosystems.

Valid philosophical questions have dogged multispecies musicking, deflecting attention away from the music's own worth as an ecological product of human and more-than-human interaction. While the eco-improvisatory practices described above remain fertile for practice-led musical analysis and documentation, they nevertheless beg broader contextual and scientific analyses if they are to progress comprehensive understanding of musical interaction with more-than-human life.

Darwin, Fux, and Schenker in the Primary Classroom

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Introduction

Argument derived from Darwinian evolutionary principles has brought a new focus to advocacy for the nature and benefits of music education as an entitlement for all children. All human beings have a capacity for music passed on in their genes.[1] This originally evolved, and remains most readily accessible, through vocal development based on singing.[2] However, strategies in primary school music teaching, if they employ the voice at all, tend to focus largely on the singing of unison songs. If, as we might advocate, all students should be capable of singing, then the development of musical skills needs to be orientated to this from kindergarten onwards. By the age of about seven, primary students will then be capable of, for instance, writing their own songs, singing rounds, and beginning to understand the potential of harmony through vocal interaction.

This paper proposes innovative pedagogy that is intended to develop both the voice and musicality of primary age children through activities informed by research in anthropology, linguistics, psychology, anatomy and musicology that has adopted an evolutionary position. The approach embraces especially the principle of collective creativity as a means of encouraging vocal development, and of delivering through social interaction an instinctive response to the properties of music on which formal theory and aural discrimination can build. The influence of Fux[3] and Schenker[4] underpins the devising of simple games that shape musical participation through improvised polyphony. Students are given the opportunity to lead activities that, in following simple principles that are learned by the whole class, permit choices to be made and self-expression to develop. Student leaders and participants alike learn through composition and improvisation. A series of action research projects in the UK and Australia has established

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[1] Iain Morley, *The Prehistory of Music: Human Evolution, Archaeology, and the Origins of Musicality* (Oxford: Oxford University Press, 2013); Steven Mithen, *The Singing Neanderthals* (London: Weidenfeld & Nicholson, 2005); Gary Tomlinson, *A Million Years of Music: The Emergence of Human Modernity* (Boston: MIT Press, 2015); Nicholas Bannan, ed., *Music, Language, and Human Evolution* (Oxford: Oxford University Press, 2012).

[2] Ellen Dissanayake, "Root, Leaf, Blossom, or Bole: Concerning the Origin and Adaptive Function of Music," in *Communicative Musicality: Exploring the Basis of Human Companionship*, eds Stephen Malloch and Colwyn Trevarthen (Oxford: Oxford University Press, 2009), 17–30; Bannan, "Instinctive Singing: Lifelong Development of 'the Child Within,'" *British Journal of Music Education* 17, no. 3 (2000): 295–301.

[3] Johann Fux, *The Study of Counterpoint from Johann Joseph Fux's Gradus ad Parnassum* (New York: WW Norton & Company, 1965).

[4] Heinrich Schenker, *Harmony*, ed. Oswald Jonas, trans. Elisabeth Mann Borgese (Chicago: University of Chicago Press, 1954).

and refined the strategies employed to achieve these goals.[5] This paper will illustrate the foundations of this pedagogical approach that can be applied in the primary school.

The Evolutionary Perspective

A universalist perspective on musical ability supports the view that all children are capable of contributing to collective singing activities.[6] The foundations of this pedagogical approach can be applied in the primary school, building on vocal interaction that begins from (or even before) birth[7] and through musical and movement games involving parents, carers, siblings and peers[8] in both domestic and pre-school settings.[9] Two of the most significant features of such an 'adaptationist' perspective on the nature and value of musical experience are: that it informs the whole life-cycle, such that skills and perceptions acquired in early infancy remain useful as tools[10] that prepare for life-long socialisation, including effective parenting; and, as with language acquisition, that the emergence of competence within the medium of music permits creativity, for every participant is capable of original utterances meaningful within the social context.

What this amounts to is advocacy for pedagogy that adopts play as a medium for learning, one which mediates between the various levels of experience that musical participation affords. Skill, enculturation and collective effervescence[11] arise in rhythmically entrained activities where everyone achieves the same moves at the same

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[5] Nicholas Bannan, "A Role for Action Research Projects in Developing New Pedagogical Approaches to Aural and Musicianship Education," in *The Music Practitioner: Research for the Music Performer, Teacher and Listener*, ed. Jane Davidson (Aldershot: Ashgate, 2004), 295–308; Bannan, "Embodied Music Theory: New Pedagogy for Creative and Aural Development," *Journal of Music Theory Pedagogy,* 24 (2010): 197–216.

[6] Nicholas Bannan, "Music, Play and Darwin's children: Pedagogical Reflections of and on the Ontogeny/Phylogeny Relationship," *International Journal of Music Education* 32, no. 1 (2014): 98–118.

[7] Anne Fernald, "Intonation and Communicative Intent in Mothers' Speech to Infants: Is the Melody the Message?," *Child development* (1989): 1497–1510; Alison Street, Susan Young, Johanella Tafuri, and Beatriz Ilari, "Mothers' Attitudes to Singing to their Infants," in *Proceedings of the 5th ESCOM Conference*, Hanover University of Music and Drama, Germany (2003): 1993; Colwyn Trevarthen, "The Musical Art of Infant Conversation: Narrating in the Time of Sympathetic Experience, Without Rational Interpretation, Before Words," *Musicae Scientiae* 12, no. 1/suppl. (2008): 15–46; Sheila Woodward, "The Transmission of Music into the Human Uterus and the Response to Music of the Human Fetus and Neonate" (PhD. Diss., University of Cape Town, 1992).

[8] Nicholas Bannan and Sheila Woodward, "Spontaneity in the Musicality and Music Learning of Children," in *Communicative Musicality: Exploring the Basis of Human Companionship*, eds Stephen Malloch and Colwyn Trevarthen (Oxford: Oxford University Press, 2009), 465–494; Cheryl Romet, "Song Acquisition in Culture: A West Javanese Study in Children's Song Development," in *Music Education: Sharing Musics of the World, Proceedings of the 20th World Conference of the International Society for Music Education*, ed. Heath Lees (Christchurch, NZ: ISME/University of Canterbury, 1992), 164–173.

[9] Patricia Shehan Campbell, *Songs in their Heads: Music and its Meaning in Children's Lives* (New York: Oxford University Press, 2010).

[10] Ivan Illich, *Tools for Conviviality* (New York: HarperCollins, 1973).

[11] Émile Durkheim, *The Elementary Forms of the Religious Life* (New York: Macmillan, 1915).

time (line dancing; unison singing). Thinking in music as an individual is, by contrast, harder to capture, though the literature of child observation[12] is replete with examples of spontaneous singing in early childhood. What creative pedagogy seeks to achieve is to recapture and shape this form of behaviour so that it informs the development of musical motivation and self-identification. Music as a consequence remains a medium in which self-expression can occur, and choices made, rather than being dominated by experience in which only compliance to existing repertoire and conformity to others are the norm.

The pedagogy described in this paper, which has been given the label 'Harmony Signing,'[13] develops out of these instinctive, social practices in early childhood. The procedures of 'Harmony Signing' extend systematically from the practices dealt with here towards more sophisticated tasks that underpin aural development and musical creativity through to upper secondary levels and beyond.[14] While games and routines can and should be engaged with in developing vocal skill and confidence in pre-school and early years settings, the pedagogical examples dealt with in this paper have been designed to meet the potential of children aged about seven years.[15] By this age they possess the capacity to sing in blended unison with others, and are ready to develop the relationship between musical hearing and generativity that permits them to perform pitches in combination with different pitches sung by other participants, which is the condition allowing polyphony and heterophony to be attempted.

Background

Darwin believed that musical communication in the ancestors of our species played a significant role in the evolution of vocal control, and its motivation by emotional states, from which the acquisition of language subsequently emerged.[16] During the last thirty years or so, this view has received considerable support in a variety of disciplines that have dealt with the phenomenon of human musicality and the development of language.[17] An "adaptationist" explanation for a behaviour or trait suggests that without

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[12] Stephanie Stadler Elmer, "Approaching the Song Acquisition Process," *Bulletin of the Council for Research in Music Education* (1997): 129–135; Howard Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (New York: Basic Books, 1983); Michael Halliday, "One Child's Protolanguage," in *Before Speech: The Beginning of Interpersonal Communication,* ed. Margaret Bullowa (Cambridge: Cambridge University Press, 1979), 171–190; Johanella Tafuri, *Infant Musicality: New Research for Educators and Parents* (Aldershot: Ashgate, 2008).

[13] Bannan, "Embodied Music Theory;" Bannan, "A Role for Action Research Projects."

[14] Bannan, In Preparation, "Every Child a Composer."

[15] Graham Welch, "A Schema Theory of How Children Learn to Sing in Tune," *Psychology of Music* 13, no. 1 (1985): 3–18.

[16] Charles Darwin, *The Descent of Man and Selection in Relation to Sex* (London: John Murray, 1871).

[17] Bannan, "Music, Play and Darwin's children;" Bannan, "Harmony and its Role in Human Evolution", in *Music, Language, and Human Evolution,* ed. Nicholas Bannan (Oxford: Oxford University Press, 2012), 288–

its presence, the organism would not have survived—either because it would not have been equipped to cope with its environment (avoiding or combating predators; hunting or gathering safe sources of nutrition) or because it was essential to effective reproduction and the rearing of offspring to the point that they too can reproduce. As Darwin explained, the models of natural selection[18] and sexual selection[19] can be proposed to account for the acquisition of abilities such as musicality in *Homo sapiens*.

All human beings thus have a capacity for music passed on in their genes. This originally evolved, and remains most readily accessible, through vocal development based on singing. Musical instruments, which are essentially tools for the exploitation and extension of existing musical abilities, appear relatively recently in the fossil record[20], though the shaping of instruments out of material such as bamboo, wood, gourd, seaweed, and gumleaf is arguably much older.[21] Nevertheless, the singing voice remains the prime resource for the establishment of musical skills and experience because, as evident in the cries and spontaneous songs of human infants (but not their closest genetic relatives in the great apes), it always has been.[22]

We live in a logocentric world, in which political measurement of the effectiveness of education focuses almost exclusively on literacy. There is a parallel to this in the research agenda for language acquisition, in which the engineering features of language—grammar, syntax, vocabulary, and the way these can be analysed on paper—tend to dominate over issues on which communication depends, such as vocal production, intonation, and non-linguistic items such as sighs and laughter.[23] Pinker proposed a means of tracing the development of linguistic ability in a manner that has many parallels with the acquisition of the independent mode of musicality,[24] but went on

339; Ian Cross, "Is Music the Most Important Thing we Ever Did? Music, Development and Evolution," in *Music, Mind and Science*, ed. Suk Won Y (Seoul: Seoul National University Press, 1999), 10–39; W. Tecumseh Fitch, "The Biology and Evolution of Music: A Comparative Perspective," *Cognition* 100, no. 1 (2006): 173-215; Steven Mithen, *The Singing Neanderthals*; Iain Morley, *The Prehistory of Music: Human Evolution, Archaeology, and the Origins of Musicality* (Oxford: Oxford University Press, 2013); Gary Tomlinson, *A Million Years of Music: the Emergence of Human Modernity* (Boston: MIT Press, 2015).

[18] Charles Darwin, *The Origin of Species* (London: John Murray, 1859).

[19] Darwin, The Descent of Man.

[20] Iain Morley, The Prehistory of Music.

[21] Pedro Espi-Sanchis and Nicholas Bannan, "Found Objects in the Musical Practices of Hunter-Gatherers: Implications for the Evolution of Instrumental Music," in *Music, Language, and Human Evolution*, ed. Nicholas Bannan (Oxford: Oxford University Press, 2012), 173–198.

[22] Bannan, "Harmony and its Role in Human Evolution;" Dissanayake, "Root, Leaf, Blossom, or Bole;" Dean Falk, "Prelinguistic Evolution in Early Hominins: Whence Motherese?", *Behavioral and Brain Sciences* 27, no. 4 (2004): 491–503; Trevarthen, "The Musical Art of Infant Conversation."

[23] Noam Chomsky, *Syntactic Structures* (The Hague: Mouton, 1957); Chomsky, *New Horizons in the Study of Language and Mind* (Cambridge: Cambridge University Press, 2000); Robert Provine, *Laughter: A Scientific Investigation* (London: Penguin, 2001).

[24] Steven Pinker, *The Language Instinct* (London: Allen Lane, 1994).

to dismiss musical ability as being of little or no evolutionary significance.[25] Sadly, there is a further parallel to this in the marked contrast between interpretations of the universal significance of the acquisition of musicality evident in the child development and psychology literature,[26] and the lack of recognition of this in curriculum design and provision. Nowhere is this more evident than in the low status accorded to developing the skills of effective music teaching in the syllabi of primary teacher education qualifications.[27] Partly for this reason, strategies in primary music teaching, if they employ the voice at all, tend to focus largely on the singing of songs, often learnt by rote and accompanied karaoke-style by recordings. But around the world a social model of vocal interaction led by children themselves, and passed on through peer interaction, illustrates the significance of this activity within young lives.[28] Play activity negotiated with or by children[29] is essential to developing the sense of ownership that renders learning meaningful, and musical play is vital because it represents a means of thinking and feeling that complements verbal and logical-numerical modes. In harnessing the undirected, spontaneous approach to musical play that has been recorded by Cook, the Opies, and Chagall, the intention is to recapture in the classroom the balance between formal and informal musical learning that has been illustrated as essential to students' motivation.[30] Indeed, playful activity that builds on the capacity in group singing for individual participation in elaborating vocal heterophony and polyphony can be traced in adult group vocal performance in every part of the world.[31] 'Harmony Signing' thus seeks to

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[25] Steven Pinker, *How the Mind Works* (New York: W. W. Norton, 1998).

[26] Nicholas Bannan and Sheila Woodward, "Spontaneity in the Musicality and Music Learning of Children;" Guy Cook, *Language Play, Language Learning* (Oxford: Oxford University Press, 2000); Ellen Dissanayake, "Root, Leaf, Blossom, or Bole;" Trevarthen, "The Musical Art of Infant Conversation."

[27] Janet Mills, "The Generalist Primary Teacher of Music: A Problem of Confidence," *British Journal of Music Education* 6, no. 2 (1989): 125–138; Deidre Russell-Bowie, "What Me? Teach Music to my Primary Class? Challenges to Teaching Music in Primary Schools in Five Countries," *Music Education Research* 11, no. 1 (2009): 23–36.

[28] Nicholas Bannan and Sheila Woodward, "Spontaneity in the Musicality and Music Learning of Children;" John Blacking, *How Musical is Man?* (Seattle: University of Washington Press, 1974); "Let's Get the Rhythm: The Life and Times of Miss Mary Mack," produced by Irene Chagall and Steve Zeitlin (New York: City Lore, 2014), DVD; Iona Opie and Peter Opie, *The Singing Game* (New York: Oxford University Press, 1985); Guy Cook, *Language Play, Language Learning*.

[29] Donald Winnicott, *Playing and Reality* (London: Psychology Press, 1971).

[30] Ruth Finnegan, *The Hidden Musicians: Music-Making in an English Town* (Cambridge: Cambridge University Press, 1989); Göran Folkestad, "Formal and Informal Learning Situations or Practices vs. Formal and Informal Ways of Learning," *British Journal of Music Education* 23, no. 2 (2006): 135–145; Lucy Green, *Music, Informal Learning and the School: A New Classroom Pedagogy* (Aldershot: Ashgate, 2009).

[31] Joseph Jordania, "Times to Fight and Times to Relax: Singing and Humming at The Beginnings of Human Evolutionary History," *Kadmos* 1 (2009): 252–276; Victor Grauer, "Echoes of our Forgotten Ancestors," *The World of Music* (2006): 5–58.

preserve the spirit of play through collective activities in which creative opportunities can lay the foundations for lifelong expressive music-making.

Aims

'Harmony Signing' represents innovative pedagogy that is intended to develop both vocal confidence and musicality. The approach embraces especially the principle of collective creativity as a means of encouraging vocal development, and of delivering an instinctive response to the properties of music on which formal theory and aural discrimination can build. Participants combine the relative security of performing as one of a group, while acquiring the freedom to depart from rigid conformity in what they contribute, and having, by turn, the opportunity to take leadership roles. Music theory and generative principles are taught implicitly and through osmosis, without recourse to notation. Music is thus experienced and shared in a manner similar to that by which language is acquired, but with the significant difference that participation is simultaneous rather than serial, as it is in normal conversation and teacher-student interaction.[32] This approach to music is practised through a guided form of trial and error learning in which teacher and students exchange formulations (utterances) and textures (simultaneous utterances in which participants perform complementary rhythmic and harmonic functions) as mutually dependent equals.

Methods

The influence of two significant figures in the history of music pedagogy and analysis, Johann Fux (1660–1741)[33] and Heinrich Schenker (1868–1935),[34] underpins the devising of simple games that shape musical interaction through improvised polyphony. Neither teachers nor students need to be aware of this in order to participate in these activities: response to their ideas represents a form of implicit knowledge carried within the practices to be explored, contrasting with instruction dependent on explicit knowledge that forms the basis of much theory teaching.

Fux sought to codify the means by which the polyphonic style of the music of the Renaissance—already an "old" language culminating in the generation just prior to his— could be taught in logical steps so as to preserve the values that defined the style:

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[32] H. P. Grice, "Utterers' Meaning and Intentions," *Philosophical Review* 78 (1969): 147–177) formulated the nature of propositional exchange, like a two-way radio, by which conversation between two or more participants takes place: "I believe that you believe that I believe x". The simultaneity of musical participation is one of the principal factors that distinguishes it from speech, in terms of both behavioural pragmatics and theory of mind. See also Robert Livingstone and William Forde Thompson, "The Emergence of Music from the Theory of Mind," *Musicae Scientiae* 13, no. 2/suppl. (2009): 83–115; Bannan, "Harmony and its Role in Human Evolution."

[33] Fux, *The Study of Counterpoint*.

[34] Schenker, *Harmony*.

independent voice-leading, harmonic coherence, expressive use of dissonance, and imitation between parts. Rather than basing his teaching on chord-progressions, Fux began with the consequences of devising well-formed unison lines, proceeding to a series of models for combining two lines of music together ("species") so as to acquire fluency in the style before moving on to freer or more complex textures. The influence of Fux on 'Harmony Signing' involves devising music in two independent but coherently-related parts, which can be done in solo pairs, or in groups led by signing. For two-part polyphony of this kind, Kodály hand-signs are employed.[35] Not only does this permit leaders to invent music in two parts that can instantly be performed by groups; it also means that the two-part texture can be internally represented through the use of two hands, representing a significant contribution to the acquisition of musical understanding and aural discrimination.

Schenker's influence on 'Harmony Signing' relates to his theory of tonal relationships that underpin the coherence of musical structure. At the initial level appropriate to the primary classroom, this involves developing an instinctive sense of the way that a tonic chord is defined in relation to its satellite dominant and subdominant—an essential component of the elaborate, long-term harmonic relationships derived from this basis. For participants of primary age, 'Harmony Signing' presents a means of experiencing chord choice that underpins aural discrimination ("location"), as well as providing the means for devising compositions and arrangements. Schenker's system itself employs reference to Fux's in seeking to reveal the underlying voice-leading principles that define the unfolding of music over time.[36] What primary-age students' exposure to these principles in practice provides is implicit but robust experience of the relationship between musical generation and perception.

The transition from unison to two-part performance is a formative breakthrough in individual musical experience. This needs to be prepared through exercises that support the aural and productive skills it demands. One can start by illustrating the nature of the unison effect, employing arm movements as gestures that provide a kinaesthetic and visual complement to musical contour. Thus one leader, working sensitively, can signal to a whole class a melodic pattern that can be performed simultaneously in unison. More saliently, students can work in pairs, taking turns to lead each other in perfect unison performance using this technique. The next step is the crucial one: while continuing to "show" what they are singing, each singer within the pair is free to move as he/she wishes; the unison is "uncoupled." Nevertheless, the singers are encouraged to remain fully aware of the overall effect—to work with one another, exploring the musical

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[35] Cecilia Vajda and Zoltán Kodály, *The Kodaly Way to Music: the Method Adapted for British Schools* (London: Boosey & Hawkes, 1980).

[36] Schenker, *Harmony*, 139.

possibilities. Students who do this will inevitably encounter a variety of properties of polyphony, including the qualities of different intervals that result, of consonance and dissonance, passing-notes, parallel, contrary, and oblique motion and so on (when working with young children, I employ the term "diagonal motion" to capture the phenomenon of parts moving in the same direction at different rates). None of these need be made explicit at this stage.

Next, Kodály hand-signs can be used to refine what is being achieved. These are what permit pair-work to act as a sketching process whereby musical material can transfer to performance by the whole class. Working in this way, the following steps can build on the preceding ones:

- One singer/part maintains a drone while the other improvises melodically above and/or below;
- Both parts move by step in a manner that captures the initial voice-leading protocols of Fux's species counterpoint.

To prepare voices and aural memory for a Schenkerian influence on classroom practice, students should initially practice varying the timbre of a sustained monotone with a view to learning how to produce vocal harmonics.[37] Working initially from a sequence of vowels, students should seek to discern precise pitches emerging as overtones: OO–OH–O–AH–AR–A–E–EH–EE.

The foundational value of learning this technique to the development of aural perception, including interval discrimination, is inestimable. It is also in its own right calming, meditative, and conducive to effective breath management and voice production. But above all, singing overtones conveys to these young students that harmony is not a construct that resides exclusively in music theory, but a fact of nature that links music to language production and forms the basis of how we perceive and respond to combinations of musical sound.

From this, we can move into 'Harmony Signing' proper. Notes 1, 3 and 5 of the scale can be sung simultaneously to provide a tonic chord that is signalled by holding the left arm across the chest with the palm downwards. When the arm moves ninety degrees into an upwards vertical position, note 1 stays where it is ("anchors") while note 3 moves to note 4 and note 5 moves to note six, revealing the subdominant:

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[37] The website of the French-Vietnamese performer and musicologist Tran Quang Hai contains a variety of video clips of overtone singing (http://tranquanghai.info/index.php?lang=en), and the following are also accessible on Youtube: Anna-Maria Hefele (https://www.youtube.com/watch?v=vC9Qh709gas); Mongolian singer Batzorig Vaanchig (https://www.youtube.com/watch?v=1rmo3fKeveo); and a five-year old Tuvan boy (https://www.youtube.com/watch?v=5fOlyrQ2z1w).

Voice 1:Soh–La–Soh
Voice 2:Me–Fah–Me
Voice 3:Doh - - - - - - - -

Movement of the arm ninety degrees in the opposite direction towards fingers pointing vertically downwards elicits the dominant: this time, note 5 is the anchor, while note 3 falls to note 2 and note 1 falls to note 7 of the scale:
Voice 1:Soh - - - - - - - -
Voice 2:Me–Ray–Me
Voice 3:Doh–Ti–Doh

Exploration of the properties of these chords in progressions can be set out over time so that their experience and potential are deepened in as many ways as possible. Whenever an individual signer leads the class in a progression of his/her own devising— including the option of silence signalled with a cut-off that permits participants to breathe and teaches the important value of shaping phrases—he/she is commencing composing.

A further possibility is to employ 'Harmony Signing' as a sketching and leadership mechanism for devising vocal accompaniment to known melodies. Here are the initial phrases of two suitable examples, shown in Figure 1 and Figure 2 below. Note that these are not intended as notations from which students should read. What they present is the relationship between what voice-parts perform that should be conveyed and explored through hand-signs and retained in aural and physical memory.

Melody voice:	Soh⁺	Doh - - - Ray Me Fah La Soh - - - -	Doh⁺ Ti La - - - Soh La Soh Me Soh - -
Voice 1:		Soh - - - - - - - - - La - - Soh - - - - - -	La - Soh - - - - Soh - - -
Voice 2:		Me - - - - - - - - - Fah - Me - - - - - -	Fah - Ray - - - - Me - - -
Voice 3		Doh -	Ti - - - - - Doh - - -

Figure 1. Shenandoah in four-part 'Harmony Signing'

Melody voice:	Soh - - La Soh Me - - - - Soh - - La Soh Me - - - - Ray⁺ - Ray⁺ Ti - - - Doh⁺ - Doh⁺ Soh - - -
Voice 1:	Soh - La - - - - Soh - Soh - - - - - - - - -
Voice 2:	Me - Fah - - - - Ray - Me - - - - - - - - -
Voice 3	Doh - Ti - - Doh - - - - - - - -

Figure 2. Silent Night in four-part 'Harmony Signing'

Conclusions

Students are given the opportunity to lead activities that, in following simple principles which are learnt by the whole class, permit choices to be made and self-expression to develop. Student leaders and participants alike learn through composition and improvisation. A series of action research projects in the UK and Australia[38] has established and refined the strategies employed to achieve these goals, of which the initial steps reported here can be introduced to primary age children.

The pedagogical approach presented is motivated by investigation into the evolutionary origins of the human capacity for music, and how in particular this is passed on and exercised in early childhood. 'Harmony Signing' develops multi-modal learning intended to encode reliable experience and memory of musical relationships, made real in performance and creative discovery in a participatory context that develops social intelligence which is at the heart of meaningful music-making.

It is to be hoped that these and similar or related practices will support the early education of all children in the establishment of oral musical articulacy, capacity for meaningful social interaction, and personal and collective confidence that permits musical responses to build on these foundations lifelong.

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[38] Bannan, "A Role for Action Research Projects;" Bannan, "Embodied Music Theory."

Recent Sonata Theory and the Performance of Early Nineteenth-Century Guitar Sonatas

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The power of sonata form lies in its ability to create long-range structural cogency. How this is achieved within the specific medium of the early 19th-century guitar sonata is the subject of this paper. I investigate the nature of sonata form through two competing yet complementary modern theories, Hepokoski/Darcy[1] and William Caplin,[2] and investigate the potential for these theories to interact with the interpretative decision making processes of the performer. The discussion draws from the repertory of early 19th century guitar sonatas—a corpus of more than 160 works—most of which remain unplayed and unstudied.[3] Although this remains a somewhat arcane repertoire, there are principles at play that have broader applicability.

This research also resists certain long-held assumptions with regard to the limitations of the guitar as an instrument, demonstrating that even the comparatively lesser-note composers for this instrumental were capable of writing surprisingly expressive music.[4] Moreover, understandings of sonata form have too often been predicated on a narrow band of repertoire representing Viennese high classicism, not adequately accounting for the diversity of practice. As Stanley Yates demonstrates, guitar sonatas can be understood in relation to regional and temporal differences in sonata styles.[5] While they perpetuate idiomatic guitar textures, they are also strongly influenced by contemporaneous keyboard and orchestral idioms. Normative conventions and their

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[1] James A. Hepokoski and Warren Darcy, *Elements of Sonata Theory : Norms, Types, and Deformations in the Late Eighteenth-Century Sonata* (Oxford ; New York: Oxford University Press, 2006).

[2] William Earl Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven* (New York: Oxford University Press, 1998).

[3] Many sonatas have recently become available to scholars due to recently digitized historic collections such as the Boije, Birkett-Smith, and Hudleston. The view that the guitar sonata in the early 19th century was relatively uncommon prevails: see, for instance, Rattanai Bampenyou, "A Performance Guitar to the Multi-Movement Guitar Sonatas of Fernando Sor and Mauro Giuliani" (PhD diss., University of Florida, 2012), 2–3. However, my research demonstrates greater prevalence than hitherto documented, with more than 160 sonatas identified, including more than forty which are arguably in the grand manner.

[4] Stanley Yates, "Sor's Guitar Sonatas: Form and Style," in *Sor Studies*, ed. Luis Gasser (Madrid: Instituto Complutense de Ciencias Musicales, Universidad Complutense, 2002), 2. Yates notes that this prejudice can be traced to Harvey Turnbull, *The Guitar, from the Renaissance to the Present Day* (New York: C. Scribner's Sons, 1974), 89.

[5] Yates, "Sor's Guitar Sonatas: Form and Style," 2–4. Also see the introduction to Stanley Yates, "The Classic-Romantic Guitar Sonata Vol. 1, Before 1800," Stanley Yates Writings, accessed November 14, 2015, http://www.stanleyyates.com/writings/sonatasv1.pdf.

resistance play a key part in this discussion, but the conventions discussed are primarily those germane to aspects of sonata form that arguably transcend the idiomatic differences between instruments.

Rather than analysis providing all the answers, in this study analytical insight and performance intuition feed into each other in a deepening spiral of growing conviction.[6] Any tension arising from either naïve intuition or misleading analysis is a site of particular interest.[7] One such conflict would be the rigid insistence by some Schenkerians that the fundamental descent must occur at the final cadence of a piece, however insignificant it might appear at the foreground level. Ultimately, I strive for the kind of "structurally-informed performance" articulated by Narmour and Berry,[8] while also heeding Cook's warning against the mire of analytical dogma,[9] noting that (as Cook intimates) analysis is ultimately also an interpretative act.[10]

The theories of William Caplin[11] are closely aligned with performance concerns in their application of functional labels to micro-level phrase structuring,[12] which in turn has implication for multiple performance decisions, including character, dynamics,

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[6] Joel Lester, "Performance and Analysis: Interaction and Interpretation," in *The Practice of Performance : Studies in Musical Interpretation*, ed. John Rink (Cambridge, England; New York, USA: Cambridge University Press, 1995), 197–216, quoted in Nicholas Cook, "Analysing Performance and Performing Analysis," in *Rethinking Music*, ed. Mark Everist (Oxford: Oxford University Press, 1999), 245. Also see the famous dialogue between the personas of analyst and performer in Janet Schmalfeldt, "On the Relation of Analysis to Performance: Beethoven's 'Bagatelles' Op. 126, Nos. 2 and 5," *Journal of Music Theory* 29, no. 1 (Spring) (1985): 1–31.

[7] An example of this approach is Matthew Brown, *Explaining Tonality : Schenkerian Theory and Beyond*, Eastman Studies in Music (Rochester, NY: University of Rochester Press, 2005). Brown's work is important in the way in which he has brought great systematic rigour to Schenkerian analysis. However, in practice he is fundamentally uninterested in the performer's intuition. As a student of Schenker, I diligently followed such analytical axioms (suppressing my intuition), while simultaneously conscious of an unsatisfying disjunction that I longed to resolve. I recall completing a Schenkerian analysis of the entire first movement of Beethoven's Op 53 Sonata ("Waldstein") for a postgraduate seminar and feeling that the most significant structural descent of the *urlinie* should occur at the climax of the work—prior to the coda—and not in the final closing gesture of the work (where I was told, it must occur). Intuitively, I yearned for the work's rhetorical climax to align with the point of contrapuntal closure, and secretly felt that it should.

[8] The quotation is from Cook, "Analysing Performance and Performing Analysis," 249. Cook is here paraphrasing the arguments in Wallace Berry, *Musical Structure and Performance* (New Haven: Yale University Press, 1989), 217–18. Also mentioned is Eugene Narmour, "On the Relationship of Analytical Theory to Performance and Interpretation," in *Explorations in Music, the Arts, and Ideas : Essays in Honor of Leonard B. Meyer*, ed. Eugene Narmour and Ruth A. Solie (Stuyvesant: Pendragon Press, 1988), 317–40.

[9] Cook, "Analysing Performance and Performing Analysis," 249.

[10] Cook refers to analysis as "performative:" see Ibid., 255ff.

[11] William Earl Caplin, *Classical Form*. Also see Caplin, *Analyzing Classical Form: An Approach for the Classroom* (New York: Oxford University Press, 2013).

[12] Caplin's theories are rooted in the tradition of phrase analysis found in Schoenberg, Ratner, and Green. See Arnold Schoenberg and Gerald Strang, *Fundamentals of Musical Composition* (New York: St. Martin's Press, 1967); Leonard G. Ratner, *Classic Music : Expression, Form, and Style* (New York: Schirmer Books, 1980); Douglass M. Green, *Form in Tonal Music: An Introduction to Analysis* (New York: Holt, Rinehart, 1965).

articulations, fingerings, and so on. Hepokoski/Darcy's theories of sonata form (henceforth to be referred as "HD sonata theory") are essentially concerned with questions of norms and deformations.[13] Since performers must also navigate similar issues in manipulating the expectations of the audience, HD sonata theory is especially relevant.

HD sonata theory argues for the ubiquitous applicability of "generally obligatory cadences," or more expansively, the "recognition and interpretation of expressive/dramatic trajectories toward" these cadences.[14] In particular, these are the "medial caesura" and the "essential expositional closure," which define the boundaries between zones, as illustrated in Figure 1.
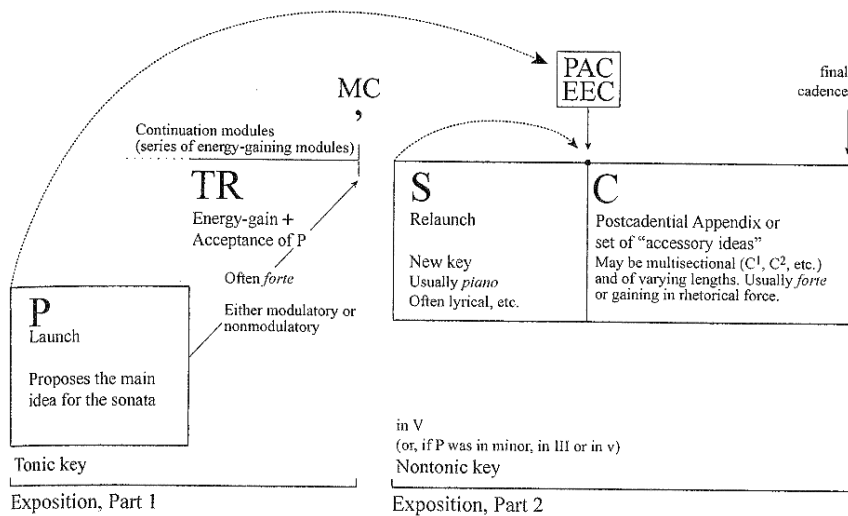
Figure 1. A diagram of the exposition sonata form according to Hepokoski/Darcy,[15] where P=primary theme zone; TR=transition; MC=medial caesura; and EEC=Essential expositional closure, defined as the "the first satisfactory PAC [perfect authentic cadence][16] that occurs within S and that proceeds onward to differing material"[17]

Also significant are the associated processes of "energy gain." For instance, the archetypal dramatic trajectory towards the medial caesura could be likened to the lights of a pedestrian crossing: green (walk), flashing (run), and red (stop). My first encounter with these concepts was somewhat of an epiphany. How had such far-reaching insights

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[13] James A. Hepokoski and Warren Darcy, *Elements of Sonata Theory.*

[14] Ibid., 13.

[15] Hepokoski and Darcy, *Elements of Sonata Theory*, 17.

[16] In English terminology, a PAC is equivalent to a V-I cadence with 'closed' voice leading (which means root position chords and melodic closure on the tonic). It signals the conclusion of a musical period.

[17] See Hepokoski and Darcy, *Elements of Sonata Theory*, xxvi.

been overlooked? Of course, they had not. Rather, such concepts are rooted in 18th century theory[18] but were suppressed by 19th century models privileging thematic contrast, and thus distorting the theoretical legacy.[19]

My discussion is framed by five pivotal questions that attempt to connect the dots between structural analysis and performance decisions:

(1) How should the performer differentiate the thematic material of the primary and secondary zones?

(2) How might the performer understand and express the syntactic relations and contrasts of character between motives and phrases?

(3) How should the medial caesura be shaped by the performer?

(4) Where does the essential expositional closure lie, and does it align with the exposition's natural climax?

(5) How should the performer respond to significant structural deformations?

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[18] 18th century sources of relevance include Koch (who speaks of large musical periods defined by structural cadences), Galeazzi (who also speaks of structural cadences), and Kollman (who conceives of sonata form as a tonal journey rather than a thematic one). See, for instance, Heinrich Christoph Koch, *Versuch Einer Anleitung Zur Composition*, 3 vols. (Leipzig,: A. F. Böhme, 1782). A good translation is that of Heinrich Christoph Koch, Nancy Kovaleff Baker, and Heinrich Christoph Koch, *Introductory Essay on Composition. The Mechanical Rules of Melody. Sections 3 and 4*, Music Theory Translation Series (New Haven: Yale University Press, 1983). See also Francesco Galeazzi, *Elementi Teorico-Pratici Di Musica, Con Un Saggio Sopra L'arte Di Suonare Il Violino Analizzata, Ed a Dimostrabili Principj Ridotta, Opera Utilissima a Chiunque Vuol Applicare Con Profitto Alla Musica, E Specialmente a' Principianti, Dilettanti, E Professori Di Violino, Di Francesco Galeazzi*, 2 vols. (ca. 1799). A good translation is available in Francesco Galeazzi, Deborah Burton, and Gregory W. Harwood, *Theoretical-Practical Elements of Music, Parts iii and iv*, Studies in the History of Music Theory and Literature (Urbana: University of Illinois Press, 2012). See also Augustus Frederic Christopher Kollmann, *An Essay on Practical Musical Composition, According to the Nature of That Science, and the Principles of the Greatest Musical Authors* (London, 1799).

[19] The privileging of thematic contrast begins with Adolf Bernhard Marx, *Die Lehre Von Der Musikalischen Komposition, Praktisch-Theoretisch: Zum Selbstunterricht*, 4 vols. (Leipzig: Breitkopf und Härtel, 1837). A translation is available in Adolf Bernhard Marx and Scott G. Burnham, *Musical Form in the Age of Beethoven: Selected Writings on Theory and Method*, Cambridge Studies in Music Theory and Analysis (Cambridge: Cambridge University Press, 1997). Other important 19th century sources include Carl Czerny and John Bishop, *School of Practical Composition*; *or, Complete Treatise on the Composition of All Kinds of Music ... Together with a Treatise on Instrumentation. The Whole Enriched with Numerous Practical Examples*, 3 vols. (London, etc.: R. Cocks & Co., 1848). See also Anton Reicha, *Traité De Haute Composition Musicale*, 2 vols. (Paris,: Zetter & cie., 1824) and Heinrich Birnbach, "Über Die Verschiedene Form Größerer Instrumentalstücke Aller Art Und Deren Bearbeitung," *Berliner Allgemeine Musikalische Zeitung* 4 (1827).

Question 1: How should the performer differentiate the thematic material of the primary and secondary zones?

Some degree of contrast between the primary and secondary zones is arguably normative, and was infamously outlined by Marx in gendered terms.[20] As a starting point, I attempt to classify the primary and secondary material according to categories identified by HD sonata theory (although other more rigorous semiotic investigations of historically-relevant musical "topics" and "tropes" could be used).[21] In the *Sonate* Op. 21 No.1 (1810?)[22] by Ferdinando Carulli (1770–1841),[23] for instance, the primary material begins the work with what HD sonata theory describe as a "motto, emblem, or head-motive" (see Figure 2),[24] and which could be characterised as assertive, even pompous. Similar beginnings are found in many early guitar sonatas; they help establish the tonality, and often exploit octaves, full chords, or arpeggios. Such gestures originate with the clichés of early symphonic writing,[25] and the guitar in this period is often treated like an orchestra in miniature.[26] In contrast, the opening thematic material of the secondary zone fits HD sonata theory's sub-type of "the bustling, staccato, energetically gallant, or jauntily self-confident S [secondary theme]" (see Figure 3), which could also be loosely associated with feminine archetypes in Italian *bel canto* opera.[27]

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[20] Adolf Bernhard Marx, *Die Lehre Von Der Musikalischen Komposition,* V, 3rd ed. (Leipzig: Breitkopf & Härtel, 1879 [orig. 1845], 282. As cited by Peter Bloom in a communication to *Journal of the American Musicological Society* 27 (1974): 161–62. Also quoted in Susan McClary "Introduction: A Material Girl in Bluebeard's Castle," in *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis: University of Minnesota Press, 2002), 13.

[21] One recent example is Robert S. Hatten, *Interpreting Musical Gestures, Topics, and Tropes: Mozart, Beethoven, Schubert* (Bloomington: Indiana University Press, 2004).

[22] A first publication date of 1810 is suggested by Mario Torta, *Catalogo tematico della opera di Ferdinando Carulli*, Vol. 1: Opere 1–120 (Lucca: Libreria Musicale Italiana Editrice, 1993), 78.

[23] Born in Naples, Carulli moved to Paris in 1808, establishing himself as a leading pedagogue, guitar performer and composer. As a virtuoso, he was somewhat overshadowed by the arrival of Fernando Sor in 1813, but in many ways Carulli's extensive catalogue (more than 365 works involving guitar) helped to define a new level of idiomatic guitar virtuosity. He made one of the most significant contributions to the development of the guitar sonata, with more than 40 works in this style (of varying lengths, labelled either *sonatines*, *sonates*, or *grande sonates*). His sonatas primarily reflect the influence of the Italian overture, although we also see the influence of the Viennese style with more complex motivic *fortspinnung* beginning to manifest itself in the developments of his more substantial sonatas.

[24] Hepokoski and Darcy, *Elements of Sonata Theory*, 87.

[25] Such as the "premier coup d' archet" in the Mannheim school, and the music of Stamitz.

[26] Fernando Sor, *Method for the Spanish Guitar* (London: Cocks & Co., 1832), 16–18. See also Dionysio Aguado, *New Guitar Method* [reprint of Madrid, 1843], ed. Brian Jeffery, trans. Louise Bigwood (London: Tecla Editions, 1981), 59.

[27] The relevance of *bel canto* opera to the early 19th century guitar, its style, and performance practices has been widely discussed in the literature. See, for instance: Adrian Charles Walter, "The Early Nineteenth Century Guitar: An Interpretive Context for the Contemporary Performer" (PhD diss., Charles Darwin University, 2008); Harold Gretton, "Historically-Informed Interpretation: A Process in Relation to the Deuxième Grande Sonate Op.25 for Solo Guitar by Fernando Sor" (PhD diss., Australian National

Figure 2. The opening "motto" motive of Carulli's *Sonate* Op. 21 No. 1 in A[28]

This clarification of the musical character of these themes empowers the performer, who is better placed to make detailed decisions with regard to dynamic, timbre, and articulation. While Carulli clarifies the dynamics for us (forte at the opening, piano for the secondary theme), there are many details missing. In line with the suggested pompous character, a slight over-dotting might also be warranted for the "motto" (Figure 2). On the other hand, the ascending scale in the "self-confident S [secondary theme]" could be played slightly staccato, for lightness and energy, in keeping with the character sub-type derived from Hepokoski and Darcy (Figure 3).

Figure 3. The "energetically gallant" S theme from Carulli's *Sonate* Op. 21 No. 1 in A (starting second bar of excerpt)[29]

Question 2: How might the performer understand and express the syntactic relations and contrasts of character between motives and phrases?

While the contrasts of thematic character inherent within the primary zone itself may seem self-evident, becoming consciously aware of their subtleties can only be beneficial to the performer, who then is better able to enunciate the syntactic structures in a more meaningful way—whether questioning, unresolved, or completing. Even a simple example, like Carulli's *Sonate* Op. 21 No.1 in A, displays a level of complexity (with

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University, 2010); Giuseppe Zangari, "Mauro Giuliani (1781–1829): Instrumental and Vocal Style in Le Sei Rossiniane" (MMus diss., University of Sydney, 2013); and Rattanai Bampenyou, "A Performance Guitar to the Multi-Movement Guitar Sonatas of Fernando Sor and Mauro Giuliani" (DMA diss., University of Florida, 2012).

[28] Ferdinando Carulli, *Trois sonates pour guitare ou lyre*, Op. 21 No. 1," (Leipzig and Berlin: Bureau des arts et d'industrie, ca.1810), sourced from the Vorhauer Collection (Private Collection of Robert Coldwell), accessed November 5, 2016, digitalguitararchive.com.

[29] Ibid.

compound antecedent and consequent phrase groups), as illustrated in Figure 4 below.[30] Table 1 shows multiple layers of analytical and descriptive terminology: (1) those according to HD sonata theory; (2) according to Caplin; (3) suggested interpretive descriptors; and (4) subsequently suggested performance considerations. Interpreting musical gestures according to historic evidence, or empirically-grounded semiotics (along the lines of Hatten)[31] is an intriguing prospect, but presenting evidence to justify the interpretations made here is beyond the scope of this present discussion. Regardless, following the precedent of Schmalfeldt (and others) I suggest that the intuitive responses of a performer should not be entirely discredited, particularly when interacting with analytical understandings.[32]

Note that HD sonata theory uses numerals with decimals (e.g. $P^{1.1}$, $P^{1.2}$, $P^{2.1}$, $P^{2.2}$), where P indicates the theme's location within the primary theme zone, a numeral after the dot represents a particular motive or theme, and the numeral before the dot indicates the motive's position vis-à-vis the period structure (a notch upwards to 2 only occurs following a PAC, or perfect authentic cadence, signalling the end of one period and the beginning of another). On the other hand, Caplin's thematic labels primarily emphasize the syntactic structural role of musical themes: basic, contrasting, and cadential.

Table 1. The phrase structures of the primary zone, Carulli's *Sonate* Op. 21, No.1 in A

Phrase group	Antecedent group (defined by HC)			Consequent group (defined by PAC)		
Phrase	1	2	3	4	5	6
Bars	1–4	5–8	9–12	13–16	17–20	21–24
Sonata Theory Label	P1.1 Motto	P1.2	P1.3	P1.1 Motto	P1.2	P1.3
Caplin terminology	Basic idea (bi)	Contrasting idea (ci)	Cadential idea (cad.)	Basic idea (bi)	Contrasting idea (ci)	Cadential idea (cad.)
Other interpretive descriptor	Assertive/heroic	Tip-toeing	Grand, climactic			
Performance considerations	Forte, over-dotted	Pianissimo, staccato	Forte, legato, slight rall	Forte, over-dotted	Pianissimo, staccato	Forte, legato, no rall this time

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[30] This shows a parallel period consisting of a compound antecedent and consequent of three phrases each (an irregular number, since phrase groups are more commonly multiples of 2). It is "parallel" in that the consequent phrases are derived from the antecedent phrases.

[31] Hatten, *Interpreting Musical Gestures, Topics, and Tropes*.

[32] Janet Schmalfeldt, "On the Relation of Analysis to Performance: Beethoven's "Bagatelles" Op. 126, Nos. 2 and 5," *Journal of Music Theory* 29, no. 1 (Spring) (1985): 1–31. See also Cook, "Analysing Performance and Performing Analysis," 249.

Figure 4. The primary zone (mm. 1-23) and the transition (mm. 24ff) of Carulli's *Sonate* Op. 21 No.1 in A[33]

Question 3: How should the medial caesura be shaped by the performer?

In the case of Carulli's *Sonate* Op. 21 No.1, the drive to a climactic medial caesura is obvious.[34] In the case of the *Gran sonata eroica* Op. 150 (1840) by Mauro Giuliani (1781–1829)[35] (Figure 5), there are no marked dynamics, and a creative interpreter might consider shaping a softer medial caesura because of the gentle music to follow. However, HD sonata theory suggest that the default option should be an energy gain with crescendo driving towards the medial caesura, unless there are musical clues to the contrary. Arguably, this energy spills over here into the caesura-filled space with the urgency of the dotted rhythm on the repeated Bs. Some early 19th-century guitar works, such as those by Molitor and Diabelli (See Figure 10 and Figure 11) demonstrate the

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[33] Carulli, Trois sonates.

[34] However, this is not always the case. In some instances (such as Carulli's *Gran sonate* op.16 in C), a MC can be defined, but thwarted by non-appearance of convincing secondary material (sonata theory speaks of potential secondary material disintegrating to *fortspinnung*, then entering the closing zone prematurely).

[35] Originally from Bisceglie in Southern Italy, Mauro Giuliani worked in Vienna from 1806–19, where he established himself as a leading figure of international renown (unrivalled, except perhaps by Fernando Sor). Giuliani composed more than 151 opus numbers, although his sonatas are more limited in number than Carulli (five sonatas, plus several other works such as overtures, employing clear sonata form). Like Carulli, they display a balance between the Italian overture (and bel canto style), and the influence of Viennese classicism.

embellishment of the medial caesura with ornamentation, quasi-cadenza. Here, the caesura space in Giuliani's *Gran sonata eroica* becomes the site of a surprising modulatory interpolation,[36] subverting the arrival of the dominant[37] by a momentary sojourn in C major. The performer is afforded extraordinary license to create an air of surprise, of freedom, and fantasy—before the music begins "a tempo" as the lyrical theme of the secondary zone emerges.

Figure 5. An excerpt from Giuliani's *Gran sonata eroica*, Op. 150, showing the lead up to the medial caesura (fermata), with energy gain (from the second line) and "caesura fill" interpolation (lines 5-6)[38]

On the other hand, the *Grosse sonate* Op. 7 (1836) by Simon Molitor (1766–1848)[39] is an example of a medial caesura that is a clearly-defined anti-climax (fourth line,

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[36] That this is an interpolation can be easily confirmed by trialling performance that simply moves from the medial caesura chord to the beginning of the last bar of the example shown (where the secondary zone properly begins).

[37] Articulated by the half-cadence medial caesura, despite the minor mode inflection in the penultimate bar preceding the medial caesura.

[38] Mauro Giuliani, *Gran sonata eroica* Op. 150 (Milan: Ricordi, 1840). Sourced from Boije Collection, the Music and Theatre Library of Sweden, http://musikverket.se/musikochteaterbiblioteket/ladda-ner-noter/boijes-samling.

third bar, Figure 6), or what HD sonata theory terms the "de-energizing transition."[40] Such an instance raises the potential for the performer to express, through dynamics (as marked), the surprise at this turn of events.

Figure 6. A de-energizing transition leads to an anticlimactic medial caesura (last line, third bar), in Molitor's *Gross sonate* Op. 7 in Am, first movement[41]

Question 4: Where does the essential expositional closure lie, and does it align with the exposition's natural climax?

One might assume that the essential expositional closure should align with the natural climax of the exposition. However, HD sonata theory warns against this assumption, seemingly suppressing the performer's instinct in obeisance to an abstract theoretical idea. Whereas the medial caesura is typically a grand gesture accompanied by an energy gain and dramatic pause, the essential expositional closure may not necessarily reflect this pattern. It is defined as the "first satisfactory PAC[42] that proceeds onward to differing material."[43] As such, it does delineate a point in which the music rhetorically shifts gear: however, it is not necessarily always "when the themes stop and the codettas begin," [44]

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[39] Active in Vienna before and during the dominance of Giuliani, Molitor had a more diverse career, active both as a violinist, guitarist, composer, and conductor (and also some time working as a military clerk), with a compositional output that also includes concerti for violin and clarinet, piano music, and chamber works. He produced five known guitar sonatas, each substantial and significant examples. The *Grosse sonate* Op. 7 is especially significant because of its extensive performance practice annotations.

[40] Hepokoski and Darcy, *Elements of Sonata Theory*, 116.

[41] Simon Molitor, *Grosse sonate* Op. 7 (Vienna: Artaria und Comp., 1836), 18. Sourced from Boije Collection, the Music and Theatre Library of Sweden, http://musikverket.se/musikochteaterbiblioteket/ladda-ner-noter/boijes-samling.

[42] PAC=perfect authentic cadence; in English terminology, a V–I cadence with "closed" voice leading signalling the conclusion of a period.

[43] Hepokoski and Darcy, *Elements of Sonata Theory*, 120.

[44] The quote comes from Ibid., 121, which is paraphrasing the position of Caplin, *Classical Form* (a position with which Hepokoski/Darcy do not agree).

although that is typically the case. Nor is the essential expositional closure necessarily the climactic cadence of the exposition. The closure attained can be deemed to be "essential"[45] without necessarily being "fully satisfying."[46] HD sonata theory thus warns against making judgements based on presumptions on what an essential expositional closure should "feel" like (echoing the sentiments of the Schenkerians).

In Carulli's *Grande sonate* in C[47] (Figure 7), for example, the essential expositional closure is delineated by a clear perfect authentic cadence where the lyrical secondary themes stops, and is followed by a series of energy-gaining cadential modules that push towards a grander rhetorical climax, one that intuition might deem the true point of essential closure.[48] This is an archetypal pattern in many early guitar sonatas. Like a medial caesura, it is followed by a sense of space, and then an episode of much gentler music.

There is a certain inconsistency in the approach of HD sonata theory in that while the medial caesura is preceded by energy gain, the essential expositional closure is typically *followed* by energy gain. From the point of view of the performer, it is arguably the later climactic arrival that provides the true sense of "essential closure."

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[45] Hepokoski and Darcy, *Elements of Sonata Theory*, 123.

[46] Ibid., 124.

[47] This *Grande sonate* is not catalogued in Torta, so the opus number and the date of first publication have not yet been traced. See footnote 49 for further information on this edition.

[48] The MC is delineated in the fourth bar, and a lyrical theme opens the secondary zone (bar 5). This theme cadences to a PAC somewhat prematurely in the fourth measure of the fourth line (ostensibly the EEC) piano. Here, the music shifts gear, taking off with a virtuosic flurry of idiomatic material that builds, through its energy gain, towards a much more climactic cadence in the third last line (presumably with an implied obligatory trill). Following this climactic cadence, the music switches gears again, becoming much more gentle and subdued (despite no marked dynamic). Finally, some peremptory cadential gestures bring the exposition to a satisfying yet somewhat ambiguous end (at least, dynamically speaking).

Figure 7. The end of the secondary zone, the theoretical essential expositional closure (EEC) (fourth line), followed by the closing zone (with energy gain), and a climactic cadence (third last line), in Carulli's *Grande sonate* in C[49]

Question 5: How should the performer respond to significant structural deformations?

Of particular interest for performance are off-key recapitulations. For instance, Giuliani's *Gran Sonata eroica* (1840)[50] commences the recapitulation with a somewhat disguised version of the primary material in the flat submediant, C major (Figure 8).[51] From an

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[49] Ferdinando Carulli, "Gran sonate," from *Sonate, Polonaises, Et Rondeux* (Paris: Pleyel, date unknown), 2–3. Scan sourced from the Hudleston Collection, Library of the Royal Irish Academy of Music, http://www.riam.ie/19th-century-guitar-music-collection-now-available-online-from-the-royal-irish-academy-of-music/.

[50] Giuliani, *Gran sonata eroica*.

[51] Extended sojourns to the flat submediant have been shown by Richard Taruskin to be a favoured early Romantic device, particularly in the music of Schubert (a contemporary of Giuliani in Vienna): see Richard

analytical point of view this is problematic, but not simply because it is in the wrong key. Rather it is because the key is only corrected with the appearance of the secondary theme (S).[52] If this C major section represents the true recapitulation, then the modified syntactical/rhetorical gestures of the medial caesura (see Figure 9) closely resembles a retransition (which weakens this interpretation). On the other hand, if the return of S (the secondary theme) is the true recapitulation, then the entire work becomes a "type 2" sonata (meaning, the recapitulatory rotation commences with the development).[53] From the performer's perspective, all that matters, arguably, is that a surprising deformation has occurred, which should be associated with a surprising execution in performance (perhaps a dream-like, soft approach).

Figure 8. The end of the development and the beginning of the recapitulation (third line) in the wrong key (flat submediant) in Giuliani's *Gran sonata eroica*[54]

Taruskin, *The Oxford History of Western Music*, vol.3 (Oxford: Oxford University Press, 2006), 94–95. Another possible precedent for Giuliani is Rossini (who is a clearly established influence on Giuliani's *bel canto* guitar idiom). The same modulation occurs at the recapitulation in the overture to *La Cenerentola* (for which Giuliani made a guitar version).

[52] In passing, we could note that Cone and Rosen were incorrect in suggesting that wrong-key presentations of primary material demand a "corrected" version in the tonic. HD sonata theory insists that this principal applies only to secondary material. See Edward T. Cone, *Musical Form and Musical Performance*, 1st ed. (New York: W. W. Norton, 1968), 76–77. See also Charles Rosen, *Sonata Forms*, rev. ed. (New York: Norton, 1988), 25, 287. Both Cone and Rosen are cited in Hepokoski and Darcy, *Elements of Sonata Theory*, 242–43.

[53] For a definition of "type 2" sonata, see Hepokoski and Darcy, *Elements of Sonata Theory*, 353ff.

[54] Giuliani, *Gran sonata eroica*.

Figure 9. The modified medial caesura in the recapitulation to the reprise of S (second last system) where the lead up to the medial caesura closely resembles syntactic/rhetorical gestures normally associated with retransition[55]

Similarly, Simon Molitor's impressive *Grosse sonate* Op. 7 (1836)[56] in A minor begins the recapitulation in the key of the subtonic G minor, then G major (see second and third systems of Figure 10) while the secondary material goes to the tonic major (A major), such that the piece ends on a triumphal note (final system). Molitor provides the performer with an intriguing clue to navigating this surprising turn of events, indicating that the beginning of the recapitulation (second system) should be executed quietly (and even more so with the entry of G major in the third system), reflecting the element of surprise associated with a non-standard key at this point in the sonata.

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[55] Ibid.

[56] Molitor, *Grosse sonate* Op. 7.

Figure 10. The surprising wrong-key recapitulation (second and third systems), with a pianissimo dynamic, in Molitor's *Grosse sonate* Op. 7[57]

Another example is the apparent wrong-key entry of the Recapitulation (on the supertonic) in the Sonata in F, Op. 29 No.3 (1807)[58] by Anton Diabelli (1781–1858),[59] which commences with the secondary theme (m. 59, Figure 11), dispensing altogether with the primary material. This is a clear example of the "type 2" sonata, therefore, as the rotation commences in the development space.[60] However, such an interpretation overlooks the clear "rhetoric" of retransition on display, and does not negate the fact that the deformation must be corrected several bars later with the reiteration of the secondary material in the tonic (m.72). Arguably, the performer's role in the case of Diabelli is to pretend that there is nothing unusual about this recapitulation (at least, at first), before finally giving the game away when the music shifts dramatically into *fortspinnung*, energy gain, and a sudden tonal shift. A dramatic caesura is reached which

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[57] Molitor, Grosse sonate Op. 7, 19–20.

[58] Diabelli, *Sonaten* Op. 29 (Imprimerie Chemique, 1807).

[59] Diabelli is especially interesting as he is one of the few guitar composers who has written extensively for other instruments (another is Sor). More than most, his guitar works (including three sonatas) do not rely heavily on clichéd textures and are able to sustain intricate motivic development within the resources of the instrument. His guitar sonatas are arguably representative of his sonata writing more generally, not just his adaptation of sonata form to the guitar.

[60] See footnote 53.

is then elaborated with a written-out cadenza marked "a piacere" (as with the Molitor example above), further heightening the moment of return to the tonic key.

Figure 11. The off-key recapitulation, commencing with S (secondary theme) in Diabelli's Sonata in F, Op. 29 No.3[61]

In conclusion, these observations merely scratch the surface with regard to the way in which these new sonata theories can provide insights relevant to performance. These include the ways that analysis can (1) clarify aspects of the semantic character of motives and themes (suggesting localized performance details); (2) clarify syntactic structures between motives and themes (aiding with dramatic pacing and contour); (3) reveal processes of energy gain and energy dissipation associated with obligatory structural cadences (suggesting appropriate shaping); and (4) uncover structural deformations (that arguably are associated with moments of surprise or drama). This paper has attempted to model a way in which analysis empowers performance decisions, yet retains no inherent superiority. While I am not, by any means, suggesting that there is

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[61] Anton Diabelli, Sonata in F, Op. 29 No.3, in Anthony Glise (ed.), *Complete sonatas of Sor, Giuliani, & Diabelli* (Pacific: Mel Bay Publications, 1998), 234. Originally published by Imprimerie Chemique, 1807.

only ONE correct interpretation, my experience of the process of performance and analysis is one of deepening conviction, which ultimately leads towards a more compelling musical performance. One goal here is for analysis to reclaim its relevance: as stated by Hepokoski and Darcy, "the best analytical system is the one that seeks to reawaken or re-energize the latent drama, power, wit, and wonder within individual compositions."[62]

[62] Hepokoski and Darcy, *Elements of Sonata Theory*, 11–12.

Facilitating Creative Synergy: An Analytical Approach to the Operatic Creative Process

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This paper explores methodological challenges encountered during the initial practice-led research phase of the creation of an opera for children. The primary impetus underlying this project is an exploration of how the creative, theoretical and conceptual approach to children's opera could be reconsidered, increasing its relevance, appeal and comprehension. *Relevance*, *appeal* and *comprehension* are three categories of insight and guidance that selected areas of literature and theory[1] can lend to creative development, including the teasing out of one main grand concept: the development (and adaptation within an operatic context) of what Jeanne Klein—widely published Theatre for Young Audience (TYA) practitioner and researcher—refers to as a "child's gaze."[2] Klein's first use of the "child's gaze" concept appears in her 1993 article *Applying Research to Artistic Practices* in which she states:

> When adult artists ignore the meanings children make of theatre they exclude them from adult fictive worlds. Theatre means, "to gaze upon." To include young audiences in children's theatre, a theatre that implies their ownership, artists must understand theatre from a "child's gaze" rather than from "adult gazes" of what adults perceive or think children will or should know, enjoy and appreciate. Children think differently at various stages of cognitive development. Theatre producers should be aware of each stage's characteristics so that artistic intentions match or challenge cognitive abilities in appropriate ways.[3]

Drawing guidance from this conceptual underpinning and theoretical framework, the project ultimately entails the creation of a libretto (text) and the musical realisation of this text (score). Provision has also been made for feedback from industry professionals on the libretto and developing score, resulting in the eventual workshopping of the opera by singers and instrumentalists, and semi-staged performance.

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[1] This involves an exploration of a broad range of secondary literature and research including: sociological concepts related to the presentation of dramatic material to children; social issues that may inhibit initial and lasting contact with the genre; the defining structure and elements of effective children's drama and study into psychological phenomena therein; and music processing elements and developmental implications specific to children's understanding of music. Developmental stage profiling is also utilized and developed using the above literature in line with Klein's comments regarding challenging cognitive abilities appropriately.

[2] Jeanne Klein, "Applying Research to Artistic Practices: This Is Not a Pipe Dream," *Youth Theatre Journal* 7 (1993).

[3] Ibid., 6.

There is often a tenuous line that creative artists tread between what is generally felt to be *instinctual* creative practice and the requirement as a practice-led researcher to demonstrate effective transference of theory into practice. The transference of these gleaned theoretical ideas into creative practice has presented numerous challenges to project design and methodology.

Also fundamental to the inception and development of a complex operatic creative work are the efficient performances of multiple roles: those of librettist, composer, performer and researcher. In this particular research project, these roles are assumed by the same person (the author of this paper), creating a further level of complexity beyond the already inherently intricate interactions between them.

This complexity of role-playing and creative design has necessitated the development in this project of various methodological reference tools. To date, this has entailed the analytical development of multiple design briefs that analyse and make a compendium of each of the primary creative roles, intended creative goals and their underpinning theoretical rationale. As well as discovering innovative ways to draw on different aspects of personal creative and performance skill sets, the development of these tools has brought about increased harmony within the performance of multiple roles, as well as providing clear and concise guidelines for the execution of sound creative writing and musical composition to follow.

Where to Begin(?): The Libretto, and the Libretto Design Brief

Michael Halliwell's statement, "in any investigation into the nature of opera, it remains generally accepted that the verbal text is the starting point for the musical development,"[4] seemed to support the decision to write the libretto first. However, the ferocity of the text versus music debate is perhaps never greater than where opera is concerned. Further reading and critical commentary, including Edward T. Cone's definition of opera as "a record of the varying resolutions of the conflict between the demands of the music for self-fulfilment and the needs of the text for projection and amplification"[5] called the process into question, triggering a reflective journey of questioning for the research project. What *really* comes first: music or text, story or general shape, or dialogue? Is the process simultaneous? Should these roles be isolated from each other for clarity? What implications do music present to text, and vice versa?

In the hybrid organism of opera, real difficulty lies in the isolation of components heavily reliant on each other for artistic clarity and success, or as Gian Carlo Menotti points out: "to read and judge a libretto without its musical setting is unfair both to the

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[4] Michael Halliwell, *Opera and the Novel: The Case of Henry James* (New York: Rodopi, 2005), 7.

[5] Edward T. Cone, *The Composer's Voice* (Berkeley: University of California Press, 1974), 44.

librettist and the composer."[6] Sandra Corse probes a little deeper, noting that "the characteristics by which language achieves its effects—contrast, repetition, symmetry, balance . . . are also the characteristics whereby musical structures are built." She also observes that "the composer reinvents, in a different medium, the ambiguity and multiple relationships of literary texts."[7]

Textual draft processes were ongoing and would inevitably be influenced by the ever-present musical realisation processes of the composition side of my brain. Less linear than the initial '*text first!*' approach, the necessity to move the project forward creatively seemed to re-arrive at this textual point naturally. However, it became evident as reading progressed that there was a scarcity of scholarly literature regarding libretto-writing method,[8] or indeed of literature treating the libretto as an independent literary form. *The New Grove Dictionary of Music and Musicians* provides a possible explanation:

> The study of librettos was for a long time neglected by historians of opera and oratorio, and it has generally been taken for granted that the vast majority of them are as literature beyond contempt.[9]

Indeed, as Arthur Groos confirms, "libretto bashing has a distinguished tradition in the blood sport of opera,"[10] as he recounts the deleterious consequences, from the beginning of opera, for serious poets and writers involved in the writing of librettos. Sandra Corse adds that libretti lie "at the edge of literature," that they "emphasize the communicative function of language rather than its aesthetic function."[11] Nor could much be found in the assumed closest relative genre of Broadway musical theatre. Only one book was unearthed that addressed the creation of a piece of musical theatre from the writer's perspective, also discussing the musical development in any depth, and this was Cohen and Rosenhaus's *Writing Musical Theater*.[12] In the introduction the authors lament this lack of documented knowledge:

> When we began to write our own shows, we often wished we could find a book that analysed musical theater from the writer's point of view, a comprehensive

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[6] Gian Carlo Menotti, cited in Ulrich Weisstein, "The Libretto as Literature," in *Word and Music Studies: Selected Essays on Opera*, ed. Walter Bernhart (New York: Rodopi, 2006), 3.

[7] Sandra Corse, *Opera and the Uses of Language: Mozart, Verdi, and Britten* (Rutherford: Fairleigh Dickinson University Press, 1987), 14.

[8] By method in this context, I mean a step-wise *approach* to planning and developing the text of the libretto.

[9] *The New Grove Dictionary of Music and Musicians*, cited in Arthur Groos and Roger Parker, *Reading Opera* (Princeton: Princeton University Press, 2014), 1.

[10] Ibid., 2.

[11] Corse, *Opera and the Uses of Language: Mozart, Verdi, and Britten*, 14.

[12] Allen Laurence Cohen and Steven L Rosenhaus, *Writing Musical Theater* (New York: Palgrave MacMillan, 2006).

guide that presented the rules of the craft in a systematic and thorough manner. More recently when we started to teach musical theater writing at the college level, we were still unable to find a suitable book for our students.[13]

As much as this manual seemed to promise at the outset, closer inspection revealed that the structure of a musical, as advocated by Cohen and Rosenhaus, was quite a different process from opera, requiring three defined roles in the creative writing process: the librettist (more akin to project manager, overseeing story design, stage directions and dialogue); the lyricist (the more poetic task of the creative writing of song lyrics); and the songwriter. Also revealed was the common use of an additional composer who writes the connecting music and orchestral interludes, also fulfilling orchestration duties. This musical theatre model was helpful but not overly precise and lacking a real focus on the techniques of operatic libretto writing and score planning. It only went so far in providing real solutions to the processes of operatic creative writing and planning.

The additional requirement of creating a work for children that would reflect the appeal, relevance and comprehension aspects mentioned earlier, led me to formulate my own design brief as a reference tool, and to utilise my knowledge of existing repertoire and style to guide me in the first draft process. This was achieved by combining many different areas of additional literature surrounding critical commentary and analysis of style and aesthetic, complemented by writings and interviews from composers and musicologists on the operatic creative process to aid direction. For example, composer Arthur Bliss notes that "even with good diction singers only succeed in making about seventy-five per cent of the text intelligible . . . the music must take charge from the first bar to the last."[14] Paul Robinson pushes this point further when he discusses the "four great operatic enemies of intelligibility . . . [that] interfere with our ability to decipher the words."[15] He calls attention to the dilution of textual impact when performers render text unintelligible. Michael Halliwell presents another related argument that the orchestra's "omniscient narrator" is "capable of providing the audience with information about and insight into a character that is not possible in drama."[16]

All of these statements present implications not just to librettists, but also to composers in their large- to-small-scale creative decisions. Initial instincts were to strive to achieve quality in both language *and* music, echoed in Paul Robinson's statement: "in

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[13] Ibid., xi.

[14] Arthur Bliss, cited in Ulrich Weisstein, *The Essence of Opera* (New York: Free Press of Glencoe, 1964), 363-64.

[15] Paul Robinson, "A Deconstructive Postscript: Reading Libretti and Misreading Opera," in *Reading Opera*, ed. Arthur Groos and Roger Parker (Princeton: Princeton University Press, 1988), 328-46.

[16] Michael Halliwell, "Fly Away Peter: When Australian Literature Goes to the Opera," *Arts and Culture Review* (2015), http://theconversation.com/fly-away-peter-when-australian-literature-goes-to-the-opera-38159.

the best operas of course, music and language achieve a degree of unity that makes fatuous any mechanical separation of verbal and musical significances."[17] Similar sentiments in essays on the subject by Richard Strauss [18] and, amongst other writings, *Opera and Drama* by Richard Wagner,[19] are notable on this point. A survey of similar musings by composers and their librettists (both together and independently) was illuminating. Mozart and Da Ponte,[20] Strauss and Hoffmansthal,[21] W.H. Auden,[22] Stravinsky and Ramuz,[23] E.T.A. Hoffman,[24] Beaumarchais,[25] Sir Arthur Bliss,[26] Giuseppe Verdi,[27] Jonathan Dove,[28] and Britten and Crozier[29] consistently reiterate that the text is never drastically more developed than that of the musical score in the overall creative development. These musings also seemed to suggest the resistance of reliance on text intelligibility for the success of the opera. The music was to play an enormous role both aesthetically and in narrative capacity. Virgil Thomson confirms this when he advocates librettos that contain "poetic language. Not pompous language, not florid, not overloaded with imagery . . . nobly plain, if possible compact."[30]

The libretto design brief (Figure 1) developed further with the exploration of literature encompassing developmental psychology relating to children's "story liking" and perception,[31] as well as literature regarding musical comprehension relating to children and their exposure to various contemporary vocal[32] and classical vocal and instrumental music styles.[33] The children's opera genre is rather underdeveloped and

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[17] Paul A. Robinson, *Opera & Ideas: From Mozart to Strauss* (New York: Cornell University Press, 1986), 2.

[18] Weisstein, *The Essence of Opera*, 294-99.

[19] Richard Wagner, *Opera and Drama*, trans. William Ashton Ellis (London: University of Nebraska Press, 1995). The original book was published in 1869 in German; utilised for this paper was the 1995 edition/translation in English.

[20] Weisstein, *The Essence of Opera*, 128-37.

[21] Ibid., 294-313.

[22] Ibid., 354-60.

[23] Ibid., 272-82.

[24] Ibid., 166-79.

[25] Ibid., 139-52.

[26] Ibid., 362-66.

[27] Ibid., 238-42.

[28] Theresa Schmitz, "The Discovery of Children as a Worthy Audience for Operas," eds Mark Macleod and Wendy C. Turgeon Lucy Hopkins, *Negotiating Childhoods* (Oxford: Inter-Disciplinary Press, 2010), 215-17.

[29] Benjamin Britten and Paul Francis Kildea, *On Music* (Oxford: Oxford University Press, 2003), 67-74.

[30] Virgil Thomson, *Music with Words: A Composer's View* (New Haven: Yale University Press, 1989), 66.

[31] Paul E. Jose and William F. Brewer, "Development of Story Liking: Character Identification, Suspense, and Outcome Resolution," *Developmental Psychology* 20, no. 5 (1984).

[32] More specifically: pop, jazz, folk and Broadway musical theatre vocal styles.

[33] More specifically: opera, operetta or art song/Lied styles of singing and large symphonic and chamber orchestral works.

underinvested in. Most professional companies (certainly in Australia) rely heavily on abridgements or adaptations of adult works such as Rossini's *La Cenerentola*[34] (Cinderella) or Mozart's *Die Zauberflöte*[35] (The Magic Flute) to form the bulk of their children's opera repertoire offerings. There are exceptions to this, of course. More recent works in the genre have seen an increase in commissions of opera for children (or families), for example Jonathan Dove's *The Adventures of Pinnocchio,*[36] Rachel Portman's *The Little Prince*[37] and Richard Ayres' *Peter Pan*[38] (all in the last 10–12 years and all for houses in the United Kingdom and Germany). There are more historical examples of quality compositions in the genre. Benjamin Britten's *The Little Sweep,*[39] Gian Carlo Menotti's *Amahl and the Night Visitors*[40] and Seymour Barab's *Little Red Riding Hood*[41] are three notable examples; there is, however, no creditable catalogue of works in the genre (a scant Wikipedia article containing approximately twenty opera titles cannot be seen as a reliable academic source). With some interviews to draw upon from Benjamin Britten's[42] work in the field, but with very little other documentation, it became necessary to look to related genres that might provide helpful examples, both dramatic and musical.

Theatre for Young Audience (TYA) literature and research was of interest, having a research history that already integrated developmental psychology literature—in particular the extensive work of Jeanne Klein.[43] Other sources such as Sinclair's *Six Lenses for Interpreting Theatre for Young Australian Audiences* [44] and Wood's *Theatre for*

[34] Gioachino Rossini, *La Cenerentola* (*dramma giocoso* in two acts), libretto by Jacopo Ferretti (1816).

[35] Wolfgang Amadeus Mozart, *Die Zauberflöte* (*singspiel* in two acts), libretto by Emanuel Schikaneder (1791).

[36] Jonathan Dove, *The Adventures of Pinnocchio, (opera for children* in two acts), libretto by Alasdair Middleton (2007).

[37] Rachel Portman, *The Little Prince* (*opera for children* in two acts), libretto by Nicholas Wright (2003).

[38] Richard Ayres, *Peter Pan* (*opera for children* in two acts), libretto by Lavinia Greenlaw (2015).

[39] Benjamin Britten, *The Little Sweep* (*opera for children* in three scenes) libretto by Eric Crozier (1949).

[40] Gian Carlo Menotti, *Amahl and the Night Visitors* (*opera for children* in one act), libretto by Gian Carlo Menotti (1951).

[41] Seymour Barab, *Little Red Riding Hood* (*opera for children* in one act) libretto by Seymour Barab (1966).

[42] Britten and Kildea, *On Music*.

[43] Klein, "Applying Research to Artistic Practices: This Is Not a Pipe Dream;" *Youth Theatre Jo*urnal 7, no. 1 (1993); "Performance Factors That Inhibit Empathy and Trigger Distancing: Crying to Laugh," *Youth Theatre Journal* 9, no. 1 (1995); "Reading Empathy in a Québécois Play: Crying to Laugh," *Theatre Research in Canada/Recherches théâtrales au Canada* 15, no. 1 (1994); "Mapping Aesthetic Development and Epistemological Understanding," *Journal of Dramatic Theory and Criticism* 24, no. 1 (2009); "From Children's Perspectives: A Model of Aesthetic Processing in Theatre," *The Journal of Aesthetic Education* 39, no. 4 (2005).

[44] Nicola Sinclair, "From Revelry to Alchemy: Six Lenses for Interpreting Theatre for Young Australian Audiences," (PhD diss., University of Technology, Sydney, 2013).

Children[45] contained a wealth of practical experience invested in related genres (children's theatre and the kitschier pantomime genre) to complement the applied theory approach. Although Klein has called into question some of Wood's less academic and "arguable assumptions"[46] in *Theatre for Children*, it is interesting to note that Wood's opinions about "what children en masse respond to"[47] correlate clearly, and quite often, with Klein's objectives and opinions.

At all stages, and as a continuing process, literature was categorized and colour-coded for ease of cross-referencing within the literature, for example with regard to characterization, the need for clarity of themes, simplicity of storyline, and realism in language.

Style/form/conventions	TYA literature	Libretto Characteristics	Story liking/social psychology
I choose NUMBER OPERA • Clarity of sections • Short duration of sections easier to grasp, similarities of structure to more exposed styles like music theatre/drama/Disney Closed musical numbers After the style of Britten (Herring), Stravinsky (Rake's), Verdi (Rigoletto) with bridge passages , orchestral interludes, to form a coherent musical whole • Aria, ensemble, recitative intermezzi • No overture at present • No spoken word dialogue • No chorus -Functionally tonal – neo classicism (Stravinsky, Britten) with -compositional influences of whole tone/modality -Recitative with Harpsichord/keyboard -Possible audience songs a la Little Sweep? Instrumental/vocal correlation and representation	(Klein & Schonmann, 2009) **Essential criteria** 1 Comprehensibility 2 Involving dramatic action 3 Humour – not too sad or scary 4 Informative child protagonist 5 Social realism, credibility (Klein, 2005) **Commonly held misconceptions about children and drama** **1 Balance** – age variable factor Before age 8 need explicit dialogue and images (p.46) **2 Attention** "The process of attention is guided by individual decisions to explore and search for information" /meaning Not too familiar, not too unfamiliar (concepts) to prevent boredom or baffling **3 Story schemas drive preferences for linear** narratives as children search for cause and effect actions within plot structures **4 Fast pace** – not too fast paced "tempos slow enough to make	(Weisstein, 2006) Libretto as literature **Brevity, simplicity, comprehensibility** • Music lacks the speed and verbal dexterity of language, fewer words are needed in opera than in a play of comparable length….necessitating a simplification of both action and characters • Emotions expressed in closed musical numbers occupying a large segment of the time normally reserved for the dramatic events (Schmidgall, 1977) Away from passages of complex discourse (Halliwell, 2005) Narrative role of the orchestra • Characterisation • Action	**Essential criteria children's literature** (Temple, Martinez, & Yokota, 2010) **1child protagonist** of similar age to the intended audience, **2 an issue that concerns children** **3** "straightforward storyline, with a linear and limited time sequence in a confined setting** **4 language that is concrete and vivid and not overly complex"** (2010, p. 9). Qualities of *outstanding* literature include books that expand awareness and "broaden children's understanding of the world and their capacity for empathy"(Temple et al., 2010, p. 10). (Hoffner, 1996) 'wishful identification' increases the impact and potency of the character and drama. Wishful identification is an extension of social identification, indicating a person's natural tendency to emulate desirable characteristics of a media personality, character or

Figure 1: Libretto design brief sample page with colour coding correlations for cross-referencing

Libretto Design Brief in Action

One of the first demonstrations of the usefulness of the design brief related to the selection of a play text versus a story text. The design brief literature led me back to many libretto-specific characteristics, prompting gravitation toward the adaptation of a story text. For example, Gary Schmidgall asserts that a librettist "will naturally gravitate away from passages of discursive complexity and toward those that issue in psychological or

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[45] David Wood and Janet Grant, *Theatre for Children: A Guide to Writing, Adapting, Directing, and Acti*ng (Chicago: Ivan R. Dee, 1999).

[46] Jeanne Klein, "Interviewing Children after Performances," in *Theatre for Young Audiences: A Critical Handbook*, eds T. Maguire and K. Schuitema (Stoke on Trent: Trentham Books 2012), 2.

[47] Wood and Grant, *Theatre for Children*, 15-61.

physical action."[48] Similarly, Weisstein comments that "Music lacks the speed and verbal dexterity of language, fewer words are needed in opera than in a play of comparable length."[49] Weisstein's comment reaffirmed the stylistic concerns I had about choosing or adapting from a more complex theatre source. When reflecting on a compilation and analysis of twentieth and twenty–first century operas (including those written specifically for children), I noted the trend to adapt from novels, stories, poems, paintings or picture books with strong visual narratives.

The short story, *The Selfish Giant,* by Oscar Wilde[50] was examined. On first viewing, this story correlated very promisingly with literature pertinent to components already investigated that reflected on the most unifying elements of children's successful[51] entertainment (child protagonists, straightforward linear timeline, elements of humour and fantasy are a few examples). It also possessed what I believed to have musical possibilities. 'Musical possibility' is a difficult concept to articulate fully and I use it to refer to how well a text or story presents itself to a composer/librettist for what Cohen and Rosenhaus refer to as "musicalization."[52] Cohen and Rosenhaus discuss this selection of idea for musical realisation in *Writing Musical Theater* when they state: "Stories that contain and evoke strong emotion, serious or humorous, are more suitable for musicalization than those that do not." They go on to note that "emotions must be strong enough that it feels appropriate for the characters to sing."[53] Prolific librettist W.H. Auden reflects: "No opera plot can be sensible, because people do not sing when they are feeling sensible."[54] The emotive nature of the text, coupled with the presence of magical characters—a giant, the elements anthropomorphised, a magical garden—suggested to me very musical possibilities relating to voice types (a bass baritone perhaps for the giant), the possibility of vocal virtuosity (coloratura) and experimental vocalisations for character effects, to name a few.

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[48] Gary Schmidgall, *Literature as Opera* (New York: Oxford University Press, 1977), 15.

[49] Weisstein, "The Libretto as Literature," 9.

[50] Oscar Wilde, "The Selfish Giant," in *The Happy Prince and Other Tales* (New York: Simon and Schuster, 1888).

[51] *Successful* is defined in terms of features common to entertainment models with very high box office/financial success (films and books) and ratings (television) as well as critically acclaimed film and literature titles.

[52] Cohen and Rosenhaus, *Writing Musical Theater*, 18.

[53] Ibid.

[54] Wystan Hugh Auden, "Some Reflections on Music and Opera," in *The Complete Works of W. H. Auden, Volume 3: Prose: 1949-1955* (Princeton: Princeton University Press, 1952).

Plot Development and Musical Form

Literature cited in the design brief assisted the formulation of a plot and scenes schema, as well as the chosen *number opera* [55] components such as aria, ensemble, and orchestral interlude for example. This was greatly assisted by the development of a structured 'map' (Figure 2a), made in consultation with my doctoral supervisor, Dr Lyndall Adams. I chose the *number opera* format due to its relationship to more modern versions of musical theatre that are presented to children today, for example in Disney movies such as *Frozen*,[56] *The Lion King*[57] and *Aladdin*.[58]

The Selfish Giant Oscar Wilde (1888)
Story breakdown

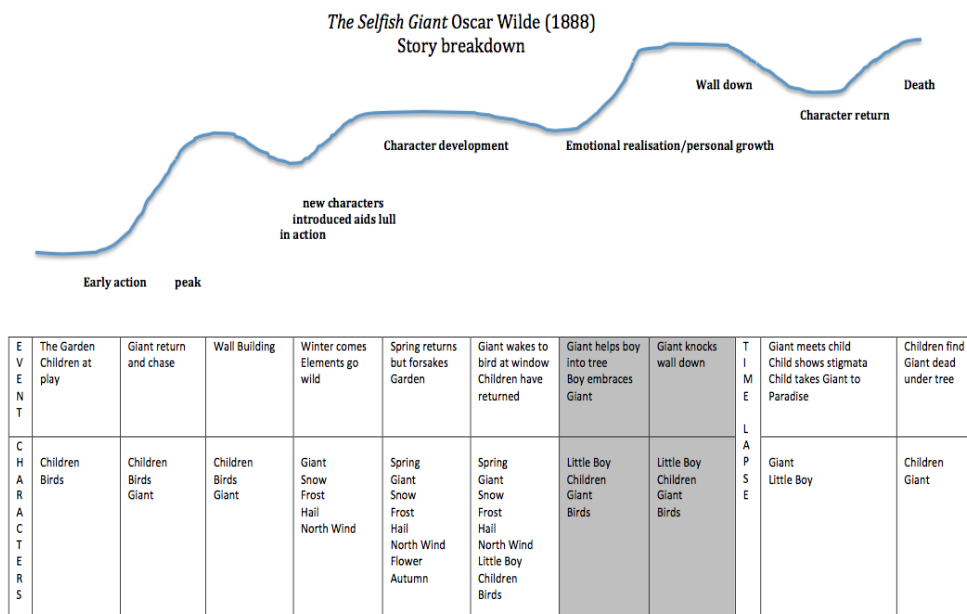| EVENT	The Garden Children at play	Giant return and chase	Wall Building	Winter comes Elements go wild	Spring returns but forsakes Garden	Giant wakes to bird at window Children have returned	Giant helps boy into tree Boy embraces Giant	Giant knocks wall down	TIME LAPSE	Giant meets child Child shows stigmata Child takes Giant to Paradise	Children find Giant dead under tree
CHARACTERS	Children Birds	Children Birds Giant	Children Birds Giant	Giant Snow Frost Hail North Wind	Spring Giant Snow Frost Hail North Wind Flower Autumn	Spring Giant Snow Frost Hail North Wind Little Boy Children Birds	Little Boy Children Giant Birds	Little Boy Children Giant Birds		Giant Little Boy	Children Giant

Figure 2a: Original story map showing two peaks in story arc

As the design brief shows, these film examples are not cited randomly, but rather are revealed to be some of the most successful (highest grossing and critically acclaimed) films for children of all time. Moreover, the musical focus is on the vocal line, akin to Broadway musical theatre in its stylistic origin. As Broadway musical theatre is the closest in style to opera, and is already a style children are exposed to through (primarily) Disney

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[55] Number opera can be defined in very general terms as an opera in which the sections (including ensembles, arias, recitatives and/or dialogue) are clearly separated from each other.

[56] *Frozen*, directed by Chris Buck (Burbank, CA: Walt Disney Home Entertainment, 2014), DVD.

[57] *The Lion King*, directed by Roger Allers and Rob Minkoff (Burbank, CA : Walt Disney Home Entertainment, 2011), DVD.

[58] *Aladdin*, directed by Ron Clements and John Musker (Burbank, CA: Walt Disney Studios Home Entertainment, 2013), DVD.

models, it seemed to be a natural choice to scaffold[59] children's existing understandings or exposure from this area into the more formal and arguably more alien world of the operatic style and aesthetic.

The number opera format supports set pieces of shorter duration, in opposition to the continuous arioso format championed in the operas of, for example, Richard Wagner or Richard Strauss. In terms of narrative development, I compiled a list of unifying characterisation elements common to many films on the broader list. Further development of the storyboard map (Figure 2b) was made with an analysis of essential plot points from the original, juxtaposed with my alternate, broad story plan, which emulated the Wilde's story arc. High points in the drama were identified, along with points where the adaptation might be in danger of losing direction, and points where more in-depth characterization might be needed in an operatic adaptation/transcription process. Later on I discovered that this story arc approach was also advocated in Cohen and Rosenhaus's text, a very encouraging correlation to uncover!
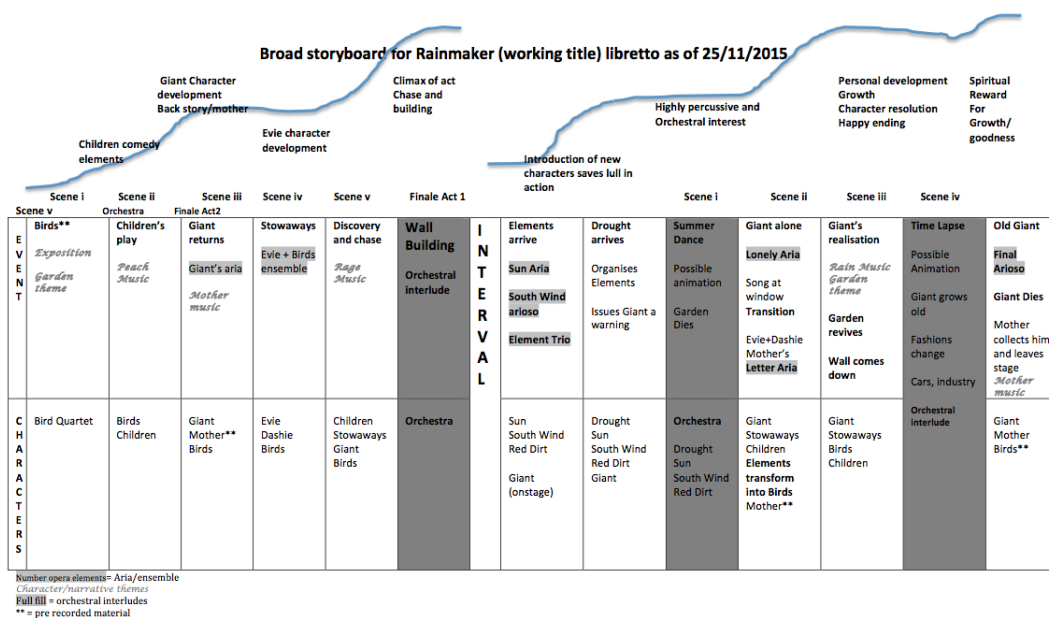
Broad storyboard for Rainmaker (working title) libretto as of 25/11/2015

Annotations along story arc: Children comedy elements · Giant Character development / Back story/mother · Evie character development · Climax of act / Chase and building · Introduction of new characters saves lull in action · Highly percussive and Orchestral interest · Personal development Growth / Character resolution / Happy ending · Spiritual Reward For Growth/ goodness

	Scene i (Scene v)	Scene ii (Orchestra)	Scene iii (Finale Act2)	Scene iv	Scene v	Finale Act 1	I N T E R V A L	Scene i	Scene ii	Scene iii	Scene iv
EVENT	Birds** / *Exposition* / *Garden theme*	Children's play / *Peach Music*	Giant returns / **Giant's aria** / *Mother music*	Stowaways / Evie + Birds ensemble	Discovery and chase / *Raga Music*	**Wall Building** / Orchestral interlude		Elements arrive / **Sun Aria** / **South Wind arioso** / **Element Trio**	Drought arrives / Organises Elements / Issues Giant a warning	Summer Dance / Possible animation / Garden Dies	Giant alone / **Lonely Aria** / Song at window / **Transition** / Evie+Dashie Mother's **Letter Aria**	Giant's realisation / *Rain Music Garden theme* / Garden revives / **Wall comes down**	Time Lapse / Possible Animation / Giant grows old / Fashions change / Cars, industry	Old Giant / **Final Arioso** / Giant Dies / Mother collects him and leaves stage / *Mother music*
CHARACTERS	Bird Quartet	Birds Children	Giant Mother** Birds	Evie Dashie Birds	Children Stowaways Giant Birds	Orchestra		Sun South Wind Red Dirt / Giant (onstage)	Drought Sun South Wind Red Dirt Giant	Orchestra	Giant Stowaways Children **Elements transform into Birds** Mother**	Giant Stowaways Birds Children	Orchestral interlude	Giant Mother Birds**

Number opera elements= Aria/ensemble
Character/narrative themes
Full fill = orchestral interludes
** = pre recorded material

Figure 2b: Rainmaker storyboard map prior to screenwriting guides application attempting to emulate story arc of Wilde's (see Figure 2a)

I certainly felt that my design brief included the essential components to make up an engaging libretto, although after finishing a first draft I felt rather clumsy about my general method. Missing from my design brief were clear and concise guidelines to the

[59] Jerome Seymour Bruner, *Toward a Theory of Instruction* (London: Harvard University Press, 1966). The concept of scaffolding is another conceptual underpinning of the research project and finds its origin in Jerome Bruner's various works in cognitive psychology and education.

creative writing process of a larger scale theatrical work. Certainly, I had not found anything in the literature to date that amounted to a libretto-writing instruction manual, with the exception of the Cohen and Rosenhaus text, which as mentioned earlier, was not ideal. After discussing these issues and receiving feedback from a professional theatre and opera director on the first draft libretto, the recommendation of two screenwriting books provided some excellent insights into the general story structure and characterisation that reiterated the director's professional advice and mandate to visualise the scene like a film unfolding (complete with soundtrack) and to take out as much extraneous text as possible. She mentioned the phrase "show . . . don't tell", straight from the pages of Robert McKee's book, *Story: style, structure, substance, and the principles of screenwriting.*[60]

Robert McKee writes: "The wise writer puts off the writing of dialogue for as long as possible because the *premature writing of dialogue chokes creativity . . .* writing dialogue in search of scenes, writing scenes in search of story . . . is the least creative method."[61] He prescribes the formation of firstly, a *step-outline* (short descriptive statements plotted on index cards) and secondly, the treatment process. Treatment entails the "moment by moment of action, underlaid with a full subtext of the conscious and unconscious thoughts and feelings of all characters."[62] He recommends that only from this very defined point should the writing of dialogue then proceed. These principles, as well as similar ones including the formulation of a Storyboard[63] and a valuable fifteen-point *Beatsheet* as prescribed by Blake Snyder,[64] have been used to supplement my own storyboard, making allowances for musical characteristics and components particular to opera.[65] This has resulted in a tighter, more minimal work without an interval and with fewer characters. The secondary story arc begins life halfway through the original text and presents a more continuous movement and natural peak in action, rather than two halves performing essentially the same pattern. The additional diagrams (Figures 2c, 2d) created to reflect the screenwriting literature are valuable additions to the design brief, and are assisting further in the libretto drafting process.

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[60] Robert McKee, *Story: Style, Structure, Substance, and the Principles of Screenwriting* (New York: Harper Collins, 1997).

[61] Ibid., 417.

[62] Ibid., 415.

[63] Blake Snyder, *Save the Cat!:The Last Book on Screenwriting You'll Ever Need* (Studio City, CA: Michael Wiese Productions, 2005), 97-117. The Storyboard includes the utilization of a large pin board, which is divided into three acts in four sections (see Figure 2d) on which all of the beats are laid out on index cards with short scene descriptions.

[64] Ibid., 70.

[65] For example the inclusion of set pieces such as an aria, recitative, dialogue, ensemble or orchestral interludes. These things are particular to an operatic work, as opposed to a film from which the literature originates.
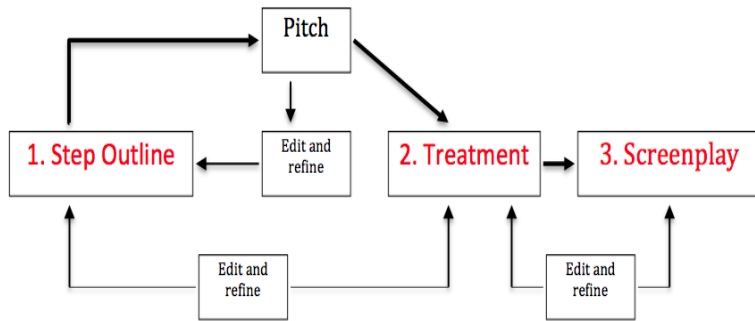
Figure 2c: Screenwriting method model of Robert McKee[66] displaying the influence of David Fenton's double-loop learning models[67], as adapted from the Argyris and Schön 1974[68] original

	Beat	Notes	Page
Act 1	Opening Image	First impression, tone and mood	1
	Theme Stated	A question posed or statement made of thematic premise	5
	Set-Up	Including "6 things that need fixing". Things 'missing' from hero's life. (facilitating call backs and repeated motifs in body of work)	1-10
	Catalyst	Inciting Incident (McKee)	12
	Debate	The pros and cons of participating for the hero. It must ask a question of some kind	12-25
Act 2	Break Into Two	The hero makes a decision to move	25
	B Story	Sub-plot, "gives us a breather", reiterates thematic premise	30
	Fun and Games	"The promise of the premise" Bulk of set pieces (example: a chase scene)	30-55
Act 2	Midpoint	Peak or crash. Stakes are raised	55
	Bad Guys Close In	Forces align against the hero	55-75
	All is Lost	Opposite of midpoint – "whiff of death"	75
	Dark Night of the Soul	Finding a solution, soul searching	75-85
Act 3	Break Into Three	Everything culminates to present a solution. Adding up clues	85
	Finale	Lessons learned are applied	85-110
	Final Image	Opposite of opening image. Proof that change has occurred and it's real.	110

Figure 2d: Table outline of Blake Snyder 'Beatsheet' and summary of beats and process[69]

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[66] McKee, *Story: Style, Structure, Substance, and the Principles of Screenwriting*, 410-17.

[67] David Fenton, "Unstable Acts," in *Live Research: Methods of Practice-Led Inquiry in Performance* (Nerang, QLD: Ladyfinger., 2012), 37.

[68] Chris Argyris and Donald A. Schon, *Theory in Practice: Increasing Professional Effectiveness* (Oxford: Jossey-Bass, 1974), 19.

[69] Snyder, *Save the Cat!:The Last Book on Screenwriting You'll Ever Need*, 67-114.

With a clearer sense of the importance of story design and anatomy over text/dialogue in shaping the drama—"writing from the inside out"[70] as McKee advocates—further note was taken of one of his other frequent statement: "show don't tell."[71] Musical realisation leads inevitably to textual change. What if the story were approached three-dimensionally by placing less emphasis on text and more on the sonic and visual worlds, thus allowing for the storytelling abilities of the score and performers to follow? Perhaps it might provide ideas that could act as catalysts for both text and the intertwined musical score and drama as the next libretto draft was undertaken.

Experiments began with different approaches to the overall creative process, ones that found genesis in my performance experience and vocal abilities. This involved integration of the influence of the action research cycle,[72] adapted action research models,[73] creative web models[74] and a broader influence of ideology particular to the *Six Thinking Hats* of Edward de Bono,[75] as adapted by Hilary Collins.[76]

After discovering a short 1956 interview transcript with Benjamin Britten,[77] which set out his process of planning and compositional idea formation, I reflected on the components of my own process. I noted that my composition process takes place with the voice clearly in mind. It is sung at the piano, refined, harmony is built around the melody line, then refined, and so on. Rather than trying to discount this voice and focus solely on the writing of the libretto, which is admittedly a less experienced field of creative endeavour for me, I decided that approaching the story/drama from a performance perspective could lead to more authentic creative results. It also helped to kick-start the creative processes throughout periods of creative writing paralysis (or "writer's block!").

Some visualisations of this process (Figure 3) were formulated, with attempts to define relationships between four distinct roles, plotted in an iterative circle diagram. I posed three questions. What is the theory relationship (information)? What is the creative relationship (inspiration)? Which elements perform both of these functions? The

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[70] McKee, *Story: Style, Structure, Substance, and the Principles of Screenwriting*, 415-17.

[71] Ibid., 334-35.

[72] Jean McNiff, *Action Research: Principles and Practice* (Abingdon, Oxon: Routledge, 2013), 57, 60-61.

[73] Jane W Davidson, "Practice-Based Music Research: Lessons from a Researcher's Personal History," in *Artistic Practice as Research in Music: Theory, Criticism, Practice*, ed. M. Doğantan-Dack (Abingdon, Oxon: Routledge, 2015), 93-106.

[74] Hazel Smith and Roger T. Dean, *Practice-Led Research, Research-Led Practice in the Creative Arts* (Edinburgh: Edinburgh University Press, 2009), 20.

[75] Edward De Bono, *Six Thinking Hats* (Boston: Little, Brown and Company, 1985).

[76] Hilary Collins, *Creative Research: The Theory and Practice of Research for the Creative Industries* (Lausanne: Ava Publishing, 2010).

[77] Britten and Kildea, *On Music*, 139.

information/inspiration arrows indicate the single or multidirectional flow of these two elements.

The first model takes on the basic action research cycle model,[78] and was influenced by Jane Davidson's adaptation for use by composers.[79] It highlights the relationship between roles, providing clarity of influence, information and responsibility. This model was then expanded into a cyclic web, indicating each role's background of experience and knowledge, and situating the origins of creative ideas together with the formulation of elements (text, music or dramatic concepts)—as in Figure 4. This model displays an influence of the Smith and Dean "Iterative Cyclic Web."[80] This larger scale model was then utilised in the breakdown of individual role responsibilities in the formulation of another design brief, this time for the creative process (Figure 5). Colour codes were again used to identify correlations in literature and concepts, and arrows were added to indicate connections between the various components.
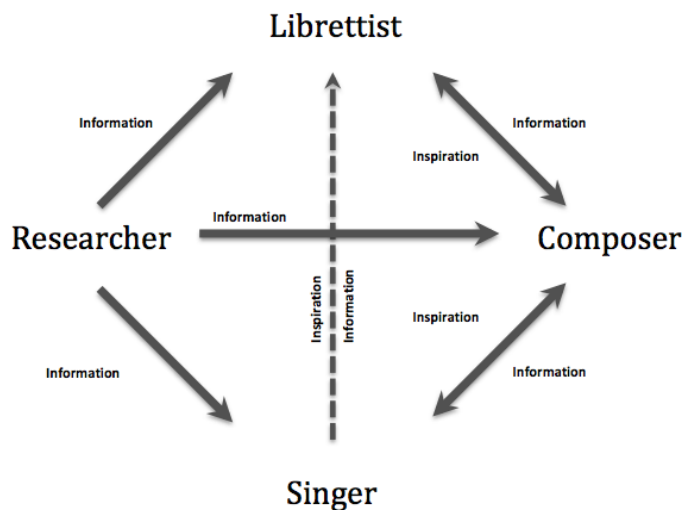
Figure 3: Preliminary conceptualisation diagram of creative process

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[78] Kurt Lewin, "Action Research and Minority Problems," *Journal of social issues* 2, no. 4 (1946): 34-46.

[79] Davidson, "Practice-Based Music Research: Lessons from a Researcher's Personal History," 101.

[80] Smith and Dean, *Practice-Led Research, Research-Led Practice in the Creative Arts*, 20.
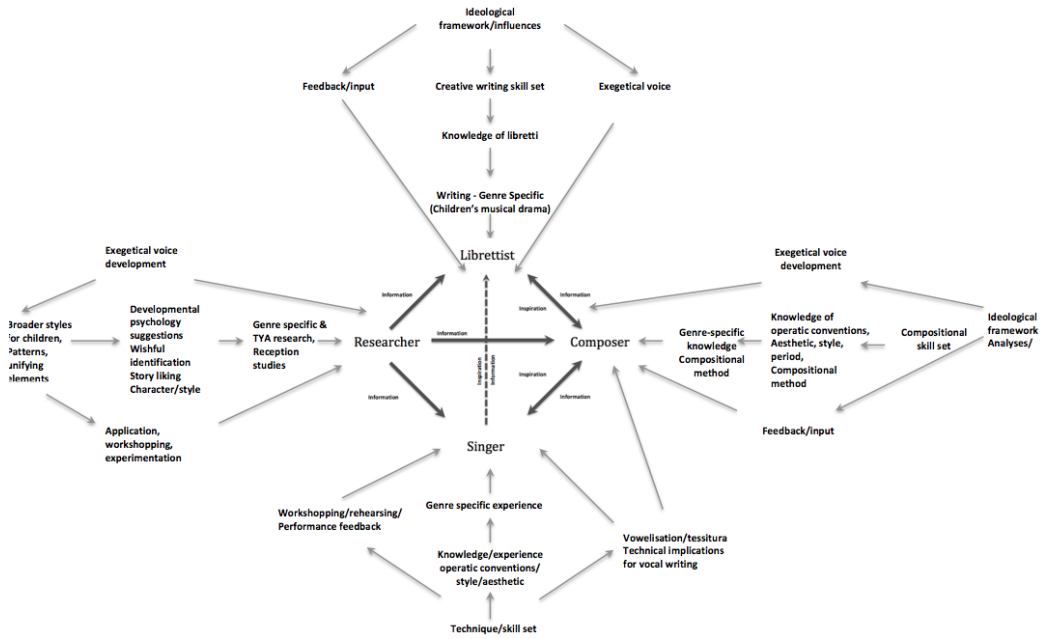
Ideological framework/influences

Feedback/input   Creative writing skill set   Exegetical voice

Knowledge of libretti

Writing - Genre Specific
(Children's musical drama)

Librettist

Exegetical voice development

Broader styles for children, Patterns, unifying elements

Developmental psychology suggestions Wishful identification Story liking Character/style

Genre specific & TYA research, Reception studies

Researcher   Information   Composer

Inspiration   Information

Exegetical voice development

Genre-specific knowledge Compositional method

Knowledge of operatic conventions, Aesthetic, style, period, Compositional method

Compositional skill set

Ideological framework Analyses/

Application, workshopping, experimentation

Information   Inspiration

Feedback/input

Singer

Workshopping/rehearsing/ Performance feedback

Genre specific experience

Knowledge/experience operatic conventions/ style/aesthetic

Vowelisation/tessitura Technical implications for vocal writing

Technique/skill set

Figure 4: Cyclic web

Librettist	Composer	Performer	Research
Text	**Text**	**Text**	**Text**
• Dialogue	• Word setting and clarity	Experienced through score	• Choice of vocabulary
• Monologue	• Technical implications/range/tessitura	• Makes suggestions to the composer regarding technical demands/issues including range, tessitura, vowelisation, virtuosity, phrasing (breathing and support)	• Social realism requirements of essential criteria
• Group scenes/ensemble	• Vowelisation		• Duration
• Vocabulary	• Virtuosity		
Style	**Style**	**Style**	**Style**
• Verse (Rhyming or non)	Poetic forms corresponding with musical motifs	• Makes suggestions to composer from performance experience within different periods	• Choice of style verse/prose
• Prose	• Number opera/da capo styles/contemporary forms with verse can be rhyming)	• Ornamentation styles, use of vibrato or straight tone	• Language choice
• Language choice/vocalisation	• Free verse/prose = through composed		• Clarity and explicitness
			• Makes suggestions to composer regarding valence, tempi, duration, use of recorded audio
Plot/storyline	**Plot/storyline**	**Plot/storyline**	**Plot/storyline**
• Narrative	• Orchestral role in shaping events.	**Not identified**	• Narrative devices
• Nuts and bolts of story action	Evocation of particular psychological states, commenting on action.		• Abstract concepts formulation/delivery
• Stage directions	• Vocal pieces shaping the drama of the text		• Symbolism/interpretation
• Symbolism			
Characterisation	**Characterisation** Role of orchestra in dramatic context	**Characterisation**	**Characterisation**
• Types (adults, children, animals)	• Thought processes	• Vocal proficiency and delivery	• Types (Child protagonist, buddy etc)
• Valence	• Musical motives that identify characters/events/places	• Acting/interpretation of drama	• Wishful identification (Hoffner, 1996)
• Motivation	• Valence	• Makes suggestions to librettist/composer regarding vocal identifier motifs	• Unifying elements in successful models
• Relationships with others		• Voice types	• Relationships with others
			• Developmental implications
			• Valence
Valence (good or bad)	**Valence (good or bad) (happy sad)**	**Valence**	**Valence**
• Vocabulary	• Major/minor tonality/modality	• Performance based outcome	• Story outcomes
• Story outcomes	• Use of percussion, rhythmic motifs		• Just world concepts (Jose & Brewer, 1984; Lerner & Miller, 1978)
• Suspense	• Tempi choice		• Suspense
• Characterisation			
(Dahlhaus, 1989)	(Dahlhaus, 1989) quotes Abert		

Figure 5: Individual roles design brief

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An example of the practical application of this exercise involved beginning the process with my own voice type (the singer role). I developed three non-textual vocalisations/vocal "identifiers" or "calls" (Figure 6). These vocalisations certainly reflect the influence of John Cage's *Aria*[81] and Luciano Berio's *Sequenza III*,[82] both in their use of graphic notation and in the experimental nature of the vocalisation. Oliver Knussen also used concepts like this for the beast characters in the opera *Where the Wild Things Are*,[83] and Kate Bush vocally imitates birdcalls in her *An Endless Sky of Honey*.[84] These are points of interest for further exploration. With three different and interesting characterisations taking place, these vocalizations suggested musical motifs, which I developed further (Figure 7).
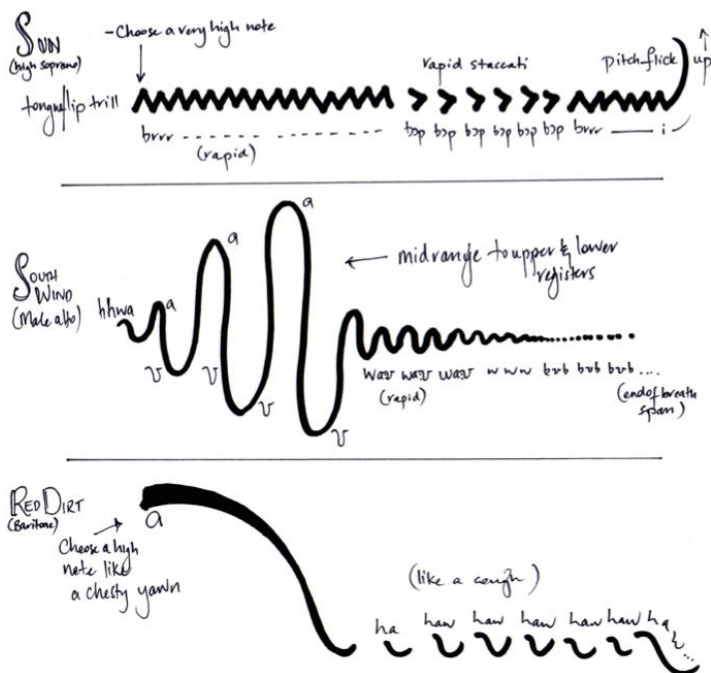
Figure 6. Vocalisation diagrams

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[81] John Cage, *Aria: Solo for Voice*, *Any Range* (New York: Peters, 1958).

[82] Luciano Berio, *Sequenza III por voce femminile* (London: Universal, 1968).

[83] Oliver Knussen, *Where the Wild Things Are* (*fantasy opera* in one act), libretto by Maurice Sendak (1983).

[84] Kate Bush, "An Endless Sky of Honey," from *Aerial*, Fish People FPCD006, 2005, compact disc.
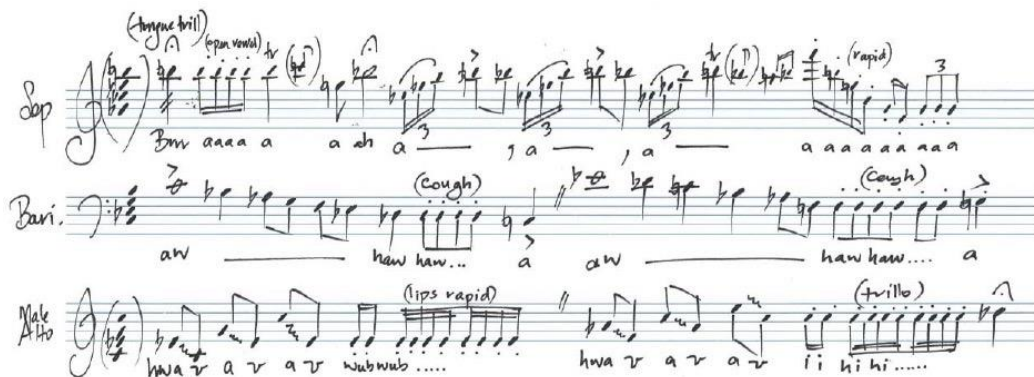
Figure 7. Excerpts of realised vocalisations developed from experiments

Whilst maintaining a sense of otherness in their more formal speech patterns and in their use of character identifier vocalisations, the elements (Red Dirt, Sun, Wind) seemed to become additions to the sonic world of the orchestra, with limited dialogue. This focus on sound, as opposed to text, correlated with the "show don't tell" ideals of the screenwriting literature; the textual role need not always be primary. Allowance for the sonic world of the orchestra and voice was made, or as Sandra Corse explains, the composer reinvents "in a different medium, the ambiguity and multiple relationships of literary texts."[85] I suspect that the reduced focus on textual intelligibility and emphasis may facilitate flexibility in more musical ways. I also suspect that it is perhaps not as big a stretch for a young person to digest the seemingly exaggerated nature of the operatic sound when it is employed for fantastical or descriptive effect.

Results and Future Direction

"In my experience, the shape comes first," says Benjamin Britten.[86] My own experiments provide shape and encourage a three-dimensional approach to the creative process by not adhering to a linear view of the process of operatic composition. A linear model could be seen as a rather narrowly drawn journey from text to music to performer. In my experiments, this journey can start at any one of three creative points, consciously drawing upon an informational source originating in the researcher role (see Figure 4), but also drawing upon the background and embodied knowledge of all four roles (see Figure 5). Additionally, although paying heed to research goals and criteria at first seemed to threaten the flow of creative process, this attention resulted in an analysis of the barest elements of the opera's design, as well as an increased efficiency in performing multiple roles, both creative and research-related. A more cyclic mode of simultaneous

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[85] Corse, *Opera and the Uses of Language: Mozart, Verdi, and Britten*, 14.

[86] Britten and Kildea, *On Music*, 187.

composition, experimentation, analysis and edit-and-refine was suggested and generated, along with the formulation of essential referencing and design briefs in order to maintain control over an extensive array of theory sources.

As this paper ends, the libretto has been developed to the point of the first piano draft. From here the piano score will continue its cycle of refinement, expanding into the orchestration and then to semi-staged performance, when the opera will continue to be refined. The experiments and methodological tools developed to date are not only informing the process of composition, but are also providing a template for the development of a critical, reflective, exegetical voice.

Reading 'Free Music:' Adapting Percy Grainger's 'Free Music' Scores for Live Performance

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Australian composer and pianist Percy Grainger's (1881–1961) vision of 'free music' was inspired by natural sounds. It represented work resulting from a field of research that involved Grainger constructing bespoke machines that created music characterized by continuous pitch without formal rhythm. It also resulted in a number of music scores and sketches that could be seen as some of the earliest examples of twentieth-century graphic notation. This paper discusses the facilitation of the interpretation of two of these scores by the new music ensemble Decibel.[1] The paper argues that digital–score–reading technologies like the one used in this project have the ability to enable a more accurate live performance of the scored *Free Music* works than would have been possible during Grainger's lifetime.

What is Free Music?

In addition to his career as a concert pianist, composer, and conductor, Grainger spent a long period of his career experimenting with the idea of a music characterised by tonal freedom and a different kind of rhythmic form. He claimed to have been pursuing 'free music' since he first heard it in his head as an eleven year old child, overlooking the lake at Albert Park in Melbourne, and considered it to be his only important contribution to music.[2] The waves on the Albert Park lake stimulated the idea of continuous motion, and Grainger described his 'free music' as a music where "a melody is as free to roam through tonal space as a painter is free to draw and paint free lines, free curves, create free shapes."[3] This would create a situation where different "tone strands" were not tied to each other as they are in traditional tonal harmonies, or connected by a rhythmic framework divided into pulse, thus removing what Grainger referred to as "goose-stepping" of pitches and beats.[4]

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[1] Decibel is a new music ensemble based in Perth, Western Australia, and established in 2009.[1] It is a world leader in the integration of acoustic and electronic instruments, pioneering digital and mobile score formats. It has commissioned over fifty new Australian works since its inception, and performed many historic works by Australian composers. The group comprises six performers who are also computer programmers, sound engineers, composers, improvisers, and music typesetters. As part of Decibel's commitment to revitalising historic Australian compositions, the group undertook to perform Percy Grainger's graphically notated *Free Music No.1* and *Free Music No.2* scores.

[2] Percy Grainger, "Free Music," *Leonardo Music Journal* 6 (1996): 109. This is a re–publication of a 1938 document housed in the Grainger Museum, University of Melbourne.

[3] Teresa Balough, ed., *A Musical Genius from Australia: Selected Writing by and About Percy Grainger* (Nedlands, W.A.; CIRCME, School of Music, 1982), 14

[4] Grainger, "Free Music," 109.

Grainger came to believe that his 'free music' ideas were too difficult to be performed with live musicians, and focused most of his efforts on machines that would create the music. Excellent examples of recordings of these machines exist, such as those included in the valuable *Artefacts of Australian Experimental Music: 1930–1973* CD series.[5] The only record of a live performance of *Free Music No.1* was the première, in 1935, when the work was performed by a string quartet. This was the last of a twelve-part transmission produced by the Australian Broadcasting Commission in Melbourne entitled "A Common Sense View of All Music."[6] There remains no commentary from Grainger on this performance, and the work was transposed for theremins by the composer a year later. *Free Music No. 2* and *Beatless Music,* the only other two scored 'free music' works, followed in 1937. It is likely that Grainger met Lev Termen, the inventor of the theremin, soon after the Russian arrived in the USA in 1927, where he began producing the instrument.[7] It has been difficult to ascertain when the theremin became available in Australia and even though Grainger arranged the work for theremins in 1936, there is no record of a theremin performance of any of the 'free music' pieces during his lifetime, either in Australia or anywhere else. Whilst bemoaning that "too long has music been subject to the limitations of the human hand, and subject to the interfering interpretation of a middle-man: the performer," Grainger also described the theremin as "the most perfect tonal instrument I know.[8] From 1938 onwards, Grainger scored no other 'free music' works, instead dedicating his time to developing (in conjunction with American physicist Burnett Cross) prototype composing machines to aid him in the creation of 'free music.'

Scoring Free Music

The original scores for the *Free Music No. 1* and *Free Music No. 2* works are lost, but old Photostat copies remain in the Grainger Museum at the University of Melbourne, Australia. They feature hand drawings on large format graph paper where the horizontal axis is used to indicate time, reading from left to right. Pitch is indicated on the vertical axis, each graph square representing a semitone step with the lowest note being A sharp below middle C. The scores have two parts—the pitch information at the top, and additional lines to indicate the dynamic information below. Grainger names the dynamics "sound strengths," which range across *ppp, pp, p mf, f, ff, and fff.* The score is read by following the line as it slides between the semitones, while simultaneously reading the

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[5] *Artefacts of Australian Experimental Music 1930-1973*, Shame File Music SHAM 050, 2007, compact disc.

[6] Larry Sitsky, *Music of the Twentieth Century Avant Garde: A Biocritical Sourcebook* (London: Greenwood 2002), 180.

[7] Albert Glinsky, *Theremin: Ether Music and Espionage* (Urbana: University of Illinois Press, 2000), 127, 200.

[8] Grainger, "Free Music," 109.

dynamics outlined in the lower part of the score. These dynamics are drawn in a similar fashion to the pitches. Figure 1 shows a copy of pages 1 and 10 of a reproduction of the first and last pages of the *Free Music No. 2* score held in the Grainger Museum.
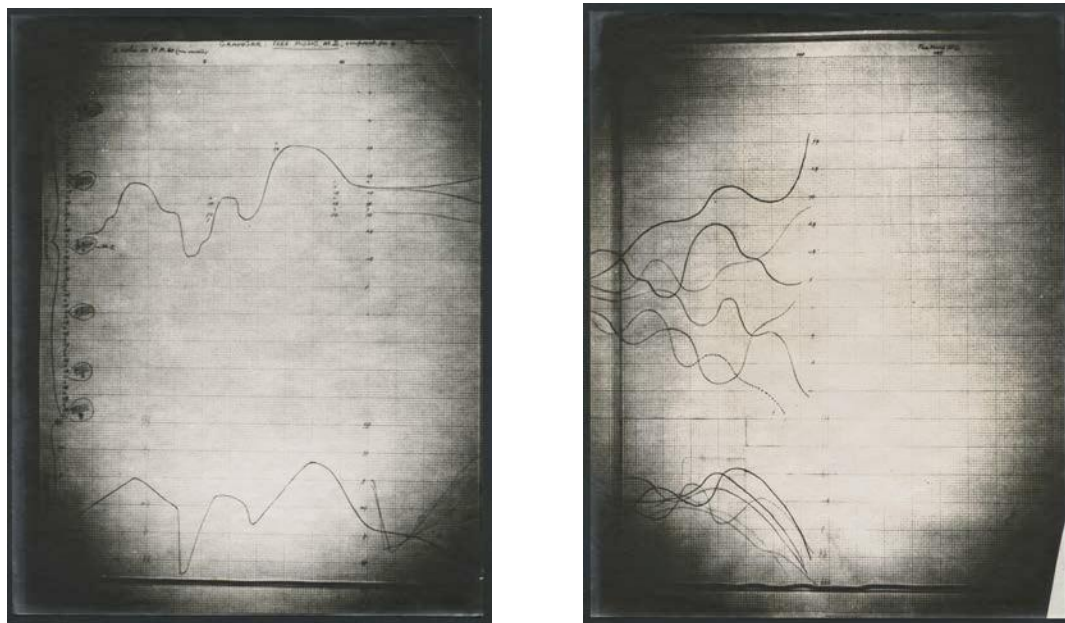

Figure 1. Page 1 and page 10 of *Free Music No. 2,* **Photostat copies held in the Grainger Museum, Melbourne (used with permission)**

In *Free Music No.1*, there are twenty-seven numbered, parallel vertical lines drawn over the graph paper, used to measure tempo. Each number represents one of fifty beats per minute, as shown in Figure 2, which is sourced from a typeset edition of *Free Music No. 1* published in Jeff Pressing's book *Compositions for Improvisers: An Australian Perspective*.[9] Here the tempo is described as "24 lines = mm50," referring to the subdivision of the graph paper squares of around one inch of measurement per metronomic beat. Grainger's original copy of *Free Music No. 1* does not indicate a metronomic measure as such, so it seems Pressing used *Free Music No.2* as a guide to the tempo marking. This could be because the original hand-drawn copy of *Free Music No. 2* includes a precise indication on the first page that states: "2 inches = 60 mm (one second)." This is counted out over 145 divisions, as can be seen in Figure 1. We can only assume that the copies are made to scale, so one "graph paper box" (defined with bold lines) equates to one inch. However, using this system of calculation, *Free Music No. 2* is only seventy-five seconds long, and *Free Music No.1*, is even shorter.

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[9] Jeff Pressing, *Compositions for Improvisers: An Australian Perspective* (Melbourne: La Trobe University Press, 1994), 33.
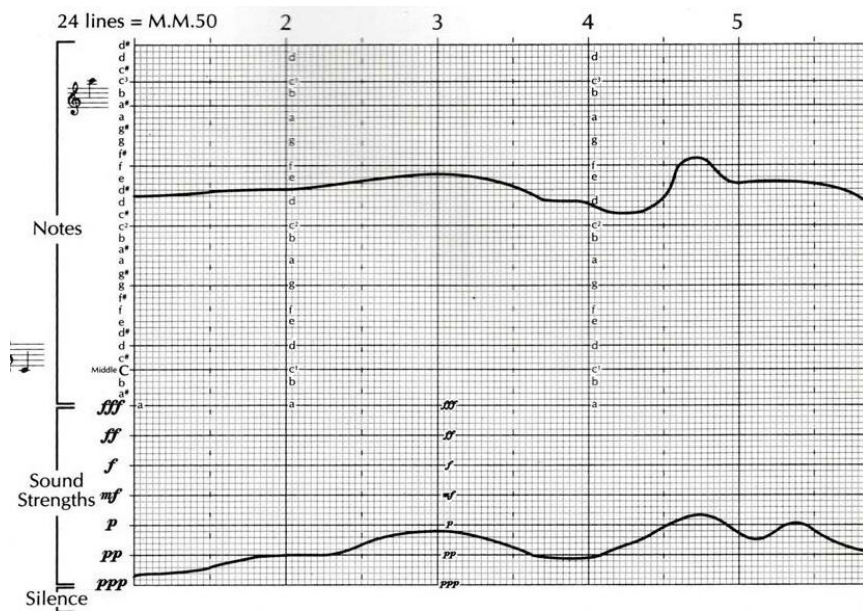
Figure 2. The first block of *Free Music No. 1*[10]

In Pressing's edition of *Free Music No. 1*, each of the four theremin parts is indicated with a different kind of line—clean; dashed into large segments; dashed into smaller segments; and the fourth a mix of small and large dashed segments, as outlined below. This method of delineation was perhaps a result of the requirement for black and white printing.

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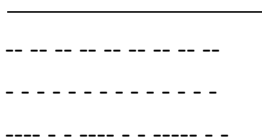
The original copy of *Free Music No.1* in Grainger's hand does not have this differential system; the hand drawn lines are almost all connected. A close examination of the copies suggests that, due to the different shades of the lines, they may have been in colour. Grainger has confirmed this in his article "Free Music" of 1938, stating that "each voice (both on the pitch-staves and on the song-strength staves) is written in its own specially coloured ink."[11] This in itself was indeed a forward-thinking development in music notation at the time, as music notation had been limited to black and white largely

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[10] Ibid.

[11] Grainger, "Free Music," 109.

as a result of the costs of publishing in colour, a luxury not available to Pressing's edition.[12]

Whilst Grainger's scores are made on individual pages of graph paper, it is clear that they are meant to be joined together in order to preserve the continuum of sound he sought. The score for *Free Music No. 1* is spread over five blocks on three pages in the Pressing edition, making a coordinated performance very difficult to enact. A joined–up image of the original Grainger papers can be found on the theremin web site, with credit given to Bardic Editions, Grainger's publisher.[13] The copy of *Free Music No.1* in the Grainger Museum shows the individual copies joined together with the "Free Music Legend"—the text description of 'free music' by Grainger pinned beside them, as shown in Figure 3.
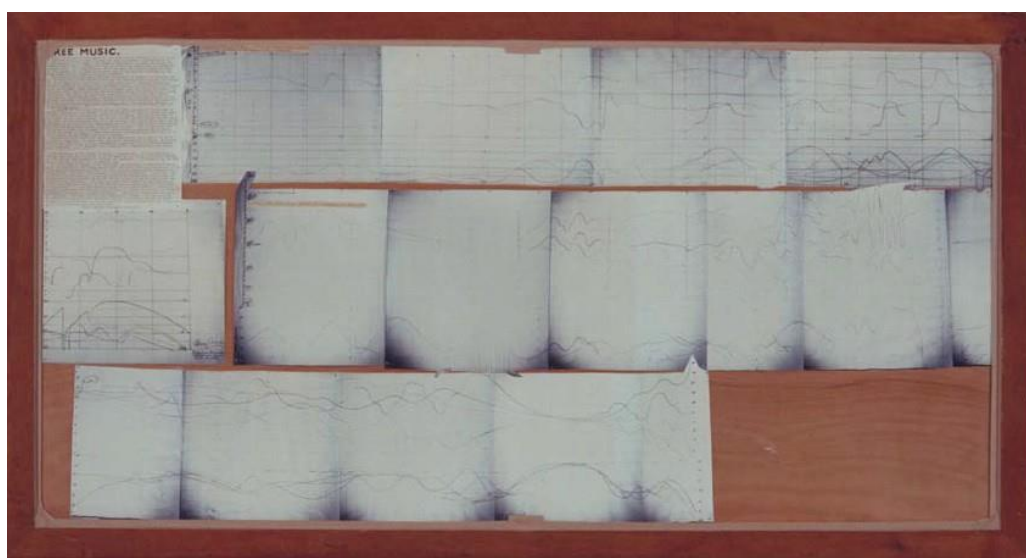
Figure 3. *Free Music No. 1,* **as it is found in the Grainger Museum. Note the Free Music Legend on the upper right hand corner. Image courtesy of the Grainger Museum, with permission.**

Reading Grainger's 'Free Music' Scores

Whilst the performance of sustained gliding notes is difficult on most instruments, including the theremin, the inaccuracy of live performance that Grainger referred to could also be attributed to the lack of a coordinated approach to reading the score. It would have been very difficult for six performers of any instrument to coordinate Grainger's precise instructions whilst reading the individual pages of a paper score. One approach might have been some kind of coordination by the players using clocks; this

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[12] Music was often represented with the inclusion of colour before the invention of the printing press, such as can be seen in examples of *Ars Subtilor*. See Andrew Hughes, *"Medieval Music: The Sixth Liberal Art,"* in *Toronto Medieval Bibliographies*, ed. J. Leyerle (Toronto: University of Toronto Press, 1979), 45.

[13] "Theremin.info," accessed 2 November, 2016, http://www.theremin.info/.

would have been the only way possible to coordinate a score of this kind at the time. However, this would have added a pulse to the reading that is unlikely to have been desirable to the composer.

Grainger had been investigating the idea of continuity in music on other levels. He had developed an automated page-turner, one of which resides in the Grainger Museum. This device was designed to be used on the piano, where a foot pedal would set in motion pages that Grainger had printed onto a long scroll. There is a possibility this may have been used for the performance of the scored "free music" works, but there is no evidence to demonstrate this.

To overcome the challenges of reading and coordinating a performance of the score, Decibel began by creating a video version whereby the score image would pass a vertical line on the computer screen at the speed specified. In this way, the performers could coordinate their parts with a high level of precision. This method was developed for *Free Music No.1*, using scanned copies of the edition in Pressing's book, joined using an image manipulation program on the computer and shown in Figure 4. A grid on the left of the moving image, originally reproduced from the Pressing edition of the score, provided a direct correlation of pitch and dynamics as the lines on the image of the score scrolled past. The long lines of the score could therefore be read at a vertical line that features the list of pitches and dynamics (at Figure 5), enabling greater accuracy by the performers. This also meant that the grid could be removed completely, as it was no longer required. The video player was prototyped using the computer program MaxMSP. This had the added benefit of enabling the networking of individual computers, and of changing the speed for rehearsal purposes. As the score travels quite fast, being able to slow down the rate of the score was useful in rehearsal.
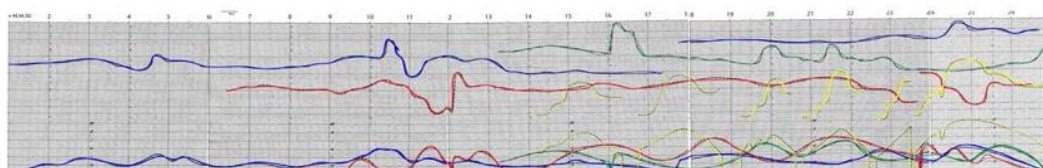

Figure 4. The Pressing edition of *Free Music No. 1* scanned and joined, with colour tracing overlaid

To facilitate the reading of the individual parts, each part was traced in a different colour, as in the original score. This made the score easier to read than Pressing's dashed black lines. *Free Music No. 2* was approached in a similar way. It was first mapped onto a graph with the left hand vertical axis indicating pitch and dynamics. A later version by Decibel featured a "notated" playhead in which the pitch and dynamic scale was moved into the frame slightly, and the graph was removed, as can be seen in Figure 5.
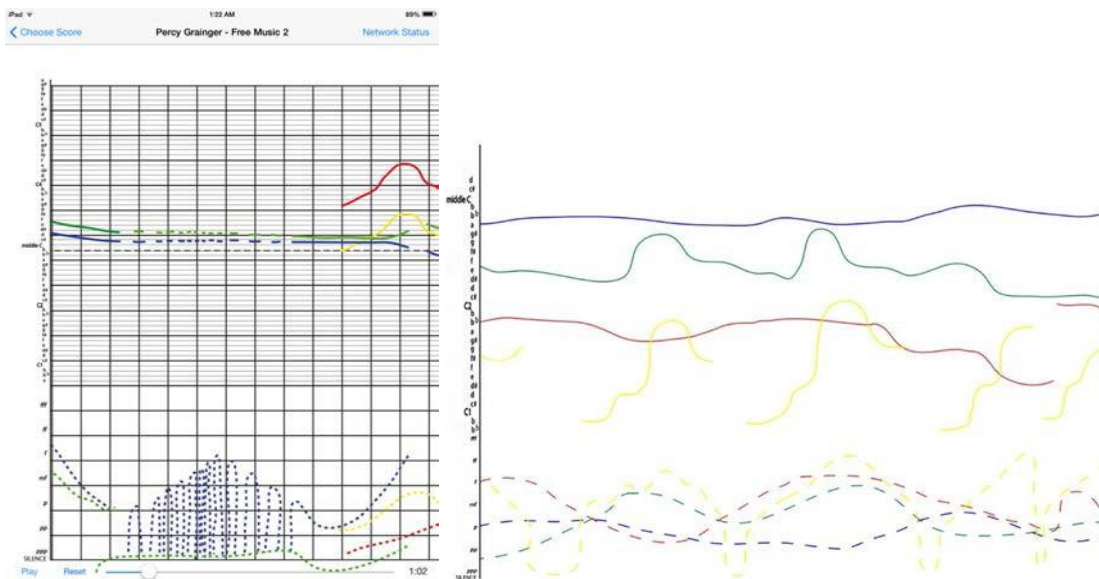
Figure 5. Decibel tracing of *Free Music No. 2* with graph on the left, and without on the right. Note the pitch scale to the left. Each line is a different colour, matching the top pitch line with the lower (dashed) line. The reader may choose to see all parts, as demonstrated here, or just his/her own part.

At first the Decibel players read the score from a projected image. The image, however, can easily distract the audience from the music because the score can become more of a focus than the music being performed. For the players, too, this method was problematic because of the difficulty of reading from a projected score without showing the performers' backs to the audience. Subsequently the players read the score from multiple, networked tablet computers, using a score reading application (app) developed by Decibel (the "Decibel ScorePlayer").[14] This method, in which each of the tablets is connected to a network using functionality built into the app, enables a number of tablets to be synchronised and individual parts to be shown to each performer.

Performing 'Free Music'

Once a readable score was finalised, Decibel was able to perform the work easily and accurately. Grainger preferred both *Free Music No. 1* and *Free Music No. 2* to be

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[14] See Cat Hope, Lindsay Vickery, and Aaron Wyatt, "The Decibel ScorePlayer: New Developments and Improved Functionality," *Proceedings of the International Computer Music Conference* (Texas, USA: 2015): 314–317. The Decibel ScorePlayer simplifies the early attempts with laptop computers, by replacing laptops with more portable tablets and the more robust networking systems provided in the tablet operating systems. The Decibel ScorePlayer app is currently only available for the iPad, and is downloadable from Apple's iTunes worldwide. Agreements that will enable the publication of *Free Music No. 1* and *Free Music No. 2* in the ScorePlayer are underway. This could lead to the pieces being bundled with the player, in their own stand-alone app, or available individually, providing an international publishing mechanism.

performed on the theremin, an electronic instrument characterized by a pure electronic sine tone altered by hand movements in relation to two antennae. One antenna enabled pitch variation (getting closer makes the pitch go higher); the other antenna was for dynamic variations (getting closer to this antenna makes the dynamic louder), the two parameters notated in Grainger's scores. It has no bow changes or breath requirements that could puncture the free long lines Grainger was seeking.

In keeping with Decibel's intention to contemporise historic electronic works, the work was originally performed on iPhones, using the Thereminator application, one of many apps imitating the theremin which can be purchased from the iTunes store. After testing several different apps, this application was chosen for three different reasons; it had the most realistic theremin sound of all the apps available; it had a clear, easy–to–use interface allowing easy identification of different pitches by note name or frequency; and it used the accelerometer built into the current model iPhone at that time (the iPhone 3). This meant that a tilt on the horizontal axis of the phone changes the dynamic louder and softer, and a tilt of the vertical axis of the phone creates a smooth transition between pitches. The iPhones sent audio to a mixer using a mini jack cable from the iPhones audio out jack. This enabled the volume to be amplified for performance in a sizeable hall. A screenshot of the app's interface is shown at Figure 6.
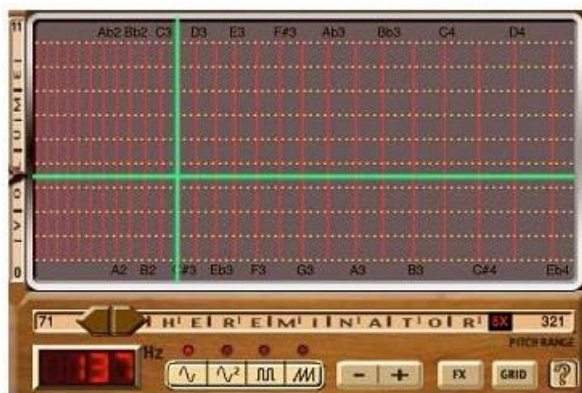

Figure 6. A screen shot of the Thereminator iPhone application

Performing the two 'free music' works on the iPhone and iPad theremin apps has similarities with a genuine theremin performance. The theremin app uses the internal accelerometer to respond to movement, retaining the necessity for performative gesture, even if they are not exactly the same gestures—which is an important and unique quality of the theremin as an electronic instrument. The sound quality is very similar to an early theremin, though of course not identical, and anyone, without even being able to read music, can learn how to play the piece from the score as presented by Decibel.

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Decibel Performances of Grainger's *Free Music No. 1* and *Free Music No. 2*

The première of Decibel's performance of *Free Music No. 1* took place at the CreateWorld Conference at Griffith University in Brisbane, Australia in December 2010; the work was also performed at the Australasian Musicological Society Conference in Dunedin, New Zealand that same year. It was then toured as part of a larger program to Denmark, Northcliffe, Albany, and Nannnup in the south-west of Western Australia in October 2011. An excerpt of a performance of the *Free Music No. 1* at the Albany Performing Arts Centre with iPhone Theremins can be seen in the film *No Encore,*[15] and a screen shot is at Figure 7.

Figure 7. A film still of Decibel performing *Free Music No. 1* in the film *No Encore*

Free Music No. 1 was again performed in three cities in Germany as part of the German Radio SWR new music series in December 2011, in the cities of Biberach and Rottenberg, curated by the late Armin Koehler. These concerts were recorded and broadcast later on SWR radio four. *Free Music No. 1* was also performed at an independent Decibel concert at WABE, in Berlin, in that same month during the tour. For these European concerts, Decibel used the *Theremin Vox* app on iPad Theremins, as they produced a louder volume, and so can be used without amplification. Whilst the volume is still low, it creates a haunting and subtle effect in the concert environment, and is a closer representation of the Theremin as a stand-alone instrument: that is, producing its own sound from its own sound, as it was originally. The iPhones and iPads also provided a convenient, portable alternative to actual Theremins on tour.

The first performance of *Free Music No. 2* by Decibel took place at the opening of the *Drawn From Sound* exhibition at the Spectrum Project Space on campus at Edith Cowan University in Mt Lawley, Western Australia in April 2013, using the same

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[15] *No Encore,* directed by Kenta McGrath (Perth: Blessed State Films, 2014), DVD.

approaches used to create the score of and perform *Free Music No.1*. The performance was later repeated at the ABC Studio 620 in Perth, for the "New Waves" podcast series on ABC Classic FM.[16] The *Drawn From Sound* exhibition, curated by Cat Hope, featured enlarged digital prints of the *Free Music No.2* copies in the Grainger Museum, amongst a selection of more recent Australian graphic scores. This exhibition was repeated in the ground floor of the Australia Council for the Arts in Sydney, from August to November 2014; the exhibition and its associated programs won the APRA|AMC Award for Excellence in Experimental music in the Australian Art Music Awards that same year. The composite score for *Free Music No.2*, drawn over with coloured lines, appears alongside a reproduction of the first page of *Free Music No. 2* in the catalogue from exhibition, with permission from the Grainger Estate and Bardic Editions, and is shown here in Figure 10.
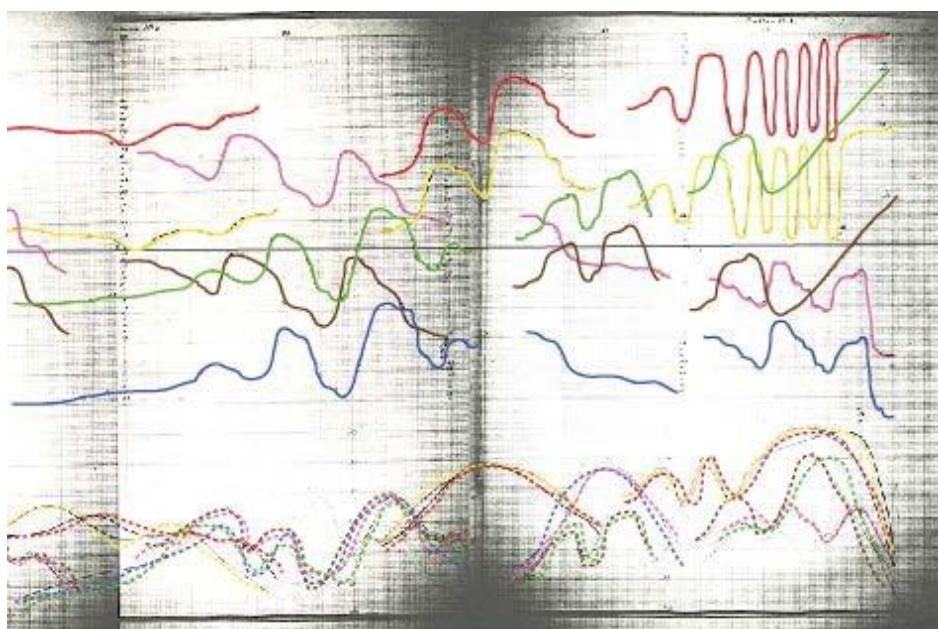

Figure 10. Drawing lines over an excerpt of the original score of *Free Music No. 2* joined together

Other Performances

Information about other theremin performances of 'free music' compositions is difficult to find. A number of performances inspired by the idea of 'free music' have been created. These include works created by Stuart Favilla and Joanne Cannon in their Bent Leather Band project, Ros Bandt and Johannes S. Sistermann's telematics performance *A Global Garden for Percy* in 1997, and works by Warren Burt and Jon Rose amongst others. There

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[16] *Graphic 4-Free Music*: *Music by Percy Grainger from the* "Drawn from Sound Exhibition," presented by Stephen Adams, ABC Classic FM, podcast audio, June 27, 2013, http://www.abc.net.au/classic/content/2014/06/27/3790768.htm.

are very few performances of the scored pieces themselves. Russian thereminist Lydia Kavina claims the first live performance of *Free Music No. 1* on multiple theremins in New York in 1997,[17] which predates Ros Bandt's claim for the world première assisted by Jon Drummond in 1998 at the "Beaming the Theremin" event during the Electric Eye Festival in the Percy Grainger Museum in Melbourne.[18] In the latter example, sound artist Jon Drummond overcame the challenges of reading the score by modelling the scores in software to learn how to play them on the theremin.[19] A number of computer or synthesiser renditions of the 'free music' scores exist. These include Les Craythorn's performance of *Free Music No.1* on a Synthi 100 synthesiser at the University of Melbourne in 1976[20] and renditions of *Free Music No. 1* and *Free Music No. 2* by Barry Conyngham using the Music V synthesis software, and released on Move Record's *Full Spectrum* compilation.[21] Of these, Conyngham's is the least successful because a semitone stepping can be clearly heard in the rendition, something Grainger aimed to avoid, calling it "absurd goose-stepping."[22]
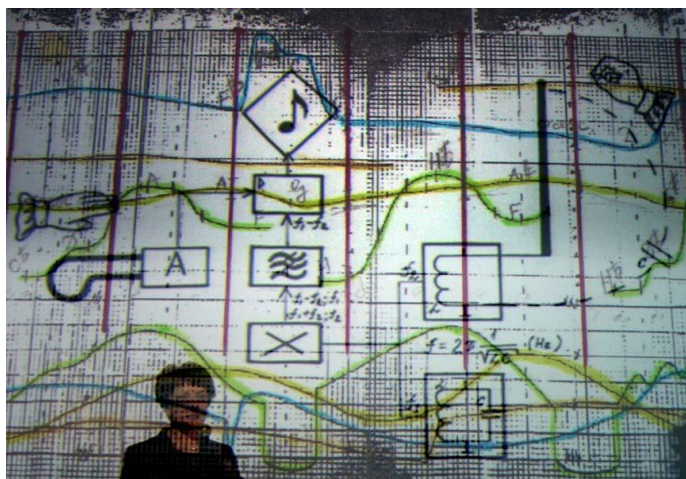

Figure 8. Lydia Kavina in front of the projection of her annotated score for *Free Music No. 1*

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[17] Lydia Kavina, "Thereminvox," in *Electrified Voices: Medial, Socio-Historical and Cultural Aspects of Voice Transfer,* eds D. Zakharine and N.M. Vandenhoeck (Gottingen: V&R UniPress, 2012), 194.

[18] Ros Bandt, "Hearing the Free Music: Percy Grainger, Australian Visionary of the Soundscape, Creator of Electro-Acoustic Free Music and Sound Machines," *Soundscape* 8:1 (2008): 12.

[19] Jon Drummond, personal communication to the author, September 22, 2014.

[20] Kay Dreyfus, "Notes from Grainger Museum, University Of Melbourne," *Musicology Australia* 5, no. 1 (1978): 21.

[21] Barry Conyngham, liner notes for *Full Spectrum: Australian Digital Music,* Move Records MS3027, 1978, compact disc.

[22] Grainger, "Free Music," 109.

Kavina has contributed the only published recordings of the 'free music' works on the theremin, including *Beatless Music*. *Free Music No.1* appeared on the New York record label Mode in 1999, and Free *Music No.1, No.2* and *Beatless Music* on another Mode album in 2008.[23] *Free Music No. 1* runs for one minute and twenty two seconds, and *Free Music 2* for one minute and twenty one seconds, running considerably shorter than the Decibel performances (taking two and six minutes respectively). Yet neither the Decibel performances nor Kavina's match the exact length indicated on the score. It is difficult to fathom how these timings were reached. Kavina presented a video during the performance of the works, stating: "A successful performance became possible when it was conducted by a video, where the score was running through a vertical line that showed the point to play at each real moment."[24] Ros Bandt's recording of *Free Music No.2* is available online, and comes in at an energetic thirty five seconds.[25]

Conclusion

The adaption of Grainger's scores to the Decibel ScorePlayer made these two 'free music' works performable in a way that has not been possible to date, facilitating the performers' ability to create the "tonal glides and curves" which Grainger sought.[26] Whether performed on the theremins of Grainger's time, or on the more portable contemporary versions, the work can now be realised to Grainger's specifications in live performance. Whilst the works still require rehearsal and an astute musical ear, the chance of an accurate performance is much more likely using the Decibel ScorePlayer version of the score. It is likely that Grainger was frustrated by his only attempt to have his scored 'free music' work performed, leading him to focus on composing machines to realise his 'free music' ideal. However, contemporary technology has enabled new ways of presenting the score that provide a more accurate reading, providing the "machine" in a way he may not have envisaged. The preparation of the score materials to be read by Decibel ScorePlayer has capitalised on this technology to provide a unique and easy way to read the pieces, leading to the kind of accurate performance Grainger would have hoped for. The potential for international publication could also see these works getting the recognition they deserve from a wider audience. Thomas Lewis, in his important book *Source Guide to the Music of Percy Grainger*, writes: "Embodied in the concept of Free Music is "non-harmony"—totally independent voices creating an immensely complex

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[23] Lydia Kavina, *Music From The Ether: Original Words For Theremin*, 1999, Mode 76, compact disc; Lydia Kavina, *Spellbound: Original Works For Theremin,* 2008, Mode 199, compact disc.

[24] Kavina, "Thereminvox," 194.

[25] Bandt, "Beaming the Theremin," accessed September 3, 2015, http://www.sounddesign.unimelb.edu.au/web/bandt/free2.mp3.

[26] Grainger, "Free Music," 109.

polyphonic web of sound that was, for Grainger's time, too intricate for human performance."[27] Perhaps our time, now, is the right time.

[27] Thomas P. Lewis, *Source Guide to the Music of Percy Grainger* (White Plains, NY: Pro-Am Music Resources, 1991), 32.

Otakar Ševčík's Op.18 as a Prescribed Method for Attaining Expert Performance

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Otakar Ševčík (1852-1934) remains one of the most influential pedagogues in the history of violin playing, not to mention a highly-accomplished soloist. Many of Ševčík's pupils also became leading players in their own right, including such figures as Jan Kubelík and Efrem Zimbalist. His most enduring influence, however, is the prodigious amount of technical material he published related to violin playing, which remains widely-utilized to this day. His later works, which consist of exercises targeted towards solving problems within specific standard violin repertoire, are of particular interest as they are less well known and rarely studied. The focus of this article, his Op.18, is a collection of this type of repertoire-tailored technical studies—written to aid the violin player in preparing for a performance of Brahms Violin Concerto in D major. Using Ericsson's "expert-performance framework" and literature addressing deliberate practice in musicians, this discussion elucidates the strong connection between Ševčík's Op.18 and behaviours associated with expertise acquisition and expert performance.

According to Ericsson, "new cognitive mechanisms are gradually acquired during the extended period and they mediate the superior performance, thus leading to qualitative differences in structure compared to untrained performance."[1] This assertion forms the basis of the expert-performance framework, in which expert-performance is defined as "consistently superior performance on a specified set of representative tasks for a domain without any age conditions."[2] The focus of the expert performance approach is to explain the "structure and acquisition of expert performance," with the central finding that "deliberate practice is the most promising proximal variable with a plausible mechanism for explaining change (improvement) of performance."[3] Under this framework, the term deliberate practice is defined as "a highly structured activity, the explicit goal of which is to improve performance."[4]

Deliberate practice behaviours of musicians have been documented to a considerable degree by existing research. Drawing on the work of Smith, Lammers suggests that deliberate practice by musicians is largely analogous with the utilization of

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[1] K. Anders Ericsson, "Why Expert Performance is Special and Cannot be Extrapolated from Studies of Performance in the General Population: A Response to Criticisms," *Intelligence* 45 (July-August 2014): 81.

[2] Ibid., 83.

[3] Ibid., 97.

[4] Ibid., 83.

problem-solving skills, including problem identification, problem definition, problem analysis, diagnosis, alternative generation, and evaluation.[5]

In musical contexts, the ability to accurately identify errors is one such characteristic that has been shown to be a crucial aspect of deliberate practice. Similarly, the role of the teacher is vital in the mediation of deliberate practice, with their most important function being the effective teaching of problem-solving strategies, and fostering the student's ability to effectively apply these strategies on an independent basis through the use of creative thinking (which is also referred to as the generation of "candidate solutions").[6]

The importance of "alternative generation,"[7] which consists of creating more than one solution to a given problem, is also identified by Ericsson et al.[8] and Smith as a key characteristic of expert practice, as it facilitates attaining higher levels of performance compared to those relying on mere repetition.

The variables of quantity versus quality of practice are also a key issue in the literature on deliberate practice. While the literature appears to be preoccupied with assessing whether quality or quantity is the more determinative variable, it is sensible to suggest that expert performance is achieved through a combination of high quality (deliberate) practice, done over an extensive period of time (as suggested by Ericsson et al.).[9]

Practice structure is also identified as an essential component of deliberate practice for musicians. Multiple authors agree that expert performers structure the learning of a new work into three distinct periods in preparing the work for performance.[10] The fundamental strategy effectively used by expert performers in this process is undoubtedly that of segmenting the score into smaller units in order to facilitate more targeted deliberate practice. The first period is marked by the selection of "performance features,"[11] shown by the literature to be crucial in the successful memorization of a work. The second stage, in which the mastery of technique becomes

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[5] See Will Lammers, "Factors Affecting Performance Proficiency: A Case Study Involving Intermediate Piano Students" (Masters Dissertation, Brock University, 2006), 13-15.

[6] Gerald Smith, "Towards a Comprehensive Account of Effective Thinking," *Interchange* 32, no. 4 (2001): 367.

[7] Ibid.

[8] K. Anders Ericsson, Ralf Th. Krampe, and Clemens Tesch-Römer, "The Role of Deliberate Practice in the Acquisition of Expert Performance," *Psychological Review* 100, no. 3 (1993): 365.

[9] Ibid.,. 370.

[10] Kacper Miklaszewski, "A Case Study of a Pianist Preparing a Musical Performance," *Psychology of Music* 17 (1989): 95-109; Roger Chaffin and Gabriela Imreh, "A Comparison of Practice and Self-Report as Sources of Information About the Goals of Expert Practice," *Psychology of Music* 29 (2001): 39-69; and Aaron Williamon and Elizabeth Valentine, "Quantity and Quality of Musical Practice as Predictors of Performance Quality," *British Journal of Psychology* 91 (2000): 353-376.

[11] Chaffin and Imreh, "A Comparison of Practice," 42.

the main focus, is characterized in deliberate practice by the gradual lengthening of practice segments (that is, practicing gradually longer sections of the score). The shift in focus through these two periods leads towards a largely interpretive emphasis in the final period, resulting in practice runs of the whole work. The use of alternate practice methods, whilst not identified as critical to expert performance, are also shown to contain potential benefits. The two most useful alternative methods identified in the literature are mental practice and the use of recorded models.[12]

When considering the complexity, depth of information, and breadth of skills that expert performance requires, it is no surprise to find that a defining factor of effective deliberate practice is the performer building an elaborate knowledge base of practice strategies. As Hallam suggests, "practice will only become purposeful and self-determined when the pupil has a range of 'task oriented strategies' to draw upon."[13] The same can be said about expert performance. Sloboda states that expert performance "is the result of the interaction of specific knowledge of [a] piece . . . with general knowledge acquired over a wide range of musical experience."[14] Indeed, Ericsson suggests that "what distinguishes expert performers is mostly more and better-organized knowledge, which had to have been acquired."[15]

With this in mind, let's now consider Ševčík's Op.18. Ševčík describes the work as "Elaborate studies and Analysis bar by bar to J. BRAHMS CONCERTO IN D-MAJOR with revised solo voice and complete piano score."[16] His preface to the work states as follows:

> An analytical study of the separate parts of a work is essential to guarantee a safe reproduction of the whole. Only by these means technical, dynamic and other effects are to be gained.[17]

Further, Ševčík views this approach (analytical study) as a "criterion"[18] for developing and sharpening the musical development of the individual. Ševčík reasons

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[12] Roseanne Rosenthal, Mary Wilson, Madeline Evans, and Larry Greenwalt, "Effects of Different Practice Conditions on Advanced Instrumentalists' Performance Accuracy," *Journal of Research in Music Education* 36, no. 4 (Winter, 1988): 254; and Steven J. Morrison, "The Use of Recorded Models in the Instrumental Rehearsal: Effects on Ensemble Achievement," *Applications of Research in Music Education* 20, no. 2 (Spring-Summer, 2002): 21-26.
http://journals.sagepub.com.ezproxy.library.uwa.edu.au/doi/abs/10.1177/875512330202000206.

[13] Susan Hallam, *Instrumental Teaching: A Practical Guide to Better Teaching and Learning* (Oxford, England: Heinemann, 1998), 140.

[14] John Sloboda, *The Musical Mind: The Cognitive Psychology of Music* (Oxford, England: Oxford University Press, 1985), 94.

[15] Ericsson et al., "The Role of Deliberate Practice in the Acquisition of Expert Performance," 397.

[16] Otakar Ševčík, "Op.18 J. Brahms: Konzert D-Dur" (Brno, Czech Republic: Ol. Pazdírek, 1930), 1.

[17] Ševčík, "Op.18 J. Brahms: Konzert D-Dur," 3.

[18] Ibid.

that studying the "separate interval and analytic studies" thus allows the user "an inspired, absolutely perfect and ideal execution, rid from technical difficulties."[19] These comments strongly suggest that Ševčík conceived the exercises with expert-performance in mind.

In addition, Ševčík seems to be acutely aware of the role of the teacher in his conception of these exercises. It can be argued that the exercises themselves effectively function as a proxy in this role, remembering that the most important function of the teacher in deliberate practice is to equip the performer with practice strategies and the knowledge required to apply them effectively and in an individual manner. The parallels between the deliberate practice literature and Ševčík's exercises are demonstrably strong in this area as he not only identifies the importance of fostering the need for individuality in solving problems and effecting musical interpretation, he critically acknowledges that the efficacy of his exercises is ultimately determined by the ability of the performer to engage with them meaningfully. This is evident from his comment noting that "good will, perseverance, and zeal are the soul of the work."[20] Further, he remarks on the first page of the exercises proper that "it lies entirely with the pupil to treat each section according to [the] grade of difficulty resulting from it."[21]

The edited solo part of Brahms' concerto includes figure/bar markings used by Ševčík as an analytical overlay for referencing the segments of the concerto addressed by each set of exercises, consists of a mere nineteen pages (see, for instance, the marking D 8-20 in Figure 2). Ševčík's exercises far eclipse this in terms of quantity, consisting of a monumental eighty-six pages in volume. This equates to four pages of exercises for every page of the solo part! Considering that the solo part also contains the orchestral tuttis, the level of detail inherent in Ševčík's exercises becomes immediately clear. Indeed, Ševčík considers this level of detail to be a particular strength of the exercises, stating that: "the scrupulousness of the analysis shall not frighten the player, but rather awaken in him a desire for solving further problems, thus enabling him to distinguish the better the nature of the musically beautiful in its subtlest components."[22]

This attention to detail is consistent with the findings of much of the research discussed earlier, including that of Chaffin and Imreh, Miklaszewski, and Williamon and Valentine, who suggest that solving technical difficulties early in the process of preparation affords a more fluid and musically expressive interpretation in performance.[23] In addition to this, the sheer volume of material is strongly indicative of

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[19] Ibid.

[20] Ibid.

[21] Ibid., 5.

[22] Ibid., 3.

[23] Williamon and Valentine, "Quantity and Quality of Musical Practice," 371–72.

the use of alternative generation, regarded by Smith as characteristic of higher-order thinking and shown by the literature to be crucial in the implementation of deliberate practice.

Ševčík provides the following instruction: "Each section of the concerto should be played only when one has finished its relative study."[24] By looking at the studies themselves, we can see that each 'section' in fact consists of around one to ten bars. This represents the use of segmentation by Ševčík, shown by the literature to be perhaps the most important technique used in deliberate practice. Further, each set of exercises can clearly be shown to evidence the key concepts indicative of higher-order thinking— including problem solving; problem identification; problem definition; problem analysis; diagnosis; alternative generation; and evaluation. Even from this brief initial perspective, the parallels between the literature on deliberate practice and Ševčík's Op.18 are quite obviously strong. However, the true test of this approach cannot lie in theory but rather in performance, so let's now look at a sample of his exercises from a practical perspective.

Figure 1 is taken from the third movement of the Brahms concerto and has been selected as an example for its high level of inherent difficulty. This high level of difficulty stems from the combination of constant shifting in both directions, string crossings, extensions (which consists of extending the fingers out of their usual span) and playing in very high positions, all of which have to be performed at a break-neck speed. It is perhaps no surprise to find that these ten bars are the subject of two pages worth of exercises in Ševčík's op.18.
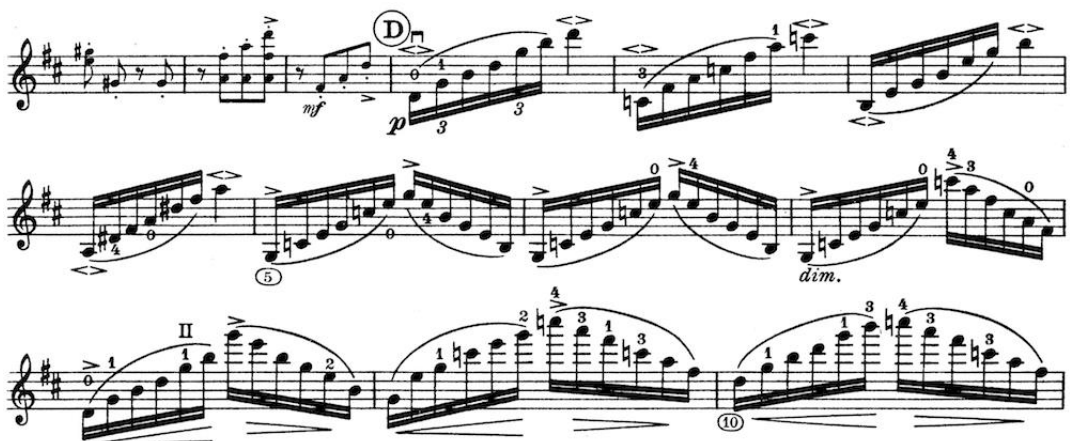

Figure 1. Allegro giocoso, ma non troppo vivace, from Brahms's "Violin Concerto in D major, Op.77," ed. O. Ševčík (measures D1-10)

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[24] Ševčík, "Op.18 J. Brahms: Konzert D-Dur," 5.

The first set of exercises, as shown in Figure 2, is typical of the approach in general, in which Ševčík reduces the solo part into a series of two-note intervals, which are then repeated once. Marked as "Interv." by Ševčík, an abbreviation for interval studies, this type of exercise is regarded by Ševčík as "indispensible for developing precise intonation."[25] Indeed, Ševčík almost always treats the solo passage using this method first, before continuing with more analytic, targeted exercises.

Figure 2. Ševčík's "J. Brahms: Konzert D-Dur' op. 18," 67

Another characteristic clearly identifiable in these exercises, which perhaps best encapsulates the overarching principle of Ševčík's methodology, is the isolation of technical challenges. In these exercises, each shift, extension and string crossing is isolated and played by the user in a slow, controlled tempo. This serves as a solid foundation, which is then built upon in subsequent exercises. After isolating every technical aspect and allowing the user to gain mastery over it, Ševčík then begins to combine multiple challenges within subsequent exercises, until the passage itself is mastered.

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[25] Ševčík, "Op.18 J. Brahms: Konzert D-Dur," 5.

Figure 3. Ševčík's "J. Brahms: Konzert D-Dur' op. 18," 68

The more complex exercises (an example of which is shown in Figure 3) are often labelled by Ševčík as Anal., meaning analytic. In this case they begin by reducing the arpeggios of the first four bars into their harmonic essence. These arpeggios alternate between ascending and descending, which is in contrast to the solo part, in which they are all ascending. This is a clear example of the use of alternative generation by Ševčík. Following this, the top four notes of the arpeggios are then scrutinized (with the middle note present in both versions). After bars 5-7 are treated in a similar way, the format is visibly changed. Instead of common time, the exercises are now in compound 6/8, and utilize a repeated rhythm of a quaver, two semiquavers and another quaver. Aside from again representing the use of alternative generation, this sort of rhythmic alteration is frequently employed by Ševčík throughout his exercises.

Such strategies are utilized for different purposes throughout the exercises, but here, can be shown to serve a particular purpose. In this case, the use of rhythmic alteration allows for a mix of intensity within the following exercises. By combining slower rhythms with faster ones (i.e. quavers and semiquavers), the exercises consistently fluctuate between fast and slow challenge requirements. Remembering that this passage of the solo part contains a combination of string crossing, shifting, extensions, and playing in high positions, we can see that each of these challenges is present in these exercises, and each is represented in both the faster and slower tempos. If we look at the first bar,

for instance, we can see that the string crossing is done over a quaver, then the following two notes, of the semi quaver rhythm cover the first shift. Following this, the next string crossing is done again between two quavers, before the final string crossing is then played over semi quavers. A further advantage of this particular slow-fast-slow structure is that it allows time between each segment for the user to remain in control and calm while working through the full complement of exercises.

Another example of the use of alternative generation is also prevalent in Figure 4 below: namely, the use of retrograde combinations. This is perhaps most easily demonstrated by looking at the shifting exercises. In the solo part, the particular shift from e-g appears in the ascending version only, but here in the exercises, Ševčík makes a particular point of practicing the shift in its descending form. When repeated, this has the added effect of teaching the muscles in the arm the distance between the highest and lowest position, by juxtaposing one after the other. This saturation of information, in excess of what is required to execute a particular challenge or even passage, is also typical throughout the Ševčík exercises, and critical, in my opinion, to the overall effectiveness of the method.

Figure 4. Ševčík's "J. Brahms: Konzert D-Dur' op. 18," 68

The level of segmentation present in the exercises is worth noting, as is the level of specificity in notated fingerings. As discussed earlier, the research on expert practice suggested that the most successful performers used segmentation more extensively as the perceived difficulty of the music increased. Using Figure 1 as reference, if we consider

that bars D1-9 are covered by half a page of exercises, and that D10 itself is covered by the same amount of material, it is clear that this is also the case in the Ševčík exercises. The exercises for D10 are of further interest, as they are one of the few instances in which Ševčík provides an alternative fingering. Essentially, there are a number of different ways in which any particular passage can be fingered, and the particular technical challenges can differ considerably in type and scope depending on which fingering is used. It should be acknowledged that this is perhaps the source of the greatest limitation in Ševčík's exercises. That is, that the complete set of exercises is constructed around Ševčík's particular fingering, which may not be comfortable for every user, and indeed will in most cases not be for the entire concerto.

In summary, the techniques and concepts identified in Ševčík's analytical studies for Johannes Brahms Violin Concerto in D major have been shown to encompass many of the key characteristics indicative of deliberate practice, as represented by the literature. Thus, according to Ericsson's expert-performance framework, Ševčík's Op. 18 can be said to represent a prescribed method for facilitating expert performance of Brahms's Violin Concerto in D Major. Arguably, this analytical approach (used here, in considering Ševčík's Op. 18) could also be fruitfully applied in the evaluation of other key pedagogical works in the violin repertoire, and indeed other genres. What remains clear is that Ševčík's utilization of practice techniques and strategies is systematic and detailed to an astonishing degree, affording a fresh appreciation of his profound contribution to violin pedagogy. An analytical understanding of Ševčík's approach clearly merits further attention in light of his elegant alignment with the recent literature on deliberate practice, with which it precedes by almost fifty years.