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The Turntable as a Musical Instrument and the Emergence of the Concert Turntablist

Analytical Notes

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A thesis submitted in partial fulfillment
of requirements for the degree of
Master of Music (Composition)


Conservatorium of Music

University of Sydney

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Declaration

I, Daniel Marc Biederman, hereby declare that this submission is my own work and that it contains no material previously published or written by another person except for the co-authored publication submitted and where acknowledged in the text. This thesis contains no material that has been accepted for the award of a higher degree.

Signed:  Date: 3/18/15

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Abstract

The turntable played a significant role in the evolution of 20th century Western music, both as a recording/playback device, and as a musical instrument in its own right. The focus of this thesis is my original compositions that feature the turntable and the history of the turntable as a musical instrument.

The 20th century delivered significant progress in turntable technology, but produced limited innovation for the turntable in new music composition. Except for a few outliers, the same techniques for the turntable have been recycled among experimental composers, sound artists and pop music producers since the 1930's. This thesis embraces those techniques from the past, and moves forward to explore new potential for the turntable.

My original folio of work featuring the turntable is informed by my research into: (1) conceptual barriers to understanding the turntable as an instrument (2) turntable notation (3) amplification options (4) public opinion of the turntable in the concert hall (5) original turntable techniques as well as my adaptation of existing techniques (6) composers who embraced the turntable-as-instrument.

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Part A: Synopsis of Turntablism, 1877 through 2013.

“Although turntablists consider themselves—and are—musicians, their originality is sometimes questioned because they perform on machines designed for automatic playback. The use of an ‘ism,’ therefore, lends weight to the practice, suggesting an art form with a cohesive doctrine and conferring a seriousness that demands respect.”

~Mark Katz¹

¹ M. Katz, *Capturing Sound: How Technology Has Changed Music* (Berkeley: University of California Press, 2004), 116.

CHAPTER 1: Introduction

1.1 Rationale

The purpose of this research is to bring the turntable-as-instrument into the concert hall with an original perspective. This is reflected in the following folio of original compositions and accompanying notes.

Turntablism is a new expression. The Grove Dictionary of American Music defines turntablism as the practice of using gramophone turntables as musical instruments.² The Oxford English Dictionary has a less committed definition, the action or practice of performing as a turntablist, and goes on to describe turntablism as one of the most recent 1% of their 600,000+ entries.³ To better understand this new term we should consider the suffix *ism*: a form of doctrine, theory, or practice having a distinctive character.⁴ This thesis seeks to illuminate the *ism* of turntablism by embracing its rich (and often neglected) role in the story of Western Music composition. Turntablism is a broad subject that includes over a century of content, despite being a new addition to our musical vocabulary.

My interest in the turntable began in the late 1980's when I discovered my parents' old record collection. I believe this was the origin of a deep-seated association with vinyl records and my love for music. Years later I became interested in the virtuosity of the

² Dale E. Chapman, *Turntablism*, (New York: Grove Music, 2000).

³ Oxford English Dictionary, "*Turntablism, N.*" (Oxford: Oxford University Press, 1996).

⁴ "*Ism, N.*" (Oxford: Oxford University Press).

hip-hop disc jockey (DJ). During this time I also saw my first orchestral work that featured a turntablist, *Concerto for Turntables* by Raul Yanez and DJ Radar.⁵

Throughout my candidature, I composed original works that developed new techniques for the turntable, brought the concert turntablist into focus, and developed a fresh view of turntablism.

1.2 Organisation of this study

Part A: Synopsis of Turntablism, 1877 through 2013 is an overview of the turntable-as-instrument and how composers, musicians and sound artists have engaged with it. Part A features my exploration of turntablism and the associated technology, but does not feature my original scores.

Part B: Philosophy, Creative Process and Folio of Original Works is an explanation of my new philosophy on music, creative process and compositions.

The Oxford English Dictionary (OED) is featured regularly throughout this thesis. I did not treat the definitions as infallible, though I do hold the OED in the highest regard. My consideration of semantics consistently branched into a philosophical discussion as to what words mean in the context of my research.

⁵ DJ Radar, 2001, Video file, <https://www.youtube.com/watch?v=1iz9YVMfA34>.

1.3 Research questions

My research seeks to answer the following practical, theoretical and philosophical questions:

What is turntablism, who is a turntablist?

How has the turntable been used as a musical instrument?

How can a composer work with found sound on vinyl records?⁶

What is the best amplification for the turntable in a chamber ensemble?

What is the best way to notate a turntable part?

1.4 Summary of methodologies

1.4.1 Autoethnography

This section is intended to (1) define autoethnography (2) explain my own perspective on autoethnography and (3) illustrate how I utilised this methodology in my research.

Ethnography is “the systematic study and description of peoples, societies, and cultures.”⁷ *Autoethnography* can be thought of as a “systematic study of peoples, societies, and cultures” from the perspective of a member of the group being studied, whose experience is included in the data. Carolyn Ellis, an authority on autoethnography, explains the “research involves the emotionality and subjectivity of both researchers and participants.”⁸

⁶ There is a history of composers and turntablists pressing custom vinyl records specifically for their vinyl-based compositions. From the outset of my research, I decided I would not press my own vinyl records and embrace working with found sound.

⁷ Oxford English Dictionary, “*Ethnography*, *N.*” (Oxford: Oxford University Press).

⁸ P. Leavy, *The Oxford Handbook of Qualitative Research* (Oxford: Oxford University Press, Incorporated, 2014), 204.

Autoethnography was conceived in the social sciences, however the liberal arts have embraced this method of enquiry and added another dimension, specifically in the manifestation of the research. While the social sciences are likely to present their findings as text or diagram, the artist has another possibility: the artwork itself. An autoethnographer in the liberal arts might present their work as a series of paintings that best convey their experience; the artwork is the sole expression of the research. I, however, did not take this approach. My compositions do reflect a significant portion of my research, but they do not represent the total scope of the project.

Autoethnography provided the framework for me to place my experiences in the wider context of like-minded composers. Published interviews and memoirs gave me insight into those composers' creative processes.

The critical step in my autoethnographic methodology was systematic self-evaluation. My method was broken down to three steps: produce, reflect, compare. Like my predecessors, I consistently documented my successes and failures. I reviewed my work at regular intervals, both my diaries and compositions. I compared my work to composers like John Cage and Pierre Schaeffer, our similarities and points of difference. Contextualising my work in the continuum of similar artists was the key to maintaining the autoethnographic component in my methodology.

Autoethnography is bona fide 21st century methodology, but also attracts the attention of skeptics. Criticisms include overemphasis on personal experience (gross self-

indulgence).⁹ An example of my own skepticism was my dissatisfaction with the book *Music Autoethnographies: Making autoethnography sing/Making music personal*.¹⁰ I found the individual stories to be too informal, too autobiographical, and generally lacking contextual awareness. A respected professor at the Sydney Conservatorium pointed out that autoethnography is popular jargon and might be used to sell books as opposed to distinguish methodological practice.

My scrutiny of autoethnography also included various definitions of the methodology. Autoethnographic definitions consistently rely on the term *culture*: a way of life or social environment characterized by or associated with the specified quality or thing; a group of people subscribing or belonging to this.¹¹

I found the idea of ‘culture’ particularly interesting and worth further contemplation. Culture is ambiguous. We have broad associations with culture: geography, art, music, clothing, ritual, religion, diet, work ethic, government et cetera, yet autoethnography relies on this term as a foundational tenet.

Who has the authority to deem a certain group a *culture*? Do I have that authority? Am I allowed to group a selection of composers together and call them a culture? How much does each composer have to have in common with one another and what must those commonalities be? What is the difference between a composer culture and simply a

⁹ A. Coffey, *The Ethnographic Self: Fieldwork and the Representation of Identity* (Thousand Oaks, California: SAGE Publications, 1999), 132.

¹⁰ B.L. Barleet and C. Ellis, *Music Autoethnographies: Making Autoethnography Sing/Making Music Personal* (Samford Valley: Australian Academic Press, 2009).

¹¹ Oxford English Dictionary, "Culture, N." (Oxford: Oxford University Press).

group of composers who have notable similarities? There are no ultimate answers to the above questions, nor do I seek an absolute definition of culture.

My ruminations on the meaning of culture led me to consider the attributes of the composers I was attracted to. It was relevant that all the composers were forward thinking, open minded and willing to engage with new technology. Furthermore, there was a clear chain of influence amongst them over time, which reinforces this cultural identity.

I am heavily influenced by the work of John Cage, his philosophy and music. Those of us who cite John Cage as a force in our lives are part of a culture. Steve Reich, Pierre Schaeffer, and Mark Applebaum have also influenced my work a great deal. Perhaps another composer whom I have never met will be influenced by my work; therein lays the building of a culture.

Throughout my study, I tried to find where I belonged as a composer. Not every composer is concerned with how they fit in, however I found it valuable to contemplate my place in music. I was not looking for validation or acceptance of my work. My goal was to understand myself better by placing my work in the greater context of history. I often found that many of my 'original ideas' were already thought of and compositionally realised. Rather than become frustrated, the like-minded composers intrigued me. The more I investigated, the more I felt a sense of *belonging*.

I have included quotes throughout this thesis with the intention of demonstrating the recurring deeper connections I felt with like-minded artists, past and present, and how those artists affected my work. Each quote specific to autoethnography is right aligned, single-spaced and italicized.

*“There remains an extensive realm of possible turntable techniques and unlimited combinations to be explored.”
~ Nicole Lizée¹²*

1.4.2 Grounded theory

Grounded Theory (GT) originated in the social sciences in the late 1960's. Essentially, GT is discovery of theory from data. This process is sometimes referred to as a reverse engineered hypothesis.¹³ GT encourages the researcher to systematically and rigorously collect data, and setting their preconceived notions aside, let the hypothesis emerge from the data. My research benefited from the deliberate setting aside of preconceived notions of what turntablism is and actively focusing on my process of data collection and cataloguing. I believe GT was integral for me to achieve a clear and holistic view of turntablism.

GT was applied in several ways. A low-tech recurring practice was to write down all of my research themes onto notecards, spread them across the floor and put them together in various sensible ways. A modern practice was to use www.wordle.net for generating

¹² Nicole Lizée, "“Rpm” for Large Ensemble and Solo Turntablist" (M.Mus., McGill University (Canada), 2001).

¹³ C. Frangos, *Proceedings of the 3rd International Conference: Quantitative and Qualitative Methodologies in the Economic & Administrative Sciences (Qmeas 2013)* (Christos Frangos), 434.

word clouds from chapters in my thesis.¹⁴ “A word cloud is a special visualization of text in which the more frequently used words are effectively highlighted by occupying more prominence in the representation.”¹⁵ Wordle.net provided a meta-perspective on my work and often helped me see the more important concepts.

1.4.3 Form and analysis

Form and Analysis is the practical process of examining pieces of music in order to discover, or decide, how they work.¹⁶ Whenever possible, traditional analysis was performed on the scores that inspired my own composition (i.e. roman numeral analysis, motivic development et cetera). However, quite often the music I was listening to did not lend itself to this type of analysis (e.g. Alvin Lucier's *I am sitting in a room*).¹⁷ An analytical conversation with my supervisor and/or my peers was often the most productive method for analysis.

1.4.4 Organology

Organology is the study of the history of musical instruments.¹⁸ While this was not a main feature of my methodology, I felt it was prudent to read about the emergence and acceptance of new instruments in concert music. A specific area of interest was the emergence of new instruments/technology in the early 20th century and their associated success and failures, such as the theremin. This is an example of a well-respected

¹⁴ Jonathan Feinberg, "Wordle," <http://www.wordle.net>.

¹⁵ Carmel McNaught and Paul Lam, "Using Wordle as a Supplementary Research Tool," *The Qualitative Report* 15, no. 3 (2010): 631.

¹⁶ N. Cook, *A Guide to Musical Analysis* (Oxford: Oxford University Press, 1994).

¹⁷ Alvin Lucier, "I Am Sitting in a Room: For Voice on Tape," (New York, NY: Lovely Music, 1990).

¹⁸ Oxford English Dictionary, "*Organology*, N." (Oxford: Oxford University Press).

electronic instrument rarely heard in the orchestra due to its incompatible timbre.¹⁹ The example of the theremin was a particularly helpful point. I attempted to use a sine wave LP several times early on in my candidature. When the sine wave behaved as I intended, I was thrilled with the result. But I found the sine wave too difficult to control in a concert situation and eventually abandoned it.

My aspiration for the turntable is to establish it as a viable member of concert music orchestration. New instruments often have a trial period prior to their acceptance or rejection; even the oboe once rivalled for acceptance into “polite society.”²⁰ I believe the turntable is in such a phase, yet to be established in the public consciousness as a musical instrument.

Miles White suggests in his 1996 thesis the turntable might best be described as a manual analogue sampler, fitting into the Electrophone category.²¹ Electrophones are described by the esteemed Sachs-Hornbostel classification system as instruments that involve electronic circuitry to produce electrical signals that are passed to a loudspeaker to deliver sound.²² Various Wikipedia contributors and Rootsofrhythm.net suggest the turntable is better described as an idiophone due to the needle’s vibration and friction on the LP.²³ The debate extends into online music forums where we can also find those

¹⁹ Gardner Read, *Orchestral Combinations : The Science and Art of Instrumental Tone-Color* (Lanham, Md.: Scarecrow Press, 2004).

²⁰ Jeremy Montagu, "The Creation of New Instruments," *The Galpin Society Journal* 59, no. ArticleType: research-article / Full publication date: May, 2006 / Copyright © 2006 Galpin Society (2006).

²¹ M. White, *The High Fidelity Turntable System and the Creation of Hip Hop Music: An Organological Inquiry* (Washington: University of Washington, 1996).

²² Musical Instrument Museums Online, "Revision of the Hornbostel-Sachs Classification of Musical Instruments by the Mimo Consortium," www.mimo-international.com/documents/Hornbostel%20Sachs.pdf.

²³ Roots of Rhythm, http://www.rootsofrhythm.net/roots/7-RORE_Guide-ch5-turntable.pdf.

who summarily dismiss the turntable as any type of instrument; “but in fact the African tribal drum is a musical instrument; the turntable is not.”²⁴

I was not compelled to finalise my opinion as to what class of instrument the turntable fits into. However the sincerity and dedication of those who are interested in vetting the turntable emboldened me. The turntable is not a gimmick; it is a musical instrument worthy of the aforementioned research.

²⁴ Charles Mudede, "The Turntable," ctheory.net, www.ctheory.net/articles.aspx?id=382.

CHAPTER 2: Brief overview of phonograph technology

2.1 Early phonography

Thomas Edison invented the Tinfoil Phonograph in 1877.²⁵ The shape and size of his phonograph was very different from the modern day record player, however the fundamental technology has remained the same.²⁶ Phonograph manufacturers came and went over the next 50 years and consumer preferences eventually led to the modern design of a flat disc rotating on a platter; “In the summer of 1929, the Edison company gave into the popular trend and introduced the Edison Portable Disc Phonograph.”²⁷ Had the public not favoured the disc over the cylinder, turntablism would certainly be a different art form today and conceivably not even exist.

Edison’s invention had a transformative effect on the 20th century.²⁸ By comparison, we can consider the effect of the Internet in the 21st century. The phonograph not only brought about the proliferation of new music, it facilitated global communication unknown before that point.²⁹

2.2 Belt-drive turntable

The primary function of a phonograph turntable is to rotate a disc enabling a stylus to read the grooves on that disc and translate the information into sound. The most

²⁵ K. Hirt, *When Machines Play Chopin: Musical Spirit and Automation in Nineteenth-Century German Literature* (De Gruyter, 2010), 131.

²⁶ "Improvement in Phonograph or Speaking Machines," (Google Patents, 1878).

²⁷ P.R. Burden, *A Subject Guide to Quality Web Sites* (Plymouth, UK Scarecrow Press, 2010), 85.

²⁸ Katz, *Capturing Sound: How Technology Has Changed Music*; David Byrne, *How Music Works* (San Francisco: McSweeney's, 2013).

²⁹ *How Music Works* (San Francisco: McSweeney's, 2012), 75-115.

important variable amongst turntablists is the technology used to rotate the disc. A belt-drive turntable rotates the disc via an offset motor and belt that wraps around the motor and platter. Belt-driven turntables are often associated with sound artists who do not rely on precise tactile control, such as Christian Marclay.³⁰

Figure 1: Christian Marclay performing on Califone belt-drive turntables, image courtesy of www.youtube.com/watch?v=IIFH4XHU228



Early in my research project, affordable belt-drive turntables put me in a position to explore sound art. However the lack of tactile control limited my compositional options. This point is explained further in the original folio section of this thesis.

2.3 Direct-drive turntable

Direct-drive turntables are built with the motor attached directly to the spinning platter. Musicians who require accurate control over the spin of the LP prefer the direct-drive turntable.

³⁰ Night Music, 1989, Video file, <https://www.youtube.com/watch?v=IIFH4XHU228>.

The first commercially available direct-drive turntable was the Technics SP-10, popularised by founding hip-hop artist, DJ Kool Herc.³¹ The SP-10 was the precursor to the ubiquitous Technics SL-1200 MKII.

Figure 2: Technics SL-1200 MKII direct-drive turntable is the industry standard in hip-hop music, image courtesy of www.djbooth.net.



The introduction of direct-drive turntables into my research project had a significant affect on my output. Direct-drive turntables paved the way for me to embrace traditional instrumentalist skill sets, like dexterity, speed, accuracy and intonation.

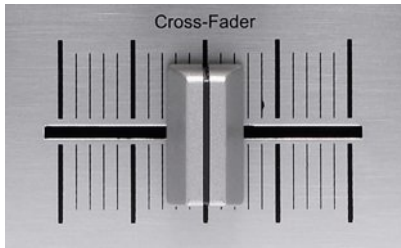
2.4 Disc jockey audio mixer

DJ mixers have at least two audio input sources, each with independent volume control and equalisation. The most significant feature of a DJ mixer is the crossfader, or “transition control slider.”³² The crossfader’s function is to transition between selected audio sources by decreasing the volume of one source and simultaneously increasing the volume of a different source.

³¹ R. Shillingford, *The History of the World's Greatest- Entrepreneurs: Biographies of Success* (BPR Publishers, 2010), 446.

³² David Cross, "A History of the Development of Dj Mixer Features; an S&Ts Perspective" (Cornell University, 2003).

Figure 3: Crossfader from a DJ Mixer courtesy of www.etcetera.co.uk



The speed in which one source becomes audible and another source becomes inaudible is referred to as curve control.

The DJ mixer allows the turntablist to shape their sound in much the same way a bow functions for a violinist.³³ The crossfader's curve control can be set to a fast attack, producing a short *ah* sound, whereas the volume fader facilitates a slow attack, i.e. a *mwaahh* sound. The crossfader is associated with staccato passages and the volume fader for a legato effect. The timbre of any sound can be altered via the equaliser by removing or boosting low, middle and/or high frequencies.

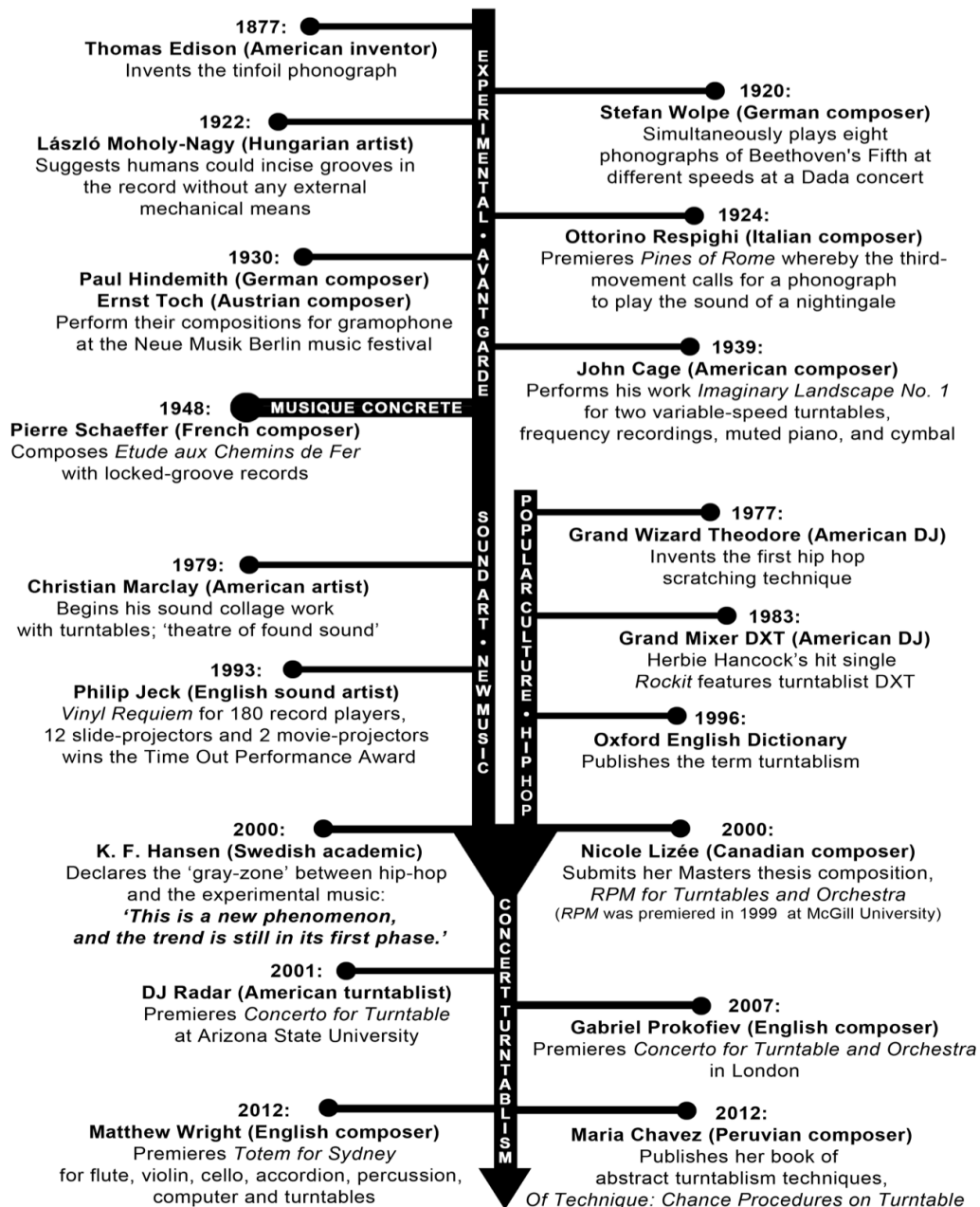
The DJ mixer was implemented as a source for manipulating timbre and articulation for the entirety of my research project.

³³ Ed Montano, "Response to Alinka E. Greasley & Helen M. Prior: Mixtapes and Turntablism: Djs' Perspectives on Musical Shape," *Empirical Musicology Review* 8, no. 1 (2013).

CHAPTER 3: Turntablism, 1921 through the 2012

I created the following timeline to show what I believe are seminal moments in Turntablism.³⁴

Figure 4: Timeline



³⁴ All citations for the above timeline are located in Appendix A.

3.1 The Pioneers, 1920 through 1948

The composers featured in this section represent the exploratory attitude of the early 20th century. There are two critical elements they share: (1) their desire to push the boundaries of the definition of music, and (2) their use of the turntable in composition.

Technology was an effective means for the pioneers to explore new ideas. A common piece of technology was the phonograph. The architecture of the turntable directly affected the creative output of these composers. Locked-groove records allowed Schaeffer to realise his *Musique Concrète* 10 years prior to magnetic tape.³⁵ *Étude aux chemins de fer* (1948), Schaeffer's first realisation, was created with a disk-cutting lathe and four turntables.³⁶ Predating Schaeffer in 1930 was *Grammophonmusik* by composers Ernst Toch and Paul Hindemith. Their *Original Works for Disc* were premiered at the Neue Musik Berlin festival.³⁷ However the exploratory attitude began in 1920 with composer Stefan Wolpe's "experiment" whereby he played eight phonographs of a Beethoven symphony and actively varied the speed of each phonograph.³⁸

"The only lively thing that will happen with a record, is if somehow you would use it to make something which isn't. If you could for instance make another piece of music with a record... that I would find interesting."
John Cage³⁹

³⁵ T. Holmes, *Electronic and Experimental Music: Pioneers in Technology and Composition* (London: Routledge, 2002).

³⁶ B. Wikipedians, *Ambient Music* (PediaPress), 36.

³⁷ Mark Katz, "Hindemith, Toch, and "Grammophonmusik"," *The Journal of Musicological Research* 20, no. 2 (2001): 162.

³⁸ E.J. Scheinberg and Los Angeles University of California, *Music and the Technological Imagination in the Weimar Republic: Media, Machines, and the New Objectivity* (University of California, Los Angeles, 2007), 61.

³⁹ Katz, *Capturing Sound: How Technology Has Changed Music*, 45.

3.2 Modern avant-garde, 1979 through 2012

*“My first influences were Cage and some of the Fluxus experiments with sound.
Then, Musique Concrète and its experimentation with found sounds.”*
~Christian Marclay⁴⁰

Modern avant-garde turntablists are often referred to as “sound artists.” They often combine found sounds to create a texture that defies any descriptions available in conventional concert music.⁴¹ These turntablists are also defined by what they don’t do, that is, they do not prioritise precise manual control over the turntable. Experimental turntable music is still thriving through musicians like Philip Jeck and Janek Schaefer.⁴²

Avant-garde turntablism is not unique to American culture. Japanese turntablists like Otomo Yoshihide came from a “free noise” tradition influenced by John Cage and the Fluxus movement.⁴³ Yoshihide is one example of many internationally recognised experimental turntablists from Japan.

3.2.1 Modern experimental turntablism

During my research project I gained an appreciation for the experimental artists’ contribution to turntablism. I was compelled to investigate the junction between sound art and music, even if the end result were to simply appreciate the creative ideas of these artists, and dismiss them as anything I would pursue during my Masters.

⁴⁰ G. Hainge, *Noise Matters: Towards an Ontology of Noise* (London: Bloomsbury Publishing, 2013), 343.

⁴¹ J. Sexton, *Music, Sound and Multimedia: From the Live to the Virtual* (Edinburgh: Edinburgh University Press, 2007), 94.

⁴² M. Katz, *Groove Music: The Art and Culture of the Hip-Hop Dj* (New York: Oxford University Press, USA, 2012), 201.

⁴³ C. Kelly, *Cracked Media: The Sound of Malfunction* (Cambridge: MIT Press, 2009), 188.

My investigation into modern experimental turntablism revealed the blurred lines between music and conceptual art.⁴⁴ Turntablists like Philip Jeck exemplify these overlapping ideas. Jeck, who studied visual arts at Dartington College of Arts, is best known for *Vinyl Requiem*, which featured 180 record players, 12 slide projectors and two film projectors.⁴⁵ His work is often referred to as “sound art” instead of music; sound is the modifier, art is the noun.⁴⁶ In *The Fundamentals of Sonic Art and Sound Design* T. Gibbs has a chapter dedicated to this divide between art and music.⁴⁷ In this chapter, the author claims in the 20th century “art responded by changing the definition of what forms could be considered [art]” whereas music “proved to be less flexible, continuing to maintain a relatively simple and limited definition of itself.”⁴⁸

Broken Music is a catalogue of works created by visual artists “with and for the medium of records.”⁴⁹ *Broken Music* attempts a point of clarity, “in contrast to the composer or musician who perceives the record first and foremost as a vehicle transporting his musical ideas, the visual artist is especially interested in the optical as well as acoustical presence.”⁵⁰ Many of the visual artists in *Broken Music* “perform” their installations on a stage for an audience, like Claus van Bebber.⁵¹ Rather than refer to the work as a

⁴⁴ Oxford English Dictionary, “*Conceptual, Adj.*” (Oxford: Oxford University Press).

⁴⁵ Laura Davis, “Major Arts Prize for Liverpool Composer,” *Daily Post*, 2009 Nov 11 2009.

⁴⁶ Christopher Olson, “Sounding. Winnipeg’s Send and Receive at Ten,” *Border Crossings* 27, no. 3 (2008).

⁴⁷ T. Gibbs, *The Fundamentals of Sonic Art and Sound Design* (London: Bloomsbury Academic, 2007).

⁴⁸ Ibid.

⁴⁹ U. Block et al., *Broken Music: Artists’ Recordworks : [Catalogue]* (Berliner Künstlerprogramm des Daad : gelbe Musik), 9.

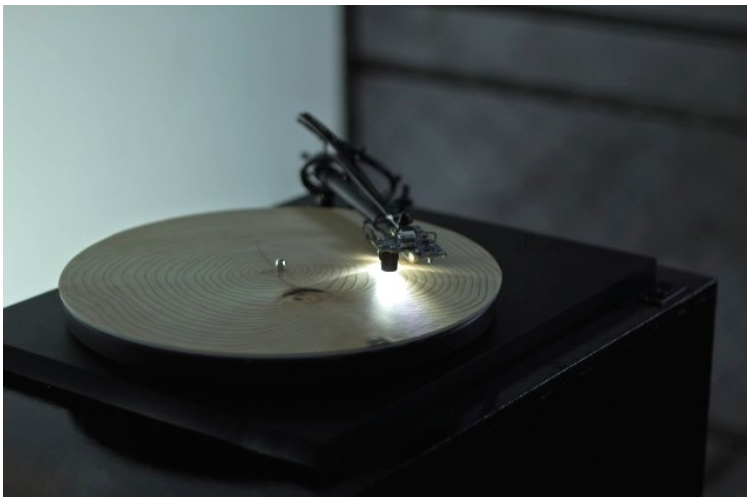
⁵⁰ Ibid.

⁵¹ Geof Huth, 2009, Video file, <https://www.youtube.com/watch?v=AC9NhMX4DFo>.

composition, the performance is called an “electronic sound piece.”⁵² Bebber is further example of the blurred lines between art and music evident in turntablism.

Modern technology allows turntables to generate analogue data to be translated by a computer and transformed into music, such as Bartholomäus Traubeck’s piece *Years*.⁵³ Traubeck uses a modified turntable to *play* tree rings. He explains, “This data serves as basis for a generative process that outputs piano music. It is mapped to a scale which is again defined by the overall appearance of the wood.”⁵⁴

Figure 5: *Years* by Bartholomäus Traubeck, year ring data is translated into music, courtesy of traubeck.com.



I believe artists like these should be considered in the story of turntablism even if they themselves favour the moniker of sound artist rather than turntablist, musician or composer.

⁵² Ibid.

⁵³ Bartholomäus Traubeck, 2011, Video file, https://www.youtube.com/watch?v=ZYLAPVi_I2U.

⁵⁴ Ibid.

3.3 Popular Culture and hip-hop, 1975 through 2012

Hip-hop turntablism began in the 1970s, concurrent but separate to the avant-garde turntablists. The scope of this thesis is not to vet hip-hop as an expression of music but rather to focus on the talent of those turntablists who associate themselves with the genre.

Clive Campbell, a.k.a. DJ Kool Herc, is widely accepted as the father of hip-hop turntablism.⁵⁵ The artistic intention of Kool Herc and those like him is completely different from the aforementioned experimentalists. There is no doubt that the hip-hop turntablists established virtuosity on the instrument. Speed, accuracy, dexterity, rhythm, pitch and expression are ever-present in hip-hop turntablism. Not to say the experimentalists are without these qualities, but hip-hop has clearly developed tactile performance-based turntablism to a higher level.

There is a narrow trend in modern hip-hop turntablism that embraces the avant-garde, e.g. DJ Olive, a modern turntablist who creates free improvisation in the style of the avant-garde tradition.⁵⁶

3.4 Concert Turntablism, 2000 through 2012

This thesis establishes the phrases concert turntablism and concert turntablist. The best way to understand a concert turntablist is to consider a concert pianist: one who has

⁵⁵ Stephen Webber, *Dj Skills : The Essential Guide to Mixing and Scratching* (Focal Press, 2008), Book, 48.

⁵⁶ T. Holmes, *Electronic and Experimental Music: Technology, Music, and Culture* (London: Routledge, 2008), 462.

studied piano playing to an extremely high level of proficiency. We would also assume the concert pianist is proficient at reading music. A concert pianist may find him/herself in a chamber ensemble with other acoustic instruments, or a full orchestra and conductor, or an electroacoustic environment. All of these attributes we readily associate with a concert pianist are the criteria I use to define a concert turntablist: one who is highly proficient on the turntable-as-instrument, adept at reading music, and performs in a purpose built space for listening to music.

According to *Groove Music: The Art and Culture of the Hip-Hop DJ*, several pieces for turntable and acoustic ensemble were written from 2000 to 2010, including a number of concertos.⁵⁷

The first recognised attempt at concert turntablism was Nicole Lizée's *RPM: for large ensemble and solo turntablist* (1999).⁵⁸ Two years later came the performance of DJ Radar's *Concerto for Turntable* performed with the Arizona State University Symphony Orchestra. DJ Radar met the criteria of a concert turntablist (he even wore a tuxedo).⁵⁹ Radar's performance was an early inspiration for my research project. Lizée's *RPM* was a benchmark piece for concert turntablism, however her work did not directly affect my compositional output.

⁵⁷ Katz, *Groove Music: The Art and Culture of the Hip-Hop Dj*, 208.

⁵⁸ Lizée, "'Rpm' for Large Ensemble and Solo Turntablist."

⁵⁹ Radar Title of Weblog.

Figure 6: *Concerto for Turntables*, DJ Radar performing at the world premiere, courtesy of www.youtube.com/watch?v=1iz9YVMfA34



In 2008, turntablist and Berklee College of Music professor Stephen Webber performed his *Stylus Symphony*. Short clips of Webber's performance are available to view on YouTube.⁶⁰

Figure 7: *Stylus Symphony*, performance at the Berklee Performance Center, courtesy of www.stephenwebbbermusic.com.



⁶⁰ Stephen Webber, 2008, Video file, <https://www.youtube.com/watch?v=GjZ56f5GIX0>.

Gabriel Prokofiev's *Concerto for Turntables and Orchestra* is, in my opinion, the most successful orchestral work for the concert turntablist to date. His work features mature orchestration, advanced turntable techniques and convincing musicianship by the turntablist. Prokofiev's concerto bolstered my pursuit of the turntablist as a viable member of the orchestra.

3.5 Perception of the turntable-as-instrument

Throughout my candidature I often had to explain the concept of composing for the turntable. The reactions I received were always mixed, regardless if I was speaking to a layperson or scholar. I realised early in my study that, should I pursue the turntable after my masters, I would have a challenge beyond the creative process. The public perception of the turntable is an additional barrier.

On March 24, 1939, John Cage's composition *Imaginary Landscape No. 1* premiered at Cornish College of the Arts in Seattle.⁶¹ The instrumentation was for two variable speed turntables, frequency recordings, muted piano & cymbal. Musicologists revere *Imaginary Landscape No. 1* as landmark composition for electroacoustic music.⁶² There are countless references to the March 24th performance available for citation, however it is very difficult to source any critical reviews of the event. The question persists; what did Cage's audience think of *Imaginary Landscape No. 1*?

⁶¹ L.R. Eyvindr, *Imaginary Landscape* (Plor, 2012).

⁶² Vladimir Bogdanov, *All Music Guide to Electronica : The Definitive Guide to Electronic Music* (San Francisco: Backbeat Books, 2001).

3.5.1 In critical reviews

The 21st century witnessed multiple symphonic concertos featuring the turntable as soloist. Thirty-five newspaper reviews of these performances reveal a brief history of the music critic's perspective on turntablism in the concert hall.

From 2000 to 2005, 70% of the headlines make use of colloquialisms directly associated with the hip-hop genre. Terms such as spin, scratch, hip-hop, DJ and stab (a hip-hop technique) are used in nearly every article title. The reliance on hip-hop clichés diminishes the credibility of the reviewers by demonstrating their collective narrow view of turntablism.

Towards the end of 2005, trite titles such as *Itch to Scratch with the Orchestra* give way to more meaningful headlines, such as *Carnegie's Classical Turntablism* and *Redefining Classical Music Conventions*.⁶³

3.5.2 In academia

In his Ph.D., Andre Sirois considers the corporate use of the hip-hop DJ to improve marketing techniques.⁶⁴ Sirois' dissertation illustrates the financial gains associated with using the hip-hop DJ as a marketing tool. The prolific use of a DJ in this way sustains the public's perception of the turntablist as a cultural archetype, not as a musician. The turntable, as associated with hip-hop culture, is more likely to rouse images of urban street clothing, graffiti, even crime.

⁶³ Lucy Reed, "Itch to Scratch with Orchestra," *Waikato Times* 2005.; Stephen Webber, "Carnegie's Classical Turntablism," *Remix* 2005.

⁶⁴ Andre G. Sirois, "Scratching the Digital Itch: A Political Economy of the Hip Hop Dj and the Relationship between Culture, Industry, and Technology" (3466385, University of Oregon, 2011).

Ironically, Sirois' work represents a clash between the academic community and the hip-hop culture. His 529-page dissertation shows critical thinking and a significant command over academic language. However, in his Acknowledgments, Sirois uses hip-hop slang, referring to "shout outs, big ups," and "mad ridiculous props," as his way of thanking the hip-hop community.⁶⁵ There is nothing inherently wrong with an informal acknowledgment section. However in the case of Sirois, his use of hip-hop jargon precipitates the public's view of turntablism as a street movement, potentially resulting in his work being treated less seriously.

Academically educated turntablists are aware of the disparity between the public's point of view and their own concept of the turntable-as-instrument. The need for approval from the legitimate music community is evident in Felicia Miyakawa's article *Turntablature: Notation, Legitimization, and the Art of the Hip-hop DJ*.⁶⁶

The 2013-2014 Berklee College of Music graduate studies program offered the following course:

MTI-611 DJing and Turntablism: in this course, students learn to use the turntable as a musical instrument.⁶⁷

Berklee's graduate course in turntablism was the subject of at least eighteen published articles between 2002 and 2004. The articles were written with genuine interest and respect.⁶⁸

⁶⁵ Ibid.

⁶⁶ Felicia M. Miyakawa, "Turntablature: Notation, Legitimization, and the Art of the Hip-Hop Dj," *American Music* 25, no. 1 (2007).

⁶⁷ Berklee College of Music, "The Graduate Bulletin of Berklee College of Music," ed. Berklee College of Music (Boston 2013).

We can glean from the myriad of critical reviews and academic presence that turntablism is on its way to being understood and accepted by the public, however the cultural associations with the turntable will likely be a barrier to objectively understanding it as just another instrument. The effect of this research on my own work has led to an active avoidance of language and sounds typically associated with hip-hop, despite my enjoyment of the genre.

⁶⁸ Cindy Atoji, "Learning; Berklee Prof Spins Idea for New Instrument," *Boston Herald* 2002; Michael Endelman, "Turntable U? In D.J.'S Hands Professor Sees an Instrument," *New York Times* 2003; Lukas I. Alpert Associated Press, "Dj School Attuned to the Basics," *Times Union* 2003; Don Aucoin, "Starting from Scratch a Revolutionary Course at the Berklee College of Music Is the First to Teach Hip-Hop Dj Techniques and Elevate the Humble Turntable to a Serious Instrument. But Is This Music?," *Boston Globe* 2004; Theo Emery, "A New Spin on Education ; Berklee Music Curriculum Has Been Turning the Tables," *The Record* 2004; "Hip-Hop Dj-ing in a Class by Itself; Berklee College Takes a Stab at Turntables 101, Possibly the First Such Course in the Country," *Los Angeles Times* 2004; "The Art of the Scratch / Music College Takes Note of Hip-Hop," *Houston Chronicle* 2004; Berklee College of Music, "Berklee Scratches Turntablism's Surface," *Systems Contractor News* 2004; Christopher Muther, "Berklee Professor Takes Dj Class out for a Spin," *Boston Globe* 2004; Sarah Rodman, "Anichtoscratch; Berklee Spins Off New Course of Study: Turntablism," *Boston Herald* 2004; Kelefa Sanneh, "Spin Doctorate," *New York Times* 2004; "At Dj U, Students Learn to Spin with Style ; Classes Join the Time-Tested Method of Trial and Error for Learning the Art of Mixing Music," *Orlando Sentinel* 2004; Robert Siegel, "Interview: Stephen Webber Discusses the Course He Offers at the Berklee College of Music on Using Turntables and Being a DeeJay," ed. Michele Norris (Washington, D.C., United States, Washington, D.C. 2004); Press Theo Emery Associated, "Scratch That Music College Nurtures Wannabe Djs," *Journal - Gazette* 2004; Stephen Webber, "At Berklee, You Can Take a Stab at a Record," *Philadelphia Daily News* 2004; Katie Zezima, "Turntables Come out of the Basement and into Music Class," *New York Times* 2004; "Students Take a Spin at the Turntable," *Milwaukee Journal Sentinel* 2004; "College's Spin: Turntable Is a Musical Instrument," *Houston Chronicle* 2004.

Part B: My Creative Process and Folio of Original Works

“Is it music?’ I’ve decided, ultimately, that this is the wrong question, that this is not the important question. The important question is, ‘Is it interesting?’ And I follow this question, not worrying about ‘Is it music?’ - not worrying about the definition of the thing that I’m making. ...I don’t worry about the likeness of the result to some notion of what music composition is supposed to be.”
~Mark Applebaum⁶⁹

⁶⁹ TED, August 3, 2012, Video file, https://www.youtube.com/watch?v=46w99bZ3W_M.

CHAPTER 4: Philosophical Enquiry

Engaging with the turntable as a composer-performer compelled me to re-examine my perception of music. Throughout my candidature I frequently revisited aspects of music that I had taken for granted.

4.1 What is music?

“Everything we do is music.”
~John Cage⁷⁰

According to the OED, music is the art or science of combining vocal or instrumental sounds to produce beauty of form, harmony, melody, rhythm, and expressive content.⁷¹

In June of 2013, I had the pleasure to see the 43,000-year-old Divje Babe flute at the National Museum of Slovenia.⁷² Bearing witness to this unimaginably old instrument served as a poignant reminder that music has been around for a very long time.

The purpose of contemplating *what is music* was to generate a process of inquiry aimed at creating my own definition of music. I was moved to take on this task due to my confrontation with the vast sonic options available on the turntable.

Music is any audible sound that is observed to be music. If a listener witnesses a sound to be music, then it is music, even if s/he is the only one who hears it as music.

⁷⁰ L. Henderson and L. Stacey, *Encyclopedia of Music in the 20th Century* (London: Taylor & Francis, 2014), 98.

⁷¹ Oxford English Dictionary, “*Music, N. And Adj.*” (Oxford: Oxford University Press).

⁷² Svanibor Dimkaroski Ljuban Pettan, “Paleolithic Bone Flute from Divje Babe Revisited (Ii),” *Folk musical instruments* (2011).

Beethoven's Ninth Symphony is widely understood as music. Likewise, by my definition, a fluorescent light buzzing in an office, if perceived as music, is music. If a child runs a stick down a metal fence and witnesses that sound as musical, s/he has created music. If the hum of a street cleaner and a random car alarm create the interval of a perfect fifth, and nobody recognises that sound as music, it is not music. In other words, for music to exist, there must be a qualitative witness.

People distinguish for themselves the difference between noise and music. While most New Yorkers would consider city traffic to be noise, John Cage refers to it as music.⁷³ I enjoy a very aggressive style of free jazz. To me, there is no question that free jazz is music. However, my mother places free jazz in the same category as traffic; noise, not music. Rap is often criticised as non-music, despite its wide acceptance in pop music culture.⁷⁴ Naysayers will hear rap as nothing more than spoken words. We can thus summarise that, just as beauty is in the eye of the beholder, so is music.⁷⁵

The idea that music is any sound that is deemed to be music is a central principle in my research and compositions. To best understand my research project, one need not agree with my definition. However, it is necessary to understand that music to me is a limitless palette of sounds. With that said, most of the compositions in this portfolio have common musical elements: melody, harmony, rhythm, and common instrumentations. The inclusion of the turntable as the central actor in my research allowed me to explore a world of sonic possibilities that fit into my definition of music.

⁷³ John Cage, "John Cage About Silence," <https://www.youtube.com/watch?v=pcHnL7aS64Y>.

⁷⁴ Fred Post, "Rap Isn't Music," *Sault Star*, 2004 Nov 23 2004; Barry Prismall, "Rap the Biggest Con in History of Music," *The Examiner*, 2013 May 29 2013.

⁷⁵ E. Knowles, *The Oxford Dictionary of Phrase and Fable* (Oxford: Oxford University Press, UK, 2006).

4.2 Why the turntable?

“I liked working with records as a performance activity. I used the records in front of people. It was a live event.”
~ Christian Marclay⁷⁶

“A turntable becomes a musical instrument when the person behind it is creating some musical ideas. If you can take a wicker basket, put some beans in it, use it as a shaker, and call that a Brazilian musical instrument, then you should call a turntable a musical instrument.”
~Herbie Hancock⁷⁷

There are several reasons behind my decision to choose the turntable as my instrument:

(1) As a listener, I love the sound of vinyl records and I enjoy the activity of listening to records. I am a part of a passionate vinyl fan base.⁷⁸ (2) As a consumer, I enjoy the LP product, specifically the album cover art. (3) As a composer, I like working with ideas that came into existence independently from me. LPs offer a great opportunity to find new sounds to interpret. (4) As a turntablist, I enjoy the physical activity of manipulating vinyl. (5) As an audience member, I like the look of a turntable on stage. (6) Most importantly, I believe the architecture of the turntable allows for the minute inconsistencies in performance that create the feel of a human being playing an instrument. The turntable affords the opportunity for imperfection that other playback devices do not, e.g an electronic sampler.

⁷⁶ Hainge, *Noise Matters: Towards an Ontology of Noise*, 346.

⁷⁷ Webber, *Dj Skills : The Essential Guide to Mixing and Scratching*, 99.

⁷⁸ Jeb Wright, "Guitarist Steve Vai Explains Why He's Had a Lasting Love Affair with Vinyl Records," *Goldmine*, Dec 2013 2013; Lockwood Rod, "Play It Again; Vinyl Records Spin out of Obscurity and Find New Fans," *The Blade*, 2010 Feb 14 2010; Heather McKinnon, "Worshipping at the Altar of Vinyl ; Several Seattle Stores Help Fans Get into the Groove, as Music Buyers of All Ages Get Nostalgic for Records," *Seattle Times*, 2004 Dec 28 2004.

4.3 Edison's Time Capsule

"Centuries after you have crumbled into dust [the phonograph] will repeat again and again, to a generation that could never know you, every idle thought, every fond fancy, every vain word that you choose to whisper against this thin iron diaphragm."
~Thomas Edison⁷⁹

A time capsule is more than the "history in a can" definition, rather a cultural transmission across significant stretches of time.⁸⁰ LPs comfortably fit into this definition. I purchased several LPs because I was intrigued by the history they carried. I enjoyed the potential of creating something new with something old. The LP is a unique time capsule for this reason: as opposed to imaging what the past was like, we can literally experience sound in the same way they experienced it. This fact cannot be overstated; gramophones and LPs are not only time capsules, they are time machines. As a composer I am compelled to embrace this opportunity to have a musical connection with the past.

*E.J. Scheinberg on Stefan Wolpe's Dada Beethoven performance: "Wolpe treated the gramophone not only as a time capsule but as a musical instrument."*⁸¹

⁷⁹ D. Hendy, *Noise: A Human History of Sound and Listening* (London: Profile, 2013), 309.

⁸⁰ W.E. Jarvis, *Time Capsules: A Cultural History* (Jefferson, North Carolina: McFarland, 2002), 1,14.

⁸¹ Erica Jill Scheinberg, "Music and the Technological Imagination in the Weimar Republic: Media, Machines, and the New Objectivity" (Ph.D., University of California, Los Angeles, 2007).

CHAPTER 5: Equipment

This section briefly introduces the equipment I used throughout my candidature. Pertinent details to the compositions themselves are discussed in Chapter 6. A complete list of all equipment used is in Appendix B.

5.1 Turntables

5.1.1 American Audio HTD 4.5 Super High Torque Direct Drive Turntable

As previously explained, a direct-drive turntable has the motor directly connected with the platter. The HTD 4.5 Direct Drive Turntable is a fantastic option for the concert turntablist. At \$200 AUD each, the HTD was an affordable option. This turntable was utilised in every composition in my portfolio.

Figure 8: American Audio Turntable courtesy of www.adjaudio.com



5.1.2 Numark CDX Vinyl-Controlled CD Turntable

The Numark CDX provided the opportunity to work within the limitations of vinyl manipulation without having to purchase new records. CDs could be burned easily allowing for more experimentation prior to purchasing a new LP. The Numark CDX

plays CDs, however the architecture of the machine is that of a turntable, hence the name vinyl-controlled CD turntable. The CDX was used extensively for research in my studio, but only implemented in my first composition, *Reimagined Landscape One*. Similarly to Schaeffer's work with his record lathe in the early years of *Musique Concrète*, the CDX provided the opportunity for trial and error in the controlled studio environment. After completing my first composition, *Reimagined Landscape One*, I decided to limit my work to existing LPs (found sound) and not pursue recording my own audio. In the future I will reconsider implementing the CDX in my work.

Figure 9: Numark CDX Vinyl-Controlled CD Turntable courtesy of www.numark.com



5.1.3 Digitech USB GE4056 Turntable with Amp RCA Outputs

The Digitech GE4056 is an inexpensive direct-drive turntable I purchased new at \$69AUD. This is the worst turntable I have ever heard. From a review on whirlpool.net.au, “this product is not fit for the purpose it was intended. It's appalling, and they shouldn't be allowed to sell it.”⁸² The Digitech turntable was implemented in my first two compositions and then discarded for better technology.

⁸² AH42, "Usb Turntable - Digitech or Others," <http://forums.whirlpool.net.au/archive/1097626>.

Figure 10: Digitech Turntable courtesy of www.jaycar.com.au



5.2 DJ Mixers

A variety of DJ mixers were used during my project. My compositions required the basic functionality available in any moderately priced DJ mixer.

5.3 LPs and CDs

My composition *Reimagined Landscape One* was the only piece that used a CD (and the Numark CDX). A catalogue of every LP used for my composition portfolio is listed in Appendix C, along with citations.

5.4 Amplification

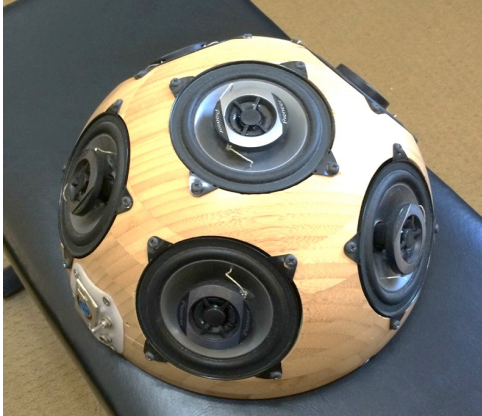
“Performing in a concert hall presented several problems. The first was purely technical. It was to ensure the best sound production, by accommodating our equipment to the acoustics and size of the hall, by installing our loudspeakers in the best places, and above all achieving a three-dimensional projection.”
~Pierre Schaeffer regarding his performance with turntables in 1948⁸³

Suitable amplification for the orchestral turntablist has been a major part of my research, specifically, finding a solution for the turntable to blend within a chamber

⁸³ P. Schaeffer, C. North, and J. Dack, *In Search of a Concrete Music* (Oakland: University of California Press, 2012), 64.

ensemble. My first effort was to build the hemi-speaker based off the Stanford Laptop Orchestra instructions.⁸⁴

Figure 11: Hemi-speaker I built from an Ikea salad bowl and car speakers



My motivation to create an omnidirectional speaker was an effort to blend the turntable in an orchestral setting by mimicking the sound projection of acoustic instruments. I hoped the hemi-speaker's output would be comparable to that of an acoustic instrument. The hemi-speaker was a cosmetic success, but unfortunately it did not sound good. I tested the audible frequency range and found giant gaps in the audio spectrum. The result was an unrealistic representation of the LP. Despite my failed attempts, I intend on pursuing the hemi-speaker again in the future with additional guidance.

Subsequent amplification efforts made use of Sydney University's Tannoy powered speakers. I experimented with different speaker placement for each composition. In *Reimagined Landscape One* the speakers were laid horizontally on the floor at various angles towards the audience.

⁸⁴ Stanford, "The Slork Speaker," <https://ccrma.stanford.edu/~njb/research/slorkSpeaker/>.

Figure 12: *Reimagined Landscape One*, performance, five speakers spread across the floor, three speakers pictured below.



Reimagined Landscape Two was performed at the Sydney Opera House for the John Cage Centennial Celebration.⁸⁵ The speakers used for this performance were a collection of whatever was available; studio monitors, an old amplifier and my hemi-speaker. This amplification situation would not be suitable for the concert turntablist, but in the context of the John Cage celebration the speakers were well placed.

Figure 13: *Reimagined Landscape Two*, John Cage Centennial performance



⁸⁵ Gail Priest, "John Cage Centenary: Legacies and Liberties," *Real Time*, no. 113 (2013), <http://www.realtimearts.net/article/issue113/10940>.

Reimagined Landscape Three was realised in a large performance hall at the university. The Tannoy powered speakers were placed vertically on the floor behind each performer.

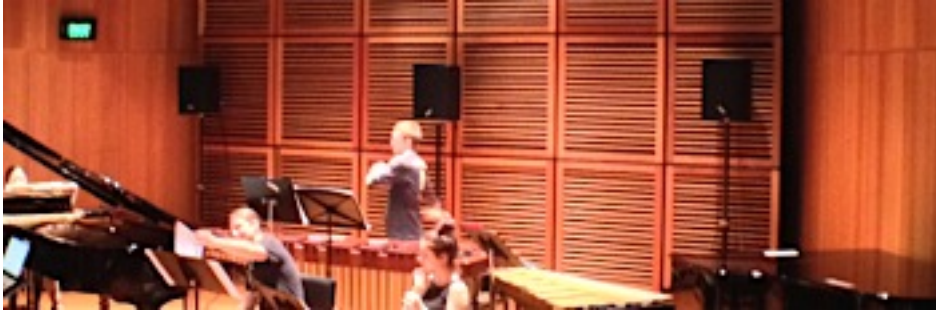
Figure 14: *Reimagined Landscape Three*, rehearsal, powered speakers on the floor.



Placing the speakers equidistantly on the floor was an improvement in the overall sound, however the performers found they were not always sure which speaker was theirs. A better solution would have been to raise the speakers on stands directly behind each turntablist.

The speaker configuration for my piece *3:30 AM, Teddy* was a significant improvement for spatial separation of the turntable sound-sources. The speakers were placed on stands along the back of the stage; the turntablist was set up stage right. The conductor for this piece cued when the volume of each speaker needed to be changed. The stage plots of my subsequent pieces always placed the speakers equidistantly along the back wall, the final improvement was to place the turntablist(s) directly in front of his or her sound source. Figure 15 is a photo of the speakers from *3:30 AM, Teddy*.

Figure 15: 3:30 AM, Teddy, rehearsal, Tannoy speakers along the back wall



5.5 Technology short names

The previously mentioned technology will be referred to in shorthand in Chapter 6:

American Audio HTD 4.5 Direct Drive Turntable = HTD Turntable

Digitech USB GE4056 Turntable with Amp RCA Outputs = Digitech Turntable

Numark CDX Vinyl-Controlled CD Turntable = CDX

Tascam X8 DJ Mixer = Tascam DJ Mixer

Numark DXM06 2-Channel Digital DJ Mixer = DXM DJ Mixer

Vestax VMC-002XLu 2-Channel USB DJ Mixer = Vestax DJ Mixer

Tannoy powered speaker = Tannoy speaker

CHAPTER 6: Influences and original compositions

6.1 Two groups of influences: composers and psychologists

6.1.1 Composers

Amongst the litany of great music I've investigated throughout this project, there were a handful of compositions that affected my work on a deeper level. The following list is diverse at a glance, but upon further investigation I found the tie that binds is what is missing, rather than what is present:

Jimbo's Lullaby by Claude Debussy (1908)⁸⁶

Vieille Prière Bouddhique by Lili Boulanger (1921)⁸⁷

Pines of the Janiculum by Ottorino Respighi (1924)⁸⁸

Ionisation by Edgard Varèse (1933)⁸⁹

The Unanswered Question by Charles Ives (1935)⁹⁰

Jesus' Blood Never Failed Me Yet by Gavin Bryars (1971)⁹¹

Workers Union by Louis Andriessen (1975)⁹²

Music for 18 Musicians by Steve Reich (1976)⁹³

⁸⁶ Claude Debussy, "Children's Corner: Piano Solo," (Paris: United Music Publishers, 1908).

⁸⁷ Lili Boulanger, "Vieille Prière Bouddhique: Pour Ténor, Chœur Et Orchestre," (Paris: Durand, 1922).

⁸⁸ Ottorino Respighi, "Pini Di Roma: Poema Sinfonico," (New York: Ricordi, 1950).

⁸⁹ Edgard Varèse, "Ionisation: For Percussion Ensemble of 13 Players," (New York: Colfranc Music Pub. Corp, 1967).

⁹⁰ Charles Ives, "The Unanswered Question: For Chamber Orchestra, Performable Also as Chamber Music," (New York: Southern Music Pub. Co, 1953).

⁹¹ Gavin Bryars, "Jesus' Blood Never Failed Me Yet," (London: Schott, 1996).

⁹² Louis Andriessen, "Workers Union: Symphonic Movement for Any Loud Sounding Group of Instruments, 1975," (Amsterdam: Donemus, 2002).

⁹³ Steve Reich and Marc Mellits, "Music for 18 Musicians: For Ensemble," (New York: Hendon Music, 2000).

When considering these compositions, the element they all have in common is a lack of functional harmony, especially a lack of functional cadences. I'm naturally drawn to modal music without functional cadences and often write in that fashion.

The influence of the aforementioned composers is discussed further in the composition analysis section.

"I could not have written in the last 20 years without La Monte Young or Terry Riley or Steve Reich."
~Louis Andriessen⁹⁴

6.1.2 Psychologists

Two professors in particular had a direct affect on my compositions; Diana Deutsch, Professor of Psychology at the University of California, San Diego and Professor Steven Brown, director of the NeuroArts Lab at McMaster University.

Diana Deutsch made a name for herself in the field of auditory illusion. Auditory illusions occur when the sounds we perceive do not correspond to those that are presented. When such a mismatch occurs, we are experiencing an *auditory illusion*.⁹⁵ Two illusions in particular made their way into my compositions, phantom words and speech-to-song.

⁹⁴ A. Ford, *Composer to Composer: Conversations About Contemporary Music* (Michigan: Hale & Iremonger, 1993), 85.

⁹⁵ E.B. Goldstein, *Encyclopedia of Perception* (Thousand Oaks, California: SAGE Publications, 2010), 160.

Phantom words appear when a single word is repeated rapidly, resulting in the listener hearing words that are not being said. Deutsch presents the name Boris on her CD, *Phantom Words and Other Curiosities*.⁹⁶ Boris is repeated in quick succession with the stereo fields offset from each other. When I listened to the Boris example I heard words like wish list, risk it, and whisper. Deutsch's Boris audio clip is featured towards the end of my composition *Reimagined Landscape One*.

Repetition is not a new musical device, however I found Deutsch's scientific approach to be fresh and inspiring. *Reimagined Landscape Three* and *3:30 AM, Teddy* use repetition with the desired phantom affects. That is, I tried to create an environment where the listener hears the loops his or her own way. Specific examples of this concept are explained in the composition sections.

The speech-to-song illusion occurs when a short, spoken passage is repeated. The spoken words transform into melody. Deutsch's example on *Phantom Words and Other Curiosities* is quite convincing.⁹⁷ With only a few repetitions one can begin to hear a song rather than a speech. This concept appears at the end of *Reimagined Landscape One* when I manually loop John Cage's voice on the turntable.

There is a similarity between orchestral tone blending and auditory illusion. Clever tone blending is often a form of auditory illusion. Hector Berlioz, in his *Treatise on*

⁹⁶ Diana Deutsch, "Phantom Words and Other Curiosities," (La Jolla, CA: Philomel Records, 2003).

⁹⁷ Ibid.

Instrumentation, advocates instrumental effects that “deceive the listener.”⁹⁸ Auditory illusion was one of the ways I chose to integrate the turntable.

The second psychologist that influenced my work was Steven Brown. His lecture, *Music and the Brain: From Mode to Emotion in Musical Communication*, described the different categories of emotions we feel when listening to music.⁹⁹ Brown’s lecture touched on concepts understood by any learned musician, e.g. the different emotional connotations of major and minor scales. However the comment Brown made that disturbed me was “music is a prostitute.”¹⁰⁰ His example was of neo-Nazi propaganda set to triumphant music, “there are good and bad messages to get tagged on with those chord sequences that make them either socially positive or socially negative. So music is kind of neutral in that sense.”¹⁰¹ Brown explains that music’s emotional associations are contextual, more so than we realise. My entire project is based on re-contextualising sound. I felt a new sense of responsibility after listening to Brown’s lecture.

Prior to working with the turntable my compositions existed in and of themselves, without social context, without accompanying images or video. I always aimed to evoke an emotional response from my audience, however my devices to do so were limited to the instruments I worked with. Introducing the turntable into my compositional process brought another dimension – I could set my music to something extra-musical.¹⁰² If I

⁹⁸ H. Macdonald, *Berlioz's Orchestration Treatise: A Translation and Commentary* (Cambridge University Press, 2002), XXX.

⁹⁹ Steven Brown, "Music and the Brain: From Mode to Emotion in Musical Communication," Library of Congress, <https://www.youtube.com/watch?v=HhnxOu1p-W0>.

¹⁰⁰ Ibid.

¹⁰¹ Ibid.

¹⁰² Oxford English Dictionary, "*Extra-, Prefix*" (Oxford: Oxford University Press).

wanted to make the audience sad, perhaps I could use the sound of a child crying. This freedom brought with it two confronting thoughts. First, I was uncomfortable with how easily I could manipulate the audience. I questioned the merits of my music; how good did my compositions have to be if all I had to do was include an extra-musical element in order to evoke emotion? Second, the turntable is my instrument, not a sound-effects machine. I concluded there is no right or wrong way to use the turntable, however for my Masters degree, I decided to stay focused on traditional elements of music composition; rhythm, pitch, timbre, and expression, rather than manipulating the audience with extra-musical elements.

*“Different Trains employs sampled fragments of recorded interviews with Holocaust survivors.”
Andrew Ford on Steve Reich¹⁰³*

6.2 Introduction to original compositions

The following sections describe my folio of original works. Each composition is explained with the subheadings (1) Instrumentation (2) Stage Plot (3) Requisite Turntablist Skill Level¹⁰⁴ (4) Commentary. The commentary sections include turntable techniques, notation, musical influences, creative process, philosophical influences, amplification and psychoacoustics.

I was the principle turntablist for all the pieces in this portfolio: (1) *Reimagined Landscape One* (2) *Reimagined Landscape Two* (3) *Reimagined Landscape Three* (4)

¹⁰³ Ford, *Composer to Composer: Conversations About Contemporary Music*, 66.

¹⁰⁴ Requisite Turntablist Skill Level is further explained in the performance notes of each piece.

3:30 AM, Teddy (5) *Industry is Beautiful* (6) *For sale: baby shoes, never worn* (7) *Perc and Tables* (8) *The Theme*.

6.3 Reimagined Landscape One

"It's not a physical landscape. It's as though you used technology to take you off the ground and go like Alice through the looking glass."
~John Cage¹⁰⁵

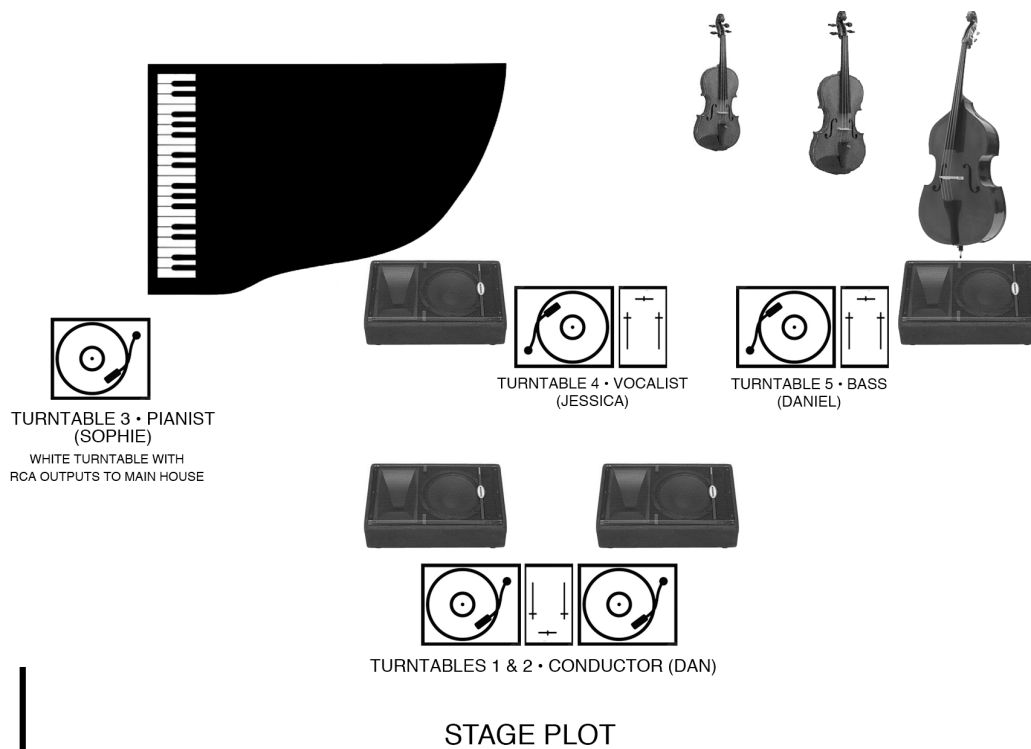
6.3.1 Instrumentation and Length of Piece

Violin, viola, double bass, piano, female soprano, turntablist/conductor, five turntables, three DJ mixers and various LPs

9 minutes 40 seconds

6.3.2 Stage Plot

Figure 16: Stage plot for *Reimagined Landscape One*



¹⁰⁵ R. Kostelanetz, *John Cage (Ex)Plain(Ed)* (New York: Schirmer Books, 1996), 66.

6.3.3 Requisite Turntablist Skill Level

The performance of *Reimagined Landscape One* required different skill levels from each musician. The least complicated task required the pianist to place the tone arm on a record and then remove it when cued to do so at the end of the piece. The vocalist and bassist were required to execute basic turntable gestures with the volume fader. I was the conductor as well as the principle turntablist with two turntables to perform on. The skill level required for my role was basic conducting and intermediate turntablism.

6.3.4 Commentary

Reimagined Landscape One was my first composition written and performed for this degree.

Landscape One comprises of the following sections: (1) MUSIQUE CONCRETE: Spoken Word (2) TRANSITION (3) FLAXEN QUOTE (4) TONE BLENDING (5) SHOSTA REVISTED (6) 12 TONE PIZZ (7) MUSIQUE CONCRETE: Locked Groove (8) PRISON.

*Although I'm working hard, I've given up my original plan, any idea of a "Symphony."
"Study" is a more appropriate title for my attempts at composition,
each one concentrating on a particular area.
~Pierre Schaeffer¹⁰⁶*

The performance of *Landscape One* sought to answer several questions. How many applications for the various styles of turntable could I compose? What can I ask of non-turntablists with formal music training? What is the most effective way to participate in

¹⁰⁶ Schaeffer, North, and Dack, *In Search of a Concrete Music*, 15.

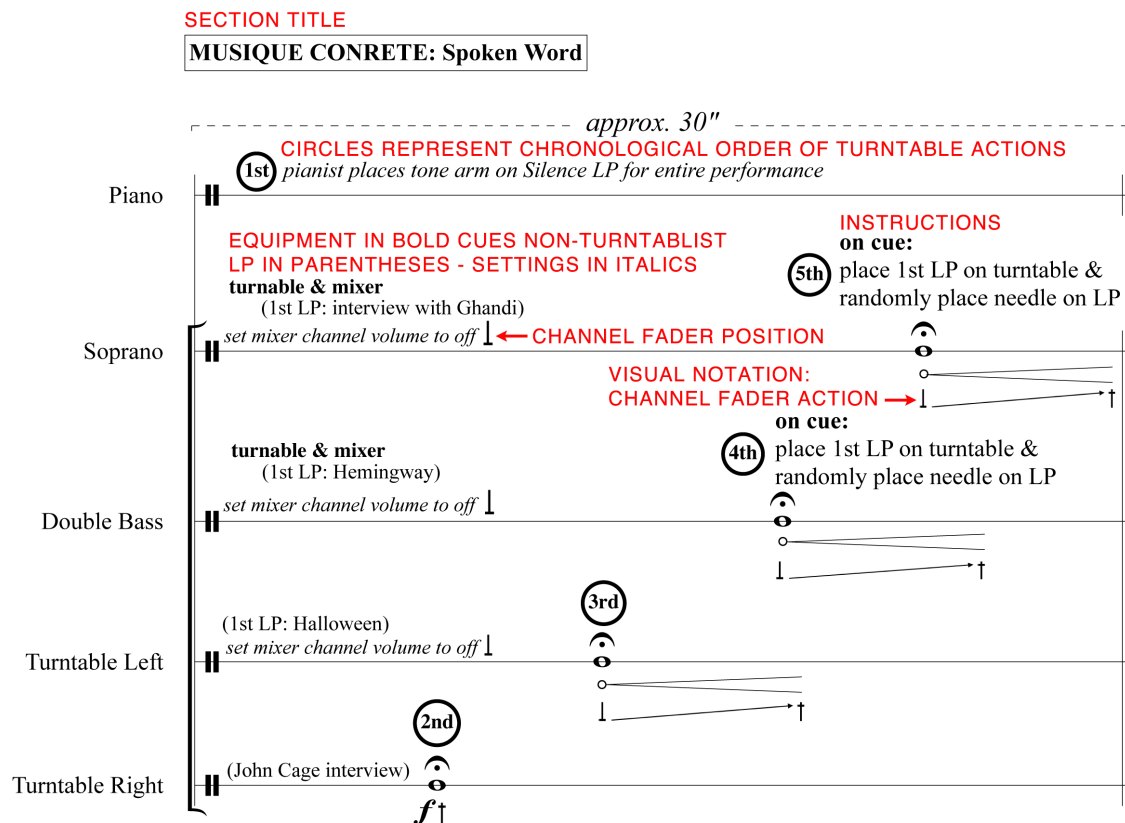
the ensemble while simultaneously leading the ensemble? What is the best amplification strategy?

The conceptual design for *Landscape One* was to source existing material for each section of the piece, modify it, and create something new. This idea was born from embracing a common limitation of the turntable-as-instrument; working with pre-conceived material (LPs).¹⁰⁷ My intention for *Landscape One* was to fully embrace this limitation and impose it on every section of the piece; hence each section is an adaption of pre-existing material, i.e. prison songs from Alan Lomax recordings, a Debussy melody, a tone row from Schoenberg et cetera. This concept helped to provide focus in a work that is otherwise concerned with exploring a variety of approaches to integrating the turntable with an acoustic ensemble.

I created graphic notation for *Landscape One* in Photoshop software and imported the images into Finale software. My goal was to create intuitive notation, catering to both the learned musician and the inexperienced performer. Figure 17 demonstrates several examples of my notation. Annotations are in Helvetica capitals.

¹⁰⁷ There are plenty of works that do not rely on LPs, such as John Cage's *Cartridge Music*. However LPs (found sound) play a significant role in turntablism.

Figure 17: *Reimagined Landscape One*, annotated, mm.1.



The title of the first section, MUSIQUE CONCRETE: Spoken Word, is homage to Schaeffer. The intention for this section was a combination of Schaeffer, Cage and my own ideas.

“I have coined the term Musique Concrète for this commitment to compose with materials taken from given’ experimental sound in order to emphasize our dependence, no longer on preconceived sound abstractions, but on sound fragments that exist in reality and that are considered as discrete and complete sound objects.”
~Pierre Schaeffer¹⁰⁸

Landscape One begins with the sound of a needle placed on a silent LP; a locked-

¹⁰⁸ Schaeffer, North, and Dack, *In Search of a Concrete Music*, 14.

groove LP without recorded material, only the pops and clicks characteristic to vinyl records.¹⁰⁹

Figure 18: Silent LP entitled Yokomono 02 courtesy of Staalplaat record label



The record was amplified through the house PA system for two reasons: (1) I wanted the vinyl sound to come from a completely different source than the instruments on stage and (2) inspired by Cage's idea of a new landscape, I wanted to evoke the feeling of being enveloped in the crackle and pop of vinyl. I thought the omnipresent sound of vinyl crackling throughout the piece would evoke an otherworldly feeling, as if the whole ensemble were being played from a record.

My intention was for the silent LP to fill in the gaps between each section of *Landscape One* with the pleasing crackle of vinyl. Towards the beginning of the piece, the effect of the LP worked as I'd hoped, but by the end of the performance the integrity of the

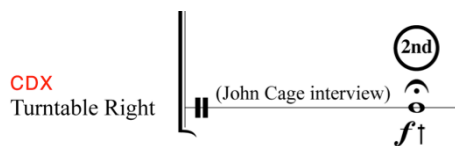
¹⁰⁹ Yokomono, "Yokomono 02: 55 Lock Grooves," (Netherlands: Staalplaat, 2005).

record had degraded significantly and the pleasing warm crackle turned into an abrasive rough noise that skipped to its own rhythm.

The second sound presented in this piece was the voice of John Cage taken from an interview where he discusses his perception of sound. It begins with the following quote:

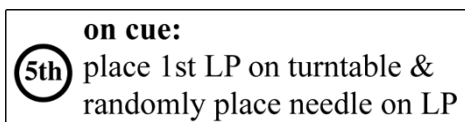
When I hear what we call music, it seems to me that someone is talking. And talking about his feelings, or about his ideas of relationships. But when I hear the sound of traffic, here on 6th avenue for instance, I don't have the feeling that anyone is talking. I have the feeling that sound is acting. And I love the activity of sound.¹¹⁰

Figure 19: *Reimagined Landscape One*, instruction to start John Cage interview, mm.1.



Cage's music often had a chaotic element brought about by embracing noise as music. I welcomed a flavour of chaos by scoring four different spoken word LPs to play at the same time. A few moments after the interview begins, an aleatoric event occurs when the bassist, vocalist and conductor are required to randomly place the tone arm on a spoken word LP.

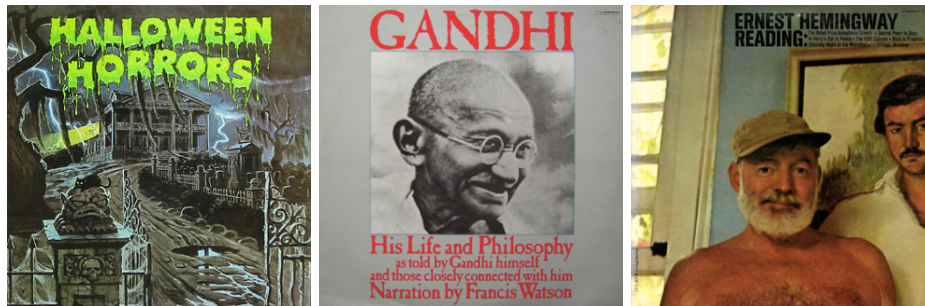
Figure 20: *Reimagined Landscape One*, aleatoricism inspired by John Cage, mm.1.



¹¹⁰ Cage, "John Cage About Silence".

The opening section of *Landscape One* introduces the spoken word LPs, one at a time, presenting all of the sounds to the audience. The LPs quickly meld into an indiscernible aural experience, eventually to be organised by the ensemble.¹¹¹

Figure 21: Reimagined Landscape One, LPs in MUSIQUE CONCRETE: Spoken Word, images courtesy of www.discogs.com



The turntablists subtly take control of the chaos by fading his or her volume up and down in unison. These volume fluctuations gradually increase in speed. The effect transforms subtle volumes change into a clear dynamic pattern. Figure 22 illustrates the moment.

¹¹¹ J. Robert Elliot, *Halloween Horrors: The Sounds of Halloween (and Other Useful Effects)* (Santa Monica, CA: A&M Records, 1977); Francis Watson, *Gandhi – His Life and Philosophy* (UK: BBC, 1983); Ernest Hemingway, *Ernest Hemingway – Reading* (Finca Vigia, San Francisco de Paula, Cuba: Caedmon Records, 1965).

Figure 22: *Reimagined Landscape One*, organised chaos via unison volume fluctuations, mm.6-14.

PAGE 1 on cue, approx ♩ = 60
create 'waves' of sound

PAGE 2

REPEAT 20X, GRADUALLY INCREASE VOLUME FLUCTUATIONS

set mixer EQ **ON CUE, approx ♩ = 60**
LOW MID HI with mixer volume 6"

remove needle from turntable & place back to resting position

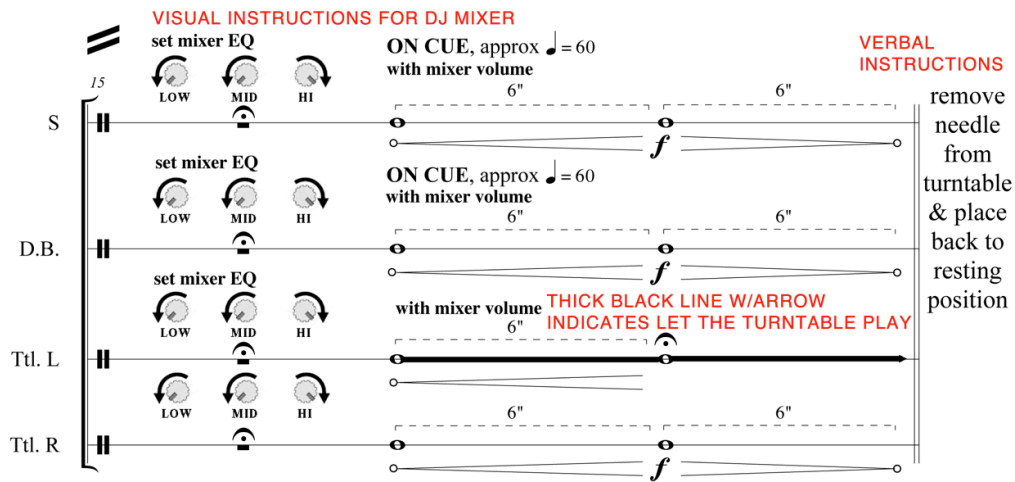
Whereas Cage inspired the chaos in this section, Schaeffer inspired the sonic material, and the manipulation of it. The sonic qualities of the spoken word LPs were disconnected from their origin; a core principle of Musique Concrète. Like Schaeffer, I wanted to take control of the sounds' amplitude envelope in an effort to create something new.

“Repeat the same sound fragment twice: there is no longer event, but music.”
Pierre Schaeffer¹¹²

Immediately following the volume fluctuations was an experiment with timbre. I used the same spoken word LPs with the low and middle frequencies removed. This idea of working with an isolated frequency range led to powerful modes of re-contextualisation in subsequent compositions. In this composition the high-only frequencies were used to elicit a frail sound quality. After the sound is presented, three of the four turntables slowly fade out in unison leaving John Cage speaking on his own with this new timbre, against the backdrop of the silent EP playing through the house PA. A thick black line indicates the John Cage audio in the score, bar 15.

¹¹² Schaeffer, North, and Dack, *In Search of a Concrete Music*, 13.

Figure 23: *Reimagined Landscape One*, an experiment in timbre via EQ, mm.15.



Debussy indirectly inspired the next two sections, TRANSITION and FLAXEN QUOTE. The Flaxen quote is a play on Debussy's *Girl with Flaxen Hair*.¹¹³

Figure 24: *Reimagined Landscape One*, quote from Debussy's *The Girl with the Flaxen Hair*, mm.18-21.

3 **TRANSITION** without a strict pulse $\text{♩} = 55$

on cue:
gently
con pedal *mf*

Pno.

Ttl. L

Ttl. R

INDICATES STOP LP

OVALS INDICATE CHANGE RECORDS

(Cage interview)

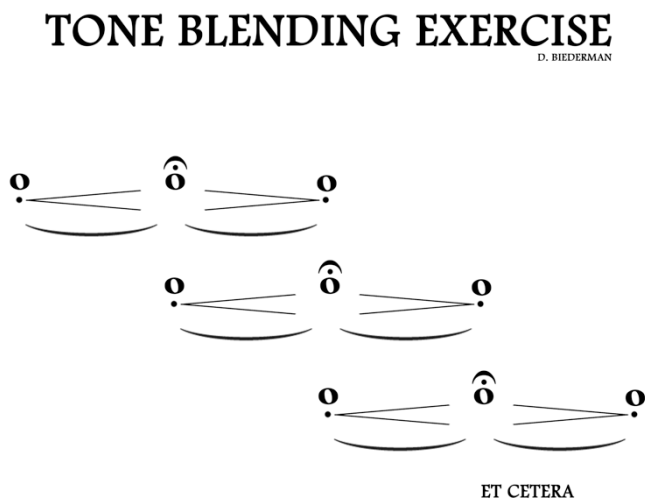
CHANGE TO WHITE NOISE

CHANGE LP TO SHOSTA

¹¹³ Maurice Hinson, "Anthology of Impressionistic Piano Music: Intermediate to Early Advanced Works by 20 Composers," (Van Nuys, Calif: Alfred Publishing Co, 2004).

Debussy also inspired the following section entitled TONE BLENDING, “to obtain a subtle nuance of tone colour, Debussy often alternates almost identical figures played by instruments of similar tone colour.”¹¹⁴ TONE BLENDING originated as an exercise between the acoustic instruments and a sine wave LP.

Figure 25: Preparatory tone blending exercise



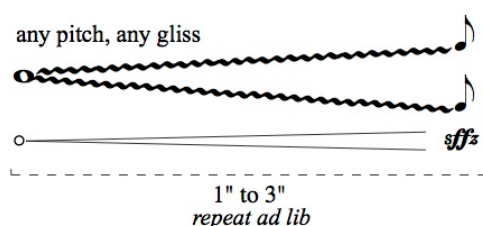
The sine wave blended beautifully with the soprano and violin, however the precision required for the auditory illusion of one instrument morphing into another was difficult to manage whilst re-pitching a sine wave. I decided to focus on conducting and replaced the sine wave with filtered white noise. The outcome was differed from my original intention, but the white noise created a pleasing cohesive effect on the ensemble.¹¹⁵

¹¹⁴ C.H. Chang, "A Study of the Technique and Function of Orchestration in Selected Works of Claude Debussy: Prélude À L'après-Midi D'un Faune, Nocturnes, La Mer, and Pelléas Et Mélisande" (Dissertation, University of Northern Colorado, 2002).

¹¹⁵ The recorded performance of TONE BLENDING exhibits several failed executions. I did an inadequate job of simultaneously conducting and handling the turntable. (In future compositions I opted to act only as turntablist and requested a conductor.) TONE BLENDING is meant to end with an extended piano technique whereby the pianist uses the sostenuto pedal to create an amalgamation of all the tones ringing in sympathetic vibrations. The pianist did not correctly execute the pedal in bar 37, which resulted in a dry series of staccato notes in bars 41-43.

The following section, SHOSTA REVISITED, began with the idea of using the turntable's pitch slider. After my limited success with consonant interplay in the TONE BLENDING section, I opted for an atonal approach, refocusing on timbre. Shostakovich's *String Quartet No. 15 in E-flat minor* provided useful material to work with.¹¹⁶ The opening bars of the second movement require each instrument to consecutively play *al niente* to an extreme crescendo on a single note. When this section was manipulated with the turntable's pitch slider the strings sounded like a series of atonal glissandi. The result is an aural illusion; one cannot easily identify if the glissandi are coming from the acoustic instruments or turntables. To bolster the illusion I scored the strings to play random glissandi with similar dynamic instructions as the LP.

Figure 26: Aural illusion, instructions to violin, viola and contrabass



The illusion is broken when the turntablist reverses the LPs, revealing itself to the audience.

The notation of the SHOSTA REVISITED section was a significant effort. Whenever possible I would use notation familiar to the concert musician. SHOSTA REVISITED repurposes familiar notation to suit my goals. The text embedded in the box notation,

¹¹⁶ Dmitri Shostakovich, *Quartet No. 14 in F-Sharp Major, Op. 142 Quartet No. 15 in E-Flat Minor, Op. 144* (N.Y., N.Y.: Columbia/Melodiya, 1977).

'Lets get Weird,' was intended to encourage a playful attitude in the ensemble, specifically to free them of any inhibitions.

Figure 27: *Reimagined Landscape One*, SHOSTA REVISITED, page 6.

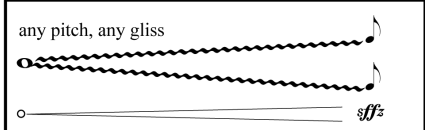
6

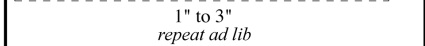
SHOSTA REVISITED in Free Time


[ON CUE: VIOLIN PLAYS FIRST]


approx 30"

A

Vln.  any pitch, any gliss *ff*

Vla.  1" to 3" repeat ad lib

D.B.  1" to 3" repeat ad lib

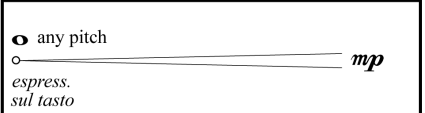
Ttl. L and R  1" to 3" repeat ad lib

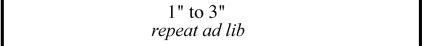
**Lets
get
Weird**


ON CUE GO TO **B** as if your switch is flipped

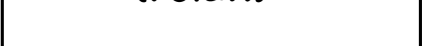
approx 15"

B

Vln.  any pitch *mp*

Vla.  1" to 3" repeat ad lib

D.B.  1" to 3" repeat ad lib

Ttl. L and R  1" to 3" repeat ad lib

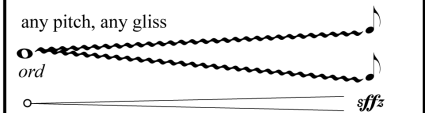
(relax)

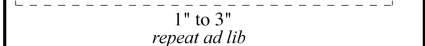
REV


ON CUE GO TO **C** as if your switch is flipped


approx 30"

C

Vln.  any pitch, any gliss *ord* *ff*

Vla.  1" to 3" repeat ad lib

D.B.  1" to 3" repeat ad lib

Ttl. L and R  1" to 3" repeat ad lib

**lets
get
molto
weird**

FWD

ON CUE STOP as if turned off

In an effort to feature the turntables' reverse button and a stop button I encouraged the ensemble to move from section A to B to C 'as if your switch is flipped' and 'as if turned off.'

The next section, 12 TONE PIZZ, featured technology specific to the CDX (vinyl-controlled turntable). I recorded a piano playing a tone row and burned the audio to a CD for this performance. The CDX has a *set key lock* function whereby you can manipulate the rotational speed the platter without altering the pitch. The set key lock allowed me to manually rotate the platter backwards, effectively playing the tone row in retrograde at the ensemble's tempo. The CDX technology facilitated a unique sound - an acoustic instrument can't play backwards, the CDX can literally play backwards.

Figure 28: *Reimagined Landscape One*, tone row with custom backwards notation for the retrograde, mm.57-64. The tone row was adapted from Arnold Schoenberg's *Fourth String Quartet*, mvt.1, mm.4.¹¹⁷

The figure displays two staves of musical notation. The top staff is labeled 'CDX Ttl. L' and features a treble clef, a key signature of one flat (B-flat), and a 2/4 time signature. It begins with a dynamic marking of *f* (forte) and a bracketed instruction '[SET KEY LOCK]'. The notation represents a tone row: C4, D4, E4, F4, G4, A4, Bb4, C5, Bb4, A4, G4, F4, E4, D4, C4. The bottom staff, also labeled 'Ttl. L', shows the retrograde of this row: C4, Bb4, A4, G4, F4, E4, D4, C4, Bb4, A4, G4, F4, E4, D4, C4. The retrograde is written in a custom notation where the notes are placed on the staff lines and spaces in a way that suggests reverse playback.

Immediately following the retrograde is an eight bar variation of the tone row orchestrated for the acoustic instruments. This allowed time for me to set up the main turntables for the next section, MUSIQUE CONCRETE: Locked Groove.

¹¹⁷ Arnold Schoenberg, "Fourth String Quartet, Op 37," (New York: G. Schirmer, 1939).

MUSIQUE CONCRETE: Locked Groove is similar to the first Musique Concrète: Spoken Word section; organised sound/noise with Cagean components. However this section used locked-groove LPs (loops) rather than spoken word LPs.¹¹⁸

MUSIQUE CONCRETE: Locked Groove is the most hands-on section for the soprano and bassist. First, they are required to perform a rhythmic action with the channel fader whereby the fader is moved quickly up and down. I call this gesture a fader throw. The effect is very similar to the sounds created by the bass clarinets in Steve Reich's *Music for 18 Musicians*.¹¹⁹

Figure 29: *Reimagined Landscape One*, unison volume fader throw, mm.80-83

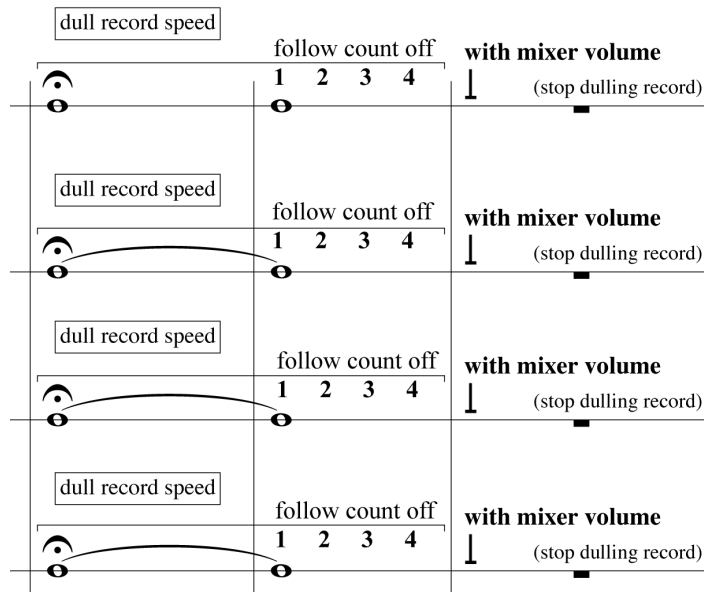
The musical score for Figure 29 is arranged in four staves, labeled S, D.B., Ttl. L, and Ttl. R on the left. Above the first measure (mm. 80), the instruction "follow count off" is written above the numbers "1 2 3 4". Above the second measure (mm. 81), the instruction "with mixer volume" is written above a vertical line. Above the third measure (mm. 82), the instruction "GRAPHIC NOTATION FOR 'FADER THROW'" is written in red, above the text "(continue sim.)". The notation for the fader throw consists of a vertical line with a horizontal bar at the top, and a series of dots below it. The time signature changes from 2/4 to 4/4 between measures 81 and 82. The notation for the fader throw is repeated in measures 82 and 83.

The second gesture occurs in mm.92-94. The performers were required to slow down the LP by gently applying pressure to the sides of the record, effectively dulling the speed and altering the pitch.

¹¹⁸ RRRecords, "Rrr-1000 Lock Grooves," (Lowell, MA: RRRecords, 2009); Tape Projects, "Tape Projects (Locked Groove)," (Australia: Tape Projects – TAPR06, 2008).

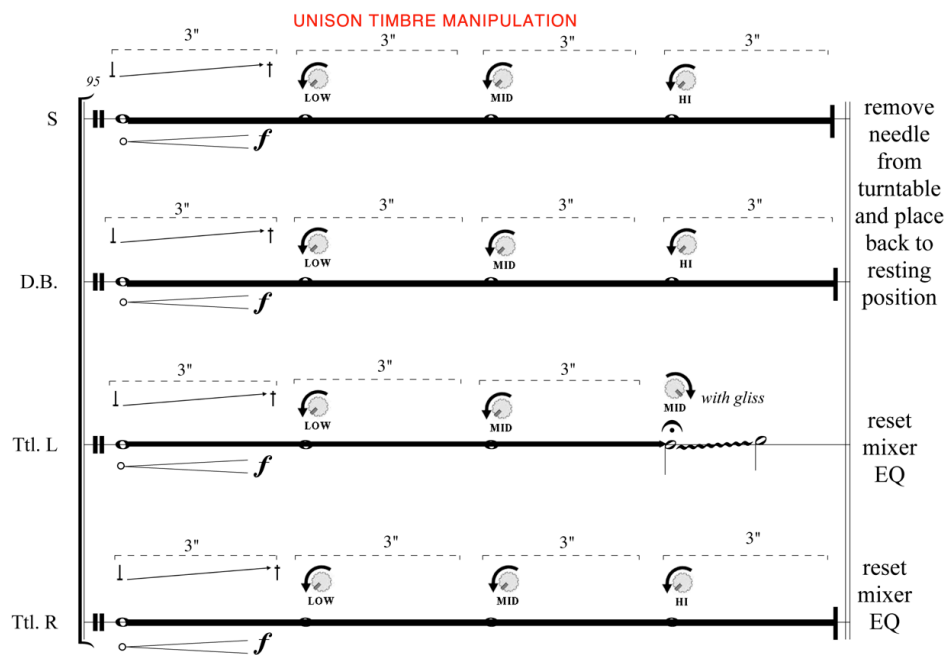
¹¹⁹ Reich and Mellits, "Music for 18 Musicians: For Ensemble."

Figure 30: *Reimagined Landscape One*, performers were required to slow down the turntable by touching the LP, mm.92-94.



The next measure, mm95, is an exploration into *unison timbre manipulation* via the DJ mixer's equaliser. The end result is a collective fade out, one frequency band at a time.

Figure 31: *Reimagined Landscape One*, unison fade out via equalisation, mm.95.



Gavin Bryars' *Jesus Blood Never Fail Me Yet* inspired the next section of this piece, PRISON.¹²⁰ Working with the turntable often requires appropriating pre-recorded audio. I love what Bryars did with the recording of the vagrant singing "Jesus' blood never failed me yet, never failed me yet, Jesus' blood never failed me yet, this one thing I know that he loves me so."¹²¹ Bryars was moved by the emotion and sincerity of the vagrant's voice.¹²² I have always been attracted to the field recordings from Alan Lomax, especially the old slave songs. I wanted *Landscape One* to culminate with something emotionally poignant; re-contextualising this piece of music seemed like an effective idea.

The song I chose, *Rosie*, had a very clear rhythm as well as a discernible key centre.¹²³ However the song presented an unforeseen issue. I heard the hammer hits as beats two and four; the back-beat often associated with African-American music.¹²⁴ When I wrote my first treatment for the ensemble, a few of the players commented they heard the hammer hits on beats one and three. I accommodated their opinion and reworked the score. This was actually more difficult than I expected as my orientation to the piece had to completely change. I literally stood in my studio and swung an imaginary axe with the recording in order to reprogram myself to hear the hits on one and three.

¹²⁰ Gavin Bryars, "Gavin Bryars (Composer) Talking About Titanic and Jesus Blood.," artybonbondesign, <http://vimeo.com/61896927>.

¹²¹ "Jesus' Blood Never Failed Me Yet."

¹²² "Gavin Bryars (Composer) Talking About Titanic and Jesus Blood."

¹²³ Alan Lomax, "Negro Prison Songs," (New York, NY: Tradition 1958).

¹²⁴ K. Chipkin, *Real Blues Guitar* (Van Nuys, CA: Alfred Publishing Company, Incorporated, 1998), 16.

Figure 32: *Reimagined Landscape One*, mm.99-101, LP image courtesy of Raphael

Boguslav



Ttl. R

Hammer hits

... ear-ly in the mor in the morn-in, ... when I rise Lord ma-ma, ... ear-ly in the mor in the morn-in,

I created the harmonic content for PRISON by improvising on the piano while listening to the LP. Modal harmonic movements and seventh chords were my preferred sound. This section also referenced earlier material; the Flaxen quote, the SHOSTA section and the John Cage interview.

Reimagined Landscape One concludes with text instructing the pianist to turn off the LP. The text was placed at the bottom of the score in the same fashion as Ottorino Respighi's Gramophone instructions to play the nightingale phonograph (Figures 33 and 34).¹²⁵

¹²⁵ Respighi, "Pini Di Roma: Poema Sinfonico."

Figure 33: Last page of Ottorino Respighi's *The Pines of Rome*

The image shows a page of a musical score for 'The Pines of Rome' by Ottorino Respighi. The score is for a large orchestra and includes parts for various instruments such as Flute, Oboe, Clarinet, Bassoon, Horn, Trumpet, Trombone, Tuba, Snare Drum, Cymbal, and Triangle. The music is in 3/4 time and features a variety of dynamics and articulations. A black box with white text is overlaid on the score, containing the following information:

★ N° R. 6105 del «Concert Record Gramophone: Il canto dell'usignolo. P. R. 439

An arrow points from the text box to the score.

Figure 34: Last page of *Reimagined Landscape One*

The image shows a page of a musical score for 'Reimagined Landscape One'. The score is for a large orchestra and includes parts for various instruments such as Flute, Oboe, Clarinet, Bassoon, Horn, Trumpet, Trombone, Tuba, Snare Drum, Cymbal, and Triangle. The music is in 3/4 time and features a variety of dynamics and articulations. A black box with white text is overlaid on the score, containing the following information:

PIANO, ON CUE: remove needle from white turntable and place back to resting position *fin*

An arrow points from the text box to the score.

Reimagined Landscape One is replete with successes and failures, all of which were valuable to my research. I believe this piece was well thought out and a successful experiment, however the execution during the recorded performance was not to my

satisfaction. Manifestations of my inexperience as conductor/turntablist are pervasive in the recording. As an example, I forgot to re-pitch the turntable in the final section, resulting in an out-of-tune LP for most of PRISON.

*“In the proceeding studies you can see how much the development leaves to be desired,
how clumsy the crescendos are and how unskilled the transitions.
This is how the classics of concrete music came about.”
~ Pierre Schaeffer*

My creative process evolved as I composed *Reimagined Landscape One*. Ordinarily I am comfortable omitting the less-convincing ideas while I write. However, with the turntable I found myself sitting with an idea longer than usual, even if I suspected the music was not that strong. The reason was I wanted to find the limitations of the turntable. I felt I needed to get to the bad ideas to find when the bad ideas ended, and the good ideas began. I had no experience writing for the turntable prior to *Landscape One* so there was only one logical way to find out if an idea was good or bad: compose and perform. I did not want to assume myself out of a potentially good idea. Often what seemed like a potential bad idea ended up as a strong piece of music, and vice versa.

My opportunities were limited to write for the turntable and ensemble. I included as much as I could into *Landscape One*. My goal was to vet as many ideas as possible while offering something I believed worthy of a performance in front of a live audience.

6.4 Reimagined Landscape Two

6.4.1 Instrumentation and Length of Piece

Four turntables with pitch sliders, two DJ Mixers, two locked-groove LPs, two frequency test LPs and a delay unit

Approximately 15 minutes

6.4.2 Requisite Turntablist Skill Level

Reimagined Landscape Two requires a basic knowledge of turntable functionality and an understanding of delay effects and associated parameters.¹²⁶ The performer does not require any musical training in the traditional sense for the performance of this piece, however the performances will vary significantly if the performer has an ear for harmony.

6.4.3 Commentary

Reimagined Landscape Two was written for the *John Cage Centennial Celebration* at the Sydney Opera House.¹²⁷ The length of the test-tone LPs determined the length of this piece, approximately fifteen minutes.¹²⁸

The focuses of *Landscape Two* were aleatoricism and indeterminacy, i.e. the potential for a piece to be performed in different ways thereby offering a unique outcome with each performance.¹²⁹ The performer is instructed to choose different locked-grooves

¹²⁶ Common delay effects include effects mix level, feedback, speed and tone.

¹²⁷ Priest, "John Cage Centenary: Legacies and Liberties".

¹²⁸ A test-tone record is a series of chromatic sines waves over multiple octaves.

¹²⁹ J. Pritchett, *The Music of John Cage* (Cambridge: Cambridge University Press, 1996), 108.

throughout the piece. Of the four turntables, two are allocated to locked-groove LPs and two are allocated to the test tone LPs.

Landscape Two appropriates notation from its predecessor, *Landscape One*. I felt strongly about reusing my notation when possible in an effort to refine and formalise my process.

Figure 35: *Reimagined Landscape Two*, appropriated notation from *Landscape One*



One of the locked-groove LPs I used for this piece, *RRR-1000 Lock Grooves*, has five hundred loops on a single side.¹³⁰ In other words, we can say the turntablist has approximately a 2% chance of choosing the same loop twice during the performance of *Landscape Two*.

Throughout this piece, the turntablist is required to manipulate the loops and sine waves with delay and equalisation. The end result is a unique experience of sound within the structure laid out by *Landscape Two*, similar to Cage's number pieces such as *One7* and *Four6*.¹³¹

¹³⁰ RRRRecords, "Rrr-1000 Lock Grooves."

¹³¹ John Cage, "Four 6 for Any Way of Producting Sounds (Vocalization, Singing, Playing of an Instrument or Instruments, Electronics, Etc.)," Henmar Press, <http://catalog.hathitrust.org/api/volumes/oclc/29515262.html>.

Performing *Landscape Two* was a completely different experience from any other performance. I found myself listening for moments where the locked-grooves and test tone LPs would come together in a sensible way. My notion of sensible was nothing that can be described clearly. I felt some moments in the piece were better than others, but I cannot articulate why. The choices I made during the performance of this piece were instinctive, reactionary and spontaneous.

Landscape Two is by far the most experimental avant-garde composition in my portfolio. I had a better understanding of sound artists like Christian Marclay and Otomo Yoshihide after the performance of this piece in a public space. Listening back to the recording of *Landscape Two* was not entirely pleasant, but the performance was rewarding; I felt free. After reading extensively about Cage and other avant-garde composers and performers, I felt satisfied to compose and perform in their style, appreciate the moment, and move on.

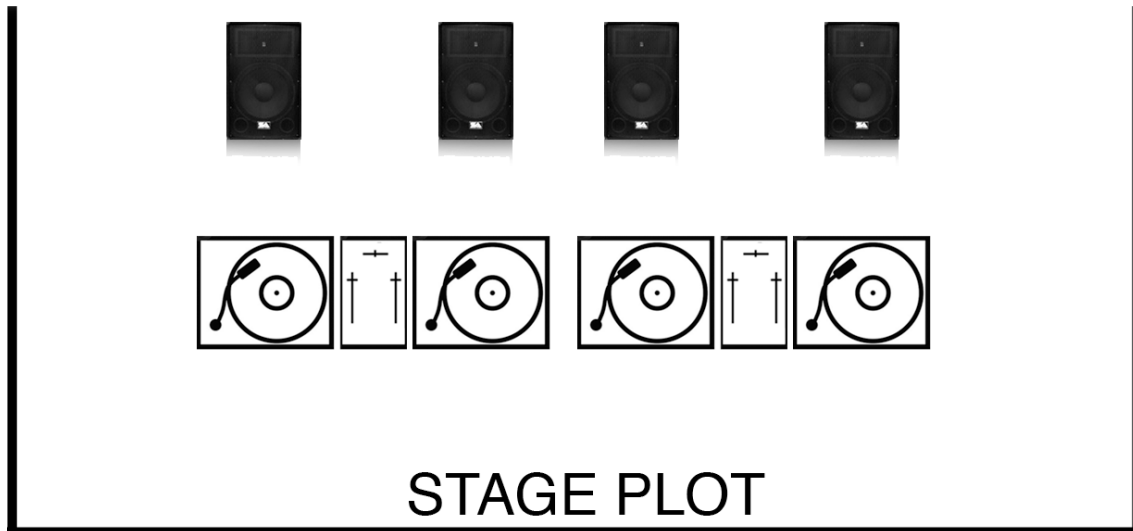
6.5 Reimagined Landscape Three

6.5.1 Instrumentation and Length of Piece

Four turntables with pitch sliders and reverse buttons, minimum two DJ Mixers, four stopwatches, four copies of the ECM compilation LP *Music With 58 Musicians, Vol I*¹³²
6 minutes

¹³² Steve Reich, "Music for 18 Musicians (Excerpt)," in *Music With 58 Musicians, Volume One* (München: ECM Records 1980).

6.5.2 Stage Plot



6.5.3 Requisite Turntablist Skill Level

Reimagined Landscape Three requires novice turntable skills. The performers need only be familiar with the various parameters of the turntable. The parameters are explained in the performance notes of this piece.

6.5.4 Commentary

Reimagined Landscape Three is a graphic score loosely based on the Cage composition *Four6*, specifically his use of stopwatches to facilitate an organised sequence of musical gestures.

Figure 36: *Four6* by John Cage, excerpt

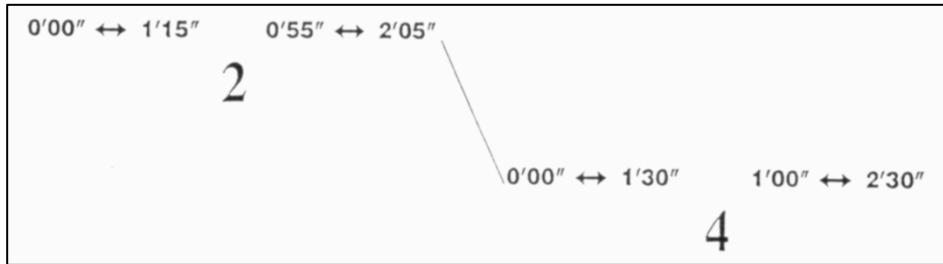
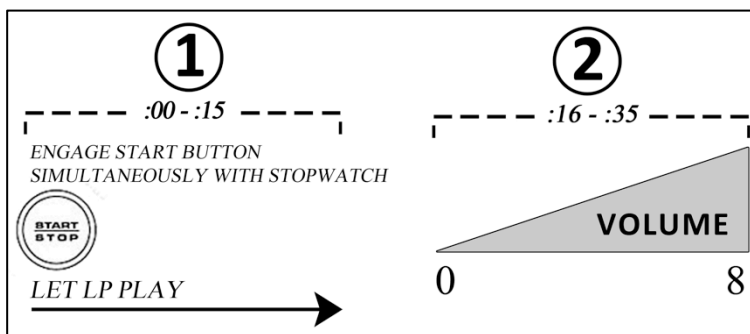


Figure 37: *Reimagined Landscape Three*, excerpt



For this piece, I developed a series of simple musical gestures based on the technology of the HTD direct-drive turntable and any basic DJ Mixer. Each gesture is represented in the score with an instructive graphic. A time marker governs how long each musical gesture is to be executed. I created the graphic notation in Adobe Photoshop, e.g. Figure 37.

Prior to *Reimagined Landscape Three* I had limited success blending the turntable into an electroacoustic ensemble. My previous two compositions in the *Landscape* series were beneficial in many ways, however I did not yet have suitable amplification for the turntable, so I decided to focus on a purely turntable work within a concert hall environment.

I worked through several ideas prior to settling on the material for *Reimagined Landscape Three*. My first attempt was similar to Diana Deutsch's *Borris* auditory illusion.¹³³ I played several locked-groove LPs at the same time. The loop was a voice speaking "thirty four" over and over again.¹³⁴ The DJ mixer's equaliser proved to be a strong timbre modification of the LPs. I also manipulated the pitch of each turntable and thereby the tempo. The results were surprising new rhythms, timbres and phantom words. However, I wanted more form and harmonic substance for *Landscape Three*, so I moved on.

The next step was to create graphic notation for the musical gestures I improvised in the aforementioned 'thirty four' session. After the graphics were finished I began to arrange the gestures into what I felt was a sensible order. I tired the sequence of gestures with multiple copies of *African Tribal Music & Dances* across four turntables.¹³⁵

Figure 38: African Tribal Music & Dances LP, courtesy of Olympic Records



¹³³ Deutsch's illusion repeats the name *Boris* in quick succession with the stereo fields offset from one another. The listener consequently begins to hear phantom words that are not actually being said (from 6.1.2 Psychologists).

¹³⁴ Projects, "Tape Projects (Locked Groove)."

¹³⁵ Sonar Senghor, *African Tribal Music and Dances* (New York, N.Y.: Olympic Records, 1976).

The African tribal dances were rhythmically interesting to work with, but left me unsatisfied. The decision to work with Steve Reich's *Music for 18 Musicians* came about naturally. After working with the African music, my subconscious offered up Steve Reich. Upon reflection, I can see that I wanted to work with western-pitched material.

Prior to buying multiple copies of the *Music for 18 Musicians* LP I simulated the turntables in music sequencing software. My intention was to disguise Reich's work as much as possible while still retaining a sense of pitch and rhythm. The most effective treatment to the LPs was to cut the high and mid frequencies, removing anything above 350hz. The result was a beautiful mess of rhythm and drone as if the listener was under water, or in a womb. Despite the amount of instruments playing at the same time, the result was quite peaceful.

I reworked my graphic notation, i.e. the sequence of gestures, to what I felt was a cohesive and interesting musical experience. During this phase I tried different sections of *Music for 18 Musicians*. Many of them sounded pleasant together, however due to the cost of the LP, I purchased an ECM Records sampler album that only contained section one of the piece, *Pulses*.¹³⁶ The financial constraint yielded positive results. *Pulses* worked.

The decision to use the same LP for each turntable brought cohesion to my project. The turntables began to sound homogenous. There were comprehensible patterns in all of

¹³⁶ Reich, "Music for 18 Musicians (Excerpt)."

the experiments, however Reich's ostinato patterns and consistency of timbre created a more palatable uniformity for *Landscape Three*. I believe with further experimentation and well-chosen LPs, a similar effect could be achieved without using the same exact LPs for each turntable.

Reimagined Landscape Three was realised in Verbrugghen Hall at the Sydney Conservatorium of Music. My composition benefited from Verbrugghen's long beautiful reverb. This piece was successfully performed by four non-turntablists, albeit after several attempts. The turntables blended nicely together, affirming for me that using multiple records was an effective compositional practice. A shortcoming to the performance of this piece was due to the DJ mixers. I did not realise the importance of their equaliser frequency range. My computer simulations of *Landscape Three* allowed for accurate removal of frequencies above 350 Hz. The DJ mixers did not have the same cut off point. The result was Reich's music was considerably more recognisable than I intended. In future performances a DJ mixer with parametric equalisation would be preferable.

6.6 3:30 AM, Teddy

6.6.1 Instrumentation and Length of Piece

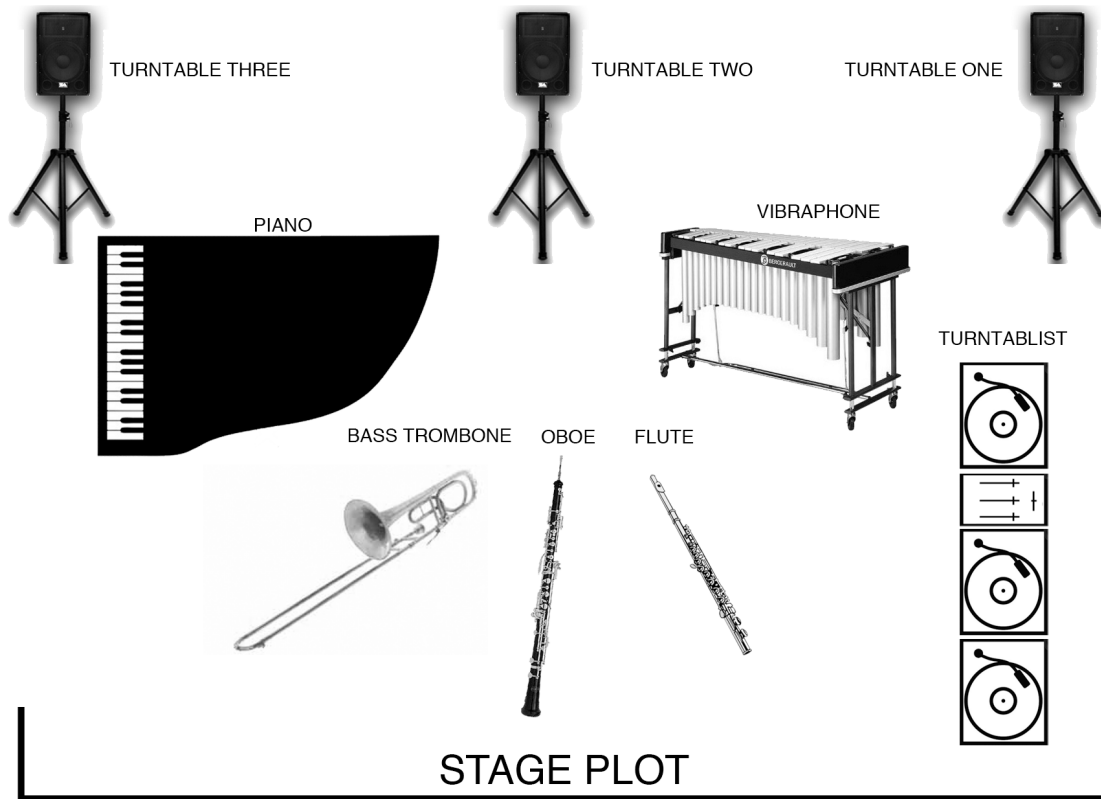
Flute, oboe, bass trombone, vibraphone w/bows, piano, three turntables with pitch sliders, 3-channel DJ Mixer, three LPs *TAPR06 locked-groove*¹³⁷

8 minutes 30 seconds

¹³⁷ Projects, "Tape Projects (Locked Groove)."

6.6.2 Stage Plot

Figure 39: Stage plot for *3:30 AM, Teddy*



6.6.3 Requisite Turntablist Skill Level

The turntablist is required to have a basic knowledge of any direct-drive turntable and 2-channel DJ mixer. The gestures in *3:30 AM, Teddy* are unmetered and cued by the conductor. A novice turntablist could perform this piece.

6.6.4 Commentary

The title and music for *3:30 AM, Teddy* were inspired by Debussy's composition *Jimbo's Lullaby*, a piece written about a soft toy elephant named Jimbo.¹³⁸ The music

¹³⁸ E.R. Schmitz, *The Piano Works of Claude Debussy* (Mineola, New York: Dover Publications, 2014), 120.

for *3:30 AM, Teddy* uses simple melodies and patches of whole tone harmony with intermittent moments of dissonance, similar to Debussy's *Jimbo*.

The image in my mind while composing this piece was that of a young child laying half awake at 3:30 AM, having a little chat with his teddy bear. When I hunt through my own memories I can recall being in this ephemeral state in the middle of the night. My young, overimaginative mind would take me back and forth between fear and comfort before finally falling back asleep. *3:30 AM, Teddy* refers to that little night-time journey. The looping locked-groove LPs created the dreamy mood for this piece.

Each turntable is plugged into one speaker along the back wall of the stage. The turntables are playing copies of the same locked-groove from TAPR06.¹³⁹

Figure 40: *3:30 AM, Teddy*, TAPR06 LP courtesy of Tape Projects.



The locked-groove is a loop of two pitches, D#4 down to B3. I considered transposing the pitches throughout the piece, however after exploring the effect I concluded the

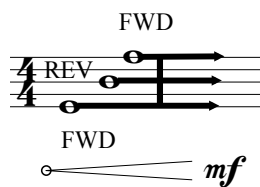
¹³⁹ Projects, "Tape Projects (Locked Groove)."

piece was better served by stasis. The turntablist is required to manipulate the pitch and rhythm of the looping LPs, but the parts always return to the D#4 and B3.

The goals of *3:30 AM, Teddy* were (1) blend the acoustic ensemble with the locked-grooves by traditional means as well as extended techniques (2) play with the audience's perception of the loop by resetting the pitches against different harmonies (3) explore Debussy's tone blending technique within the ensemble (4) simplify the turntable notation.

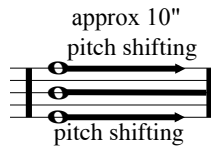
The turntable notation for this piece is borrowed from my previous compositions. The whole notes represent each turntable; the thick black line represents the LP. Instructions for the turntablist are written near each note, e.g. REV. The arrows occurring through the bar line instruct the turntablist to let the LPs play uninterrupted.

Figure 41: *3:30 AM, Teddy*, notation for the turntablist



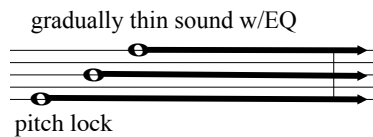
Teddy's overall form is a series of acoustic ensemble motifs separated by disruptions to the locked-grooves. Each time the LPs were manipulated the goal was to refresh the listener's ears. Manipulations were marked with thick single bar lines.

Figure 42: 3:30 AM, *Teddy*, thick bar lines inform the ensemble.



The turntablist sections included changes in volume, pitch, timbre and tempo. Figure 43 is an example of a timbre change via the equaliser.

Figure 43: 3:330 AM, *Teddy*, manipulation of the locked-grooves, mm.42



Ives' *The Unanswered Question* also inspired *Teddy*. Ives plays with listener's perception of foreground and background. In *Teddy*, the turntables stay in the background and only come to the foreground, not by increasing in volume, but by the absence of foreground.

Throughout the score there are instructions regarding who is intended to cue the music. Placing the responsibility with the ensemble and conductor rather than with the turntablist (myself) resulted in a better performance.

Teddy begins with each LP rising in volume *al niente*, introducing the LPs one at a time. The piano and vibraphone entered next, playing a D#4 and B3 as a mechanic trill, effectively blending in with LPs.

Figure 44: 3:30 AM, Teddy, piano and vibraphone entrance.

Vibraphone

constant, without dynamic change

approx 20"

p

Piano

constant, without dynamic change

approx 20"

p

Following the vibraphone and piano, the flute and oboe round out the sound with a wave of tremolos. The goal was to create a pleasant texture and a peculiar mood.

Figure 45: 3:30 AM, Teddy, flute and oboe overlapping tremolos.

Largo A

Flute

approx 20"

approx 10" in delicate waves

tremolo = slow fast slow

pp

Oboe

approx 20"

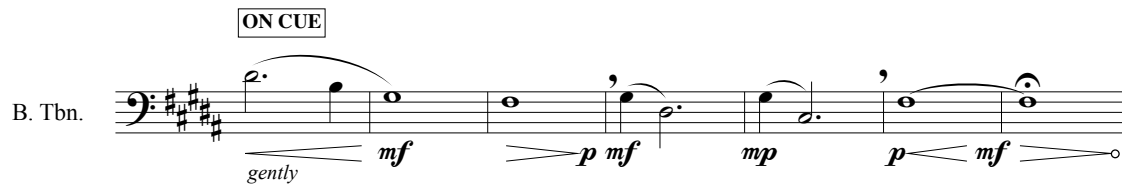
approx 10" in delicate waves

trill = slow fast slow

pp

The bass trombone starts (and finishes) *Teddy* with a simple and ambiguous melody line. The intervals, rhythm and overall delivery of the melody were reminiscent of a military bugle call, however the note choices against the backdrop of the locked-groove LPs were anything but.

Figure 46: 3:30 AM, *Teddy*, bass trombone melody in the beginning of the piece, mm7-13.



Throughout the entire work I harmonically re-contextualised the locked-groove of D#4 and B3 with varying levels of tension and release. My approach was modal; I avoided settling on any tonal centre. The most frequent sonorities are the B major seventh and G major seventh augmented. I'm particularly fond of the major seventh chord with an augmented fifth. Frédéric Chopin makes use of this chord in his *Prelude in E Minor*, as do Miles Davis and Wynton Kelly in their solos on *Freddie Freeloader*.¹⁴⁰

Figure 47: *Prelude, Op. 28, No. 4*, GMAJ7+5 on beat 3, mm.17.



Teddy vacillates between dissonant and consonant harmonic ideas throughout the entire piece as demonstrated in Figure 48.

¹⁴⁰ Frédéric Chopin, "Prelude : Op. 28, No. 4," (Columbus, Ohio: Permus, 1982); Miles Adderley Cannonball Coltrane John Chambers Paul Cobb Jimmy Kelly Wynton Evans Bill Davis, *Kind of Blue* ([New York]: Columbia, 1992).

Figure 48: 3:30 AM, *Teddy*, re-harmonising the Major 3rd locked-groove loop, mm.26-29.

I wanted to experiment with tone blending unison lines between the oboe and flute. Extreme octave jumps between the instruments sounded as if they were finishing each other's phrases. This required sensitive listening on behalf of the players.

Figure 49: 3:30 AM, *Teddy*, flute and oboe weave between each other's octaves, mm.35-36.

Three extended techniques are featured in *Teddy*. Each technique was brought about in the same way: free association with the locked-groove loop. The LPs were reminiscent of whale sounds. I allowed my train of thought to explore this idea. The following figures display the extended techniques that came from free association.

Figure 50: 3:30 AM, *Teddy*, whale sound played by the bass trombone, mm.48.

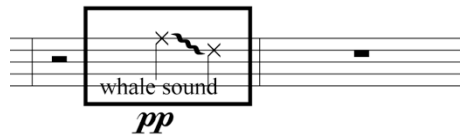


Figure 51: 3:30 AM, *Teddy*, pigeon sounds were an experiment, mm.41.

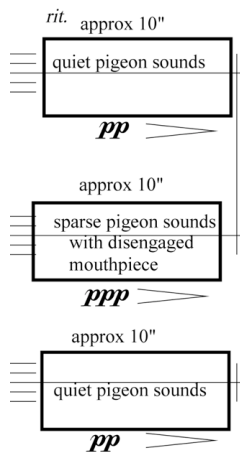
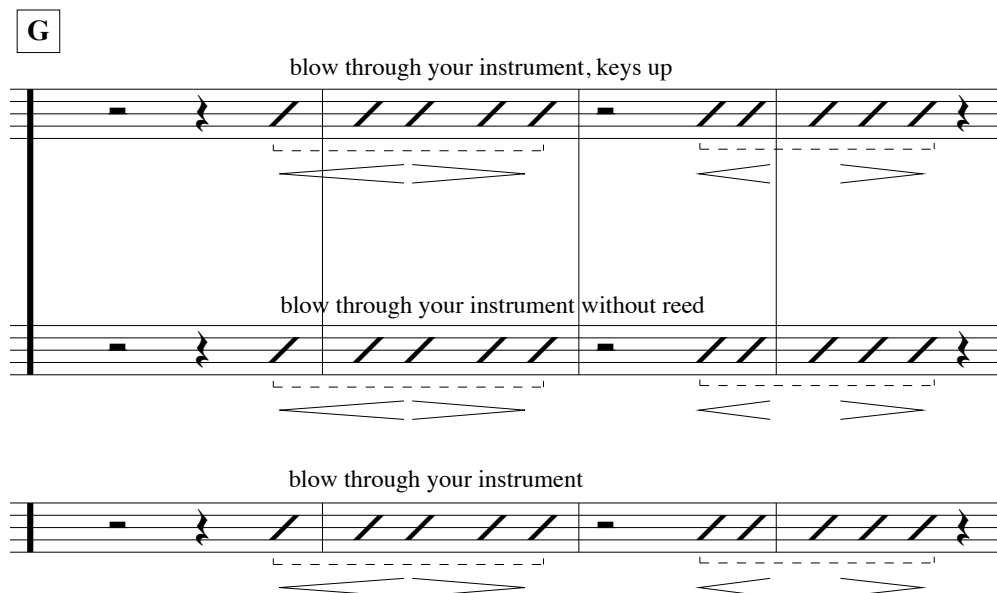


Figure 52: 3:30 AM, *Teddy*, the sound of air was intended to intrigue and engage the audience in the moment, mm.57-62.



Teddy concludes with similar material from the introduction. The monophonic instruments play the introduction melody one at a time, ending with the bass trombone. In an effort to make the melody sound distant, I instructed the bass trombone to play the melody with a bucket mute, his back to audience, facing up to the ceiling. The sound and visual effect added to the feeling of dissociation and dreaming.

Figure 53: 3:30 AM, *Teddy*, bass trombone plays the concluding melody with back to the audience, mm.88-93.

B. Tbn.

88

Bucket

p *mf* *p* *mf* *mp*

p
gently
back to the audience
horn at upward angle

6.7 Industry is Beautiful

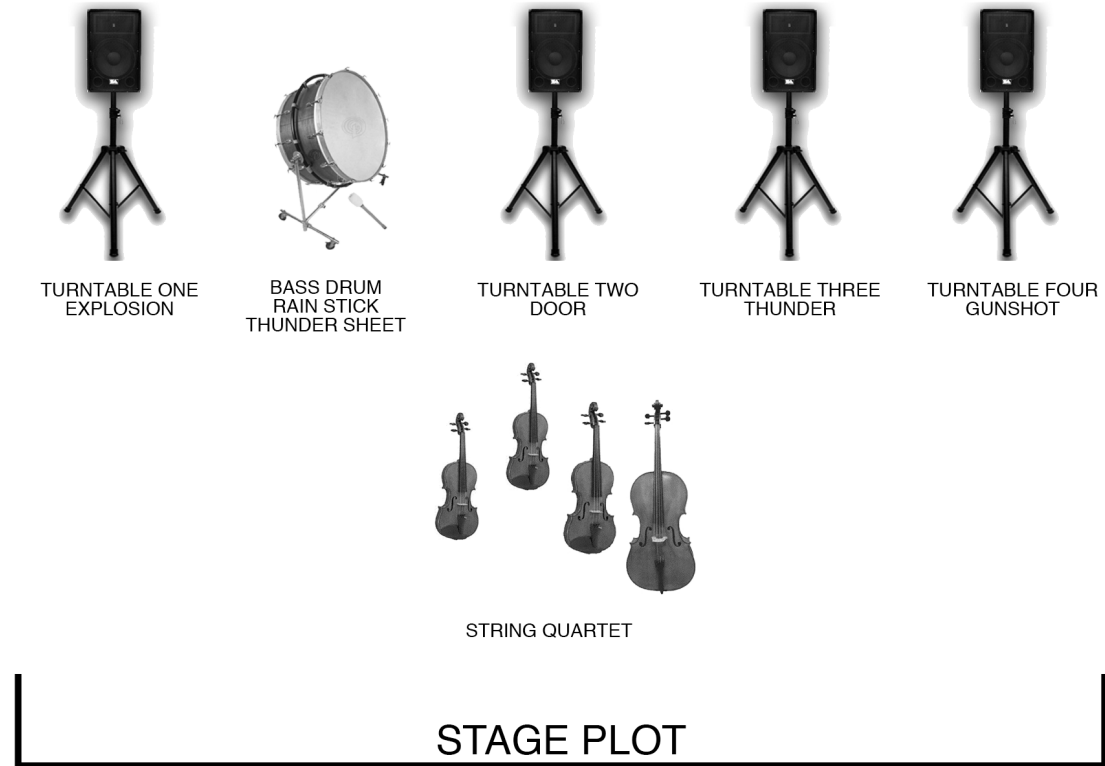
6.7.1 Instrumentation and Length of Piece

Violin, violin, viola, cello, bass drum, four direct-drive turntables with accompanying DJ mixer for each turntable, four copies of the LP, *Halloween Horrors: The Sounds Of Halloween (And Other Useful Effects)*¹⁴¹

¹⁴¹ Elliot, *Halloween Horrors: The Sounds of Halloween (and Other Useful Effects)*.

6.7.2 Stage Plot

Figure 54: Stage plot for *Industry is Beautiful*



6.7.3 Requisite Turntablist Skill Level

An intermediate skill level is required to perform the turntable gesture referred to as cutting.¹⁴²

1. Hold the record as the platter spins beneath.
2. Simultaneously release the record and open the [cross]fader.
3. Close the [cross]fader.
4. Pull the record back with the [cross]fader closed.
5. Repeat in time¹⁴³

¹⁴² Webber, *Dj Skills : The Essential Guide to Mixing and Scratching*, 262.

¹⁴³ Ibid.

6.7.4 Commentary

“Although hip-hop and minimalism are rarely uttered in the same sentence we find an unexpected kinship in their mutual reliance on mechanical repetition.”
Mark Katz¹⁴⁴

Industry is Beautiful positioned a minimalist-flavoured string quartet against a simple and dramatic rhythm created by the percussionist and turntablists. *Industry* combined an orchestral bass drum with an explosion sound effect on beats one and three, and a gunshot, thunder and a slamming door on beats two and four. The combination of orchestral percussion and turntables created a unique synergy.

The process for choosing sound effects was informed by Schaffer's characterisation model from *Musique Concrete*.¹⁴⁵ Schaeffer analysed sound in three main categories, or as he called them, planes: Dynamic, Harmonic and Melodic. His characterisation model represents a combination of traditional musical analysis and organology (classification of musical instruments) however he creates his own terminology, e.g. Aeolian: a very slow attack, typically made with a reed or bow.¹⁴⁶

The essential ingredient of Schaffer's method that influenced my sound choices was his narrow focus on the sound's characteristics, virtually disregarding the instrument that created the sound. The turntablists in *Industry* used the aforementioned four sounds: explosion, thunder, large slamming door, and gunshot. Each sound was chosen for its character, not because of any potential connotation. In fact, I did not want any of the

¹⁴⁴ Katz, *Capturing Sound: How Technology Has Changed Music*, 31.

¹⁴⁵ Schaeffer, North, and Dack, *In Search of a Concrete Music*.

¹⁴⁶ Ibid.

sounds' origination to be recognisable; I did not want an extra-musical element in this piece.

The explosion's aggressive timbre blended nicely with the orchestral bass drum. The bass drum provided a deep round attack and the explosion filled out the sound with an exciting boom. The explosion and bass drum combined to make an impactful and elusive timbre.

The other percussive conglomeration in this piece is created from a slamming door, thunder and gunshot. The result is a curious *crack* that resembles the attack of a snare drum with the body of thunder. The gunshot adds a particularly interesting component due to its long decay and instant attack. The turntablist manually reversed the gunshot's attack and decay creating a *shhhhh* sound leading back to the crack of the gun. When combined with the other sounds the effect is an anticipatory *shhhhh* into a dramatic crash.

Kevin Volans' *White Man Sleeps* inspired the string quartet in *Industry*.¹⁴⁷ *White Man Sleeps* creates several moods in each movement, often using (1) minimalist techniques (2) minor scales (3) interesting timbres and (4) angular transitions. I sought to create mood in *Industry* by embracing Volans' compositional devices, however I did not literally mimic his techniques.

¹⁴⁷ Kevin Volans, "String Quartet No. 1: White Man Sleeps," (London: Chester Music, 1995).

The core theme in *Industry* is an ascending diatonic pattern in G natural minor.

Figure 55: *Industry is Beautiful*, the theme prioritises diatonic thirds. The intervallic pattern alternates between thirds and stepwise motion.



Industry's form was developed around a self-imposed; I did not want the turntablists to change LPs during the performance, nor did I want them to relocate the needle on the LP (choose a different sound). The purpose of this restriction was to cater to novice turntablists.¹⁴⁸ This restriction limited the turntable's parts to one sound each. I recognised that *Industry* would be best-kept short considering the turntable's limited palette of sounds. In an effort to keep the turntable part fresh, *Industry* re-harmonises the main theme several times throughout the piece.

The turntable notation in *Industry* is simple. I chose backwards arrows to instruct a backwards movement on the platter and forward arrow to instruct the turntablist to let go of the LP. Considering there is not yet a standard turntable notation, composers have to decide how much information to embed into the notation versus how much should be explained in the performance notes. Rather than create a complicated piece of notation, I explained the techniques in the performance notes and relied on the turntablists' prowess.

¹⁴⁸ I did not view simple turntable parts as a problem. Practicality and playability were (are) important to the development of the turntable-as-instrument. I was content to write a short piece that was easy to perform.

Every sound played by the turntablists was dependent on manual rhythmic execution in an ensemble setting. I highlight this activity because we can appreciate the difference between using a turntable and some other sound-making device, like a computer, keyboard or audio sampler. Rhythm and timbre are highly dependent on the attack of a sound's amplitude. The turntablist has a significant level of control over the attack parameter. This control is important for two reasons. First, the turntable's architecture provides a wide range of manual control over attack, more than a keyboard or push-button sampler, or even a computer. Second, the manual control over attack promotes the *human element*, that is, minute inconsistencies from moment to moment that make a piece of music sound live, as opposed to pre-recorded. This fact cannot be overstated; the potential for the musician's imperfection is paramount to the turntable-as-instrument. *Industry* embraces the human element by scoring multiple turntables to play similar rhythms via hands-on control over the spinning platter.

A performance of Gustav Mahler's 6th symphony was the initial inspiration for the turntable's simple yet dramatic part in *Industry*.¹⁴⁹ A large hammer is not typically considered an orchestral instrument, yet it was a wonderful part of Mahler's 6th. His use of the hammer justified my notion to use the turntable exclusively in *Industry*'s percussion section.

¹⁴⁹ Gustav Mahler, "Symphony No. 6 in a Minor," (C. F. Kahnt Nachfolger, 1906).

6.8 For sale: baby shoes, never worn

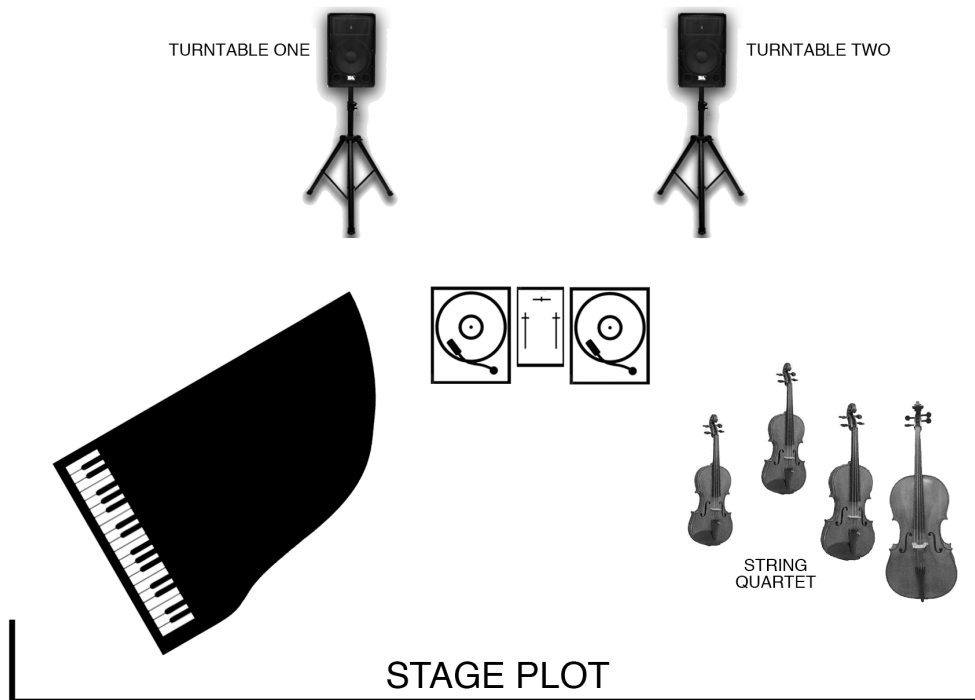
6.8.1 Instrumentation and Length of Piece

Two violins, viola, cello, piano, two turntables, one DJ Mixer, two copies of the LP,
*Ernest Hemingway – Reading*¹⁵⁰

5 minutes 30 seconds

6.8.2 Stage Plot

Figure 56: Stage plot for *For sale: baby shoes, never worn*



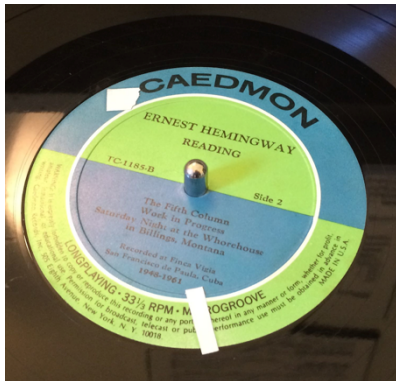
6.8.3 Requisite Turntablist Skill Level

The turntablist is required to execute a range of skill sets including basic LP manipulation and advanced beat extensions, a gesture that originated in hip-hop

¹⁵⁰ Hemingway, *Ernest Hemingway – Reading*.

whereby the turntablist must multitask on two turntables.¹⁵¹ The turntablist must also understand how to mark an LP label to create a visual cue designating where a sound begins.

Figure 57: *For sale: baby shoes, never worn*, two samples marked with tape on the label¹⁵²



6.8.4 Commentary

“By accident I came across this tape of this old man singing and made something out of it.”
~Gavin Bryars¹⁵³

The goal of *For sale: baby shoes, never worn* was to re-contextualise an old LP of Hemingway’s voice. I wanted to work exclusively with the Hemingway LP. This limitation put me in the position to develop multiple ways of using the turntable and mixer to alter the sound of the record.

The only borrowed turntable technique in this piece was the aforementioned beat extension, also known as beat juggling. This gesture is difficult to comprehend without

¹⁵¹ Webber, *Dj Skills : The Essential Guide to Mixing and Scratching*, 251-2.

¹⁵² Hemingway, *Ernest Hemingway – Reading*.

¹⁵³ Bryars, "Gavin Bryars (Composer) Talking About Titanic and Jesus Blood."

an audio example.¹⁵⁴ Beat extensions require a considerable amount of steps to be executed correctly in a specific order. If the turntablist fails to perform any of the steps, the execution of the entire gesture fails. Beat extensions are typically performed with drumbeats, effectively repeating the same part of the drumbeat by manually adjusting the LPs in real time. *For sale: baby shoes* made use of beat extensions with the Hemingway's voice rather than a drumbeat. Additionally, the turntablist is required to perform this gesture as an *accelerando*.

The other gestures featured in this piece were developed through improvisations in my studio. By slowly rotating the turntable manually with the motor off, I found that the rotating the platter made Hemingway's voice resemble melancholy droning sounds, while rotating it quickly created an odd, uncomfortable chipmunk sound. In addition, moving the platter one full revolution and counted for two seconds, the LP sounded very close to its original $33\frac{1}{3}$ RPM (revolutions per minute). Manually moving the LP at the correct speed facilitated a new approach – I was the 'direct-drive' motor. Whereas typically a turntablist restricts the turntable's motor from spinning, this new action allowed me to make sound by acting as the motor. The effect of removing the motor as the energy source for the spinning platter and inserting myself resulted in a greater sense of control over the sound.

For sale: baby shoes creates three distinctive moods; pensive, energetic and exotic. I sought to match the aforementioned turntable gestures (beat juggling and manually moving the platter at different speeds) with the three different moods. The pensive

¹⁵⁴ For more details, readers can search YouTube for *beat juggling* or *beat extension*, which will provide some context.

piano chords at the start of this piece were paired with the melancholy sounds produced by slowly rotating the Hemingway LP.

Figure 58: *For sale: baby shoes, never worn*, instructions for the turntablist to manually rotate the LPs, mm7-8.

The figure displays a musical score for two parts: Piano (Pno.) and Turntables (Ttl 1 and Ttl 2). The piano part, starting at measure 7, features a treble and bass staff with a key signature of three sharps (F#, C#, G#). The first measure is marked *pp* (pianissimo) and the second measure is marked *p* (piano). The turntable parts, also starting at measure 7, are represented by horizontal lines. Ttl 1 has a measure rest followed by a series of diagonal slashes indicating a rapid, repetitive sound, marked *mp* (mezzo-piano). Ttl 2 has a similar pattern, also marked *mp*. Between the two turntable parts, there is a handwritten instruction: "manually rotate the LPs very slowly (unintelligible)".

The entrance of the string quartet and rapidly arpeggiated piano chords created more energy in the second section. The turntablist followed suit by beat juggling the Hemingway LPs, effectively repeating the phrase “they never came.”¹⁵⁵ The turntablist is instructed to increase the rate of repetition, which contributes to the tension.

¹⁵⁵ Hemingway, *Ernest Hemingway – Reading*.

Figure 59: *For sale: baby shoes, never worn*, instructions for the turntablist to beat juggle faster, mm39.

The musical score for Figure 59 consists of three staves. The top staff is for the Piano (Pno.) in G minor, starting at measure 39. It features a piano (*p*) dynamic and a series of sixteenth-note runs in the bass clef, with a '6' indicating a sextuplet. The middle staff is for Turntable 1 (Ttl 1) and the bottom staff is for Turntable 2 (Ttl 2). Both turntable staves show a series of diagonal slashes representing beats, with the instruction 'increase rate' written between them.

The third and final section of this piece is a release from the tension. I referred to this mood as ‘exotic’ due to the perfect 4th and 5^{ths} in the piano part and the folkloric melody in the violins.

Figure 60: *For sale: baby shoes, never worn*, example of the exotic mood, mm52.

The musical score for Figure 60 consists of three staves. The top staff is for the Piano (Pno.) in G minor, starting at measure 52. It features a series of chords in the right hand and a series of eighth notes in the left hand. The middle staff is for Violin I (Vln. I) and the bottom staff is for Violin II (Vln. II). Both violin staves show a series of eighth notes in the right hand and a series of eighth notes in the left hand, with a '3' indicating a triplet. The instruction 'arco' is written above the Vln. I staff, and 'espress.' is written below the Vln. II staff.

The turntable part in the final section recapitulates the phrase “this is Ernest Hemingway” in a rhythmic interplay with the ensemble. Up until this point the LPs and

the acoustic ensemble have coexisted in mood and feeling, but have not paired up in an immediately recognisable rhythmic fashion. The intention was to create a light sense of surprise for the listener.

The final bar of *For sale: baby shoes* ends in without any type of cadential passage – it just ends. I understood this was a risk. Generally speaking, listeners prefer a defined ending of some sort. This piece creates a feeling of open-endedness, a story that is not yet finished; that can be unsettling. Philip Glass's *Truman Sleeps* has a similar ending.¹⁵⁶ Glass's piece inspired me to finish my composition with an open-ended conclusion.

Most of the Hemingway LP in this piece is unintelligible. The timbre of the turntable gestures took precedence over any meaning behind Hemingway's words, except for two audio samples: "this is Ernest Hemingway" and "they never came."¹⁵⁷ I chose "this is Ernest Hemingway" because I wanted the listener to know the identity of the speaker prior to my re-contextualisation. The second intelligible quote, "they never came" was a play on Hemingway's infamous flash novel, "For Sale: Baby shoes, never worn."¹⁵⁸ Here, my intention was to create an environment whereby the listener might make their own story out of "they never came." The turntablist is instructed to beat juggle this

¹⁵⁶ Philip Glass, *The Truman Show Music from the Motion Picture* ([S.l.]; New York: Milan ; Distributed in the United States by BMG Distribution, 1998).

¹⁵⁷ Hemingway, *Ernest Hemingway – Reading*.

¹⁵⁸ S. Dobbs, *Creative Writing for Creative People: Beginners*, (Lulu.com), <http://books.google.com.au/books?id=NQCPAAQBAJ>.

phrase (repeat it over and over again). This gesture presents the listener with the opportunity to absorb Hemingway's words and create his or her own meaning.¹⁵⁹

My inspiration for working with the spoken words of Hemingway was a culmination of several influences:

- (1) John Cage: anything can be music; any sound can be music (even Hemingway)
- (2) Mark Applebaum: "is it music" is a bad question, is it interesting is a better question (I followed this logic while improvising with the LPs)
- (3) Pierre Schaeffer: Musique Concrete, discrete and complete sound objects (I was inspired to look past Ernest Hemingway as a person and focus on the timbre of his voice)
- (4) Gavin Bryars: re-contextualised the found sound of a vagrant singing with a slow, beautiful harmonic sequence (this inspired the piano harmony at the start of *For sale: baby shoes*)
- (5) Ottorino Respighi: nearly 100 years ago, this composer scored the sound of a nightingale into his music (hearing this reminded me that there is precedence for my actions)

For sale: baby shoes, never worn is an ephemeral, emotive work that brought together several disparate influences and resulted in an original composition with new turntable gestures.

¹⁵⁹ Diana Deutsch presented repetition as a means to *phantom words*, words that are heard but not actually being said. That was not my intention for this section of the piece, however, if phantom words did occur for the listener, that effect would be congruent with my desire for the listener to create personal meaning.

6.9 Perc and Tables

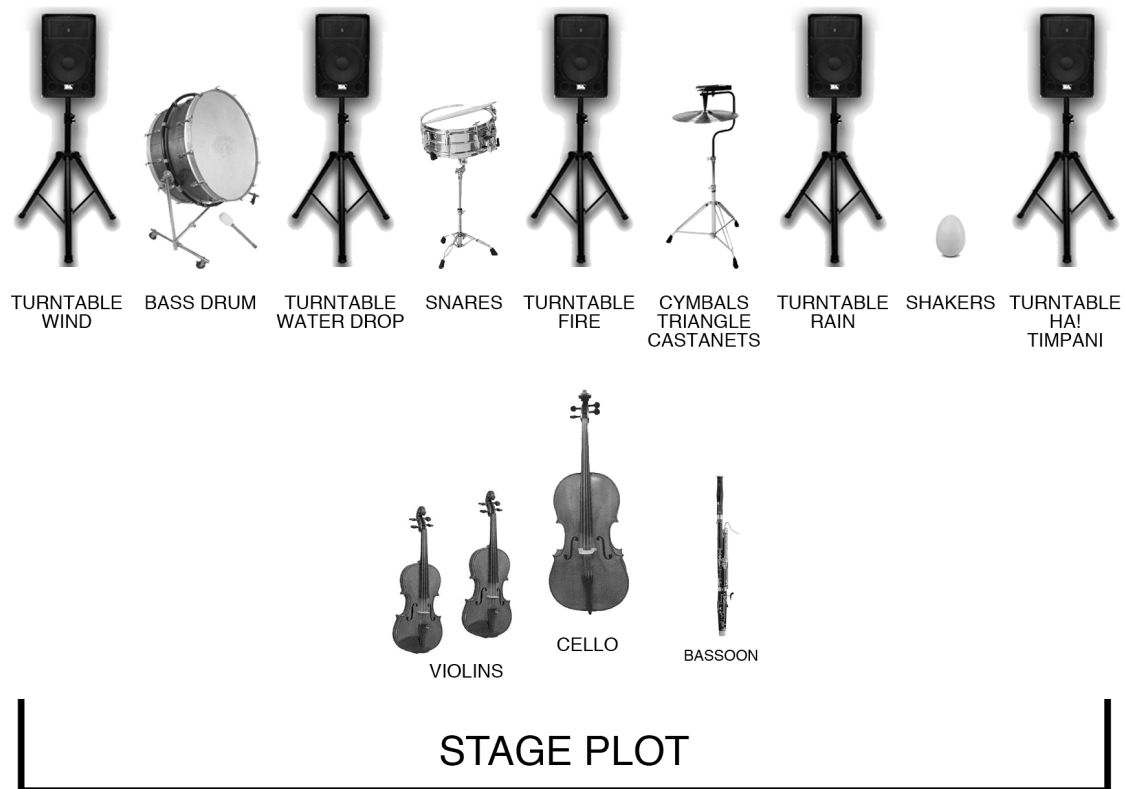
6.9.1 Instrumentation and Length of Piece

Two violins, cello, bassoon, shakers, castanets, cymbals, triangle, two concert snare drums of different dimensions, bass drum, six DJ mixers, six turntables, six copies of the LP, *Halloween Horrors: The Sounds Of Halloween (And Other Useful Effects)*¹⁶⁰

3 minutes

6.9.2 Stage Plot

Figure 61: Stage plot for *Perc and Tables*



¹⁶⁰ Elliot, *Halloween Horrors: The Sounds of Halloween (and Other Useful Effects)*.

6.9.3 Requisite Turntablist Skill Level

Perc and Tables required the highest skill set of all the pieces in this folio due to complex sheet music and intermediate turntable gestures adapted from hip-hop.¹⁶¹

6.9.4 Commentary

Perc and Tables combined orchestral percussion with the LP, *Halloween Horrors: The Sounds Of Halloween*.¹⁶² In the spirit of Schaeffer, the sound effects were chosen for their character, not their connotation.

Perc is a short piece featuring complex rhythmic motifs between the percussionists and turntablists. The middle section of this piece shifts focus to the violins and bassoon. Inspired by Ravel's *String Quartet in F major, 2nd movement*, the middle section is mostly pizzicato and quite dance-like. *Perc* ends with similar rhythmic motifs as the opening. The mood of *Perc* is light and unserious.

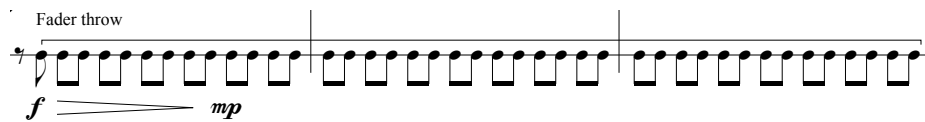
Six sound effects were used for *Perc*: wind, water droplet, fire, rain, timpani, and a laugh. The sounds were chosen primarily for their malleability. Each sound had a useful range of timbres when manipulated with the turntable. As an example, the water droplets had different personalities when played fast or slow, forwards or backwards, or any combination of those parameters. The droplet sample was a fast *drip drip* sound, but under the hands of a turntablist, the droplets could be broken into their constituent parts and rhythmically manipulated.

¹⁶¹ See performance notes for more details

¹⁶² Elliot, *Halloween Horrors: The Sounds of Halloween (and Other Useful Effects)*.

Perc also plays with auditory illusion. As an example, the rain sound effect is manipulated with an original technique called a fader throw (first introduced in *Landscape One*) resulting in a sound nearly identical to the shaker.¹⁶³ *Perc* replaces or obscures the common sounds of orchestral percussion instruments by combing those sounds with turntable gestures.

Figure 62: *Perc and Tables*, example of fader throw replacing the eighth note shaker rhythm. mm58-60.



The hip-hop techniques appropriated into *Perc* range from basic to advanced. Whereas my composition used the same gestures as hip-hop turntablists, the outcome was quite different. Hip-hop artists tend to work with a limited sound palette; water droplets and timpani do not typically find their way into the hip-hop artist's sound choices. Implementing hip-hop techniques into *Perc* brought this piece to a higher level of sophistication than my previous compositions.

Hip-hop refers to turntable gestures as *scratches*. Detailed instructions for executing the scratches used in *Perc* can be found in the performance notes of the score, as well as in Stephen Webber's book, *DJ Skills: The Essential Guide to Mixing & Scratching*.¹⁶⁴

¹⁶³ A fader throw is further explained in Appendix D: APPENDIX D: INTRODUCTORY TURNTABLE EXERCISES

¹⁶⁴ Webber, *Dj Skills : The Essential Guide to Mixing and Scratching*, 255-72.

Standard notation and text-based instructions were used for the score relying entirely on the turntablist to understand the required gestures, as opposed to the various graphic notations I created for previous scores. I consider this to be the same as relying on any proficient instrumentalist to understand the techniques of their instrument; e.g. sostenuto pedal, Bartok pizz, or bucket mute.

Figure 63: *Perc and Tables*, example of common hip-hop turntable gestures written into the score, mm.17

The figure shows a musical score for five turntable parts, labeled on the left as Ttl wnd, Ttl drp, Ttl fr, Ttl rn, and Ttl timp. The score begins at measure 17. Each part is represented by a horizontal line with various musical notations and text instructions above them. Ttl wnd includes a 'Cut' instruction followed by a 'One-click flare' instruction. Ttl drp includes a 'Cut' instruction followed by a 'Pull back' instruction. Ttl fr includes a 'Cut' instruction followed by a 'One-click flare' instruction. Ttl rn includes a 'One-click flare' instruction. Ttl timp includes a 'Cut' instruction. Below the Ttl timp part, there is a dynamic marking 'f' (forte) with a wedge-shaped crescendo line extending to the right.

The skillset for this piece is significantly more demanding than my first work (study), *Reimagined Landscape One*. *Perc* represents a shift in my compositional approach. I was no longer writing for the untrained turntablist.

6.10 The Theme

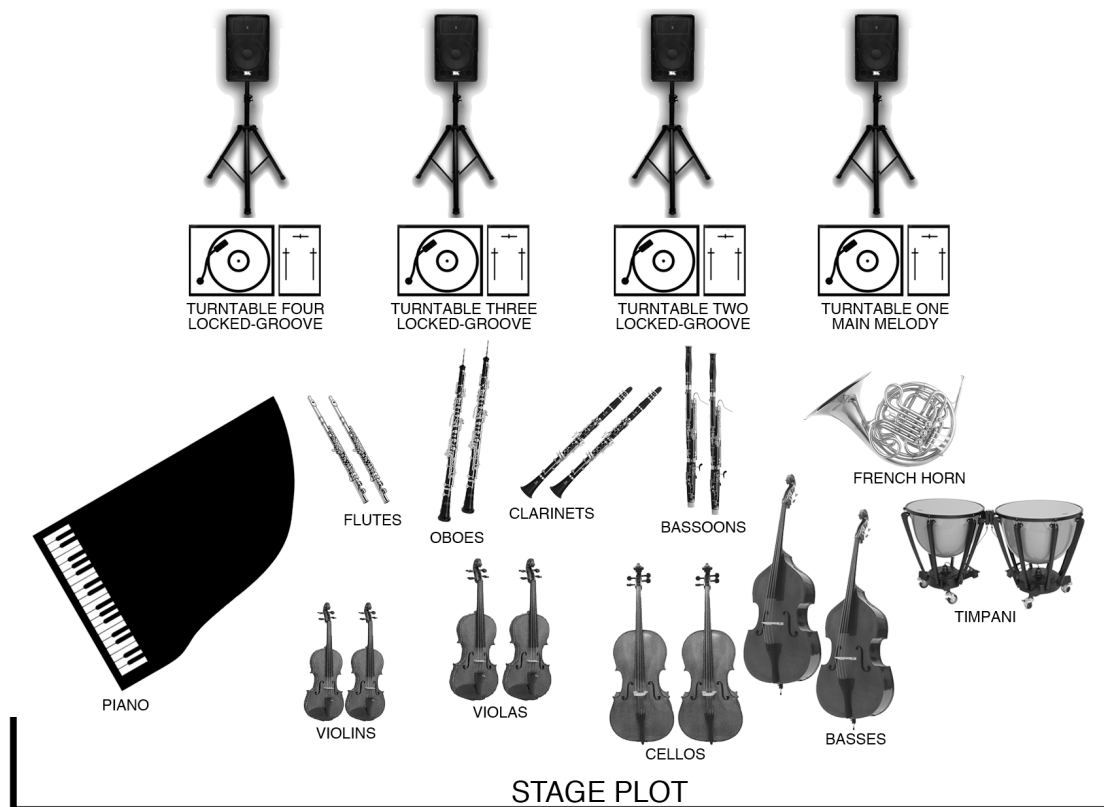
6.10.1 Instrumentation and Length of Piece

Two flutes, two oboes, two Bb clarinets, two bassoons, French horn, timpani, piano, two violins, two violas, two cellos, two contrabasses, four turntables, two DJ mixers, three locked-groove LPs, one *Jamey Aebersold – Gettin' It Together* LP, delay unit.¹⁶⁵

3 minutes 30 seconds

6.10.2 Stage Plot

Figure 64: Stage plot for *The Theme*



¹⁶⁵ Jamey Aebersold, *Gettin' It Together* (JA Records, 1979).

6.10.3 Requisite Turntablist Skill Level

Three of the turntablists require the same novice skill set from *Reimagined Landscape Three*; they need only be familiar with the various functionalities of a turntable. The principle turntablist requires an intermediate skill level. The principle is required to (1) quickly affect several turntable parameters in real time and (2) work with the DJ mixer equaliser.

6.10.4 Commentary

The Theme came about after I purchased the jazz play-along LP, *Gettin' It Together*. This LP begins with four Bb tuning notes played on a piano. I created the melody for *The Theme* by improvising with the turntable's pitch manipulation functionality. The HTD (direct-drive) turntable has four parameters that facilitated *The Theme's* melody: (1) pitch slider (2) RPM selector (3) reverse button and (4) on/off switch.

Figure 65: *The Theme*, main melody created from manipulating the Bb tuning notes on the turntable.

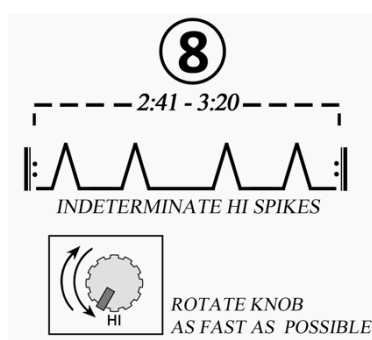


The Theme presented the opportunity for me to combine two compositional elements I enjoy; first is the use of simple uplifting, melody e.g. Aaron Copland's *Fanfare for the Common Man* and Antonín Dvořák's *Largo* from *New World Symphony*¹⁶⁶. The second technique is the stark juxtaposition of consonance and dissonance, e.g. Charles Ives'

¹⁶⁶ Aaron Copland, "Fanfare for the Common Man," (New York: Boosey & Hawkes, 1944); Antonín Dvořák and John Wilson, "Largo from Symphony from the New World," (Tallahassee, Fla: TBQ Press, 1994).

The Unanswered Question.¹⁶⁷ The uplifting melody presented in *The Theme* was juxtaposed with noisy percussive loops from three locked-groove LPs. The records were manipulated with similar gestures from *Reimagined Landscape Three*.

Figure 66: *Reimagined Landscape Three*, example of turntable gesture appropriated into *The Theme*.



Once again, this piece toys with aural illusion. The main melody is a distinct piano sound, albeit manipulated and altered by the turntable gestures. I enjoyed the prospect of presenting the sound of a piano to the audience, a ubiquitous sound, but re-contextualised into something they had likely never heard before. In addition, I intentionally scored an actual pianoforte into this composition to emphasise the point; a piano is visible, a piano is audible, but the turntablist is playing the piano melody.

The Theme was the last work I completed for this degree and I found great joy in the success of my compositional process for this piece. The Aebersold LP was chosen with clarity; I knew the turning notes would be useful. My improvisation with the tuning notes was predictable and controlled; I knew the turntable's intervallic range and I knew

¹⁶⁷ Charles Ives, Paul Echols, and Noel Zahler, "The Unanswered Question: For Trumpet, Flute Quartet, and Strings," (New York: Peer International, 1985).

the sensitivity required for accurate intonation. The resulting melody from my improvisation immediately conjured up the aforementioned inspirational compositions (Copland, Dvořák and Ives). My previous work with locked-grooves and noise provided a familiar palette to work from in order to achieve the juxtaposition I envisioned. I look forward to exploring more possibilities in the future with the Aebersold record and a fuller orchestration of turntables and acoustic instruments.

CHAPTER 7: Conclusion

Through my research I have affirmed the tradition of the turntable-as-instrument and have shown in my compositions intriguing potential for its use in a concert setting.

Having an open-mind as to what could be ‘music’ was essential in developing new techniques. When I to read Schaeffer’s work, I began to envision what an LP could be used for. Schaeffer refers to isolating the “in-itself-ness of sound; hearing sound for its texture, matter and colour.”¹⁶⁸

My creative process was reinvented during my research. I synthesised the influences of diverse disciplines, which manifested in a fresh look at compositional techniques. For example, one such technique, repetition, is a very effective way to re-contextualise pre-recorded audio (found sound). This is evident with Steve Reich as well as the work of psychologist Diana Deutsch. The hip-hop discipline has made the art of repetition a virtuosic skill. The combination of different points of view on the same technique provided me with a broader perspective on my creative process.

I encountered practical complications throughout my research such as budget and available turntablists to work with. These hurdles are not necessarily applicable to a large organisation. The single biggest issue during my candidature was locating a concert turntablist to execute advanced ideas. My skillset was adequate for my

¹⁶⁸ Schaeffer, North, and Dack, *In Search of a Concrete Music*, 13.

compositions, but it was not realistic to train my peers at University beyond a novice level.

There were benefits to the aforementioned limitations. As an example, I discovered that simple turntable gestures could be meaningfully applied across a spectrum of skill levels, from novice to expert. Regarding writing for inexperienced turntablists, I never required a non-turntablist to cue an LP (cueing requires the turntablist to wear headphones and navigate the LP without the audience hearing them, and then properly placing the needle in the correct spot). This limitation meant that each turntablist would work with only one sound per composition. As a result I had to vet all of the different ways I could manipulate that one sound to produce fresh results. My pieces, *Industry is Beautiful*, *For sale: baby shoes, never worn* and *Perc and Tables* represent the positive manifestations of the one-LP-per-player limitation.

In my compositions I found new potential with hip-hop techniques. Applying those techniques to a broad palette of timbres bore interesting results. This merits further development and requires trained turntablists for performances. However, there is a disparity between the requisite skills of a concert musician and the improvisatory approach of the hip-hop discipline. I believe this is why we do not see many hip-hop turntablists in the concert hall. The concert turntablist requires the skill set of a learned concert musician such as reading sheet music, following a conductor and dynamic sensitivity in a concert hall, coupled with hip-hop techniques typically learned through improvisation. The inherent mismatch of skills lead to barriers for my compositions' notation.

My early pieces focused on a notation style for both trained and untrained turntablists. Heavy use of symbols akin to a percussionist's score was pervasive in work. However, the more I composed, the more I gravitated towards standard notation, dismissing symbols as a superfluous step. I have concluded that standard notation coupled with descriptive words (especially hip-hop vernacular) and a simple, immediately recognisable symbol (such as an arrow) is the best practice. By using hip-hop jargon, a composer can bridge the gap between the virtuosic hip-hop turntablists who is inexperienced at reading music and the expectations of an orchestral musician.

Amplification was another practical issue and will be a challenge for the concert turntablist until a reasonably priced purpose-built speaker comes to market. Amplifying the turntable is not an insurmountable problem, but it has been, and will be, a challenge for the turntablist who wants to blend within an acoustic ensemble.

Throughout my candidature I developed a best practices list – or at least a best practices *for me* list. Examples are:

- (1) Notation: keep it as simple as possible, rely on the skill of the turntablist, use standard notation whenever possible.
- (2) Equipment choices: the concert turntablist must work with a high torque direct-drive turntable and a quality stylus.¹⁶⁹ A heavy case for the instrument will have a negative affect on portability. DJ Mixers have different equalisers, read the specifications prior to purchasing a mixer.
- (3) Remove and/or altering a sound's transient produce a new timbre.

¹⁶⁹ I used various styluses during my research. The more I spent on a stylus, the better sound I got from my turntable.

- (4) Equalisers are a power tool for timbre modification as well as amplitude modification. A sound can be completely transformed by removing large frequency bands.
- (5) Purchasing LPs: buy more than one copy of the LP when possible.
- (6) A Musique Concrete perspective on sound is beneficial (focus on timbre, not the timbre's source).
- (7) Percussionists gravitate towards the turntable more readily than other orchestral musicians.
- (8) Continuous sounds with slight fluctuations are particularly useful in a variety of contexts, e.g. the sound of wind.

At the end of my research, the most significant conclusion I came to was this: any LP (found sound) can be predictably re-contextualised via the turntable and DJ mixer. A composer must first choose to consider sound as a concrete object in and of itself, as Schaeffer did.¹⁷⁰ If a composer embraces this perspective, s/he will be in a position to hear the similarities between seemingly random LPs and orchestral instruments. Sound objects in the hands of a capable turntablist can be meaningfully re-contextualised into poignant original composition.

Upon reflection of my research, I believe the turntable is a viable orchestral instrument, more than just a special guest. A concert turntablist displays a similar skillset to any proficient orchestral musician, however the turntable is not limited to conventional musicianship. The nature of this instrument includes a wide variety of sound options

¹⁷⁰ Schaeffer, North, and Dack, *In Search of a Concrete Music*, 14.

unavailable to the acoustic instrument. I encourage composers to consider the sonic possibilities available with the turntable-as-instrument.

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APPENDIX A: TIMELINE CITATIONS

- 1877** Thomas Edison (American inventor)¹
1920 Stefan Wolpe (German composer)²
1922 László Moholy-Nagy (Hungarian artist)³
1924 Ottorino Respighi (Italian composer)⁴
1930 Paul Hindemith (German composer) and Ernst Toch (Austrian composer)⁵
1939 John Cage (American composer)⁶
1948 Pierre Schaeffer (French composer)⁷
1977 Grand Wizard Theodore (American DJ)⁸
1979 Christian Marclay (American artist)⁹
1983 Grand Mixer DXT (American DJ)¹⁰
1993 Philip Jeck (English sound artist)¹¹
1996 Oxford English Dictionary¹²
2000 K. F. Hansen (Swedish academic)¹³
2000 Nicole Lizée (Canadian composer)¹⁴
2001 DJ Radar (American turntablist)¹⁵
2007 Gabriel Prokofiev (English composer)¹⁶
2012 Matthew Wright (English Composer)¹⁷
2012 Maria Chavez (Peruvian composer)¹⁸

¹ D. Morton, *Off the Record: The Technology and Culture of Sound Recording in America* (Rutgers University Press, 2000), 2.

² E.J. Scheinberg and Los Angeles University of California, *Music and the Technological Imagination in the Weimar Republic: Media, Machines, and the New Objectivity* (University of California, Los Angeles, 2007), 61.

³ M. Katz, *Capturing Sound: How Technology Has Changed Music* (University of California Press, 2004), 115.

⁴ *Classical Music Magazine*, (Music Magazine, 1997), 13.

⁵ *Capturing Sound: How Technology Has Changed Music*, 120.

⁶ R.T.D.R.P.S.C.U.W. Sydney, *The Oxford Handbook of Computer Music* (Oxford University Press, USA, 2009), 558.

⁷ P. Griffiths, *Modern Music and After* (Oxford University Press, USA, 2011), 18.

⁸ T. Holmes, *Electronic and Experimental Music: Technology, Music, and Culture* (Taylor & Francis, 2012), 460.

⁹ R.L. Goldberg and J. Liese, *Performa: New Visual Art Performance* (Performa, 2007), 253.

¹⁰ J. Shepherd and D. Horn, *Continuum Encyclopedia of Popular Music of the World Volume 8: Genres: North America* (Bloomsbury Publishing, 2012), 201.

¹¹ M. Goddard, B. Halligan, and N. Spelman, *Resonances: Noise and Contemporary Music* (BLOOMSBURY PUBLISHING, 2013).

¹² Oxford English Dictionary, "Turntablism, N." (Oxford University Press, 1996).

¹³ Kjetil Falkenberg Hansen, "Turntable Music," *Musikklidenskapelig Årbok 2000* (2000).

¹⁴ Nicole Lizée, "Rpm : For Large Ensemble and Solo Turntablist," (2000).

¹⁵ DJ Radar 2001, Video file, <https://www.youtube.com/watch?v=1iz9YVMfA34>.

¹⁶ Gabriel Prokofiev, *Concerto for Turntables and Orchestra* (2007), compact disc.

¹⁷ Matthew Wright to Totem for Sydney by Matthew Wright 2012, Video file, <https://www.youtube.com/watch?v=MG2AdxUXmAo>.

¹⁸ M. Chavez and D. Ferrari, *Of Technique: Chance Procedures on Turntable* (Rolling Press, 2012).

APPENDIX B: LIST OF EQUIPMENT

Table 1: Equipment used for each composition Compositions

	Landscape 1	Landscape 2	Landscape 3	The Theme	3:30 am	Industry	Perc&Tables	For sale
Turntables								
HTD 4.5	x	2x	4x	4x	3x	3x	4x	2x
GE4056	3x							
CDX	x							
DJ Mixers								
DJM-350	x		x	x		x	x	
X8	x		x	x		x	x	x
DXM06	x	x	x	x		x	x	
VMC-002X			x	x			x	
Speakers								
Hemispeaker	x	x						
VNET	4x		4x	4x	3x	3x	4x	2x
KRK RP6		2x						
Cube-15X		x						

American Audio **HTD 4.5** Direct Drive Turntable

Digitech USB **GE4056** Turntable with Amp RCA Outputs

Numark **CDX** Vinyl-Controlled CD Turntable

Pioneer **DJM-350** 2 Channel Effects DJ Mixer

Tascam **X8** DJ Mixer

Numark **DXM06** 2-Channel Digital DJ Mixer

Vestax **VMC-002X**Lu 2-Channel USB DJ Mixer

Custom built **hemi-speaker**



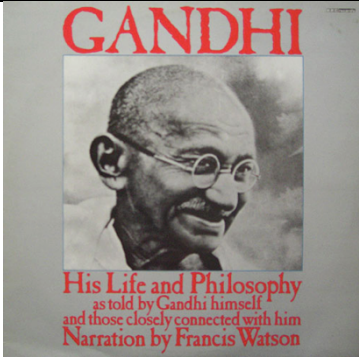
Tannoy **VNET** powered speaker

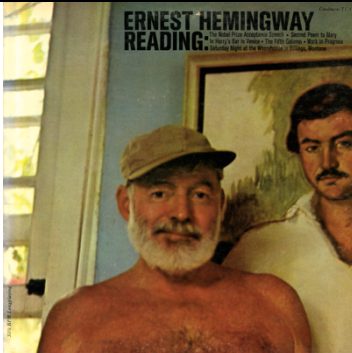



KRK **RP6** Rokit 6 Powered Studio Monitors





Roland **Cube 15X** Guitar Combo Amplifier



APPENDIX C: LPS USED IN COMPOSITION FOLIO

Table 2: LPS adapted for the purpose of this thesis, courtesy of www.discogs.com

LP	Credits	Composition
	<p>Yokomono 02: 55 Lock Grooves Label: Staalplaat – STLP 14269 Format: Vinyl, LP, Compilation, Clear Country: Netherlands Released: 2005 Credits: Lacquer Cut By – Rashad Becker Mastered By – Radboud Mens Notes: One the first side of this record Staalplaat Soundsystem created 55 silent lock grooves. One the other side Staalplaat Soundsystem commissioned 11 artists to create 5 lock grooves each. On side B label, Staalplaat Soundsystem is misspelled as Staalplaat Soundsyste. Courtesy of www.discogs.com</p>	Reimagined Landscape One
	<p>J. Robert Elliot – Halloween Horrors: The Sounds Of Halloween (And Other Useful Effects) Year: 1977 Courtesy of www.discogs.com</p>	Reimagined Landscape One Industry is Beautiful Perc and Tables
	<p>Gandhi – His Life And Philosophy Label:BBC – REH 466 Format:Vinyl, LP Country:UK Released:1983 Notes: His Life and Philosophy as told by Gandhi himself and those closely connected with him. Narration by Francis Watson. Courtesy of www.discogs.com</p>	Reimagined Landscape One

	<p>Ernest Hemingway – Reading Label: Caedmon Records – TC 1185 Format: Vinyl, LP Country: US Released: 1965 Credits: Other [Liner Notes] – A.E. Hotchner, Mary Hemingway Notes: Recorded at Finca Vigia, San Francisco de Paula, Cuba 1948-1961. Courtesy of www.discogs.com</p>	<p>Reimagined Landscape One For sale: baby shoes, never worn</p>
	<p>Shostakovich - Taneyev Quartet – String Quartets 14, 15 Label: Columbia Masterworks – M 34527 Format: Vinyl, LP, Album Country: US Released: 1977 Art Direction – Henrietta Condak Composed By – Shostakovich Ensemble – Taneyev Quartet Photography By [Cover Photo] – John Paul Endress Sleeve Notes – Royal S. Brown Courtesy of www.discogs.com</p>	<p>Reimagined Landscape One</p>
	<p>Various – Tape Projects (Locked Groove) Label: Tape Projects – TAPR06 Format: Vinyl, 12", 33 ⅓ RPM Country: Australia Released: 2008 Courtesy of www.discogs.com</p>	<p>Reimagined Landscape One Reimagined Landscape Two The Theme</p>
	<p>Various – Tape Projects (Locked Groove) Label: Tape Projects – TAPR06 Format: Vinyl, 12", 33 ⅓ RPM Country: Australia Released: 2008 Courtesy of www.discogs.com</p>	<p>Reimagined Landscape One Reimagined Landscape Two Reimagined Landscape Three, research and development only 3:30 AM, Teddy The Theme</p>

	<p>Phantom Words and Other Curiosities Diana Deutsch 2003 Philomel Records, Inc. USA Audio Engineer and Graphics: Trevor Henthorn Front Cover Image: Detail of photograph of the Crescent Nebula, taken with the Hubble Space Telescope. Courtesy of NASA and NSSDC. Courtesy of www.philomel.com</p>	<p>Reimagined Landscape One</p>
	<p>Various – Negro Prison Songs Label: Tradition – TLP 1020 Format: Vinyl, LP Country: US Released: 1958 Credits: Design [Jacket Design] – Raphael Boguslav Recorded By, Liner Notes – Alan Lomax Notes: Collection of work songs and blues recorded in 1947 at the Mississippi State Penitentiary at Parchman, Mississippi. Courtesy of www.discogs.com</p>	<p>Reimagined Landscape One</p>
	<p>Sonar Senghor And His Troupe – African Tribal Music And Dances Label: Olympic Records Series: The Atlas Series – Format: Vinyl, LP, Album Country: US Released: 1976 Notes: Record has no track indexes, all songs play continuously Courtesy of www.discogs.com</p>	<p>Reimagined Landscape Three, research and development only</p>
	<p>Various – Music With 58 Musicians, Volume One Label: ECM Records – PRO-A-850 Format: 2 × Vinyl, LP, Compilation, Promo, Sampler Country: US Released: 1980 Credits: Artwork [Cartoon] – Luis Murschetz Compiled By – Robert Hurwitz Liner Notes – Steve Lake Engineer – David Baker, Jan Erik Kongshaug, Kent Nebergall, Klaus Hiemann, Martin Wieland, Tony May Photography By [Cover], Design – Dieter Rehm Producer – Manfred Eicher Courtesy of www.discogs.com</p>	<p>Reimagined Landscape Three</p>

	<p>Various – Chromatic Scale Test Record Label: Cook – Series 60 Format: Vinyl, LP Country: US Courtesy of www.discogs.com</p>	<p>Reimagined Landscape One, research and development only Reimagined Landscape Two</p>
	<p>Sir Adrian Boult – Sir Adrian Boult Introduces The Instruments Of The Orchestra Label: Classics For Pleasure – CFP 40074 Format: Vinyl, Album Country: UK Released: 1968 Notes: With members of The London Philharmonic Orchestra. Courtesy of www.discogs.com</p>	<p>Perc and Tables</p>
	<p>No Artist – Microgroove Frequency Test Record Label: Decca – LXT.2695 Format: Vinyl, LP Country: UK Courtesy of www.popsike.com</p>	<p>Reimagined Landscape Two</p>

APPENDIX D: INTRODUCTORY TURNTABLE EXERCISES

I created the following exercises during my study with the aim to teach an orchestral musician the basics of manipulating a turntable for the purposes of my original portfolio.

Exercise 1: dal niente, al niente

Focus Instrument: mixer

Timbre: monophonic oboe or any sustained pitch

Sample: sustained single pitch

Procedure:

- (1) Begin with cross fader set to on, and channel fader set to zero
- (2) Start the turntable
- (3) Slowly bring the volume of the fader up to forte, followed by a decrescendo to al niente
- (4) Repeat process, always starting from silence, working up to a predetermined dynamic

Considerations:

Master volume of the mixer and speaker/amplifier

Sample length

Scope and Rationale:

The performer will learn the dynamic spectrum of the channel fader and develop control over speed of a crescendo and decrescendo.

Solo, followed by ensemble; the turntablist should first examine his dynamic scope uninhibited by exterior music. Following this practice, it is advisable the turntablist reproduce this exercise in an ensemble situation.

Exercise 2: Learn the Cross Fader

Focus Instrument: mixer

Timbre: monophonic oboe or any sustained pitch

Sample: sustained single pitch

Procedure: additional percussionists will be necessary for the group activity

- (1) Begin with cross fader set to off, and channel fader set to *forte*
- (2) Start the turntable
- (3) Move the crossfader to an open position, immediately followed by a closed position
- (4) Once the procedure is learned, execute various rhythms, simple to complex

Considerations:

Master volume of the mixer and speaker/amplifier

Sample length

Scope and Rationale:

The performer will begin to learn how to manifest rhythm on the instrument. This exercise can be performed as a soloist, or in a group setting whereby all performers have related rhythms.

Exercise 3: Glissando

Focus Instrument: mixer

Timbre: monophonic sine wave

Sample: sustained single pitch

Procedure: *an additional pitched instrument will be needed for this exercise*

- (1) Begin with cross fader set to off, and channel fader set to *forte*
- (2) Start the turntable
- (3) Move the crossfader to an open position
- (4) With the help of a pitched instrument, use the pitch slider to execute a unison interval
- (5) Vary the Pitch Range Selection button; this will alter the intonation curve of your pitch control

Considerations:

Learn the range of pitches via the pitch control

Intonation

Scope and Rationale:

The performer will get a feel for intonation on a turntable.

Exercise 4: Long-tone Tongue Exercise

Focus Instrument: mixer

Timbre: monophonic timbre

Sample: sustained single pitch

Procedure:

- (1) Begin with cross fader set to on, and channel fader set to off
- (2) Start the turntable
- (3) The channel fader should be moved rapidly up and down in as short a distance as possible
- (4) Gradual move the gesture from *piano* to *forte*

Considerations:

The channel fader must have a long volume throw.

Scope and Rationale:

The desired result is a similar sound to the woodwinds in Steve Reich's *Music for 18 Musicians*, Section XI¹⁷¹

¹⁷¹ Reich and Mellits, "Music for 18 Musicians: For Ensemble."

Exercise 5: High Pass Filter Shaker

Focus Instrument: mixer

Timbre: low cut/mid cut/high pass

Sample: most locked-grooves will work

Procedure:

Begin with cross fader set to on, and channel fader set to off

Start the turntable

In eighth notes or sixteenth notes, the channel fader should be moved smoothly up and down in as short distances. The wrist should be loose, similar to playing a shaker. To create accents, the fader can travel further up the mixer.

Considerations:

A loose wrist is imperative.

Scope and Rationale:

The desired result is a similar sound to the shaker, along with a high degree of predictability over the sound produced.

Exercise 6: Crossfader to Volume Fader

Focus Instrument: mixer

Timbre: sustained sound

Sample: most locked-grooves will work

Procedure:

- (1) Begin with crossfader set to off, and channel fader set to on
- (2) Start the turntable
- (3) With the crossfader, produce a simple quarter note rhythm in 4/4 time. The rhythm itself should be staccato, the quarter notes should not last a full beat. After the fourth quarter note, the crossfader will be in the off position.
- (4) Quickly move the volume fader to the *off* position, and then move the crossfader to the *on* position.

Considerations:

In this exercise, there are essentially two moves that have to take place in a short amount of time in order to prepare the mixer to be played with the volume fader: volume fader off, cross fader on. Prior to practicing this movement in real time, musicians should go through the motions a few times.

Scope and Rationale:

The crossfader and volume fader produce different sounds. The crossfader produces a Morse code like on/off sound, where as the volume fader has a lot of dynamic play. Switching between these two faders in real time is essential to using the turntable as instrument.