Low Budget Music:
Three EPs

by
Samdrub Dawa

An exegesis submitted in
partial fulfilment of the
requirements for the degree of

Master of Music
in Studio Production

at
The University of Otago,
Dunedin, New Zealand

July 2016
Abstract

This exegesis sets out to investigate our production of three EPs created on low budgets in Dunedin in order to gain a deeper understanding of our activities and external influences upon them. It is accompanied by these EPs to combine both practice-led research (analysis of practice) and practice-based research (presenting the artefact) approaches to the study of record production. I worked with three musical groups of different styles in an attempt to elicit different production practices in response to their music.

I predicate discussions of how the EPs were made with theoretical frameworks to explore them as contexts for our activities. Conceptions of music production are used to view how myself as a record producer apply these to low budget practices. I examine discourse on the role of the record producer for a similar reason. The impact of the “Dunedin Sound” legacy on local musicians and the practices of other local musicians creating music on low budgets frame our activities within Dunedin music to view our similarities and differences. With these discourses in mind I then take a model of music production to structure discussion of each EP under categories of writing, arranging, performing, and recording. The appendices expand on this by detailing the recording, mixing, and mastering activities of each EP as well as providing supporting information, including a diary of all musical activities and personal logs written after each of these activities.

I found that the types of concerns each group faced making music on low budgets were the same, as were the types of resources they employed. We set up new recording environments in rehearsal spaces with our own, borrowed, and rented equipment. When faced with production choices our limitations to resources made decision-making processes simple and we followed through with any of their consequences. We worked around the schedules of other people and forged close relationships with each other that helped us to problem solve during our challenges. Interactions with the “Dunedin Sound” legacy showed it was unclear how much we were influenced by its impact. I attribute the sound of each EP as reflecting our engagements with our resources and working conditions.
Acknowledgements

University Staff: Graeme Downes, Michael Holland, Oli Wilson, Anthony Ritchie, Rob Burns, Karen O’Neil, Mary-Jane Campbell, Stuart Young, John Egenes, Stephen Stedman, Daniel Buchanan, Claire Gallop, Louise Kewene-Doig, Jennifer Cattermole.

Contributors: Gordon Duncan, Ben Fielding, Joshua Hunter, Brad McDonald, Rassani Tolovaa, Connor Blackie, Josh Nicholls, Zac Nicholls, Nick Tipa.


My family, Gianna and Alessandro.
### Table of Contents

Abstract .................................................................................................................................................. ii  
Acknowledgements ............................................................................................................................... iii  
List of figures .......................................................................................................................................... vi

Introduction .......................................................................................................................................... 1
  Overview .............................................................................................................................................. 3
  Overview of productions ....................................................................................................................... 4
Methodology ........................................................................................................................................... 4
Literature Review ................................................................................................................................... 6

Chapter One: Music Production ........................................................................................................... 10
Conclusion ............................................................................................................................................. 11

Chapter Two: Role of the Record Producer ......................................................................................... 13
Conclusion ............................................................................................................................................. 18

Chapter Three: Dunedin and the “Dunedin Sound” ............................................................................... 19
Conclusion ............................................................................................................................................. 24

Chapter Four: Sample Practices From Local Record Productions .................................................... 25
Conclusion ............................................................................................................................................. 29

Chapter Five: Recording Locations .................................................................................................... 30
Conclusion ............................................................................................................................................. 32

Chapter Six: EP 1 - Gordon Duncan .................................................................................................... 33
  6.1 Pre-production ............................................................................................................................... 33
    6.1.1 Musical relationship ................................................................................................................. 33
    6.1.2 Budget, planning, and resourcing ............................................................................................ 34
    6.1.3 Writing and arranging ............................................................................................................. 34
    6.1.4 Demoing ................................................................................................................................. 36
  6.2 Main production activities .............................................................................................................. 36
    6.2.1 Performing and recording ........................................................................................................ 36
    6.2.2 Mixing ..................................................................................................................................... 37
    6.2.3 Mastering ............................................................................................................................... 38
  6.3 Reflection ....................................................................................................................................... 38
  6.4 Conclusion ..................................................................................................................................... 39

Chapter Seven: EP 2 - Hermann Doose ............................................................................................... 40
  7.1 Pre-production ............................................................................................................................... 40
    7.1.1 Musical relationship ................................................................................................................ 40
    7.1.2 Budget, planning, and resourcing .......................................................................................... 40
    7.1.3 Writing and arranging ............................................................................................................ 41
    7.1.4 Demoing .................................................................................................................................. 41
  7.2 Main production activities .............................................................................................................. 42
    7.2.1 Performing and recording ....................................................................................................... 42
    7.2.2 Mixing ..................................................................................................................................... 45
    7.2.3 Mastering ............................................................................................................................... 45
  7.3 Reflection ....................................................................................................................................... 46
  7.4 Conclusion ..................................................................................................................................... 46
List of figures

Figure 5.1 - Studio1 .................................................................................................................30
Figure 5.2 - Studio2 ................................................................................................................31
Figure 6.1 - '1670kmph' project Arrange window in Logic Pro X ........................................35
Figure 7.1 - A live show I recorded, which provided other demos ........................................42
Figure 7.2 - Bricks fixed to microphone stands for stability .......................................................44
Figure 7.3 - Online bounces from the tracking sessions ............................................................44
Figure 8.1 - A poster for a live show that our groups played together ......................................57
Figure 8.2 - A live show, which provided demos for the group ..............................................48
Figure 8.3 - Studio2 ................................................................................................................50
Figure 8.4 - Studio2 side room ...............................................................................................54
Figure 8.5 - Studio2 entrance hallway ...................................................................................54
Figure 8.6 - Bounces of Battlephant throughout the production ..............................................55
Figure 8.7 - Battlephant by The Violet Ohs (2015) ...................................................................56
Figure D1.1 - RME UFX audio interface ..............................................................................83
Figure D1.2 - Studio3, recording the 'Doodle' demo ..............................................................84
Figure D1.3 - ‘1670kmph’ project Arrange window in Logic Pro X .......................................89
Figure D2.1 - Recording drums at Studio1 .............................................................................91
Figure D2.2 - Recording bass guitar at Studio1 .....................................................................93
Figure D3.1 - Recording equipment for Battlephant ...............................................................98
Figure D3.2 - The wall behind the drums at Studio2 ...............................................................101
Figure D3.3 - The bass amplifier isolation ..........................................................................102
Figure D3.4 - Studio2 side room, doorway view ...................................................................105
Figure D3.5 - Cloth padding underneath microphone stands ...............................................107
Figure D3.6 - Overdub recording notes for lead guitar .........................................................108
Figure D3.7 - Vocal recording setup ....................................................................................109
Figure E1.1 - Mix window view 1 .......................................................................................115
Figure E1.2 - Mix window view 2 .......................................................................................115
Figure H1.1 - Studio3 ..........................................................................................................134
Introduction

This is an exegesis about producing music on low budgets and the particular kinds of practices that are appropriate to it. It explores the methods of production for three EPs and is based on fieldwork that I undertook full-time over the period early 2015 to early 2016 in Dunedin, New Zealand. I still discuss the role of the producer in relation to my overall production ideas having impact upon my production methods, but the focus shifted during the course of my research towards production methods.

Looking back I can see not only how we could have changed our approaches but how even in the short time since then developments in production technology have afforded new possibilities that we could have used. One example is that the range of free production software available for download on the Internet has expanded to now include more tools that were previously segregated by price walls. The implications of this would have affected the sonic capabilities of the processes that we navigated in completing our recordings. Overall I found that although the specific details changed from production to production and across genres, the production concerns of low budget music as well as the kinds of resources they employ remained the same.

My research technique involved a willingness to participate in all production activities that I was asked to perform. While I worked with eighteen groups throughout the period of research, I focus on the activities of three that I approached with the intentions of recruiting into this study. As a journeyman¹ record producer in Dunedin, I have featured in some operational capacity on dozens of recordings over the past decade, while I have concentrated more upon developing my own skills and producing full albums within the past year or so. Previously known associates returned with production jobs big and small as well as new acquaintances approaching me to assist them with their recording projects. Primarily these people communicated with me by email, cellphone, or word-of-mouth. I did not actively pursue any recording projects throughout this time. During this study I made no move to hide the fact that I was undertaking research into low budget productions. Rather, one group explicitly asked me not to use their recordings in this research, the reason behind which I believe involves their music being signed to an independent record label. Most people were interested in the research but also asked for help or advice regarding their own projects. I shared my own experiences with these people and also made them aware that the research would be openly available upon completion. In the majority of cases musicians were open to discussing their experiences and examples from those conversations only are given below.

¹ In between an amateur and a professional.
with their knowledge of the research.

In approaching the three groups to be a part of this study, I used conceptions of “production” and “producer” to guide us. While analysing the case studies (as practice-led research), I found that my interactions with these conceptions were imposed onto each production through my activities in each production process. These ideas are discussed in Chapters one and two to act as predicates for the discussions of the case studies that follow, where the case studies are intended to be read through these conceptions of “production” and “producer”. Upon reflecting on this study, I now realise that while I spent much time recording and conversing with musicians, I did not observe their own interactions with such ideas. It may be that they expressed these and that at the time I did not find them noteworthy enough in relation to the study or perhaps that the situation for the musicians to express themselves in this way never arose in the first place. This was potentially a lost opportunity to learn more on this subject.\(^2\) In addition to this, I never asked each group if they produce themselves or prefer the services of a producer. However, two of the three groups have at least produced themselves before as is evident by self-produced publications. Due to my dual involvement in producing each group and documenting our experiences as a researcher, I define my position in the research as a co-participant, through which my observations are viewed.

Undertaking this research in Dunedin, New Zealand, led to comparisons from musicians and the public to the “Dunedin Sound”.\(^3\) I became aware of the influence of certain Dunedin musicians’ activities throughout the late 1970s to 1980s. My findings focus on discourse surrounding the “Dunedin Sound” legacy. I summarise existing discussions and examine how the legacy impacts local musicians, including myself and the research participants. While I compare our activities to those associated with the “Dunedin Sound” phenomenon, overall it was inconclusive how far they were “inherited” or if it was only an apposition.

The conversations with local musicians mentioned earlier about low budget practices led me to include examples of these herein for both context of our own activities and as a broader view of this sort of Dunedin music. Again, parallels may be drawn between their activities and those of the “Dunedin Sound”, but instead I focus on how they worked within their limitations. Many exhibited a do-it-yourself (DIY) attitude and implicitly realised possibilities for “better” sound quality. Others used recording as instances of their artistic expression and appeared to care less about how it sounded and more about documenting an experience.

---

\(^2\) Fortunately there are other studies on this subject and I refer the reader to two such publications: Guastavino & Pras (2011); and Guastavino, Lavoie, & Pras (2013).

\(^3\) See Chapter three.
Declaring certain practices “low budget” then begs the question what is “high budget”? Simply the terms are relative to each other. In Dunedin it appears that the majority of music made is “low budget” when compared to that which employs budgets magnitudes greater in amount. Our activities were relatively low budget as two groups employed no budget at all while the third used NZ$2,350\(^4\) to create a full-length album over ten weeks - I have used three of the album’s nine songs to comprise an EP in this study which effectively reduces this figure’s application. We used these budgets, our own resources, and those borrowed from others to facilitate each EP’s production. I gave my time to two groups at no cost and at a low cost for the third: I was paid $6 an hour across The Violet Ohs’ album production. In observing our activities on low budgets I discuss them through accessibility to resources, distribution of labour, and production activities. Our activities were essentially compromises where we used low cost recording equipment, worked from music rehearsal rooms as “studios”, scheduled our sessions around noise restrictions and other people’s timetables, faced a deadline in one EP, and where I mastered two of the EPs even though I am not a mastering engineer.

**Overview**

After this introduction is a summary of what each case study production involved. This is followed by a description of the methodological approaches employed throughout the project and then a literature review. The subsequent chapters act as theoretical backgrounds useful for discussing the case studies. Chapter one discusses conceptions of what production is. Chapter two examines how other people and I engage with the role of the record producer. The next chapters act as precedents to our activities within low budget Dunedin music. Chapter three summarises existing discussion about the “Dunedin Sound” and identifies its influence on our productions. Chapter four explores a selection of experiences from local musicians who have recorded music on low budgets. Chapter five describes the recording locations used in this research to set up discussion of our interaction with them in the subsequent chapters. Chapters six, seven, and eight then explore how we created each EP. Finally, the last chapter draws concluding remarks. The appendices provide useful additional information on the research.

\(^{4}\) All monetary values are expressed in NZ dollars unless otherwise stated. At the time of writing NZ$1.00 was worth US$0.65 (ANZ, 2016).
Overview of productions

The first EP is from a solo artist, Gordon Duncan. It is primarily acoustic and experimental music. I was in an alternative rock group with Duncan from 2010-2013. In the years after that, Duncan and I have made recordings individually. The EP featured here is a meeting of our recent recording histories and the experiences and resources we have now have.

The second EP is from a four-piece indie pop group, Hermann Doose. In early 2015 another producer enlisted me to help him record the group. After completing that EP I produced another with only the group. Their second EP is used in this research.

The third EP is from a four-piece post-punk group, The Violet Ohs. A university faculty member offered me a production job with this group in late 2015. I met the group and they said that they wanted to record an album of “around nine songs at 45 minutes”, that it would involve a “$2,500 budget”, and that it would have a time frame of ten weeks. I accepted, we finished work on the album on the day of the deadline, and the group released the album that evening. Three songs have been taken from the album to comprise an EP for this research.

Methodology

The method of this research employed the role of the record producer in order to gain insight into activities making music on low budgets in Dunedin. It combines practice-led (analysis of practice) and practice-based (presenting the artefact) research to create an exegesis and recordings respectively.

I exhibit my studio production abilities through the production of low budget music. This is the type of production I am most familiar with and I have found that while these sorts of practices are ubiquitous worldwide, there is currently little research investigating them, particularly out of the Dunedin music scene which has a rich history of them. As a local citizen and musician I based this research in Dunedin, New Zealand.

Many local audio engineers approach record making by performing multiple engineering roles themselves within projects. Typically these are the activities of recording, mixing, and mastering. The implications of such an approach include potentially minimising production costs and for this reason I chose to imitate this approach in addition to producing each group. Therefore I categorise my roles in the research as researcher and producer/engineer.

The selection criteria for choosing groups to feature in this study started with establishing a sample population. My aim was to involve myself in local productions. To discover

---

5 See Chapter three on the “Dunedin Sound”.
potential musical projects, I spent time in the local music scene with musicians and familiarised myself with their music. Throughout the research period 2015-2016 I received offers for production work through making myself “public” in this way as well as directly from previously known associates. I accepted and undertook all work that I was asked to perform. From this population I approached three groups and we discussed in detail this research and its intentions. I selected these groups based upon their different musical styles that would potentially offer different production experiences. All groups agreed to be a part of the research and I did not ask any further groups. Gordon Duncan mainly creates acoustic music but also hybridises genres; Hermann Doose make “surfy” music and built their group on clean guitars and reverb; and The Violet Ohs define themselves as “post-punk” and play predominantly heavy and psychedelic music styles.

Our practices creating recordings on low budgets are the focal point of the research and I employed several methods for collecting data on them. After each encounter with each group I wrote a log or a reflective diary that summarised the activities that we performed. These logs are primary sources of information on our practices and example logs are provided in the appendices. However, this material was only ever intended to be raw data from which to write about each production’s recording, mixing, and mastering activities. These are the production activities that typically have the most people involved in them and have the greatest effect on shaping the outcome of the final recording. Our enterprises involved in navigating these production processes are detailed in appendices D through F. In turn these production processes as well as all other activities involved in each production are summarised to create the chapters below on each case study group. I invoke G. Scott’s model of what music production is as a framework to structure discussion in these case study chapters around relevant production processes. Due to my production style and how our low budgets practices affected each production, I place an emphasis on the recording process and its discussion, largely leaving discussion of mixing and mastering to the appendices.

The theoretical discussions of what music production is, the role of the producer, and to a lesser extent, the “Dunedin Sound” legacy and low budget practices, were included based on my experiences taking on all production work throughout the research period. These ideas and examples appeared to be major external influences on producing music in this way and warranted exploration. Other ideas were also found to be influential, such as interpersonal relationships and systems of exchanging value, the influence of a city upon music creation, and how technology has brought about change to the average musician, but I limited

---

6 See Chapter one.
discussions to the four previously mentioned in the interest of focusing the research.

Finally, further sources of data are employed to form a parallax of the research project. The rationale behind this was that it was perceived as possible that employing one form of data alone may miss a valuable insight into practice. However, these sources are used as appendices and do not contribute to the discussion of our productions in any way other than to more broadly contextualise our activities. A diary of the entirety of my musical activities throughout the period of research is provided as is a summary of the recordings that resulted from them. For the curious reader further links are given on Dunedin music.

**Literature Review**

Literature on low budget music tends to not to discuss its production practices but rather the musical group who created it, its musical conventions appropriate to genre, or its relation to music scenes. Lewis’ (2011) case study of microphone practice on Bon Iver’s *Skinny Love* is a notable exception. A common low budget practice, Iver uses only a single microphone to record an entire album, with the exception of a few vocal and horn tracks. The implications of such an approach necessarily affect the musical product in question and Lewis discusses these from a technical perspective. However, without an insider’s perspective of the production, we can only speculate how the recordings were actually made as well as Iver’s rationale while making them.

Most other literature in this area consists of journalism or instructional guides. Important examples include the ‘Mix Rescue’ and ‘Session Notes’ columns found in *Sound on Sound* magazine (2015). ‘Mix Rescue’ invites *Sound on Sound* readers to contribute problematic recordings for their engineers to remix from the ground up. Viewed across many issues these recordings support a body of typical concerns “home producers” face in making their music. The overarching theme of the column appears to be that while resources help, it is knowledge of production processes that separates these readers from the magazine’s author/engineers. This is addressed and exhibited through the remixing process. Authors also demonstrate this by using production tools both familiar and unfamiliar to them, such as showcasing those that readers themselves are known to employ. ‘Session Notes’ documents a *Sound on Sound* author/engineer’s experiences while recording a group. Typically there is some sort of challenge or limitation involved, which previously have been time-based, resource-based, or experience-based (2015). For example, the engineer may be attempting to record several songs in one day; they may be using someone else’s equipment which is not ideal for the task at hand; or they may be working with a group who has not recorded before. The article
content varies from month to month and as such it often does not connect with low budget practices. However, it is still possible to learn about them obliquely, such as by viewing how the engineers gain access to recording resources at short notice, for example. Importantly, both columns are accompanied by the recordings discussed but also feature them at milestones through the production including before and after. This provides a deeper level of understanding for the reader and supports the step-by-step analyses written about each production.

Online resources such as Internet forums are concerned with production practices on all budgets. These include such websites as Gearslutz.com (2015b), Realgearonline (2016), and Electrical Audio (2015). The purpose of these forums is to provide a medium through which anyone can enter or start discussion around the forum’s target subject. However, it is not their purpose to go into detail about productions. What details there are appear to be scattered throughout the entire website making such information difficult to discover and collect. Exceptions exist, such as the thread dedicated to record producer Rob Schnapf (Gearslutz, 2016c). Schnapf himself appears in the thread and discusses equipment and how certain records were made, from modifying recording consoles to using an inexpensive Radio Shack PZM7 to record Beck’s vocal on “Loser” (ibid).

Scholars have previously used the case study format in order to study recordings from perspectives other than low budget practices. Fitzgerald (1996) documents the events of a popular music recording session and examines issues surrounding the copyrights of performing musicians and arrangers. Liu-Rosenbaum (2012) deconstructs the mix of Led Zeppelin’s rendition of “When The Levee Breaks” in order to trace a sonic narrative. Holland and Wilson (2015) produce a song to explore how record producers engage with discourses surrounding the artists that they produce. These case studies employ methods of practice-led research but are concerned with production practices relevant to much higher budgets than those considered herein. Other case studies include those submitted for tertiary level degrees (e.g. McLennan-Kissel, 2011; Moskal, 2012) and those focused on the activities of particular groups (e.g. The Beatles: Lewisohn. 1988/2013; Kehew & Ryan, 2006).

Other scholars have engaged with discourses surrounding low budget practices. Tomaz De Carvalho (2012) theorises the distribution of power associated with traditional recording studios in comparison to that of home recording activities. Kaloterakis (2012) theorises discussions of creativity and home studios in order to understand the effects that affordable equipment is having on recording artists in Greece. Both of these studies are meta-textual and

---

7 Pressure Zone Microphone. Also known as a boundary microphone. Commonly used in conference rooms.
hold implications relevant to the study of low budget practices. Meanwhile, this research is concerned with creating raw data in the form of practical examples for the purposes of determining knowledge.

There is an abundance of literature on music production and the role of the producer. The discussions of these that follow centre around my understanding of each subject and therefore I discuss relevant literature on these that I have used in my own education. Many titles on music production are instructional or are otherwise less formal in their discourse, such as collections of interviews, web shows, and podcasts. My understanding of music production has been influenced by such instructional titles as those on acoustics (Toole, 2008; Everest & Pohlmann, 2015), microphones (Rayburn, 2011), recording (Mixerman, 2014; Owsinski, 2014b), mixing (D. Gibson, 1989; Owsinski, 2014a), mastering (B. Katz, 2007), and general reference (Davis & Jones, 1989; Ballou, 2015; G. White, 2005). My understanding of the producer’s role has been established through scholarly work (e.g. Hennion, 1983; Howlett, 2012; Burgess, 2013; Egenes, 2016), autobiographies (e.g. Martin, 1979; Emerick, 2007; Scott & Owsinski, 2012), and interviews across books (e.g. Massey, 2000; Bonzai, 2006), magazines (e.g. Sound on Sound, 2015; Tape Op, 2015), podcasts (e.g. G. Scott, 2016), and videos (e.g. Pensado’s Place, 2015; Produce Like A Pro, 2015; Recording Boot Camp, 2015). Further examples of each are discussed in Chapters one and two.

Similarly there is a wealth of literature on the phenomenon known as the “Dunedin Sound”. Its literature includes theses (e.g. Robertson, 1991), journal articles (e.g. Mitchell, 1994; Goddard, 2013), collections (e.g. Hayward, Mitchell, & Shuker, 1994; Davey & Puschmann, 1996; Eggleton, 2003; Dix, 2005; Shuker, 2005; Bendrups & Downes, 2011; Chapman, 2016), radio interviews (e.g. Hill, 2016), video archives (e.g. Chillblue07, 2011a, 2011b, 2012a, 2012b), biographies (e.g. Bannister, 1999), online articles (e.g. B. White, 2013; McAuley, 2014; R. Brown, 2014; Bannister, 2016), and blogs (e.g. Mills, 2015). Additional sources on the “Dunedin Sound” are used for summary in Chapter three as a context for our activities.

Finally, there is an emerging field of scholarship on record production. Scholars are engaging in discussions about technology (e.g. Théberge, 1997, 2004; Greene & Porcello, 2005; M. Katz, 2010; Schmidt Horning, 2013), place (e.g. Whiteley, Bennett, & Hawkins, 2005; Cohen, 2007; Ochoa Gautier, 2014), and sound studies (e.g. Sterne, 2012; Théberge, Devine, & Everett, 2015). Other authors raise meditations and provocations (e.g. Frith & Zagorski-Thomas, 2012; Zagorski-Thomas, 2014), examine the role of studios (e.g. C. Gibson, 2005; Seay, 2012; Théberge, 2012), investigate recording engineers (e.g. Porcello,
Chapter One: Music Production

By definition, producing music necessitates an interaction with the activity of music production. But what is music production? I have not sought to explore the nature of the relationship between conceptions of music production and the activities of producing music on low budgets other than to imply that it is a causal one. My own conceptions of music production are linked my practice of it and therefore my approaches to producing musical groups. I have sought to clarify what I think music production is or at least how I currently understand it.

It has been an historically acceptable approach to discuss of music production by dividing it into key component areas. These are typically songwriting, arranging, performing, recording, and mixing (Zak, 2001; Mixerman, 2012). This is also evident by the literature aimed at each of these areas. G. Scott defines the relationship between these components through a linear model: “A production is a recording of a performance of an arrangement of a song” (2014). In this definition I interpret ‘recording’ to represent two things: the active process of recording, involving microphones and storage medium for the performance; and the end product, such as a CD or mp3, which is the final result of all production processes.

G. Scott views this model as a pyramid where songwriting is the foundation segment and production is a small triangle on the top. This is because of a perceived need to have strong songs as strong foundations from which to build the rest of a production. Historically, placing emphasis on the song seemed the obvious choice, where composers and musicians presented their songs to record labels in bids to get them recorded. While record producer Al Schmitt also treats the song as the most important production element (as cited in Massey, 2000, p. 35), he also adds that “really good engineering can make a mediocre song or artist sound pretty damn good” (ibid). Therefore, while songs may be the first layer in a production, it is not necessary for the song to have the most impact on a production. Having production as a small triangle segment at the top represents the relationship it has with everything as it is analogous to the entire pyramid structure which contains the key component areas within it. In this sense production can be “shallow” or “deep” as well as recurring and self-referential.

It is increasingly being identified how the roles of production processes (songwriting, performing, mixing, etc.) are overlapping with one another (Zagorski-Thomas, 2007, pp. 191-192). As an example, musician Bing Crosby used tape editing to mediate his “performance” through the “recording”: “In that way, we could take out jokes, gags, or situations that didn't

---

8 For example, The Beatles (Martin, 1979, p. 123).
9 Tape editing involves creating a composite performance by cutting and pasting sections of tape together.
play well and finish with only the prime meat of the show; the solid stuff that played big” (as cited in Miller, 2009). Computer software easily affords such mediation, such as by allowing recordings to have their timing and tuning adjusted to improve performances (Senior, 2011, p. 89). The consequences of advances in production technologies afford new possibilities where production processes may renegotiate their traditionally defined roles (Zak, 2001, pp. 10-12).

These processes may interact with each other to the point where we only understand one process as mediated by another. It is not necessary to even have a “foundation” or starting point before engaging in production processes:

> And, know what? The advent of “electronica”, or “techno”, whatever the heck it's called this year, renders the whole two-schools argument pointless! There's nothing “out there” to take a “photo” of in the first place; the act of creation and the act of recording/producing are inseparable. Suddenly, almost by definition, everyone's a producer (Endino, 2015a).

Due to the elasticity of production elements, it is possible to work on a production at any stage of the process; a production stage does not have to be finished before working on another.

In relation to musical genres, definitions of music production apply to all genres, otherwise we are referring to a certain musical genre’s niche production style with its own peculiarities and approaches specifically tailored towards its activities and needs. The terminology employed in G. Scott’s model may be used as analogues relative to the conventions appropriate to varied musical genres. For example, the foundation of the production is the “song” which typically consists of a melody and words, but it may also be the composition, the riff, the electronic loop, or whatever germ all other production activities of that genre stem from.

Small’s situating of music as an active process as opposed to an object (1998, p. 8) is useful in understanding what music production is. Recorded music, the object of music production, can be viewed as active processes (recording, performing, arranging, songwriting), where the sustained interaction of these processes may be defined as music production. In other words, it is viewing activities of producing music through its intended form. The direction of these processes, undertaken by an individual or group, is then the role of the record producer.

**Conclusion**

It is simultaneously useful to break music production into key component area as discrete production processes in order to define them, yet their roles can overlap with each other and
they do not required to be completed in any particularly order. However, it is precisely due to this obscurity that I subscribe to G. Scott’s model of production for structure. This model may be universally applied to all musical genres and provides a starting point for all activity. At the same time I embrace the freedom afforded in production today: after using G. Scott’s model to begin production, I may deviate from its path if I deem it to be in the production’s best interests. Such an approach can be undertaken on low and high budgets alike as the model has nothing to do with resources but is instead concerned with activities.
Chapter Two: Role of the Record Producer

This chapter builds upon the definition I set forth in the last chapter that “the direction of these [production] processes, undertaken by an individual or group, is then the role of the record producer”. As with the previous chapter, my own conceptions here are linked to my practice and therefore the music of this study. While it is somewhat of a hollow statement to say that no two record producers are the same, it nonetheless identifies that there are innumerable variables involved when a person produces music. The layers of complexity in the social and technological interactions that the producer undertakes makes the task of quantifying the extent of any given producer’s role on a production against other factors near impossible. Instead, the individual jobs that are typically required of producers may be deconstructed to act as guidelines for the producer’s role. This chapter then can be used to compare my ideas against the music in this study. In the excerpts that follow it is possible to collate similarities across descriptions of the role that collectively inform such a system of guidelines.

Definitions of the producer’s role are provided by record producers David Huber;

- Help the artist (and/or record label) create the best possible recorded performance and final product that reflects the artist's vision. This will often include a large dose of musical input, creative insight and mastery of the recording process.
- Assist in the selection of songs.
- Help to focus the artistic goals and performance in a way that best conveys the music to the targeted audience.
- Help to translate that performance into a final, salable product (with the technical and artistic help of an engineer and mastering engineer).

(Huber & Runstein, 2014, pp. 21-22)

Mixerman;

Overall, you have two main jobs as the producer: organization and leadership. These two jobs, however, break down into a number of specific roles. Not only are you in charge of the budget, but also the time, personnel, politics, and overall musical vision of the project (Mixerman, 2012, p. 51).

Jack Endino;

PRODUCTION - What most people want from me: a mad-scientist combination of engineering and technical chops, musical knowledge, psychological skill and empathy, problem-solving ability, extreme patience, and experience x1000 (2015b).
And Phil Ramone:

Someone's got to think fast and move things ahead, and those tasks fall to the producer. Because he or she is involved in nearly every aspect of a production, the producer serves as friend, cheerleader, psychologist, taskmaster, court jester, troubleshooter, secretary, traffic cop, judge, and jury rolled into one (Ramone, 2007, p. 15).

While a more extensive survey of the role of the producer could produce a greater correlation of data, this selection serves this study’s purpose of the defining the producer’s role in relation to our practices. In retrospect this research could have benefitted from surveying its musicians for their own interpretations of the role.\footnote{See Guastavino & Pras (2011).} However, from these definitions the record producer is a worker whose responsibility is the creation of a product. This act of creation is broken down into many tasks, which the producer may undertake himself or herself or delegate to other people to complete. These tasks may be technical (concerned with the physicality of the recording) or social (concerned with the people involved in the production) in nature. Importantly, the producer’s role includes many sub-roles that are predominantly based around interpersonal relationships that are active while creating a recording. After completing a production these relationships have served their purpose and may cease to exist. It is worth noting that the above perspectives are all derived from different geographical, historical, and social contexts. For example, Ramone alone started making records in New York in the 1950s and continued worldwide until his death in 2013. His outlook above comes after decades of experience across many changes in the studio environment and from working with many artists of different musical styles and approaches. Furthermore, such descriptions from prolific producers like Ramone are already summaries of the producer’s role, deriving from experience on hundreds and sometimes thousands of productions.

As a journeyman record producer I have used these and other definitions to congregate notions of what it is that I should be doing when producing in order to support my own ideas. I approach production through a negotiation of the artist’s production vision with my conceptions of what production is in order to facilitate their activities towards it. In practice I say what I think is possible and what I think is not. To undertake the producer’s jobs I have also embraced aesthetic approaches towards the role. For example, I confer on the matter with record producer Jerry Wexler’s categorisation of such approaches:
The first is the documentarian, like Leonard Chess, who took Muddy Waters’ Delta Blues and recorded them just as Muddy played them – raw, unadorned, and real. Leonard replicated in the studio what he heard in the bar.

I fit in the second category – the producer as servant of the project. . . . His job is to enhance: meaning find the right song, the right arranger, the right band, the right studio – in short, do whatever it takes to get the best out of the artist.

Phil [Spector] is the prime example of the third category: producer as star, as artist, as unifying force (as cited in Zak, 2001, pp. 175-176).

In this sense I also attribute myself under the second category, rarely under the first, and never under the third. My rationale for this is a desire to avoid “over-involving” myself in a production. I view a recording as a collaborative work between the artist and myself but ultimately belonging to and reflecting the artist. As an active musician I can vent my own musical ideas in other ways. Having participated in many groups has allowed me to better understand other musicians as well as why they may not want producers over-involving themselves with their work. I also agree with Howlett’s notion of the producer as nexus, as “the necessary connection between cause and effect”, where “the connection is not a wholly transparent one—the personality and skills of the producer will shape and tone the outcome, as a colour transparency affects the light passing through it” (2012). Because of the implicit “signature” or “stamp” the producer has on a work by the fact of their involvement, I attempt to minimise any further “footprint” through means of facilitation as opposed to imposition. This is mainly what “hands-off” producing means: prioritising the artistic mark of the artist over that of your own. In these terms I concur with record producer Michael Beinhorn’s approach where:

I try to be open to the creative process and its outcome without trying to dictate exactly how it has to go. I find if I simply show up to work and devote myself to it, everything falls into place (Beinhorn, 2015, p. 1).

Beinhorn’s reflection is eternally optimistic and shows that he brings his will under control in order to not to overpower creative processes. I find this important in such work where the “creative spark” is a fickle being that can evaporate in an instant.

I ascribe these guidelines not only towards the individual jobs of producing but also in order to fulfill an overall “production vision” of a project. While an artist has a vision of their music and often their own vision of the production, for producers a production vision enables them to abstract a thought product into a series of events towards creating a tangible version of it. This is comparable to another theory of creativity:
And there is the famous example of Michelangelo's theory of sculpture: The statue is already in the stone, has been in the stone since the beginning of time, and the sculptor's job is to see it and release it by carefully scraping away the excess material (Nachmanovitch, 1990, p. 4). [all emphases in original]

This excerpt does not reveal all of Michelangelo’s philosophy, as different cuts of stone would reveal different possibilities, necessitating the use of the “right” stone to begin with (New Renaissance Art, 2016). I apply this idea to record production through setting the “right” scene for a recording to happen in: appropriate space, equipment, musicians, vibe, direction, work ethic, and so forth, without dictating how these eventuate. This is particularly relevant for low budget practices where adaptation encourages a production born out of compromised circumstances. In practice this could be waiting to borrow “better” equipment, using affordable or found resources to change working conditions, such as using a mattress and a blanket as a makeshift vocal booth, or exchanging goods or services for use of a space.

As a producer/engineer, I also apply the above ideas to the practices of recording and mixing. In attributing myself to Wexler’s categories of producer as documenter/servant to the project I minimise the application of processing to sound. In this matter I concur with the record producer David Brigg’s general production vision:

You get a great sound at the source. Put the correct mike [sic] in front of the source, get it to the tape the shortest possible route [emphasis in original] – that's how you get a great sound. That's how you do it. All other ways are work (as cited in Young, 2012, pp. 338).

In a realm of endless possibilities this type of aesthetic aims to take “no sound” as its sound. Any desirable changes to the sound are undertaken as early in the production as possible and are then maintained at the maximum quality along the signal path for as long as possible, starting with the musician, the instrument, the room, the microphone, and so forth. After finding a sound at the source this aesthetic aims to leave it undisturbed, explaining Brigg’s comment that it is “less” work than other ways. I also employ practical techniques towards this aesthetic, such as those by record producer Al Schmitt:

HM: I know that, in recording, you get sounds from mic placement rather than from EQ, but do you use very little EQ on your mixes too?  
AS: Yeah – I almost try to turn it off. If you look over my shoulder at the board, you'll see very few EQs.  
(as cited in Massey, 2000, p. 32)

Here the interviewer refers to shaping the frequency balance of a recorded sound through

---

11 ‘EQ’ is short for equalizer. These are signal processors used to ‘equalize’ or balance frequencies in the audio spectrum.
manipulation of a microphone’s proximity and angle to a sound source. In Schmitt’s case he consciously performs equalization tasks during the recording phase through microphone choice and placement to the extent that equalization is later no longer necessary.

While I consciously attempt to do so today, when I started engineering and producing music I used minimal equipment and processing through a lack of resources. My development involved studying records, identifying and meeting with like-minded individuals, purchasing affordable equipment, and having opportunities to practice my abilities. I can relate to the experiences of record producer Nathan Daniel, who has discussed his development of a production consciousness:

The bottom line is, I didn’t know what I was doing when I first started, so I just recorded everything, taking some tips from people or reading things, “alright, I’ll put a microphone here”, blah, blah, blah. Especially being a guitar player, I had no idea what a good guitar sound was. And then, over time, I learned what I liked and what I didn’t like, I learned the type of tones I liked and what I didn’t necessarily like.

... So, it’s experience. You’ve just got to keep doing it until you figure out that’s good or not (as cited in G. Scott, 2015).

I began making recordings at home and at music rehearsals without knowing how little I knew about production. In hindsight I consider that this was most likely a setback compared to a studio intern style of education found in large recording studios, where the studio is set up for production and acts as a consistent framework within which to learn. Primarily through trial and error and experimentation, I recorded demos\(^\text{12}\) with low-cost, second-hand, or borrowed resources. Over time my recordings improved and groups started releasing them. For me the transition from making demos to making records was as much in the mind of the producer as in the minds of the groups and the audience. In this matter I have related to how record producer Rob Schnapf’s career developed:

It was a funny thing at the time. You could record things and they were demos, but, if you made artwork, put them on a 7-inch, then you were making records. So that's what we started doing.

... We'd find a band we liked and we just put our money together. Do a little artwork, you know, we had friends who did graphic art. Everything was on the cheap. Make a run of singles, throw them in Darren's record store. And then, you know, we started taking meetings.

...  

\(^\text{12}\) A demo recording is a demonstration of a song in recorded form. Typically it is used as a draft or preparation tool for further recording. Historically, songwriters used demos to sell their songs to labels and artists. In my groups we have used demos as recorded documentation of our jams and songwriting progress.
And then it was like, oh, ok (as cited in Produce Like A Pro, 2016a).

My transition from an amateur recording engineer to journeyman record producer was a sum of the actions of the groups that I worked with. No matter the objective quality of the recordings, this approach to releasing music has provided many opportunities for myself to start producing and develop production sensibilities. In Chapter four I view how this also helps other musicians/engineers/producers do the same.

**Conclusion**

In this chapter I have built upon my definition of the record producer as a director of production processes and examined how I employ ideas on the record producer and have developed a production sense. These ideas may be applied to small and large scale productions alike as they do not necessitate resources on scales afforded by high budgets nor specific pieces of equipment in order to be practiced. Specific approaches assist in reducing the innumerable variables involved in producing music through the commitment to a sound and have added benefits of sonic “purity”. In spite of a lack of access to knowledge and resources such schemas have not prevented but enabled myself as well as others to start practising production. The ideas in this chapter are ingrained in my production sense and are therefore embedded within each case study through my interaction with their productions.
Chapter Three: Dunedin and the “Dunedin Sound”

This research was based out of Dunedin, New Zealand. This chapter provides a light survey of the city before discussing practicalities of making music here, in order to set the scene for the productions in the following chapters. In seeking an overview of Dunedin I noted the historical music forces known as the “Dunedin Sound” and became aware that they exhibited similar behaviours to those of this study. Because of this I also examine the impact of the “Dunedin Sound” legacy on local musicians, if any.

Dunedin is situated in the South Island of New Zealand and was colonised in the early 1800s by predominantly Scottish immigrants. During the mid to late 1800s Dunedin was a thriving city mainly due to widespread gold mining operations in the region but towards the turn of the 20th century population growth began to slow down. The city consisted of 64,237 people in 1911 (Statistics New Zealand, 2016a) whereas it is around 120,000 today (Statistics New Zealand, as cited in DCC, 2016). This figure fluctuates with the city’s large student population, with the local university alone having 18,431 equivalent full-time students in the year 2015 (University of Otago, 2016). The city has a major national port and recently won a competition to receive ultra-fast broadband, the first of its kind in the country. The average house price is almost a third of that of New Zealand’s biggest city, Auckland (QV.co.nz, 2016), affecting local mortgage and rent prices. The median income of Dunedin is almost 20% lower than the national average income (Statistics New Zealand, 2016b).

Dunedin is home to a wide range of music. There is a vibrant folk scene that holds an annual festival, coming up to its 41st iteration (Whare Flat Folk Festival, 2016). Large music organisations include brass ensembles (Mosgiel Brass, 2016; St Kilda Brass, 2016), jazz groups (Dunedin City Jazz Orchestra, 2016), and the local symphonic orchestra (Dunedin Symphony Orchestra, 2016). An electronic dance music scene exists but lost its primary venue, Bath St, several years ago (Benson, 2010b). A range of dedicated music venues are scattered around Dunedin, as well as certain bars and restaurants that accommodate music performances. Owing to the size of the city and its music scenes, venues do not tend to specialise in music genres.

Through heritage, the phenomenon known as the “Dunedin Sound” persists in discourse surrounding local music. I discuss this due to its impact on local musicians creating and recreating music identities, affecting how they develop aesthetics. The “Dunedin Sound” has links to New Zealand’s social and countercultural history in the 1980s, “grounded in a specific time and ideological space” (Holland & Wilson, 2015). The term is used to denote the influence of certain musical groups active in Dunedin around the late 1970s and early 1980s.
such as The Clean, The Chills, and The Verlaines and widely refers to:

Good original songs played by amateurish musicians to small local audiences without regard to popularity, current musical style, or fashion.

…

A selective co-option of the ethos of punk and post-punk culture and a broad echo of elements of an older construction of New Zealand national identity (Schmidt, 2016).

The “Dunedin Sound” groups also exhibited similar musical conventions, such as those identified by Downes:

The insular and isolated nature of the Dunedin scene around 1980-83 meant that bands tended to learn from each other, both technically and in terms of how to write songs, one might even argue that a shared aesthetic of what constituted a good or original song was generated largely internally. Every good song set a benchmark that others tried to emulate or outdo. Not only is the sound similar in some cases but they share compositional techniques, choices of harmonic and melodic materials and structurally go about songwriting in a way quite removed from external norms (as cited in McGonigle, 2005).

In surveying the “Dunedin Sound” I found that the term combines musical groups, record labels, and music venues with dynamics of parochial and national senses of self, socialism and/or anti-establishmentarianism, and discourses of isolation in Dunedin. At least initially, many groups now associated with it were hand-picked by Flying Nun Records label founder Roger Shepherd to join the label’s ranks, creating a commonality for the groups, the label, and the “Dunedin Sound”. 13 Shepherd now reflects upon use of the term:

The ‘Dunedin Sound’ was only ever a convenient label for something rather complex and difficult to describe… There was no single, simple identifiable sound coming out of Dunedin. (Shepherd, 2016, p. 89).

The “Dunedin Sound” seemingly broke its own rules as it became more popular and fashionable. Martin Phillipps of The Chills affirms/denies its existence:

There wasn't a Dunedin Sound, except that the bands recorded on the same equipment and possessed the same feel. We all shared a love of good songs and a loathing of stage personas and such (as cited in McGonigle, 2005).

Credited with coining the term, albeit as an off-hand remark, David Kilgour of The Clean now finds its use difficult: “The Dunedin Sound, mmmm, me and my big mouth!” (as cited in McGonigle, 2005). From this limited sample it is evident that there are similarities about the

---

13 See throughout Shepherd, 2016.
“Dunedin Sound: an emphasis on songs; and distance from popular music trends. There are also differences in the discourse: groups sounding similar/dissimilar to each other; and it is easily defined/it is difficult to define/or a rejection of the term.

By including certain qualities the “Dunedin Sound” excludes others. The term is also used to demarcate activities of musicians outside its immediate sphere, including those active in Dunedin at the same time, such as *The Other Dunedin Sound: The Acoustic Community of Southern New Zealand* (Saunders, 2011); *The Original Dunedin Sound – 1966-1970* (Spittle, 2013); and *The Other Dunedin Sound* (Peter Gorman, 2014). A recent book on the “Dunedin Sound” (Chapman, 2016) attempts to take a neutral stance, choosing 17 acts for its discussion while addressing arguments on use of the term:

I can understand the arguments. For instance, how do you compare The Dead C with The Stones, or The Chills with The Clean?

... But I took the view that is a pointless argument. The term is established in popular culture; it exists around the world. I didn’t want the book to attempt to pick the eyes out of the terminology, yet I didn’t want to avoid such discussion either (Chapman, as cited in Gilchrist 2016c).

Others have questioned the premises for a “Dunedin Sound” in the first place, citing its similarities to activities around New Zealand (McLeay, 1994) or its cyclical, self-affirming nature (Schmidt, 2016; Steel, 2016). Personally I believe the “Dunedin Sound” to have been a marketing vehicle for the fledgling Flying Nun Records label and a number of Dunedin groups successful in getting their music known to wider audiences. While a deeper investigation of it lies outside this research, for now it is suffice to say that it is contentious – as perhaps all “Sounds” (with a capital S) are.

This is relevant to this study as the “Dunedin Sound” is ingrained in the realities of creating music in Dunedin today. Notions of it interact with musicians proceeding with their own music identities. Holland (2010) has interviewed contemporary local musicians and observes that they exhibit degrees of “inherited aesthetics”. In summary he finds that:

The Dunedin Sound legacy has a profound impact on the aesthetic of most musical acts operating in the city: regardless of genre most acts feel obliged to react in some way to the discourses of authenticity, sincerity and distrust of large-scale industry embodied by the city’s most well known musical era (Holland, 2010, p. 72).

The current activities of Dunedin groups may be ignored in favour of reinforcing a “Dunedin Sound” legacy. Appearing in Chapman’s forthcoming book, local record label owner Ian
Henderson writes: “It can also mean continual references, comparisons and judgement in relation to music of a long-distant era and expectations about sound and style” (as cited in Gilchrist, 2016c). Henderson refers to how the media are particularly fond of using the term as a measuring stick to compare local groups against. Chapman uses Henderson’s perspective in the music industry to view how this affects local groups:

I specifically asked him to comment on how the new bands regard the term ‘Dunedin Sound’. Some of them do bristle a bit. However, as Ian says, the association with the term is one reason others will give them a listen. It does open doors (as cited in Gilchrist, 2016c).

Some people openly express desires to abandon associations with the “Dunedin Sound”. Musician Millie Lovelock believes the legacy to be withholding contemporary musicians:

The other thing is just that Chick’s [Hotel, music venue] has been such a staple of the Dunedin music scene for so many years, so it’s kind of a bastion of the “Dunedin Sound”. Maybe if we’ve lost that then we can finally move on, finally progress as a scene to be more than just Dunedin and the “Dunedin Sound” (as cited in Callister-Baker & Bollen, 2016).

In response to a review of his album from Pitchfork, musician Kane Strang takes a pre-emptive strike against the media: “I honestly would have been fine with a 3 [out of 10] as long as they still didn’t mention the Dunedin Sound lol” (2016). A recent city sponsored article attempts to renegotiate use of the the term: “Here the term Dunedin Sound is not used as a label to define a type of music or band but rather to examine the place Dunedin and the music created there” (Loughran, 2016). As a dialogue about Dunedin Sound, it subverts expectation by mentioning the successes of contemporary local artists without discussing the “Dunedin Sound” legacy, suggesting that their activities can be viewed as independent from it. The article also elicited derision from a group whose image was used to front it without credit nor mentioning them: “Look boys.. we made the Herald. We must be the 'dunedin image’” (McKean, as cited in Dunedin NZ, 2016). While essentially an in-joke about the media’s use of the “Dunedin Sound”, their attitude highlights a tension regarding musicians and their identities.

In undertaking this research, many musicians and members of the public drew comparisons between it and the “Dunedin Sound”, primarily citing the do-it-yourself (DIY) attitude associated with it. After finishing the productions of this study I sought perspectives from the musicians involved. While I met each group individually, they held a unanimous opinion: they thought that most musicians in Dunedin knew about the “Dunedin Sound” and that its legacy affected some groups in Dunedin today more than others. They also expressed
that they personally were not invested in the “Dunedin Sound” but were instead were
influenced by musical groups and trends originating overseas. Perhaps this was their reaction
to the legacy, to avoid it altogether? At the same time they were all familiar with the groups
and ideas associated with the “Dunedin Sound” and we discussed which groups we liked and
did not like as fans. I also noted that these musicians shared features with those of the
“Dunedin Sound”: they emphasised songs and musical performance over other aspects of
music; they largely distanced themselves from popular music trends and conventions; they
embraced a DIY approach to making music; and they self-funded their activities. While
somewhat contrived by this study, they also all recorded on the same equipment. However,
without a deeper level of investigation these similarities can be ascribed to coincidence.
Future studies might expand on this by exploring the influence the city itself lends to making
music here through the people and resources it enables or discussing the “Dunedin Sound”
legacy with a wide group of local musicians.14

Beyond senses of identity and musical modus operandi, there are practicalities of making
music in Dunedin as a small city. It takes up to fifteen minutes to reach the centre of town
from most places within Dunedin (Google Maps, 2016). Through purchasing musical and
recording equipment over the past sixteen years I have experienced that there is a limited
range of either available at the few music stores around: Music Planet, Music Works, and the
Rockshop. At the same time the Internet has brought more options to consumers while
international purchases incur relatively significant customs fees for purchases over NZ$400
(New Zealand Customs Service, 2016). I have found that musicians themselves are often
accessible through parties, performances, the city’s hospitality industries, or through
“someone who knows someone” and many are active in multiple groups. In searching for
rehearsal spaces it appears that there are virtually no commercial options and they tend to
have noise restrictions.15 From experience most small groups rehearse out of whatever spaces
they can, while organisations such as those listed earlier in the chapter tend to have exclusive
use of facilities or their own spaces. There are also relatively few performance spaces and
musicians adapt by hosting performances in non-traditional spaces (McGaughran, as cited in
Valentine, 2016).

Dunedin is also home to few recording studios. The purpose-built Albany St. Studios was
commercially available to the public for most of this century so far but has recently been
slated for closure due to structural problems and obsolescence (Gilchrist, 2016b). During its
recent tenure it had been favourably compared against previous studio environments in

---

14 See also Holland, 2010; and Schmidt, 2016.
15 For example, see Chapter five.
Dunedin: “It may as well be on a different planet to the '80s and even the '90s” (Downes, as cited in Benson, 2010a). Other former studios have included the 4XO studio, Fish St Studios, and Arc (Holland, 2010, pp. 60-62). Today there is the production room at student radio station Radio1, primarily used for in-house work; the recently established Port Chalmers Recording Service, set up in an old music venue; as well as professional home studios, created from purpose-built or repurposed rooms within people’s homes.\textsuperscript{16} It is interesting to view how people make records in an environment where there is no commercial studio infrastructure. In addition to discussing this research with musicians, I sought out engineers and producers and most operated independently, with a few working for the local university. At least during the recording phase, they tend to work from non-traditional spaces which have previously included churches, community halls, music venues, stables, garages, holiday homes, basements, woolsheds, club rooms, rehearsal spaces, and lodges. Despite availability of production facilities and their associated personnel in Dunedin, another “industry” has operates in parallel for musicians who cannot or do not afford their services, such as ourselves in this instance as well as the majority of the musicians in the next chapter.

\textbf{Conclusion}

I have used this chapter to contextualise environments in Dunedin in which local musicians create their music. While the city lends influence to how music is made here, I have only sought a light survey of this for the purposes of this research. Prior generations of musicians have created publicity and set traditions in Dunedin. Complex interactions with the “Dunedin Sound” factor into how local musicians go about their own musical identities. While the musicians involved in this study’s productions distanced themselves from the “Dunedin Sound”, they shared similar attitudes and working methods with it. Further sources both for and against the “Dunedin Sound” are provided in the literature review. The practicalities of creating music in Dunedin tend to limit musicians’ access to resources. There are few music venues and recording studios around and production personnel tend to work from non-traditional spaces.

\textsuperscript{16} See Gilchrist, 2016a.
Chapter Four: Sample Practices From Local Record Productions

This chapter examines select practices from local musicians creating music on low budgets, observed both before and through this study. While the intent to record oneself may be intentional, the sound of the resultant recording may be unintentional. A recording’s quality of sound is determined by a function of equipment and interaction with it, where its input is a performance; as temporal episodes a performance may be concerned with movement of air molecules, changes in electronic power, or digital events. Using these terms then, sound quality can be limited by one or more of these factors. For example, musician Matthew McAuley observes differences between their recordings:

We weren’t really happy with them, and being lo-fi was never really a conscious choice. We just didn’t play very well, the setup was pretty bad, and a couple of the songs aren’t that great. But when you’re poor and don’t have much time, hi-fi recordings are nigh on impossible. It’s fun self-recording, and we’ll keep doing it, but we wanted to try doing something a little more advanced fidelity-wise. And though it was pretty expensive, it’s something I’m really happy with and excited about eventually getting out (as cited in Hewitt, 2010).

During the research period I talked about music production with many local musicians. I found a widespread dissemination of recording resources: of the eighteen groups I worked with through this time seventeen had home recording equipment. While equipment was ubiquitous, I received many questions about how to use it from “basic” to “advanced” queries. I also received several requests to “touch up” recordings that featured technical problems such as clicks, pops, and excessive distortion. I agree with Tomaz de Carvalho (2012) that production knowledge operates as a continuum of power dynamics, where typically the more knowledge a person has the more influence they may have in a production or the more professional a sound they are able to achieve. For example, through owning distortion-removal software I am then able to use it to interact with a performance to create a more professional sound by removing undesirable elements, which is a power that others may not possess. To use a metaphor, while I believe that one should “do no harm” towards a recording, I discovered that such concerns were not relevant for some musicians. For them recording functioned as a servant of the will of their musical expressions. A recording’s purpose was to contain an instance of their artistic expression in spite of production knowledge or “professional sound”, where a listener should hear through any defects in the recording to get to the musical “prize”. While these cases were in the minority, it is interesting to note musical aesthetics other than pursuing a “good” sound.

17 See also Chapter one.
I re-examine the comment from the previous chapter that the case study groups appeared to have or embraced DIY attitudes towards music. They all had made self-recordings prior to this study and have also made self-recordings after our productions featured herein. Duncan makes his own electronic equipment, such as guitar effect pedals and amplifiers. When looking for a rehearsal space, Hermann Doose initially rehearsed in a storage container; they said that it was very loud inside and that they often heard metal groups rehearsing a few containers away from theirs. The Violet Oh's share a rehearsal space with several other groups and during our production transformed it into a live performance space. They held an album “preview” show where we recorded each group’s performance from the mixing desk and gave them to each group. These sorts of activities do not appear unique to us but are prevalent elsewhere in Dunedin music as is evident below. Given that nearly every musician, engineer, and producer I talked to recalled a similar experience, I have no doubt that such DIY attitudes are also widespread not only nationally but worldwide. A brief scan of online production forums such as GearsLutz.com (2015b), RealGearOnline (2016), and Electrical Audio (2015) reveals promising leads to follow. However, locally, I support this claim with the following DIY practices observed from informal conversations throughout the period of study:

• Many groups created EPs and albums by borrowing all recording equipment from other people and then recording themselves;
• One such group did so because they used all their money for alcohol and cigarettes – limited by equipment, they recorded themselves on up to 4 tracks at a time across 2 computers and synced the files up during mix;
• Musicians without the ability to record real drums programmed software drums;
• Several of the above resorted to using their computer’s alphanumeric keyboard to type in the notes, tapping along to the music;
• Musicians created music on computers and then recorded it onto cassette tape for “mastering” and release/distribution;
• Musicians without access to recording spaces recorded vocals in their bedroom, singing quietly to not disturb anyone through the thin walls but also for privacy;
• Musicians recorded with toy microphones from karaoke video games;
• A musician bought broken recording equipment and repaired it;
• A musician wrote and recorded an album on their laptop, mixed the song on headphones and wore them around their neck to check the clarity of the mix.
I also observed other low budget music practices:

- Musicians used on a computer’s in-built microphone to record with;
- Some of the above intentionally/unintentionally recorded the computer’s ‘blip’ sounds as they turned the volume up to monitor themselves, as well as recording the sound of the key being pressed to stop recording and included these in their songs;
- Musicians used low-cost non-traditional equipment such as toy keyboards, toy drum machines, toy glockenspiels, portable gaming devices, miniature guitars, and megaphones;
- A musician used their computer tablet’s microphone to record songs with, creating a build up of extraneous noise;
- A musician turned down an opportunity to record vocals in a large, neutral acoustic space but instead used the lounge of their house as it was more available to use;
- A group of musicians used a music production software on a prolonged trial to avoid paying its US$60 license fee – they recorded an album in this manner and later paid to get it professionally mixed and mastered;
- A musician’s home computer died so instead of repairing it or buying a new one they migrated to an existing computer tablet to create music by remixing other people’s music, primarily by chopping it up and looping it and often from low quality mp3s;
- Musicians used downtime during album recording with engineers to record all or parts of their solo projects;
- A musician had clicks and ticks in the recorded signal of their song due to poorly maintained production equipment and added percussion over the top, jingling their keys over the music to hide the noises;
- Musicians used free music production software and objected to using other softwares as they would necessitate learning new software;
- A drummer recorded their electronic drum kit at home as the drum “shells” (bass drum, snare drum, tom drums), while they played real cymbals lightly and recorded these with microphones – this was quiet and enabled them to record at almost anytime;
- A musician searched local thrift stores for music equipment and found a good condition bass drum drumhead for NZ$5.00;
- A musician recorded a freeware drum programme played over speakers with a headset microphone, which was noisy, and then rather than redoing the whole song they worked the noise into its meaning.
While Goodman observes that “anyone with a USB interface, a fair microphone, and a computer can capture great sounds” (2015, p. 12), some of the cases above featured musicians operating on even less equipment when chasing great sounds. At the same time many musicians borrowed recording equipment, ranging from a few items to complete recording setups. Musicians enabled each other’s productions by sharing resources. Several joked that when they purchased new equipment they were doing so not only for themselves but for the music scene as well. Such a culture of sharing allows musicians to partake in new recording projects and begin and/or develop their recording educations. New engineers and producers are born in this way.

Production personnel who have witnessed long arcs of change in music production are useful for reflections on the state of recording equipment. For example, record producers Warren Huart and Greg Collins compare new ways to the old:

WH: What do you think about the fact now that everybody has half a million dollars worth of equipment for $300?
GC: Yea, that's crazy. It's just the way it is.
…
WH: It completely changes the way we think about stuff.

(as cited in Produce Like A Pro, 2016b)

Collins and Huart refer to how software allows for high track counts and high numbers of signal processors that otherwise required a building to house and operate. As Goodman, above, also observes, production technologies today have put the prime function of studios within reach of the public at a low cost. This chapter shows a proliferation of people making recordings with little money. Modern recording technology has brought other benefits with it, such as those identified by Downes:

Technology is such that, for me at least, error and miscalculation in the recording process has been greatly diminished. It captures more depth and nuance in the recorded performance more than anything and, like most digital technology, aids efficiency and productivity.
…
In short, it maximises all the qualities of performance and composition (as cited in Benson, 2010a).

Where studios were previously the “gatekeepers” of sound in that they housed advanced technology inaccessible to the majority, such changes here therefore redefine traditional ideas of high-tech and low-tech equipment; at the least, low-tech equipment now includes wider ranges within it. In this matter I agree with Goodwin that overall we should be prepared to refresh what we consider music and production to be:
As students of pop, we need to know exactly how the means of musical production impact upon the sounds themselves. But in undertaking that task, we have to recognize also the definitions of music and musician can change. The new technologies of pop music have not created new music. But they have facilitated new possibilities (2006, p. 282). [all emphases in original]

The case study chapters view how we were able to create recordings on low budgets today, employing much low-tech equipment. Due to developments in production technologies, the types of resources we employed are different to those that were employed in the past (see, for instance, Miller, 2009, versus Appendix D). Where a recording’s quality of sound is determined by a function of equipment and interaction with it, this reflects how both change. Future studies in this area might regularly survey production technologies to view change, such as every five years.

**Conclusion**

Today’s musicians using low budgets and low-tech equipment are able to do so in ways not previously possible. At the same time musicians and production personnel co-exist in an environment where some are from the analogue era and some are from the digital era of music production with much overlap in between. While more people are recording, it remains unknown how intentional the resultant sounds of these recordings are. I observe Tomaz de Carvalho’s home recording discourse (2012) except that music aficionados without a minimum of $500 to invest in the activity are included; at least half of the musicians cited above invested no money into resources but were enabled through interpersonal economy and/or found equipment. Perhaps this speaks more of Dunedin musicians’ “inherited aesthetic” to place an emphasis on the song before other aspects of music, where, at least initially, the object of home recording has been to transduce the song idea into a recorded form rather than a thesis/antithesis towards a professional sound, to say nothing of the quality of these recordings nor of the fulfillment of their function. In this sense many of these musicians were not aware of their limitations leading to both mass confusion and innovation. However, I otherwise agree with her discourse and view the majority of the above practices as examples of “guerilla recording” (ibid) where their actions implicitly or explicitly acknowledge the possibilities for a “better” sound. This is further supported by the subsequent recording activities by many of these musicians I have observed undertaken towards a more professional sound.
Chapter Five: Recording Locations

I combine the notion of production practices operating in parallel to the professional level in Dunedin with the tendencies for the majority of local production personnel to work from non-traditional spaces. Our access to resources enabled us to use the following two spaces for the purposes of recording during this study. Bates sees studios as active agents in the recording process in that they call attention to themselves in different ways, imprint the “sound” of their room upon recordings, and enable and disable forms of social and production practices (2012). I describe each “studio” through acoustics; practical use; and social use.

The following spaces are not music studios but rooms in buildings with rich histories that have both been repurposed as art and music studios among other things. We temporarily outfitted each room with musical and recording equipment in order to create recordings. Work on the case studies took place at one or both rooms. These are hereby defined as Studio1 and Studio2.

![Figure 5.1 - Studio1](image)

Studio1 is a small brick-and-wood-walled room with a low drywall ceiling. It is currently in use as a rehearsal space for several local groups. The room is the middle of the building which itself is in the centre of Dunedin. The building was once a school. The roof on this room is
made of corrugated metal. Most outside sounds do not bleed much into the room except for rain on the roof. Access is achieved via a few flights of stairs. The room neighbours several other rooms used by various community groups. There are noise restrictions on music rehearsal rooms in the building. Loud or amplified music is allowed between 5:30pm and 10pm on weekdays and between 1pm and 10pm on weekends. The room has power facilities, however, the building’s power has been problematic in the past, including minor shocks from microphones as well as power outages. Temperatures in the room fluctuate with the outside temperature. In exchange for using Studio1 I regularly cleaned the room and disposed of rubbish. I rearranged the room for rehearsal and recording purposes. I also offered my instruments and recording equipment for everyone to use and contributed to the room’s maintenance and upkeep.

![Figure 5.2 - Studio2](image)

**Figure 5.2 - Studio2**

Studio2 is a medium-sized brick-walled room with a wooden A-framed ceiling. It is currently in use as a rehearsal space for several local groups as well as a workshop for a few effects pedal designers. On the day we started recording here with The Violet Ohs, an audio engineer also moved in as a new studio user. This room is in a building that is also in the centre of Dunedin. The building itself has previously been used as many things including as a hotel, a gym, and dance studios (Built in Dunedin, 2015), with remnants such as wall length mirrors
still remaining at Studio2 today. The room is situated at the top of the building. The roof is made of corrugated metal and plastic. As we found out during recording, rain is very audible as are helicopters, sirens, and thunder. Access is achieved by a few flights of stairs and hallways. There is another studio room next door which is also used by local music groups for music lessons and rehearsals. Loud or amplified music is allowed after typical weekday work hours and on weekends, however, tenants have received noise complaints during these times. The room has power and internet facilities. Temperatures in the room fluctuate with the outside temperature. The group who share Studio2 pay rent there and contribute instruments to the room for everyone to use.

The nature of our activities meant that we used either studio as needed. The Violet Ohs demoed at Studio1 and recorded their album at Studio2. Figure 5.2 above shows their recording setup in the main room. Hermann Doose demoed and recorded at Studio1. Gordon Duncan demoed and recorded at Studio1.

**Conclusion**

Existing tenants in each studio as well as neighbours and noise restrictions determined how we engaged in use of each room. Each studio had previously been used for recording demos or low-tech productions, however, as each room had not been designed for recording purposes there were several challenging features about each: the reflectivity of sounds within each room as well as bleed from the outside into the room and bleed from inside the room to the outside; kitchen, lounge, and toilet amenities were shared with all building tenants or were otherwise dysfunctional; moving equipment in and out required strategic parking on major arterial Dunedin streets as well as navigating flights of stairs and narrow hallways; and heating was an issue in each room as were the effects of temperature changes on equipment, particularly drums. The following recordings were made in these rooms as products of such acoustical, practical, and social concerns.
Chapter Six: EP 1 - Gordon Duncan

The previous chapters have been given as predicates (ideas of music production; and role of producer) and precedents (Dunedin as place and interaction with the “Dunedin Sound”; sample practices from local musicians; recording locations) to the case studies of this research. It is intended that our activities below will be “read” through these prior discussions. The following chapters concern our accessibility to resources, distribution of labour, and production activities in Dunedin over the period late 2015 – early 2016. These chapters have been structured around G. Scott’s model of production.\(^ {18}\) I place emphasis here on the lower levels of this model (writing, arranging, performing, and recording), as G. Scott also does. Mixing and mastering were important production activities but overall had diminishing returns on the work that took place before them. While I initially mixed each EP myself and then later with each group, my aim was to simply reflect what I heard when each group performed, as opposed to a more “hyperreal” mixing approach. Exceptions exist, such as in Duncan’s production below. Likewise, my mastering activities attempted to do little but remove excess parts.\(^ {19}\) I took any input here from each group and applied it unless I had some sort of technical objection. As such, each mix represents a negotiation of production visions between each group and myself, where the results were mutually agreed upon. Further information on the recording, mixing, and mastering of each EP is provided in the appendices.

6.1 Pre-production

6.1.1 Musical relationship

Duncan and I met in Dunedin through a mutual friend who is also a musician. In 2010 we started making music together and often played with another musician. We initially jammed at my flat using whatever equipment was available and later at a rehearsal space in town when we began playing shows. Duncan and I know each other well and have made many recordings together. After a jam together in early 2015 I discussed this research with Duncan and asked him to participate, as I was particularly interested in the diversity of his music. He accepted and we jammed a few more times to discover what sort of direction to head in.

\(^ {18}\) See Chapter one.
\(^ {19}\) See Chapter two.
6.1.2 Budget, planning, and resourcing

After initially discussing the research we chose to employ no budget and do everything ourselves with the equipment available between us. This enabled us to be flexible with our working hours and to move lightly and quickly. Because of this, we covered most costs personally but also received some financial support from the University of Otago. We spent money on travel costs, refreshments, and equipment maintenance, such as guitar strings and drumsticks.

Through an associate we had access to Studio1 and we planned to use this space to record the EP in due to it being available. Keeping in regular contact, Duncan sent me self-recorded demos and played other ideas in front of me on acoustic guitar so that I could familiarise myself with his material. We discussed all of these ideas and gave them working titles in order to plan recording sessions for them. Our intentions were for Duncan to play all instruments and parts himself but to also collaborate with other musicians. We began scheduling in times to work from Studio1.

Based on our budget we resourced most things ourselves but also enlisted the help of others. I offered my recording equipment to the project and volunteered to undertake all engineering tasks. Duncan owns many instruments of different sorts, I own varied percussion instruments including drum kits, and we used most of these throughout the production. We brought equipment to Studio1 for everyone to share and also used the bass amplifier located there. Three other musicians also contributed musical ideas to the EP’s songs. A pianist came around to Duncan’s house for recording and Duncan bought him a meal to show our appreciation. Duncan also bought refreshments for most sessions to keep us replenished.

6.1.3 Writing and arranging

At the start of production Duncan had some fully formed songs as well as song sketches. As these songs ideas were of different feels and styles, we discussed how to approach each idea and gave them all working titles. Duncan not only self-recorded his ideas to help discussion but also employed computer software for composing with virtual instruments, such as synthesisers and drum machines. Two songs remained unchanged through the production, whereas the rest were gradually written over a few months as we began recording them.

In order to arrange some of the song ideas, we demoed at Studio1 and then discussed them over email. ‘Doodle’ was initially recorded at Albany St Studios and then at Studio1, where Duncan created new parts while recording. For ‘Baltic’ we recorded Duncan’s initial song
idea, added many layers of instruments over the top of this so as to view this effect, and then edited the recordings into a tighter arrangement. For example, I recorded myself playing each percussion instrument as repeated figures for the duration of the whole song and then cut out large sections during mix. ‘Baroque’ was simply a re-recording of Duncan’s home demo. ‘IPG’ was initially recorded with a different acoustic guitar, double tracked heavy drums, and a complex arrangement of drones featuring a guest musician on electric guitar and guitar pedals. Reflecting on this, we found that the feel of the song was slightly off and so we started again with a new recording of the acoustic guitar part. We simultaneously created a rough mix of the song and added new parts for it, repeating this process a few times. Most of the noise elements of the song were arranged during mix by heavily editing the recordings and implementing effects processors, all towards Gordon’s vision for the song. The cacophony of drums was influenced by Frank Zappa’s ‘xenochrony’ technique, where I lifted two drum tracks from an entirely different recording and placed them in the song. With Duncan’s blessing upon hearing this, I duplicated these a few times each and time stretched them so that they would not directly overlap but instead fill in space. Duncan created ‘1670kmph’ at home in Logic Pro X and collaborated with another musician for the vocal parts. While reviewing the song, Duncan wanted to try layering the electronic drums with acoustic drums so I recorded myself playing these at Studio 1 and we added them to the song.

Figure 6.1 - '1670kmph' project Arrange window in Logic Pro X
6.1.4 Demoing

Duncan created initial demos of some songs himself at home in order to document his song ideas. Some of these were recorded with his computer tablet’s in-built microphone and others involved a few microphones and an audio interface.\textsuperscript{20} After planning the EP we went to Studio1 and minimally recorded these and other ideas with Duncan on acoustic guitar and myself on drums. Using these as another base for discussion, we planned which instruments to use and what sorts of parts to perform and created further demos of each song for further reflection. After a few sessions we decided to transition from demoing and start recording the songs with greater attention to detail.

6.2 Main production activities

6.2.1 Performing and recording

Duncan performed nearly all parts on the EP himself across many types of instruments. Typically I set up the recording equipment, soundchecked it, and then recorded Duncan performing parts and takes as he pleased. When tackling a more difficult part I set a three-take maximum after which we took breaks to refresh our perspective. We then resumed recording and took up to another three takes if needed. If more takes were desired I suggested that we try the song again another day. We ran sessions for around three hours which we felt gave us enough time to work with but not enough to burn out from. Takes were decided after Duncan had performed them or through reviewing the recordings over monitor speakers.

We recorded most instruments at Studio1 using almost entirely my own recording equipment. A few microphones were borrowed from those in the room and we also used two of Duncan’s microphones. On the day of a session with Duncan I went to his house where we discussed our plan for recording, focusing on one song. He grabbed relevant instruments and equipment and while driving us to Studio1, I planned which microphones to use and where to initially place them. Arriving at the studio Duncan prepared to perform while I prepared the recording equipment. The near majority of all parts were recorded one at a time, where Duncan listened to previously recorded instruments through headphones. We found that by recording a song, we discovered and experimented with new parts which we then recorded. We later discarded some of these new parts but overall our recording process was to try every idea. Rather than reuse microphones on new tracks, where possible I employed different

\textsuperscript{20} A device that takes a microphone’s signal, typically amplifies it, and then sends it to a computer to be digitally recorded by software.
microphones across each instrument or made adjustments to a microphone’s onboard settings in order to elicit a new sound from it. I was influenced by Al Schmitt’s use of microphones as equalization for this method. During some downtime on another session I invited Duncan to Albany St Studios where we recorded ‘Doodle’, but we ended up re-recording it at Studio1, where Duncan also created new parts for it. All recording sessions are logged in Appendix C in the diary of my musical activities.

6.2.2 Mixing

As Duncan’s material differed in style and instrumentation, each song was mixed as a separate entity. I regularly listened to a playlist of all of the songs in order to develop a sense of the whole EP that was being created. Mixing activities ranged from virtually no processing at all (Baroque) to completely remixing a song (1670kmph). Duncan had created ‘1670kmph’ at home and with his blessing, I used his session files to try improve upon his mix with my wider range of resources than his. I initially mixed all songs at home, sent bounces of these to Duncan over email, and later mixed on my home setup with him present for input. We started mixing songs as they neared completion in the interests of maintaining momentum throughout the production, meaning that some mixes were nearly finished before other songs were completely recorded. We employed heavy use of editing and effects processors to develop arrangements, often filling in spaces or intensifying density. For example, on ‘Baltic’ I manipulated the controls of a random signal generator to create a noise crescendo at 3:44; on ‘IPG’ I sent the time-stretched drums to a delay whose time constant was automated to gradually increase across the duration of the song, creating a push and pull sensation as delayed signals overlapped. Both of these effects were reached as results of Duncan and I’s discussions about the vision for each song. In order to remix ‘1670kmph’ I started by replicating Duncan’s mix and then added in the acoustic drums. The vocals had been recorded through an Apple computer’s inbuilt microphone and were excessively sibilant so I processed these with a de-esser. I reduced masking of mid-range and high-mid range frequencies and then added reverbs where Duncan requested. About halfway through the overall mixing process I bounced all songs and created rough masters of them in order to anticipate how the mixes held up under mastering. Once the mixes were finished I printed the final mixes and waited a few days to clear my head before mastering.

---

21 See Chapter two and Appendix D1.
22 A render, a print, a copy of the song.
23 Employing a process to the signal in order to reduce the “ess” sounds in the upper treble of the voice that can sometimes become harsh.
6.2.3 Mastering

As a musician turned engineer turned producer, my ideas of mastering music come from my own experiences of having music mastered, notions of what professional mastering engineers do, and discussions through technical texts and online forums. I combined these ideas into a simple workflow with the mantra to “do no harm”. I left myself ample headroom on the mixes and imported these into a new REAPER\textsuperscript{24} session where I balanced the levels of the tracks against each other. Each song received its own equalizer to broadly but gently shape the tone of its mix before all songs were sent to a common bus\textsuperscript{25} for further processing. I then employed a combination of fast compression, slow compression, high-pass and low-pass filtering, saturation, and limiting on this common bus. I printed each song through this signal path and listened to them in a playlist across multiple devices for reference.

6.3 Reflection

Making this EP was different to the other two as here we also used the production process to create songs as opposed to only strengthening them and documenting them. By recording at Albany St Studios, Duncan played a previously forgotten song idea that became the first demo for ‘Doodle’; ‘Baltic’ started as a melodic motif that we added many layers to before taking them away; similarly, ‘IPG’ was an acoustic guitar part that we recorded and built up around before starting over and building up again. At the same time, ‘Baroque’ was a direct re-recording of Duncan’s demo and ‘1670kmph’ was created by Duncan and remixed by myself and Duncan. We regularly met up and worked on the material and overall tried to approach the EP with open minds. As we felt that some days were more productive than others, we preferred to end unproductive sessions rather than persevere through them. I facilitated Duncan by organising access to resources, managing labour tasks, and undertaking production activities. We shared resources with other musicians and they shared resources back. A few musicians offered ideas and performances to the EP, such as the piano and keyboard on ‘Baltic’ and the vocals on ‘1670kmph’. Once we decided to create the EP we had no deadline to fulfil and no involvement from third parties such as record labels. Rather, we proceeded to create it for our own enjoyment and therefore it reflects our tastes. In this matter we were also influenced by the instruments available to us, including our diverse personal collections. Nearly all sessions took place at Studio1 with the piano and keyboard on ‘Baltic’ recorded at Duncan’s house; a few guitars on ‘IPG’ were recorded at my house; and the

\textsuperscript{24} My music production software of choice.
\textsuperscript{25} A bus receives the input from one source and sends it to the input of another, typically the master output.
vocals on ‘1670kmph’ were recorded by a guest musician at his house. We faced challenges throughout the production, such as loud noises emitting from Studio1’s neighbours while recording quiet parts and using noisy recording equipment; see for instance ‘Doodle’ or the end of ‘IPG’. Also, when a guest musician arrived at Duncan’s house to play piano, he discovered that it was virtually a semi-tone flat, however, he was able to transpose the song in real time. I think that this EP was created as much by showing up and recording it as by spending time with each other driving to and from Studio1 and around town, talking about music and life outside music.

6.4 Conclusion

In this EP Duncan and I predominantly acted as musician and producer respectively, where Duncan focused on the music and I focused on the recording. Our roles also interchanged as Duncan produced ‘1670kmph’ alone at home and I performed drums and created percussion parts on ‘Baltic’ and ‘1670kmph’. I believe that our communication was enhanced by our shared understandings of music and production processes as musicians and producers ourselves. The limitations of our non-existent budget acted as a boundary within which we worked and made decision-making processes easier as we had few options. In this sense I believe that this EP is a consequence of our low budget practices and would not have existed on other budgets, at least in this way. It is different to the other two EPs in this respect where their production processes were used more to document the material and therefore may have benefitted from equipment with higher resolutions. However, by undertaking all tasks ourselves, with the exception of a few guest performances, we moved quickly and lightly and were able to be flexible with resources, time, and material and therefore the EP as a whole.
Chapter Seven: EP 2 - Hermann Doose

7.1 Pre-production

7.1.1 Musical relationship

In early 2015 another producer contacted me about recording a group that he had seen performing live. We then arranged for everyone to meet each other and made plans to record an EP. A few months later we recorded six songs with the group playing together live in one day, with myself taking lead producer and engineer roles. I was impressed with their energy and we had good rapport. Later in the year some of my own groups played shows with them in Dunedin. I caught up with them before they released this EP, mentioned this research to them, and asked them to participate in it. They were interested and our discussion turned into our first production meeting for their second EP, which is featured here.

7.1.2 Budget, planning, and resourcing

With no other options in sight, we decided to follow in our own footsteps and self-fund this production. While restricting our access to resources, this allowed us to proceed more or less at our own pace, which we valued due to our varied work hours and lifestyles. We spent money on travel costs, refreshments, and equipment maintenance such as guitar strings and drumsticks.

We were able to use Studio1 for recording through my connection to it. Hermann Doose continued to write, rehearse, and play shows around this time to determine material for recording. We communicated with each other primarily by email but also met up at bars to discuss our production approach and recording equipment and instrument options. Our intention was to contrast the live recording approach taken on the first EP and record each instrument separately one after another as a new method for the group. As they refined their material, we began to schedule in sessions at Studio1 for demoing.

As with their first EP, we used mostly my own recording equipment and I undertook all engineering tasks at no cost to the group. Other recording equipment was borrowed from Studio1 such as dynamic microphones. The group primarily used their own musical equipment but also borrowed instruments from their flatmates, associates, other local musicians, and myself for options. We also used the bass amplifier at Studio1. The group showed their appreciation for my work on the EP by paying for my food and drink outside of sessions.
7.1.3 Writing and arranging

Hermann Doose had several songs mostly ready by the time of our first production meeting and also created further material specifically for it. They wrote all music and words themselves. I encouraged them by regularly emailing to check how things were going and by scheduling in demo sessions for our reflection.

The production process was employed to document their songs as they were when the group played them live. However, by recording instruments one at a time they also created parts that they were physically not able to reproduce live. For example, the lead guitarist’s keyboard and guitar work and the rhythm guitarist’s layering of guitars. The musicians pre-conceived most of these studio-only parts but also created others during the recording process. In particular, the lead guitarist browsed through his digital multi-effects pedal while playing in order to trial out new effects for songs. When we were recording vocal overdubs the drummer saw my tambourines at Studio1 and created a part for both of us to play in unison.

We used guide vocals\(^{26}\) but also a few sessions recording lead vocals to experiment with different words, vocal phrasing, and vocal melodies. At the earliest demo sessions the singer sung melodies as a placeholder for words that he went on to write.

7.1.4 Demoing

After recording the rhythm tracks\(^{27}\) for The Violet Ohs (Chapter eight) I moved my recording equipment back to Studio1 and set up for live group demo recording. I had heard some of Hermann Doose’s new songs live and we operated demo sessions with everyone playing together and vocals running through a P.A. system.\(^{28}\) This allowed me to become familiar with the group’s internal sound balance and allowed them to quickly demo their songs. We arranged demo sessions via email and cellphone for flexibility and the group brought their instruments up to Studio1. At each session they performed all of the songs in a row before we took a break and walked around the building, sometimes going outside for fresh air and to talk about life outside of music. We then demoed all of the songs again and sometimes they performed a few songs further still as rehearsal or to get a better take. At Studio1 we noted which were the best performances from the day and I sent bounces of these to the group via a file-sharing website. After several demo sessions, and aware that the end of the year was approaching, we transitioned to recording phase.

---

\(^{26}\) A first recording of vocals used to fill in the place of final vocals so that musicians have a reference or “guide” of the finished product while recording.

\(^{27}\) Recordings of the foundation instruments, typically drums, bass guitar, and rhythm guitar.

\(^{28}\) Public Address system. Here we had vocals running directly into one speaker set up at around head height.
7.2 Main production activities

7.2.1 Performing and recording

Hermann Doose performed all parts on the EP except for a small tambourine part which I played in unison with the drummer. The group rehearsed between demo and recording sessions so that their performance abilities were fresh. As we recorded each instrument separately with musicians monitoring other instruments over headphones, a useful monitor mix was important to ensuring their comfort while recording. The drums were recorded with the bass guitar going through only the headphone mix; the bass guitar recorded on top of drum tracks; then rhythm guitar; lead guitar; lead vocals; keyboards; backing vocals; shaker/tambourine; and pump organ. The order of recording instruments was determined initially with the whole group present and later, as more instruments were recorded, with the relevant musicians. I monitored the same mix each musician heard while recording for a better perspective on their performance. After a take we discussed it and decided whether to do another or move to another song and it typically took musicians three takes per part. Some
minor editing during mix mediated a few performances to tighten timing, such as moving a few bass guitar notes to fall more in line with the bass drum and editing one keyboard part. One particularly high and difficult vocal part was also edited together from multiple takes to create a composite performance. Initially musicians performed all the way through a song but later, as we began experimenting with additional guitar sounds from rhythm guitar onwards, musicians recorded performances in sections, such as a verse only or a chorus only. This approach was employed in order to reduce the audible clicking sounds when guitarists engaged certain effects pedals between sections. Occasionally we referred back to the demo recordings for structure, tempo, and feel.

After demo sessions we planned which instruments to use in the recording as well as other options. Being a drummer myself we used parts from my drum kits and I set up and soundchecked a drum recording setup in advance of our first session, allowing the group to focus more on the performance. We borrowed some microphones from Studio1 but also from Gordon Duncan when those microphones were unavailable. When we recorded drums the impact of the drummer playing caused the floorboards to bounce, slightly sending microphone stands up and down and creating a rumble in the recordings. I noted this for the mix but also applied countermeasures, such as changing microphone mounts, tying microphone stands down with bricks, and as a last resort I held a microphone stand still during performances. In addition to this I had recently had my good drum throne stolen and we ended up using my backup throne which moved about from side to side and was covered in old tape residue. I covered the seat top with a plastic bag and then a fabric shopping bag and tightened the seat top mechanism to the stool, but we found that it still moved around. I met the group at Studio1 each session and all group members came along to sessions when they could in order to offer feedback and support and to understand the recording process. We held recording sessions lasting two to four hours each and I quickly sent bounces for the group to listen to as we sometimes resumed recording the day afterwards. As a long narrow box featuring parallel brick and drywall surfaces, Studio1 felt congested as an acoustic space. We simply put up with any anomalies such as its low-mid range frequency bloom and I employed different microphones, different microphone positions, and different instrument positions in order to create clear and different sounds for each instrument, putting them each in their own space within the room. After recording a couple of times a week over two months with a break in the middle for Christmas and New Years, we finished all recording on the EP, ending with tambourines and pump organ.
Figure 7.2 - Bricks fixed to microphone stands for stability

Figure 7.3 - Online bounces from the tracking sessions
### 7.2.2 Mixing

Prior to recording, the drummer and I discussed drum tones via email. The group had previously sent me music while working on the first EP and we also discussed other music while working on this one. These discussions set the direction for the mix approach which overall was to be clean with reverb with some grit to the vocals. As the instruments were tracked one at a time for all songs at once, I created a decent rough mix of one song and then transferred this knowledge to all others in order to develop a sense of the material. I used this method for consistency across the EP rather than individually tailoring mixes to each song. During recording we captured each primary guitar part with three microphones to give me flexibility during mix. Instead of combining these signals I used different microphone tracks during different parts of the song for contrast, such as in the verse and chorus, for example. After applying some corrective equalization to the instruments I retained dynamics by making little use of compression but controlled levels through level automation. Once rough mixes of all songs had been prepared I sent these to the group over email and then implemented their feedback when I resumed mixing. I checked the final mixes on my main speakers, alternate speakers, headphones, and laptop speakers before printing them for mastering.

### 7.2.3 Mastering

I mastered Hermann Doose’s EP around the time I mastered Gordon Duncan’s EP and as a result, I started from a mastering template that I created from a copy of Duncan’s mastering session. I initially level balanced the mixes against each other and then tried out a brand new software equalizer with an interesting “learn” function. It mapped the frequency content across a song’s duration and then matched it to that of pink noise. I used this equalizer as a reference for a more equal distribution of frequencies but not as a processor on any mix. Instead I employed the same signal processing chain from Duncan’s EP and made changes to the compression, equalization, and limiting processors. I printed versions of the songs through these processes and listened back to them in various places, going back to make minor adjustments before printing final master versions.

---

29 Memorised movement of controls to manipulate mix variables such as volume fader and left-right track position.
7.3 Reflection

While Duncan’s EP was created with a relaxed timeframe and The Violet Oh’s EP created under a tight deadline, this EP fell somewhere in between. It also differs from the others in that it was the only EP to have its songs written in advance and then recorded with one instrument at a time. It was entirely made possible through the use of Studio1 as a base of operations and all recording took place there. The group’s first EP was recorded live in a day at Studio2 and our experiences together creating that carried over into this EP; we referred back to certain qualities of the first EP or our production activities undertaken when making it. I think that this EP feels fresh or lively because the group employed a new recording approach and that some of the songs were written shortly before production started. This meant that they were understanding their material better through production processes as we started to record the songs. Hermann Doose also rehearsed and played shows around and during the production which I think helped to strengthen their performances as well as the structure of their songs. The production processes themselves followed a linear transition from one to the next, from writing and arranging, to demoing, performing, and recording, to mixing and mastering. I did not start mixing the songs until we reached a point where we were satisfied with all recorded performances. In this matter this EP is similar to The Violet Oh’s EP and both differ to Duncan’s EP. I did not impose deadlines on the group until we neared two months of recording but encouraged them to work quickly by making preparations outside of recording sessions and then doing up to three takes before moving onto something different. The group were facilitated by my own resources, those of associates, and by Studio1. As producer/engineer, I managed the majority of the production labour for them, with the group writing, arranging, and rehearsing of their own accord; we then undertook all other production activities together.

7.4 Conclusion

In this EP Hermann Doose and I acted as musical group and producer respectively where I donated my resources and time at no cost to them. While as a journeyman record producer I have enough resources to create a recording, we also borrowed equipment from associates and Studio1. We built upon our relationship forged while recording their first EP to create an EP within the confines of a rehearsal room as a “studio”. Deliberation of microphones, instruments, space within the room, and the mix resulted in recordings that worked against the relatively poor acoustic environment that they were created in. We worked around the
schedules of others and came up with creative solutions to our problems, such as fixing bricks to microphone stands to stop them from wobbling. The production followed a linear progression of writing, arranging, performing, recording, mixing, and mastering. While we did not have a deadline, I encouraged the group to move quickly and partly attribute this to the EP’s lively sound.
8.1 Pre-production

8.1.1 Musical relationship

Earlier in 2015 one of my groups played a live show with The Violet Ohs for the local student body radio station. The bar failed to provide a live sound engineer as promised but instead hired a P.A. system and I performed live sound for most of the show. We shared the adversity of creating a performance environment hours before the scheduled start of the show. Before that I had seen previous incarnations of the group play and was impressed with their abilities and energy. The drummer and I also play in different groups with a guitarist in common. In late 2015 a university faculty member offered me a recording project with this group as he was unavailable to do it. The group and I met in September and discussed creating an album in ten weeks.

![Figure 8.1 - A poster for a live show that our groups played together](image_url)

8.1.2 Projected budget

At our first meeting the group said that they wanted to create an album of “around nine songs at 45 minutes” on a “$2,500 budget”. I took on the role of producer and began discussing expenses with them. The budget was to include professional services for mixing, mastering, and album design. Outside of this the group would pay for personal expenses themselves, such as strings, drumsticks, drumheads, travel costs, and refreshments. We broke down the $2,500 budget into:
• $1,000 for mastering.
• $500 for CD duplication.
• $200 for design.
• $100 for beer for Sam [as rental of various amplifiers].
• $700 for mixing engineer.
• Total: $2,500.

8.1.3 Planning and resourcing

The group paid rent and rehearsed at Studio2 and after discussing recording engineers and studios we settled on myself recording them at this space to keep costs down and our flexibility up. Members of the group were involved in work and study, reducing their availability during daytime hours. They booked an album release show on a date ten weeks after our first meeting and planned to spend the first five weeks writing and completing songs and demoing, before recording, mixing, and mastering in the remaining five weeks. As we explored mix engineers around this time and on this budget, we decided to use myself as mix engineer which further helped to concentrate knowledge of the production and keep costs down. The group played live shows throughout the production and used a live recording from the mixing console at an early show as first demos in order to introduce me to the material that they were working with. We planned demos sessions at Studio1, the group continued to write, and we scheduled in times to record Studio2 around the activities of its other users and neighbours.

Each musician had their own musical equipment but we also looked elsewhere for musical and recording resources as options. The bass guitarist borrowed a bass amplifier from another musician and both guitarists used guitar amplifiers owned by other Studio2 users. The drummer used his own drum kit and purchased new drumheads prior to recording. A culture of sharing existed at Studio2 where we were able to borrow almost any equipment there without notice. On the day that I loaded recording equipment into Studio2, a new user had just finished moving in and had brought his recording equipment with him. We had arranged to borrow/rent recording equipment from other people so this was potentially a lost opportunity for us. We used mostly my own recording equipment as well as that of one of Studio1’s users that we rented out for the duration of the recording. No guest musicians featured on the album. After discussing mastering engineers with the group via email, we decided on a local engineer and I scheduled in the album with him, which the group paid for from their budget.
8.1.4 Writing and arranging

The group wrote all songs themselves as was their choice. Going into production the group had completed several of them but also continued to refine other material they had as well as write new songs. They had previously self-recorded an EP and chose to re-record one song from it for the album. The group used rehearsals, live shows, and demo sessions early in the production to refine their new material.

When recording sessions began the group committed to using nine songs and finalised their structures. As we recorded three days on, four days off, we started with the songs that they were most familiar with in order to give them the most possible time with their newer material prior to recording it. After recording rhythm tracks the lead guitarist had ideas for additional guitar parts and we recorded new melodies and guitar solos. During this time the singer listened to the rhythm tracks and wrote or finalised words for all songs. He had the idea to layer vocals by repeating the same part several times to create a dense, chorused sound. He also created multiple harmony parts which were also duplicated, leading to up to nineteen concurrent voice tracks at a time. We recorded vocals until we were both happy with their delivery, ensuring that they were tight and did not take up excessive room in the arrangement/mix.

8.1.5 Demoing

As mentioned earlier, the group used a live recording from a show as first demos, which they used to reflect upon their material and to introduce me to it. A few weeks later we began demoing at Studio1 where the group played live together, with the singer sending his vocals through a digital multi-effects pedal and then into a P.A. speaker. The Violet Ohs performed each of their songs once before we took a break. This included going outside and talking
about music and life outside of music, helping us to establish rapport with each other. We then resumed demoing and the group either played through all songs again or targeted several songs and played them again once or twice. We noted the best performances and I sent these to the group via a file-sharing website soon after the session. I noted that as a small room the sound quickly became congested at Studio1 as the group navigated dynamics in their songs. Fortunately this was not to be a concern at Studio2, which was several times the size of Studio1 and also had adjacent side rooms. The Violet Ohs were the first of the three groups in this study to begin production and I went on to share approaches across all three, hence there were similarities with Hermann Doose’s demoing process, which happened afterwards.

8.1.6 Further preparation

The Violet Ohs initially wanted to release the album physically and so we factored this cost into the budget (see above). However, as time passed, they decided to delay a physical release to instead concentrate their energies more on songwriting and rehearsing. We planned to hold an album preview listening party after the first week of recording rhythm tracks by holding live performances at Studio2, with friends of the group also performing. The drummer and I discussed drum sounds and he sent me online music videos of other groups as reference for the sorts of sounds he liked. We used these to create shared ideas of a drum sound for the album. He bought drumheads a few days prior to recording and we fitted these onto his drum kit at Studio2 in order to let the drums acclimatise to the environment. After our last demo recording session we had a meeting in town where the group finalised which songs to record; the running order of songs; the album title, Battlephant; and a graphic artist to create the album artwork. They chose nine of their fourteen current songs and ordered them based on key signatures, styles, and tempo, allowing them to complement each other.

8.2 Main production activities

8.2.1 Performing and recording

The Violet Ohs performed all parts on the album and therefore this EP themselves. They recorded rhythm tracks live by all performing in the same room at Studio2. We spent the first day of recording getting tones from the instruments and soundchecking the recording equipment. Because of this I reminded the group to perform accordingly and save their energy until we had sorted everything out. The next day we started recording with two familiar songs and the group played them a few times each before taking a break. I had brought monitor
speakers up to Studio2 and we used these to listen back to performances either directly after a take or after a few takes, depending on how we felt about the performances. We continued in this manner three nights a week for three weeks and after each night I sent the group bounces via a file-sharing website of what we had considered its best performances. Each night the group picked one or two songs and focused on recording those but sometimes performed other songs as well. After settling into our process the group started to achieve better performances of songs. During takes I sat out of the way so as to not be a distraction. Occasionally the group asked for my opinion and I briefly offered my perspective that either the take sounded like a record or that they should keep going but otherwise I did not discuss the performances, instead leaving them to determine what sort of record they were creating. After getting rhythm tracks the lead guitarist recorded overdubs and was decisive in whether or not he had performed takes to the level he wanted to. The singer and I set up to record vocals after this and worked closely and quickly together to record and evaluate performances. He also had a great sense of what he wanted to achieve and was objectively critical of himself, leading to tight performances across up to nineteen layers of vocals at a time.

I had had experience recording groups live at Studio2 and used it as a base to plan a layout for recording The Violet Ohs. We set up the drums in the main room close to one wall and positioned the bass amplifier on the opposite side of the room along a diagonal axis. This amplifier had castor wheels which vibrated when the bass guitarist played, so we placed the amplifier on a large cushion. We also surrounded the bass amplifier with pieces of furniture to minimise its direct bleed into drum microphones. While each guitarist performed in the main room, we placed their amplifiers in separate side rooms adjacent to the main room, employing two each. The rhythm guitarist used the door leading to his amplifiers to control bleed into the main room against hearing himself play (Figure 8.5). As the drummer was closest to the rhythm guitarist, he could somewhat hear him play but the other musicians typically heard little of him and so the door was also used to aid with their hearing. The lead guitarist kept the door to the room with his amplifiers open but the bleed into other microphones from these was minimal while still allowing the other musicians to hear him play (Figure 8.4). Overall this set up provided some bass amplifier bleed into the drum overhead microphones and some cymbals bleed into only one of the bass amplifier microphones but otherwise isolated each instrument to an extent that I was satisfied with. As mentioned earlier, all musicians performed in the main room, which made it easy for all of us to communicate with each other about the recording process. The day after our last demo session I moved the recording
equipment into Studio2 and set up microphones on the drum kit, playing drums and soundchecking equipment myself. It was raining heavily on and off during this time and this was audible on the corrugated iron and plastic roof, as was thunder and other sounds. On the first day of recording the drummer set the kit up to his liking and I adjusted the microphones accordingly. The other musicians and I set up their amplifiers and balanced their volume against potential bleed into other microphones so that everyone could hear enough of everyone else. We spent the first day getting tones from these amplifiers and I set up and adjusted microphones around them accordingly. For guitar amplifiers I used record producer Dave Jerden’s split-band technique to capture bass and treble frequencies. On the second night we tweaked this configuration further and recorded short performances in order to monitor the combined recorded sound and to discuss tones. After swapping around the microphones on the rhythm guitar, the mix opened up and we began recording takes. After the first week of recording I packed down the space, took some equipment back to Studio1, and then set up for the album preview party. Studio2 became a makeshift live performance venue and we used its new tenant’s P.A. system for the live sound and my recording equipment for live recordings. After doing another show there the next night I went back the following day to prepare for The Violet Ohs’ rhythm tracks. Setting everything up again from memory and photos, we obtained a sound close to that of the first week and then proceeded to continue recording. Once completing rhythm tracks we recorded a few punch-ins to tighten up some rhythms and also recorded lead guitar overdubs, using Jerden’s split-band technique again. We then reconfigured our setup and began tracking guide vocals in the corner of the main room near where the bass amplifier had been while the rest of the group sat on a couch and gave feedback. The singer and I developed a method for layering vocal performances where I employed a microphone preamplifier previously unused on the production and tweaked its settings between stacked performances in order to give each a slightly unique sound, yet not so far as to lose an overall “glue” across vocals.

---

30 See Appendix D3.
Figure 8.3 - Studio2

Figure 8.4 - Studio2 side room
The rhythm tracks were all recorded in generally the same way which meant that ideas from one mix carried over to another. There were some differences in the drum sounds between the first week and the later weeks but overall I found this only of concern when checking the phase of the drum kit microphones. I edited the punch-ins to tighten up those recordings and otherwise cleaned up the audio: this involved trimming the starts and ends of files where a musician was not playing, removing a few moments of distortion on one of the tom drum microphones, and cutting excessive breaths or distracting mouth noises from the many vocal parts. I made a mix template based off James Lugo’s (2015) and The Recording Academy’s (2015) provided templates and created a rough mix of one song. I used this to generally understand the material and then created two further rough mixes. After learning these mixes I then went back to the first song and mixed it to near completion before taking this knowledge and applying it to the rest of the album. Once these rough mixes were finished I sent them to the group via an online file-sharing website and we met up and listened to them at Studio1. The group made some general and specific requests and I applied these to the next mixes. We met up again and made further changes before I continued to refine the mixes at home. Several days before the deadline I completed the mixes and sent them to mastering.
8.2.3 Mastering

I scheduled mastering in with a local mastering engineer a few weeks into the production and updated him throughout the production regarding our progress. Several days out from the deadline and therefore the group’s album release show, I uploaded the mixes to an online file-sharing website and discussed details of the production with the engineer, citing the group’s musical influences, styles, and production perspective. A few days later he sent the songs back mastered. Upon listening to these I realised that mastering had highlighted some undesirable dynamic changes in some mixes and I made changes to these accordingly, manually raising and lowering the volume of specific parts for a more balanced presentation. The group and I listened to all of the masters together at Studio1 and they had little feedback on them other than to maybe make them brighter. I then sent the three updated mixes back to the mastering engineer and he returned these mastered soon afterwards. I forwarded these masters to the group, we signed off on all the mastered songs, and they released their album later that day. Over the next few months I worked on the other productions in this study before coming back to this album. I then chose three songs of different styles to feature as an EP for this study.

8.2.4 The actual costs

I was paid a set fee for all my production work, which was approximately 200 hours in total. The group received a special, discounted rate from the mastering engineer. On completion of the production the costs were:
• Mastering: $600.00
• Producer Fee: $1,200.00
• Food: $200.00
• Petrol: $50.00
• Equipment: $300.00
• Total: $2,350.00

8.3 Reflection

Contrasting the other groups, The Violet Ohs’ EP was made to a strict deadline with an album release show booked before recording had started. With the first five weeks after our initial meeting reserved for writing and rehearsing, we recorded in the next three and mixed and mastered in the remaining two. This simultaneously created pressure for the group to perform while practically forcing us to commit to production decisions at as early a time as possible. For example, while the group were writing I practised microphone techniques at Studio1 and when I found a drum microphone setup that worked under loud volumes I committed to it and moved onto practising guitar microphone techniques. This resulted in an overhead
microphone setup based on George Massenburg’s and an electric guitar technique based on Dave Jerden’s split-band approach. In hindsight the only thing I would have changed about the production would be to have had more time to experiment with sounds. Throughout the recording process, the group and I kept each other in check in regards to completing the album to the deadline by limiting the number of performances of a song each night and not spending long periods trying out ideas. Of the three EPs in this study, the songs taken from Battlephant were the only ones recorded with the group performing together live and as such, they necessitated a different recording approach that balanced bleed against the musicians being able to hear each other. Studio2 facilitated this by having a few rooms that we worked out of. While still writing, the group rehearsed and performed live shows during the production which helped to tighten up their performances and aid their familiarity with their material. As with Hermann Doose, the production processes themselves followed a linear progression. This EP was facilitated by my own resources, those from Studio2, as well as resources rented from the group’s budget and those borrowed from associates of the group. We undertook the labour of most production tasks between us but also hired the services of others for the album design and album mastering. The group wrote and arranged the album themselves and then we performed all other production activities together.

8.4 Conclusion

In this EP we created an album from which I took three songs to represent our work together. While I acted as producer for the group, they determined the overall musical direction and arranged some of the resources and labour tasks so I suggested that they take a co-production credit on the album. They had a budget of NZ$2,500 and paid me and others for services but also used it to rent equipment for the duration of the production. This production was our first project together and we worked quickly to foster relationships, communicating by cellphone and email and meeting up regularly. Through renting Studio2 as a rehearsal space we used it to record the album as well as for an album preview party in the middle of the production. We scheduled the recording sessions with and around the other tenants both at Studio2 and in the room next door, which is used for music lessons and rehearsal. The impending deadline of the album release acted as a limitation on the production by which performances and experimenting with sounds were limited. The group performed together live based on experience and because we thought it would speed up proceedings. I attribute the sound of the EP as a reflection of their live performances and also my experiences witnessing them.

See Appendix D3 for details on both.
Chapter Nine: Conclusion

This exegesis has been used to examine our activities making three EPs in Dunedin over the period of 2015-2016. While each EP is discussed under a common framework based on G. Scott’s model of production, it is evident that the specific production activities of writing, arranging, performing, recording, mixing, and mastering had similarities and differences. For the majority of songs the groups acted as artists and I acted as producer, where they wrote and arranged all of the material. Recording was then an event that occurred after material was developed. In all cases I initially mixed the songs and then with each group. No group was involved in mastering activities but all provided positive feedback on their outcomes. My overall approach to each EP was the same in that I worked with each group to create a recorded version of their material that negotiated their production vision with my conceptions of what was possible through music production. The differences between EPs were primarily the musical content and how I engaged with them to record, mix, and in some cases master them. Rather than apply the same techniques across projects without regard to content, I adapted them to the musical input that I received.32 Using three EPs as case studies has highlighted the different approaches taken by musicians who work across different styles of music. The Violet Ohs recorded together live; Hermann Doose recorded one instrument at a time; and as a solo artist Duncan combined approaches from recording one instrument at a time, to using the studio as a compositional tool, to creating everything himself on his home setup, to collaborating with other musicians in person and via the Internet. The resultant sound quality of these EPs was determined by implementation of production equipment and my interaction with it in regards to each group’s musical performance. Furthermore, this was balanced against our engagement with our working conditions.

I found that having few resources and therefore a limited range of choices in each production encouraged us to commit to making decisions early on and follow through with any of their consequences. For example, by using Studio1 as a recording space we found that the floorboards bounced during drum recording and so we tied microphone stands down with bricks and filtered out rumble in the recordings. Similar resources were used across all productions, including my recording equipment and services. Each group had their own musical instruments which I categorise as “mid-tier” in that they were not poorly made, bad sounding, or of the highest quality and tone. When we needed additional instruments we reached out to associates or either Studio1 or Studio2’s users for help. Each “studio” itself was a normal room used by local groups as a rehearsal space that we outfitted for the purposes

32 See Appendix D.
of recording. Most travel costs were self-funded by each group with myself driving Duncan around and the University of Otago making a contribution to this expense. In addition to the bricks tied to microphone stands, we employed other found items in each production in attempts to modify our working conditions, such as placing microfibre cloths under microphone stands and stuffing foam from a microphone box under the bridge of a bass guitar. While it is likely that we would have faced the same sorts of concerns if we had higher budgets, specialised equipment exists to prevent them, such as heavy duty microphone stands.

Even though musicians and producers are increasingly enabled by low-tech and affordable equipment today, we faced challenges creating these EPs with little money. When it rained on the roof at Studio2 or when the neighbouring rooms at Studio1 were excessively loud, we waited until these sounds passed before recording. At Studio1 deliberation of microphones, instruments, space within the room, and the mix worked against an acoustic space that featured undesirable traits. We also held sessions around the schedules of other users at each studio, as well as their neighbours. Without a fully equipped recording space to work from, we took equipment to each place and set up a new recording environment. These lacked the benefits of working from a familiar acoustic space and so we took time to acclimatise. As the rooms were poorly insulated, changes in temperature only mildly inconvenienced us but had consequences on equipment, such as changing the pitch of the drums, which I then constantly retuned. Such challenges occupied our minds, time, and energy during sessions.

I discussed our productions with other Dunedin musicians operating on low budgets and found that they dealt with similar concerns. These were predominantly based around access to production resources but also to production knowledge and personnel. Many musicians exhibited a DIY attitude to production, doing whatever they could to record their music. Over half borrowed equipment from other people, leading some musicians to joke that when they purchased equipment they were doing so not just for themselves but for everyone. While most musicians appeared to struggle to get their music to sound “good”, some were not concerned with quality of sound but rather used recording in order to capture instances of their artistic expression. However, the majority of practices implicitly acknowledged the possibilities for better sound. For example, musicians created drum parts by tapping on their computer keyboards rather than programming software drum samplers, hardware drum samplers, or recording real drums; they recorded in their bedrooms as opposed to acoustically desirable spaces or those where they felt comfortable to sing loudly; and they used in-built computer microphones as opposed to a dedicated recording signal path, such as those typically involving separate microphones, microphone preamplifiers, and so forth.
In making music in Dunedin artists navigate the practicalities of living in a small city. While Loughran attempts to find a “recipe” specifically for making music in Dunedin (2016), his search acknowledges that cities as places affect how its inhabitants go about this. Further research may explore this relationship at a deeper level than is explored herein. Local musicians also exist in an environment where a renowned historical legacy shadows their formation of musical identities. I found that the “Dunedin Sound” legacy affected some musicians more than others and saw continuations of what Holland calls “inherited aesthetics”.

While the musicians featured in this study’s EPs held a nonchalant attitude towards the “Dunedin Sound” legacy, they also shared many similarities to the musicians associated with it. These included an emphasis on songs and musical performance over other aspects of music; movement away from popular music trends and conventions; a DIY approach to making music; and while somewhat contrived by this study, they all recorded on the same equipment. My investigation into the impact of the “Dunedin Sound” legacy also made me more aware of how it has affected myself. As a local musician and producer/engineer, my own development may be viewed as a desire for autonomy in an environment where there are few recording studios, previous musicians have struggled to get their music recorded, or in what Loughran identifies as “an industry where as the saying goes ’the money is no good’” (2016).

In undertaking this research I examined theoretical aspects of production. Rather than test the limitations of these ideas, these discussions add depth to the case study chapters where our activities are intended to be read through my conceptions of what music production is and the role of the producer. As theories of music production, they apply to small and large productions alike as they are not restricted by use of specific resources or procedures. These impact upon general concerns such as personal relationships, aesthetics, and what I think is and is not possible within the realms of music production. Such ideas enabled me to start practising production and develop a production sense. More particular ideas, such as those on creativity, are relevant for low budget practices as they encourage productions born of compromised circumstances.

Overall I found many similarities faced by ourselves and other Dunedin musicians creating music on low budgets. Primarily these concerned accessibility to resources, who undertook the production tasks, and the production activities themselves. While the music was different from one group to the next, musicians bonded over their shared experiences and created music that otherwise would not have been heard. I observed that ourselves and many

---

33 See Holland, 2010; and Chapter three herein.
musicians found creative ways to produce music on low budgets and that these practices represented other things: invention; fashion; necessity; aesthetic; inherited culture; desperation; fulfilment; deadlines; stubbornness; compromise; meta-commentary; lack of knowledge; frugality; pride; nostalgia; technological revolt; avoidance of the other; and simplicity. Future studies may witness how this changes or if it stays the same.

At completion of this research there are many ideas still yet unexplored. Similar studies may take recordings as case studies and explore one aspect of low budget practice, such as the recording process, in greater depth. Analyses of affordable production technologies may view how they have become available to the poor musician/producer/engineer over time and exactly what they now enable them to do/not do. These may be revisited regularly as production technologies continue to develop. There are potential sociological studies that may concern themselves with how musicians interact with people to get their music made on low budgets, how they create systems of exchange, and how these compare to musicians on high budgets. Research may view the differences between production personnel who grew in the analogue and digital recording eras. This may focus on aspects such as how people become engineers and producers today or how they do so outside of traditional music studio environments. Other studies may continue exploring the impact of the “Dunedin Sound” legacy and survey the local music population’s attitudes and activities.
References


Dunedin NZ. (2016, October 31). This is a journey in sound the #DunedinSound #createdunedin https://goo.gl/rPYX2t [Facebook status update]. Retrieved from: https://www.facebook.com/DunedinNZ/posts/10154477966200090


Strang, K. [KaneStrang]. (2016, March 8). *Kane Strang on Twitter*: “I honestly would have been fine with a 3 as long as they still didn’t mention the Dunedin Sound lol” [Tweet]. Retrieved from: https://twitter.com/kanestrang/status/707299336971886592


Théberge, P. (2012). The end of the world as we know it: The changing role of the studio in the age of the Internet. In S. Frith, & S. Zagorski Thomas (Eds.), *The art of record production* (pp. 77-90). Surrey, United Kingdom: Ashgate.


Image Sources

5.1 Studio1. Author’s collection.
5.2 Studio2. Author’s collection.
6.1 ‘1670kmph’ project Arrange window in Logic Pro X. Apple Inc.
7.1 A live show I recorded, which provided other demos. Lee Nicolson.
7.2 Bricks fixed to microphone stands for stability. Author’s collection.
7.3 Online bounces from the tracking sessions. Dropbox, Inc.
8.1 A poster for a live show that our groups played together. Sourced from https://www.facebook.com/Thundercub-82896242886/
8.2 A live show, which provided demos for the group. SoundCloud.
8.3 Studio2. Author’s collection.
8.4 Studio2 side room. Author’s collection.
8.5 Studio2 entrance hallway. Author’s collection.
8.6 Bounces of Battlephant throughout the production. Author’s collection.

F1.1 RME UFX audio interface. RME.
F1.2 Studio3, recording the ‘Doodle’ demo. Author’s collection.
F1.3 ‘1670kmph’ project Arrange window in Logic Pro X. Apple Inc.
F2.1 Recording drums at Studio1. Author’s collection.
F2.2 Recording bass guitar at Studio1. Author’s collection.
F3.1 Recording equipment for Battlephant. Author’s collection.
F3.2 The wall behind the drums at Studio2. Author’s collection.
F3.3 The bass amplifier isolation. Author’s collection.
F3.4 Studio2 side room, doorway view. Author’s collection.
F3.5 Cloth padding underneath microphone stands. Author’s collection.
F3.6 Overdub recording notes for lead guitar. Author’s collection.
F3.7 Vocal recording setup. Author’s collection.
G1.1 Mix window view 1. Apple Inc.
G1.2 Mix window view 2. Apple Inc.
H1.1 Studio3. Author’s collection.
Appendix A: How to find information on Dunedin music

- Local newspapers
  - Otago Daily Times, daily newspaper, circulation approx. 43,000 papers daily: http://www.odt.co.nz
  - The Star, weekly newspaper, free, circulation approx. 47,000 papers weekly: accessible from http://www.odt.co.nz

- Local music news and websites
  - Dunedin Symphony Orchestra: https://dso.org.nz
  - Dunedinmusic.com
  - NZMIC: http://nzmic.org
  - Otepoti Music: musicdunedin.blogspot.co.nz;
  - Radio One 91 FM: www.r1.co.nz;
  - Seen In Dunedin: http://www.seenindunedin.co.nz/index.php
  - Whare Flat Folk Festival: http://www.whareflat.org.nz

- National fanzines and music websites
  - Amplifier: http://www.amplifier.co.nz
  - AudioCulture: http://www.audioculture.co.nz
  - Muzic.net.nz: http://www.muzic.net.nz
  - NZ Music Commission: http://nzmusic.org.nz
  - NZ Musician: http://www.nzmusician.com
  - Sounz: http://sounz.org.nz
  - The Audience: www.theaudience.co.nz
  - Under the Radar: www.undertheradar.co.nz
## Appendix B: Other records I worked on during this research

Legend:

- **p**: produced
- **e**: engineered
- **ae**: additional engineering
- **m**: mixed;
- **M**: mastered
- **c**: consulting work

<table>
<thead>
<tr>
<th>Record</th>
<th>Role(s)</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Prophet Hens</td>
<td>e,m,p</td>
<td>LP</td>
</tr>
<tr>
<td>Beach Wolf</td>
<td>e,m,p</td>
<td>EP</td>
</tr>
<tr>
<td>Space Bats, Attack!</td>
<td>e,m,p</td>
<td>Single</td>
</tr>
<tr>
<td>Astro Children (live)</td>
<td>e,m,p</td>
<td>LP</td>
</tr>
<tr>
<td>Hermann Doose (live)</td>
<td>e,m,p</td>
<td>EP</td>
</tr>
<tr>
<td>The Violet Ohs (live)</td>
<td>e,m,p</td>
<td>LP</td>
</tr>
<tr>
<td>Old Psychiatrist's Club (live)</td>
<td>e,m,p</td>
<td>LP</td>
</tr>
<tr>
<td>Death and the Maiden (live)</td>
<td>e,m,p</td>
<td>LP</td>
</tr>
<tr>
<td>Kane Strang (live)</td>
<td>e,m,p</td>
<td>LP</td>
</tr>
<tr>
<td>Space Bats, Attack! (live)</td>
<td>e,m,p</td>
<td>EP</td>
</tr>
<tr>
<td>Dinosaur Sanctuary (live)</td>
<td>e,m,p</td>
<td>EP</td>
</tr>
<tr>
<td>Brad McDonald</td>
<td>e,m,p</td>
<td>EP</td>
</tr>
<tr>
<td>Matt Brook</td>
<td>ae [drums]</td>
<td>LP</td>
</tr>
<tr>
<td>Thundercub</td>
<td>e</td>
<td>EP</td>
</tr>
<tr>
<td>Kairi</td>
<td>M</td>
<td>EP</td>
</tr>
<tr>
<td>Kairi</td>
<td>M</td>
<td>Single</td>
</tr>
<tr>
<td>Grawlixes</td>
<td>ae [vocals], c</td>
<td>LP</td>
</tr>
<tr>
<td>BIKK</td>
<td>c</td>
<td>LP</td>
</tr>
</tbody>
</table>
**Appendix C: Musical diary**

**NB:** Events that were a part of this project have a location listed under “Where”; also, Beach Wolf later renamed themselves Hermann Doose.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>March 4</td>
<td>Meeting</td>
<td>Refuel</td>
<td>Beach Wolf</td>
<td>Pre-production</td>
</tr>
<tr>
<td>March 5</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>March 11</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>March 12</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>March 19</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>March 21</td>
<td>Gig</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>March 25</td>
<td>Tribute night</td>
<td></td>
<td>Calder Prescott</td>
<td></td>
</tr>
<tr>
<td>March 26</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>March 27</td>
<td>Recording</td>
<td></td>
<td>The Prophet Hens</td>
<td>Setup</td>
</tr>
<tr>
<td></td>
<td>Gig</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>March 28</td>
<td>Recording</td>
<td></td>
<td>The Prophet Hens</td>
<td>Rhythm tracks</td>
</tr>
<tr>
<td>March 29</td>
<td>Recording</td>
<td></td>
<td>The Prophet Hens</td>
<td>Rhythm tracks</td>
</tr>
<tr>
<td>April 1</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>April 2</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>April 3</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>April 4</td>
<td>Recording</td>
<td>Studio2</td>
<td>Beach Wolf</td>
<td>Rhythm tracks</td>
</tr>
<tr>
<td>April 6</td>
<td>Recording</td>
<td></td>
<td>The Prophet Hens</td>
<td>Rhythm guitar</td>
</tr>
<tr>
<td>April 7</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td>+ demos</td>
</tr>
<tr>
<td>April 8</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td>+ demos</td>
</tr>
<tr>
<td>April 9</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>April 10</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>April 11</td>
<td>Gig</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>April 13</td>
<td>Practice</td>
<td></td>
<td>For The Quail</td>
<td>Consulting Grawlixes</td>
</tr>
<tr>
<td></td>
<td>Consulting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 14</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>April 15</td>
<td>Gig</td>
<td></td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>April 16</td>
<td>Jam</td>
<td>Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>April 17</td>
<td>Recording</td>
<td></td>
<td>The Prophet Hens</td>
<td>Keyboards</td>
</tr>
<tr>
<td>April 18</td>
<td>Recording</td>
<td></td>
<td>The Prophet Hens</td>
<td>Guitar overdubs</td>
</tr>
<tr>
<td>April 19</td>
<td>Recording</td>
<td></td>
<td>The Prophet Hens</td>
<td>Guide vocals</td>
</tr>
<tr>
<td>April 22</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>April 23</td>
<td>Gig</td>
<td></td>
<td>Thundercub</td>
<td>GBTM</td>
</tr>
<tr>
<td>April 24</td>
<td>Recording</td>
<td></td>
<td>Grawlixes</td>
<td>Vocals</td>
</tr>
<tr>
<td>April 26</td>
<td>Recording</td>
<td></td>
<td>Grawlixes</td>
<td>Vocals</td>
</tr>
<tr>
<td>April 29</td>
<td>Practice</td>
<td></td>
<td>Thundercub</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Activity</td>
<td>Artist/Task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>--------------</td>
<td>----------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 30</td>
<td>Practice</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 1</td>
<td>Recording</td>
<td>Grawlixes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 2</td>
<td>Consulting</td>
<td>Grawlixes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 3</td>
<td>Practice</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 6</td>
<td>Consulting</td>
<td>Matt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 7</td>
<td>Practice</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 9</td>
<td>Recording</td>
<td>Studio2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 10</td>
<td>Recording</td>
<td>Studio2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 11</td>
<td>Practice</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 14</td>
<td>Practice</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 16</td>
<td>Practice</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 17</td>
<td>Recording</td>
<td>Studio1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 19</td>
<td>Practice</td>
<td>Studio1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 20</td>
<td>Practice</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 21</td>
<td>Gig</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 22</td>
<td>Gig</td>
<td>Thundercub + engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 24</td>
<td>Jam</td>
<td>Gordon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 5</td>
<td>Jam</td>
<td>Studio1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 6</td>
<td>Jam</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 11</td>
<td>Production</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 13</td>
<td>Jam</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 18</td>
<td>Jam</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 20</td>
<td>Jam</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 23</td>
<td>Jam</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 24</td>
<td>Jam</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 25</td>
<td>Gig</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 26</td>
<td>Gig</td>
<td>Thundercub + Iron Mammoth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 27</td>
<td>Gig</td>
<td>Defender + DJing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 2</td>
<td>Jam</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 4</td>
<td>Jam</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 9</td>
<td>Jam</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 11</td>
<td>Recording</td>
<td>Studio1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 22</td>
<td>Jam</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 30</td>
<td>Jam</td>
<td>For The Quail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 31</td>
<td>Recording</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td>August 1</td>
<td>Recording</td>
<td>Thundercub</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>HDSPNS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kane Strang</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ demos</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ demos</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ demos</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ demos</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ demos</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demos</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
August 2  Practice  The Prophet Hens    Filling in
Recording  Thundercub    Demos
Recording  Space Bats, Attack!
August 3  Recording  Space Bats, Attack!
August 4  Recording  Thundercub    Drums
August 5  Recording  Thundercub    Drums
August 7  Practice  For The Quail
August 11  Group discussion  Guest panel    On record production
August 13  Practice  For The Quail
August 15  Recording  Thundercub    Guide guitars
Gig  The Entire Alphabet    Watching
August 16  Practice  The Prophet Hens    Filling in
August 19  Practice  The Prophet Hens    Filling in
August 20  Practice  For The Quail    + demos
August 22  Jams  Studio1  Gordon    + demos
August 23  Recording  The Prophet Hens    Backing vocals
August 24  Practice  The Prophet Hens    Filling in
August 25  Practice  For The Quail    + demos
August 29  Practice  The Prophet Hens    Filling in
Gig  The Prophet Hens    Filling in
August 30  Recording  The Prophet Hens    Backing vocals
August 31  Recording  The Prophet Hens    Backing vocals
September 1  Meeting  Cafe  The Violet Ohs    Pre-production
Recording  The Prophet Hens    Backing vocals
September 2  Recording  The Prophet Hens    Backing vocals
September 3  Practice  For The Quail    + demos
September 4  Jams  Studio1  Gordon    + demos
September 6  Recording  Brad    + playing on
September 7  Recording  The Prophet Hens    Backing vocals
September 9  Mastering  Online  Beach Wolf    Engineer: Steven Marr
September 10  Practice  For The Quail    + demos
September 17  Practice  For The Quail    + demos
September 19  Gig  For The Quail    Dunedinmusic.com
September 20  Recording  Studio1  The Violet Ohs    Demos
September 21  Practice  Thundercub
September 22  Practice  Thundercub
September 27  Recording  Studio1  The Violet Ohs    Demos
September 28  Recording  The Prophet Hens    Vocals
September 29  Recording  Studio1  Drums, etc.    Practice
Recording  The Prophet Hens    Vocals
September 30  Recording  Studio1  Drums, etc.    Practice
<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Location</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 1</td>
<td>Practice</td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>October 2</td>
<td>Recording</td>
<td>Studio1</td>
<td>Drums, etc.</td>
</tr>
<tr>
<td>October 3</td>
<td>Recording</td>
<td>Studio1</td>
<td>The Violet Ohs</td>
</tr>
<tr>
<td>October 4</td>
<td>Load-in</td>
<td>Studio2</td>
<td>The Violet Ohs</td>
</tr>
<tr>
<td>October 5</td>
<td>Recording</td>
<td>Studio2</td>
<td>The Violet Ohs</td>
</tr>
<tr>
<td>October 6</td>
<td>Recording</td>
<td>Studio2</td>
<td>The Violet Ohs</td>
</tr>
<tr>
<td>October 7</td>
<td>Recording</td>
<td>Studio2</td>
<td>For The Quail</td>
</tr>
<tr>
<td>October 8</td>
<td>Recording</td>
<td>Studio2</td>
<td>Beach Wolf live recordings</td>
</tr>
<tr>
<td>October 9</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Astro Children”</td>
</tr>
<tr>
<td>October 10</td>
<td>Recording</td>
<td>Studio2</td>
<td>“The Violet Ohs”</td>
</tr>
<tr>
<td>October 11</td>
<td>Setup</td>
<td>Studio2</td>
<td>“Old Psychiatrist's Club”</td>
</tr>
<tr>
<td>October 12</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Death And The Maiden”</td>
</tr>
<tr>
<td>October 13</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Kane Strang”</td>
</tr>
<tr>
<td>October 14</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Space Bats, Attack!”</td>
</tr>
<tr>
<td>October 15</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Dinosaur Sanctuary”</td>
</tr>
<tr>
<td>October 16</td>
<td>Recording</td>
<td>Studio2</td>
<td>“The Prophet Hens”</td>
</tr>
<tr>
<td>October 17</td>
<td>Recording</td>
<td>Studio1</td>
<td>Hermann Doose</td>
</tr>
<tr>
<td>October 18</td>
<td>Setup</td>
<td>Studio2</td>
<td>The Violet Ohs</td>
</tr>
<tr>
<td>October 19</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Guitars, bass guitar”</td>
</tr>
<tr>
<td>October 20</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Vocals, guitars”</td>
</tr>
<tr>
<td>October 21</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Vocals”</td>
</tr>
<tr>
<td>October 22</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Noise jam”</td>
</tr>
<tr>
<td>October 23</td>
<td>Recording</td>
<td>Studio2</td>
<td>“Vocals”</td>
</tr>
<tr>
<td>October 24</td>
<td>Studio setup</td>
<td>Studio1</td>
<td>Clean &amp; setup</td>
</tr>
<tr>
<td>October 25</td>
<td>Recording</td>
<td>Studio1</td>
<td>“Vocals”</td>
</tr>
<tr>
<td>October 26</td>
<td>Recording</td>
<td>Studio1</td>
<td>“Demos”</td>
</tr>
<tr>
<td>October 27</td>
<td>Recording</td>
<td>Studio1</td>
<td>“Vocals, guitars”</td>
</tr>
<tr>
<td>October 28</td>
<td>Practice</td>
<td>Studio1</td>
<td>For The Quail</td>
</tr>
<tr>
<td>October 29</td>
<td>Gig</td>
<td>Alizarin Lizard</td>
<td>Watching</td>
</tr>
<tr>
<td>October 30</td>
<td>Practice</td>
<td>For The Quail</td>
<td>+ demos</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Location</td>
<td>Artists</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>------------------</td>
</tr>
<tr>
<td>November 4</td>
<td>Mixing Studio1</td>
<td>The Violet Ohs</td>
<td>Sunley Band</td>
</tr>
<tr>
<td></td>
<td>Recording Studio1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 5</td>
<td>Practice Studio1</td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>November 7</td>
<td>Mixing Studio1</td>
<td>The Violet Ohs</td>
<td></td>
</tr>
<tr>
<td>November 8</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>November 9</td>
<td>Mastering Studio1</td>
<td>Hermann Doose</td>
<td>The Violet Ohs</td>
</tr>
<tr>
<td></td>
<td>Recording Studio1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 10</td>
<td>Practice Studio1</td>
<td>For The Quail</td>
<td></td>
</tr>
<tr>
<td>November 12</td>
<td>Gig Chick’s Hotel</td>
<td>For The Quail</td>
<td>The Violet Ohs</td>
</tr>
<tr>
<td>November 13</td>
<td>Gig</td>
<td>Solo acts</td>
<td></td>
</tr>
<tr>
<td>November 15</td>
<td>Debrief Cafe</td>
<td>The Violet Ohs</td>
<td>Jeremy Mayall</td>
</tr>
<tr>
<td></td>
<td>Concert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 17</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td>The Prophet Hens</td>
</tr>
<tr>
<td>November 20</td>
<td>Mixing Studio1</td>
<td>The Prophet Hens</td>
<td></td>
</tr>
<tr>
<td>November 23</td>
<td>Demos Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>November 24</td>
<td>Concert NZSO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>November 25</td>
<td>Mixing Studio1</td>
<td>The Prophet Hens</td>
<td></td>
</tr>
<tr>
<td>November 26</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>November 27</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>November 28</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>November 29</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gig</td>
<td>Shellac</td>
<td></td>
</tr>
<tr>
<td>December 5</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>December 9</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>December 12</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>December 13</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>December 14</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>December 21</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>January 4</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>January 6</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>January 8</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>January 9</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>January 12</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>January 15</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>January 16</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>January 20</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>January 21</td>
<td>Recording Gordon's</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>January 24</td>
<td>Recording Studio1</td>
<td>Hermann Doose</td>
<td></td>
</tr>
<tr>
<td>January 25</td>
<td>Recording Studio1</td>
<td>Gordon</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Location</td>
<td>Artist(s)</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>January 27</td>
<td>Recording</td>
<td>Studio1</td>
<td>Gordon</td>
</tr>
<tr>
<td>January 28</td>
<td>Compiling</td>
<td>Gordon's</td>
<td></td>
</tr>
<tr>
<td>February 2</td>
<td>Recording</td>
<td>Studio1</td>
<td>Gordon</td>
</tr>
<tr>
<td>February 3</td>
<td>Recording</td>
<td>Studio1</td>
<td>Gordon</td>
</tr>
<tr>
<td>February 4</td>
<td>Recording</td>
<td>Studio1</td>
<td>Matt</td>
</tr>
<tr>
<td>February 5</td>
<td>Recording</td>
<td>Studio3</td>
<td>Gordon</td>
</tr>
<tr>
<td>February 10</td>
<td>Recording</td>
<td>Studio1</td>
<td>Gordon</td>
</tr>
<tr>
<td>February 12</td>
<td>Recording</td>
<td>Studio1</td>
<td>Gordon</td>
</tr>
<tr>
<td>February 18</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>February 20</td>
<td>Mixing</td>
<td>My house</td>
<td>Gordon</td>
</tr>
<tr>
<td>February 21</td>
<td>Recording</td>
<td>My house</td>
<td>Gordon</td>
</tr>
<tr>
<td></td>
<td>Mixing</td>
<td>My house</td>
<td>Gordon</td>
</tr>
<tr>
<td>February 27</td>
<td>Mixing</td>
<td>My house</td>
<td>Gordon</td>
</tr>
<tr>
<td>March 5</td>
<td>Mixing</td>
<td>Studio1</td>
<td>Hermann Doose</td>
</tr>
<tr>
<td>March 6</td>
<td>Mixing</td>
<td>My house</td>
<td>Gordon</td>
</tr>
<tr>
<td></td>
<td>Recording</td>
<td>My house</td>
<td>Gordon</td>
</tr>
<tr>
<td>March 10</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 17</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 31</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 2</td>
<td>Jam</td>
<td></td>
<td>Lee</td>
</tr>
<tr>
<td>April 5</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 14</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 15</td>
<td>Jam</td>
<td>Studio2</td>
<td>Gordon &amp; Lee</td>
</tr>
<tr>
<td>April 18</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 21</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 22</td>
<td>Gig</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 26</td>
<td>Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 30</td>
<td>Meeting</td>
<td></td>
<td>Space Bats, Attack!</td>
</tr>
</tbody>
</table>
Appendix D: Recording

On microphone technique

I used all microphone techniques in more or less the same way: we set up an instrument and I positioned a microphone where I thought it would work, sometimes using an established technique; we then recorded the sound to reflect upon it; often, in response to this, I moved the microphone; and we repeated entire the process. In doing this I ensured musicians knew that we were only trialing microphone positions and reminded them to save their energy for the take.

My positioning of microphones was based upon several factors. Firstly, this was the sound of a microphone, based on a microphone’s characteristics. These are informed by its transducer type, frequency response, directional characteristics - including off axis frequency response, sensitivity, noise level, maximum SPL tolerances, impedance, transient response, body and grill resonances, shock absorption capabilities, and more. I have gathered these characteristics from microphone manuals and by testing microphones. Secondly, it was based on my experience and other people’s experience of where a microphone complements a source. I have learned microphone positions from teachers, a wide range of literature, videos, the musicians I record, and experimentation. Finally, it was influenced by how its sound worked for the song and the mix. In reviewing the position of a microphone I considered what the overall finished product would be and to get there I may have moved a microphone.
D1 Case Study 1: Gordon Duncan

Gordon Duncan’s EP consists of five songs. We created the EP by developing and recording one song at a time, instrument by instrument. We did not record the EP in the order of its track listing. Throughout recording we made extensive use of monitoring through headphones and earphones and I ensured that monitor mixes were comfortable and interesting to work with. In order to achieve this I listened to the same monitor mix as the artist. I found that there were no audible delays between the direct sound coming from the instrument and the headphone mix. We used a RME UFX audio interface and its TotalMix monitoring software, which is the centrepiece of my equipment, around which all other equipment is based. This combination of audio interface and monitoring software was also employed across the other productions in this project.

![RME UFX audio interface](image)

Figure D1.1 - RME UFX audio interface

The songs are:

1. Doodle
2. Baltic
3. Baroque
4. IPG
5. 1670kmph

1. Doodle

Sometime after we had recorded the other songs, I had spare time at the end of another production and invited Duncan to Albany St. Studios (see Appendix H). When he arrived he wanted to play a song idea and I recorded him playing it, using several microphones. He thought of some additional parts and advised me where to drop him in to record them. We left the studio with a full version of the song, however, in my haste I had recorded the material
poorly. Without knowing what Duncan was going to play I had set up microphones too far away and instead of moving the microphones, I had increased their preamplifier gain too far, resulting in too much noise in the signal.

**Figure D1.2 - Studio3, recording the 'Doodle' demo**

Using the Albany St. Studios recording as a demo, we recorded the song again, at Studio1. During that recording session Duncan thought of another part for the song.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acoustic guitar1</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioid</td>
<td>12th fret</td>
</tr>
<tr>
<td>Acoustic guitar2</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioid</td>
<td>12th fret</td>
</tr>
<tr>
<td>Acoustic guitar3</td>
<td>sE Electronics X1R</td>
<td>ribbon</td>
<td>figure 8</td>
<td>12th fret</td>
</tr>
<tr>
<td>Acoustic guitar4</td>
<td>sE Electronics X1R</td>
<td>ribbon</td>
<td>figure 8</td>
<td>12th fret</td>
</tr>
<tr>
<td>Acoustic guitar5</td>
<td>RØDE NT3</td>
<td>condenser</td>
<td>cardioid</td>
<td>below neck</td>
</tr>
<tr>
<td>Acoustic guitar6</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>omni</td>
<td>close mic</td>
</tr>
<tr>
<td>Acoustic guitar7</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>omni</td>
<td>close mic</td>
</tr>
<tr>
<td>Acoustic guitar8</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>omni</td>
<td>close mic</td>
</tr>
<tr>
<td>Acoustic guitar9</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>omni</td>
<td>close mic</td>
</tr>
<tr>
<td>Acoustic guitar10</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>omni</td>
<td>close mic</td>
</tr>
</tbody>
</table>
I set up two Line Audio CM3s 20cm apart on a RÖDE stereo bar, which were aimed at around the 12th fret of the guitar. I did this because Duncan played the first guitar part twice and it allowed me to use a different microphone for each take. The second guitar part was also performed twice and both performances were recorded with a sE Electronics X1R, which was adjusted in position until it was no longer too boomy. A third part followed, which was the main melody line, and I recorded this with a RÖDE NT3. This microphone was the brightest of those employed on the song and was directed at below the 12th fret. The fourth guitar part was a stack of harmonies and was recorded with a Studio Projects CS5 multi-pattern condenser microphone, set to omnidirectional pattern and positioned close to the guitar.

2. Baltic

Baltic was the most dense recording in this entire project and was loosely influenced by: our collection of instruments, some of which were recently acquired; Beirut; and The Magnetic Fields. Duncan provided me with a demo of this song that he had made at home, which featured acoustic guitars, a woodwind instrument, and some percussion. When we started work on this song at Studio1 we decided to employ a click track to record it, setting it to ¾ time, 150 beats per minute. The click track was found to be more offputting than useful so instead I created a software drum loop. We used this to keep time during the recording process and then later deleted it from the mix. Having discussed a direction for the song, we started recording instruments at Studio1, recording everything except for piano, keyboard, and percussion tracks, the latter of which I recorded in my own time. I found that Duncan had a clear idea of what he wanted to achieve with this song. For example, he stuffed foam underneath the strings at the bridge of the bass guitar in order to get a dull, long sustain.

I made duplicate copies of the recordings for security purposes and started to clean up and edit the song. As it was being tidied up we thought of and recorded additional parts.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acoustic guitar1</td>
<td>Oktava MK-219</td>
<td>condenser</td>
<td>cardioid</td>
<td>out front</td>
</tr>
<tr>
<td>Bass guitar DI</td>
<td>Countryman Type10</td>
<td>DI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bass amplifier</td>
<td>sE Electronics X1R</td>
<td>ribbon</td>
<td>figure 8</td>
<td>close mic</td>
</tr>
<tr>
<td>Acoustic guitar2</td>
<td>CAD M179</td>
<td>condenser</td>
<td>cardioid</td>
<td>close mic</td>
</tr>
<tr>
<td>Mandolins</td>
<td>RÖDE NT3</td>
<td>condenser</td>
<td>cardioid</td>
<td>out front</td>
</tr>
<tr>
<td>Electric guitars</td>
<td>Oktava MK-219</td>
<td>condenser</td>
<td>cardioid</td>
<td>far mic</td>
</tr>
<tr>
<td>Melodica</td>
<td>Electro-Voice PL80a</td>
<td>dynamic</td>
<td>supercardioid</td>
<td>out front</td>
</tr>
<tr>
<td>Glockenspiel</td>
<td>Audix D3</td>
<td>dynamic</td>
<td>hypercardioid</td>
<td>above</td>
</tr>
</tbody>
</table>
This chart is structured in the order that the instruments were recorded. My concept for recording this song was influenced by Al Schmitt: using microphones as equalization in order to carve out spaces in the mix (as cited in Massey, 2000, p. 32). The use of a wide range of microphones provided different “voices” in the mix and avoided stacking up the same voice too many times. However, there were some exceptions to this: I used the same microphone for two bongo parts, as these parts did not play at the same time; I adjusted the filters on board the Shure SM7B in order to create a different voicing for each tambourine part; and I also engaged the filters on board the Studio Projects CS5 for the shaker parts.

During one of the recording sessions at Studio 1 we encountered another musician, who was a pianist, and recruited him to perform on the song. Duncan had a piano at his house as well as enough equipment to record, so we held a recording session there. The guest musician brought his keyboard along, “just in case”. When he started to play the piano he identified that it was virtually an exact semitone flat, so he transposed his playing to match it. Furthermore, the piano had problems with its damping systems, causing it to ring out longer than normal. The guest said that this influenced his playing, which was also improvised. The piano also sounded further away in the recording than I had expected from its microphone position.

3. Baroque

This song features a virtual guitar ensemble. Duncan wrote it at home and sent it to me by email. When I heard the demo I decided to take Schmitt’s microphone-as-eq concept all the way, aiming to use microphones and their positions for balance and to not use any equalization in the mix. I achieved this, however, I also employed high pass filters on
individual tracks where those tracks had not already been high pass filtered during the recording process. Everything was recorded at Studio1.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acoustic guitar1</td>
<td>Oktava MK-219</td>
<td>condenser</td>
<td>cardioid</td>
<td>above neck</td>
</tr>
<tr>
<td>Acoustic guitar2</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>figure8</td>
<td>right shoulder</td>
</tr>
<tr>
<td>Acoustic guitar3</td>
<td>sE Electronics X1R</td>
<td>ribbon</td>
<td>figure 8</td>
<td>out front</td>
</tr>
<tr>
<td>Acoustic guitar4</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioi</td>
<td>d</td>
</tr>
<tr>
<td>Acoustic guitar5</td>
<td>RØDE NT3</td>
<td>condenser</td>
<td>cardioid</td>
<td>front top</td>
</tr>
<tr>
<td>Acoustic guitar6</td>
<td>Karma K10</td>
<td>condenser</td>
<td>cardioid</td>
<td>side front</td>
</tr>
<tr>
<td>Acoustic guitar7</td>
<td>sE Electronics X1R</td>
<td>ribbon</td>
<td>figure8</td>
<td>out front</td>
</tr>
<tr>
<td>Acoustic guitar8</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>omni</td>
<td>under neck</td>
</tr>
</tbody>
</table>

This chart lists the instruments in their positions in the mix in order from left to right. Duncan performed on two acoustic guitars and sat in the same place for each take. I imagined that one spot on the guitar was the centre of a sphere and positioned microphones, take by take, at different points around the surface of the “sphere”. I did not consider it important enough to measure these distances exactly.

4. IPG

Duncan had the idea of this song but had not created a demo for it. In recording it we were influenced by the sounds of nature, Eastern European acoustic guitar music, and Swans. We recorded this song twice with the first time being recorded on a nylon string acoustic guitar. On top of this we added heavy, thrashy drums and a complex arrangement of drones, noises, and bass sounds. We found that this version of the song was interesting but that it was not what we wanted from the song. We kept the essence of it and started over. The second time we recorded Duncan playing a steel string acoustic guitar. He performed several takes of the song and during one take, he gained momentum on the end part and continued playing it, extending the song out further. We both enjoyed this and then added bass guitar and electric guitar noises over the top of it. We still wanted to feature drums on this song but felt that the previous drums had been wrong. Instead, I employed Frank Zappa’s “xenochrony” technique and took performances from one song and transplanted it another (1987). In doing so I duplicated the drum parts several times until we had achieved a general cacophony.
Some of the instruments, such as the guitar noises, the guitar DIs, and acoustic guitar harmonics, were featured as texture rather than melody or harmony. Of these the guitar DIs and acoustic guitar harmonics were recorded during a mix session at my house, where Duncan brought his equipment over to record them.

The ‘Daptone’ position is a close proximity drum microphone technique developed by record producer Gabriel Roth from Daptone Records. It involves placing a single microphone roughly in between the bass drum, snare drum, and hi-hat, facing it at the snare drum at snare drum height (as cited in Daley, 2008). The technique picks up a balance of the whole kit. The drums were taken from a recording at Albany St. Studios. Any cymbals heard in the song were recorded through this technique.

5. 1670kmph

Duncan created this song at home in Logic Pro X and sent me a bounce of what was virtually the finished song. This featured vocals from a friend, who had written the words and sung them through an Apple computer’s in-built microphone.
At Studio1 we listened to Duncan’s bounce of the song and discussed whether or not to include a live drum kit part, in order to add some life to the electronic percussion on the song. To help us decide, at a later date I recorded drums, performing them to a click track and editing them with quantization software to almost perfectly align them with the electronic drums. When we reviewed the live drums in the song we decided to keep them in.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass drum</td>
<td>AKG D112</td>
<td>dynamic</td>
<td>cardioid</td>
<td>inside</td>
</tr>
<tr>
<td>Snare top</td>
<td>Audix i5</td>
<td>dynamic</td>
<td>cardioid</td>
<td>at centre</td>
</tr>
<tr>
<td>Snare bot</td>
<td>Audix D3</td>
<td>dynamic</td>
<td>hypercardioid</td>
<td>at snares</td>
</tr>
<tr>
<td>Ovh L</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioid</td>
<td>recorderman</td>
</tr>
<tr>
<td>Ovh R</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioid</td>
<td>recorderman</td>
</tr>
</tbody>
</table>
Case Study 2: Hermann Doose

Hermann Doose’s EP consists of six songs. We created the EP by recording all songs instrument by instrument, starting with the drums, until we felt that we had all of the necessary parts. We made extensive use of headphones for monitoring purposes in order to achieve this.

The songs are:
1. Blister
2. Skate 2
3. Killing Trees
4. Faux
5. Rads
6. Southerners

In this appendix I contrast the song-by-song approach employed in the previous appendix by referring to each instrument as it was recorded; this approach more closely reflects our method of recording for this EP.

The instruments are:
1. Drums
2. Bass guitar
3. Rhythm guitar
4. Lead guitar
5. Lead vocals
6. Additional overdubs

1. Drums
I cleaned up Studio1 and met with the group to record demos, which we did for a few weeks, using the demo process to experiment with sounds. In doing so I tried the drum kit in different places before settling it in a corner, facing the drummer outwards into the room. The drummer and I discussed drum sounds and decided to use combinations of my individual drums to create a kit, as well as combinations of our cymbals. These were a 20” bass drum, a 14” snare, a 12” rack tom, and a 16” floor tom; and a 20” ride cymbal, 14” hi-hats, and an 18” crash cymbal. We wanted the drums to sound open but not ring out too much and so where we
judged it appropriate, I applied narrow strips of felt to batter side drumheads.

![Figure D2.1 - Recording drums at Studio1](image)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass drum</td>
<td>Shure SM7B</td>
<td>dynamic</td>
<td>cardioid</td>
<td>inside</td>
</tr>
<tr>
<td>Snare top</td>
<td>Audix i5</td>
<td>dynamic</td>
<td>cardioid</td>
<td>at centre</td>
</tr>
<tr>
<td>Snare bottom</td>
<td>Audix D2</td>
<td>dynamic</td>
<td>hypercardioid</td>
<td>at snares</td>
</tr>
<tr>
<td>Floor Tom</td>
<td>CAD M179</td>
<td>condenser</td>
<td>hypercardioid</td>
<td>close mic</td>
</tr>
<tr>
<td>Rack Tom</td>
<td>CAD M179</td>
<td>condenser</td>
<td>hypercardioid</td>
<td>close mic</td>
</tr>
<tr>
<td>Ovh L</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioid</td>
<td>recorderman</td>
</tr>
<tr>
<td>Ovh R</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioid</td>
<td>recorderman</td>
</tr>
<tr>
<td>Ride</td>
<td>RÖDE M5</td>
<td>condenser</td>
<td>cardioid</td>
<td>v. close mic</td>
</tr>
<tr>
<td>Hi-hats</td>
<td>RÖDE M5</td>
<td>condenser</td>
<td>cardioid</td>
<td>v. close mic</td>
</tr>
</tbody>
</table>

The above mentioned microphones were chosen in relation to the tones of the individual drums; from the equipment available to us; and due to the fact that the room had boxy and congestive qualities of sound to it. On the eve of recording drums, after checking that I had
enough microphones to use, one of the studio’s tenants lent out a pair of their microphones to another group, as that group did not have a pair of small diaphragm condenser microphones at their disposal. I had planned to use those microphones on cymbals and still wanted to record cymbals for security, so I made enquiries and was immediately able to borrow a matched pair of RØDE M5s from Gordon Duncan.

In using close proximity microphones I balanced sound isolation against useful bleed: the tom mics were set to hypercardioid pattern and positioned close to the drums; the cymbal microphones were placed a few inches away from the cymbals, angled in such a way that they could not “see” the drums; and I accepted bleed that helped the overall sound of the drum kit.

The drummer did not play to a click track but instead played live with the bass guitarist, who plugged his bass directly into the audio interface. They both wore headphones and monitored the bass guitar through them. Initially the sound in the room of the bass being played was being captured by the drum microphones, but we were able to reduce this to an acceptable level by getting the bass guitarist to swap plectrum playing for finger playing and by moving him further away from the drums. Where necessary we referred back to the demo recordings for tempo, groove, structure, feel, vibe, and parts. We monitored playback of some takes over monitor speakers. We finished recording the drums after short sessions over two and a half days.

2. Bass guitar
As they had been present at the drum recording sessions, everyone had an idea of the recording process for this EP. The bass guitarist played to the recorded drum tracks through headphones. During demo sessions he had used the studio’s bass amplifier, which he liked the sound of, so we used it for recording; this was a 15” speaker combo amplifier with basic onboard controls, which we set to neutral. I positioned it on top of a metal tube frame in order to provide some isolation from the floor. The bassist used his own bass guitar to record and played with a pick for most parts, using fingers for others. He also made use of a tuner pedal and occasionally used a chorus pedal.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass guitar DI</td>
<td>Countryman Type 10</td>
<td>DI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bass amp mic1</td>
<td>sE Electronics X1R</td>
<td>ribbon</td>
<td>figure 8</td>
<td>v. close mic</td>
</tr>
<tr>
<td>Bass amp mic2</td>
<td>Electro-Voice PL80a</td>
<td>dynamic</td>
<td>supercardioid</td>
<td>v. close mic</td>
</tr>
</tbody>
</table>

The volume of the bass guitar coming out of the amplifier was such that the musician did not
need any bass guitar in the headphones but instead, we needed to balance the headphone mix so that he could hear the drums being played back. The bass guitarist tuned up between takes or was otherwise reminded to do so. He played all the way through the songs before we all decided if he needed to do another take or not; the rest of the group’s and my perceptions were different to his as we could hear only the amplifier. Each song was recorded in about three takes and bass took one and a half days to record.

3. Rhythm guitar

At my request and his interest the rhythm guitarist brought a few guitars and effects pedals to Studio1, as well as an amplifier. We used these to identify appropriate sounds for each song, picking and choosing equipment for the part. I set the amplifier up on an old wooden school desk, about a metre off the floor. Once the rhythm guitarist found his sound I set up
microphones in response to it. We recorded him playing and adjusted the microphones and amplifier until we were both satisfied.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guitar amp mic1</td>
<td>Shure SM57</td>
<td>dynamic</td>
<td>cardioid</td>
<td>close mic</td>
</tr>
<tr>
<td>Guitar amp mic2</td>
<td>Oktava MK-219</td>
<td>condenser</td>
<td>cardioid</td>
<td>far mic</td>
</tr>
<tr>
<td>Guitar amp mic3</td>
<td>RØDE NT3</td>
<td>condenser</td>
<td>cardioid</td>
<td>far mic</td>
</tr>
</tbody>
</table>

To provide options in the mix I set up three microphones: the Shure SM57 gave a close sound; the Oktava MK-219 gave a dark room sound; and the RØDE NT3 gave a bright room sound. The rhythm guitarist is also the singer and he recorded the rhythm guitar parts while considering their effect on his future singing. He played the songs through in their entirety and tuned between takes. Sometimes we stopped to audition another piece of equipment before continuing to record. After recording the majority of his parts we needed to replace a small section with a different tone, so we punched in to the section and he quickly recorded the part. Overall, our decision to record takes in their entirety had been an aesthetic choice, where we found that performances were consistent throughout a take. However, when we punched in to record it was clear that it did not matter either way for this guitarist; we then recorded several other parts by punching in to record. After one and a half days we had finished recording rhythm guitar.

4. Lead guitar

After the lead guitarist witnessed the punch-in style of recording he wanted to record his parts in sections, so we did, recording introductions, verses, choruses, and other such parts individually. He brought his amplifier, guitar, and pedals to the studio and set up to play, however, we soon discovered that there was a problem with his amplifier. Still wanting to record that day, we contacted many people about borrowing equipment and within half an hour we had another, similar amplifier to use, which we picked up, tested, and found to be an acceptable replacement. This amplifier was smaller and featured one larger speaker in favour of several speakers. The lead guitarist set up his guitar and his digital multi-effects pedal and we listened to the songs-so-far over the monitor speakers, which he used in order to find effects suitable to use on them.
The idea behind the choice of microphones for lead guitar was the same as for the rhythm guitar: using a close microphone, a dark room microphone, and a brighter room microphone for options in the mix. We selected a song to record, listened back to it and discussed it, created tones for each section, and then recorded and reviewed each section, finishing lead guitar recording in one and a half days.

5. Lead vocals
As we all listened back to the rhythm tracks the shape of the songs became more visible to everyone, which the singer used in order to finish writing the lyrics. We then started to record the vocals, trying out different vocal deliveries, word choices, and tracking methods, such as double tracking the vocals. In doing so I noticed a slight flutter echo in the room, which was captured by the microphone, but I found this to be negligible in the big picture. We placed a pop filter between the singer and the microphone, setting this up on a separate stand than the microphone, and the singer stood about a foot away from both. I configured a monitor mix for the singer, employing reverb and echo effects from the UFX, and listened to a copy of his monitor mix, through a pair of earphones, in order to better gauge his performances.

I employed this microphone’s onboard filters to tame the brightness of the microphone, which also had the effect of reducing the harshness of “ess” sounds. We recorded the lead vocals through a microphone preamplifier that had not yet been used on the production; the idea was to use introduce a new colour of sound in order to help the lead vocals stand out more in the mix. This preamplifier\(^4\) featured basic compression and equalization controls; I made small use of both, reducing around one dB of level and cutting some mid frequencies. In recording the vocals we discovered that there was a small amount of signal bleeding from the headphones into the microphone, but this was reviewed and found to be negligible.

\(^4\) A Joemeek threeQ microphone preamplifier.
Additional overdubs

After recording vocals the group had a near complete representation of each song, which we used in order to identify what instruments there were still left to record or that we wanted to record. The lead guitarist performed the keyboard parts, which we ran through the same amplifier as used by the lead guitar, and he struggled with the rhythm of one part. As I refused to perform major editing I asked him to continue performing until we were both happy with the performance or until I would be able to make a simple edit to compile performances together; he quickly achieved this. Furthermore, the singer thought of vocal harmonies and we recorded them in the same manner as recording the lead vocals. Later, while we were reviewing the songs again, the drummer found a tambourine at Studio. In doing so he thought of a place in a song that he wanted to play it and at his invitation I joined him, playing another tambourine. In most songs we also added to the existing guitar parts either by doubling an existing part with a different tone or by layering additional parts over the top. Towards the end of recording, the lead guitarist thought of an idea for an organ part and we recorded this for the EP’s closing track.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keyboard DI</td>
<td>Countryman Type 10</td>
<td>DI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keyboard mic</td>
<td>Electro-Voice PL80a</td>
<td>dynamic</td>
<td>supercardioid</td>
<td>close mic</td>
</tr>
<tr>
<td>Backing vocals</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>multi</td>
<td>on axis</td>
</tr>
<tr>
<td>Tambourines</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioid</td>
<td>XY stereo</td>
</tr>
<tr>
<td>Additional guitars1</td>
<td>Shure SM57</td>
<td>dynamic</td>
<td>cardioid</td>
<td>close mic</td>
</tr>
<tr>
<td>Additional guitars2</td>
<td>RØDE NT3</td>
<td>condenser</td>
<td>cardioid</td>
<td>far mic</td>
</tr>
<tr>
<td>Organ</td>
<td>Electro-Voice PL80a</td>
<td>dynamic</td>
<td>supercardioid</td>
<td>close mic</td>
</tr>
</tbody>
</table>

The keyboard microphone was positioned up close on the amplifier’s speaker grill cloth, contrasting the direct signal taken from a DI box; the amplifier, speaker driver, and microphone all filtered the signal. The backing vocals were recorded with the same microphone as the lead vocals, which had its onboard settings adjusted to give them each different sounds. We recorded the tambourines by setting up a stereo pair of microphones and standing in front of them relative to where we wanted to be positioned in the mix, a technique used by Phill Brown (2010, p. 337). The drummer monitored the rhythm track over headphones and I watched his hands and played to him. Some of the additional guitar parts were recorded at the same time as the rhythm and lead guitar parts, whereas others were recorded later as textures to fill out the sound spectrum. The pump organ played by the lead
guitarist was an electric model, apparently from the 1960s. When it was powered, the air pump sounded like a vacuum cleaner motor; we turned the volume on the organ up to full in an attempt to drown this out, which resulted in a sound that I was happy to record. Finally, I positioned the pump organ microphone out in front of it in order to reduce the volume of the clicking sounds that sometimes occurred when the musician’s fingers struck the keys.
Case Study 3: The Violet Ohs

The Violet Ohs’ EP exists only in this research as it borrows from a bigger work: an album of nine songs. The album was recorded over the period of a few weeks at Studio2. The musicians performed together live to record rhythm tracks, where we arranged instruments around the spaces to minimise bleed into microphones. We maintained eye contact by positioning the musicians together in the main room; as the centre of activity, the recording equipment was also based there. Other instruments were recorded on top of the rhythm tracks as overdubs. Wanting to portray what I experienced when listening to the group play together in the studio, I based sonic choices on creating an overall profile that was brighter than pink noise but darker than white noise.

![Recording equipment for Battlephant](image)

**Figure D3.1 - Recording equipment for Battlephant**

The songs are:

1. A Faulty Streetlight
2. Battlephant
3. Big Leg
As with Hermann Doose, the recording process has been documented as one instrument after another.

The instruments are:

1. Drums
2. Bass guitar
3. Rhythm guitar
4. Lead guitar

   General live recording notes
5. Additional overdubs
6. Vocals

1. Drums
   When we recorded demos at Studio1, the drummer used some of his own equipment and I started to become familiar with his sounds and how he played. Later, during pre-production, I asked him what drum sounds he liked and he sent me an email, including several YouTube video links, and detailed which aspects he liked about each of them. I took notes on the sounds that I heard in the videos. For example:

   Mono
      lots of room sounds
      large "cannon" like bass drum
      reverb and delay on cymbals
      sparkly cymbals

   Kaki King
      loud cymbals
      punchy toms
      punchy bass drum
      woody snare

   Battles
      bright hi-hat low in mix + dark crash/ride
      punchy toms and bass drum
      snare "crack", tuned high

   Mclusky
      big low floor tom
      "ploughy" snare with snare wire sound
      room sounds
      Albini drum sound
Shellac

Albini drum sound
- snare tuned high with snare wire sound
- tight, pillowy bass drum sound
- room sound

Having both listened to these groups, we discussed drum sounds further and created an ideal drum sound to pursue, which the drummer bought new drumheads for. We fitted these onto this drum kit at Studio2, two days before we were scheduled to record the full group. The idea was to let the drumheads settle onto the drum kit and for the kit to settle into the environment.

Having previously recorded at Studio2, I was familiar with the main room there and went in the day before recording to trial drum sounds in the room, moving the bass drum and snare drum around until I found an acceptable place for the drum kit. I positioned the drums in front of one wall, facing out into the room. We used the drummer’s equipment, which consisted of a 22” bass drum, 14” snare, 13” rack tom, and 16” floor tom; and a 22” ride cymbal, 14” hi-hats, and a 16” crash cymbal. In an attempt to get closer to our ideal sound, I dampened the undersides of the bass drum batter and resonant side heads with a strip of felt each and dampened other drums with small amounts of felt taped down onto the batter side heads.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass drum in</td>
<td>Shure SM7B</td>
<td>dynamic</td>
<td>cardioid</td>
<td>inside drum</td>
</tr>
<tr>
<td>Bass drum out</td>
<td>sE Electronics X1R</td>
<td>ribbon</td>
<td>figure8</td>
<td>outside reso</td>
</tr>
<tr>
<td>Snare top</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>hypercardioi</td>
<td>at centre</td>
</tr>
<tr>
<td>Snare bottom</td>
<td>Shure SM57</td>
<td>dynamic</td>
<td>cardioid</td>
<td>at snares</td>
</tr>
<tr>
<td>Floor tom</td>
<td>CAD M179</td>
<td>condenser</td>
<td>hypercardioi</td>
<td>at centre</td>
</tr>
<tr>
<td>Rack tom</td>
<td>CAD M179</td>
<td>condenser</td>
<td>hypercardioi</td>
<td>at centre</td>
</tr>
<tr>
<td>Ovh L</td>
<td>Karma K10</td>
<td>condenser</td>
<td>cardioid</td>
<td>spaced pair</td>
</tr>
<tr>
<td>Ovh R</td>
<td>Karma K10</td>
<td>condenser</td>
<td>cardioid</td>
<td>spaced pair</td>
</tr>
<tr>
<td>Hi-hats</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioi</td>
<td>close mic</td>
</tr>
<tr>
<td>Ride</td>
<td>Line Audio CM3</td>
<td>condenser</td>
<td>subcardioi</td>
<td>close mic</td>
</tr>
<tr>
<td>Room</td>
<td>Line Audio OM1</td>
<td>condenser</td>
<td>omni</td>
<td>back wall</td>
</tr>
</tbody>
</table>

The area behind the drum kit was used to store equipment, which was constantly being picked up and dropped off by the group and others. These objects were in a loosely scattered formation and helped to diffuse the sound of the drums.
I tuned the drums, let them rest, and then tuned them again. I then selected and arranged microphones to complement the sound of the kit; the Shure SM7B picked up the attack of the bass drum beater, whereas the sE Electronics X1R captured a fuller sound from the resonant head; the Studio Projects CS5 was directed at the centre of the snare drum, positioned in such a manner so as to reject the sounds of the hi-hats, and was vertically aligned with the Shure SM57 underneath it, which was aimed at the snares; the CS5 and the SM57 faced the centre of the snare to create a 90 degree angle; as the CAD M179s easily distorted, I engaged their 20 dB pads so that I could place them closer to the tom drums; the Karma K10s followed a spaced pair configuration, picking up some room sound, with each microphone at the same distances away from the bass drum and snare drum as the other, placing those drums in the centre of a stereo image, as I learned from watching George Massenburg (as cited in Audiofanzine in English, 2011); the cymbal microphones were recorded for security and for options in the mix, where they could be balanced against the overhead microphones for a different tone; and finally, a room microphone was positioned behind the drum kit pointing at a wall, which, while close to the drums, later also picked up significant amounts of bass guitar. I tested all of the microphones by playing the drums and making adjustments myself, identifying phase relationships between microphones and moving them where appropriate.

The next day the group arrived, set up, and performed sound checks. The drummer set the
drum kit up to his comfort and I adjusted the close proximity microphones to these new positions; this included moving the tom microphones back a few inches in order to lessen their chances of distorting. The M179s clipped their signal several times throughout the recording process, which I later removed with iZotope’s RX 3 Advanced Audio Repair Suite. When we recorded soundchecks as mix previews, we used these to further check and refine the sound of the drum kit, as well as balance it against the rest of the mix. At the end of the first week of recording we packed down the rooms and set up for the group’s album preview party, where I performed live sound for and recorded the group’s set, also doing so for seven other groups over two nights. After the weekend I set up the drums and all of the microphones from memory and photos and tested all the signals by recording myself playing. Later, the group arrived and continued recording, making checks and adjustments where necessary, and we finished recording drums that week, having recorded all drums over six evenings.

2. Bass guitar

When the group demoed at Studio1, the bassist played through the studio’s amplifier, which I was familiar with and listened through to observe his tone. He had a full bass guitar sound and played with plectrums and fingers. At Studio2 he used a borrowed bass amplifier.
After we acquired the amplifier I investigated it. It was a 2x10” speaker combo unit with a horn; the horn was useful for brightening the bass signal but was prone to rattling and was therefore disengaged; the amplifier had wheels for ease of transport; and it had several useful controls, such as separate tone controls for bass, mid, and treble frequencies. As we turned up the volume on the amplifier it began to bleed into the drum microphones, so we sat it on its wheels on a cushion in an attempt to reduce some of the bleed, slightly decoupling it from the floor. Furthermore, we arranged furniture in the room in order to block a direct path from the bass amplifier to the drum kit, all of which, in practice, did little to reduce the overall bleed, but it changed the nature of the bleed to a more reverberant one and it made me feel better about it. The bassist played through the amplifier and set up a tone that he liked, employing several effects pedals, such as a tuner, distortions, and a delay. I then arranged microphones around the amplifier, using at least one bright microphone in order to slightly compensate for the disengaged horn.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bass guitar DI</td>
<td>Countryman Type 10</td>
<td>DI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bass amp mic1</td>
<td>Oktava MK-219</td>
<td>condenser</td>
<td>cardioid</td>
<td>v. close mic</td>
</tr>
<tr>
<td>Bass amp mic2</td>
<td>Audix OM2</td>
<td>dynamic</td>
<td>hypercardioid</td>
<td>v. close mic</td>
</tr>
</tbody>
</table>

The bass amplifier offered a useful, round tone and I captured it with an Oktava MK-219, which had a large proximity effect, and a midrange focused dynamic microphone, which, due to its position, picked up more bleed from other instruments than the MK-219. I blended the microphones with a Countryman Type 10 DI positioned after the effects pedals and in doing so, I noticed that one of the signals was out of phase. This turned out to be the MK-219, which was later discovered to have been wired in reverse polarity. If I had had a second DI, I would have positioned this before the effects pedals for an alternate perspective.

The amplifier was aimed at where the bassist stood during performance and was audible to all musicians. The bass guitarist made use of different effects pedals for each song, so we set these up before recording, where he found a tone that he wanted and engaged the pedal in and out to balance its level against the rest of the signal chain. One particular distortion pedal compressed the signal and boosted its treble by a large amount, which I noted for the mix. Furthermore, on a few occasions during performances the sound of the musician engaging pedals by standing on them transmitted a momentary click throughout the recorded bass tracks. After identifying this I discovered that any such sounds were easily removed with specialist software in the event of their being.
3. Rhythm guitar

When the rhythm guitarist brought his equipment along to demo sessions, I became familiar with his sound. He used his own amplifier, which was a 12” speaker combo tube unit. This was pleasant sounding, operated on low power, and featured basic tone controls and a reverb effect. I used the demo sessions to trial different microphones on the amplifier, noting that the rhythm guitarist had a balanced sound. At Studio2 we had access to further equipment and I employed a technique that I had recently researched from record producer Dave Jerden; it involves visualising the sound spectrum as a few separate bands of frequencies, such as bass and treble, and employing separate signal chains to record each band (Gearslutz.com, 2016a). Therefore, we split the guitar signal at a pedal and sent it to two amplifiers: one amplifier was a tall vintage combo unit with a 15” speaker and we placed it on top of a large wooden spindle in the hallway, using this setup as a ‘bass band’; the second amplifier was the guitarist’s 12” tube combo unit which we placed on top of a wooden desk a metre away from the other amplifier (see Chapter seven), using this as a ‘treble band’. The guitarist stood in the main room where he set up his pedals, which included a tuner, distortions, and a delay. We ran cables from two of his pedals under the main room door to the amplifiers, using the door to balance the bleed of the amplifiers into the main room against their audibility to the musicians. As the amplifiers in the hallway faced outwards into some of the building’s shared space, we cleared recording schedules with other tenants. I initially used a bright microphone on the bright amplifier and a dark microphone on the dark amplifier, but after a soundcheck I swapped these around, which helped make the recordings of the whole group playing together clearer.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guitar amp mic1</td>
<td>Oktava MK-219</td>
<td>condenser</td>
<td>cardioid</td>
<td>v. close mic</td>
</tr>
<tr>
<td>Guitar amp mic2</td>
<td>Audix i5</td>
<td>dynamic</td>
<td>cardioid</td>
<td>v. close mic</td>
</tr>
</tbody>
</table>

Because the sounds of the amplifiers were so different, we were able to create different sounds by using either microphone or a combination of them. I engaged the 10 dB pad and the low cut filter onboard the Oktava MK-219, which I discovered to also be wired out of phase, and noted to flip the phase of the microphone’s signal in the mix. Both microphones were positioned a few inches back from the centre of each speaker’s dust cap.
4. Lead guitar

At the demo sessions I noted that the lead guitar was brighter overall in sound than the rhythm guitar. The lead guitarist used a borrow amplifier, which he also intended to use on the recording. At Studio2 we set up this amplifier, a 12” speaker tube combo unit, and also a lower powered 12” speaker tube combo amplifier, both of which were brighter than the amplifiers used by the rhythm guitarist; these suited the role of lead guitar. The lead guitarist had many pedals, including a tuner, distortions, modulation effects, pitch effects, and delays. We split the guitar signal at one of these pedals and sent it to an amplifier; a second signal continued through additional pedals before it was sent to the other amplifier, and, as a result, was occasionally being fed a different signal, depending on his use of the pedals. In this sense this was a modified split-band amplifier technique but at other times we were simply recording two different signals, which I noted for the mix. The amplifiers were set up in a side room accessible from the main room and the musician stood in the doorway between the rooms, positioning his pedals in front of him in the main room. From this position he was able to hear his amplifiers, see the other musicians, and hear what they were playing.

Figure D3.4 - Studio2 side room, doorway view

The sound of the lead guitarist’s amplifiers was audible in the main room to the other musicians but was not found to be bleeding too much into any of the microphones. What
bleed there was tended to be reverberant as the amplifiers faced out into an empty room, ensuring that the direct sound became diffused.

Once the lead guitarist was comfortably set up and had found his sound, I placed microphones directly in front of the amplifiers.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guitar amp mic1</td>
<td>Shure SM57</td>
<td>dynamic</td>
<td>cardioid</td>
<td>close mic</td>
</tr>
<tr>
<td>Guitar amp mic2</td>
<td>RØDE NT3</td>
<td>condenser</td>
<td>cardioid</td>
<td>close mic</td>
</tr>
</tbody>
</table>

The combination of these microphones resulted in a signal that was too bright, however, we liked the tone of the amplifier, so I angled the brighter microphone off-axis to the speaker’s dust cap, which resulted in a darker, more balanced signal.

General live recording notes
We employed this arrangement of instruments, musicians, and recording equipment for all sessions and met up and recorded three nights a week for three weeks. We used the start of every session to prepare for recording; I checked the tuning of the drums, which shifted due to changes in temperature and under the force of the drummer’s playing; the guitarists and bass guitarist tuned; we recorded a short passage as a soundcheck and made any necessary changes to equipment; and we listened back to the most recent recordings, which were either the demos or the most recent takes. As we were preparing one night, I found that one of the drum overhead microphones had moved; in an attempt to slightly pad the microphone stands from the floor I had taken some unused cloths sitting in the studio and had placed them underneath the stands and we discovered that someone had needed to use them and had taken some. I moved the microphone stand back into place, placed another cloth underneath it, taped all of the cloths down, and ensured that the remaining cloths were then put in an accessible location for the other studio users.
We focused on two or three songs each night, where the group performed them one at a time for up to several takes before taking a break. During takes I maintained the recording equipment and sat in different places in the room, listening to the sound of the group playing together in the acoustic environment and focusing on different aspects of the performances. After each performance we discussed how it went. It was simple for us to determine which performances worked and which did not. In hindsight I attribute this to the demo recording process and the group’s experience, which, among things, included prior experience recording together live. This was our process more or less every night recording rhythm tracks. Over this period the group recorded early in the week and performed shows on the weekends. The group often asked me if we were on track to finish by the deadline and I gave a fair assessment each time. We were all aware that we should be making the best use of the time that we had available to us and we completed recording rhythm tracks ahead of schedule.

5. Additional overdubs
The group received regular bounces of the rhythm tracks each night as they were performed. Once we finished rhythm tracks we set up to re-record any stray parts that we felt could be improved without doing any harm; we punched in and replaced only a few brief parts on
rhythm guitar and bass guitar. After this we set up to record guitar overdubs, moving the
guitar amplifiers into the main room and all of the recording equipment into one of the
corners, as well as positioning the monitor speakers and the couch nearby. As we listened to
the rhythm track bounces the lead guitarist told me what he wanted to add to each song, which
I took down on notes and used as a map for recording his overdubs.

<table>
<thead>
<tr>
<th>Track</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>faulty street light</td>
<td>4:19 end, low, dry, chuggy bit underneath</td>
</tr>
<tr>
<td></td>
<td>3:25, loop droney bit</td>
</tr>
<tr>
<td>iridescent</td>
<td>intro, doubling an octave lower</td>
</tr>
<tr>
<td></td>
<td>very end, g4, guitar solo, replace last note</td>
</tr>
<tr>
<td>kickin' around</td>
<td>intro, filler</td>
</tr>
<tr>
<td>open air</td>
<td>intro, first verse</td>
</tr>
<tr>
<td>shambles</td>
<td>very end heavy guitar part</td>
</tr>
<tr>
<td></td>
<td>at 3:45 turn up the 57 which has the harmoniser part on it!!!</td>
</tr>
</tbody>
</table>

**Figure D3.6 - Overdub recording notes for lead guitar**

Overall, the overdub recording process was completed without complications. Spreading it
out over a few days allowed the musicians to have some time with the tracks and listen to
them in different environments. Later we started to record guide vocal tracks but soon
abandoned them in order to record lead vocals.

6. Vocals

The rhythm guitarist is also the singer and he finalised lyrics after the additional overdubs
were completed. While recording guide vocals, we developed a recording process and gained
momentum; in doing so we decided to forgo guide vocals altogether, as well as potential
access to higher quality equipment, including microphones and preamplifiers, and move
directly into recording lead vocals. The singer wrote lyrics on his laptop and positioned this
nearby on a desk in order to read it while singing. While soundchecking he requested reverb,
delay, and distortion effects on his voice in the monitor mix, and I employed these from
REAPER’s effects and the RME UFX’s onboard software; these effects were only present in
the headphones, allowing him to sing into a mix more indicative of the end product, and then
were recreated in the mix. The singer also experimented with multi-tracking the vocals and
devised a technique of layering vocals and vocal harmonies.
The microphone was set up on one side of the main room and had a pop filter in front of it, attached it to its own stand. The microphone went into a simple preamplifier with onboard compression and equalization; I had reserved it until this point in order to specifically use on the vocals, introducing it as a new sound colour to help the vocals carve out their own space in the mix. As the singer began testing his multi-tracking technique, layering up to five tracks of any main melody line, I devised a method to complement it, using different combinations of preamplifier distortion, compression, and equalization: the first track engaged compression and equalization; the second compression only; the third equalization only, and the fourth and fifth used neither. The effect of this was a dense stack of vocals, where the individual parts were still discernable. Any harmony parts on top of this also followed this procedure and in total, we recorded up to 19 layers of vocals per song. The sound of the room coming back into the microphone was pleasant and non-destructive and we also planned to process it with further reverberation in the mix.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Microphone/DI</th>
<th>Transducer</th>
<th>Pattern</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocals</td>
<td>Studio Projects CS5</td>
<td>condenser</td>
<td>cardioid</td>
<td>close mic</td>
</tr>
</tbody>
</table>
The microphone was set up in cardioid pattern and I engaged its onboard filters for a 50 Hz low cut and a 15 kHz high cut. This was in response to the singer’s request for a ‘clear’ and present vocal sound and was a slightly bright configuration, therefore I noted to keep sibilance levels in check in the mix. The singer had well-tuned instincts about his performances, which greatly helped us to record the vocals; we recorded dozens of layers of vocals, across nine songs, during multiple short sessions, over several days.
Appendix E: Mixing

Most of the following processes have been discussed generally rather than specifically. In this matter I agree with record producer Andrew Scheps’ reasons for discussing mixing in this way:

Talking about mixing is like talking about music is like dancing about architecture. It’s all very hard to do. So, what I want to do is play you things and then I’ll sort of walk through the setup of one of the songs, and then talk about some sort of specific decisions I had to make on those songs ‘cause I think that’s a lot more relevant than saying “I used this compressor” cause I don’t, I mean who cares, right? It doesn’t matter. If it compresses it compresses, if it doesn’t then that’s not a compressor (as cited in Westlake Pro, 2014a).

Furthermore, I applied some work methods almost universally:

- I created mix templates, which were influenced James Lugo’s (2015) and The Recording Academy’s templates (2015);
- After recording sessions I copied all files to a few locations;
- I renamed all individual files, folders, and tracks in order to make them easier to read;
- Individual tracks were trimmed, cutting unnecessary signal, and had tiny fades applied to them at the beginning and end;
- Any noises, pops, clicks, or anomalies were edited by cutting, fading, cross fading, reusing signal from elsewhere, or employing specialist software, such as iZotope’s RX 3 Advanced Audio Repair Suite;
- In dire circumstances I edited performances. I was heavily reluctant to do so and mentioned this to musicians throughout the recording process;
- I initially set rough fader levels and pan positions for all of the tracks in the mix, ensuring that the combined signal heading to the output fader was not excessive;
- Following from above, after listening to the mixes in this state I created a very fast, rough mix of each song, developing a sense of the record being made, the idea of which I fed back into all songs and mixes;
- Where an instrument was recorded the same way throughout a production I transferred knowledge of it across all songs;
- I accomplished the ground work of each mix in advance, which then allowed me to start mixing without those concerns;
- I checked the phase of instruments that had been recorded with multiple microphones, applied signal processing to them, and then checked their phase again;
• I used ideas from record producer Andy Wallace, employing dry signals for punch and clarity, “up front”, and reverberation for simulating real acoustic experiences, particularly on the bass drum (as cited in Tingen, 2014);
• I made extensive use of parallel processing: sending a signal to another channel, processing it, and blending the result back in with the original signal (Brauer, 2016). This was used when I wanted to maintain the best qualities of both the unprocessed and processed sounds;
• I employed an idea from record producer Tchad Blake: to use a wide range of signal processors so that the sound of one processor does not stack up too much (as cited in Westlake Pro, 2014b);
• I sent the groups bounces of progress for feedback.

All mixing and mastering was performed on the same equipment. I used REAPER DAW on my 2011 MacBook Pro, running OS X 10.8.5. This featured a solid-state primary hard-drive, a second hard drive for backups, and RAM expanded to 16GB. I monitored through an Apogee Duet audio interface on PreSonus Sceptre S8 monitor speakers with a PreSonus Temblor T10 subwoofer. I also monitored on Audio Technica ATH-M50 headphones and occasionally on Yamaha HS80M monitor speakers, the latter of which were set up at Studio1.
E1  Case Study 1: Gordon Duncan

The songs are:
1. Doodle
2. Baltic
3. Baroque
4. IPG
5. 1670kmph

These songs were recorded over a few months. Because each song was recorded individually, mixing was performed differently for each song.

1. Doodle
This song has several acoustic guitar tracks. The recording process gave each guitar a slightly different sound, helping them to fit into a mix. Tracks were panned out equally between 100% left and 100% right. While I had planned this song with no equalization in mind, listening back I felt that I had recorded the tracks with too much “mud”. As a result, I used equalizers to cut low and low-mid frequencies on individual tracks and on the mix bus. Once the tracks were balanced I sent them to a reverb to taste.

2. Baltic
This was a dense mix featuring many different instruments. As I had recorded all percussion instruments playing repeated patterns from the beginning of the song until the end, I cut them up in the editing process into a dynamic arrangement of parts.

Some tracks required corrective work to fit into the mix. For example, the lead acoustic guitar track was recorded with excessive proximity effect, giving it a boomy quality. To correct this its low end was reduced with an equalizer. Furthermore, the electric guitars occasionally had a harsh resonance in the mid range frequencies, which were then also reduced with an equalizer.

The panning schedule had a few concerns. The instruments were fanned out relative to their rhythmic, melodic, and harmonic elements, but also the frequency content, prominence of parts, and how often they were played. I wanted to simultaneously balance the frequency spectrum and create interest when parts came in and went out.

The majority of tracks were high pass filtered to some extent, with the high frequency percussion filtered up to 800 Hz. Most of the instruments had been recorded with
microphones placed in close proximity to the source; in the mix I positioned these tracks in the middle ground and left about half of them dry, with the percussion and a few smooth, flowing instruments receiving reverb.

Duncan had the idea for the middle section to delve into chaos. As an experiment, I arranged and recycled electric guitar parts, treating them with reverb and delay effects. We liked the overall effect of this and automated their levels as the middle section progressed.

3. Baroque
Like ‘Doodle’, this song features several acoustic guitars and its recording process used microphones to balance out the parts.

The tracks were panned out equally across the panning spectrum. Signals that had not been high pass filtered during recording were then filtered in the mix. Finally, everything was sent to a gentle, long reverb.

4. IPG
The first time we recorded this track its acoustic guitar required little work to fit in the mix. The second time it was recorded we got the performance we wanted but the acoustic guitar required some corrective work. However, this was the preferred scenario. I listened to the entire song and identified areas where the acoustic guitar masked other instruments and in response, I pulled down some frequencies with an equalizer. Other instruments had low cut filters applied. The bass guitar was gently compressed.

The song gradually rises in volume and intensity. The electric guitars were duplicated/recycled several times and pushed into the middle ground of the mix where they were treated with reverbs and delays. As the song climaxes the guitars were automated in volume. I also duplicated the drum tracks several times; each track was time stretched differently so that they were at random pitches and did not sync up with each other. The toms were sent to a delay and I automated its level and speed throughout the song. This had the effect of making the toms “gallop”, which was a consequence of the delay time speeding up. I sent all drums to a bus which was gently equalized to fit into the mix. Other, non-noise electric guitars were recorded as DI signals and reamped with software amplifiers.

5. 1670kmph
Duncan wrote, arranged, recorded, and mixed this song in Logic Pro X. Listening to it I thought that I could squeeze a tiny bit more from the mix and Duncan gave me his blessing to
take the session. I exported Duncan’s tracks with all processing applied, leaving the integrity of his sounds intact. He had recorded electric guitar and bass guitar direct into an audio interface and applied signal processing to them in Logic Pro X; Logic’s preset settings provided Duncan with the sounds for most tracks. The presets are seen as barely visible light grey fonts at the very top of the following picture, followed by the blue boxes underneath them, which were the signal chains of each preset’s individual signal processors.

Figure E1.1 - Mix window view 1

Figure E1.2 - Mix window view 2

All of the tracks had also been exported from Logic Pro X with their panning information applied. I rebuilt the mix in REAPER by listening to Duncan’s mix on repeat.

My priorities were reducing harshness and reducing sibilance. I identified that Duncan’s electric guitar had a mid range frequency push at around 2.7 kHz. Sometimes this area became harsh so I equalized it down in level. The vocals for this song were recorded by an in-built computer microphone positioned a medium distance away from the singer. The singer
had initially used a video game karaoke microphone to record vocals but he said that it had made him sound like he had a cold and given him a lisp. I treated this with transparent de-essers and some reductive equalization in the mid range.

I copied the use of reverb and delay effects from Duncan’s mix and then panned instruments slightly further away from each other for greater clarity. Most instruments were treated with low cut filter equalization after which I equalized the electronic bass drum samples to shift their low frequency information further down. I limited some instruments to pin their place in the mix and added the acoustic drum tracks into the mix and limited those. The main difference between Duncan’s mix and mine was that of using a wider range of processors, which slightly helped to separate the mix elements.
E2  Case Study 2: Hermann Doose

The songs are:
1. Blister
2. Skate 2
3. Killing Trees
4. Faux
5. Rads
6. Southerners

In this EP I used the mix settings from one song to influence the mix settings in another song. Furthermore, when multiple microphones were captured for options in the mix I used different microphones for different sections of a song. For example, a verse used a darker microphone and a chorus used a brighter microphone, or a verse used an omnidirectional pattern microphone and a chorus used a cardioid pattern microphone.

In this appendix I contrast the song-by-song approach taken in the previous appendix. Instead, the mixing processes are documented as one instrument after another.

The instruments are:
1. Drums
2. Bass guitar
3. Rhythm guitar
4. Lead guitar
5. Keyboards
6. Additional guitars
7. Vocals
8. Backing vocals
9. Additional instruments
   General mixing notes

1. Drums
The bass drum was recorded with a plastic bass drum pedal beater on a clear plastic bass drum drumhead, using a dynamic microphone, with its additive high shelf filter engaged, aimed at the beater. As a result, we had plenty of attack on the bass drum. I was more concerned with
obtaining this at the source as meaningful low end information was going to be easier to make/recreate later if needed. In order to sculpt the bass drum into the mix I used an equalizer to high pass filter the bass drum and to reduce a few bands that were masking other instruments.

The snare bottom track had a harsh peak which I equalized out by a few dB at around 6 kHz. The tom drums were level automated and then equalized to remove masking from the snare drum in the low mid frequencies. The overhead microphones were processed with a transparent equalizer, also removing masking, this time in the low mid and high mid frequencies.

The drum tracks were panned, level balanced, and checked for phase. I sent the snare top and bottom tracks to their own bus, the overhead microphones to their own bus, and the bass drum, snare bus, and tom tracks to a “shells” bus. The overheads bus and the shells bus were lightly compressed with a very fast attack, reducing up to 2 dB, and then were summed to a final drum master bus.

The bass drum and snare bus were gated, reducing around 6 dB of level. For transparency the gates were set to a medium release. The drum master bus was further compressed, again with a very fast attack, and only lightly reducing level. The accumulative effect of small amounts of compression sounded more natural to me than fewer compressors working harder. The hi-hats and ride cymbal microphones were unnecessary and were deleted.

As the mix developed I felt that the drums were too dry so I sent the bass drum, snare drum, and overheads to short reverbs.

2. Bass guitar
I recorded the bass guitar with a DI, a dynamic microphone, and a ribbon microphone. The dynamic was too bright for my mix vision so I deleted it. I tried the ribbon and DI together but later deleted the ribbon track as well. I discovered that the bass guitarist had occasionally hit the strings against the pickups, creating momentary bright or harsh noises, so I used a de-esser for when these arose. I sent the bass signal to two compressors: the first was configured in parallel, gently leveling out the signal; and the second was inserted in series and was used as a limiter to catch loud peaks. Finally, I saturated and high pass filtered the bass guitar.

3. Rhythm guitar
The rhythm guitar was recorded with a close dynamic microphone, a dark far condenser microphone, and a bright far condenser microphone. Listening through each song, I
dynamically muted these microphones depending on the song section. I balanced the microphone tracks against each other and then sent them to a bus, which was gently saturated and then equalized to reduce any build ups of muddiness or harshness. Furthermore, some remaining harsh resonances in the upper mid frequencies were then cut by a surgical equalizer. I set the pan of the guitar from the bus. On most songs I then sent the guitar to a reverb.

4. Lead guitar.
The lead guitar was processed in almost exactly the same fashion as the rhythm guitar. The processors themselves were the same. Individual microphone tracks were sent to a bus for mutual processing.

The lead guitar was also sent to a reverb on most songs. Most of the time this was the same reverb as the rhythm guitar, otherwise it was a different reverb, so as to place the guitar in its own space.

5. Keyboard
I recorded the keyboard with a DI and dynamic microphone. These were blended together and sent to a keyboard bus, which was then saturated. The keyboard had a harsh resonance in the upper mid range, so I notched them down with a surgical equalizer. I applied keyboard panning from the bus. The keyboard bus signal was then sent to a reverb.

6. Additional guitars
Guitar parts were doubles of the rhythm and lead guitar lines or were short interludes, such as solos. Additional guitars were more or less treated in the same fashion as rhythm and lead guitars, using the same processors. These were employed for the same reason: to reduce any muddiness and harshness as well as to clear space for other instruments where necessary. The individual track equalizers used slightly different settings.

The individual additional microphone tracks, such as the close microphone track and far room track, were chosen so that they did not clash with the respective, existing rhythm and lead guitar microphone track choices. Some additional guitar tracks were sent to a reverb. These were different reverbs to those already in use.
7. Vocals
The lead vocals were double tracked. I employed the same signal processors to both tracks with minor adjustments where the signals were different. I saturated the vocals, compressed them in parallel, and used a transparent de-esser to pull down any excessive sibilance. The combination of singer, microphone, and preamplifier resulted in excessive upper-mid frequencies, so I used an equalizer to balance these against low and high frequencies. I sent the vocal tracks to a reverb send, set to medium decay, and roughly tuned the pre-delay time to the tempo of each song.

8. Backing vocals
The backing vocals were sculpted to fit around the rest of the mix. A dirty de-esser limited excessive sibilance on each individual track. Some backing vocals were parallel processed with a chorus modulation effect to help them blend in. All backing vocals were then sent to a bus, which itself was compressed, equalized, and sent to a reverb.

9. Additional instruments
The previously described entries were the core elements of the mixes. The additional instruments were the lowest priority in the mix. Guitar noises were saturated, equalized for harshness, and sent to a reverb. The tambourines were panned out and high pass filtered. The pump organ was somewhat honky sounding and was smoothed over with an equalizer before it was sent to a reverb. Finally, the shaker was sent to a reverb.

   General mixing notes
All tracks and buses were sent to a master output bus. All mix elements were panned for balance and contrast. Drums were panned out to the audience perspective at about 60% wide. Guitars sat at about 75% wide each. Bass guitar and vocals sat in the centre. Other elements were panned out to places where they were at low risks of masking other sounds. Most reverbs were set to a full stereo pan or otherwise used in mono, panned centre. The mix did not peak above 0 dBFS, leaving me headroom for mastering.

   After each significant mix milestone I sent bounces to the group. They responded with feedback which then I implemented into the next iteration of mixes.
Case Study 3: The Violet Ohs

The songs are:

1. A Faulty Streetlight
2. Battlephant
3. Big Leg

As with the Hermann Doose, the mixing processes have been documented as one instrument after another.

The instruments are:

1. Drums
2. Bass guitar
3. Rhythm guitar
4. Lead guitar
5. Additional guitars
6. Vocals
7. Backing vocals

General mixing notes

1. Drums

The drum sound was largely defined by the work accomplished during the pre-production and recording phases and so the mix was used to build upon what was already there. The bass drum tracks, snare drum tracks, and overhead tracks were sent to their own buses. These buses and all remaining drum tracks were then sent to a drum bus. Throughout mixing I regularly checked the phase coherency of all the tracks.

In response to the drummer’s dynamic playing I limited most individual tracks, reducing only a few dB of level each. I preferred the effect and sound of accumulative, small amounts of level reduction as opposed to fewer instances of larger amounts of reduction.

Close miced drum tracks, such as bass drum, snare drum, and tom drums, were gated, sometimes with the gate employed in parallel. These tracks were then parallel compressed, set to a long attack and medium release and also equalized in order to reduce muddiness and to enhance clarity. The bass drum ribbon microphone employed an equalizer in parallel to reduce low-mid frequencies. I then wanted more thump from this drum, so I added a tight, low frequency boost to the bus. Later in the mix I wanted more punch from the drums and
automated a high shelf on the bass drum and snare buses, initiating these during the denser sections, such as most choruses.

Resonances in the snare drum and toms were reduced by narrow bands of parallel equalization. The snare bus was sent to reverb with a short decay.

The overhead tracks and cymbal tracks were equalized in parallel in order to reduce muddiness and harshness yet maintain the shimmer. The cymbal tracks were also muted when the respective cymbals were not being played, helping to clear space in the drum sound.

The drum master bus was lightly limited. The room microphone, which had mainly picked up drum kit and bass signals, was balanced in level against this.

I maintained the essence of the drummer’s dynamics while pulling stray peaks into line. Later I automated the drum bus during songs for dramatic effect; most of the automation moves were direct results of recommendations from the group.

2. Bass guitar
The bass tracks sounded hollow and were discovered to have phase issues when summed together; I identified and corrected the phase on the MK-219 track. I then balanced the DI and microphone tracks against each other before sending them all to a bus. I created an equalizer band at the same frequency as the bass drum’s tight boost and reduced this on the bass guitar.

I employed a multi-band compressor to level out the lowest frequencies, which sometimes spiked in volume. The bass bus was limited, gently parallel compressed with a fast attack and medium release, and then compressed further, with a medium attack and release. As the mix progressed I reduced some frequency bands to help the bass fit into the mix. The last signal processor was a high pass filter set to a corner frequency of 41 Hz, at around the frequency of the lowest note played on the bass guitar.

The bass guitarist had often engaged effects pedals, changing the nature of the sound. When engaged in and out these had the effect of changing the volume of the bass guitar, so in response I automated the level of the tracks, as well as the level of the bass bus.

3. Rhythm guitar
The rhythm guitar was recorded with two microphones, splitting the frequency spectrum into low and high bands. These were out of phase and were corrected. I sent the tracks to a rhythm guitar bus. This overall sound was big, meaty, and dark. The group liked it but wanted both it and the lead guitar brighter. Therefore, I employed an equalizer in parallel, boosting the treble frequencies in a wide band.
A tube compressor emulation, which had a sidechained high pass filter at 250 Hz, lightly compressed the guitar bus and imparted a softer tone upon it. I then limited the bus and then high pass filtered it, employing a gentle slope.

Finally, the rhythm guitar was automated to bring it up and down in level when it was too quiet or too loud.

4. Lead guitar
The lead guitar was processed in almost exactly the same fashion as the rhythm guitar, using the same or same sorts of signal processors in the same ways. It was recorded with a bright condenser and a mid range focused dynamic microphone. Sometimes the signal to each microphone differed. In response to this and where otherwise necessary, the individual tracks and also the lead guitar bus were automated in level.

5. Additional guitars
Further guitars were used to fill out the middle ground of the mix or for interludes, such as guitar solos. Additional guitars followed almost exactly the same treatment as rhythm and lead guitars, using their same signal processors. The microphone tracks were checked for phase coherency, brightened with an equalizer, balanced against each other, and sent to a bus. They were then saturated and high pass filtered. A further equalizer reduced harsh resonances in the mid range and high mid range, parallel processed at 75% wet.

Some of these guitar parts were sent to a reverb. The volume of these reverbs were sometimes automated in level.

6. Vocals
The singer recorded up to 21 tracks of vocals per song. Every individual vocal track was processed with a de-esser to tame its excessive brightness and sibilance, blended in at 50% wet. I considered automating the threshold of each de-esser in order to catch only the harsh syllables. However, given the amount of vocal tracks and the deadline, I skipped this task. I then reviewed and judged the parts and sent them to different buses: lead melody verse parts were sent to one bus and lead melody choruses parts to another. These buses were employed in order to apply different processing to the vocals during different song sections. Harmony parts and backing vocals were likewise split and sent to their own verse and chorus buses for the same reason. All individual vocal tracks were found to be in phase with each other. They were then level balanced and panned according to their part.
The buses for the lead vocals were treated in similar fashions to each other. A high pass filter reduced rumble and any remnants of excessive plosive sounds. Another de-esser was employed, triggered by the sum of the individual track inputs, and was blended in at 50% wet. This second de-esser was employed instead of automating each individual vocal track’s de-esser. An equalizer followed this, reducing low frequencies and boosting high frequencies. The buses were then lightly compressed at a 1.5:1 ratio. A further de-esser followed and, in a push and pull manner, was employed in order to catch any harshness introduced by the high frequency boost. Finally, another compressor, which had a sidechain frequency of 250 Hz, lightly leveled each bus.

The lead vocal buses were typically sent to a delay, a distortion, and a reverb, depending on the song and which bus it was. I used different effects or different versions of the same effects in order to distinguish the lead vocal buses from each other.

Buses and effects were automated for impact.

7. Backing vocals
The backing vocals were generally processed in the same manner as the lead vocals had been. Individual microphone tracks were level balanced, panned, and sent to a backing vocal verse bus or backing vocal chorus bus. Each bus was equalized around the lead vocal buses, parallel compressed to level them out, and were sent to delay and reverb effects.

General mixing notes
All buses were sent to the output bus. The drums, bass, and most vocals were panned up the middle. Rhythm guitar, lead guitar, and other vocals were panned up the sides. The rhythm and lead guitars were initially panned hard left and right, helping to create space in the mix; after the group heard this they felt that it was too wide, so we brought them in to around 70% left and right.

The output bus was compressed at a 4:1 ratio, reducing up to 1 dB of level. Finally, I rode the output bus fader in order to enhance dynamics across songs, gently lifting choruses and end sections up, and gently lowering other sections; REAPER allowed for the automation to be read “pre effects”. This meant that any rides in volume drove the compressor’s input harder, but in practice this affected the overall gain reduction by only miniscule amounts.
Appendix F: Mastering

F1  Case Study 1: Gordon Duncan

This EP was mastered for CD at 44.1 kHz, 16-bit.

After exporting the mixes at their native resolution, 48 kHz and 24-bit, I opened a new session in REAPER and imported all of the mixes. I labeled each track with its corresponding song title and roughly balanced the track levels against each other, noting which songs peaked louder than others and which felt denser than others. I inserted a transparent equalizer onto each track and used broad bands of equalization in order to internally balance the tones of each song and overall, to bring the songs close in sound to one another. I set up a limiter and adjusted its settings listening to these songs until I consistently caught peaks, not limiting more than a few dB. After some trial and error with various signal processors I settled on the following signal chain on the output:

- A transparent compressor set to fastest attack, medium release, catching any stray peaks before the limiter, reducing them by around 1-2 dB during loud passages;
- A different transparent compressor set to slowest attack, fastest release, reducing at maximum 1 dB of level;
- A third, transparent compressor, set to fastest attack and automatic release, leveling the signal by around 1 dB;
- A transparent parallel equalizer that high passed and low passed the signal with corner frequencies of 29 Hz and 22.1 kHz;
- The best limiter I had, set to fast attack and medium release, reducing up to a few dB of level;
- A second instance of the same limiter, further reducing up to a few dB of level but with a lower threshold than the previous limiter, therefore acting before it in most cases. This limiter also filtered DC offset and dithered the signal down to 16 bits, writing zeroes on the remaining bits for them to later be truncated.

I listened to the tracks and adjusted the output signal processors’ settings, going back and forth between them and sometimes turning each track’s level up or down by a few tenths of a dB. I was aiming for a consistent loudness across the tracks which were of different styles. The last song on the EP, ‘1670kmph’, was in an electronic rock style and was to be the loudest song. This had an RMS of around -12 dB, which I felt was enough level.
I applied fade outs onto the mix bounces so that the fades were read pre-effects. I used no level automation on songs during mastering as I had already written this onto songs during the mixing process. I individually bounced tracks through the output, converting their sample rate down to 44.1 kHz with a high quality resampler and truncating their bit resolution down to 16-bit.
Case Study 2: Hermann Doose

This EP was mastered for CD at 44.1 kHz, 16-bit.

The mastering process for this EP was exactly the same as that described for Gordon Duncan’s EP. As I had mastered Gordon’s EP before this EP, I used the same processors as a starting point for mastering, which greatly sped up the process, allowing me to focus more on the big picture rather than on the small details. I used an equalizer’s frequency analyser to better understand the frequency content before making broad equalization strokes on each track. The final compression and limiting settings were virtually untouched as instead I used the individual track faders to gain stage the tracks into them. I printed the tracks through these signal processors and referenced them on the systems available to me; monitor speakers, laptop speakers, headphones, and car stereo. After a few revisions spread out over a few weeks, taking the whole process slowly, I printed final masters. I targeted the RMS level to be loud but comfortable, settling at around -12 dB.
F3  Case Study 3: The Violet Ohs

The group’s album was mastered for CD at 44.1 kHz, 16-bit. I directly took songs from the album in order to make their EP as featured in this project.

The album was mastered by a professional engineer, paid from the group’s budget. At our first meeting on September 1 the group and I discussed mastering options. We talked about what the group wanted from mastering and who we might use. The group wanted the option to be able to attend sessions and we eventually chose a Dunedin engineer. The group made initial contact with him and during the second week of recording I followed up to formally schedule in the work. Three weeks later I sent the engineer the mixes over the Internet. Two days later he delivered a CD for review purposes and I forwarded the songs to the group by online file transfer. I listened to the masters on a few different audio systems, including different pairs of headphones and speakers, and thought that the masters had enhanced the mixes. The group and I discussed the masters and I found that the mastering process had highlighted some minor mix imbalances. I made alterations to three mixes and sent them back to the mastering engineer, who returned them mastered the next day; this was the day of the group’s album release show. I sent the group the three remaining masters, they gave their approval, and later that day they released the album.
Appendix G: Engineer’s logs

The first iteration of this exegesis involved a literature review, the reflective logs, and chapters on record producers and Dunedin music. A reflective log was written immediately after each session, with logs totalling around fifty in number. All session dates are provided in Appendix C. The following are sample logs from the demoing, recording, and mixing stages of one case study only. I used informal language in the logs as a quick means of note-taking; around half of the logs were written in the early hours of the morning after long recording sessions. Furthermore, recording terms have been employed without an explanation of their definitions.

Engineer's report
September 20 2015
Studio1
10:30am demo session

I arrived at the the studio at 10am to set up. Recorded through a Mackie Blackbird interface onto a Macbook Pro into REAPER software. Input list was as follows:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gat 1</td>
<td>SM57</td>
<td>amplifier</td>
</tr>
<tr>
<td>2</td>
<td>vox</td>
<td>SM58</td>
<td>through vox effects, into pa, out of pa, direct signal out</td>
</tr>
<tr>
<td>3</td>
<td>gat 2</td>
<td>D3</td>
<td>amplifier</td>
</tr>
<tr>
<td>4</td>
<td>bass</td>
<td>Type 10</td>
<td>DI at the end of the pedal chain, before the amp</td>
</tr>
<tr>
<td>5</td>
<td>bass drum</td>
<td>D112</td>
<td>into porthole</td>
</tr>
<tr>
<td>6</td>
<td>snare</td>
<td>SM57</td>
<td>on top aiming a little down</td>
</tr>
<tr>
<td>7</td>
<td>ovh l</td>
<td>CM3</td>
<td>XY</td>
</tr>
<tr>
<td>8</td>
<td>ovh r</td>
<td>CM3</td>
<td>XY</td>
</tr>
</tbody>
</table>

I set up guide levels on all preamp inputs and tested the vocal output through the P.A. system. Satisfied, I met the group and brought them to the studio. They set up.

The drummer used the house kit with his cymbals. These are medium weight cymbals - I can imagine they cut through in a live show context. He hits hard and plays dynamically. Look into drumhead options - he wants to reskin his whole kit and his dad may pay.

The bass player set up a chain of approx. 5 pedals, including tuner, distortions, and delay. He tweaked the settings on the amp, including graphic EQ and bass treble, but the amp signal
was not taken. He plays rhythmic lines, very driving. Note these settings when recording. One of his pedals developed a problem. He will look into this further.

The singer / guitarist [gat 1] sang through the SM58 and plugged this into a vocal effects unit. He brought his own XLR cable. Note to bring a spare in the future. This vocal signal went to the desk and out the monitors. He set up a small chain of guitar pedals, including tuner and distortions. He played through an Ampeg, which looked like a GVT15-112 [tube]. The amp sat on a metal school chair. The guitar [gat 1] sounded full, mellow, not overdriven, with little sharpness or edginess. He plays mainly rhythm parts, chords, rhythmic lines. His power was taken from the other side of the room to everyone else and his amp made an audible hum. When everyone was playing this was not noticeable.

The lead guitarist [gat 2] played through a large pedal board of approx 10-15 pedals. Many different types of effects, including tuner, distortion, modulation effects, pitch shifting, delay, and reverb. He played through his friend's amp which was a Fender hot rod deluxe [tube]. The guitar [gat 2] sounded light with enough treble, and while not harsh, with another amp pairing it may become so.

They wrote the songs up on a whiteboard and ran through them all [10] in a row. Everyone tuned between takes. Recorded at 96 kHz, 24-bit. REAPER handled recording 8 tracks for up to an hour with no problems.

Look into their "groove" - identify who plays where around or on the beat.

Thoughts for recording. More mics on the drums: bass drum out, snare bottom, hi-hat, ride, room mics. Another mic on each amp. Vocal recording to be discussed - will he sing clean or into effects? Use for reference: David Bowie, Rage Against The Machine, Godspeed You! Black Emperor, Neu!, Shellac, Muse [early], A Perfect Circle.

Engineer’s report
October 4 2015
Studio2
1:00pm recording session

After loading in last night I unpacked most of the equipment and started rearranging the room. We are scheduled to start recording with the whole group tomorrow. The drumheads have started to settle in and I retuned these and played some drums in the room to get a sense of the room and the sound of the drums. Today it was raining with thunderstorms. I set up microphones on the drum kit and played some drums. The rain falling on the corrugated
plastic and metal roof was audible through the overheads and room microphones, as was thunder. It was raining very hard. The forecast for the next few days is rain, eventually clearing. Input list was as follows:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Microphone 1</th>
<th>Microphone 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>b drum in SM7B into porthole</td>
<td>D8</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>b drum out X1R pointed down at reso</td>
<td>UFX</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>snr top CS5 on top aiming down</td>
<td>D8</td>
<td>48V</td>
</tr>
<tr>
<td>4</td>
<td>snr bot SM57 under aiming up</td>
<td>Blackbird</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>tom 1 M179 on top aiming down</td>
<td>Blackbird</td>
<td>48V</td>
</tr>
<tr>
<td>6</td>
<td>tom 2 M179 on top aiming down</td>
<td>Blackbird</td>
<td>48V</td>
</tr>
<tr>
<td>7</td>
<td>ovh l K10 spaced pair</td>
<td>D8</td>
<td>48V</td>
</tr>
<tr>
<td>8</td>
<td>ovh r K10 spaced pair</td>
<td>D8</td>
<td>48V</td>
</tr>
<tr>
<td>9</td>
<td>hi-hat CM3 4” above cymbal</td>
<td>Blackbird</td>
<td>48V</td>
</tr>
<tr>
<td>10</td>
<td>ride CM3 4” above cymbal</td>
<td>Blackbird</td>
<td>48V</td>
</tr>
</tbody>
</table>

This configuration provides some room sound from the overheads, which pick up bleed from other instruments. Make a floor plan and prepare some ideas for isolation and absorption.

The room itself is approximately 15 metres squared with unsealed brick walls. The floors are wood and the ceiling is a wooden A-frame with corrugated plastic skylight cutouts. The room is peppered with desks, art supplies, musical instruments, and more, which serve to diffuse the sound. There is a live, splashy quality to the room sound. There is nowhere for the air to escape when the doors are closed. The room can get a little boomy or thick. There are no windows. There are ample power outlets, however, it appears as if they all run off the same circuit. The floor is solid, and if you jump on it there is a little bit of give.

There is an adjacent room with windows and a fire escape. This room is about half the size of the main room and is in use as a storage space. Similar construction: wooden floors, painted brick walls, A-frame with wooden roof. This room is partitioned to another, much larger room. Also, it is not as boomy. There is a door between this room and the main room, so this could be used as a sort of isolation room.

The shared hallway into the main room has a large wooden door, so this could be used as a second isolation room. The hallway is a short connecting path between the main room and another larger room outside. The hallway would allow a lot of air to move and also may offend the neighbours.

There is little to do about the rain.
The studio is now partially set up for demo recordings [for other productions], and as such, there are monitors in place for playback. I arrived a little early to set these up for playback of the group's tracks.

The mixes so far are "static" in that there are no volume rides and most of the balancing has been done. At this stage I consider the mixes a representation of what they will become with a bit of polishing and that most of the ideas and sonics have been laid down.

We listened through each song and discussed what we heard. Suggestions from the group will be addressed in future mixes, such as volume rides, which I have left until the end of the mixing. Some other balance requests were addressed, such as bringing up or down a guitar in certain parts of the song to highlight a part or line. The guitarists wanted the guitars brighter and panned more into towards the centre.

Some ideas were added, such as making the drums hit big before a drop, and adding a ton of reverb on a snare accent before a chorus. Some of these ideas were made in reference to how other musicians play [make it sound like a “musician x” snare hit]. I noticed some more balance issues that I will address down the line. We discovered a plug-in that repeats a sound that we will use as an effect in the second verse of one tune. The group is happy with progress and keen to hear what happens next.
Appendix II: Reflection

Since 2009, I have assembled a portable recording rig, piece by piece, and made recordings in Dunedin. By becoming interested and active in local record productions I became aware of a local network of engineers and producers. These people have given me support and feedback and have recommended me for projects.

When I first recorded anything, approximately ten years ago, I recorded my group’s rehearsal with a handheld tape recorder direct to cassette tape from its built-in microphone. During this research I used a wide range of equipment, had virtually unlimited channel counts in my DAW mixer, and had virtually unlimited instances of signal processing. I have employed equipment and processes as spaces within which my abilities can develop, and by extending the range of equipment and processes that I used, I increased my capacity to develop more abilities.

The artists involved in this study showed enthusiasm for making music and records. Together we faced and overcame challenges due to the restrictions of equipment, space, funding, and personnel. As one production finished another started, each with completely different ideals, people, and preferences. I therefore felt that each production was like making my first record all over again.

In the last months of this study I contrasted this project with a production at Albany St. Studios. They had a greater selection of microphones, higher quality microphones, a wider range of inputs, higher quality microphone preamplifiers, higher quality A/D conversion, a range of outboard equipment such as compressors and equalizers, and many more monitor speakers. Also, I had greater access to the space, where there was a range of instruments and equipment, which all worked. I was able to work for longer hours, have fewer disruptions, and ask the staff questions. The monitoring stimulated the production process; sounds came together faster; it was a warmer environment; and I felt more relaxed. I found that I could explore the production at greater depths than on the low budget productions and that a wider range of choices opened up to me in this third studio.

Overall, these contrasting experiences of high-tech and low-tech productions raised more questions than provided answers. What would musicians do if they had access to big studios and better equipment? Would it perhaps be analogous to a film director moving from low to high budget productions? Future study in this area may examine existing cases and build upon them by challenging musicians and producers in this way.
Figure H1.1 - Studio3