

Challenging Hierarchies through Minimalist Music:
A Human Experience of Recording and Re-Composing
Australian Wildlife Sounds

Volume I

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of the requirements of the degree of
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Statement of Originality

This is to certify that the content of this thesis is my own work. This thesis has not been submitted for any other degree or purpose.

I certify that the intellectual content of this thesis is the product of my own work, and that all assistance received in preparing this thesis and all sources have been acknowledged.

No content produced by generative AI tools has been used in the preparation of this thesis.

Eleanor Brimblecombe

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First Nations peoples in Australia have cared for Country for millennia, sustaining living environments for generations. They have longstanding, ongoing traditions of oral histories and storytelling through song. I would like to pay respect to the Elders, knowledge holders, and communities who continue these practices today.

Abstract

For centuries, human survival depended on the categorisation of other-than-human animals into hierarchies of importance and value. Today, however, these human constructed hierarchies drive the degradation of the environment, the destruction of ecosystems, and the ongoing damage caused by climate change, threatening both the human species and other life on earth. Current research in the environmental humanities has sought to rethink the long-established hierarchical dynamic between humans, other animals, and landscapes, with a view towards developing more ethical, equitable, and informed understandings of environmental networks and environmental sustainability. This Doctor of Musical Arts project aims to link this environmental humanities work into human cultural practice by developing musical methods for destabilising human constructed hierarchies in compositions inspired by Australian wildlife.

Specifically, this dissertation and portfolio explores how Australian native wildlife vocalisations and behaviours, perceived through the filter of the embodied fieldworker/composer, mesh with the musical structures of minimalism. Through this practice-based methodology, the human composer, the recorded species, and the environment coalesce into acoustic compositions that communicate all three perspectives in a single, performed moment. The works I have created through this approach unsettle various ecological, social, and musical hierarchies — from humans over animals and ecosystems, to melody over texture, to narrative over scene. Although these creative works are based on Australian species and composed by an Australian composer, the method behind their compositions is conceptualised with a wider view of establishing strategies for

artists around the world to challenge hierarchies and ignite cultural change through their creative practice.

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Chapter 1 – Introduction

1.1 The Human, the Other-than-Human Animal, and the Environment

Long-held perspectives on the hierarchies of humans as superior to or more important than other-than-human animals (speciesism), or separated from other animals and hence “the default” species (anthropocentrism), remain influential in the zeitgeist (O’Neill, 1997; Bujok, 2013; Philo, 2017¹; Kasperbauer, 2017; Krings, et al., 2021; Caviola et al., 2022). Recent research in the environmental humanities has been working to rebalance ethical, scientific, and geographical attitudes towards other-than-human animals through dissolving the discrete categorisation of “human” and “nature” in the field of environmental history into new multispecies approaches (O’Gorman and Gaynor, 2020, p. 716), recalibrating the study of landscapes with new technologies and classifications of “living” habitats (Whatmore, 2006), and navigating the role of human agents in modern conversations about environmental custodianship (O’Neill, 1997). In fact, the use of the words “other-than-human animal” and “nonhuman animal” in this dissertation comes from ongoing discourse in the environmental humanities and is particularly informed by Price and Chao (2023). Humans are animals according to our understanding of science, therefore a sentence that makes a distinction between “humans and animals” is incorrect and is inherently anthropocentric.

¹ This is a dissenting opinion in the realm of political geography, criticising the more-than-human geographies for eliminating the “human” – however, it provides a useful (although colourful) overview of the work of modern geographers.

Despite these developments, the extent of the current distortion in human-nonhuman animal relationships is evident in everyday life. Examples range from industrial meat and fishing businesses; laboratory testing on nonhuman animals for medicine and cosmetics; the destruction of natural environments for mining and development; to backyard pet abuse and the use of bug spray.

Mechanisms that were once essential for our species' survival – categorisations between dangerous animals, food animals, companion/guard animals etc. (Rubin, 2000; Caviola et al., 2020) – have transformed into harmful hierarchies, currently working to our detriment. The resultant loss of biodiversity and the destruction of ecosystems threatens not only affected nonhuman animals, but the longevity of the human race (O'Neill, 1997). The anthropocentric mindset behind short-term human gain over long-term sustainability dictates that the value of non-human life depends on its industrial uses, such as with cows, fish, wheat, and trees (Frey, 2002, p. 287). Once these industries take hold, they cause environmental degradation and ecological decline that destabilises natural cycles and ultimately undermines human survival (Renner, 1997).

It is not a complete decentralisation of the “human” that is needed, but a reintegration of humanity into the categories of “environment” and “nature” in as many facets of life as possible. This rebalancing, a shift in attitude towards the role of humans in shared environments, has the potential to create a sense of unity, and therefore, hopefully, an urgency for panoramic survival that cannot be ignored. This DMA project integrates the sounds and behaviours of wildlife in environments with minimalist music (music that is itself hierarchy-defying) in order to interrogate the divisions between humans, nonhuman animals, and their environmental contexts.

1.2 Outline of the Dissertation

This dissertation's layout follows the order in which it was carried out; from delving into existing literature, to studying methodologies and developing methods, carrying out practice-based elements, and finding research outcomes through fieldwork and composition practice. Threads are woven through each chapter and section, building on themes leading up to the destabilisation of multiple types of hierarchies.

The next part of the introduction gives the rationale behind my role in this project. As the researcher, fieldworker, and composer, I was able to decide how much of myself and my observations to allow into various parts of the music and strategize depending on how this would impact the research goals.

Chapter 2 follows from the introduction in exploring current literature in main study areas, setting the foundation for my new research, examining possible gaps, and determining hierarchies to challenge. The four key areas analysed are environmental activism, zoömusicology, minimalism, and the use of nonhuman animal sounds in minimalist music.

Chapter 3 uncovers both the overarching methodology of practice-based research and the methods of field recording and wildlife sound transcription. These subsections deal with the systems and approaches of the research project as a whole, including the written and practical elements. There is a combination of theoretical and functional topics within this chapter, aimed towards performing research by developing the compositions.

Chapters 4 to 9 outline the six final compositions for this project, including in-depth documentation of the field recording scenarios, transcription methods, and composition processes of the pieces, as well as thorough reflections on their significance in regard to the goals of the thesis. The six pieces are:

- *Frantic* for Winds and Percussion,
- *Reed Warbler* for Saxophone Ensemble,
- *In the Reeds (with a Reed Warbler)* for Percussionist and Prepared Recording,
- *Grey Fantail* for String Quartet and Wind Trio,
- *Frog Almost* for Voices, and
- *Stay here longer* for String Ensemble.

These six chapters represent the findings and discussions of the thesis, tying together the content threads from the introduction, chapter 1, and chapter 2 into functioning pieces of music. As part of the practice-based methodology for this Doctor of Musical Arts degree, the compositions also stand as research outcomes themselves.

The final chapter is the conclusion, which summarises the main themes, target issues, gaps in research, and threads, then describes the innovation and significance of the compositional processes and outcomes. There are ideas that are recommended to be undertaken as future research, which are also outlined in chapter 10. This chapter answers whether the research goals were met, finishing the written element of the thesis.

As mentioned, this next section describes the approach to including myself as an active part of the project. This inclusion extends throughout all elements of the research and outcomes, and is grounded in human agency and creativity.

1.3 The Impact of the Human Composer and Researcher

Environmental issues are as problematic for humans as they are for other species of animals – we may only be seeing the first signs in more vulnerable species or species which live in more vulnerable habitats. The survival of all organisms, including humans, relies on their evolutionary niche. As mentioned, by degrading natural systems, human activity

simultaneously threatens biodiversity, ecosystems, and human survival. On the other hand, human endeavours to save specific species (turtles, pandas, regent honeyeaters and other popular targets) and specific environments (the Great Barrier Reef, the Amazon Rainforest etc.), can be seen as acts of human and planetary self-preservation. This more positive agency informs the inclusion of myself as an example “human” in this research project.

My goal as the researcher and composer behind this project, is to synthesise Australian wildlife vocalisations and behaviour with minimalistic compositions, resulting in human music that destabilises hierarchies, establishes new ways of non-narrative based thinking and listening, and interrogates the relationships between humans, other-than-human animals, the environment, listeners, minimalist music techniques, and music itself.

“Human music” is a term at the centre of zoömusicological research and debate (Head, 1997; McDermott and Hauser, 2005, p. 33; Taylor, 2017), but for the purposes of this project is called on to reference music written by (and mostly aimed towards) humans. As the human composer in this project, my experiences of the animals I have encountered are filtered through me into my music, and my perceptions of the scenes I experienced are a part of the compositional output. This is an orientation I deliberately embrace as part of this thesis.

Through the embodied practice of fieldwork, I have recorded native Australian wildlife sounds, which I have then transcribed and turned into instrumental human music. The composition processes for each piece were influenced by my experiences during the fieldwork, including my understanding of the target species’ behaviours, how I was feeling throughout the recording, my response to the sounds of the species recorded, and any other pieces of context that were relevant to my creative practice. These elements will be specifically described in later chapters.

The minimalist aspects I have incorporated into my musical practice include driving, long-form repetition with iterative processes; unison music that features a recorded bird as an element of the composition; mathematical, additive processes that are allowed to play out, sometimes through layering; blocks of elongated sonic atmospheres with micro-changes that encourage close listening; and music which is zoomed-in and lengthened by multiple times to offer an alternative sense of timescale. Each of these compositional manoeuvres utilises minimalist or quasi-minimalist techniques, whether heard solely or amongst other musical material, and all the other music in the submitted portfolio that strays from minimalist techniques was created with the use and impact of Australian wildlife behaviours and vocalisations. Through my fieldwork and compositional practice, I believe I have successfully produced a portfolio of works which demonstrate a commitment to equalising all of the voices amongst Australia's living habitats by challenging multiple hierarchies.

Chapter 2 – Hierarchies in the Field

2.1 Flagship Species in Environmental Activism

Human-caused climate change and environmental degradation (environmental pollution, mining, development of infrastructure, introduced species etc.) are leading factors in the loss of biodiversity in Australia’s ecosystems (Mackey et al., 2008; Bradshaw, 2012; Hobday and McDonald, 2014; Legge et al., 2023). Climate activists work hard to maintain the visibility and the public’s awareness of these issues using multiple methods. One of the strategies for localised activism is the use of specific “flagship species” as prime motivators for action and funding (Bowne-Jones and Entwistle, 2002; Home et al., 2009; Veríssimo et al., 2011). This strategy, while arguably efficient, tends to preserve narrow narratives of the key factors in ecological preservation and activism.

“Flagship species” (Walpole and Leader-Williams, 2002; Home et al., 2009; Verissimo et al., 2011), are similar to “charismatic fauna” (Macdonald et al., 2017). Their role in conservation and activism is to increase fundraising through their public appeal and marketability. The chosen species’ conservation statuses are usually concerning, but they could be receiving “undue attention, in terms of public and professional concern for their welfare and in terms of the research effort devoted to them” (Hosey et al., 2020) compared to other, overlooked species. They are chosen based on select attributes – conservation status, ecological role, location-related audience appeal, charisma, flexibility in representing a large range of other species, size, rarity, threat to humans, the orientation of the eyes, the fur and more (Dietz et al., 1994; Macdonald et al., 2017). As Walpole and Leader-Williams note: “it is a fact that ‘big, cute, and furry’ sells, and as much should be made of this as possible” (2002, p. 544). This model of fundraising has led to successes in some target areas

through increased sponsorship, donations, tourism, and changing local perceptions of the species (Walpole and Leader-Williams, 2002). Although flagship species are ideally chosen with benefits to their environments in mind, their use funnel attention (and therefore funding) away from broader environmental projects that tackle the root causes of biodiversity loss and negative environmental changes (Simberloff, 1998; Caro et al., 2004; Moynes, 2021). The dis-integration of environment and flagship species steers public focus away from the concepts of living habitats and multispecies approaches and towards only one or two species, creating the narrow narratives mentioned previously.

The existing rhetoric within activist endeavours also tends to strip animals of some agency and results in representative species being used as tools in a campaign (Edelblutte et al., 2023). There are many aspects to the lives of other-than-human animals that are often overlooked in wildlife conservation, management, and activism. To be specific, animal (including human) behaviours change, they have their own intentionality, and they have “context-specific and complex behaviors that are predicated on their sentience, individuality, lived experiences, cognition, sociality, and cultures” (Edelblutte et al., 2023, p. 1). Humans in environmentalist positions who overlook these factors can lack a sense of “kincentricity” (Bhattacharyya and Slocombe, 2017) and will often relate to animals with a subject-object mentality, influencing both the way they approach complex goals in wildlife conservation and the way the public engages with these efforts (Meyer, 2008, p. 1). They may not fully grasp that humans live in the same context-specific worlds as other animals, and that interactions within the complex webs that make up our social-ecological systems affect both humans and animals alike.

Wildlife and land management that considers the decisions and adaptations of all agents living amongst the land offers human/non-human cross-cultural approaches to improve current practices (Bhattacharyya and Slocombe, 2017, p. 2). This perspective is impinged on by patriarchal views which “normalize the objectification and instrumentalization of nature, thereby facilitating its exploitation and destruction” (Bossert et al., 2024, p. 1). There have already been successful projects that make use of “interspecies decision-making” and the understanding of animal “autonomy and individuality” (Edelblutte et al., 2023, p. 11; see also Boonman-Berson et al., 2016; Meijer, 2016). This shows that “the perception of animals as agents akin to humans within social–ecological systems is a perspective with much to offer modern wildlife management” (Bhattacharyya and Slocombe, 2017, p. 14). Taking cross-cultural, kincentric approaches could make conservation efforts both broader in scope and more efficient (Bossert et al., 2024, p. 1). In the context of this project, offering more agency to Australian wildlife, including acknowledging those extending their agency towards the researcher, can perhaps create new perspectives in activist rhetoric.

As native Australian ecosystems come under threat (Laurance et al., 2011), more must be done to reconceive the relationships between humans, other-than-human animals, and the living habitats around us. It is my hope that by focusing on my own kincentric perspectives of the non-flagship species I record, I might invite a pondering of the interconnectedness of whole environments and ecosystems (Beattie, 1996, p. 696; Moynes et al., 2021, p. 5). These changes in thinking could help to address the systemic issues that are causing climate change and environmental degradation, while supporting biodiversity conservation in a more comprehensive way.

2.2 Zoömusicology and Musical Appropriation

While this project touches on facets of the intricate web of fields under the zoömusicological umbrella, it does not have the scope to thoroughly explore some of the overarching questions raised by zoömusicologists. These questions include “is birdsong music?”; “can we participate in animal musics?”; “can animals understand human musical structures, or sing with us in a musically structured way?”; and many more. These questions have current, lively discourse driven by zoömusicologists such as David Rothenburg, Emily Doolittle, Hollis Taylor, Bernie Krause, Dario Martinelli, David Dunn, Milena Petrovic, Leah Barclay and more; the foundations of which are supported by recent historic discussion by researchers and musicians such as Peter Marler, Hans Slabbekorn, François-Bernard Mâche, Steven Feld, Luis Felipe Baptista, George Herzog, and Olivier Messiaen, to name just a few. Furthermore, the book *Nature’s Music* (2004), edited by Marler and Slabbekorn, is an excellent resource for learning about the mechanics, physiology, evolution, functions, ecology, and the science of birdsong.

One of the facets of zoömusicology that this thesis directly engages with is soundscape ecology. The term “soundscape” is defined by R. Murray Schafer as the sonic environment. Pijanowski et al. (2011a, 2011b) refine this to mean the collection of sounds that emanate from landscapes, using Schafer’s (1994) idea of encompassing all sound from natural to post-industrial. Alternatively, Connor (2014) cautions that it is not only sounds that make up a soundscape, but the relationships within the sounds – for instance, the dynamic listening and responses of animals.

Soundscape ecology is a new branch of ecological research that examines “the causes and consequences of biological (biophony), geophysical (geophony), and human-

induced (anthrophony) sounds” (Pijanowski et al., 2011a, p. 203; also see Krause, 2008; Farina, 2014) and emphasises the importance of their ecological characteristics in tandem with landscape ecology. Nature’s sounds can be indicative of the health of an environment (Krause, 2008; Pijanowski et al., 2011a) and have been found to be patterned and structured (Truax, 1996; Pijanowski et al., 2011a, 2011b; Monacchi, 2013; Farina, 2014; Krause, 2012). Since soundscapes can represent ecological health and changes (Krause, 2008), the field of soundscape ecology significantly contributes to climate change research (Krause, 2008; Farina et al., 2011; Galloway, 2014; Guyette and Post, 2015; Quinn et al., 2018) and animal species conservation (Laiolo, 2010; Browning, 2017; Wredge, 2017; Teixeira, 2019).

Soundscape and single species recordings featuring biophony, anthrophony, and/or geophony are not only crucial components of soundscape ecology (Krause, 2002; Pijanowski et al., 2011a) but are often used as a source of musical inspiration (Gomes et al., 2014; Martin, 2018; Walzer, 2019).

2.3 Overview and Definitions of Minimalism

Centred in New York in the 1960s, the minimalist movement emerged from a number of artistic, intellectual, political, multicultural, and spiritual corners (Rockwell, 1986; Blom, 1999). Some claim that minimalism was a reaction to the complex, abstract, expressionist, impressionist, and serialist musics of the 20th Century (Evans, 2013, p. 242). Minimalism broadly includes a variety of styles and approaches, all of which signalled the start of something new in music at the time (Bernard, 2003). It was, however, a short-lived movement: *“musical minimalism may have been destined for even greater transience than is*

usual for any music movement that comes into vogue, owing to its heavy dependence on a form of visual art that was in itself short-lived, and owing also to its rather narrow character" (Bernard, 2003, p. 130).

The term "minimalist music" has been rejected by some of the most notable composers under its umbrella (Reich, Glass), embraced by others (Adams), and is a debated term with a range of proposed definitions. Johnson (1994) categorises these definitions into three ideas – minimalism as an aesthetic, a style, or a technique.

The aesthetic route sees minimalism as "the conception of the non-narrative work-in-progress" (Broad, 1990, p. 51-52), with the teleological nature of most Western music absent (Mertens, 1983, p. 88), and a strong focus on listening to the process of the music itself. This sentiment is shared by Brian Eno, who expressed that minimalist music (or his own "ambient" extension thereupon) was "a drift away from narrative and towards landscape, from performed event to sonic space" (Ross, 2007, p. 517). This definition of minimalism describes the philosophy of non-linearity that I will be continually referencing throughout this thesis, but excludes many of the pieces that would be considered minimalist by other definitions.

The definition of minimalism as a style or genre attempts to draw minimalist pieces and composers together under one rubric, mapping out the specific musical elements that unify many minimalists and their works. In an article discussing style in music, R. J. Pascall (1980) breaks music into five parts; form, texture, harmony, melody, and rhythm. Johnson (1994, p. 748) describes how minimalism as a style works within these components of music:

- Form – Continuous
- Texture – Bright, energetic, interlocking rhythms/pulses
- Harmony – Simplistic, limited, slow harmonic rhythm
- Melody – Extensive melodic lines absent, scant patterns if any
- Rhythm – Short repeated patterns, rhythm is the primary interest

While this definition of minimalism lays a clearer roadmap for a minimalist composition, and extends further than strictly process-oriented music, it excludes pieces that do not have all of these characteristics, or that have additional features. For example, many of Arvo Pärt, La Monte Young, and Alvin Lucier's pieces lack the energetic rhythms, fast-paced pulses, and repeated rhythms of Reich- and Glass-style pieces. I take inspiration from both the energetic rhythmic/pulse-driven style described above, as well as the slower, more meditative, and experimental types of minimalism found elsewhere in the repertoire.

Minimalism viewed as a technique allows a more flexible use of the term, and for its use with other non-minimalist elements to be recognized. The technique of minimalism can be described by Glenn Watkins as a "general reduction of materials and emphasis on repetitive schemes and stasis" (1988, p. 572). Johnson posits that minimalist technique can be based on the previous style's five components, however only requiring two or more to be recognizably minimalist. For example, the works of John Adams often include long sections of bright, energetic, repetitive interlocking rhythms, with limited harmonic rhythm and absent melodic lines, informed by music from Reich and Glass before him. These sections are undeniably minimalist, yet do not always contain every minimalist element. They are also often accompanied by other sections of adapted and transformed minimalist elements,

as well as completely non minimalist music. To make clear the distinction between minimalist as an aesthetic, style or technique, Johnson draws the conclusion that “Adams has adopted the minimalist technique, but he has transcended the minimalist aesthetic and style through his expansion of these features and through his frequent use of extended melodic lines” (Johnson, 1994, p. 752). The distinction of using two or more elements to qualify as minimalist removes composers such as Mozart or Stravinsky from the definition, who, although they may use a simple harmonic selection or copious repetition respectively, do not combine these factors with other minimalist elements. This definition may not approach the deeper concepts behind minimalist aesthetics and rhetoricity, or the exact musical foundations of well-known minimalist pieces, but it does allow a broader use of the term, encompassing more of both older and newer minimalist pieces into its description.

My approach to the use of the word “minimalism” during this project is twofold – utilising the philosophy of the aesthetic approach, and the practice of the technique approach. I strive to harness the non-narrativity of minimalism, create sonic landscapes or vignettes, and capture the way that minimalism encourages a focused kind of listening, paying attention to the process or unfolding of the music. I believe this can be achieved by using minimalist techniques in **sections** of music, rather than necessarily strictly adhering to one idea for an entire piece (although I may experiment with this too). When I mention “minimalist techniques” I will be referring to the use of two or more of the stylistic features of minimalism listed by Johnson above, as well as the use of processes in the music. This could culminate in a continuous section of fast-paced, repetitive music with a strong emphasis on rhythm, slow music with long notes and static harmonic progressions, or other, different combinations of minimalist elements.

2.4 Minimalism as a Tool for Dissolving Musical Hierarchies

This project aims to investigate how minimalist musical styles can be used in conjunction with other-than-human animal sounds to address and break down hierarchies in tonal music that tend to result in linear narratives. Minimalism's distinctive qualities and multi-valence allows composers to explore alternative perspectives of music, the roles of melodic, harmonic, and rhythmic elements, structures, and performance. A minimalist approach allows the sounds of a piece of music to take on their own, new, independent agencies by moving away from narrative structures; an argument backed by Reich (2002, p. 14). By placing a listener in unified sound-worlds or scenes, rather than unfolding stories, minimalist music encourages different types of listening, often types that steer away from the typical narrative elements and hierarchies of traditional music (Wolf, 2024, pp. 57-62)². These factors provide opportunities to involve and experiment with natural sonic elements in the composition process, particularly the intricacies of the voices of animals and the forms/structures of their songs. That is, minimalism allows a shift towards locating natural aural **experiences** at the centre, or indeed the heart, of human musical and cultural practices.

Minimalist music has historical foundations in using sonic "found objects" as source material (Sion, 2013, pp. 262-265). Terry Riley's tape delay experiments epitomise this early development in minimalism music, resulting in pieces such as *She Moves She* (1963), the

² This is not to say that minimalist music is completely devoid of narrative or is incapable of telling stories. For more on the historical development of minimalism as it relates to narrative, see Pymm, 2013.

music for *The Gift* (1963), and *The Bird of Paradise* (1964). Steve Reich's early tape pieces join Riley's in demonstrating this use of found material, including *It's Gonna Rain* (1965) taking the words of a preacher on the streets of San Francisco, to *City Life* (1995) using everyday sounds of New York City. Further examples include Alvin Lucier's *I am Sitting in a Room* (1969) demonstrating the "found object" of the room's particular resonances. John Cage's *4'33"* (1952) has the audience's attention turn to the ambient (found) sounds of the performance location. Taking a "found object" approach provides a perfect opportunity for the incorporation of wildlife sound recordings and transcriptions into musical structures in this project. Existing examples of this will be discussed in depth at a later section.

Minimalist music also has innate similarities with animal sounds and ecological soundscapes themselves. Where minimalist music is often based in repetition (Delaere et al., 2004), animal sounds can be minimalist themselves, often repetitive (and sometimes iterative) over long spans of time (Price, 2013, p. 1002). Minimalist music folds together the concepts of melody and harmony into homogenous, rhythm- and/or timbre-based textures, similar to the layered soundscapes of dawn choruses, frog choruses, and insect choruses. In these choruses there is no foregrounding of individual species except through localisation, and no backgrounding of environmental contexts. This leads to the introduction of "noise" elements, both present in the contexts of opportunistically recorded animal sounds (geophony – leaves rustling, water rushing, gravel crunching etc.) and in the genre-defining work *4'33"* (1952) by John Cage (Antokoletz, 2014, p. 389), which focuses completely on the extraneous sounds one would not usually associate with music. In this way, minimalist music encourages alternative modes of listening, mirrored by the experiences of humans as they listen to nature. Minimalist music provides the landscape to platform new, animal-

informed musical concepts, and leaves room for its structure to be informed by extra-musical elements such as wildlife behaviour and calling patterns.

Minimalist music's capacity both to form cohesive bonds with natural elements and foster different listening practices, results from its unique musical language that subverts and defies traditional ideas of hierarchy. I will refer to Austrian music theorist Heinrich Schenker's (1868-1935) analytical approach to 18th and 19th century Western Art Music (WAM) to outline and define these traditional musical hierarchies. His definitions serve as a commonly debated and somewhat accepted viewpoint of WAM and the Western classical and romantic musical canon. These types of music, rather than popular genres, cultural music, or other types of music outside of WAM, are the comparison to minimalist music in this project, due to the similarities in acoustic instrumentation, tendency for on-stage performances, and minimalist composition's roots in WAM.

Schenker stipulates that musical depth is tied to the sounding of an overall harmonic sequence that is teleological in design – i.e., pulled toward a tonic (Schenker, 1906) – and "tonality is a hierarchical system" (Montgomery, 1994, p. 56). Foregrounded in this theory is the importance of large-scale harmonic progressions and multiple unique voices/lines. Musicological studies based on Schenker's foundations have allowed musicologists to "have a closer look at that dark kingdom of light which is the hierarchy of musical structure" (Khannanov, 2010, p. 109). Some musicologists suggest that the sense of hierarchy within music creates purpose, without which musical meaning would be "unthinkable" (Metzger, 1997, p. 57). Collectively these arguments show that the traditional tonal and chordal structures pull the music towards a tonic, creating a sounding narrative without words or

plot. Minimalist music is liberated from these conventional horizontal harmonic, and therefore narrative, tendencies, subverting the hierarchies that inevitably result.

The use of evolving repetition is particularly evident in Terry Riley's *In C* (1968), which relies on a unifying pulse and key, instead of the I-V-I *Ursatz* (foundation) of Schenkerian theory. The cells of music in this piece could be compared to Schenker's elaborations or "Auskomponierung," however no individual melody is ever heard. This is in keeping with one of the defining features of minimalist music – "the melodic aspect of the minimalist style is perhaps its most obvious characteristic: extensive melodic lines are entirely absent" (Johnson, 1994, p. 748). *In C* also has no pre-determined rules of bass notes with linear harmonic destinations, and no precautions given regarding register (Potter, 2002, p. 109), challenging Schenker's hierarchies further. Other than the woodblock metronome, there is only the slow addition and progression of overlapping segments that results in a mosaic of changing clusters of pitches and rhythms. This is idiomatic of minimalist music, as described by Fink: "[...] collapsing of voice-leading and functional hierarchies is one of the most characteristic features of minimalist tonality—a two-dimensional tonality which seems, even at its most blandly consonant, somehow flat and unreal, without perspective, stubbornly anti-illusionistic." (Fink, 1999, p. 127). Despite Fink's criticism, these elements are precisely what separates minimalist music into a hierarchy-breaking genre. Due to the absence of some of traditional Western art music's most relied-upon melodic and harmonic techniques, *In C* continues to stand as a timeless representative of the minimalist style (Johnson, 1994; Haskins, 2010).

Repetition similarly plays a key role in minimalism's interrogation of musical hierarchies, often replacing melody, harmony, or tonality altogether. In Steve Reich's *Piano Phase* (1967), one of his most well-known pieces, the prolongation of a non-traditional

chordal progression, carried by a rhythmically active wall of interwoven voices, engages and holds a listener's attention without the hierarchies of traditional harmonic structures.

"Reich replaces hierarchy with saturation: he relies on the tension generated by mass repetition to 'prolong' the weak dissonance of the minor seventh, [...]" (Fink, 1999, p. 126).

The concept of using repetition as the leading form of structure and substance is found in many of Reich's other works, as well as in pieces by Philip Glass (Pestana and Pestana, 2012; LeBlanc, 2024, p. 61), John Adams (Kleppinger, 2001; Palmese, 2019, pp. 14-16), Michael Nyman (Jones, 2013, p. 152), Terry Riley (Kleppinger, 2001, p. 81), and more (Heisinger, 1989; Leydon, 2002).

John Cage's ground-breaking *4'33* subverts musical expectations and breaks concepts of hierarchy in a more self-referential way. The hierarchy that Cage questions is that of "music" being different to, or more musical, than "noise," and whether listener's perspectives can change "noise" into music. The definition of "noise" has been discussed by Schafer in "The Soundscape, Our Environment and the Tuning of World" (1993, p. 199). He says "of the four general definitions, probably the most satisfactory is still 'unwanted sound'" – however, there are examples of "noise" being used in a broader sense (Schafer, 1994, p. 200). Cage's *4'33* invites the audience to take the opportunity to hear the background noise of the location and the sounds of the people around them.

Cage questioned the concept of "music" head-on, presenting an alternative view on whether definitions of music can be expanded to include "sound" and "noise," stating that "wherever we are, what we hear is mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it fascinating (1968, p. 25). This interpretation of Cage's quote is supported by Kahn: "He was known for introducing noise and worldly sounds into music. [...]" as well as proposing a mode of being within the world based on listening, through hearing

the sounds of the world as music” (1997, p. 556; also see Metzger and Pepper, 1997; Davies, 2006; Pritchett, 2009; Kruse, 2021). Cage eliminated the hierarchy of foreground (music) and background (noise), presented sounds as “just sounds, all equally valid” (Pritchett, 2009, p. 166), and thereby interrogated previous conceptions of the fundamental definition of music (Pritchett, 2009; Kruse, 2021). Other minimalist composers, particularly John Luther Adams in *Songbirdsongs* (2012), combine noise and music by weaving natural and urban locations and soundscapes into their compositions, or indeed focusing entirely on the soundscapes as the material of their compositions (Drever, 2002; Westerkamp, 2002; Truax, 2008). In many ways, “the backdrop has become the curtain.” (Fink, 1999, p. 127).

These examples of minimalist compositions and the accompanying techniques illustrate key ways in which this genre can defy musical hierarchies. The emphasis on aural experiences prompts alternative modes of listening, while similarities between minimalist elements and wildlife sounds show the potential for new musical structures. Minimalist composers have repeatedly defied Schenker’s hierarchical values through the use of harmonic inertia, driving repetition, and questioning music itself. There are still more nuanced contexts in which minimalist techniques can work with other factors to destabilise current systems and structures. The next chapter will reveal some of these deeper capacities of minimalist music, especially when meshed together with wildlife sounds.

2.5 Birdsong in Minimalist Music – An Analysis

While many composers throughout the history of music have transcribed or taken inspiration from the songs and calls of birds and other animals (Mansfield, 1921; Jensen, 1985; Petrovik and Ljubinkovic, 2011; Lanooij, 2018) only a handful of minimalist or

postminimalist (Gann, 2013, pp. 40-41) composers have incorporated animal sounds into their work. Examples include Jim Fasset's *Symphony of the Birds* (1960), Chris Merrick Hughes' "Slow Motion Blackbird" from *Shift* (1994) (an interpretation of a previously unrealised piece by Steve Reich), Daniel Goode's *The Thrush from Upper Dunakyn* (1982), and Marcus Coates' *Dawn Chorus* (2015). It could be argued that Morton Feldman's 1970 work *Madame Press Died Last Week At Ninety*, which includes cuckoo sounds, also falls under the umbrella of minimalism. These pieces take differing approaches to the use of birdsong and the utilisation of minimalist techniques in their music, offering digital remixes, iterative processes, and static representations. I will discuss the first three pieces mentioned, which feature sound-worlds dictated by the timbres and textures of tape-recorded birdsong; alternative ways of listening through repetition, process, and long pauses; and compositional direction from the behaviour of the animals themselves, resulting in minimalist musical structures.

Jim Fasset's *Symphony of the Birds* (1960) was part of the tape-recording experimentation movement that came to rise through the 50s and 60s, pioneered by Pierre Schaeffer, and transformed into repetitive music by Terry Riley, Steve Reich, and John Adams (Dart, 2011; Levoux, 2017; Palmese, 2019, p. 10). The three movements of the symphony are comprised of nothing but heavily edited field recordings of American birds. The first and third movements, *Andante Lyrico* and *Misterioso* can be considered minimalist due to the repetitive nature of the bird songs, the process of the composition, and the use of timbre and pitch as the primary focus (rather than melody, harmony, or rhythm). Fasset's piece steers away from common ideas of composed, narrative-driven music,

instead moving towards an appreciation for curated sound-worlds, developing timbral scenes with rich textures underpinned by the artefacts of early tape recording.

The intervals and pitches employed in these two movements are dictated by the birds, and although many calls have been edited beyond recognition, the delicate choice of included species creates a strong tonal identity within each movement. Despite the tonal identities, there are no discernible harmonic motions or single melodic lines in the movements, which means there is no pull towards a tonic note. Statements by birds overlap each other across varying registers, interrupting any melody that begins to become established. This is similar to Riley's *In C*, where the emphasis is placed on a vertical collection of interacting sounds rather than traditional musical layering and harmonic progression (Sîon, 2024, p. 246). Fassett's ability to establish a tonal identity within each section of the piece while withholding the allure of a harmonic progression or resolution to a tonic allows his music to explore complex sonic scenes without falling to the implicit hierarchies of narrative expression.

Despite the clear foregrounding and backgrounding of sounds in *The Symphony of the Birds*, the fact that all of the sounds come from recordings of birds lends the piece a sense of holistic self-similarity. Each layer has a role, whether a special effect, a main bird singer, or a harmonic mosaic, but they are also all "bird." Further, each aural environment invites the listener to simultaneously hear both the presented bird sounds and the material of the music – the edited tape. Prepared with an introduction of each individual bird song, the listener can almost make out the sampling and splicing techniques used in real time. The artefacts of the tape recording point to the reality of the recording artist, Jim Fassett, and his experiences and use of technology while recording. Similar to Reich's *Pendulum Music* (2005) and the aleatoric sounds therein, the listener can sense that Fassett was at the mercy

of animal decisions and the recording technology of the 1950s. The audible evidence of the use of tape brings the listener closer to the original recordings and the process of composition itself, opening the metaphorical curtain between musical creation and creator. The inclusion of the original, unedited tape recordings on the CD further opens this curtain while allowing the birds' presence to underpin all aspects of the music, unifying it.

Fassett breaks down multiple hierarchies, including those between composer and subject, composer and listener, the material of composition and the music itself, and the birdsong and human music. The piece is a deep and honest exploration of tape and birdsongs, which aims to first educate the listener on the sounds of the recorded birds, then use them in a process-oriented, material composition which emphasises timbre and texture the usual melody and chordal progression and engages the listener in a completely new mode of listening.

"Slow Motion Blackbird" from *Shift* (1994) by Chris Merrick Hughes was the first realisation of Reich's 1967 prototype composition, *Slow Motion Sound* (1967). The instructions on Reich's conceptual score read: "Very gradually slow down a recorded sound to many times its original length without changing the pitch or timbre at all" (Reich, 1967, p. 1). At the time, the technology required to achieve this was limited, and by the time it became widely accessible, Reich had "lost [his] taste for working with complex technology" (Reich, 2002, p. 26). Although Reich's idea was inspired by his interest in the extended sounds of spoken voice and speech melodies (Reich, 2002, p. 29), Hughes takes the piece in another direction. By slowing down the song of a blackbird, Hughes reveals the intricacies of avian voices; voices that are often too quick, high-pitched, and detailed to fully appreciate

live. The almost 6-minute-long piece uses iterative repetition to prolong the otherwise 3-second-long recording of blackbird song.

Between each repetition of the blackbird song, the distant calls of other blackbirds can be heard, and are also subjected to the slowing down in the piece. Their chorus acts as an example or hint of possible motivic development throughout the piece, particularly since the pitches of the calls are the same as the solo bird's. The inclusion of these background sounds places the solo bird in a natural environment, rather than a sterile place such as a recording booth.

A string accompaniment with solo violin guides the listener through the changes in each slowed repetition of the blackbird song, highlighting trills, wavering pitches, microtonal notes, and small pauses in the song. Although the addition of accompaniment differs from Reich's original concept, Hughes' repeated chord progression from I to \flat III emphasises the tempo changes throughout the piece and suggests a scene of tranquillity. The piece's use of harmony is not too different from Reich's *Piano Phase* (1967), with the process of repetition and phasing creating developments in the harmonic progression. However, instead of *Piano Phase*'s changing clusters of pitches based on phased phrases, "Slow Motion Blackbird" uses changing duration to suspend the 'resolution' of the harmony, and therefore engages listeners in a different way. The listener is shown how to listen to a blackbird through the consecutive slowing downs of the bird phrase in an almost educational format, while being allowed to simply enjoy the resultant details in the music and call. The process in the piece provokes a kind of meta-listening, wherein the listener hears the active composition of the piece and the result of the piece at the same time, a main goal of some minimalist composers (Reich, 2002, p. 34). This works well due to the extremely limited melodic material, which additionally allows for the theoretical concept the "speech-to-song illusion"

(Simchy-Gross and Margulis, 2018), which is itself another, novel, way of listening which pinpoints the ability of humans to transform unfamiliar sounds into “song,” given enough repetitions. At the conclusion of ‘Slow Motion Blackbird,’ there has been no unfolding story, just the extended, repeated experience of one blackbird call with accompaniment, encouraging listeners to learn the call the blackbird.

In the decision to use a recording of a blackbird, rather than the originally instructed recording of human speech, Hughes captures previously unheard complexities within avian language. He invites listeners to delve into the realm of the bird by slowing the birdsong down to speeds that humans are able to process. The details revealed in this process foregrounds the agency of the animal, perhaps encouraging a deeper respect for the capabilities of blackbirds, and birds as a whole.

The Thrush from Upper Dunakyn (1982) is just one of many thrush-inspired pieces by composer Daniel Goode. The 22-minute CD features a live recording of 11 hermit thrush (*Catharus guttatus*) calls transcribed for solo bass recorder. Other than the ambient sounds surrounding the church it was recorded in, the piece is mostly silence with the occasional thrush call. In a 2011 email, answering questions from Maayan Tsadka, Goode wrote: “it was more the ‘bird-form’ than the nature of the song itself that got me thinking about composition. In presenting the transcription, I was more faithful to the bird-form than the bird song, in which I had to alter register, approximate “microtones” from tempered, and decide in many cases to avoid a lot of the noise elements in the songs” (Goode, 2011, p. 1). The faithfulness to the bird’s natural singing structures (sporadic, unmetered, and limited in melodic content) interrogates human understandings of musical form and melody. It targets

the definition of “music” in a similar way to Cage’s *4’33*, and simultaneously offers a new way of listening.

The use of extended time between calls forces the listener to contemplate each heard call for a period of time before the next call sounds, similar to the experience of hearing the bird in the wild, or in fact similar to being the bird itself. The hermit thrush would likely have been listening to its surroundings during the breaks between calls, just as the audience are invited to do in this piece. It also allows the listener to learn each individual call, familiarising them with the vocabulary of the thrush in order to process the later repetitions in new ways. In some ways, the type of listening evolves with each call – what starts as the wonder of new sounds and anticipation for each subsequent call turns into recognising specific calls, and ultimately, due to the length of the performance, one may begin to disassociate from the conscious listening experience. This disassociated listening aligns with one of the primary outcomes of early minimalist pieces, including Cage’s *4’33*: “They move sharply away from the idea of requiring the listener to recognize goals and goal-directed motion and toward the notion of listening from a nonparticipatory viewpoint suspended in time” (Johnson, 1994, p. 745; also see Duker, 2013, p. 142). This type of listening, experiencing sound suspended in time, invites the listener to view every two-second statement of music as simultaneously a whole and a part of a series. A sense of narrative is not allowed to develop through longer melodies, harmonic movement, or tension and release. The drawn-out structure of the piece is framed as an elongated scene, rather than a story, and the stark lack of direction towards musical goals reinforces this. The hermit thrush-like bass recorder phrases simply exist alongside the listener’s existence, placing the listener in a non-hierarchical point of view.

Hermit thrush calls often demonstrate the use of the harmonic/overtone series; a quality noted for being similar to human music (Doolittle et al., 2014, p. 16616; Doolittle, 2020, p. 8). Rather than unpacking a coarse, raucous, or highly complex call, Goode presents the harmonic series, a natural (Schenker, 1954, p. 20; Wason and Brown, 2020, p. 16) and often heard phenomenon, in the way the hermit thrush uses it. Highlighting this specific species with its accessible vocal tonality provides an opportunity for listeners to learn and connect with the bird. Goode offers the bird an opportunity to be perceived as having significant musical insight and cultural worth, challenging the listener to change their assumptions of the bird's value.

The uses of birdsong in conjunction with minimalist techniques in these pieces have already yielded several very different sonic scenes. The textures, timbres, and some of the compositional methods in each piece have been directly determined by the recordings of the birds and their songs. In other words, the listening experience in each piece is dictated through a dual effort between both avian and human composers. The pieces take human listeners to bird-directed territories through minimalist techniques, which is an approach that I intend to follow. Minimalist techniques have been used to deconstruct birdsong to its core sonic features, leading the music into specific bird-directed territories. This is unlike the romantic use of birdsong in music, for example, Beethoven's *Pastoral Symphony* (Symphony No. 6 in F Major, Op. 68, 1808), where birdsong themes are used to decorate a tonal, aesthetically pleasing brook; or Rautavaara's *Cantus Arcticus* (1972) in which recordings of birds from the Arctic Circle are used as a sticker-like sound effect on top of otherwise wholly human music. Using minimalist music techniques is a compelling way to integrate animal

sounds into human music, lending the animal voices significant value in the composition of the pieces, and diminishing the separation between animal and human musics.

Pairing wildlife sounds with music is not a new idea; however, new musical emulsions of the two have the potential to grow and adjust to environmental needs, reach new audiences, and enact further change and awareness in modern times. Birdsong has historically been used in music for its aesthetic (Jaffe, 1995; Bowden, 2008) and symbolic (Harley, 1994; Doolittle, 2007) properties, but with the recent availability of sound recording and manipulation technologies, sound artists and composers have been able to amplify the voices animals and their relationships with their ecosystems to communicate about climate change (Barclay, 2017; Wodack, 2018; Ryan, 2014; Prior, 2022). Pressing environmental issues demand much more than the current economic and energy-based ideas of “sustainability” (Titon, 2009); they require a fundamental shift in human cultural practices (Plumwood, 2009) – a proposition that has emphasised the value of the arts (Eaton, 1998). This crucial view on how to move from studies and ideas to communication and action is shared and supported by Dunn: “Such attempts to increase our collective awareness of environmental issues by sensitizing us to the soundscape are now four decades old. So what’s next? Undoubtedly musicians, artists, scholars, and scientists will continue to use established practices and technologies to bring issues of the natural environment into foreground awareness through sound. They will also invent new techniques and tools for this purpose” (2008, p. 1). Ongoing research into environmental biodiversity monitoring and conservation, combined with the affective power of the arts, provides continuous, powerful opportunities to communicate with the public about vital issues facing our world.

Chapter 3 – Methodology

3.1 Practice-Based Research

My research falls under the principles of practice-based research, which Candy et al. describe as “a principled approach to research by means of practice in which the research and the practice operate as interdependent and complementary processes leading to new and original forms of knowledge” (2022, p. 26; also see Costello, 2022, p. 342). The flexible framework of practice-based research, as opposed to practice-led research, is particularly pertinent in the field of creative/arts research, as it places value on the relationship between research and practice, as well as the outcomes of creative work itself (Borgdorff, 2012; Sade, 2022, p. 187). Candy clearly outlines the expectations in undertaking a research project with a practice-based approach: “the outcomes of practice must be accompanied by documentation of the research process, as well as some form of textual analysis or explanation to support its position and to demonstrate critical reflection” (2006, p. 2). The documentation and analysis of my creative outcomes form the main written component of my thesis, while the creative works themselves stand as novel research outcomes.

The research element of this methodology, in my case, pertains to grounding my thinking and creative works in existing literature. Through critical engagement with major relevant fields (environmental activism, soundscape musicology, zoömusicology, and minimalist music), I have been able to refine my research goals and therefore refine my compositional practice. Specifically, studying the different ways minimalist musical practice disintegrates hierarchical musical structures has informed my creative practice over the course of this project significantly, allowing me to design compositions that directly address the hierarchical issues in environmental activism outlined in my literature review. Other

practical elements of this research included conducting fieldwork, making opportunistic recordings, and transcribing animal sounds. In this chapter I outline the scope of my fieldwork, my approach to recording in the field, and my approach to transcribing animal sounds in order to illuminate how source material for my compositional portfolio was derived through a process of attuning to the complexity and interplay of life in a range of Australian environments.

3.2 Field Recording

3.2.1 Fieldwork Rationale

Fieldwork aligns with one of the principles of practice-based research, placing myself “at the centre of the research” (Candy et al., 2022, p. 28). Rose and Robin assert that “the unit of survival is the organism in recursive and mutually constitutive relationships with its environment” (2004, p. 2). This is where embodied research, and for me, conducting and drawing from my own field recordings, is paramount. The animal/s, environment, season, time of day, weather, and my presence, mood, and interpretation of events are all factors that determine the outcome of a recording session and ultimately the resultant musical work. I am aware of these factors as I experience them, which fundamentally leads to the creation of a scene or sound-world which encapsulates as much of the experience as possible, rather than a linear narrative which may foreground and background certain elements.

Being in some of New South Wales’ natural places, listening to the surroundings with my own trained ears, and becoming part of the context of the environment, greatly enhanced my understanding of and connection to the recordings. I frequently witnessed natural processes and animal behaviours which I adapted into musical structures and use to

enhance the musical environment. I took in minute details from each unfolding scene, as there was little to no cognisable narrative present within the natural surroundings. Specific relevant experiences and contexts will be further detailed in later chapters. I took note of the differing features of a variety of environments; each element of an environment impacted the resultant sounds and animal inhabitants, including rivers and streams, boulders, rocky formations, tree/bush species and their leaves, weather, temperature, humidity, elevation, and other qualities unique to each place. This factors informed the decision to conduct my own recording fieldwork.

3.2.2 Recording Areas

The first step of planning my fieldwork was choosing a suitable timeframe for a month-long recording trip. The season would impact the fieldwork, as animals generally sing and call more in certain seasons – particularly Spring, which spans from September to November in NSW, Australia. I required minimal disturbances for my recordings, however my teaching job meant I could only do my fieldwork during the Spring school holidays, when many families would be camping. I therefore planned locations which were less likely to be used as holiday camping spots.

I decided on general locations based on the South-West direction I wanted to take. For the September 2023 fieldwork, I wanted to travel slightly inland from Sydney, and then South, heading towards Mt Kosciuszko (Australia's tallest mountain and only true alpine environment). I would then head more West and come back to Sydney through the ACT and

Canberra. I then located suitable recording locations near National Parks, rivers, the coast, forests, with Google Maps. I specifically planned to record in a broad array of environments.

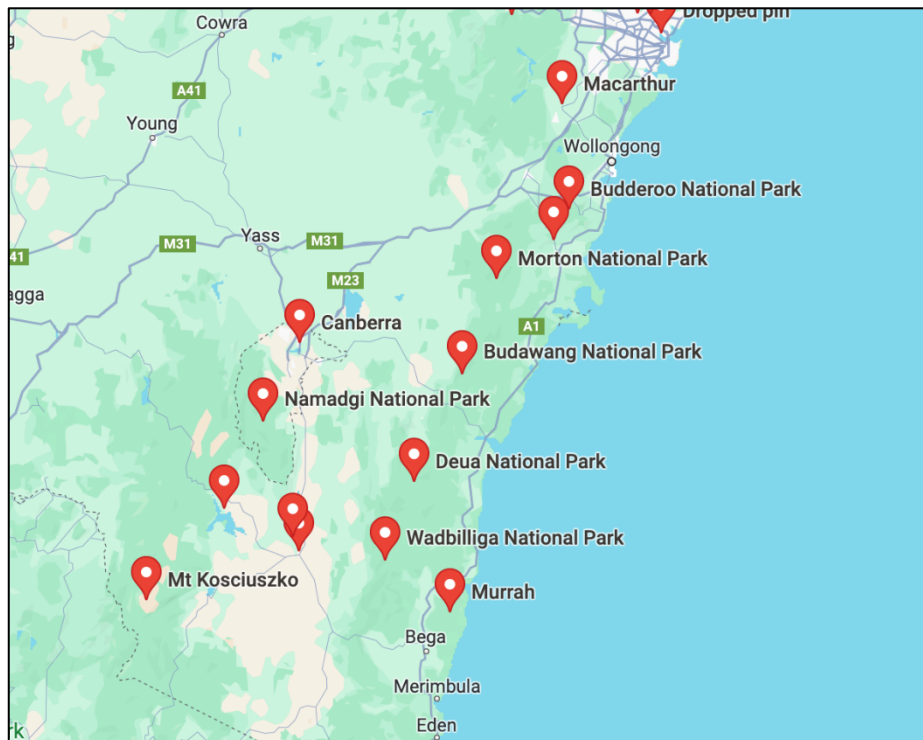


Figure 1: Planned fieldwork recording locations plotted on Google Maps.

Due to my previous camping experience, I am skilled in setting up a camp, surviving by myself, and taking safety measures. I prepared for fieldwork by downloading lists of animals found in each location, accessible from the NSW National Parks and Wildlife Service website³, and then selected specific camping locations based on my knowledge of likely habitats for these animals. Each campsite was located near places with multiple natural features, a decision based on the popular permaculture principle, the “edge effect.” Angelo Eliades from *Deep Green Permaculture* describes edges as “the boundary or interface between two biological communities (e.g., forest and grassland) or between different

³ <https://www.nationalparks.nsw.gov.au/>

landscape elements (e.g., land and water)” (Eliades, 2009). These natural interfaces often contain greater biodiversity, as species from each community or landscape element may be present, as well as others that prefer the niche of the “edge” (Harris, 1988; Laurance et al., 2007). My previous experiences, knowledge of camping safety, biodiversity preparation, and the edge effect all played significant roles in choosing good camping and recording locations.

I planned my trip on an Excel spreadsheet and a Word document. Once I plotted rough locations on Google Maps, I researched nearby national parks to set up camps. These campgrounds usually have ample space, are accessible by car, and offer ample amenities. I could then travel to other nearby recording locations from camp. In NSW, most national park camping grounds cost approximately \$7 per night, which contributed to my choices of campgrounds.

3.2.3 Apparatus and Procedure

Due to the travelling required for my fieldwork, I utilised a lightweight recording setup. The recording gear utilised during this project is described below. Specific recording contexts and my experiences in relation to each used recording are discussed in later chapters.

Zoom H5

The Zoom H5 is one of the latest battery-powered handheld recording devices produced by Zoom. It has multi-channel inputs, stereo and mono capabilities, and most importantly for my purposes, manual gain control. I carried the Zoom H5 by hand in most instances of individual species recording. I stood or sat still and pointed the recorder at my target animal/s by moving my arm, although this somewhat limited my movement. Bumping

the recorder or attached cables on any surrounding shrubbery, or any creaking produced by my wrist or fingers while holding it would impact the recording. However, its portability mean I could take it anywhere, including on sound walks, where I moved through environments and stopped to record as necessary. I also used the Zoom H5 with a small tripod in order to record dawn/frog/dusk choruses or ambient soundscapes for long periods of time. The tripod method also allowed me to remain hidden from view of any nearby animals, increasing the likelihood of them producing sounds.

Zoom H5 Stereo XY Microphone

The Stereo XY Microphone attachment comes standard with the Zoom H5. This attachment records soundscapes or areas with a wide panorama of sounds. The foam wind cover minimises wind interference and other extraneous sounds, as well as protects the microphones from wet weather and bumps.

Audio Technica Shotgun Microphone with Sony Parabolic Reflector

The Audio Technica mono shotgun microphone with adjustable gain and physical recording parameters (e.g., wide, narrow), in tandem with the Sony parabolic reflector, targets individual animals. The microphone itself only records a limited distance away; a parabolic reflector increases the maximum audio recording distance significantly while maintaining a pinpoint accuracy, allowing for cleaner, louder recording of distant animals. This enhanced distance enabled me to find a place to stand while recording, minimising disruption I may have caused in the environment through movement. In turn, I employed the foam wind cover on the shotgun microphone to decrease wind noise.

Samsung Galaxy S10 5G Phone with the "Sound Recorder" App

Throughout the project, both in and beyond fieldwork, I heard interesting wildlife sounds that I wanted to record when the only recording equipment I had access to was my

mobile phone. By recording in the moment on multiple occasions, using my phone, I captured a greater variety of incidental animal sounds. These recordings also happened to be in more urban environments, increasing the variety of habitats and species recorded. The audio quality of these recordings varied depending on the “noisiness” of the specific recording contexts. Some recordings required editing with Audacity (see Chapter 2.3.4), such as a high pass filter or normalisation. One of the main drawbacks of this method of recording is the auto-gain of the phone recording app, which levels out the volume, making loud noises and quiet noises all sound similarly loud. This can also sometimes introduce artefacts or misrepresent real sounds.

SD Card and Storage

The Zoom H5 has a maximum allowance for SD card space, which forced me to purchase multiple 32 GB SD cards. I transferred the recording files onto my laptop, Google Drive (an online Cloud storage facility), and an external hard drive to ensure I had multiple copies and backups.

3.2.4 Software

I employed several computer programs to open, analyse, edit, and transcribe my recordings.

Audacity (Version 3.0.3)

Once my fieldwork was complete, I loaded all of my recordings into Audacity, a free digital audio editor and recording application. Audacity is my application of choice due to its lightweight nature and ease of use. The application opens large files quickly and features simple playback mechanisms with a built-in optional spectrograph view. The identification of both high-quality recordings and the likely species making the call are enhanced and

accelerated by manual filtering through spectrograph visuals. Audacity also contains a host of simple editing options, including slowing down tempi, Paulstretching (Paul's Extreme Sound Stretch), fading in and out, and cutting. The full processes used for each piece will be more deeply explained in subsequent chapters.

Sonic Visualiser (Version 4.4)

This application assisted with transcribing animal sounds. It has multiple spectrograph viewing options, as well as an indicator of the frequency and pitch of any location on the spectrograph. The pitch indicator was beneficial as I do not have perfect pitch and could not always hear or identify a specific pitch in low, low volume, or noisy recordings.

Sibelius Ultimate (Version 2021.2 Build 3268)

Sibelius stands as my choice of musical notation software and is recognised as one of the three main industry standard notation applications along with Finale and Dorico. I have been honing my skills with Sibelius since I started using it in 2009, which makes it the fastest and most accurate way for me to creatively express myself while writing notated music.

NotePerformer (Version 3.3.2)

NotePerformer is a sound library with a playback engine based on artificial intelligence (AI). The high-quality sound of NotePerformer allows for a better listening experience when using Sibelius. The playback engine analyses notated music and “performs” it with musical phrasing, which enhances the realism of the sounds produced. Using Sibelius Ultimate with NotePerformer provided valuable audio renderings of my compositions, which I employed for conference presentations, sharing with prospective performers, and refining the works themselves.

3.2.5 Identifying Species

To identify the species of animals and insects recorded, I employed multiple strategies. As someone who enjoys being outside and has experience birdwatching, I was able to identify many species by ear or sight, such as the noisy miners, Eastern koels, grey fantails, gang gang cockatoos, and green tree frogs. For other species, I took note of any visible attributes, compared their sounds to known species, took environmental contexts into consideration, used my general knowledge of animals and naming conventions, and searched online for area catalogues of species and for audio recordings of likely candidates.

For example, in identifying the Australian reed warbler, I knew I was looking for a small bird that lived around rivers, near Cooma, and that had virtuosic singing abilities (I was not able to see the bird during my fieldwork). From my experience, I could tell it was not a water bird such as a duck, nor a parrot, or a bird of prey. I looked up a list of birds near Cooma, and a comprehensive eBird website list resulted⁴. From there I could search for a bird's name that mentioned singing, such as whistler, warbler, triller, or lark. The remaining options were white-winged triller, speckled warbler, Australian reed warbler, rufous whistler, olive whistler, golden whistler (although I could count out rufous and golden whistlers as I am familiar with their calls), Eurasian songlark, brown songlark, rufous songlark, and singing bushlark. From there I searched YouTube and Xeno Canto for examples of these birds' songs and quickly discovered that I had just recorded an Australian reed warbler.

This was the end of the process for most of the species I was unfamiliar with, however there was one species of bird and two species of frog that I was unable to identify

⁴ https://ebird.org/region/AU-NSW-CMO/bird-list?rank=hc&hs_sortBy=taxon_order&hs_o=asc

in this way. For these three species I asked trusted wildlife enthusiast friends for their input, then verified using Xeno Canto and FrodID.

3.3 De- and Reconstruction of Australian Animal Sounds

3.3.1 The Historical Transcription of Birdsong

Notating birdsong has historically been used as a method in both the natural sciences and music composition. Athanasius Kircher's *Musurgia Universalis* (1650) presents an early compilation of notated birdsong for the purpose of identification (Gunn et al., 1969). Other books and field guides with significant notated birdsong include William Gardiner's "The Music of Nature" (1840), Simon P. Cheney's "Wood Notes Wild" (1891), Charles A. Witchell's "The Evolution of Bird-Song" (1896), Ferdinand S. Mathews' "Field Book of Wild Birds and Their Music" (1921), Peter Szöke's "Ornitomuzikológia" (1963), and Olivier Messiaen's "Catalogue d'oiseaux" (1994-2002). For thorough reviews of the history of birdsong transcription as it happened alongside technological developments, see Taylor, 2008, and Mundy, 2018.

The use of graphic notation in field guides emerged as recordists sought alternatives to the limitations of descriptive language and conventional musical notation (Batchelder, 1903). A wide range of approaches were developed in the twentieth century, each incorporating elements of sound—such as pitch, duration, timbre, and rhythm—in different ways. Hold (1970) and Bruyninckx (2011, 2018) have outlined the challenges and shortcomings of both traditional and graphic notation approaches. Some argue that the structured framework of musical notation full stop is too rigid to capture the natural qualities of birdsong, therefore leaving graphic notation as a more flexible option (Batchelder, 1903; Bruyninckx, 2018). I agree that musical notation has drawbacks and

extend this logic to encompass human instrumental and vocal transcription as well. Music notation has undergone a lengthy evolution thus far, and yet it has limitations in concretising or prescribing the real sounds of musicians – an obstacle that allows musicians creative liberties when performing. Different types of graphic notation, in my view, can bridge some of the gaps left by musical notation, but each has its own limitations as well.

The difficulties in accurately notating birdsong, whether through musical notation or graphic notations, surface in my own efforts in animal sound transcriptions. One solution to this issue is to have alternative performance options. Acoustic instrumentalists increasingly perform alongside recordings, bringing wildlife sounds to the concert hall in a more accessible way. I will experiment with this technique, using technology to project the sounds of an Australian native bird into a concert hall. Another solution is to lower expectations for exact transcription. Musical notation for acoustic instruments or voice, as mentioned above, cannot achieve completely true mimicry, and therefore my own notations are not used for this purpose. My intention in my practice-based research is to incorporate these sounds into music in order to challenge and destabilise hierarchies, so my transcription and performance only needs to be close enough. The title of the piece, program notes, and verbal explanations alongside the transcribed and composed wildlife sounds will help to imprint the likeness of the target species represented in the music. More details about specific chosen notation techniques are given in later chapters about each piece of music.

3.3.2 My Transcription Methods

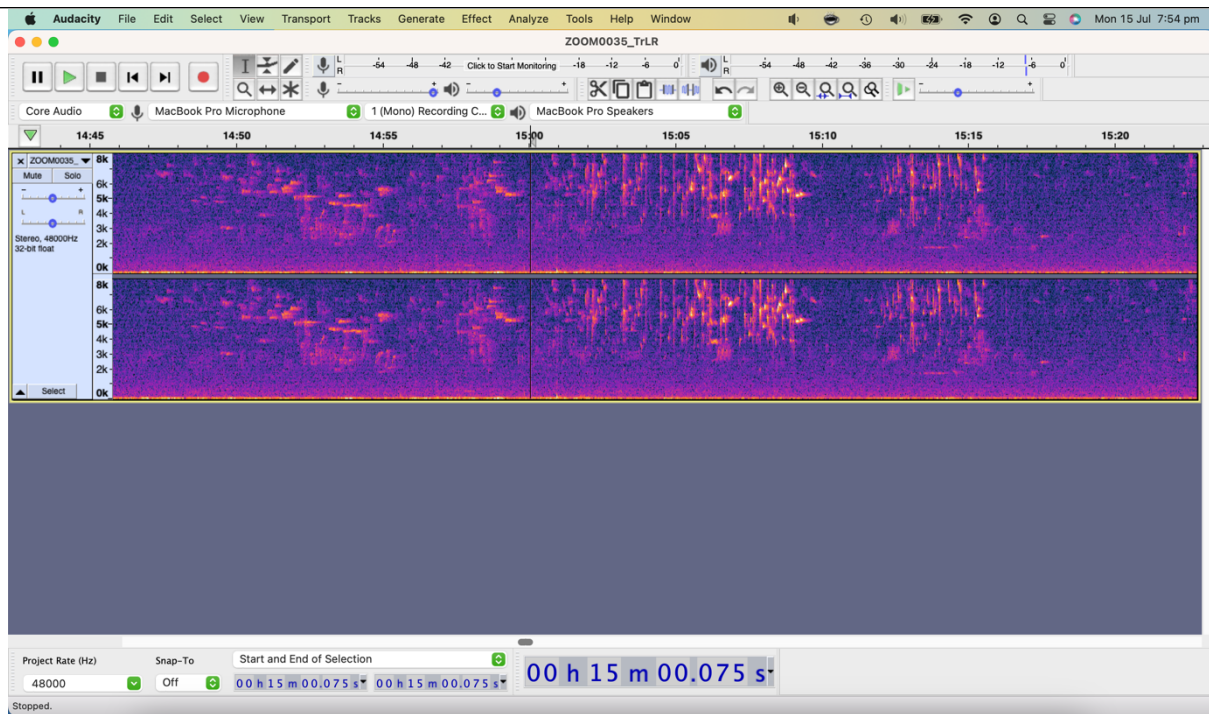
Through this project, the first step in transcription (and ultimately composition) varied per piece, often starting with a concept obtained from an experience in the field, from listening to a specific call and hearing possible musical accompaniment in my head, or

from conversations with others about their experiences with particular animal sounds. Once I concocted an idea for a piece of music, I went looking for a suitable recording in my Excel spreadsheet "Recording Catalogue," starting with a rough date based on my memory. For example, if I was particularly inspired by the raspy, interrogative calls of the group of apostlebirds (*Struthidea cinerea*) I recorded near a golf course I visited, I would search for the rough date I was at that golf course in my catalogue. From there, I would find the most likely Zoom files, and search for the moment with the apostlebirds on Audacity's spectrograph setting. It would be obvious due to the volume of the birds, and I would be able to make an educated guess about the sonic signature of the apostlebirds, based on my experience looking at birdsong spectrographs.

Suitable recordings for transcription include clean, clear samples of animal sounds, with limited geophonic and anthrophonic sounds such as wind or cars. Longer samples (1+ minutes) are ideal in order to amass a range of transcribable and useful animal sounds and calls. Due to the embodiment aspect of fieldwork, I can generally recall which recordings have the best samples, although sometimes audio artefacts can appear in recordings after the fact, as with my grey fantail (*Rhipidura albiscapa*) recording from the 27th of September 2023. I located this specific moment at approximately 15 minutes into the recording I made on 27th of September 2023. I knew this recording was high quality, because the bird had been flying around in a bush only about two metres away from me, on a still day, and it had been singing directly to me quite loudly. I had been anticipating a great recording when I had the chance to listen to it, but unfortunately the intensity of the grey fantail's song had resulted in quite strong sympathy tones, especially in its upwards swoops, so I was not able to use the recording. Transcription, however, could still go ahead to some extent. I had hoped I would be able to slow the grey fantail's call down enough to determine individual

notes, as it sings quite a fast and complicated song, but at a slower speed I would not have been able to tell which notes were the bird, and which were the unnatural sympathy tones generated by the microphone.

Figure 2: Screenshot of Audacity showing the spectrograph view of the Grey Fantail at ~15:00.



To transcribe some of the grey fantail's singing, I listened to smaller selections on repeat until I could roughly sing them. Repetition plays a large role in my transcriptions; in a previous project, I transcribed the complex calls of Australian magpies using repetition, and I continue to use this technique in my creative practice. Once I could sing a call, I would then open a new Sibelius file with my anticipated instrumentation and set the time signature to 4/4. I usually use 4/4 to start with, because it can be adjusted very easily. It doesn't already have such a strong musical "personality" that it takes over some of the creativity of the composition. Another reason is that it is a natural duple time for humans to walk or run along to, and play music along to, which could make it easier for a piece in 4/4 to be performed well on the first try.

Once my instrumentation and time signature were set up, I'd begin to place pitches ("rounding up" when necessary to avoid quartertones), and experiment with rhythms to achieve a close-enough transcription. A key signature could become involved once enough songs or calls had been transcribed to establish some kind of tonality, and if the time signature needed to be changed, that could happen iteratively. This "segmented listening → singing → transcription" method applied to all of the pitched animal sounds I used in my compositions.

Not all of the animal sounds I wished to emulate contained distinct pitches, which led to opportunities for creative problem-solving. For the piece *Frog Almost*, I developed my own method of graphic notation, and in *Stay here longer* I digitally edited (Paulstretched) the recorded gang-gang cockatoo (*Callocephalon fimbriatum*) calls to extract pitches which I could then notate. Both of these alternative methods will be more thoroughly explained in their relevant chapters.

3.4 Structure of the Following Chapters

In the following chapters, I will explain and discuss each of the six pieces of music I composed for the project. The first section of each chapter will outline the individual wildlife sound recording scenario/s applicable for the represented species, as well as any other relevant biological information. This is to ensure the accuracy of information regarding species dialects, to represent interspecies contexts between the target species and myself, and to explore whether there is any applicable established research on the behaviours or vocalisations of the target species. The next section will include the song/call transcription and/or manipulation process if it is separate from the compositional process.

Following that I explain the compositional practice and creative decision-making behind each piece. These sections will be the longest, outlining from rehearsal mark (RH) to rehearsal mark the musical elements and techniques used, as well as the rationales behind my leveraging of minimalist techniques. The final section of each chapter will discuss the extent to which hierarchies were destabilised through the use of minimalist music techniques and Australian wildlife sounds in each piece. This discussion highlights the ways each piece of music addresses the issues of hierarchical imbalances presented in the introduction.

Chapter 4 – *Frantic* (2023) for Woodwind and Percussion

4.1 Field Recording

My field recordings for this work were conducted over the span of a few years, in differing locations and at varying times of year/day.

The first movement features the sounds of noisy miners (*Manorina melanocephala*) captured from my mobile phone (Samsung s10 5g) at Victoria Road, Parramatta, NSW, at approximately 5:11am on the 14th of December 2021. This recording was not planned; I was doing laundry at a nearby laundromat when I heard them start singing. I placed my phone on the roof of my car parked outside, started recording, then continued to organise my laundry. Despite the impromptu nature of this recording, I was able to capture clear audio of the flock of local noisy miners singing their three distinct dawn chorus calls in unison.

The second movement involves the exact pitches and harmonics of what I believe to be mole crickets (*Gryllotalpa australia*). Unfortunately, I was unable to make a definitive identification as I could not see the insects. I made multiple recordings between 6:30-7:30pm on the 3rd of October 2022, just outside Lane Cove National Park, Marsfield, NSW. These recordings were conducted on the way back home from a walk through the nearby national park, and also with my phone. At first, I started by locating individual insects (that promptly stopped chirping when I was too close) and sitting near them until they started chirping again. With my ear only a few centimetres above the ground, I could hear the undertone of each cricket's chirping. My phone was also able to pick these undertones up, and so I went to five individual crickets and recorded their undertones and overtones at very close proximity.

The third movement predominantly features the Eastern/Pacific koel (*Eudynamys orientalis*). In my field recording trip in November 2020, I visited Connelly Park in Newcastle, NSW. At 5:00am on the 1st of November 2020, I recorded a pair of koels singing multiple calls – their rising “kooo-el” call, as well as their pair call/duet which comprises of a mixture of one bird with the rising “wurra-wurra-wurra” call, and another duet call with repeated shrieks. I recorded these Koels from my car, pointing the Zoom H5 recorder with the shotgun microphone capsule out of my car window.



Figure 3: The handheld Zoom H5 point at the koels in Connelly Park, Newcastle, from the car window.

4.2 Transcription

The first movement of *Frantic* incorporates the dawn chorus calls of the Parramatta subspecies of noisy miner bird. Transcribing these calls was a slow task, with most of the time spent on listening. I would select one instance of a call and listen to it on repeat until I began to hear individual pitches, then I would write these pitches directly into Sibelius software with computerised sound files from NotePerformer. For all three of these calls, three piccolos were used in order to promote intonation variance and a discordant, harsh, natural effect. There was a lot of checking the accuracy between the original file and the Sibelius/NotePerformer playback. Although using computer playback is not highly accurate to the timbre and subtleties of a live performance, it assists in creating a more accurate transcription than notation alone. I repeated this for each call, and each set of calls, until I had transcribed enough of a library of noisy miner calls to use as the basis for a piece of music.

Their dawn calls are in chorus, with three specific interchangeable patterns that repeat. The first, a fast three note pattern (semiquaver, semiquaver, quaver), sounded to me as though it was comprised of an F#6, Fnat6, and E6 cluster chord, with occasional additions or movements to include G6 and exclude E6. The second call was a slower, statelier group of three (quaver, quaver, quaver), with an inclination towards descending over the duration of the repetitions. This call is overall lower, comprising of approximately F6, E6, and D#6. The last call was another fast call, this time repeating a two-note descending motif (semiquaver, semiquaver) in quick succession, a variable number of times (although no more than six repetitions occurred in my recording). The notes involved in each pair of semiquavers were F6-E6, and Eb6-E6.

Moderately fast ♩ = 110

Picc. 1
Picc. 2
Picc. 3

ff

ff

ff

33

Picc. 1
Picc. 2
Picc. 3

mf

mf

mf

7

Picc. 1
Picc. 2
Picc. 3

mf

mf

mf

Figures 4, 5, 6: Transcriptions of the first noisy miner call (top left), second call (top right), and third call (bottom left).

Transcription for the second movement, *Mole Crickets*, was similar, although needed the aid of the “sonic visualiser” application to determine exact pitches. The individual insects had varying undertones and overtones, and most were creating these tones for a long, uninterrupted span of time. The one that had a different rhythm seemed to be “chirping” at a fairly consistent medium tempo, albeit with long gaps between bouts of chirping. This behaviour was taken into consideration in the notation of these calls. Another factor in notation was their reactions to me – as I walked or crawled closer, they would stop, which refocused my attention onto nearby crickets rather than the target individual. They would eventually restart once they had determined that I was no longer a threat. This distance-related perception of the crickets was relayed in the music by using extended techniques (with instructions written in each part and in the score) with the performers. By rubbing hands together, and creating “tss tss tss,” “ch ch ch,” or “sshhh shhh” sounds with their mouths, the performers create an atmosphere reminiscent of a distant field of insects. When the notated individual cricket tones falter and stop, this atmosphere continues, bringing the background into the fore.

The image shows a musical score for a percussion ensemble and saxophones. The instruments listed are Alto Sax. 1, Alto Sax. 2, Ten. Sax., Bari. Sax., Db., B. D., Cym., Tamb., and Crot. The score is in 5/4 time. It features several staves with musical notation and aleatoric instructions. The instructions include syllables like "tss tss", "shh shh", and "ch ch", and directions such as "continue sounds at own tempo, with occasional breaks of 1-2 bars." Dynamic markings like *mp* and *ppp* are also present. Some instructions specify "rub hands together" for certain sounds.

* all sounds repeated at irregular intervals

Figure 7: The aleatoric instructions that create the background (syllables) and further background (rubbing hands) sound effects.

The third movement, *Eastern Koels and Spotted Nightjars* required an instrument to be able to gliss between two close notes, in order to successfully mimic the “koo-el” calls of the Eastern koels. I used “sonic visualiser” to determine the initial and final pitches of the call, which was quite consistent and static over numerous incidents. The pitches were within

Figure 8: A shrieking mating call including the “wurra” call transcribed across many instruments, followed by a “koo-el” in the 1st alto saxophone.

a tone and involved microtones, however for ease of playing I “rounded up” to C5 and D5. I deliberated on whether bringing in one trombone for this purpose would be feasible, however I decided to keep this piece devoid of brass. I experimented with the alto saxophone, gaining advice from a saxophonist friend about how realistic the required glisses were. Ultimately, the saxophone was the right choice, as not only were the glisses possible, but they were also consistently repeatable and did not require a lot of stamina to perform.

Difficulties came when attempting to notate the rising “wurra-wurra-wurra” and shrieking mating calls. Reminding myself that my main goal was to create a “good enough” representation of animal sounds, I played with rhythms and notes until I settled on a few versions of the call based on a couple of the recordings. Splitting the “wurra” and shrieks sounds apart was a given, based on the duet-like nature of this short gesture from the birds themselves. Oboes, Eb clarinet, and flute were pitched high enough to produce the necessary “wurra” sounds, with the piccolo and oboe (supported by the alto saxophone an octave below) made the shrieks.

4.3 Composition

The piece started as a pure transcription of these calls, as explained. Once I was satisfied with the quality and accuracy of the transcriptions, my attention turned to contextualising the transcribed calls with human-music elements inspired by minimalist composers. The first consideration was location of performance, as I envision each new composition of mine in being performed in a physical space before committing to a strong concept. For this I originally decided to take lead from the birds and crickets themselves.

4.3.1 Movement 1 – Noisy Miners

Noisy miners call as a group, spread out amongst trees and houses in a suburb, creating a spatialised experience for a human listener. It sounded as though each individual bird sang cluster chords, so I decided to group piccolo players together, and spread them around a performance hall such as the Verbrugghen Hall, University of Sydney Conservatorium. This approach would also take inspiration from John Luther Adams' *Songbirdsongs* (2012), a similarly spatialised piece of music incorporating natural sounds. However, the lack of instrumentational variety, the subsequent diminishment of the audience experience, and the difficulty in performing the piece were issues that meant I needed to reconceive the piece.

The first attempt to boost the listening experience was to add some high-pitched, sparkly sounds; something a human listener would be engaged by. I chose crotales as a supplement to the piccolos. The crotales were also to play the transcribed noisy miner calls, albeit with a completely different timbre, faster attack and decay, and potentially more temporal accuracy due to an individual (rather than a group) playing chords. The crotales would echo the piccolos, as was sometimes heard in the original recording: noisy miners further away from my recording location would lag behind or start before the closer

individuals creating an echo. This interwoven, spatialised back-and-forth between a group of piccolos and the set of crotales was more engaging than the previous idea, but it lacked a sense of long-term structure, and was not complex or meditative enough to achieve the subconscious, focused listening that minimalist pieces often achieve. This problem was left alone for a few months, while I worked on other things.

Upon returning to the piece, I realised that I had become frustrated with my own strict adherence to a set of arbitrary rules that I had not cognitively realised. I decided to add more instruments and create an accompaniment that I felt characterised the transcribed calls in a way that somewhat suited the birds' behaviour and reflected the resultant human annoyance from hearing these repetitive, high-pitched calls at 4am on a Saturday morning. Firstly, the crotales would be difficult to play accurately at a balanced dynamic with the piccolos, so I reinforced them with glockenspiel. After a couple of statements of the calls from piccolo and crotales/glockenspiel, I developed an accompaniment. A fast tempo was necessary to accommodate the fast calls, which prompted me to create the incessant bass drum pulse for the first section from bar 22 to bar 33. Angry, loud clarinet/saxophone cluster chords in slower syncopated rhythms were my creative representation of the human annoyance. These syncopated chords interrupted the 4/4 timing and provided a contrasting rhythmic element to the repeated noisy miner calls. One of the main components of minimalist music is repetition, although not without change or reason. This particular section was repeated to solidify the noisy miner call as a musical theme, entrenching it into the audience's mind before the upcoming change. In many other styles of art music, this type of repeated, rhythmic noise would be an accompanying element to support a featured melody, rather than being the main feature itself. The idea of "repetition legitimises"

(Neely, 2017; Lyon, 2020) is used here to convincingly showcase the repetition itself as the independent fabric of the music.

From bar 33, I had a chance to change the existing block of music and introduce the second motif from the noisy miners. I kept this motif in the piccolos for the first iteration of this motif in the piece, and to create a seamless timbral and spectral transition from one section of music to the next. The second motif is slower, so I added a fast, shimmering accompaniment in the clarinet section. The arpeggios here are comprised of notes from the previous cluster chords, keeping a similar tonality whilst changing the feeling of the music. Due to the somewhat thin instrumentation in this section, I opted to have the crotales-glockenspiel echo play at the same time as the piccolos for added depth and texture. This layering also happens in the original recording, as the neighbouring birds will often sing in either echo or unison with the birds closer to the recorder.

After six bars of this new section with the second motif, I use the first motif section to transition to the next part of the music from bars 40 to 50. A thinner version of the arpeggiated accompaniment now enters in the saxophone section. The thicker timbre of the saxophones supports the introduction of the third motif set. These calls are less repetitive, with irregular rhythms and larger spaces between calls. They were also quieter, which is reflected in a change of instrumentation from the high sounds of piccolo and pitched percussion to the lower and more mellow sound of clarinets. The energy is still high here, just as the small birds were not finished with their dawn chorus. High piccolo squeaks represent the avian individual who was performing contact calls, rather than the dawn chorus calls. In bar 46, the accompaniment changes to a development of the rhythm from the second motif, securing a stable temporality for a moment. A few lower voices are added, such as bassoon, contrabassoon, bass clarinet, contrabass clarinet, double bass, and

low marimba. Here in the music, the attention turns from precise transcribed calls to human music with slightly more liberty taken, to prepare a listener for an upcoming change in musical atmosphere. This taste of what is to come lasts three bars before the piccolo group briefly reunites.

The first section then comes back for a quick reprise at bar 50, with the first noisy miner motif played by the punchy saxophone section. The cluster chord ends with a held note, punctuated by a single call by a solo piccolo and finally a percussive clap of the whip, tambourine, and crotales – a noisy miner swooping another animal and snapping its beak as it flies past. This is an artistic rendition of what I have witnessed in my time watching noisy miners, and it reappears several times throughout the first movement. Not only is its purpose to evoke the sudden and unexpected snap of a beak, but also to provide an element of structure to a later part of the movement.

From bar 57, the known motifs and a new motif are played one after the other by different instrument groups, while flutes and alto saxophones sustain parts of the cluster chords. This section serves as a wind down, thinning in instrumentation, which transitions to the next minimalist technique I wanted to borrow for this piece, Steve Reich's type of building repetition with phases of a singular motif.

The inspiration behind the material from bar 66 to 113 comes from multiple places. *The Augurs of Spring, Dances of the Young Girls*, a section from Stravinsky's *Rite of Spring* (1913), and Reich's *Music for 18 Musicians* (1976), *Different Trains* (1988), and *Electric Counterpoint* (1988) all hinge on heavy repetition and constant rhythm to create either a sense of tension, direction, or as a basis for other thematic growth. All of these pieces fed into my creative decisions in this part of my piece. I took the simple three-quaver rhythm from the second noisy miner motif and used it to form a staggered rhythmic drive, starting with the low reeds and working its way up to high clarinets and oboes. Harmonic movement is slow in all the aforementioned pieces; however, the harmony is not stagnant or static either. Interesting chords are built up in each piece, and rhythm and texture are constantly slightly modifying the harmonic background of each pieces' repeated sections. Therefore, as I introduced new voices to my own rhythmic drive, I chose notes which did not outright imply harmonic changes nor a harmonic stasis. Minimalist music has been described as listening to the process of the music being composed, rather than listening to the music itself (Johnson, 1994, p. 744), which is an idea that I acted on in my piece by staggering

The image shows a musical score for Figure 9, which is bar 68. The score is written for a woodwind ensemble and includes parts for Clarinet 1 (Cl. 1), Clarinet 2 (Cl. 2), Clarinet 3 (Cl. 3), Bass Clarinet (B. Cl.), Contrabass Clarinet (Cb. Cl.), Alto Saxophone 1 (Alto Sax. 1), Alto Saxophone 2 (Alto Sax. 2), Tenor Saxophone (Ten. Sax.), and Baritone Saxophone (Bari. Sax.). The key signature is one sharp (F#) and the time signature is 4/4. The score demonstrates staggered entries of ostinatos. The Clarinet parts (Cl. 1, 2, 3) enter with a three-quaver rhythmic pattern starting at different points in the bar. The Bass Clarinet and Contrabass Clarinet parts enter with a similar pattern starting earlier. The Alto Saxophone 1 and Alto Saxophone 2 parts enter with a similar pattern starting even earlier. The Tenor Saxophone and Baritone Saxophone parts enter with a similar pattern starting at the beginning of the bar. The score uses dynamic markings such as *f* (forte) and *p* (piano) to indicate the volume of the instruments. The notation includes stems, beams, and flags to indicate the precise timing of the notes.

Figure 9: Bar 68, demonstrating staggered entries of ostinatos.

entries by both bars and beats as they brought new notes to the vertical harmonic structure.

Once this repetitive framework had been set up, I added a more prominent, attention-grabbing feature, similar to that of the bass clarinet and strings in *Music for 18 Musicians*. Using dynamics to contrast the otherwise unchanging dynamics, I took the saxophone semiquavers from bar 40 and implemented them at bar 77 in the middle range of the clarinets. I also brought back the bass drum pulse from the beginning of the piece for a rhythmic symbol of change. This two-bar interjection intensifies in volume like the beating of a small bird's wings as it flies past a listener, before blending back into the background. It appears a second time at bar 81. The third time at bar 86, the clarinet semiquaver passage rises in pitch, transfers to the flutes and piccolos, and then falls into the saxophones, like a bird swooping around near a tree before abruptly landing on a branch with the increasing dynamics from the saxophones. A percussive beak snap interrupts the motion of the piece, then, after a surprising beat of rest (deliberately breaking the audience members out of the homogenous sonic atmosphere), restarts it again leading into bar 96.

From bar 96, the second noisy miner call is played again by the piccolos, with an echo in the flutes a bar and a half later. This time, however, it is more developed. Instead of plain repeating ostinatos as at the beginning of the movement, the call begins to descend in pitch while remaining rhythmically static. I decided to do this to create a more demented noisy miner character, partly inspired by the earliness of the calls in nature mixed with the idea of a human being woken up by them (as I have experienced myself) and listening to them while half-asleep. The timbre and dynamics of the piccolos and flutes in this high register, along with the accented quaver beats, forces this call to be the focus, over the established fog of overlapping rhythms and harmonies. That is until another beak snap

harshly interrupts. This is where the grumblings begin in the bass clarinet, contrabass clarinet, contrabassoon, baritone saxophone, and double bass.

Using the rhythms from RHs 25 and 50, the low reeds and double bass now signify either the sleepy, disgruntled human agonizing over the shrill calls at 4am, or the sinister undercurrent which mirrors the ruthless group-mobbing tactics that noisy miners employ when an unwanted visitor is in their territory (Arnold, 2000). Either way, these low voices moving in semitone steps represent something deep and inescapable.

Next, while the rhythmic ostinatos continue, a call-and-response between the 1st call in the piccolos and its more developed counterpart in the oboes and clarinets, also descending, occurs. The noisy miner calls are then layered into a duet, trio, and then quartet with the low voices added, before a crescendo into the slower climax of the movement, in 3/4 time at RH 113. This shorter section reprises the beginning of the piece, with the 1st call accompanied by clarinet and saxophone ostinatos and the bass drum crotchets. However, the slower tempo, the addition of dotted minims (long notes), and the lower pitches of the accompanying figures change the feeling to more of a surrender to the energy and bite of the calls. It gives way to the highest, most dissonant held note in the piece, performed by the piccolos at an unrelenting fortissimo, before diminishing into a quieter section set up by the bassoons and long notes with decrescendos in the saxophones and low clarinets.

The section from RH 126 is in more of a stretto in waltz style, in 6/8 time, with a mixture of major and minor tonalities. This section is meant to be lighter, a touch humorous and mocking, and somewhat confounding. The flutes and marimba sustain the 1st call motif, slower and at a lower register, displaced by a quaver beat so that the emphasis is on the

third note in the call, rather than the first. This is accompanied by tambourine on the first two quavers of each dotted crotchet beat - the only element that creates a residual feeling of urgency. At RH 133, a rhythmically slower chordal melody is introduced in the saxophones. This melody is slightly related to the dissonant accompaniment at RHs 25 and 50, but has its own character, and is in the key of G Major, clashing with the flutes' Fs and A flats, and the marimba's Cs. The chordal melody is a moment of peace and relief (albeit with a suspense-building suspended cymbal roll underneath) surrounded by uncertainty. It is then interrupted by discordant ostinatos when the clarinets enter with C#, F, and G, in a rhythm based on the 1st noisy miner call, with an added tenuto quaver to extend the motif and give more time to the dissonant lydian-esque harmony. These notes mix with the chordal melody to produce a harmony similar to the overtone scale (flat 4, sharp 7). Animal sounds are often comprised of elements of the harmonic series and overtones, giving this a somewhat naturalistic feeling.

Six quick, isolated tambourine hits follow, restarting the sequence, and bringing back in the chordal melody. This time the oboes and bassoons play the chordal melody, missing the first quaver beat to add some more uncertainty. The clarinet interruption is followed by the addition of the piccolos playing the 1st call in conjunction with the flutes, the saxophones playing the 1st call directly on beat 1, and the crotales playing on the second quaver of the bar in time with the clarinets. The slight phase shift in the saxophones in relation to the flutes and piccolos works to fill each bar with overlapping, dissonant semiquavers in quaver beats 1, 2, 4, and 5.

The texture is broken up in the transitional section at RH 152, where the chordal melody is made less tonal by using low, clashing harmonies with off-beat strikes from the high winds and cymbals. Again, reminiscent of the sections at 25 and 50, the bass drum re-

joins the cacophony, albeit in dotted crotchets rather than crotchets, slowing down the rhythmic speed of the piece. This, as well as the lone glockenspiel calls in bar 160, is the preparation for another *accelerando* into the reprieve of the movement at RH 163.

The section at 163 is the same as bar 20 for 8 bars, before leading into darker harmonies in the low winds and frantic arpeggios in the clarinets and glockenspiel. The urgent and incessant energy of the movement comes back at this point. A *decrescendo* and sustained rhythmic ostinatos in the marimba take the movement to a sort of *stretto*, where a further developed, more melodic version of the 3rd call is tossed around the ensemble (RH 182).

The saxophones start with the new melody, starting in the higher register of the altos, then descending into the tenor and baritone. This is then passed to the oboes and bassoons, then the alto saxophones again, then the clarinets. All the while, the glockenspiel, crotales, and tambourine maintain the energetic rhythm derived from the 1st call in retrograde. At RH 198, the oboes and bassoons bring back the semiquaver passage that represented swooping birds from bar 77. Without the context of the built-up tension from bar 77, however, it seems more relaxed. This is aided by the lack of dynamics fluctuation, and the rhythmic ambiguity of the percussion instruments. The semiquavers are passed from the oboes and bassoons to the saxophone section, and then the clarinet section. At bar 204, the flutes enter and a cadence similar to that of bars 45 and 46 occurs, bringing the music forward into the final sections. A condensed version of bar 46 happens at bar 206, the syncopated cluster chords come back, and then finally a dissonant chord is held underneath the final calls and trill of the piccolo. The long pause and trill sound decidedly unfinished,

because the second movement is yet to come, the day has just begun, and the birds will no doubt get up to some trouble.

4.3.2 Movement 2 – Mole Crickets

I started the second movement as though the listener has just come across a hill to sit on. The nearby crickets are not chirping, but the forest further away is full of insect sound. I chose a slow 5/4 for this movement, as in my experience, it lends itself to a feeling of free time that works, in a practical sense, with an ensemble of classical musicians. The aleatoric nature of the long pause in the first bar reproduces the perceived randomness of insect sound, wherein each participant has a constant pattern. I experimented with the “hands rubbing together” sound and the oral insect sounds (the syllables of which are ch, sh, and tss) at a rehearsal for another concert band that I am part of. The rubbing hands was very quiet, but still audible enough to produce a close-enough reproduction of distant insect activity. The oral syllables of different lengths and speeds were effective in portraying closer insects of different species. I combined them at the beginning of this movement, and had many players continue making these sounds throughout the movement. To add some more depth, more variety of timbres, and an element of spatialisation, the suspended cymbal player is to continue a quiet (changing between pianissimo to mezzo piano and back at random) roll of varying timbres (moving from the rim to the bell of the cymbal, using different parts of the sticks or mallets, etc.) throughout the movement. Once this background insect chorus had been established, it was time for the nearby crickets to start chirping.

Each cricket had a louder high pitch corresponding with a softer, undertone that was only audible when very close to the insect. I started with piccolo with flutter-tongue on a

high C for the higher pitch, and growled baritone saxophone on a low A for the undertone, beginning in bar 2. Flute and piccolo flutter-tongue requires more air than usual playing, so the high pitch of the first cricket is dovetailed between two piccolo parts to allow for more breathing. The growl on saxophone also requires more air, and so the undertone is dovetailed with a bassoon. Dovetailing the held notes cuts down the stamina requirements to replicate the continual sound of the crickets over 8 bars.

The second cricket to enter is the medium-tempo one. It also had two pitches; however, they were in less extreme ranges, and much closer together. The higher pitch (B natural) is produced by the Eb clarinet, and the lower (F sharp) by the 1st Bb clarinet. these notes are later transferred to the oboe and bass clarinet for timbral variety, to reduce the need for prolonged mental focus, and to perhaps include another cricket participant. The third cricket sound is brought in by the 3rd piccolo/1st flute (playing either a G or F# with flutter-tongue) and the tenor saxophone/2nd bassoon (playing a C with growl when possible). With these three crickets and the background sounding, the texture is full.

The next event in this movement is a slow-motion depiction of someone walking past nearby, starting at bar 232. The bass drum signals footsteps, starting quiet/distant, then growing slowly louder and closer. As the footsteps approach, each cricket stops chirping. The medium-speed cricket is the bravest of the crickets which continues chirping for longer than the others. It becomes the main focus once the longer chirping crickets drop out completely in RH 236. Once a fortissimo bass drum footstep happens, the medium-tempo cricket stops with a slight delay. There are a few beats of quiet at this point, bars 237-238, in which the audience can hear the background insects more clearly. The hand rubbing and oral syllables which have underpinned the movement are unaffected by the

bass drum footsteps. The medium-tempo cricket regains some sense of safety and makes a few more chirps before another fortissimo footstep reminds it that a human is still around. Then there is another bar where just background insects can be heard. The medium-tempo cricket starts up once more, and a forte footstep signals that the human is leaving the area, so it continues chirping.

Eventually, at bar 243, one of the other crickets joins back, followed by the next at bar 244 and 245. By RH 247, all of the crickets have the security to continue chirping. The crickets join back in in the reverse order from which they stopped. All cricket sounds from the first half of the movement are retrograded from bar 243 onwards.

The scene concludes with another human walking past from bar 252, with the crickets stopping as before (the retrograde of them entering at the beginning of the movement). This time, the background noise diminishes too, leading to the end of the movement – a single fortissimo bass drum hit. Ultimately, the static feeling of the movement, with one or two simple “story” elements inspired by both nature/my experience and John Luther Adams’ *Become Ocean* (2013). The coming and going of crickets and footsteps is similar to Adams’ slow rising and falling of waves in a timeless feel. The long form and minimal texture of the movement echo some of Adams’ decisions in capturing vast landscapes, except in my case it is to capture an extended time scene depicting how the crickets behaved.

4.3.3 Movement 3 – Eastern Koels and Spotted Nightjars

Being known as a bird person means that many of my friends will ask me for bird identification based on their recorded sounds and images. A frequent request for ID during the spring to summer months is the Eastern koel. These birds often start calling around

4am, waking sleeping humans up and making it difficult to fall back to sleep. I believe this is due to their rising, almost question-like koo-el call capturing human attention, mixed with the inconsistent and therefore unpredictable frequency of calls putting human listeners on edge. My goal in this movement was to replicate the sound and feeling of being woken by an individual Eastern koel, and by a pair of mating koels. There is a secondary theme based on the call of the spotted nightjar owlet, however I did not personally record any of these animals myself and will therefore spend less time talking about how I incorporated their calls.

The circumstances under which I recorded the Eastern koels played a large role in my musical interpretation of their calls. I had initially been looking for other species of animals and had almost given up recording altogether when I heard the koels. The lack of other animal sounds was significant to me, so I based the beginning of the movement on an otherwise silent early morning with a single koel singing. Alto saxophone was an ideal choice of instrument to embody the koel, due to its ability to pitch bend. Most of the other instruments in the chosen ensemble are unable to reliably and smoothly scoop/gliss from a C to a D. The slightly abrasive timbre of the alto saxophone was perfect to emulate the loud, cutting quality of koel calls. Therefore, the movement starts with a single alto saxophone playing the incessant calls of the Eastern koel, spaced out inconsistently enough to potentially recreate the 4am irritation. This fairly accurate replication of my recording experience could be likened to John Luther Adams' *Songbirdsongs*, given the repetitive and slightly aleatoric bird sounds. Unlike Adams, however, I force the audience to focus on one bird (with minimal accompaniment) for an entire minute and a half.

While the alto saxophone carries on, the bassoons and contrabassoon, and the bass clarinet and contrabass clarinet, take turns bringing in an accompanying idea at bar 269. Meant to signal the slow breathing or sighing of a human being awoken, the low reeds start with four-bar held notes which fasten to two-bar notes, switching between a low D and a low C. Once this crude bassline is established with consistent two-bar phrases, and other bass instruments are added, the second koel joins the sonic atmosphere.

The second koel, imitated by the oboe, performs groups of three quick notes, which each group ascending, as a precursor to the joint mating call. Mating calls between the two koels create a kind of hocket made of a) a “wurra-wurra-wurra” sound⁵, ascending, and b) high pitch shrieks which intersect the “wurra” pattern. Different groups of instruments perform this hocket, creating a loud, disjointed effect, punctuating the static koo-el call and lazy accompaniment with elevated activity. Each time the mating call occurs, the accompanying low reeds all play their Cs and Ds at the same time, creating an elevated moment of tension. The interjections of the pre-mating and mating calls build in different high-pitched instrument groups, continuing at odd intervals until bar 321.

From bar 302, the flutes present a flutter-tongue motif, similar in timbre to the previous movement, and underneath the main Koel calls and mating calls. The clarinets extend on the flute motif at bar 312, creating a harmonic progression. The harmonic material in the flutes and clarinets is not derived from animal sounds, and instead serves as more of a human-music accompaniment to the koels.

⁵ As described in Pizzey and Knight, “The Field Guide to the Birds of Australia” 2012, 9th Edn, p. 278.

The next animal sound added to this movement is that of the spotted nightjar, at RH 323. For these birds, I took audio reference from a recording by Bill Flentje of the AWSRG⁶. As I did not record any spotted nightjars myself, the specifics of transcription and notation are omitted from this dissertation.

The nightjar call is played by a solo flute, and accompanied by flute chords, creating an opening in the sonic texture and a change of mood. This more positive mood is welcome after the prolonged koel section; however, it does not last long. On the fifth repetition of the call (RH 330), other instruments join as the music devolves into a noisy, aggressive section of music.

The first four bars from 330 are a combination of noisy miner calls in the high winds, half-time nightjar calls in the lower instruments, and mating-koel sounds in the 2nd and 3rd clarinets, piccolos, Eb clarinet, and 1st alto saxophone. It is frantic, loud, and cacophonous. The next nine bars include more of the koel sounds in the oboes, and flutes, bringing this ascending melody to the focus. The slow chromatic crotchet triplets in the lower instruments, combined with the faster quaver triplets in the clarinet section are developments of the nightjar call, and drive the piece forward through rising chromatic harmonies. This section builds until RH 343, when a rhythmic ostinato based on the first noisy miner call appears in the saxophones and woodblock, and the rhythm of the cluster chords from the first movement is added to the low chromatic melody/bassline. The ostinato brings more of the sense of relentless urgency, while the low melody carries a sense of restless anger. Flutes and piccolos play the ascending nightjar theme, holding

⁶ Track 1, Audiowings No. 12, December 2004 "Spotted Nightjar (BF)"

clashing notes at the end of the call. This part of the music represents somewhat of a mental battle between dawn bird calls and sleepy humans. This is until the climax at RH 358.

At RH 358, there are two main themes. The first, in the low voices, is a slowed down version of the three notes from the first noisy miner call, and the second is a reinforced Eastern koel call upheld by the saxophones. The clarinets and baritone saxophone continue a chromatic upward trajectory, similar to the nightjar call, by playing semibreves in minor 2nd intervals, ascending a semitone each bar. After four bars of this, a modified noisy miner call is heard in the clarinets for two bars, then the previous four bars repeat with flutes and piccolos added for more intensity. This leads to a chord change at RH 370, followed by another at bar 372.

With the koel sounds now dominating the music, underpinned by the slowed down noisy miner call, we have reached the end of the battle. The birds have won through their shrill, unremitting sounds. The low voices which were representing the angry human have become part of the chordal structure of the piece, rather than an opposing force. Whether the sleepy humans decided to stay awake, or finally managed to go back to sleep, is up to the listener. A final series of minim triplets in the bass instruments and bass drum, accompanied by an almighty tam-tam roll, heralds the final section of the music. Noisy miners continue in the piccolos and crotales/glockenspiel, as at the beginning of the piece – none of the melodic development, chromatic modification, or rhythmic changes are present. The bassoon and contrabassoon, followed by the bass clarinet, contrabass clarinet, and double bass, play their alternating two-bar long notes as a reminder of the start of the movement. This is important, because the end of the piece is a more positive mirror of the beginning of the third movement, with little pieces of all the previous animal sounds included. This time, the Bb clarinets join the long notes in major thirds, and the glockenspiel plays the major third of the chord on the second beat of each bar.

At RH 386, the original alto saxophone Koel solo starts up again, and is maintained throughout the rest of the piece. The calls of the noisy miners, spotted nightjar, and the crickets are heard sporadically as the piece ends, with small melodies in the flutes and saxophones at various points. The slower tempo creates a relaxed feel, and all the different species make sounds in harmony. The piece ultimately ends with a repetition of the tied semibreve Ds in the bassoon section, along with the final few koel calls.

4.4 Destabilising Hierarchies through Music – Reflection

4.4.1 Movement 1 – Noisy Miners

The first movement of *Frantic* foregrounds the calls of the noisy miner bird, a species usually dismissed as sounding harsh or annoying. In doing so it questions aesthetic hierarchies of sound vs music, and which bird species' songs can be considered worthy of incorporating into music. The minimalist repetition and building of textures, especially in the first half of the piece, reinforce to the listener that the shrill and dissonant calls are worth listening to, and can be easily curated to create vivid sound worlds. The use of woodwind and percussion, layered with repeating noisy miner calls, departs from the traditional concert band instrumentation and musical roles of melody and accompaniment. The use of the cells of birdsong as the central material, rather than background noise or special effect, positions the birds as co-creators in this piece of music, unsettling usual composer credit conventions. *Frantic* shows that noisy miners are no less musically valuable than cuckoos or magpies, and that the foregrounding of their unique calls in repetitive, layered musical techniques can result in hierarchy-defying compositional outcomes.

4.4.2 Movement 2 – Mole Crickets

Consisting of only four elements, three of which are replications of insect sounds, the second movement of *Frantic* is the furthest away from traditional music that this portfolio deviates. Insects are frequently overlooked as valuable members of the animal kingdom, let alone creatures capable of making musical material, and I committed an entire movement of a work to them in the hopes of equalising this discrepancy somewhat. The background insect effects, performed by the hands and mouths of the instrumentalists, create a sense of location, depth of field, since ecosystem is an indelible part of an insect's world. The bass drum footsteps fortify this feeling of location and depth, fading in and out as the person walks closer and further away from the mole crickets.

The mole cricket tones come in two varieties; the sets of elongated, fluttered or growled tones, and the measured, repeated quavers which occasionally pause and resume. While the longer tones are passed between different groups of instruments, there is no discernible rhythm or pulse. The measured quavers are the same tempo throughout the movement, but because they stop and start randomly, there is no development of pulse. The timelessness of both these mole cricket emulations is reinforced by the inherent metric vagueness of a slow 5/4 time signature. As in *Stay here longer*, discussed in greater depth later, a sense of timelessness challenges the idea of human perception of time being the default. These features, focusing in on insects, including an interconnected sense of location, and omitting a feeling of pulse, all work to portray a very specific scene – the local mole crickets are making sounds, but they will become quiet when you walk past. The simplicity of the scene matches the way it is portrayed in the music to break notions of the value of insects, their sounds, how time might be perceived for smaller beings, and how minimalist music can be used to represent them.

4.4.3 *Movement 3 – Eastern Koels*

Depicting the calls of the Eastern koel in order to irritate listeners was a choice I made to demonstrate a couple of points. Firstly, that an alto saxophone can do a very good imitation of a koel. This shows that transcribing birdsong, even repetitive, non-musical contact calls, works well as a way to communicate about and with projected other-than-human animal sounds (which is more humane than capturing the bird in a cage and forcing it to sing). Secondly, that a performed representation of a bird's call has the potential to cause some kind of reaction in a listener, implying a relationship or dynamic between the sound originator and the receiver, defies the expected roles. If the assumption is that humans are superior to other animals, how could a bird have power over a human? Yet, through repetition and a performance format, the Eastern koels of Connelly Park may sincerely challenge that assumption.

Chapter 5 – *Reed Warbler* (2023) for Saxophone Ensemble

5.1 Field Recording

The basis for this piece was one recording conducted at Pilot Creek Road on the 23rd of September at approx. 1:30pm during my 2023 fieldwork. I started this session on the Eastern side of the Murrumbidgee River, but encountered a lack of vocal wildlife, as well as the prohibitive volume of the river rapids, rushing at high speed due to nearby snowmelt. I packed up and ventured to the other side of the river, further away from the rapids, stopping my car every 50-100 metres to see if I could hear any distant calling or singing. The car I hired for this trip was a hybrid RAV-4, a perfect car for the job, because travelling at low speeds was almost silent thanks to the electric vehicle (EV) mode. I was able to crawl along with just the sound of crackling gravel under my tyres, making minimal disturbance by the riverside ~100 metres away.

Eventually I could hear a bird singing incessantly, echoing off the trees and the riverbanks. I prepared my recording gear and walked very slowly towards the sound. I carried my Zoom H5 recording with a shotgun microphone attached to a parabolic reflector, with the excess wires wrapped around my neck and shoulders to avoid snagging on branches or long grass. After a couple of failed attempts to station myself near some bushes, I stood up, walked closer to the source of the singing, taking one small step every two or so minutes, until the microphone was picking up the bird's song loudly and clearly. I could eventually sit down and unravel the cable quietly.

It was an Australian reed warbler (*Acrocephalus australis*), and while I could not see it tucked away in the reeds by the river, it had a lively presence that wholly captured my

attention for almost half an hour. The resultant recording was the highlight of my 25-day September fieldwork and inspired this piece of music for saxophone ensemble.



Figures 10, 11: The view from behind the microphone (above) was only reeds and grass, as I sat still with my back to the sun for half an hour (right).

5.2 Transcription

The transcription process of the piece was similar to that of transcribing the Noisy Miners. At first, I opened the file with Audacity and isolated a 15-minute section of the recording that was the highest quality with minimal disturbances (i.e., without water rushing, wind blowing, my wrist or body moving). All of my transcriptions came from this smaller section. I then opened a new file on Sibelius and entered the instrumentation for the Conservatorium Saxophone Ensemble. With this blank canvas ready, all I had to do was repeat the individual “cells” of calls within Audacity until I was able to hum the pitches and rhythm to myself.

From this audiation, I was able to transcribe the calls into the Sibelius files, simplifying rhythms and “rounding up” when pitches were not discrete values.

My knowledge of woodwind playing helped in decision making regarding the balance between playability and loyalty to the original birdsong. Once I had 19 calls (an arbitrary number that I felt would be enough to develop into multiple styles and musical atmospheres) transcribed onto random saxophone staves, I could begin composing the music.

The image displays a screenshot of a music score in Sibelius software. It features ten staves, each representing a different saxophone part. The top staff is labeled 'Kopon Saxophone' and includes a tempo marking of '♩ = 120'. The subsequent staves are labeled 'Kopon Saxophone', 'Alu. Saxophone', and 'Alu. Saxophone'. The score shows musical notation for saxophone parts, including a prominent melodic line in the top staff and various rhythmic patterns in the lower staves. Measure numbers 123 through 137 are visible along the bottom of the staves.

Figure 12: Screenshot of Sibelius showing the reed warbler calls transcribed onto saxophone parts.

5.3 Composition

From my point of view, the bird was running through its vocal repertoire in quick succession from songs comprised of repetitive cells to more sporadic, arrhythmic calls. While composing the piece, I decided to draw inspiration from the chaotic segmentation of its train of thought that I perceived and used the organised transcribed calls in varying musical scenarios. As I started to group certain calls together and loop them, three main sections of music revealed themselves.

The first section was the beginning of the piece – three of the calls played together and repeated. I wanted this noisy sound to start in a similar way to Robert Davidson’s *Spin* (uploaded to YouTube in 2013). His description of the piece summarises the musical technique employed; “A loop gradually grows from a blip into a two-bar pattern, piles up, then gets sucked back up into the blip” (Davidson, 2013). This way of announcing an ostinato removes some of the inherent hierarchy in many other examples of rhythm/drive-based minimalist pieces⁷. Rather than establishing a groove then layering voices one by one, all voices are present from the beginning. Steve Reich achieved similar removal of a melody/harmony/bass/percussion framework in *Music for 18 Musicians* and *Variations for Winds, Strings and Keyboards* (1979). He starts both pieces with all the necessary texture instruments playing at once, with no initial introduction or starting with a drone or metronome. Even the additive rhythm melodies in *Music for 18 Musicians* and the broad waves of brass notes underneath the ostinatos in *Variations for Winds, Strings and*

⁷ See: *In C* (1964) by Terry Riley, *Mad Rush* (1989) by Philip Glass, and *Drumming* (1971), *Piano Phase* (1967), and *Music for Pieces of Wood* (1990) by Steve Reich.

Keyboards are present from the first seconds of each piece. This establishes a cohesive scene from the start, instead of introducing new elements one by one.

The major difference between Reich and Davidson's pieces is that in Reich's works the rhythmic drive is present from the beginning, along with the voices upholding it. In Davidson's approach with *Spin*, the rhythmic drive is created over time through the use of constant restarting and varied play lengths of each repeat. It is still a prolonged introduction of a greater element, except it upholds the whole sound as a monolith, and the ever-changing rhythmic drive is a by-product of the compositional technique.

To achieve this technique with acoustic instruments rather than an edited audio recording, there were limits on how small I could make each repetition of the two-bar loop. I decided to start the loop at a slower tempo than the final tempo, with semiquavers as my smallest denomination. The piece starts with the first semiquaver of the loop, followed by the first semiquaver again plus the next semiquaver, and so on until the full two bars had emerged. From this point, I could establish the driving ostinato and increase the tempo to the desired range (crotchet = ~135).

Once the ostinato was almost in full effect, from bar 11, I began to bring in the one non-animal motifs of the piece: chords composed of a dotted minim with a crescendo leading to a staccato crotchet, followed by rests, then an accented long note. This then repeats in a lower register.

25 Moderately fast ♩ = 110

Musical score for saxophone section, measures 25-30. The score is arranged in a grand staff with nine staves, labeled on the left as Sop. Sax. 1, Sop. Sax. 2, Alto Sax. 1, Alto Sax. 2, Ten. Sax. 1, Ten. Sax. 2, Bari. Sax. 1, Bari. Sax. 2, Bass Sax., and Cb. Sax. The music is in 4/4 time and features a chordal motif. Measures 25 and 26 show the initial chordal structure with dynamics *p* and *mf*. Measures 27 and 28 show the motif continuing with dynamics *mf* and *p* to *mf*. Measures 29 and 30 show the motif concluding with dynamics *mf* and *p* to *mf*. The score includes various musical notations such as slurs, accents, and dynamic markings.

Figure 13: The chordal “human” motif in *Reed Warbler*.

The rationale behind including a chordal motif, unlike anything the Reed Warbler produced, was firstly to provide contrast to the bird's restless singing, and secondly to add an element that a human audience might be more able to connect with. Perhaps this longer, slower motif was a subconscious effort to depict myself in the music. The rhythm could be compared to somebody breathing in, holding their breath, then sharply exhaling, similar to the breath holding I was likely doing while sneaking up to the river in order to record the bird. This motif is one of the only mainstays in the composition, linking sections together and returning at many points throughout the piece.

From Bars 12 to 21, the ostinato continues and is joined by lower saxophones. The breathing motif is put on hold to accommodate sweeping low notes, and the end of the introduction is reached with a climax. As the climax fades, Soprano Saxophone 2 plays a new transcribed call, foreshadowing a later section of the music.

In the next section of the music, I used four of the calls to start a new, more thickly layered ostinato. Beginning with the full breathing motif at bar 25, different saxophones play the calls at different times. This arrangement of calls is the most similar to the performance of the bird: one call at a time, performed as small solos. Before long, however, the calls stack up on each other, creating a low-pitched, rhythmically dissonant groove underneath the breathing motif, heading into bar 41. The development of this section is more similar to the layered voices of *In C* by Terry Riley than the aforementioned works by Steve Reich. The lower saxophones, from tenor down to contrabass, maintain the groove while new voices are brought in with different ostinatos. First the alto saxophones join the mix, with a two-bar phrase split between the two parts bar by bar. This ostinato quickly quietens to blend with the other voices, creating an active, restless texture.

Next, the tenor saxophones break away from their previous ostinato with a new one, alternating between parts at a forte dynamic. Again, once they have announced the new call, they fade back into the groove. Lastly, the soprano saxophones enter with their call at RH 52. Unlike the other layers, the two instruments play in dissonant harmony, sounding for approximately four beats before resting for an amount of time. The design of the soprano saxophone parts here is a deliberate nod to the bass clarinet and violin parts in Reich's *Music for 18 Musicians*. Each call fades in and out, lasting for approximately the duration of one breath, and resting for around the duration of an inhalation.

A raising of pitch (bar 57) across the ensemble precedes another change in texture at RH 61, one more similar to the "chorus" in upcoming sections. Using previously established ostinatos, the texture remains active while becoming muddled at RH 64. This leads into the falling transition to the "chorus." By repeating the falling motif three times, I hark back to Indian classical music with the "tihai," where a thrice-repeated small fragment of music signals the conclusion of a musical section and acts as a cadence into a new section (Lipiczky, 1985, p. 159).

The chorus is a contrasting tonal section that repeats a few times throughout the piece. At RH 82 it is set up for the first time with the bass and contrabass saxophones repeating a new motif as if it were a blues or jazz bassline. The alto and tenor saxophones then develop an accompanying theme. Much like Reich's growing themes in *Music for 18 Musicians*, the alto and tenor saxophones substitute rests for notes, adding two semiquavers each repetition. A third accompanying ostinato is introduced at RH 79 in the 2nd alto and 1st baritone saxophones. It fills in the first halves of bars, while the previous ostinato focuses more on beats 3 and 4.

The image shows a musical score for three saxophones: Soprano Saxophone 1, Soprano Saxophone 2, and Alto Saxophone 1. The score is in 3/4 time and features a repeated falling motif starting at bar 69. The motif consists of a descending eighth-note pattern. Dynamics include *f* and *ff*.

Figure 14: The thrice repeated falling motif starting at bar 69.

Additionally, at RH 79, I curated a jazzy soprano saxophone solo, comprised completely of the strung-together calls of the reed warbler. The decision behind making a solo part, a foregrounded melody against a background, in this exploration of minimalist techniques, was to lend some of the music to the true form of the reed warbler calls. The bird's connected phrases of similar and dissimilar cells of music seemed not so different from a long-form improvisatory jazz solo. I took inspiration from the form and drew parallels between these two types of musicking, the bird's and the jazz soloists'. At RH 78 the solo is passed to the 1st alto saxophone, with a similar first bar followed by different connected motifs. The orchestration of the accompaniment changes slightly to better support the alto saxophone melody, but the musical material remains unchanged throughout the entire two-solo chorus.

While the next two sections of the piece feature more repetition of selected motifs, they aren't necessarily minimalist in style. RH 97-107 acts as an outro to the chorus, and RH 117-115 is a 5/4 section that transitions to the next minimalist idea. Both of these sections contain material from the birdsong and the breathing theme from the beginning of the piece. The mood of the music changes several times, from a somewhat hopeful and dramatic feel to a serious, isolated, and disjointed atmosphere.

RH 115 is the start of a larger-scale musical process of establishing and adding ostinatos and changing registers that lasts until RH 182. The ideas behind this section were to commit to a longer pattern of repetitions and ostinatos, use some of the reed warbler motifs that had not yet been used, and change the sonic scene from the low-energy and thin texture of RH 107 back to the spirited, driving rhythms from the beginning. I first set up a landing place coming from RH 107 into RH 115 – I embraced the harmonic implications of one of the calls, sounding as if it were in Eb major, and created a fairly static, major texture with the longest notes of the piece producing a chordal stasis. The tenor saxophones played the fast-moving call softly, dovetailing in between the players allowing for space to breathe. This specific ostinato continues repeating until bar 144, although it moves into the baritone saxophones at bar 134.

At bar 124, another new ostinato is introduced, shared between the bass and contrabass saxophones. The long chordal notes now incorporate timbral trills, increasing the thickness of the texture and adding to the bubbling scene. These changes at 124 continue the established tonal centre, although the lower saxophones' ostinato adds a little more emphasis on the Bb, the 5th of the chord. This tonal centre is even further reinforced by the soprano saxophones playing short offbeats in thirds at bar 128. This material was taken from the tenor saxophone motif and is not its own call. The soprano saxophones here increase the variety of textures and rhythmic length in the section, and act as an announcement about the next small changes.

At bar 134, the alto saxophones begin to play the ubiquitous motif of the beginning of the piece, the two quavers and trilled crotchet call. This time, however, it fits into the key of Eb major, making it a little less jarring. At the same time, the long notes with the timbral trills conclude, giving space to the (now in Eb major) unfolding “breathing” theme from the

beginning. The breathing theme leads into the new tenor saxophone ostinato, the leaping triplet motif in the original key at bar 145. This is quickly simplified into crotchets, since the quaver lead-ins would be hardly audible, and require the players to work harder for not much payoff. The bass and contrabass saxophones take over from the fast semiquavers that had been sustained in the tenor saxophones from bar 115, albeit simplified to quavers. The simplification serves three purposes – to make the texture somewhat sparser, to keep the bass registers from becoming muddy, and to change the feel of the tempo to half the speed. At the same time, the tenor saxophones start a new ostinato. Four bars later, the soprano saxophones join the altos, swapping the positions of the trills and quavers, so that trilling can be heard on every beat. This completes the constantly changing, bubbling groove from bar 115, and now we are onto a slightly different idea.

At RH 153, the soprano and alto saxophone ostinatos begin to fade to PP to make room for the upcoming bass melody. This melody is established through additive process, starting with just the first crotchet sounding three times over three bars in the bass and contrabass saxophones. That crotchet then becomes a dotted crotchet followed by a quaver, again repeated three times. Another quaver is added, then another, in the same fashion. All through this section from RH 153 to 165 there is an accelerando from crotchet = 80 to crotchet = 100. This slight change in tempo begins to feel sinister leading into RH 165, where the final crotchet is added to the bass melody, and the 1st baritone saxophone joins in.

In the section at RH 165, the completed bar is repeated a number of times until a crescendo to a second bar consisting of a descending minor third. This structural idea is then repeated. The accompanying ostinatos temporarily stray from their insistent drive in the

second half of bars 169 and 172, adding a little dynamic contrast while bringing back the chordal motif from the beginning of the piece. At RH 174 the chordal motif interjections have been subsumed into the material of the accompaniment, while the bass melody becomes more tumultuous.

At RH 174, the bass and contrabass saxophones continue with the fully realised two-bar melody, which now starts an offbeat quaver earlier. Meanwhile, the baritone saxophones play the same melody offset by a bar. This is the final form of this long building section, with the trilled ostinatos, simplified triplet ostinato, and simplified descending quaver ostinato interrupted by the chordal motif, all underpinned by the layered and conflicting additive melodies in the baritone, bass, and contrabass saxophones. It lasts for six bars before dramatically slowing down into what seems as if it could be a climax or significant change in the music.

The music at RH 182, including the 2/4 bar leading into it, very much diverts from the previous 63 bars of ostinatos and rhythms. It is not a textural, harmonic, rhythmic, or atmospheric climax that follows on from bars 117-180, but another jazz-inspired solo, this time for tenor saxophone. The accompaniment and bassline are the same from the previous solos, orchestrated differently and slightly simplified to make room for the tenor saxophone pitch range. I approached this orchestration based on Bernie Krause's "The Great Animal Orchestra" (2016). It is not a revolutionary concept to make space for pitch ranges when orchestrating ensemble music. However, that is how I thought about it while working on this solo.

Instead of featuring two soloists, this time there is only the one tenor saxophone solo before heading straight into the "chorus" section at RH 191. It is a derivation of the material at RH 97, twice as long and with a feeling of finality due to the rhythmic and

harmonic interplay between the two alto saxophone parts and the soprano saxophone 1 part. As the section at RH 202 modulates from F major to Bb major, the piece begins to draw to a close, using more of the previously heard reed warbler calls.

The image shows a musical score for a saxophone ensemble. It consists of nine staves, each representing a different instrument: Soprano Saxophone 1, Soprano Saxophone 2, Alto Saxophone 1, Alto Saxophone 2, Tenor Saxophone 1, Tenor Saxophone 2, Baritone Saxophone 1, Baritone Saxophone 2, Bass Saxophone, and Contrabass Saxophone. The score is written in treble clef with a key signature of one flat (Bb major). The tempo and meter are indicated as 8/8. The score is divided into measures by vertical bar lines. A box labeled '216' is positioned at the top left of the first staff. The number '41' is located at the top right of the score. The music features various dynamics such as *p* (piano), *mf* (mezzo-forte), and *f* (forte). There are also articulation marks like *flz* (flautando) and *nat.* (natural). The score shows a progressive shortening of the bars towards the end, with the final measure being significantly shorter than the previous ones.

Figure 15: The progressive shortening of the bars at the conclusion of *Reed Warbler*.

The final section of music from RH 216 to the end features nearly the mirror opposite of the technique used at the very beginning of the piece. This time, however, the diminution of the featured bar is made faster by taking away a quaver length each repetition. The quaver is removed from the end of the bar, similar to how the quaver was added to the end of the bar in the beginning section of the piece. In both the beginning and the end, the first beat of the bar is repeated more than the rest of the beats in the bar. My justification for this is that the most recognisable material is at the beginning of the bar, and I preferred to end the piece with that familiar material rather than a new interpretation of

something less familiar. That being said, the flutter-tongue and the unison crotchet are distinct in character from anything previously heard in the piece. In my recording experience, I had not heard any silence before the bird started singing – I came across the bird's area of the river via my own listening, i.e. the bird was already singing when I arrived. The same was not true for the end of the recording though. The bird flew away abruptly. This is represented by the ensemble-wide flutter-tongue technique used to portray active wings, and the unison final note as it became clear that the captivating half an hour of singing had concluded. After being taken elsewhere by the reed warbler's calls, I had been firmly placed back in the reality of a person standing next to a reedy river with a handheld microphone, much like the music had ventured into many forms before reaching a total rhythmic and tonal agreement and grounding at the very end of the piece.

5.4 Destabilising Hierarchies through Music - Reflection

Multiple hierarchies were challenged through this music, making a valuable contribution to this project and an effective stand-alone zoömusicological composition. Opportunistic fieldwork at the Murrumbidgee River resulted in my recording of this species of bird – as with all of my recordings, I had not explicitly planned to record the Australian reed warbler (nor did I know of its existence). It is not a ubiquitous avian “Australiana” cultural icon such as the Australian magpie, kookaburra, or sulphur crested cockatoo. It does not look particularly impressive, being described as “plain, brown, and rather nondescript” (Kirwan and Dyrzc, 2021), and its conservation status is of least concern. These elements place the Australian reed warbler below many other species of birds in terms of representing Australia at a cultural level or as charismatic fauna – an unnecessary

categorisation. The individual/s that I heard were, vitally, agents within their environmental niche.

This piece remains firm in its portrayal of the Australian reed warbler's continuous cells of birdsong, highlighting the bird's virtuosic singing, stamina, and repertoire. It places the reed warbler's singing alongside human musicians, and above myself in terms of improvisatory performance skills. The use of saxophone ensemble to create new sound worlds with repetitive musical techniques created focused scenes of music rather than constrictive linear narratives, zooming in on the perspective of the embodied recordist experiencing the moment, in the location, as it happened. While there was sometimes a melody and accompaniment, a hierarchy in itself, the form of those sections was led by my interpretation of the birdsong's form. This places the human experience firmly into zoömusicological composition, acknowledging the role of the recordist in the ecosystem at the time.

The minimalist sections of music removed the hierarchies of melody, harmony, accompaniment, and tonal chordal progressions in favour of textural, timbral, or rhythmic development. The resulting piece is, on the surface, a testament to the small brown bird with a rich vocal repertoire and my experience of finding, listening to it, and recording it. But the piece has deep undercurrents of challenging established hierarchies between humans and other species, between different species of birds, between narratives and scenes, and between reducing or valuing the human experience in academic research and resultant creative output.

Chapter 6 – *In the Reeds (with a Reed Warbler)* (2023) for

Percussionist and Prepared Recording

6.1 Field Recording

The field recording for this piece is exactly the same as the previous piece, *Reed Warbler*. However, this piece is particularly underlined by my exhaustion due to the previous 28 days of fieldwork.

6.2 Transcription

To start with, I had to cut the recording to start and end at moments that could make sense musically, with as little wind noise during the recording as possible. I decided to keep my voice at the beginning of the recording in, because I sound tired during the recording. It sets the emotional tone of despondency and places the embodied fieldworker on stage with the percussionist and bird. It also helps with sense of location, especially given the words I say are: “On Pilot Creek Road, opposite side of Murrumbidgee River from the previous recording.”

The first step in transcribing the birdsong was to figure out how to synchronise an audio output of the recording with the Sibelius playback. In Sibelius, one is able to play a video alongside a score, with the video stopping and starting at the same points as the composer pressing play and pause on the music score. This would allow me to sync the playback of the Sibelius percussion notation with the reed warbler notation and rewind as much as needed, so I exported the recording of the Australian reed warbler as a video file and loaded it into Sibelius.

From here I could listen again and again while using a mixture of rhythmic dictation and trial and error to notate the rapid calls of the reed warbler. I also used the video with Sibelius to allow the correct amount of time to pass between bouts of singing and playing the tom-toms. The recording and the Sibelius file were very closely synchronised using this method.



Figure 16: How I worked in Sibelius with the audio/video overlay while transcribing the birdsong.

6.3 Composition

This piece went through a couple of renditions before I landed on a concept that suited the story of my recording experience as well as the chosen instrumentation. I knew I wanted to write a piece for solo percussionist and recording. The first idea I had was to replicate and extend the deep drumming sounds of emus or cassowaries, but I was not able to record any of these birds myself. Then I wanted to record the supersonic mid-air battles of moths and bats and recreate it with duelling percussionists. I planned to record bats near

the Deua River, Moruya, but the muddy weather and a closure of the national park due to a nearby bushfire made it impossible. I looked through my recording catalogue and found a recording I made of a dawn chorus at the Barrington Tops where the local Whipbird calls outlined an F# chord, and the Bell Miners were also beeping F#s. I wrote a piece which included bowed vibraphone and crotales mimicking these two species, but I was dissatisfied with the result.

The recording of the Australian reed warbler near Murrumbidgee River was a clear, high quality recording without interruptions, wind sounds, or other unwanted artefacts. It was suggested to me to use it alongside a solo human musician, and it became clear to me that this was the piece for a percussionist. The melodic/pitched elements of the reed warbler calls had already been explored in *Reed Warbler* for saxophone ensemble, so the use of percussion lent itself to the rhythmic and dynamic aspects (with some use of pitch as a tool for general shapes and gestures). Tom-toms were chosen to create a stark contrast with the high-pitched singing of the bird, and to provide a limited range of timbres to keep the piece cohesive. The dynamic range of the tom toms allowed me to match the vitality of the bird, with quieter rim hits and very loud grooves.

At first the piece was going to be in complete unison for its duration. This idea did not last long. The bird was already singing its song in a perfect way, through the recording rather than transcription, so directly copying it provided no new information. It would have fallen too far into my mental “just go outside and listen to the real thing” category, rather than an effective synthesis of other-than-human animal sound and human music.

The final concept behind this piece was to play with the different ways two voices could interact with each other. The energy of the bird and my excitement in recording it,

combined with my exhaustion from three weeks of solo camping and fieldwork, created a dissonance in my head. Therefore, the interactions between the voices sometimes leant into the dissonance I felt, and other times presented an alternative of congruence and teamwork.

I chose to leave the lively original recording almost as it was and add the tom toms as a representative of an equally loud and energetic human. While initially in unison, the piece becomes a push and pull of who has the "melody" vs the "accompaniment", followed by some sections of equality and counterpoint between the parts. This reflects my own desire to exit the recording site, which came up directly against the thrill of recording such a vibrant bird call.

The piece has six parts, all different arrangements of the two voices:

1. From the beginning until F they are in unison,
2. then from F to I the drums have a solo section based on the previous material, with occasional interjections from the bird starting at G, which the drums briefly copy.
3. At I, the drums play more of an accompaniment role while the bird sings over the top,
4. then at J this hierarchy is reversed as the drums take the focus and the bird's singing is somewhat drowned out.
5. The unevenness of the two voices is then remedied at K, when they have more of a contrapuntal section with their two separate "melodic" lines.
6. At L, it's the bird's turn for a solo, which is occasionally reinforced by the drums, mirroring the section at F.

The piece ends with the bird stopping singing or flying away, and the drums taking the final spotlight to end the piece.

The six sections flow on from each other naturally, almost like two musicians working out how to improvise with each other in situ, changing strategies and taking solos at different points in time. The unison section at the beginning sets up the idea that both beings know the same bird language – that the drummer has listened to the bird and perfected the elements of its calls ahead of time. Unlike other types of music where the drums often take an accompanying role with designated spaces for solos, here the drums are an equal and melodic voice. This is more similar to renaissance two-voice canon improvisation, in which each voice sings the same improvised line a fifth apart and a bar displaced, taking turns to create new lines. The bird and drums use exactly the same material as each other, and the timbral differences create enough space between the two parts to parallel the renaissance voices being a fifth apart. However, they do not sing/play in canon, and they do not (yet) have specific rules for the melodic lines, rhythmic harmony, or structure of the session.

The absence of set rules leads the piece to emulate a flow-of-consciousness approach to impromptu duetting. The drummer character is trying to find his niche within the sonic atmosphere of the bird's calls by experimenting with the types of hierarchies within duets, and the bird character leading the music by establishing melodic and rhythmic material, giving the drummer space to take the lead, and providing criticism on the drummer's attempts.

Rather than a student-mentor relationship, which could be insinuated from these characterisations, the two beings are simply clashing in their approaches to the piece. The bird seems to be stubborn in its idea of how the music should sound. The drummer gets frustrated and takes over the focus at J, reluctantly steps back to listen to the bird at L, and ends the piece with a brash final quip, as though there was some betrayal or annoyance associated with the bird's departure. The bird must have become impatient with the drummer or bored at the progression of the music. Of course, this is all curated by me, the composer, and the bird was not originally participating in a duet with any other being.

The dynamics between the two voices, as previously mentioned, reflect my experience as I was recording the bird. I had dragged myself to the recording site which was not originally in my plan. I went to Murrumbidgee River because it was closer than the planned destination and it took less effort to get to. I had been pessimistic about the recording session, not expecting to hear many wildlife sounds, and for the sounds I did record to be washed out by the sounds of the rushing river. When I heard the Reed Warbler, I wanted to record it from my car instead of trekking down to the riverbank. I did go to the riverbank, but once I was there, I mostly just waited for the bird to stop singing so that I could leave. The bird was, in my dazed opinion at the time, stubbornly directing my time and energy without my permission. At the same time, I knew I had struck gold in terms of audio quality, the length of recording, and the species of bird I had captured. It was one of the most successful recording sessions I had had, and the best individual recording I had achieved in three weeks. I learned its call through the process of transcription and had my own experimental duets with the bird throughout the writing of it.

6.4 Destabilising Hierarchies through Music - Reflection

The duo of my recording of an Australian reed warbler, and a solo percussionist equipped with four drums, has resulted in a captivating composition that explores many of the possible permutations of traditional musical duets. This piece aligns with the practice of François-Bernard Mâche in his piece *Sopiana* (1980) for flute, piano, and tape-recording featuring multiple bird species. More contemporarily, Hollis Taylor, melds human- and more-than-human music by pairing various instruments with pied butcherbirds (*Cracticus nigrogularis*) in her album *Absolute Bird* (2017). *In the Reeds (With a Reed Warbler)* is resolute in its consideration of avian singers as colleagues or mentors rather than beings of lesser value. In applying that ethos through composition, I attempted to keep both parts of the duet equally weighted, creating distinct scenes where each agent was collaborating, listening, ignoring, or taking the lead. Despite the agreements and disagreements between the bird and the drummer, there was never a question of musicality or skill, only one of whether these two individuals could work together on this one day – a question which reflected how mixed I felt upon encountering the bird in the wild.

Much like the music of Mâche and Taylor, the resultant piece did not fit neatly within the style of minimalism, and instead took on freer characteristics led by the reed warbler and my perception of it. The main way this manifested was in the chaotic, ever-changing macro and micro rhythmic and pitch structures throughout the piece. Thus, in choosing tom-toms, a percussion instrument with significant limitations, clear motifs and character interchange and comparisons could take centre stage. The similarities between the reed warbler and the drums include the limited use of contour that the four drums and rims can provide, the rhythmic cells and interconnectedness of the rhythms, and some of the dynamic range. The instruments/characters differ greatly in where their strengths lie;

melodic dexterity and dynamic articulation respectively. The use of tom-toms to replicate and reciprocate the sound of the birdsong invites listeners to directly compare and contrast the expressive abilities of both rhythm-based (drums) and pitch-based (bird voice) instruments alongside each other. By limiting elements such as harmony, bassline, pulse, groove, texture, and timbre, the piece centred on the interplay between the two characters, without musical symbolism or hierarchy obscuring the messaging. Simplifying a piece of music down to only the elements of pitch, rhythm, and dynamics, strips away many of the hierarchies of traditional Western music, similar to minimalist music.

Chapter 7 – *Grey Fantail* for String Quartet and Winds

7.1 Field Recording

At a road near the Kanangra-Boyd National Park, I had parked my car and was leaning on it, trying to figure out which way the wind was coming. I was planning on sitting or standing on the less windy side of my car and waiting for some kind of wildlife to appear and make sound so I could record it. Of course, I was hoping for a species I had not recorded before, but it did not take long before a grey fantail zipped directly into the bush in front of me and hurriedly darted around the bush's branches. At first, I felt lucky that it was so close to me, thinking that I might get a good recording, so I turned down the gain and tried to follow the bird with my microphone.

The grey fantail did not just start singing, it basically unleashed its entire repertoire at me, at full volume, while jumping from branch to branch and shimmying its tail back and forth. From my knowledge of bird behaviour, I felt it was acting extremely suspicious of my presence in its territory. Loud, complex calls can be used to deter predators or challengers as a way of saying "here's taken!" This brave and curious bird was not making any swoops at me though, so it did not strike me as particularly aggressive. I concluded that it probably had some kind of ecosystem-related duty to protect or monitor that area, and I was an uninvited visitor. Once its impressive show of vocal skills began to wind down, I hopped back in my car and found another place that did not have a grey fantail sentinel on guard.

7.2 Transcription and Composition

The composition of *Grey Fantail* started with the goal to represent the inquisitive and interrogative nature of the grey fantails (*Rhipidura albiscapa*) that I had encountered at multiple locations on my fieldwork journey. I had originally planned to make use of the high-quality recording I had captured by creating a digital composition – a Reich inspired mosaic of grey fantail call snippets – on Audacity or GarageBand. I started this process in December 2023, by first loading the recording into Audacity, and slowing down the grey fantail call by a small amount. Then I searched for charismatic 1-2 second moments within the call of the grey fantail in Audacity and looped them until rhythmic ostinatos formed. I then exported these snippets as their own .wav sound files and imported them to GarageBand where I could start layering them.

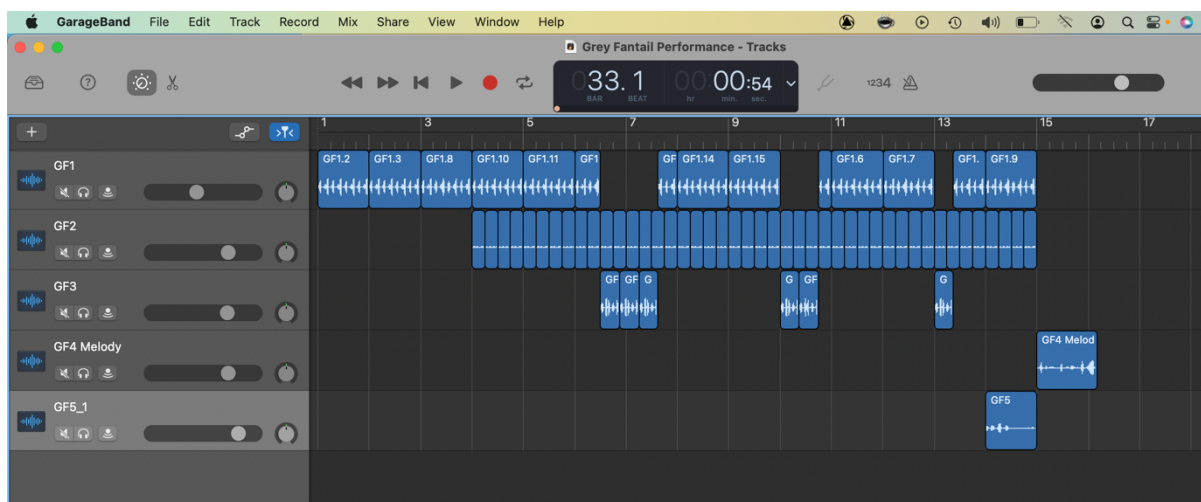


Figure 17: A screenshot of my repetitive grey fantail piece on GarageBand. There are five layers.

I made a compelling 16-second-long introduction to a piece of music this way. It was fast-paced, poly-metred, somewhat tonal, and represented my understanding of the bird perfectly. I was then side-tracked by other compositions until July 2024, when I was involved in the Inaugural USYD Conservatorium + SSO Fellows Composition Winter School.

20

Fl.

Cl.

Bsn.

Vln. 1

f 3 3 3

mp

f 3 3 3 3

Figure 18: The flute and violin 1 pattern spans 5 triplet quavers.

I decided to revive this piece of music, this time transcribing the small snippets for a smaller section of the set Winter school instruments – 2 violins, viola, cello, flute, clarinet, and bassoon. The transition from electronic music to notated music is not too dissimilar to Reich’s own musical progression from tape loops and electronics to repetitive

instrumental music (Glover, 2013, p. 167). I started the composition in the same manner as the existing GarageBand creation, then expanded on it, taking time with the intermingling timbres of the acoustic instruments for longer before moving on.

The ostinato dovetailing between the flute and clarinet was necessitated by players needing to draw breath, whereas the violin 2 ostinato could continue for as long as needed without a break. The viola ostinato joins the atmosphere at RH 12, adding semiquavers to the beginning of the bar, opposing the flute and clarinet. The bassoon joins the woodwind ostinatos when the first violin and flute enter with the next element of the grey fantail call at RH 20. These continuous ostinatos with dovetailing between parts symbolise the incessant vibrancy of the grey fantail – an element that is sustained throughout the piece.

The new motif in the violin and flute spans the length of five triplet quavers and is repeated, slowing down the macro pulse substantially and suddenly from the previous simple duple feel. I make use of this jarring effect a few more times in the section from RH 20 to RH 92, changing the number of repetitions and the length of the call itself. This is to mimic the sudden changes in direction and slow tail-wags of the bird as it hopped from

branch to branch. The flute and violin instrumentation here works to represent the octave higher range that the bird call was producing in the recording. By contrasting the tones of the instruments within close proximity and with short notes, I was hoping to trick the ear into hearing a register higher that would more closely align with the true pitch of the birdsong.

At RH 61, the cello enters with the beginning of a new motif, similar to how Reich introduces the ubiquitous ostinato in *Music for 18 Musicians* in an additive process over many repetitions. The cello ostinato is complete and continuous by RH 81, allowing the triplet motif to repeat six times in a slight build up to RH 92. Whenever a process occurs in this piece, it is a musical metaphor for the bird learning more about me, the intruder in its territory, from different angles. Here the clarinet and bassoon take over the original violin 2 ostinato, alternating with each other beat by beat, and violins maintain the original woodwind and viola ostinatos, changing the timbre of the piece significantly. Meanwhile, the viola and cello continue with a slightly altered cello motif in octave unison, encouraging a zoomed-out perspective on the pulse of the piece – where before each crotchet beat in a 2/4 bar was its own self-contained unit, one can now feel the music in two bar phrases.

Through this section from RH 92 to RH 114, another new motif is established by the first violin. It is a simple motif, starting with the first two quavers at bar 97, and adding the triplet in bar 106. This motif builds through the section, similar to the cello motif. However, it is bounced around between the first violin and flute before developing, leading to a transitional section between RH 122 and 143.

91 92 11

The musical score consists of two systems of staves. The first system covers measures 91 to 95, and the second system covers measures 96 to 100. The instruments are Flute (Fl.), Clarinet (Cl.), Bassoon (Bsn.), Violin 1 (Vln. 1), Violin 2 (Vln. 2), Viola (Vla.), and Cello (Vc.).

Measures 91-95:

- Flute (Fl.):** Measures 91-92 feature a triplet of eighth notes. Measures 93-95 are mostly rests.
- Clarinet (Cl.):** Measures 91-92 are rests. Measures 93-95 play a steady eighth-note ostinato.
- Bassoon (Bsn.):** Measures 91-92 play a steady eighth-note ostinato. Measures 93-95 play a steady eighth-note ostinato.
- Violin 1 (Vln. 1):** Measures 91-92 play a triplet of eighth notes. Measures 93-95 play a steady eighth-note ostinato.
- Violin 2 (Vln. 2):** Measures 91-92 play a steady eighth-note ostinato. Measures 93-95 play a steady eighth-note ostinato.
- Viola (Vla.):** Measures 91-92 play a steady eighth-note ostinato. Measures 93-95 are rests. Measure 96 starts a new motif.
- Cello (Vc.):** Measures 91-92 play a steady eighth-note ostinato. Measures 93-95 play a steady eighth-note ostinato.

Measures 96-100:

- Flute (Fl.):** Measures 96-99 are rests. Measure 100 plays a new two-quaver motif.
- Clarinet (Cl.):** Measures 96-100 play a steady eighth-note ostinato.
- Bassoon (Bsn.):** Measures 96-100 play a steady eighth-note ostinato.
- Violin 1 (Vln. 1):** Measures 96-99 play a steady eighth-note ostinato. Measure 100 plays a new two-quaver motif.
- Violin 2 (Vln. 2):** Measures 96-100 play a steady eighth-note ostinato.
- Viola (Vla.):** Measures 96-100 play a steady eighth-note ostinato.
- Cello (Vc.):** Measures 96-100 play a steady eighth-note ostinato.

Figure 19: The completed cello motif, the clarinet and bassoon ostinato switched with the violins, and the new two-quaver motif in the 1st violin and flute.

At RH 150, a metric modulation from crotchet to dotted crotchet is achieved, turning the original flute and first violin five-triplet-quaver motif from RH 20 into a steady, driving quaver ostinato in 5/8. The foundational rhythmic pulse in flute, clarinet, both violins, and viola is established by RH 156, and another additive cello motif is initiated. Like before, while the rhythmic pulse continues, the cello repeats and adds to its motif, although this time the “completed” version of the motif ends with a suspended long note and changed accompaniment details. The accompanying ostinatos repeat notes instead of playing melodically and come to the foreground in terms of dynamic levels for a short period, before returning to their previous pulsing. This process is then repeated. This motif is a durationally elongated and over-repeated version of a short melody that occurs in the next section, and the structure of this section introduces the idea of contrasting dynamics as a compositional focus, also setting up for the next section. The clarinet replays the motif once more at bar 200 while the accompaniment fades to silence, giving way to the next process.

RH 204 sees a time signature change to 6/8, and new musical material appearing in all instruments. It is as if the grey fantail has renewed its efforts in figuring out whether the intruder is a threat and is checking from a different branch of the bush. The viola and cello have a dissonant and exciting quaver pulse, the clarinet and bassoon have a consonant and joyous quaver pulse, the first violin plays the blatant and comical melody that the previous cello motif had been alluding to, and the flute delivers a percussive sound every seven quavers to lessen the strength of the pulse a little. The viola and cello quavers overlap with the clarinet and bassoon quavers, alternating dynamics (crescendo and decrescendo between fortissimo and pianissimo) between the two groups of instruments every 3-4 bars.

The process here, however, is in the dynamics and how often the woodwinds and lower strings fade between *ff* and *pp*, which is illuminated at RH 227. The flute helps to show how this process will work from here, emphasising the groups of each of the quaver pulses – the lower strings’ quavers are grouped in three groups of three, such as in 9/8, and the lower woodwinds’ quavers are grouped in two groups of three, fitting more into 6/8. As each set of instruments completes two “bars” (9/8 for strings or 6/8 for winds) of their quavers, they decrescendo, and over the next two “bars” they crescendo, which leads to quick phasing. The process itself begins at RH 238, and the phasing is allowed to continue through to bar 250, when the rules of the music change. Over the top of the phasing, the first and second violins play the comical melody at normal and half speed, and with dissonant harmony. The notes themselves did not matter to me here, just the contour, rhythm, and that it sounded deranged and whimsical. This is to symbolise the manic, disorganised feel of the bird’s interrogation. The flute continues to perform the percussive sound every seven quavers to add to the odd feeling during this section.

At bar 250, the rules of the low woodwinds and strings change from a phasing process to simple alternation in dynamics. The length of time that each set of instruments plays one of the extremes (*ff* or *pp*) is three quavers at first, which then reduces to two quavers at RH 256 with a change to 3/4 time. Rather than continue to write out excessive dynamic markings and have musicians play *pp* when others were loud and likely covering the sound, at this point I decided to replace the *pp* notes with rests. This also served to provide the woodwind players with more opportunities to breathe.

Then at bar 262, the space between alternations becomes shorter again, and the woodwinds and strings’ quaver pulses evaporate into a hocket-like waltz. The rule is less

strict here for multiple reasons, including ability to continue playing in time, having interesting and easy parts for the musicians, introducing more harmonic variety, and weighting beat one differently for a waltz feeling. The violins have both continued variations of the comical melody throughout these dynamic quaver pulse changes, but at RH 267, they become elongated and continuous, contrasting against the short durations of the accompanying notes and the major tonal harmony. This demented dance and flurry continues until RH 286.

The image shows a musical score for measures 268 to 273. The score is arranged in two systems. The first system includes Flute (Fl.), Clarinet (Cl.), and Bassoon (Bsn.). The second system includes Violin 1 (Vln. 1), Violin 2 (Vln. 2), Viola (Vla.), and Violoncello (Vc.). The key signature is two flats (B-flat and E-flat), and the time signature is 3/4. The Flute part has rests in measures 268-271 and enters in measure 272. The Clarinet and Bassoon parts play a rhythmic pattern of eighth notes. The Violin 1 and 2 parts play a melodic line with a waltz-like feel, characterized by a dotted quarter note followed by an eighth note. The Viola and Violoncello parts play a rhythmic pattern of eighth notes.

Figure 20: The waltz-feel section at bar 268, with violins 1 and 2 playing the comical melody.

At RH 286 the texture becomes sparser, making way for a flute solo. The percussive sound effects that had been continuing through this section had likely become background noise by this point, so the change in timbre or re-introduction of the regular flute sound

creates a new atmosphere. The violins stop their atonal melodies, and the accompaniment undergoes yet another change. This time, since alternating semiquavers at this tempo would be unwieldy and sound too dense, the low woodwinds and strings begin alternating bars. At RH 298, the once comical melody is announced by the flute, this time tonal and beautiful. It is repeated at RH 304, joined by sensitive staccato quavers in the violins which develop into shared high Fs, similar to those heard at the beginning of the piece – the highest note in the triplet motif.

The second motif, from RH 92, is brought back at RH 319 by the flute as the clarinet and first violin lean into the now beautiful melody. The cello and bassoon are playing a simplified version of the original cello motif, and the five-quaver motif is fully brought back (although not in triplet quavers this time) by the violins at bar 334. The melody is transferred to the cello, the higher pitched instruments abound in various previous ostinatos and motifs, and it begins to feel as though the piece is drawing to a close. This is until bar 349, when a *rallentando* then a pause and tremolo on an unresolved chord launches back into a faster tempo and an atmosphere reminiscent of the very beginning of the piece.

The flute begins to sound alarmed at RH 350, playing the very first ostinato of the piece that the second violin originally had. The clarinet takes over once the flute has played four bars, then the flute takes over after another four. Then they take over from each other after three bars each, then two, then they continue by alternating each bar until RH 406. From RH 350, the cello plays the starting groove from its first motif – the first two quavers, and the offbeat quaver in the second bar – and continues this as an underlying drive until bar 378 where it starts to develop more. The entire motif, including an extra crotchet to fill

the space, is finally established by RH 396. This return to the first themes suggests either that the bird is not yet satisfied with my presence, or maybe it has noticed something new in the surroundings that has caught its attention.

351 Moderately fast ♩ = 125 37

Figure 21: The new section at RH 351, revisiting themes from the beginning with new elements.

While these accompanying features are driving forward, the two violins and viola play variations on the cello motif. The three instruments take turns playing the two-bar phrase with slight changes in quick succession, creating a six-bar phrase, or three two-bar phrases, which feels unsettled. The viola part develops into a cross-rhythm ostinato at RH 368, then the first and second violins begin playing more and more until they too are repeating variations segments of the cello motif. At bar 386 their rhythm changes, and the first violin emerges with a solo – the tonal melody from before, but this time serious and in

a minor tonality. It is repeated at RH 406, this time with a counter-melody of the simple motif (two quavers and a triplet, but lengthened and inverted) in the flute and second violin.

In the build-up to the finale at RH 418, the cello part is joined by the bassoon, and simplified for clarity and volume. The simple motif is repeated by the flute, clarinet, and both violins to build tension, and the final note of bar 417 is tied across the barline to blur the pulse a little – a common thread in this piece. At RH 418, the longest and clearest phrases occur on top of three remaining ostinatos in the bassoon, viola, and cello. The flute, clarinet, and violins play a wide open tonal chordal progression that had not been explicitly heard before in this piece. As I was writing this piece, it seemed as if the chords themselves had wanted to be heard the entire time, like they were the secret crux of the piece, but only now had the chance to fully exist. A couple of the SSO Fellows suggested adding more dynamic expression to the chords, and I thoroughly agreed with them. Since one of the themes of the piece had been adding and subtracting durations and lengths of time, I decided to slow down the chords towards the end of the piece, in note value and by adding a *ritenuto* heading into RH 441.

The very end of the piece, from RH 441 to the final barline, serves as a moment to briefly revisit and process the original triplet motif heard throughout the rest of the piece. I used it as an opportunity to dwindle down the instruments, slow down the remaining ostinatos with a *molto rall.*, and leave the final pizzicato note as a question mark to the audience, rather than a resolution. When the grey fantail disappeared into the other bushes and grass around us, I was firstly amazed by this short, loud, and action-packed experience, and secondly left questioning whether I earned the bird's approval or not. I looked around for a couple minutes before deciding it was a grey fantail place, then I retreated.

7.3 Destabilising Hierarchies through Music - Reflection

Out of all the pieces in this portfolio, *Grey Fantail* is the most similar to music by minimalist musicians such as John Adams and John Cage, with each section of music dedicated to repetition, process, and rhythmic drive. All of its components lead back to the same source, the restlessness of the grey fantail, approaching the scene of the bird interrogation from multiple multi-layered angles. Every melodic motif undergoes a slow and precise development as it becomes an ostinato, carrying forward with fervent momentum. There is a lack of dramatic gesture, suspense, chordal tension, or wistful melody and harmony to carry forward a storybook narrative. The characterisation of the bird's behaviour through its own song, processed and recomposed through the ears and mind of a human composer, has evolved into a piece that conveys a moment in time without asserting undue hierarchies. It is a focused analysis of a single scene.

Another key aspect of this piece is the implied location of the interaction. While the listener would likely be hearing this piece in a performance venue, the original meeting with the bird happened in a medium-sized bush near Kanangra-Boyd National Park. That is the place I have woven into the music when I listen to it, but other listeners may imagine someplace else. Since the grey fantail I recorded was, from my perspective, making sure I was not a threat to its ecosystem, the grey fantail character in the composition must have its own domain to protect. The minimalist music, the birdsong, the bird behaviour, the listener (who also takes the role of the interrogated), and the place, are all equally important elements to the depicted experience. This composition challenges those hierarchies that value fauna more than their own ecosystems, that value melody above

texture and rhythmic drive, and that find a narrative structures better than concentrated scenes.

Chapter 8 – *Frog Almost* for Voices

8.1 Field Recording

The field recordings for this piece spanned from 2020 to 2023.

8.1.1 2020

Barrington Tops: One night while camping I came back to the tent after a walk, and a very small pond between my campground and another had about five different species of frogs all croaking and calling at the same time. Their pitches were spread out across the different frequencies, and I knew at that moment that I wanted others to hear this. I recorded different angles of the pond, trying to capture each frog as well as the whole gist of the chorus.

8.1.2 2023

Kangaroo River: Multiple species of frog were mating at the top of the waterfall. Walking along the side of the falls and rapids, in the light of the full moon, I spied pairs of frogs on top of each other. The cacophony of frogs was deafening. There were about three or four distinct species, which a frog expert identified for me.



Figure 22: Just one of the pairs of mating frogs.

Mt Kosciuszko: I did not want to walk all the way to the top of the mountain, so as I was slowly wandering up the walk, I listened for any animal sounds I wanted to record. I came across a small pond of meltwater from the recent snow full of common Eastern froglets. I sat by a large rock there for about half an hour, recording lots of sound, enjoying the view and the sheer number of froglets I was hearing.



Figure 23: Capturing the sounds of common Eastern froglets at Mt Kosciuszko.

Unknown Campground: I was staying at a campground on the way to Cooma, up the hill from a riverbed that had a minimal amount of water going through it. Late at night, only on the first night, I heard some low pitched, throaty frog calls coming from the riverbed. I did not know the land well enough to venture down to the riverbed at that time of night, so

I was not able to get a very close recording. I did get a good enough recording to get it identified though.

Lane Cove: Going for a walk through Lane Cove, near a small concrete-laden stream, I heard a very interesting frog call. Almost as soon as I noticed it, it stopped, so I stood very still and waited. After a while, a couple of frogs started making endearing descending calls. I identified them as stony creek frogs.

8.2 The Poem

The poem is as follows:

What a Wonderful Bird the Frog Are

“What a wonderful bird the frog are!
When he stand, he sit almost;
When he hop, he fly almost.
(When he talk, he cry almost.)
He ain't got no sense hardly;
He ain't got no tail hardly either.
When he sit, he sit on what he ain't got almost.”

Anonymous (n.d)

8.3 Transcription and Composition

Frog Almost was inspired by three main things; the recording I made at the Barrington Tops in November 2020 of a frog chorus, taking a class about the history and evolution of vocal and choral music and notation, and the poem called *What a Wonderful Bird the Frog Are* by Anonymous (n.d.). I knew that I wanted to create a polyrhythmic, tonally rich soundscape, and that the human voice would be a great candidate for acoustic

representation. Structurally, fitting it with a line from the poem seemed to be a great option, so I went with my favourite line “when he hop, he fly almost.” The last challenge was notation, and having just been exposed to *Stripsody* (1966) by Cathy Berberian, I tried graphic notation by writing the sounds as they came to me.

I organised the score by grouping the vocalists into high, middle, and low voices, hoping to create tonal variety, especially in the middle group, with a mixture of male and female voices. I made staves with six lines instead of five to prevent singers from reading the music in traditional Western notation. I printed several pages of blank staves so I could experiment with writing and drawing different letters and symbols, until I came up with my own key and systems for communication. It was important for me to remember that notation is simply communication with other humans, just as frog calls are how frogs communicate with other frogs (and other species too).

I browsed my recordings, searching for frog calls I could emulate with my own voice. This was a useful method for multiple reasons. I did not have to search for high quality recordings, because I was not trying to notate exact pitches or determine precise details, I just had to be able to hear it well enough to make similar sound myself. Once I felt I had a grasp on how to sound like a frog, I studied my own version of the frog call. For example, with the Peron’s tree frog (*Litoria peronii*), I had to make a middle-pitched, nasal, stuttering, descending laugh. With the green stream frog (*Litoria phyllochroa*), I had to make a tight, nasal, very short / ɪ / sound five times, also descending slightly, this time starting and ending higher than the Peron’s tree frog, with no stutter.

I discovered that I needed to use plain English letters that suited the sounds as closely as possible, except for the “ñ” in the case of the screaming tree frog (*Litoria quiritatus*); capitalisation of letters and punctuation to influence emphasis; musical symbols such as accents, staccatos, dynamic markings, repeats, barlines, caesuras, and more; lines such as dots or trill lines to symbolise the use of stuttering or vocal fry; creative placement of letters and syllables to indicate melody or contour of pitch; and other drawn lines to show details of pitch when it would otherwise be unclear how syllables connected or moved. I also needed to write an explanation and pronunciation guide for the frog calls at the beginning of the piece, and record each of them myself to provide an mp3 of demonstrations should anyone require it for future performances. If communication was the goal, I was willing to communicate in any way necessary.

[WEEE tip] – *Litoria fallax*/Eastern Dwarf Tree Frog

Pronounced with a nasal, rapidly ascending “ee” sound like in “tree”. Emphasis on the “t” and “i” sound in “tip”.

[RRRAAH] – *Litoria peronii*/Peron’s Tree Frog

Extend the “r” sound and make the “a” sound as in “apple”. “Stutter” the entire sound, with constant glottal stops.

[Bon. Bon.] – *Limnodynastes dumerii*/Eastern Banjo Frog

Open, resonant “o” sound to resemble a plucked banjo or guitar string. Short “n” to stop the sound.

[iiii iiii] – *Litoria phyllochroa*/Green Stream Frog

This sound is like the very beginning of the “y” sound in the word “yep”. Further back in the throat than the “i” in “fish”. There are 4-5 of these in a row, descending. They are very short sounds, started and cut off by glottal stops or the very back of the tongue. Bouncy and very loud.

Figure 24: An example of explanations and descriptions of the frog call species and notations on the score.

The other step was working out how to incorporate the poem, which was easily solved by writing the words to the poem across all staves, showing that everyone should say the word at the same time. The interesting thing about the spoken words in the piece, especially in the context of Australian native frogs, is that the performers at the moment

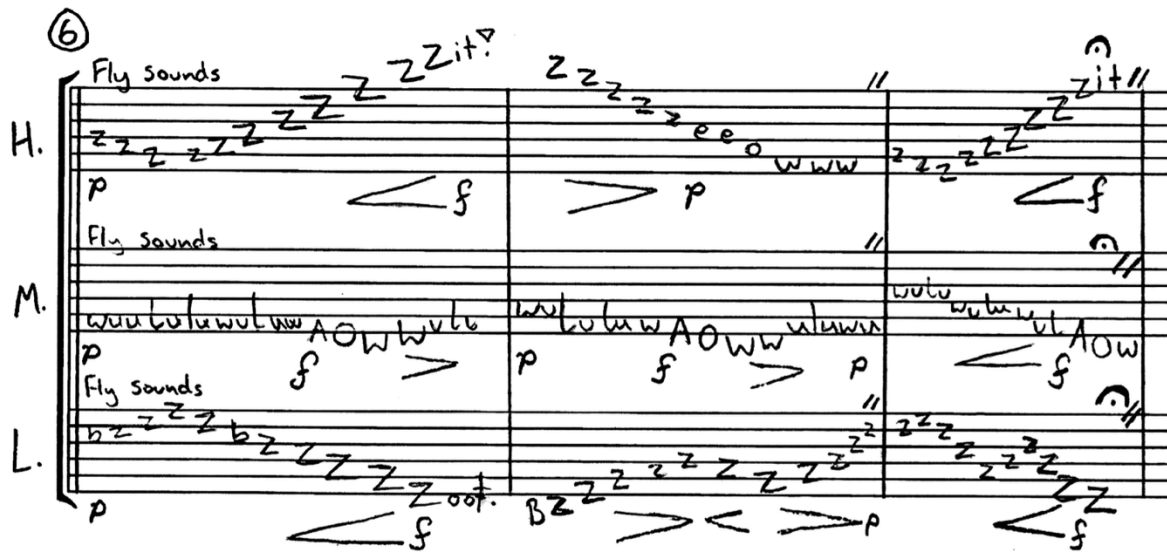


Figure 26: Several transcribed fly sounds as incidentally recorded from my fieldwork.

I had a small issue with connecting the words of the poem to the frog calls in terms of semiotics, which I decided to resolve through taking the word “fly” literally, as in the insect, and by using onomatopoeia – “buzz”. In my recording fieldwork I had incidentally recorded flies, sometimes quite close up, with them landing on my microphone. I therefore could use the same transcription method and write out accurate-enough spoken fly sounds for the vocalists. This crucial moment sewed the two elements, frog calls and poem, together enough for a listener to perhaps create meaning for the rest of the work. More on this will be discussed in the next section.

8.4 Destabilising Hierarchies through Music – Reflection

Frog Almost has a very clear role in the destabilisation of hierarchies within this project, almost becoming a self-referential commentary on the use of birdsong vs frog calls in music. Numerous composers have made choral pieces attempting to capture some of the

beauty of a dawn chorus, but few, if any, have attempted a frog chorus. Birdsong has been traditionally used in music compositions to symbolise beauty and positivity, but aside from its development through history, why do we find the songs and calls of birds so worthy of transcription and music-making and then keep overlooking the sonic potential of frogs? Perhaps it is a bias towards melody, phrase, and pure tones, or the virtuosic fast passages some birds are able to conjure. For those with a bias towards thicker texture, timbre, and rhythm, frog calls hold a wealth of wonderful musical material. These qualities resonate with key principles of minimalist music, positioning *Frog Almost* as an alternative to melody-centred traditions and their historical dominance. The poem doubles down on this point, describing how, if you ignore a few features, frogs look, talk, and behave like birds.

Frog Almost also centres highly around place. From section to section, the frog chorus changes species, which are highly dependent on location. Although the groups of frogs are not accurate to their real-life locations (for orchestration purposes), the changes in frog calls alone should indicate a sense of changing locations, perhaps around Australia as we visit these different species' ecosystems. The idea for the piece was sparked when I found a frog chorus at a tiny pond and had the desire to bring the pond home with me through music. I have managed to achieve this through aleatoric music, creating individual scenes or "ponds" of music that can be imitated and performed by almost anyone, anywhere. The poem's words dotted throughout tie the performance's location to the imagined location of the imitated frogs, as the performers' accents would infiltrate into the spoken elements. This is not a problem, though, as the featuring of place in this piece is paramount to its sincerity. Frogs are very sensitive to their environments, and hopefully in enjoying their funny calls, we can look after their – and our – places better.

Chapter 9 – *Stay here longer* for String Ensemble

9.1 Field Recording

I recorded the gang-gang cockatoos while trying to record a frog next to a stream near the Kanangra-Boyd National Park. It was early in my fieldwork expedition, and I was testing the range of the parabolic reflector with a microphone. I was standing on a rock on one side of a creek bed, trying to record a single frog on the other side of the creek where some water was trickling. It was a distance of about 20-30 metres away. There were not many birds around, otherwise I would have been recording them. While I was focusing on the frog, I was continuously looking around for movement in the trees or bushes on the opposite side of the creek.

Then I heard some parrots ahead of me and above me, talking in creaky voices. They were in a tall eucalyptus tree to the right of the frog spot. It was difficult to see which species of parrot they were – Australia has many, and the white clouds were very bright behind the top of the tree, making the birds look like silhouettes. I was anticipating king parrots. I recorded them for as long as they made their funny, creaky calls, then they flew overhead and landed in a different tree with better lighting. It was then that I was able to identify them as gang-gang cockatoos. I was thrilled, knowing that they are an endangered species in NSW, Australia.

Figure 27: The recording location and gear for the gang-gang cockatoos.



On the original, raw recording I can be heard whispering to myself: “Oh my god they’re gang-gangs!” I tried to follow them to no avail.

9.2 Transcription and Composition

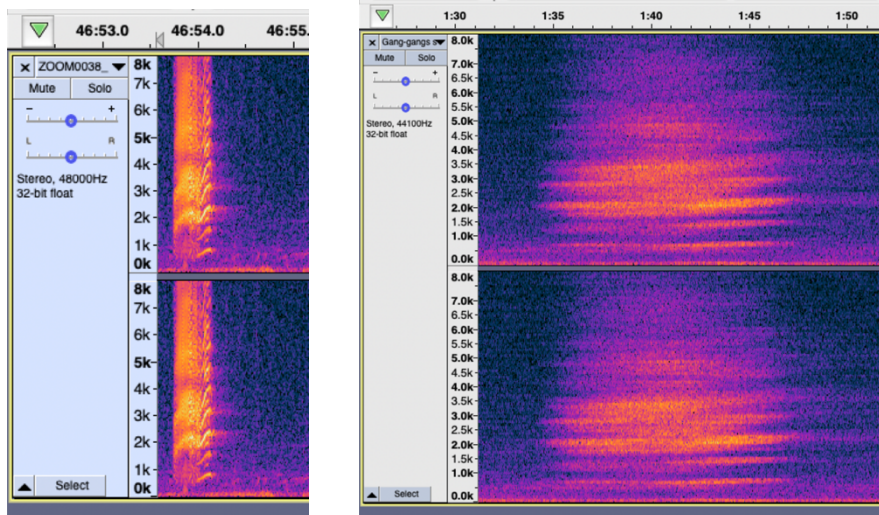
This piece was conceived when I was working out how to transcribe a sulphur crested cockatoo call, and the idea of technologically slowing down a cockatoo call intrigued me. I wanted to find out if slowing down such an outwardly non-melodious sound would reveal any underlying types of pitch or melody, or anything that I would be able to transcribe for acoustic instruments. After a few experiments with Audacity and some recordings from Xeno Canto, I worked out that using Paulstretch, rather than simply slowing the tempo, helped to draw out the pitched sounds within the raspy, screechy sounds of sulphur crested cockatoos. I found a good stretch factor (20) and began to listen.

This was the one piece in my portfolio that had been planned before I recorded the target species. The piece was going to be titled *Screeches* based on the sulphur crested cockatoo calls, but I did not end up getting any high enough quality recordings of the birds to do this method of transcription and composition. I did, however, record two pairs of endangered gang-gang cockatoos near the Kanangra-Boyd National Park. The creaky calls of gang-gangs are quite different to the squawks of sulphur crested cockatoos, but I really enjoyed the use of Paulstretch on their calls as well and decided to move forward with them as the target species.

The more I worked on this piece, the more elements clicked into place regarding the use of gang-gang cockatoos and the Paulstretch effect. Firstly, in writing a piece of music about my experience seeing and hearing the birds in real life, I was able to relive and reinterpret the exhilarating experience many times over, similar to extending and changing

the duration and sound of the calls with Paulstretch. Secondly, as gang-gang cockatoos are endangered, elongating the sound of their voices began to feel as though I was almost lengthening their species' stay on planet earth a little longer, or broadening the reach of their calls in a symbolic way – if the echoes of their creaky voices were still around, so were they, despite all else. The individual birds themselves probably are not thinking about themes like these, but for me, as a human who wishes for their longevity and survival, the composition and process behind it felt poignant.

Thirdly, I had been asking myself, if humans could hear the dense timbral and textural qualities of cockatoo calls with the same ears, brains, and processors as the birds themselves could, what would it sound like? Would it sound beautiful to us? Slowing birdsong down can help humans notice and understand more of the details, in the same manner as slowing down a fast violin cadenza. Birds hear differently to humans, with data showing “temporal resolution in the processing of acoustic communication signals in birds well beyond the limits typically reported for humans” (Dooling et al., 2002, p. 758). This, as well as other physiological differences, means “most certainly [...] that bird vocalizations sound much different to birds than it does to humans” (Dooling and Prior, 2017, p. 289). Using Paulstretch on the gang-gang cockatoo calls blurred the articulations and rhythms, drawing out the pitch and timbral material instead, but it could still reveal to humans something about cockatoo calls that we may not be sensitive to when we listen naturally. I hope that this piece displays some of the eerie harmonies that the gang-gang cockatoos emit to each other.



Figures 28, 29: The Audacity spectrographs of the original (left) and Paulstretched (right) 3rd gang-gang cockatoo call.

Using the Paulstretched calls on Audacity with the spectrogram to gauge roughly what to listen for, I spent time determining which pitches were apparent in each moment of a call, where they were moving to, and how loud they were relative to the sounds around them. There was lots of fading in and out, slowly rising or falling in pitch, and extremes of highs and lows, all accompanied by harsh cymbal-like noise. I decided to focus on the pitched sounds and omit the cymbal-sound, although that could be added in future versions. To figure out exactly which pitches to write, I would sing along with the recording with my phone tuner next to me telling me note names. If I was unable to pitch/sing along, I used the Sonic Visualiser software to place notes. If a pitch happened to be a quarter tone, I always “rounded up” to the nearest natural or sharp note for playability.

I transcribed the calls for modified string ensemble because string instruments are able to glissando fluidly between notes and play very quietly. In addition, the timbre was quite similar to the Paulstretched gang-gang cockatoo sounds. The instrumentation for each individual call depended on the array of pitches, and the instrumentation for the piece as a

whole was consolidated later. The piece has been recorded, but not yet performed. I would like for the piece's eventual performance to be in a highly resonant space, played very slowly, with great care and focus given to every iteration of dissonance as different instruments glissando between semitones over several seconds of time. These harmonic and temporal features led the piece to share similarities with György Ligeti's *Atmosphères* (1961) and share aspects with spectral music. These results are coincidental, but they highlight how the intentional focus on using minimalist ideas and processes to conceive and compose the piece led to music that challenges the hierarchies of melody and harmony.

Figure 30: The violin 1 and 2 parts for call 3, with attention given to register, dynamics, and incremental pitch changes.

I transcribed ten calls in total, in recorded order, ending with a call that had a major triad between the first violin and the second viola. The final call's major triad was accompanied by a dissonant note in the double bass, so after 10'20" of listening to slow bubbles of microtonal changes and irregular chordal harmonies, it does not feel final. Each call had a gap of silence in between to let the sound settle, which again shrouds the final call's finality in doubt. Here I am hoping that the end of the endangered gang-gang cockatoo species is not yet in sight, hence the new title, *Stay here longer*.

9.3 Destabilising Hierarchies through Music – Reflection

Stay here longer strips away a lot of musical language in order to say something simple. The sweet, creaky calls of gang-gang cockatoos were significantly slowed down using Paulstretch, then transcribed for modified string ensemble. This kind of “deconstruction” is similar to the early minimalist tape and electronic experiments of Terry Riley and Steve Reich, where a field recording (often speech) is made unfamiliar through manipulation (Sion, 2013, pp. 262-265) – an example of this is Riley’s *Bird of Paradise I* (1965). Using this process with my field recordings uncovered a few implicit hierarchies, including whether cockatoo calls are worthy of being turned into music instead of being considered “noise” or non-musical sound, especially when considering traditional musical hierarchies; whether human time is, or should be, the default sense of time, thus challenging anthropocentric frames of reference; and whether the calls of endangered species hold more depth of meaning when transformed into human music.

The piece, in essence an honest transcription of a processed recording, transforms the second-long clips of gang-gang cockatoo calls into minute-long wails of twisted, dissonant harmonies. Due to the semitone glissandi, the resultant microtones, and changing microtonal intervals, the piece is free from traditional harmony and chordal structures, despite the main audible focus being its rich harmony and chordal progression elements. This allows the listener to relax into the sounds without any hint of what might come next. The original material (the recordings) used lends itself to exactly this kind of harmonic outcome, almost like its Paulstretch “fingerprint” – experiments run with sulphur crested cockatoos and other species of birds sounded significantly different with extremely varied harmonic atmospheres. Even the “noisiest” or most irritating birds’ voices can be turned into intriguing and distinctive harmonic movements with a sensitive, creative approach.

The complete absence of melody or motivic fragments, ostinatos, or notes with shorter durations forces a listener to succumb to the very slow tempo. With little sense of rhythm or pulse, the scale of a piece of music becomes difficult to grasp. In John Luther Adams' *Become Ocean* (2013), waves of sound wash over the listener at certain intervals, creating a sense of pulse on the macro scale. Similarly, *Stay here longer* has a broader sense of pulse, with the ten calls occurring spread out over the 10'20" duration of the piece. This slow pulse encourages a different type of listening which is similar to the type that minimalist compositions may induce in listeners. Once the listener has entered the right state of mind, they may begin to listen to the process of the music being composed, rather than the music of the composition itself. Parallels can be drawn between the narrative vs scenic types of listening here as well. Playing with the sense of time and scale in this piece disrupts the assumption that the human feeling of time is the norm when there are so many other creatures with completely different perceptions.

Slowing down the gang-gang calls does strengthen the messages regarding the endangered status of the species, as discussed previously, although I did not choose these messages from the outset of the project. I had not specifically planned to capture the calls of any endangered species on my fieldwork trip, although I was thrilled to have done so for personal, creative, and archival reasons. Despite this, I do not think the endangered status of the gang-gang cockatoo species influenced my composition process, since I originally wanted to use Paulstretch on sulphur crested cockatoos. I stayed true to the original plan of opportunistic fieldwork recordings and created compositions with whichever recordings I was able to acquire and use. While the conservation status may not have affected my process, it has affected the way I think about this piece, the meaning I have now associated with it, and the change in title. That being said, I do not believe that the meaning in this

piece is any more or less valuable or important than the scenes depicted in the other creative works. It is a fact that the species is endangered, just as it is a fact that the Australian reed warbler was singing continuously, and that is what I have chosen to represent in each of my pieces. All environments and all beings are affected by the hierarchies highlighted throughout this research project, so I do not favour certain ecosystems or species over others in my recordings or music – the inclusion of mole crickets in *Frantic* being a case in point.

Chapter 10 – Conclusion

10.1 Summary of Aims and Methods

The aims of this thesis were to tackle the issue of human-nature hierarchies and separations, once important for our survival, now contributing to environmental degradation and threatening our longevity. The way in which environmental activism often relies on “flagship” and “charismatic” species as fundraising drawcards is a key example of how implicit hierarchies can strip other-than-human animals of value and agency, whilst weakening human kincentricity towards our own environments and our place in the animal kingdom. Plumwood (2009) suggests that significant changes to this implicit hierarchical thinking requires human cultural practices to adjust, a task that needs its own strategies. Researchers such as Whatmore (2006), and O’Gorman and Gaynor (2020) in the environmental humanities are currently uncovering which ethical, scientific, and geographical changes are necessary for progress, and, as Dunn (2008) states, enacting these changes on a broad scale calls on the communicative power of the arts.

I have taken on this call, writing six evocative pieces of music that aim to destabilise these (and more) hierarchies through the effective use of musical languages in tandem with the voices of the ecosystems and other-than-human animals. By undertaking my own fieldwork to do opportunistic wildlife sound recordings, I have placed myself as a component in the research and composition processes from the outset. As an embodied listener, I have had the agency to translate my perceptions and experiences into the music. The transcription of recorded wildlife sounds has taken on multiple innovative forms, with each target species’ voice and behaviour contributing to creative choices. The similarities

between wildlife sounds and minimalist techniques have been fully utilised in each piece of music, leading to anthropocentric and traditional musical hierarchies being questioned.

The hierarchies that have been destabilised by the portfolio as a whole are, the (often anthropocentric) hierarchies between humans and nonhuman animals; the hierarchies of value that humans ascribe to different species in terms of usefulness, charisma, or musicality; the hierarchies that prescribe (musical) narratives more meaning and depth than complex, multivalent scenes; the hierarchies that raise the traditional Western musical values of melody, harmonic movement, and tonality above other musical elements and expressions; and other, more niche or nuanced hierarchies I uncovered through the composition process. In the following pages, I will examine the stakes of my compositional choices in light of the issues identified at the beginning of the conclusion and these hierarchies just mentioned.

10.2 How the Portfolio Operated within the Research Project

Frantic explored minimalist techniques that worked well with the already repetitive cells of the noisy miner dawn chorus and Eastern koel contact calls, and with the slow-motion world of the mole cricket, concretising the use of minimalist techniques with wildlife sounds to destabilise hierarchies in this research project. The first movement of *Frantic* begins with blatant themes of birds as co-creators with humans, and noisy miners equally as musically valuable as other species of birds. Both of these points invite the listener to challenge their own assumptions through the remainder of the movement. Their assumptions are further challenged as they tackle the hierarchies of vertebrates vs invertebrates and narratives vs scenes in the second movement, and the struggles of power

between species in the third. The piece as a whole aims to subvert expectations, platforming unlikely, “noisy” species of Australian animals as musically worthy.

As the first composition in the portfolio, the results from *Frantic* also crystallised the main transcription method. As evidenced by the noisy miner calls transcribed for piccolos and crotales, the mole crickets transcribed across multiple instruments, and the *Eastern Koels* transcribed for alto saxophone, my process of wildlife sound transcription has worked well. Due to the success of the transcriptions, I have used these method for many of the other pieces, modifying the process slightly when needed.

Reed Warbler introduces additive, repetitive musical scenes that foreground the plain brown bird as a virtuosic master, capturing the recordist’s attention and time, while also allowing the composer interpretive freedom. The main observation I was able to draw from my own practice was reverence for this bird, which I was able to communicate to potential listeners through the music, unsettling species vs species hierarchies along the way. This particular species of bird, the Australian reed warbler, was new to me, and despite my exhaustion while recording, I stayed for the full half hour that the bird was singing. The minimalist techniques I used, detailed in Chapter 5, enabled me to compose a hyper-detailed scenic view of the moment, rather than a fleeting narrative structure, resulting in a piece that shines a spotlight on the vocal skills and stamina of the individual bird.

While the Australian reed warbler would not be labelled as a flagship species or charismatic fauna due to its plain brown appearance and “least concern” conservation status, its virtuosic and intriguing cell-like vocal repertoire was exceptional. This directly addresses the problem with the strategy of flagships and charismatic species, namely, that

animals' worth is drawn from their usefulness to humans, which contributes to distorted hierarchies and strips agency from the chosen species within their own living habitats.

In the Reeds (with a Reed Warbler) brought together the imagined character of the percussionist performer and the recorded audio of the Australian reed warbler. This piece explored the agency and equality between the two beings, offering a number of possible combinations of artistic attitudes towards the simplistic idea of a duet. In creating these sustained scenes of different ways of duetting, several intellectual and musical hierarchies between the human and the bird were subverted, inviting the listener to consider the bird as an equal - or even sometimes superior - to the percussionist.

The chosen instrumentation, four tom-toms and the prepared recording of birdsong, clash timbrally, challenging the status quo of traditional Western art music. The inclusion of my voice at the beginning of the recording adds a sense of location that can transport listeners away from the concert hall, extending the challenge further. This piece stands out as both common ground and a battle for musical territory between the two animals, human and bird, connecting them in an esoteric environment with sonic jostling made from untraditional sounds. This scene uses the fabric of the music to unsettle both anthropocentric and musical hierarchies in a new way.

Grey Fantail started as a digital piece comprised of snippets of birdsong and ended as a rhythmically driving display of the calls and behaviours of a grey fantail written for strings and winds. In de- and re-constructing the grey fantail's songs and mannerisms, various processes unfolded, revealing slowly changing musical atmospheres that built more character with each following section. This piece leant on the interaction between myself

and the bird and my interpretation of its reaction to me, more than the other pieces in the portfolio. It also had more sustained use of rhythmic repetition and additive processes throughout, demonstrating that minimalist techniques and birdsong can create rich musical scenes which portray complex multispecies relationships.

As well as portraying these multispecies relationships, *Grey Fantail* begins to question hierarchies regarding anthropocentrism and the environment. As the particular grey fantail I recorded was essentially a custodian of its territory, it follows that its territory is significant too. Not only was I recording a bird, I was also possibly threatening a habitat that was not mine to visit. Therefore, place and environment are woven into the piece, and are as equally present as the grey fantail, its song and movement, and the human interpreter. When performed, this equalising of voices destabilises those previously mentioned hierarchies, suggesting that place (including on stage), bird (or performers; the interrogators), and human (including audience; the interrogated) have fascinating, intricate group dynamics.

The fundamental concept of *Frog Almost* was to bring a frog chorus from near the Barrington Tops to the stage through music, and this was achieved through custom notation. As frog calls rarely feature pitch, opting instead for repetition of distinctive timbral motifs, I was not able to use traditional musical notation. I wanted it to sound as froggy - rough, silly, and sincere - as possible, which was factored into the notation system from the beginning through its whimsical hand-drawn style. The character of this piece relies on the performers' interpretations of the score rather than the composition of the music, especially because of the lack of most of the common musical elements, and the aleatoric

spacing of the calls. Therefore, the innovative appearance of the score has a great impact on the way the piece sounds.

The primary goal of the piece was to call attention to the discrimination that frog calls face when it comes to their incorporation into performed music. Birdsong features elements that align with traditional classical music, causing it to be much more prevalent in composed music. Frog calls, on the other hand, tend to feature timbre, texture, and rhythm as the predominant musical elements, lending them a much closer resemblance to minimalist music. This fact, however, had not yet been explored. *Frog Almost* uses minimalist techniques to commentate on the representation of animal sounds in music, hinged on the fact that frogs are often dismissed as musically worthless. The words of the poem that are woven into the piece (“when he hop, he fly almost” (Anonymous, n.d.)) reinforce this message, likening the frog to the bird – an apt comparison in many ways. As such, *Frog Almost* has challenged the hierarchies which presume that birdsong is more musically valuable than frog calls through charismatic, innovative notation and the use of a musical language that suits their rhythmic calls.

Stay here longer succeeded in representing a diversion from the anthropocentric view of human time as the default – an assumption challenged through the use of an original, digitally-assisted transcription technique, long-form minimalist structure, and the calls of the endangered gang-gang cockatoo. Using Audacity’s built-in “Paulstretch” to slow down the recordings of the gang-gang cockatoos uncovered the underlying harmonic fingerprint of their usually atonal, creaky calls. Transcribing these slowed calls extended the original second-long recordings into minute-long calls, resulting in a piece with an elusive

timescale, which then exposed listeners to micro-tonal dissonances over a long period of time, encouraging them to become comfortable with the new harmonic atmospheres.

This innovative process resulted in a focus on temporal perception across species, similar to the mole cricket calls in the 2nd movement of *Frantic*. Strong themes of animal agency, alternative types of listening, and anthropocentric frames of reference are addressed through the combination of long-form minimalist structure and slowed down gang-gang calls. Of particular significance is the idea of types of listening and how it relates to wildlife sounds, especially in terms of “noisy” species such as cockatoos. When considerably slowed down, harsh, noisy sounding bird calls can become beautiful and intriguing. Perhaps this slowed down version of the call is closer to the sound received by the intended avian listener, since birds can process sounds faster than humans can using their different temporal resolution abilities (Dooling et al., 2002; Dooling and Prior, 2017).

10.3 Recommendations for Future Research

There is yet more space for composers to continue to incorporate wildlife sounds, minimalist techniques, and a human element into their music whilst working alongside fellow researchers, especially in fields with substantial crossover such as acoustic ecology. There are further steps to be taken in the area of musical communication of environmental problems while navigating and destabilising hierarchies which threaten to harm humans and other-than-human animals in this multispecies world. Working with researchers in the environmental humanities and with activists could help to inform the public about both problems and successes in their local and non-local surroundings. For example, once data has been collected from acoustic ecological recordings, composers can communicate that data, musically infused with transcriptions or the recordings themselves. Some composers

have already created works like this. For example, Leah Barclay combined environmental research with original sound art to generate environmental awareness in *Sound Mirrors* (Barclay, 2014), and The ClimateMusic Project based in San Francisco performs “exciting new content that leverages technology to reach global audiences with inspiring, content-infused music” (ClimateMusic, 2025). I encourage more composers and zoömusicologists specifically to look into these concepts.

While writing the initial version of *Grey Fantail* on GarageBand, I was held back by my own still-developing skills in digital music. Incorporating the advanced technological power of new digital workstations could take original minimalist concepts and repetition much further, and has already begun to revolutionise the minimalist genre (Glover, 2013, pp. 178-180). Doing more with minimalism, my recordings of wildlife sounds, and digital music techniques is something I would like to explore fully, so I am working towards gaining the necessary skills.

The last facet of future research that I would like to touch on is completing the pieces that I only conceptualised during this project. The pieces I had prepared were:

- *Abuzz,*
- *Cicadas take over, and*
- *The Seagulls of Circular Quay (Suite).*

Abuzz is an installation piece using donated old mobile phones with different vibration tones, set up so that audience members can call or text the phones to make them vibrate in response. The idea is to create a human parallel to the idea of bees using

vibrations to communicate (Fisher, 1988), since humans (who have their mobile phones set to vibrate for notifications) actually communicate this way as well. I wanted to sit with a native Australian beehive as part of my fieldwork and listen to them so I could understand a little more about which vibration sound effects I should set the phones to use. The issues in including *Abuzz* in this project were the pricing of sim cards, the amplification of the vibration sounds, and finding an event at which to present it.

Cicadas take over is still in the planning phase. It is based on an experience I had at the peak of the Barrington Tops, in November 2020. There must have been thousands of cicadas (unknown species) making noise amongst the trees – the sound waves were almost physically oppressive. The interesting thing about the cicada sounds was that no matter where I walked, the cicadas around me seemed to be pulsing in time with each other, whereas those further away seemed out of time. This phenomenon has been studied and documented in cicadas (Sheppard, 2020) and other chorusing insects (Greenfield, 2017).

I hope to recreate this effect with the help of 100-200 humans in a grid, spaced 5-10 metres away from each other, equipped with sleigh bells. Sleigh bells were chosen based on similarity to the original cicada sound, and financial feasibility. The instructions would be for everyone to look and listen to the closest person to their right, and to try to pulse their sleigh bell in time with that person. To members of the general public, it should seem that the players near them are in time with each other, and players further away are not. To add to the piece, it would hopefully recreate the oppressive sound of cicadas from both near and far.

The Seagulls of Circular Quay is the name of a vocal piece for SSAT choir that I wrote during this project, with lyrics about the behaviours of the flocks of seagulls that reside at Circular Quay, Sydney, NSW. The lyrics I wrote are:

“The seagulls of Circular Quay,
They are always watching.
With a keen eye, head turned to the side
they spy you holding a fry. So sly,
they fly in, swiping while you’re imbibing,
on a Saturday evening.”

As the song is only 1’30” long, is not based on minimalist techniques, and does not include the caws of seagulls, it does not qualify for this project. That being said, I have started to write a suite of choral songs focusing on how other-than-human animals have found ways to thrive amongst humans in urban and suburban environments. This suite would have lyrics about species that are not particularly vocal, but that share our environments with us, potentially including possums, brush turkeys, native rodents, huntsman spiders, mosquitoes, carpet pythons, and crested pigeons. These short songs would continue the work being done in this research project, unifying all beings in our shared ecosystems.

10.4 Final Statement

This dissertation and the portfolio of musical works demonstrate the significance of the creative arts in reshaping human relationships with the other-than-human world. Each composition draws on the voices and behaviours of Australian species, recorded and interpreted through the experience of embodied fieldwork. This has led to the further development of animal sound transcription and notation methods within a range of

instrumental and vocal configurations. These works explore how the sounds and behaviours of other-than-human life can inform and mesh with hierarchy-defying minimalist musical structures, resulting in music that challenges the hierarchies that position humans above other species, and that separate animals from the ecosystems we inhabit.

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