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AN OMNIVOROUS EAR:

THE CREATIVE PRACTICE OF FIELD RECORDING

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Hughes Hall

Submitted for the degree of Doctor of Philosophy

Faculty of Music, University of Cambridge

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Viva Committee: Professor John Levack Drever & Dr. David Trippett

Summary

"An Omnivorous Ear - The Creative Practice of Field Recording" offers new insights into the history of recording outside of the studio in North America, challenging the various working definitions of field recording in music studies, anthropology, and communications. I examine recording methodologies through the late 19th and 20th centuries as a documentary technique, a tool for composition, and an art object in the United States of America and Canada from the late 19th century to the present day. Within this geographical region, I focus on the invention of acoustic recording, the proliferation of the technology amongst the public, folkloric recording supported by governmental and academic institutions, as well a experimental artistic practices. Throughout the dissertation, I argue that 'the field' is a social construction mediated by the recordist and recorder. Chapter 2 focuses on how cultures translate collective and phenomenological experiences into histories through sound media. These include orality, writing, the inscription of sound waves onto media, acoustic recording, and radio as forms of sound media that each embodies distinct forms of social and political knowledge. Chapter 3 details the development of recording machines and their effect on listening practices. Chapter 4 locates practitioners of phonography within the development of portable recording equipment on the one hand and the 'hi-fi' cultural movement in North America on the other. Practitioners included folklorists Alan Lomax from the Library of Congress, Moses Asch of Folkways Records, and Harry Smith, creator of the Anthology of American Folk Music; Stefan Kudelski, creator of the NAGRA recorder; and media maker Tony Schwartz, among the first to create the sound documentary by editing field recordings. Chapter 5 explores the relationship between sound, music and the environment within the paradigm of the soundscape as theorized by the World Soundscape Project (WSP). I critique the research and compositional practices developed by WSP members, and the influence it has on ecomusicology and sound art. Chapter 6 outlines *sonic ethnography*, a methodology that borrows from the best practices of many of the individuals mentioned throughout the dissertation, and employs new compositional techniques to condense and manipulate social, political and historical narratives through sonic works. The dissertation concludes by arguing that field recording, can be used to critique aesthetic and cultural dilemmas of representation.

Declaration

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Preface

While this dissertation draws from multiple histories of listening practices, there are key themes addressed and returned to throughout the text. The most urgent question is: what exactly can we define as field recording? Alternatively, what set of practices constitute field recording, and who sets the limitations of these practices? Literature concerning field recording often references specific sonic practices without reviewing their historical lineage. For example, a great deal of ink has been spilt on the concepts of musique concrete the soundscape, as well as those who coined the respective terms – Pierre Schaeffer, and R Murray Schafer. However, there are individuals and groups of recordists whose technical and creative work has been grossly undervalued. While a great many academics and sound artists have moved beyond these term 'soundscape,' there is a gap in the research concerning field recording in the first half of the twentieth century. Preceding the practices that would be formally called field recording, there is little written about the inspiration to record sound outside of the studio environment in the first place. To address these gaps, I identify how oral traditions and early writing practices established ways of thinking about sound long before the invention of mechanical and electric audio recorders. By linking oral traditions with writing and recording, I argue that medial practices that document heard events contribute to the construction of 'the field,' an approach to listening as both a subject and an object for observation and study. I also offer tools for the musical and critical analysis of field recordings, drawing from the empirical study of audio, as well as the interpretive study of field recordings as a field of inquiry. Lastly, I pose the question of how to listen with an ear to the aesthetic and cultural value of recordings, arguing that recording ought to be thought of as a form of scholarship and therefore held to the same rigorous ethical codes and individual moral considerations as research projects and the resulting texts.

Artistic practice, fieldwork, and archival research have been connected throughout the course of my research. Similar in spirit to Nicholas Cook's "Analysis through Composition" (1997), proficiency in music production and sound recording lends itself to researching field recording practices. The ability to think critically about sound ought to be accompanied by adeptness at sound production. And while a recordist does not have to be a technician, much like an instrumentalist does not have to be a luthier, a technical knowledge of sound does uniquely enhance the study of field recording because it is an electrical instrument. Appropriately, this research consists of fieldwork that involves making field recordings in a variety of settings. I

have conducted interviews as one might collect during ethnographic field research, compiled a series of music recordings such as an ethnomusicologist might make, researched archival recordings dug up from collections that have not been heard since their creation - a responsibility that often lies with folklorists, musicologists, and archivists – and composed environmental soundscapes made in rural and urban areas, as a sound artist might do for installation work. To research field recording, it was necessary to acquaint myself with its many uses and forms. My field notes, presented throughout the dissertation, have taken the form of multimedia.

Critiquing recording processes has been an integral part of my archival research. In February and March of 2014, I visited Smithsonian Folkways Recordings in Washington, DC, to examine auditory media and photographs related to the field recordings and sound documentaries of Emory Cook and Tony Schwartz. During my time there I discovered unreleased sound documentaries made by Schwartz, one of which was made with Marshall McLuhan. Research at Folkways contributed to my fourth chapter, where I describe the context in which recordists - notably Schwartz and Nagra inventor Stefan Kudelski - made their own portable recording devices in the late 40s and 50s.

The very premise of field recording is that one is recording in a place with such particularity that the sonic event could not occur anywhere else in the same way. That means this dissertation is also geographical in nature. In studying and critiquing these techniques of recording, I have learned and performed many of them: record cutting, urban phonography, collecting and archiving media, curating sound installations, and developing sound maps. Each of these learned practices is associated with the time, place, and culture of a recording. Using a 1930s Presto K8 disc cutter, which I refurbished to working condition, I made several records 'live-off-the-floor' with a single microphone corresponding with the same period, in effect simulating a common recording condition. The conditions of recording were observed to further understand the historical materials available through the Library of Congress, Smithsonian Folkways Recordings, and Thomas Y. Levin's Phono-Post archive.

As a method of researching the materials and practices of field recording, using binaural and head-worn microphones, environmental soundscapes were captured for electroacoustic performance and installations. Binaural sounds of the city of Toronto were recorded for Tod Machover at the MIT Media Lab as a part of his collaboration with the Toronto Symphony

Orchestra, *A Toronto Symphony: Concerto for Composer and City* (2013). Head-worn microphones designed using Leonard Lombardo's DSM recording system were used for urban phonography. Experimentation with this system resulted in a piece called *If One Night* (2013), commissioned by the theatre company Collodion Remedy at Trinity St Paul's United Church, Toronto, ON, and published by the Centre for Imaginative Ethnography, York University, along with responsive commentaries by anthropologists Ken Little and Cristina Morretti. This same technique was used to create environmental soundscapes in Sydney, Nova Scotia, in the fall of 2013, for an archive of ethnological media on immigrant life on Cape Breton Island. Along with interviews of residents, these sound pieces were presented on CBC Radio 1 in the fall of 2013. These sound pieces were also included in sound maps, embedding digital audio, images, and text within mapping coordinates for presentation on geographic information system platforms such as Google Maps. Research in sound mapping has resulted in a workshop series designed for the Humanities Without Walls initiative run by Isaac Weiner at the Ohio State University and Amy DeRogatis at Michigan State University, now a national initiative called the American Religious Sounds Project, where I am a member of the advisory board.

In April 2014, I visited the Sensory Ethnography Lab at Harvard, where a course on Sonic Ethnography is taught. I also gave a paper at the Society for Visual Anthropology called *Toward An Audio Vérité*, about the use of sound in point-of-view and observational documentary cinema. In this paper I suggested that location sound recordings are used kinaesthetically, contributing the sense of embodiment within the medial frame of the video/film. This is a part of my sixth chapter on sonic ethnography. I curated an exhibit at York University that uses a combination of audio-visual materials and sound map installations about the cultural history of immigrant communities from Maritime Canada, using a combination of soundscape compositions, music, interviews, and CBC radio broadcasts. A public viewing and roundtable discussion took place on May 1st, 2014, as part of the Canadian Anthropology Society conference.

From 2015 to the present, parts of this dissertation have become teaching tools for research and creation of field recordings in a variety of settings: in classes related to ethnomusicology, anthropology, comparative studies, religious studies, film and media studies, community-engaged arts, and professional development workshops. Outreach and impact have been as

important as the writing process to the development of this dissertation and to my growth as an artist researcher.

It is telling that this research is conducted by an author who is Canadian, trained in anthropology and visual methods, within a faculty of music in the United Kingdom. Field recording has a rich history in both of those regions. For Canadians, sound studies is a discipline rooted in communications and media studies. A decade after Marshall McLuhan, himself an Alberta native and professor at the University of Toronto in Ontario for the majority of his career, published "The Extensions of Man" (1964), sound studies came into its own in media studies. Composers under the tutelage of R Murray Schafer – The World Soundscape Project (WSP) - joined the Simon Fraser University School of Communication in British Columbia to support research that culminated in Schafer's text "The Tuning of The World" (1977) and a database of thousands of environmental field recordings. The WSP continues operation to this day as the Sonic Research Studio, first under the supervision of Barry Truax, and now Milena Droumeva. The influence of these publications and recordings was widespread and has resulted in the formation of the World Forum for Acoustic Ecology – the largest groups of recordists devoted to documenting environmental sound. In the United Kingdom, sound studies thrive in and out of the academy. The London College of Communications' Creative Research into Sound Arts Practice (CRiSAP, directed by Cathy Lane), Ian Rawes' The London Sound Survey, and the Reel to Real sound studies project by ethnomusicologist Noel Lobely at the Pitt Rivers Museum, Oxford University, are all actively researching sound studies within the boundaries of communications, archival sound, and anthropology, respectively. Jon Wozencroft's Touch label further extends the reach of sound studies through experimental sound art available for consumption through digital multimedia, sound installations, live listening sessions, and performances in the London area. The variety of publications and media developed within UK-based institutions reflect an engagement with field recording in such myriad ways that it is impossible to define field recording in just one way. My observation as a researcher and practitioner has been that the more one investigates the matter, the more challenging it is to define clear boundaries as to what field recording really is. This dissertation is partly autobiographical in the sense that one's understanding of field recording is defined by practice. So, while this PhD course is not practice-led, it is experiential in the sense that studying recordists' lives, listening to their works, and attempting

the methods myself provided extraordinary insight into the epistemological jump to be made between field recording as the subject of study and the practicalities of being a field recordist.

This dissertation includes a series of recordings, some of which were made by me to mimic the conditions of recording mentioned throughout the text. These, along with interactive website URLs, are listed in the appendices. Apropos, listening is required.

Prelude

I end the summer of 2013 by traveling across the southern part of the United States, collecting recordings of ambient soundscapes while moving my brother from North Chicago, Illinois to Upper Richmond, San Francisco, California. We pick up and drop off furniture for his friends along the way, arriving in a new city at the end of each day, and look for a cheap hotel and a place to eat. Our days consist of 8-11 hours of driving. I feel the highway roads change beneath my feet. The contact of the wheels vibrates my body and sounds out changes in the landscape as we make our way south. Rain muffles the sound of the tires connecting with the pavement in Iowa City. Dust and pebbles slap against the side of our U-Haul as we drive through Denver to Santa Fe. Heading North from Los Angeles, the wind of the Pacific makes the truck creak and groan as we drive over the Redwood City. Finally, we arrive in San Francisco. Still, the soundscape is changing every day.

I have done this drive before, and I know that it is worth documenting through sound. I bring with me a small kit: some in-ear headphones, a Sony stereo field recorder, two omni lavaliere mics, and a Sonic Studios head-worn binaural microphone. I carry these mics in my shoulder bag at all times. My presence is always divided between the moment at hand and attention to technical matters. Did I replace the batteries in the recorder today? Do I trust the recorder's battery indicator? Should I buy more AAs? Is the gain too hot? What am I wearing today? Will it muffle the sounds around me? Do my shoes squeak when I walk through a hallway? Do I always shuffle this much?

Every time I take out my recorder, someone jokes about the voyeuristic nature of what I am doing. It's true; the recorder eavesdrops and 'overhears' conversations wherever I go. The binaural system I wear looks just like headphones, so nobody notices what I am doing. I fumble with the switches, check my levels, and press record. As the meter starts, my friends fall silent. Suddenly, we are all listening along with the recorder.

By the end of our trip, I am hiking in Muir Woods National Park. I try to stay silent as I make my way up a hill, but I can my feel my heavy breathing, the beads of sweat running down my temples, soaking into the windscreen of my mics. The forest's silence is punctuated only by the sound of birds in the distance and by other visitors in the foreground. This place, the 'Redwoods Sanctuary,' is filled with tourists. The click of camera shutters is all around me. I climb to a more secluded space and listen for something else, a soundscape untarnished by others.

Later, I sit at my computer and begin to edit out parts of the soundscape. I am in Toronto, New York, Chicago, Washington DC, and London, listening for the place I had hoped to capture. As I splice together my recordings and compose a sound piece commissioned for theatre, I hear a voice I did not notice during recording. She asks, "What was that?" I suspect she is talking about the kids in the distance emulating birdcalls, but as I listen closely to the sounds I have collected, I am thinking, "It is me." It is my breath, my panting into the microphones, my feet against the branches, kicking up dirt and dust. When my head turns, so do the microphones. My recordings have captured me, my body, as much as my surroundings.

Notes for composition "If One Night," July 2012 (Rosenblum, forthcoming 2017)

Chapter 1: Introduction - We Are All Producers

In 2011, after an academic year of studying ethnographic filmmaking in London, I experienced a sonic event that would radically change my hitherto visually oriented thinking; the riots in Peckham and Lewisham had taken over the high street, where my flat was located. After three days of hibernation, cautiously peering out of my window to see the damage incurred by local shops, I left for the Sainsbury's just down the block. What struck me was not the devastation to physical infrastructure I expected based on BBC reports, but the silence of the streets. In a city where bustling crowds are expected even on side roads, East London had become eerily quiet. Voices of the middle and working class in New Cross were hushed - a political dissent in their quietude. My reaction to the lack of cars, cyclists, pub patrons, televisions, radios, and local shops was visceral, a terror in broad daylight.

Despite my primary academic interest in music and performance ethnography, I was not prepared for my own sense of place to be altered so drastically by a lack of sound*:* what Brandon LaBelle might refer to as an 'acoustic territory' (2010) in flux. Within that moment of auditory vertigo lay my first exposure to a dichotomy of noise and silence reversed from the common notion of noise as the sonic intruder. My reaction was a realisation of the acoustic epistemologies entrenched within political urbanism and civil unrest that existed around me constantly but had gone unnoticed.

I retreated to my flat to attempt a further understanding of the event. At this moment, my own neighbourhood had become a field site. Despite my year of film and video training, I sensed that the camera would not capture my experience. I had replaced my eyes this time with my ears as an instrument of qualitative research. I have since grown to understand that event as the catalyst for my own auditory turn. Thus, my desire to do anthropology through media shifted toward an ontological framework of auditory media and culture.

The Ethnographic Ear

After three years of filmmaking, photography and devoting my efforts to honing my ethnographic eye, I begin to ask what Veit Erlmann posited in "Hearing Culture," Erlmann et al. (2004) lay the framework for modes of ethnographic listening: What of the Ethnographic Ear? The ears of the microphone allow us to listen through the ears of another, expose us to

forms of undiscovered forms knowledge (2010) and using the recorder as a set of ears that both document and interpret knowledge.

In addition to the common practice of field recording – whether called by its name or otherwise - a radically growing interest in music production has given rise to entirely new genres of music. Listeners will know Electronic Dance Music (EDM) as a popular genre of music that rose to popularity in the 2010s when music production software became ubiquitous on new computer systems. The ability to create entire releases from start to finish without expensive hardware, commonly referred to as 'in-the-box' production - with programs such as Ableton Live and FL Studio (formerly Fruity-Loops) - privileges creativity and rhythm-matching manipulated with a graphic user interface over knowledge of music theory and Western Art Music notation. Digital audio workstations and software-based sequencers afford anyone with a computer the opportunity to become a producer. This is a well-documented phenomenon in the music industry, sparking a debate centred around the potential for the home studio to replace the professional studio entirely. Ethnographers have observed this phenomenon up close by participating in composition simply through participation: taking part in the process of producing and performing as it exists on multiple platforms, both real and virtual. One example is Kiri Miller's "Playing Along: Digital Games, YouTube, and Virtual Performance" (2012) encourages musicologists to rethink the concept of fieldwork by participating in gaming, where networks of users create and perform music within the boundaries of the game design (such as composed 'music-minus-one' songs, leaving room for the Guitar Hero to take the lead [Ibid p13]). In so doing, gamers and ethnographers become amateur producers, and contributors to a community of "game designers, players, choreographers, dancers, writers, composers, directors, performers, and audiences, as well as marketers, publishers, and other commercial mediators" (Ibid p5). While these examples demonstrate that sound recording and manipulation software, and even gaming in music, have become ubiquitous, the extent to which we have embraced digital technologies in sound recording goes largely unrecognised. Everyone is a producer: music and media technology is no longer specialised or proprietary knowledge. Through the democratisation of music composition, the notion of musical expertise has been changed and challenged. This is not just in regards to music creation; the move towards a democratisation of mobile media devices means that everyone is an amateur phonographer.

Accordingly, phonography as a common practice is on the rise. As one can surmise from another common name for the practice, field recording is done outside of the studio environment, rendering exciting and spontaneous results when pressing record. The very notion of the field sounds exciting: somewhere far off, exotic, known, different, or other. Many phonographers are attracted to this lack of predictability, an experience far from the controlled environment of the modern studio. What is heard on a conventional studio recording is entirely unlike what would be heard in an acoustic space filled with natural ambience, and often overwhelming sounds of urban and industrial activity. This is a fundamental contrast between studio recordings and field recordings. Recording in an environment outside of an acoustically treated studio often means that the sound field is full of ambient noises; objects heard moving through the acoustic space, and effects of varying volumes and proximities. Whether it is a recording of a music video in a live setting with a single handheld camera adding an air of authenticity to a performance, or a recording made in a historic site with unique acoustical qualities, listeners in popular music have fetishised field recording.

While musicians are not expected to be musicologists or have an understanding of the effect that media has on their work outside of a marketing or aesthetic effect, ethnographers have an obligation to think critically about how they represent communities and cultures they engage with through representation in film, video or audio. In a recent blog post, "What was documentary? An elegy for Robert Gardner", film critic Kevin B. Lee writes:

> Documentaries are no longer confined to cinemas and television; they are practically everywhere, because people are now equipped to make and watch them all the time. YouTube, Instagram, Vine and Facebook have collectively built a vast, unruly new ecosystem of personalised documentary production and exhibition. People are constantly sharing their realities with each other, with such convenience and immediacy as to trigger an epidemic of compulsive one-click behaviours: 'like', 'fav' or share.
>
> (Lee 2014)

In our constant state of mobile connectivity, users leave voicemails, record music on our computers for distribution on YouTube, and generate audiovisual materials in the form of Multimedia Messaging, Snapchats, and Instagram videos. For most of us, the sounds we create

are a mere side effect of our daily routines: communicating with others during our commute, making plans, closing the gap in long-distance relationships. Mobile phone users do not consider themselves amateur phonographers just because they carry around a device that contains a microphone. But should they? When a mobile phone records a conversation with sensitive information or captures an altercation that is then used as an 'Exhibit A' for a legal case, or just more likely is uploaded to social media or online news and subjected to scrutiny by journalists or populist political pundits, the average media consumer, and media maker might think twice as to how they treat their phone-cum-recorder.

For those scholars and artists thinking critically about how they use media, a heightened awareness of how recorded sounds leave traces are hugely important to our perception of place. **The one consideration to take away from this entire dissertation is that no matter how a recording is made and by whom, recordings are cultural documents that contribute to forms of knowledge production and may drastically affect those people and places that have been recorded.** In creating recordings, we affect and are affected by our acoustic environment and the cultural context of sounds: soundmarks of places and times. In "Senses of Place," Steven Feld and Keith Basso write that:

> [as] people fashion places, so, too, do they fashion themselves. People don't just dwell in comfort or misery, in centres or margins, in place or out of place, empowered or disempowered. People everywhere act on the integrity of their dwelling…[these] placements [reside within] cartographies mapped, sung or storied…in local knowledge of well-attended paths or roads made vague by having no names or too many, and in the voicings of deep aphorism, memorial poesis, heated backtalk…humorous quips, true-to-life fictions, and what goes without saying.
>
> (Feld and Basso 1996, p11)

As Feld and Basso unravel in their text, senses of place can often be traced through media, such as maps, recordings, speeches, and correspondence. This dissertation focuses on field recording's ability to demonstrate the sensations of place and their cultural effects: it begins with the written work of the epic poets meant to be read aloud in order to place listeners 'in medias res' - into the midst of things - and ends with methods of digital storytelling and nonlinear interactive digital sound media.

In this dissertation, I navigate through gaps in histories of technological innovation that are used and abused by phonographers to record environments urban and urbane, using the microphone to extend an ear out into the world. This dissertation treats the recorder as a tool that grants social agency and establishes complex power relations between recordists and those who are recorded, and examines the role of the recordist as a collection of embodied practices that are at times a manifestation of privilege, at times subversive, and always political. It is made up of three parts, each of which focuses on an assemblage of histories affected by the practice of location and field recording, defining histories through location recordings, canonising musical works through anthologising collections, and making place through curated sound pieces.

In Chapters 1 and 2, I describe the ways in which listeners have historically documented sound predating mechanical recording. It is as much a theoretical inquiry into the philosophy of listening as it is an analysis of how we account for sounds in multimedia. I assert throughout these chapters that we are always listening and sounding. Sounds drop us into the middle of occurrences: they are the markers by which we identify with things. Our listening is not contained within a framed narrative; it is the continuum of sounds that we experience. Media techniques in the epic and film noir cinema immerse the listener within the sonic environment: a sensorial 'cold open.' The soundscape accomplishes what Horace prescribed of the epic poet: "always he hurries to the action, and snatches the listener into the middle of things…" (Ars Poetica [Poetic Arts], 13 BC Lines 147-149). Thus, every soundscape is an attempt to contain that which is 'in medias res.'

Citing a variety of scholars in language studies (Steven Connor), sound art (David Toop), and musicology (Alexander Rehding), I investigate the changing relationship that sound has with each respective discipline. This section also deals with drawings and epigraphs as documents of sound, and alternative forms of notation, such as the phonautograph that inscribes waveforms. Methods of exploring the earliest sound media are reviewed, such as the compilation of written works related to sonic events, Auditory Archaeology, and the computational techniques employed to create sonic events from earlier technologies, notably Patrick Feaster's theory of Sound Eduction.

In Chapters 3, and 4, I critique narratives developed through phonographic practices both popular amongst avid listeners of American folk music and relatively unknown North

American experimentalists: covering the development of location recording technologies and their use, from wax cylinder recorders to media more conducive to recording in the field, such as lacquer disc cutting, wire and tape recording. The use of these technologies and the politics of their phonographic engagements are described in the context of the recording environment; an ethno-organology of the location recorder and recordist across the United States of America in particular. Technological innovations such as Thomas Edison's Phonograph cylinders, early Binaural broadcasting, and recordings made for playback on the Victor Talking Machine had suggested early practices of field recording before it was even called 'recording.' The portability of the Chicago Webster wire recorder, as well as the PRESTO and Wilcox Gay Disc Cutter's of the 1940s and 50s America, furthered field recording practices by making it available to middle and upper-class families. Field recordists were early adopters of these technologies, using them for documentation and experimentation. John and Alan Lomax's body of work, the Association for Cultural Equity, as well as his theory of Cantometrics, are reviewed and critiqued as the first collection to bring together music from around the world and perhaps unfairly compare them. Similarly, I give a history of the recordings and business of Moses Asch, beginning with his failed record labels 'Asch,' 'Stinson,' and 'Disc,' and the successful and long-running Folkways releases. Asch's colleagues - sound engineer and inventor Emory Cook, sound documentarian and media theorist Tony Schwartz, and folklorist and mystic Harry Smith - also created formidable discographies in their lifetimes. Their releases are early examples of American field recording, innovative sound documentaries and soundscape compositions, such as Cook's *Railroad Sounds*, *Ionosphere: High Latitude Sounds Recorded at Various Speeds*, *Science of Sound* and *The Spirit Cries: Music from the Rainforests of South America & the Caribbean*; Smith's now-famous *Anthology of American Folk Music*; and Schwartz's: *New York 19* and *Sounds of My City*. This section examines the ways in which sensory perception and critical listening affect the understanding of soundscapes (for audile techniques, see Sterne 2012), analysing works from a critical period of innovation between 1946 and 1977, and using both ethnographic methods and empirical visualisation techniques borrowed from computational musicology (Cook 2004).

In Chapters 5 and 6, I describe the digital distribution of field recordings and associated writings through cartographic and ethnographic methods. Highlighting the Canadian composers that formed the World Soundscape Project (WSP), I examine the influence of Tony Schwartz's sound documentaries and fellow Canadian Marshall McLuhan's media

ecology on acoustic ecology, as well as the field recordings and writings of R Murray Schafer and Barry Truax. The WSP's mapping of soundmarks as used in publications and teaching are considered along with over 50 sound maps created by communications departments, libraries, cultural institutions, and sound artists. This third and final part of the dissertation concludes with a digital ethnography of recordings that elucidates the ways in which artists, social scientists, and critical media practitioners use alternative forms of notation, geographic information systems (GIS) data and Google application programming interfaces (API) for sound mapping, and the use of multimedia in sonic ethnography.

The State of Sensory Studies

The sense of immersion that sound yields are at once physical and cerebral, and in the 21st century is the subject of studies in a field aptly called 'sensory studies.' Paul Stoller advocated for the relevance of the senses in ethnographic practice in his text "Sensuous Scholarship" (1997), where he argues against the idea of the body as a text to be read. Rather, Stoller suggests ways in which meaning is bound up in being and embodiment, and so is more complex than monographs and journal articles can express. Sarah Pink's "Doing Sensory Ethnography" (2009) is a formative text in the practice of media anthropology, elaborating on Stoller's thinking. A handbook more than a monograph, Pink examines the functional and ethical issues concerning video and image ethnography, accounting for the interrelation of the senses in its practice.

Following the trend in sociology and anthropology is musicology, which has only recently begun to embrace the senses in a field appropriately titled 'sensory musicology.' Distinct from the psychology of sensation and the recognised phenomena of studies in music and mind, sensory musicology investigates the socio-cultural context of the senses. Works that may be considered sensory musicology are Steven Feld's ethnomusicological studies of the Bosavi and their culture of listening (1990), Elisabeth Le Guin's "Boccherini's Body: An Essay in Carnal Musicology" (2005), and the Centre for the History and Analysis of Recorded Music (CHARM) research project Expressivity in Schubert Song Performance (Leech Wilkinson 2006), which combines gesture and the senses in the analysis of recordings. Much of the work falling within sensory musicology is in press or review at the time of writing and is concerned with gesture in performance and listening. Shared amongst them is a fascination with the materiality of the senses - the corporeality of knowing through sound.

As the digital humanities were in the 1990s, sensory studies are now at the vanguard of humanities and social science research. Indeed, interdisciplinary research projects funded by national granting bodies in the UK, US and Canada use empiricism and sensory studies to further understand the ontological reach of their own disciplines. Sensory studies have found their way into the aforementioned AHRC funded CHARM, the Mellon Foundation's Sawyer Seminar at Harvard entitled Hearing Modernity*,* and the SSHRC-funded project The Varieties of Sensory Experience. In many ways, these three research projects lay the conceptual foundations for this dissertation. This research addresses field recording as it exists within a history of recording technology, as an essential mode of understanding sound studies, as a tool within and a subject of media studies, and as a means of collecting and interpreting sociocultural customs through audition.

Sound recording's academic relevance - as a tool for documentary and creative practice - is in a current state of nascence. It is a confluence of art, music, and information, with disciplinary boundaries defended militantly by some and challenged by others. 'Sonic culture' has not developed to the extent that 'visual culture' has in the arts, humanities and social sciences: in many ways, the latter has overshadowed the former. The camera is privileged over the microphone, the television over the radio, and the webcam over the telephone. This dissertation aims to historically examine the use of recordings made on location - in and out of audiovisual media - and their social contexts.

For all of the research dedicated to listening practices, scholars of sound studies neglect to conduct a study on the material grounding of listening. And while there are more ways to record than ever, the ethics surrounding the practice remain as ambiguous as ever. To be sure, ethnographers and journalists are expected to receive written consent from those that are recorded, but little else in the way of communication is required during the process of sound editing and production. The academic disciplines that use ethnography as a methodological tool and way to conducting research - anthropology, sociology, linguistics, archaeology, ethnomusicology, even communications studies – have used media irresponsibly throughout their established existence. These disciplines are guilty of overgeneralizations concerning structures for representation using audio and video. And where visual studies have come into its own and arms critics with tools for identifying when an individual is being exploited, the same does not exist for sound studies in such an explicit manner. The collective keen eye of cultural studies is not accompanied by a good ear.

Accordingly, this ethno-organology of the recorder traces the cultural origins of the recording machines development and its use throughout the last century in North America. The recorder has taken on many technological iterations, some more portable than others. The first commercially advertised portable recorder was designed for film sound and would travel from location to location while permanently installed in a truck. Famously, Alan Lomax's Presto disc cutter was mounted in the trunk of his car, so he could pull up in front of bars and churches to record local artists and then continue on his journey. The more one delves into the history of these recorders - and the ways in which they were used (and abused) - the more one sees that there are intersections between the worlds of music, folklore, radio, communications, and media studies. Field recording does not have a singular narrative, and this dissertation does not create a potted or cobbled together version of one – it simply demonstrates the lack of historical insight that exists as of yet in the academic literature. Accordingly, histories of field recording can be written to look and sound entirely different to this dissertation – here I attend to the ways of listening through the recorder in primarily American and Canadian contexts, with the inclusion of European inventors where their work intersects with their North American colleagues and their creative practice.

'Portable recording,' 'sound in the field,' 'found sounds,' 'audio vérité,' 'live and direct,' 'location recording': all of these practices belong to narratives of radio arts, film sound, media anthropology, folklore, electroacoustics, psychoacoustics, and beyond. What makes field recordings so interesting is the mode of creation, that is, *composition*. One produces or composes a field recording and is required to make consequential decisions that greatly affect the perception of the subject material. Field recording means different things in different professions and in different situations. For many folklorists, linguists and anthropologists, it is a way of documenting events, interviews and artistic performances. This is the use of the majority of field recordings. This act of 'ears-on-the-wall' recording has been the stock and trade of the humanities since the beginning of the 20th century. This dissertation problematises the use of recordings for transcription and introduces questions of interpretation that the microphone brings to the fore. Many of these questions have already been posed in the fields of visual culture and image-based anthropology, and are overdue for those working with sound.

In this dissertation, many of the sound recordings presented were made by individuals with little training in sound technology. Consequently, the notion of a producer, one who is an

audio engineer and has extensive training, is challenged by the sheer quantity of recordings made by amateurs. This is not meant to question the value of a person trained in audio engineering - called the *Tonmeister* - and their depth of theoretical and practical knowledge concerning music and sound production. If only some of the recordists featured in this dissertation had such training, listeners would have benefitted massively from higher fidelity recordings. For example, musicians that Moses Asch recorded referred to him as 'an artist,' yet his recordings were notoriously poor in quality. An advocate for 'flat' recordings (recording and presented without equalisation), Asch claimed that stereo sound captured a false representation of the performance, and recorded exclusively in mono (Carlin 2008). So in what capacity was Asch considered an artist, beyond the conventional perception of a recordist as a trained audio engineer? One may posit that Asch's talent as a producer and artist was not to create high-quality recordings but to create the conditions necessary for artists to perform to the best of their ability. In this way, Asch acted much like a producer in a studio. Asch's hugely popular recordings of Woody Guthrie, Lead Belly, Pete Seeger, and Cisco Houston are evidence of his artistry as a curator rather than an engineer.

In this way, we are all producers. But what kind of production processes do we engage in? How do the sites of inquiry change as we engage in critical listening and thinking, as we increase our sonic literacy or, as Schafer would call it, develop our 'clairaudience'? Where do we go to find these sites of inquiry, and how do we engage with them? What is lacking in the training of the *Tonmeister,* beyond the engagement with music on a theoretical and technical level? How does the non-trained recordist benefit from the freedom of not knowing best practices? How is this ignorance dangerous to fidelity and authenticity?

Field recordings are often made without thought, or at least without knowledge of the effect of recording technology upon what is heard. One narrative in the history of field recording is that of voicemail. For the millennial generation, the voicemail is thought of as entirely ephemeral, a digital file to be sent and promptly deleted upon listening. But voicemail used to be composed of material objects - records and then tapes - sent via post. In the 1940s through to the 1970s, audio companies manufactured equipment for consumers to create their own 78s and 45s, so they could record letters to family and friends, as well as their own songs[-]. Amongst the most popular were recording booths made by Voice-O-Graph , set up at radio shops, carnivals, and county fairs. One booth was set up on the top of the Empire State

Building in the late 1940s, which would provide consumers with a record marked "Souvenir from Empire State Observatory" and was advertised by The Billboard in 1946.

The development of portable sound recording equipment came into its own with the support of the film industry. Early portable sound recorders were created specifically for sync sound, and the best of them were created for that very use well into the 1980s. Most famous among them is the Nagra IV-S recorder, the first battery powered stereo tape recorder, created by Swiss engineer Stefan Kudelski. The recorder garnered interest from those in the FICS group and eventually American filmmakers, who previously relied on the Fox Films-owned Movietone system. The Nagra was quickly adopted by the film and radio industries for location recording. Released commercially in 1958, the recorder complemented newly available 16-millimetre cameras made for filming without a tripod. Filmmakers D. A. Pennebaker, Jean-Luc Godard, and Jean Rouch famously used these over-the-shoulder recorders and cameras (Vitello, 2013).

Figure 1: A production model Nagra II-CI from 1955 (Photo courtesy of the British Library)

From 1971 through to the present day, the Nagra IV has been used by large-scale film studios such as Skywalker Sound and Dolby Laboratories, as well as by independent sound recordists, to record sounds not replaceable in the Foley studio (where the majority of sound effects are created for film). This model was also popular among folklorists and linguists for its durability in the field and was also used by the WSP for their Canadian Soundscapes series for CBC Radio.

Figures 2 and 3: The Nagra III and IV-S Recorders, designed for film sound and journalism, also used for song collecting and linguistics.

Figure 4: Cutting a record on a refurbished Presto K-8 at home in Toronto, ON, February 2014.

Films rarely disclose the presence of the sound recorder or the microphone. Notoriously poorly-made films that have achieved cult status often feature slow moving boom microphone operators, resulting in an unintended comic effect - such as the terribly produced "Plan 9 from Outer Space" (1959). The occasional documentary will feature a best boy rushing behind the camera, drawing the viewer's attention only intentionally in cinema vérité. However, there are some Hollywood films that pay homage to the power of the recorder - in particular the Nagra - such as Francis Ford Coppola's "The Conversation" (1974) and Brian De Palma's "Blow Out" (1981). In the former, Gene Hackman plays a top-tier private investigator, contracted to 'bug' a couple as they walk through a crowded Union Square in San Francisco. Later in his studio, he mixes the tapes from several recorders to discover a cryptic exchange that ends with "He'd kill us if he got the chance." Hackman's character becomes entangled in a murder plot and develops extreme paranoia. The film ends with him stripping the walls and floors of his home in search for tape recorder surveillance, and he is left in the centre of his living room amidst a pile of rubble.

Figure 5: Gene Hackman plays a wiretapper and surveillance expert in Francis Ford Coppola's "The Conversation" (1974).

"Blow Out" reinterprets Michelangelo Antonioni's "Blow Up" (1966), replacing the camera for the sound recorder. John Travolta, a sound recordist for film, is seen on a bridge with his shotgun microphone, aiming it at animals, people and other sources of sound. A couple standing a hundred yards away is caught on the microphone talking about Travolta, asking, "What is that man doing? Is he a peeping tom?" Travolta cannot see their expressions or their physical features as a peeping tom might, but smiles all the same as he eavesdrops from a distance. Shortly after, he witnesses a fatal car accident, capturing the entire event on his Nagra. Travolta rushes to the scene and discovers a politician dead at the wheel, while the female passenger, Sally, is badly injured. Upon playback, the tape reveals the sound of a gunshot just before the car drives off of the road, exposing the truth of the accident to be an assassination. Obsessed with the tape, Travolta investigates further and attempts to take revenge with Sally in a sting operation wherein she carries a hidden recorder to meet the assassin. The sting goes awry, leaving her and the assassin dead, with both of their deaths recorded to tape. Travolta is seen in the studio listening to the tape of Sally's final scream - at which point Travolta's producer comments that this is the perfect scream for the film he is making. Both films exploit the recorder's ability to hear the unseeable, to keep a record of chilling events, and to drive the protagonists to madness.

Figure 6: John Travolta collects sounds - and uncovers an assassination plot - in Brian DePalma's "Blow Out" (1981).

In these films, the recorder plays a central role in the plot. Tape reels disclose information to which only the listener is privy, and which are vital to the protagonists' lives - and in these cases highly detrimental to their mental state. The microphone serves as a set of ears that make possible what human hearing cannot accomplish. Through polar patterns such as shotgun and Mid-Side, the microphone focuses listening on particular subjects, and artificially widens or narrows the stereo field of listening, affecting our perception of the recorded subject. Further, the microphone is a set of ears that exists in multiple temporalities; it can record what only the producer may hear, for listeners that are not present at the time of recording. When running workshops on field recording and playing materials, the question most often asked of me is "what year is this from?" second only to "where was this recorded?" It hears what we otherwise would not, and the recorder documents with a precision that which our memories cannot. The examples from "The Conversation" and "Blow Out" demonstrate that recordings exist in multi-temporal and multi-spatial contexts, for preservation and interpretation. The revelation of the assassination plot occurs after the events are heard by the recordists while back in the studio during editing. In particular, "The Conversation" and "Blow Up" demonstrate the opposite uses for recording. Hackman is searching for truths to be uncovered as a private investigator for hire, while Travolta is simply looking to record sound effects for film. "The Conversation" ends with Hackman tearing his home apart searching for recorders, left playing his saxophone in a pile of rubble and his own destroyed belongings, while Travolta is horrified and helpless as he listens to the sounds he has captured. Sally's final scream before her death is grossly inappropriate for a library of

sound effects, but who would know if it was used other than Travolta's character? Though the plot of "Blow Up" is an exaggeration of what field recordists might commonly use their recordings for, the plot represents how recordists use their recorded materials freely, which can lead to mischaracterizations of the original work. Hackman's character knew what troubles recording could mean for him, and Travolta's character learned them through a series of tragic events. What real-life and perhaps less dramatic events can we point toward that present the power of sound recording?

Within these films, field recordings do indeed change lives. But can the same be said of field recordings outside of these unconventional circumstances? Can a field recording change the life of someone who – like most listeners – simply listens for enjoyment? Ethnomusicologist Anthony Seeger addresses this question in *Changing Lives with Recorded Sound - Recordings and Profound Musical Experiences* (2001), a lecture delivered at the annual meeting of The College Music Society:

> Recordings are not simply commodities. They are also endowed by consumers with profound significance. They acquire some of their meanings through the social contexts in which they are played. Recordings can also be pathways from the past to the future. They can nourish an existing musical tradition, or contribute to the creation of an entirely new one. In order to learn traditions that have not been performed in a long time, musicians and members of communities often turn to archives and music libraries to recover musical traits that would otherwise be completely lost. Recording has become a standard part of cultural transmission in many places.
>
> (Seeger 2001, p6)

In "Ethnomusicology Today," Seeger (1986) recognises the unique position of field recordings in the music industry. Seeger also identifies field recording as a way of promoting awareness. The circulation of recordings from particular regions helps to illuminate cultural diversity. Indeed, field recordings establish a sense of place within the music and film industries that viewers rely on to situate themselves within a scene – or, in the case of folkloric labels, an ethnic or regional setting. Street sounds, music, and ambient noise are all captured for manipulation by post-production facilities and record labels. Recordings made for such industries are entangled in copyright law. Their uses in particular settings either afford or deny

certain rights to their creators. Where recordings are used as sound effects for film and radio broadcast (the job of Travolta's character in "Blow Out"), the effects are sold in 'banks': entire collections are handed off to a production company to be incorporated into film, much like Foley sound created in a studio. Where field recordings are culled for compilation albums, they at best demonstrate the diversity of musical practices, and at their worst canonise and simplify them (as in the *Putumayo World Music* series). Such compilations are often composed of 'traditional songs,' that is, without a claim to songwriting copyright on behalf of the performer (though in some cases a claim is made to rights in arrangement or performance); they are often distributed by large record labels, rather than those who actually made the recordings[1].

Ethnomusicologists have made a concerted effort to contextualise traditional songs by keeping them in the company of other recordings from the same region or community. Perhaps the largest effort to retain contextual materials has been accomplished through Smithsonian Folkways Recordings. Seeger's own research and career is simultaneously devoted to ethnomusicological research and the archive. As a former director of Smithsonian Folkways Recordings, he played an integral role in launching a not-for-profit record label whose mandate was to continually keep every record in press. Many of these recordings were made by Moses Asch, founder of Folkways recordings, who recorded approximately one album per week for nearly 30 years. Others were saved from neglected family estates ready to go to the junkyard. Since the late 1980s, Seeger and archivist/curator Jeff Place have recovered entire record catalogues (Cook Laboratories, UNESCO Collection of Traditional Music, Monitor Records, etc.) now included in the Ralph Rinzler Folklife Archives and Collections. Here we are presented with a problematic relationship between cultural encounters documented through recordings and the institutions that archive and distribute them. While museums and universities have attempted to repair relationships with communities through repatriation, it is always after the fact, and often after significant damage has been done. The work of Seeger, Place and other music scholars to present recorded materials surrounded by writings that seek to honour and protect the cultural agency of a group is not possible in every

[1] Historically, Columbia Records has had the largest stake in field recording sales. Much of early folk revival recordings selected from the Lomax collection were made into anthologies, of which Columbia retains copyright.

instance, nor can the protection of communities be formulaic. This 'one size fits one' approach is costly in terms of finances and time spent on each project, which many institutions with fewer resources cannot afford.

What Seeger alludes to throughout his many lectures on the role of sound recordings in academia and archives is the question of interpretation—at its core an anthropological question. While the role of record producers in popular music is celebrated in documentaries and 'Behind The Scenes' television programs, the field recordists role is far more ambiguous. Footage of Alan Lomax holding a microphone out into a church or in front of a musician's house fetishises the traveling song collector as a keeper of traditions and documenter 'par excellence.' Yet every ethnomusicologist who makes a recording is in fact producing, and in so doing they are making an interpretation of the sonic event. "Field recordings are, after all, part of an analytic approach to a musical tradition. They may be compromised by the inappropriateness of placing the microphone in the "best" location because it would interfere with the event recorded, or by the inability of the equipment to handle the multiple aspects of a musical event, or by the recorder's choice of recording strategy. We are all producers" (Seeger 1986, p269-270). Seeger's reasoning makes all field recordings a part of interpretive anthropology. Despite the social agency that field recordings possess and the potential for commercial success, they are rarely considered to be the product of research. Instead, they are considered to be texts, subject to interpretation (Seeger 1986, p264). Furthering Seeger's argument, I suggest that recordings are richer than text; they are moments that are – or ought to be - interpreted, compared and related like texts, to other recordings across disciplines, but also engaged with in ways that move beyond words: manipulated, annotated, narrated and 'remixed' in ways that reveal new contextual information that enriches the listening experience.

Ironically, representing cultures through media has a long history of exploitation in anthropology in particular. Visual anthropology has generated imagery that sensationalises and fetishises others, as seen in the seminal ethnographic film by Tim Asch and Napoleon Shagnon, "The Axe Fight" (1975). Asch and Shagnon's account of a Yanomami conflict provides the audience with an alleged insight into the activities of this Venezuelan tribe. Adam Curtis's inquiry into the making of the film in 2007, "The Trap," revealed the significant influence of Western visitors, with a direct correlation between their presence and an increase in local conflict. Despite the inquest into Asch and Shagnon's filmic practice, "The Axe Fight"

continues to be widely distributed by Documentary Education Resources and is often included in curricula as required viewing for all media anthropologists in training. For graduate-level students interested in ethnographic filmmaking, it is a cautionary tale of how not to film. But for undergraduates, it is included in Introduction to Anthropology courses.

Just as the very presence of the camera hugely affects the situation - Margaret Mead and Gregory Bateson's nearly 300 hours of fly-on-the-wall recording of Samoan interactions have been ridiculed as a form of "naive realism" (Suhr & Willerslev 2013, p8) – so any form of audio recording will too affect the situation. The process is far more subtle and complex with auditory media: there is no lens to point, no lights to set up, no one behind the camera. Of course, there is a microphone to be pointed, a person to hold it, and an audience to listen to it. In situations outside of news reporting, the microphone's directionality is less clear (omnidirectional and wise stereo patterns are often used for music), and thus the question of what - or who - is being recorded remains indistinct. Parsing out power relations between the holder of the microphone and the person being recorded is not as simple as pointing in a given direction; the recordists themselves can be captured on media as easily as the intended subject.

Salomé Voegelin claims that each field recording is embodied within particular practices of recording, collecting, archiving and distributing:

> Exciting field recording does not record the field but produces a plurality of fields. It neither abandons the reality of the recorded, nor does it take it for granted, but works with it, responds to it, understands it as one imprint in the landscape made by the body of the recordist and retraced tentatively by the listener. This listener in turn generates a new imprint between the heard and the recorded, listening to the authenticity of a particular rendition rather than its source, and embracing interpretation as part of the actuality of the real.
> (Voegelin 2014)

Studying field recordings provides scholars with a greater understanding of how auditory media are created, how they represent places, people, and things, and how they reflect on those who recorded them.

If anthropology, in its ontological turn, has become concerned with the materiality of practice (Strathern 2012), than this dissertation aims to closely examine those practices within the terrain of listening practices in North America. Just as Science and Technology Studies developed "a programme of research that actively blurs the lines between depictions of the world and interventions into its composition" (Lezaun 2014), field recording - in disciplines moving towards media-rich scholarship - must be considered as both representing and intervening. Field recording as a practice is significant because it is not just the act of making recordings, but technological and cultural possibilities how these actions are bound up in. It is for this reason that I do not suggest that we ban *The Axe Fight* from curricula, nor would I advocate for a ban on music anthologies that misrepresent communities. I do, however, encourage the development of a critical eye early on in disciplinary pedagogy – and in the same way, I encourage the study of recordings to be done with a critical ear, and endeavour to do so throughout this text. Field recordings have the social power to celebrate diversity, exploit communities, and reveal cultural differences. This is the principal focus and primary thrust behind the archival research presented in Chapters 3 and 4.

Research for this dissertation has been made possible by creating and curating works. Rather than supplementing the doctoral research, I have used community engagement and ethnographic media creation as an essential part of my research. Presentations at conferences, exhibits at universities, archival research at cultural institutions, and collaborations with computer scientists, composers, and orchestras have all helped me to define what constitutes field recording. The practices mentioned in the dissertation and the application of these methods demonstrates how auditory media are used in the arts, humanities and social sciences. This dissertation is the product of practice-based research methods that foster relationships with multiple organisations in and out of the academy. Many of my collaborations have resulted in radio, television and online news coverage, promoting the development and outcome of artistic works. For example, during ethnographic research on Cape Breton Island with Marcia Ostashewski, I created soundscape compositions that became an integral part of broadcasts for CBC Radio 1. As part of Tod Machover's collaboration with the Toronto Symphony Orchestra, I composed soundscapes and participated in community-engaged art projects with youth that was documented and televised by the BBC. Much of the research conducted heavily influenced the program and diverse invited speakers list for the conference and artists residency program *Sound Studies: Art, Experience, Politics*, which I

organized and curated with Steven Connor and fellow sound studies and PhD candidate Anija Dokter at the Centre for the Research in the Arts, Social Sciences and Humanities (CRASSH) at the University of Cambridge.

Sound, Listening and Cultural Technique

To better understand the implications of recording in the field, this dissertation draws on methods that are as interdisciplinary as the recording practices I have engaged in. Taking a cue from Jonathan Sterne, who has dramatically changed the terrain of sound studies by tracing the origins of listening practices back to particular technologies, I investigate the forms of audile technique – entrained ways of listening to sources - in a variety of disciplines. In "The Audible Past" (2003), Sterne identifies the connection between audile techniques in medical practice and in Morse code. From the inaccuracy of directly placing the ear on the abdomen to hear the sound of the heart—immediate auscultation—were born instruments designed to amplify those sounds through a moving diaphragm, the technology used in the stethoscope, and therefore a form of mediate auscultation. "If mediate auscultation is significant because of doctors' systematic attempts to elaborate on the hermeneutics and pedagogy of listening, sound telegraphy both further generalised a notion of technisized listening and brought it for the first time into the realm of mediated communication, mass culture, and everyday life. Doctors went through years of training to become virtuoso listeners, but the telegrapher was a self-made auditor" (Ibid, p137).

From telegraphy, which encompasses communication from smoke signals to email, Sterne identifies morse code as the height of directed listening, producing heard patterns that have language embedded within them. Sterne says, "If, as many media historians have suggested, electric telegraphy heralds the age of modern mass communication, then listening is at the very core of modern media history. If technologies of sound reproduction depended on and actuated versions of audile technique, they drew together a diverse field of practices that had been developing for decades" (Sterne 2003, p95). Sterne's observation only emphasises the importance of listening as an essential component of everyday life. Mass communication technologies like cellular phones and computers generate recordings that are compressed into packages small enough to travel in what is seemingly real time, an illusion itself that we are only reminded of when there is time lag or distortion. Understanding recordings as containing

assemblages of knowledge is requisite for Sterne: "The medium…can be said to precede even the technology itself. Sound reproduction is a social process" (Ibid, p219).

As mentioned, field recording is a practice too often relegated to specialised practitioners and their complicated equipment. But the idea of sound media goes beyond devices with big red recording buttons. Recording in the field - wherein people use a given medium to remember the sounds around them - has been practiced since the beginning of history. But recorded how? This dissertation explores how all forms of media are used to participate in field recording: writing on one's own experience of listening, recording an acoustic event, or mapping a collection of sounds. Each has its own instruments and techniques. While it would be inaccurate to call all of these media field recordings, they provide essential context to the practices of the 20th and 21st centuries.

A significant shift in understanding sound media as a continuum is marked by writing and recording as documentary and interpretive actions. The shift from inscribed to electronic media is one that goes unacknowledged in field recording. Perhaps the most celebrated media theorist after McLuhan is Friedrich Kittler. Just as McLuhan theorised media as "the extensions of man" (1964), media for Kittler was a series of "cultural techniques that allow one to select, store and produce data and signals" (Krämer 2006, p93). Cultural technique has been adopted by theorists internationally to further understand the interrelationship between media. Thomas Macho explains that Kittler's 'Kulturtechniken' moves beyond the materiality of objects toward their uses as sign and symbol storage and distribution:

> Cultural techniques—such as writing, reading, painting, counting, making music—are always older than the concepts that are generated from them. People wrote long before they conceptualized writing or alphabets; millennia passed before pictures and statues gave rise to the concept of the image; and still today, people sing or make music without knowing anything about tones or musical notation systems.
>
> (Macho 2008, p179 [translated by Winthrop-Young])

Kittler's media theory encourages thinking of all media as connected by their forms of signification, storage, and their distribution and transmission.

Cultural techniques are employed by media makers, or 'Horspielmachers,' that develop creative practices through technological literacy. Innovations in media-making equipment blur the lines between the media maker and the creative practitioner; portable recording's history is evidence of such blurred lines. The recorder, be it a pen, phonograph cutting stylus, or digital imprint, inscribes meaning. This dissertation theorises field recording as an assemblage of knowledge in all its forms, ontologically prior to its theorisation: the practice of field recording has existed much longer than we have been thinking about it. Historical reviews of writing and recording are explored, as is media making in new digital forms of mapping and other non-linear interactivity. Each medium contains a unique sonic signature, inscribed within the recording. This sonic signature is explicated by analysis of experiential layers, or a double reading of both empirical timbral analysis and the temporal, socio-historical context thereof.

This dissertation focuses on the theories and practices of field recording: on cultural, musical and artistic techniques, and on the use and dissemination of field recordings. Beginning with early recording innovations - the phonautograph, the wax cylinder, stereo and binaural sound transmission, as well as the creation and distribution of home recordings on disc, wire and eventually tape - I identify the shift from sound documentary to the soundscape, the significance of media ecology and philosophies of listening, and the trajectory of sound art and music analysis as affected by these practices. I conclude with the suggestion of a 'sonic ethnography,' a practice whereby an anthropology of materials is conducted, and sound pieces are created for further understanding of cultural phenomena. Of course, when writing about any media, one must ask 'What is at stake?' and just as importantly, 'For whom?' In this dissertation, sound is understood through historical, social, and technological close readings. Additionally, sound is understood as a tool as much as it is a subject: field recording is as revealing of histories as it is a part of them.

Chapter 2: Sonic Materialism

If one were to begin teaching the history of recording, it might start with the first recorder of note: the Edison wax cylinder. However, this common starting place for understanding the history of the recorder is problematic. Inventors have attempted to create ways of recording sound since long before the creation and popularisation of Edison's machine. A sound-writer that preceded it - the phonautograph, of which more will be discussed later - could record acoustic information but could not reproduce it. Perhaps this machine should be included in a history of recording technology; after all, what is a recorder's primary aim but to listen? If this premise is accepted, then a number of machines and techniques for documenting acoustic information are highly relevant, and indeed provide great insight into the creation of the sound recording devices we know today.

This chapter focuses on the ways in which cultures and individuals translate collective and phenomenological experiences into histories through sound media. Orality, writing, inscribing sound, recording, and radio are all forms of sound media that contain these social and political knowledges. Media lend themselves to particular narrative structures and embody acoustic epistemologies. The research in this chapter, and indeed the entire dissertation, is presented under the supposition that all ways of knowing, documenting, and interpreting auditory materials are forms of sound media. Rather than provide detail into the exhaustive literature on orality and literacy, I illustrate the constructive and interpretive nature of all media, with a focus on sound media. Of course, this requires identifying qualifiers for defining something as sound media. Sound media are modes of transmission that express sound events through vocalisation and gestures or develop channels of communication that are emphasised, altered, or manipulated with techniques and tools that aid in the dissemination thereof. Some forms of sound media are ephemeral, such as oral histories, telegraphic communications, and radio broadcast. These forms rely on the memory of the listener to recount the event. Other forms of sound media are meant to document and interpret the sound event for future reference. Amongst the other aims of this chapter, understanding these materials within the context of each other—not as distinct practices but as techniques that are drawn from as necessary—is essential.

It is this consideration of writing and recording, inscribing and describing sounds as media that is central to this dissertation. None of these media practices developed in isolation, and therefore they should not be studied in isolation. These practices include cultural techniques

of transmission, remembering, documenting, and interpreting. Treating orality in its many forms - poetry, song, and literature - as media is the first step toward a greater acoustemological understanding. Often found to be at odds with one another, orality and literacy are here described as practices that are often complementary. Tensions are not necessarily between the practices of media in different cultural contexts, but rather between the ways that they represent sounds and events. This will be shown, for example, in the Griots' performance of epic songs and the Muslim literature that followed.

This discussion encourages thought about the ways in which we record sound. How do we remember sounds, relate to them, relate sounds to one another, and infer socio-cultural, political, and philosophical connections to them? Technologies that record sound permit listeners to take for granted the materiality of acoustic events shared amongst us but rarely deliberated upon. I posit that writing and recording, or any simulation of sound, is always interpretive and thus creative. Sound deals with both document and sentiment. Writing about sound attends to the event whilst providing the listener with new ears: ears that are present at the time of writing. Be it the pen or the microphone; each instrument affords knowing through sound. In this chapter, I suggest that histories of listening employ techniques of writing: writing descriptions, writing transcriptions, and inscribing sound from memory to media. I focus on the modes in which these techniques act as forms of storage and the means by which they are distributed.

Histories of listening are often associated with histories of music and sound technologies. This chapter will, therefore, discuss a range of material techniques employed to remember voices and sources. It should be noted that this treatment of sound documentation and interpretation attends primarily to the media used to capture sounds. This reflects not only my role as a practicing producer and music technologist but also the extent to which equipment and technique affect the meaning of a recording. All of these techniques deal with the same problem: the absence of the source, or the originating voice.

Acoustic characteristics of locations and the reverberations found within them have always been of interest to the listener. The acoustics of spaces are commonly used as sonic location markers for navigation and survival. A practical example of this is the use of echolocation; for animals and humans alike, it is a way of knowing the world through sound. In "The Great Animal Orchestra: Finding The Origins of Music in The World's Wild Places," Bernie Krause

notes that echolocation serves as a powerful imaging tool for bats, dolphins, and whales. Their bursts of sound are reminiscent of ultrasound scans but with even greater distance accuracy, such that they can "distinguish between two quarter size coins, one made from wood, another from plastic, from twenty five yards away underwater" (Krause 2012, p64). The same techniques were utilised by sub-acousticians after the sinking of the Titanic. The technique developed during the First World War, 'Sound Navigation and Ranging' - known colloquially as sonar - uses microphones (called hydrophones) to measure spatial information underwater. A submarine sends out a signal and waits for it to return, bouncing off of objects and thus detecting movement and location (Krause 2012, p189). Echolocation is also used for those with vision impairment. By using "flash sonar" to gather information about surroundings based on acoustic feedback, sound is used to image locations for assisted navigation (Baker and Smith 2012; Teng et al. 2012; Thaler et al. 2014). Greg Downey writes that echolocation is evidence of the ability to use listening in tandem with the other senses, rendering distinction between them indistinct: "Human echolocation highlights…that the anthropology of the senses needs to realize that the theory of 'five senses,'…is a bit of cultural common sense and not at all a scientific approach or reflection of verifiable psychological or phenomenological reality" (Downey 2011). Indeed, listening is a wholly embodied practice that, when analysed, eschews the distinct 'five senses' cultural trope and demonstrates fluidity throughout the sensorium. Echolocation is one example of how listening is embodied within the other senses, using auditory technology to develop complex imaging. As will be further explained in Chapter 5, listening as a set of embodied practices affect the way listeners create soundscape compositions, sound art, and sound for film - all forms of phonography.

Using sound as a way of knowing - developing acoustic epistemologies - is an essential means of making and defining a place, both geographically and socially. R Murray Schafer and the WSP identified sounds that were unique to specific locations. Schafer and his team called these sonic-geographic associations 'soundmarks' (Schafer 1977). In "Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression", Feld analyses the meaning of birdsong to the Kaluli, as voices and "spirit reflections" of the deceased (Feld 1982 p45). Feld writes that "adaptation to life in a forest environment develops acute spatial skills for audition, and the Kaluli use these to advantage over vision. In my experience, bird calls and bird life constituted the most accessible domain from which many of the experimental aspects of this perceptual system were linguistically marked" (Feld 1982 p62).

It is only in the early 2010s that sound media's potential to aid in interdisciplinary studies and creative practice began to be systematically studied. Schwartz's "Making Noise: From Babel to the Big Bang and Beyond" (2011) weaves together histories of listening and sound media to present noise as both an acoustic phenomenon and a metaphorical concept - chaotic by nature, but a valuable insight nonetheless. The histories presented in "Making Noise" indicate the disarray of documentation and representation on sound. Techniques of recording sonic events arise from art movements, disciplinary practices in the academy, and industry. Schwartz pays particular attention to those artists not known for making sound art:

> Theosophists and Impressionists with their spectral vibrations, Late Romantic poets and early Expressionist painters with their emotive wave-forms, cartoonists with their rays, and art-philosophers like Wassily Kandinsky with his 'symphonic" paintings or Marcel Duchamp with his proposals to sculpt a Venus de Milo in sound and 'Make a painting of frequency', all advanced the visuality of sound and the figurativeness of its correlative, noise.
>
> (Schwartz p425-426)

Other writers attend to particular locations and times of sound and sound-making: "The Acoustic World of Early Modern England: Attending to the O-Factor" (Smith 1999), "The Sound of Shakespeare" (Folkerth 2002), and "Victorian Soundscapes" (Picker 2003) serve as examples of sonic socio-historiography in Britain. Each is filled with descriptions of sound, descriptions that are spoken, written, printed and reproduced. Pertinent discussions on sound, writing, and place-making are occurring at universities internationally. Conferences such as Hearing Landscape Critically; Music, Place and the Spaces of Sound; and Hearing Modernity examine the potential for a cross-disciplinary inquiry into music, soundscapes, and sensory studies. It is timely then to explore writing and recording as forms of sound media.

This chapter aims to extend research on phonographic practice to an era before electronic equipment and acoustic reproduction. By including oratory and written works that focus on the effects of sound, field recording can be seen as simply a practice of recording information about sound events and acoustic spaces with the tools available. Practitioners in their respective professions - recordists, writers, and performers - all document sound through representation or description. I examine the shift from orality to writing in modern civilisations, and the use of technology to record sound - that is, to keep a record of sound. I

propose that the means by which sound is stored and transmitted in various technological forms is a reflection of and has an effect on each culture's conceptualisation of listening. I then problematise the absence of origin in reproduction, and how sound media attempt to negotiate panophonia - Steven Connor's term for the illusory voice (2012). I conclude by pointing to acoustemic techniques used to record sound- that is, to document sounds and their contexts through writing, forensics, and acoustic and electronic technologies. Ultimately this chapter gives a series of brief insights into ways of listening and associated cultural customs. As a literature review, it provides a foundation for the dissertation, as a history of both listening and the use of influential technologies employed throughout the late 19th and early 20th centuries in North America and Europe.

Hearing and Listening as Ways of Knowing

'Hearing' is a term that generally refers to the passive ability to sense sound. This physiological capacity to hear affords humans the ability to be stimulated by auditory phenomena. Auditory cues are employed by technologies that are tacitly understood to represent instinctive operations, such as telephones ringing. As Cluett (2010 p8) notes - and in doing so cites Gibson (1983) - the call to attention by the senses is "pre-cognitive". Thus, an event may trigger a particular sense, and allow it to become the dominant mode of perception. Unintentional overhearing occurs even within social interactions. It accidentally becomes a part of the conversation, inadvertently included within the proximal hearing distance. Hearing calls attention to and may affect our actions, but does not in itself affect our thinking. Hearing does not intervene. Upon entering a building, one receives auditory information and becomes aware of the change in architectural acoustics and the difference in sound pressure, which may serve to heighten the sense of one's surroundings. But it goes further than that. Ong writes of the unique qualities of sonic sensation, that "hearing can register interiority without violating it." One need only hear the sound of objects hitting together to discover their acoustic and basic physical properties: "Sounds all register the interior structures of whatever it is that produces them. A violin filled with concrete will not sound like a normal violin. A saxophone sounds differently from a flute: it is structured differently inside. And above all, the human voice comes from inside the human organism which provides the voice's resonances" (Ong 1982, p70).

If, as Ong claims, hearing affords sensorial immersion and 'centeredness', then listening activates the concentration of subject-object relations, as well as their cultural and semiotic meanings. Listening is active. Don Ihde's "Listening and Voice" points toward a metaphysics of auditory presence. To listen in is to become acutely aware of one's surroundings:

> Without denying the intimacy of sound and time and without denying the richness of the auditory in relation to temporality, a strategy that begins in approximations is one that must move with extreme care so as not to overlook or fail to hear what also may be shown in the seemingly weaker capacities of auditory experience [hearing, for example, as weaker than listening]. Thus as the move into phenomenology proper is made, it is with the spatiality of sound that description may begin.
>
> (Ihde 2008, p59)

In "Listening to Noise and Silence: Toward a Philosophy of Sound Art," Salome Voegelin writes of "focused listening". Voegelin here dissects the generative power of listening as meaning that is compounded and expounded upon simultaneously through knowledge and aesthetics:

> Focused listening produces this unspeakable, solitary signifying that concentrates as well as expands the material and the subject in a dual but not paradoxical move: it pursues a phenomenological epoché but instead of closing down what it found in a return to the semiotic it continues the endless mobility of listening in the practice of signifying…When the solitary subjectivity is understood as part of the aesthetic sensibility produced in its emancipated and powerful generative autonomy, then we will come to understand the radical value of sound to shift not the meaning of things and subjects, but the process of meaning, making and the status of any meaning thus made.
>
> (Voegelin 2010, p36)

In creating media that attend to sound, namely writing and recording, an account is made of the experience of focused listening. The discord between an ephemeral experience, like

listening, and writing (or recording) is evident in the fixity of written prose or irrevocable recordings made in situ.

Recall from Chapter 1 Travolta's character in DePalma's "Blow Out:" at the opening of the film, the catalyst for the murderous plot to begin is what is heard accidentally while collecting sounds for film effects. In this opening scene, Travolta is first seen on a park bridge. The audience hears ambient noise, but only listens as Travolta does when he reacts to the soundscape: an owl rustling its feathers, a couple whispering to each other. His focused listening for elements within the ambient noise of the environment is meant for his sound effect recordings but is interrupted by the sound of a gunshot. Travolta overhears the sound and is shocked out of his listening environment, turning his attention and his microphone to what is in actuality - and thus far unbeknownst to him - the scene of a murder. He shifts from one listening environment to another, and in doing so shifts the focus and re-contextualizes his listening. He responds 'pre-cognitively' to what he has heard, helping the injured woman out of the car that is sinking into the lake. He later listens back to his recording of the event, focusing on the sound of the car crash that he discovers is preceded by the sound of gunfire, thus revealing the assassination. In this example from popular culture and cinema studies, passive hearing and active listening come together in a single event that demonstrates a process of causation and interpretation; first Travolta hears a sound, then later he listens for the qualities of sound that give way to added meaning. While the recordings are subject to further interpretation and manipulation, they nevertheless are subjective depictions of events. This is the conclusion drawn from all sound media: they simultaneously document and interpret.

In listening, a person becomes immersed within knowledges and sociality. These acoustic epistemologies—or acoustemologies, as Feld writes—are an attempt to place all practices and techniques concerning sound into an all-encompassing term that denotes "The potential of acoustic knowing, of sounding as a condition of and for knowing, of sonic presence and awareness as potent shaping forces in how people make sense of experiences" (Feld 1996, p97). Examples of practices derived from acoustemology are auditory archaeology (the review of literary accounts of heard events), and sonic ethnography (accounts of the sociality of sound and sound-making in communities and cultures), both of which are conventionally expressed in the form of monographs. Studies of sound are by no means confined to composers and musicians. Out of the incomprehensibility of sounds' origin and the illusory

nature of the voice are borne multiple theoretical perspectives on sound. Jean-Luc Nancy's treatise on listening (2007) offers an existential and metaphysical philosophy of resonance based on the principles that he was to outline the following year in "Corpus," the book he co-authored with Rand (Nancy and Rand 2008): the phenomenology of body and soul, and technology's effect upon this duality of physical form. Nancy identifies the deceptive nature of listening and gives the act an unusual philosophical significance. Since there is no easily perceptible trace of a sound as it diffuses into the air, he asks, how might we existentially or metaphysically understand listening? For Nancy, composition is the organisation of this chaos: "the art of hope for sound".

In some cases, writing about sound and recording attempts to increase the sensitivity of listening. R. Murray Schafer's soundscape, sonic landscape, and schizophonia—the crisis of sounds divorced from their sources—are terms widespread in sound art and sound studies. Schafer believes that metropolitan cities breed aural apathy. Knowing sound through Clairaudience is his antidote: an acoustemological training in identifying sounds, their sources, their social significance and their fragility in the face of noisy industries and their technologies. The term 'soundscape,' coined by Schafer, is a neologism now used within the world of sound art and ethnomusicology to describe either his pioneering method of recording or the aural attributes of sociocultural phenomena and histories of performance practice in particular regions. Both of these meanings denote forms of place-making, be it through immersive installations, field recordings of performances that attempt to capture the environment the music is played within or written work dedicated to describing the socio-cultural context of sound.

These two definitions of the soundscape are part of Schafer's work in media studies and composition. The soundscape has two practices associated with it: listening and recording. Listening in the soundscape has a set of parameters: forms of training that Schafer developed to increase one's comprehension of sonic environments. Schafer and his colleagues at the WSP analysed the meaning of environmental phenomena. Using stereo tape recorders, they recorded environmental sounds across Canada and five European villages. All of these recordings comprise *The Music of The Environment* series, archived in the World Soundscape Database at Simon Fraser University. Each field recording is a survey of a chosen region: recorded, annotated by time, date, and discernible sounds captured, as well as mapped with a legend of decibel variation in a given location.

This approach may sound excessively clinical, and perhaps prescriptive, for a sound artist or a composer. However, Schafer's motivations clarify his method. Schafer describes a crisis in the perception of recordings and electroacoustic constructions of a sonic environment: we experience them as separate from their source. This dislocation, the aforementioned schizophonia, triggered by technologies such as the loudspeaker and portable audio players, is said to be the catalyst for the decrease in natural sound. Their varying aural fidelity, from poor frequency range and low dynamic range to shocking realism, is typified as lo-fi versus hi-fi. Schafer's terms 'clairaudience' and 'ear cleaning' describe the ability to train the ear to "listen more discriminatingly to sounds, particularly those of the environment" (1977, p272). The aim of clairaudience is to identify soundmarks: specific aural occurrences that are unique subjects for study within an environment. Schafer's aspiration to collect and organise sounds for analysis is a part of his pedagogic approach to identify soundmarks and train musicians and non-musicians to engage in active, critical listening. To listen is to identify, to classify sounds in a manner akin to Linnaean taxonomy, and to identify with a sound. Schafer, a pillar of the nascent field of Sound Studies, develops a methodology for indexing sounds and their aesthetic valuation.

Just as a camera lens focuses on certain subjects, listening is activated by the cognitive process of concentrating on certain sounds and their contextual meanings. Listening is a process of thinking, but also of emotional association. Certain sounds or acoustic environments provide us with direct connections to memories. Sounds can also be identified as a reminder of events or people. Sounds are entangled in value-judgements, as good or bad, pleasurable or painful. As we will discover throughout this chapter, sound has knowledges embedded within it that must be translated and interpreted in order to write of it. Oral traditions have been replaced with writings that attempt to document the event of poetic transmission. In so doing, as McLuhan might have said, the media change the message. Sound studies in the late 20th and 21st centuries has discovered ways to bring sound media back into historiographical research. Sound art is not only a subject of academic study but also a way of conveying knowledge in ways not possible through the written word.

That hearing and listening represent distinct cognitive states will not come as a surprise to those who study sound in psychology, linguistics, and music. Still, the distinction between hearing and listening is essential to understand different medial techniques. I will show that writing was used by the Greeks for transcription of speeches and discussions. Again, for the

Mande and Muslim bards of West Africa, the written word was meant to interpret the oral histories and provide commentary. These distinct cultural techniques of oral transmission and written interpretation are mirrored by early sound-writers and Edison phonographs - the omnivorous ear that was meant to hear everything in its proximity. This conceptualisation of sound and recording will be discussed in Chapter 3, which in part details the invention and reception of Thomas Edison's phonograph as a machine that faithfully captures every sound in its proximity. This early conceptualisation of the recorder as a machine that listens with unabated attention is problematised in Chapters 3 and 4.

This chapter has thus far equated hearing to elemental stimuli and listening to conceptualised meanings. Of course, a mode of listening particularly familiar to humans is music: listening as an aesthetic experience. Veit Erlmann understands listening to music as "being in music" (Erlmann 2010 p312), and in the same way, listening to the sounds of an environment brings the listener to a place that is not the same as the place itself - it is one of the imagination, where the listener focuses on timbres and textures not otherwise appreciated. This approach to listening is not meant to interpret real-world interpretation and meaning, but for aesthetic experience. This approach is similar to that of Pierre Schaeffer, whose musique concrete was meant to bridge the worlds of sound and music.

Orality and Writing

The epic poets spoke of listening in to the event as the duty of the orator. We begin, as Horace wrote in "Ars Poetica," with the listener placed in the midst of things (*in media res*), in an immersive and sensorial experience that is created through description: the epic poet "[begins] the Trojan War from the egg, but always he hurries to the action, and snatches the listener into the middle of things" (Horace in Fairclough 2005). Sound brings us to the event, acquainting the listener with the circumstance through the body. In "Beyond Words: Sobs Hums, Stutters and Other Vocalizations" (2014), Steven Connor reflects on the voice's essentialism, the connection between the utterance of the word and the body:

> The mouth is the crucible of this compounding, a commerce of image and actuality. The sounds made in and by the mouth are part of the ordinary phenomena of the world. They come about as the sounds of the world do, through actions of rubbing, blowing and obstructing, and are subject to precisely the same physical and acoustic laws as apply in the world. Yet for all

> that the sounds produced by the mouth are nevertheless not simply or merely worldly, precisely because they are articulated in systems of relation and contrast that make them into the things we call words.
>
> (Connor 2014, p194)

He sees the significance of the voice not only as a communicative device but also as an instrument abounding in meaning with every articulation:

> Linguists nowadays are perhaps more likely to define articulate sounds, not as ones made with signifying intent, but as sounds that form part of a language, in the sense of a regular structure of similarities and differences, which alone makes them able to embody meaning…On this view, too, it would seem to make no sense to mark off certain features of speech as noise from other features of speech that are taken to be meaningful, sense-making sound. All phonemes, or distinguishable elements of speech, are at once noises and sounds.
>
> (Ibid 2014, p10)

In contrast to words, the sense of individuality imparted through the voice and oral transmission bridges particular acoustic attributes and socio-political distinctions. If we extend Nancy's rationale to Connor's way of thinking, the voice is the instrument by which that art of hope for sound is activated. By manipulating the mouth to make words from utterances, orality is thus a mode of construction and a 'making sense' of sound[2]. This construction is highly embodied - as much a social process as a 'making sense'. The use of the senses required to understand these tensions is learned just like any other method.

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[2] Connor holds a special place for the utterances between sound and word, wherein meaning is at the cusp of construction in the moment before language and explicit meaning. Where do we find an analog to these vocalisations in writing, or even in recording? The unfinished written word, the drop of a needle, or the wow and flutter of a damaged tape?

The etymology of the word orality is in itself telling of the practices associated with listening: in Sanskrit "to hear, to obey", in Greek "to hear or be called", in Latin "to hear oneself called, be spoken of", in Welsh "I hear". All listening deals with relationship to the self: listening aids in relating others and events to the individual. Hearing itself is a metaphysical marker of interpreted knowing-through-sound. As Erlmann writes, hearing "constitutes philosophy's principal means for the 'metaphysics of presence'…The ear also excludes the possibility of the self knowing what remains irredeemingly alien to its own terms. To hear another is therefore to always hear oneself" (Erlmann 2010, p47). Hearing is also a public affair, in the sense that no one individual may possess privileged access to whatever sounds are within audible range.

Recall from Chapter 1 my experience in the wake of the London Riots. The call to attention came from a silence unfamiliar to me. As I focused my listening on waiting for a sound to replace the cars, markets and clamour of urbanism in New Cross, the revelation came from my own imposition of expectations. My experience of the sounds, or lack thereof, was entrenched within my subjective, sensorial experience. For another, the silence might have been a welcome change to the sounds of rioting on Lewisham Road just a hundred meters away. My listening during this experience is that of an outsider - a temporary resident but not a citizen, a white male from North America with no direct exposure to violent crime or civil unrest. At that moment, my hearing was attuned to my own judgements and social and moral leanings as much as it was to the environment. Inspired by that phenomenological experience, this research works under the presumption that sound is a social and political force, worth listening to in order to deconstruct the soundscape and further understand its socio-political meaning. Hearing - a passive act – may call the witness to actively listen. Early inventors of recorded sound and amateur recordists were unaware of the politics of translation in which their works were bound up.

For Mesopotamian and Greco-Roman societies, bards, storytellers, and poets were guardians of knowledge. The spoken word was the mode of transmission of political and philosophical discourse, and for diffusion of knowledge concerning historical events. Writing existed for the purposes of documenting, and in no way replaced oral transmission. Another example is of storytelling in Senegambian and Malian cultures, which were transmitted exclusively through song. The families charged with oral poetry through musical performance - Griots - play instruments such as the Balafon (xylophone), the Kora (harp), Ngoni (lute), and Djembe (drum). Living amongst Mande, Fula, Hausa, Songhai, and Mauritanian Arabs are the

Cissokko, Diabate Kouyate, and Tounkara families, whose performances are an essential element of a social contract with noblemen of their communities. Through these performances and their reception, a centuries-old bond is activated - a connection rooted within the performer-listener relationship.

An example of this is evident through performances of the Sundiata Keita, or the Sundiata Epic. Performed to honour the Keita legacy, Griots sing the story of the rise to power in the thirteenth century of Sundiata Keita, who freed the Mande people from oppression. When a descendant of the Keita family enters into a room, a Griot is obligated to perform a portion of the Sundiata epic, praising the glory and honour of their king. The Sundiata descendant must then make a payment out of gratitude. Given that noblemen of the Keita family are often not wealthy or recognised with an elevated status within their culture, the exchange of song and story is integral to their relationship. This performed social contract is both their rite and the agency by which their gift economy operates. Without the song, the story of Sundiata is never told. In this way, orality was privileged amongst West African cultures and remains so today.

Christopher Wise writes that the secret of the Griot is found within the occult world, or nyama. The nyama, essential to the performance of the Sundiata Epic, is accessed only through the spoken word, "the invisible wind that blows over the fine hairs of the ears" (Wise 2006, p33). For the Mande, the ears are the "spirit", whereas the eyes are the spectre (Ibid). Babacar Fall writes of the Griots' importance in Mande culture:

> The dual role of the griot is to "break the silence of forgetting and exalt the glory of tradition". For Cheikh Hamidou Kane the griots…were the demiurges who shaped that world and made themselves its sole witnesses. They praised it and. . .kept it alive in glory and tradition. They accomplished this against silence and forgetting, and in spite of the destructive effect of time.
>
> (Fall 2003, p56-57)

Given the importance of the process of oral transmission for the Senegambian and the Mande people of Mali, writing had a different purpose. From the fifteenth to seventeenth centuries, literate Muslims became members of this society, and for the first time in recorded history, the Griot was not the only keeper of Mande history. The co-existence of writers and Griots during this time meant that writing served not to transcribe, but to interpret events. As the

Griot was charged with preserving the history of the Mande people, the function of the writer was to bring new insights into these traditions.

In "Orality and Literacy: The Technologizing of the Word", Walter Ong argues that orality provides the individual with an appreciation of history not possible with the image nor the written word. Ong theorises that the turn to writing signifies a change in the conceptualisation of history; with the written word comes a greater comprehension of history, but a deterioration of its appreciation. One might theorise that the linear fashion of listening to an orator is inconsistent with the ability to read a historical narrative as one pleases - to flip through pages and pick up at the beginning, middle or end of an event. Despite the obvious virtues of writing as a document of events, Ong claims that "storing knowledge outside the mind, writing and, even more, print downgrade the figures of the wise old man and the wise old woman, repeaters of the past, in favour of younger discoverers of something new" (Ong 1982 p41). He argues that writing is a technology, and is therefore mediated - a consideration that often eludes the reader:

> Because we have by today so deeply interiorized writing, made it so much a part of ourselves, as Plato's age had not yet made it fully a part of itself (Havelock 1963), we find it difficult to consider writing to be a technology as we commonly assume printing and the computer to be. Yet writing (and especially alphabetic writing) is a technology, calling for the use of tools and other equipment: styli or brushes or pens, carefully prepared surfaces such as paper, animal skins, strips of wood, as well as inks or paints, and much more.
>
> (Ong 1982, p80)

As Ong writes, sound envelops the individual in a way that vision cannot: "Sight isolates, sound incorporates. Whereas sight situates the observer outside what he views, at a distance, sound pours into the hearer. Vision dissects, as Merleau-Ponty has observed (1961). Vision comes to a human being from one direction at a time: to look at a room or a landscape, I must move my eyes around from one part to another" (Ong 1982, p70). Ong emphasises individual presence within a sonic environment: "When I hear…I gather sound simultaneously from every direction at once: I am at the center of my auditory world, which envelopes me, establishing me at a kind of core of sensation and existence. This centering effect of sound is what high-fidelity sound reproduction exploits with intense sophistication. You can immerse

yourself in hearing, in sound. There is no way to immerse yourself similarly in sight" (Ong 1982, p70). Similarly, Jonathan Sterne reflects on the audio-visual litany in his text "The Audible Past:" "[The] litany…idealises hearing as manifesting a kind of pure interiority. It alternately denigrates and elevates vision: as a fallen sense, vision take us out of the world" (Sterne 2003, p15).

Auditory Archeology and Sonification

The record of an acoustic event, which is re-contextualised and re-embodied in each playback environment, is the inscription of sound. The inscription relies upon mechanical and electronic technologies, the most conventional being the cutting of a wax cylinder, an acetate or vinyl record, or recording to magnetic tape. All these recording instruments combine the functions of recording and reproduction, yet are logically distinct. As I previously stated, the earliest example is the phonautograph, the first form of acoustic recording. These sound recordings were not meant to be played back, but provided the user with a visual representation of the acoustic event: they could be read according to the intensity of the waveforms. The early phonograph also recorded sound onto tinfoil, a form of "talking on[to] paper" (Gitelman 2012, p293). Gitleman writes that "Tinfoil phonographs were machines that created documents of authenticity. As with the phonautograph, the tinfoil phonograph made visible a sound event - purportedly without interpretation" (Ibid). Conspicuously predating the development of acoustic and electronic recording, these sound-writings represent the desire for the documentation of sound with undeniable authenticity. Gitelman continues: "The records were stunning harbingers of provenance. Each had a precise point of origin (recorded at one moment in "real time", according to today's parlance), and they were together defined by virtue of their precision, a new, more vivid indexicality" (Ibid, p294).

Techniques of writing that actively employ acoustic epistemologies have arisen in the field of Sound Studies. In "Dig: Sound and Music in Hip Culture", Phil Ford writes that "language imposes fixity, linearity, one-sidedness and one-at-a-timeness on the moving, three-dimensional, multi-valent, everything-at-once reality of lived experience. Written words flatten out reality, but sound carries it forth in all its fullness" (Ford 2013). Although writing is the condition by we which we conceptualise history, it problematises both events and the sensation of them. As St Paul wrote, "the letter kills, but the spirit gives life" (Quoted in Winn 1998, p16). Bards, storytellers and poets perform histories as their words and vocalisations

reverberating through halls and home. The word, on the other hand, is reductive. However, scholars use the fixity of language to their advantage. Despite the shortcomings identified by Ong, the written manuscript has a distinguished provenance for historians. Once the pen is put to paper, an idea, person, place, or event is given a sense of definition not possible through other media. Written work can be expounded upon: it is subject to 'close-readings', sustained interpretation that turns the work into an event unto itself. This is useful for analysis of what Augoyard and Torgue call "complex sound events" (2005, p12) - situations where a cacophony of noises all occurring at once, made up of distinct components that elide a single mode of measurement. Writers use documents, images, archaeological and architectural information to theorise on the role of sound in societies. Auditory archaeology studies physical space and socio-historical data and is based on historical and social analysis and writing, as a way of studying and elaborating upon senses of place and society.

Simply put, auditory archaeology aims to ask and answer "How do we know what others have heard in the past? What meaning did it have for them?" Technological advancements in recording sound events - from quill to pen to sound writer to lathe recorder and on - provide the scholar with evidence. In a preliminary report on the practice concerning sound studies in Çatalhöyük, Turkey, Steve Mills describes auditory archaeology as: "…an attempt to give sound and its significance in the past a greater presence in archaeological thinking and practice" (Mills 2004). If sound is indeed a source of information to be researched, just as one might understand the past through artefacts, then all sound media must be understood as cultural techniques of knowing and remembering. As communities and cultures leave behind clues that allude to what daily life might have been like, their sonic environments may be reconstructed and understood as another form of cultural artefacts. These artefacts may be equally revealing of social and political relationships.

Mills also identifies some principles of auditory archaeology. The practice of auditory archaeology is meant to bolster research into a culture's architecture, musical instruments, writing, and social practices to understand the relationships engendered within places, commonly used materials, and the daily lives of the people that used them. Through a further understanding of sound's role in culture, a researcher might learn how to listen as these people did. This research also contributes to a broader conceptualisation of the role of listening in human evolution and civilisation, as a practice that has been socialised and embodied (Ibid). This method has been adopted and extended by Stephen Banfield in "The Sounds of

Stonehenge" (2009). Through acoustic measurements and modelling, researchers at the University of Salford were able to estimate the sonic properties of the space; a practice referred to as Archeoacoustics. This is complementary to the study of auditory archaeology, which also studies the social significance of these acoustic spaces. In this practice, technological advancements are identified and analysed in unique ways that shed new light on familiar artefacts. This is especially salient for the confounding case of Stonehenge.

The moments of greatest significance are when technologies and cultural techniques overlap. When a new way of documenting sound is created, it either replaces the former or aims to complement it. This moment - when a culture is at the crux of technological innovation being accepted into society - is critical to understand a culture's desire to reproduce the listening experience. As seen in the Mande culture, Western conceptions of writing about historical events have almost entirely replaced the traditional Griot performances of their oral history. In this way, writing has threatened their cultural heritage[3]. Still, the Griot tradition serves a higher purpose, which is socialised in a way that writing cannot be. The act of retelling the story is never repeated by rote but is of greater social importance than the fixed prose of the historian.

Sound artist, musician and author David Toop defines auditory archaeology as "sonic history through detective work, a verbal reconstruction by auscultation of the lost sound embedded within a variety of sources" (Toop 2010, p34), and in this context, writing has a ubiquitously privileged position for historians, scholars, and poets in the Western world. In his text "Sinister Resonance," (2010) Toop himself speaks at length of myth and sound in the folk tales of Pan, the Greek god of the wild whose presence is marked by his flute and piercing vocalisations. Pan suffers the fate of death, announced by a divine voice. This tale is retold by Richard Payne Knight, John Keats, and other nineteenth-century writers who recognised the significance of sound and listening. In such tales and lore, sound is perceived as illusory. The resonance of sound is a formless entity that emanates without direction, reflecting off surfaces in seemingly incomprehensible ways and manipulating the perception of space and time. Each

[3] However, field recordings of their performances that have been released of late have helped to revive the Griot tradition, simply because they are again able to find gainful employment doing so. Notable amongst these recordings are Lucy Duran's Growing Into Music, and the first documentary on the Sundiata Epic with a poetic English translation by Professor Cherif Keita, directed by the author.

author writes of the piercing sound that Pan creates, and uses their writing as a form of retelling and analysis. These descriptions have interpretation embedded within them, as a way of reconciling the ephemeral nature of listening and memory.

Along with auditory archaeology, another method has arisen in the 21st century to analyse sounds before the era of acoustic and electric recorders: sound eduction and sonification. Both use forensic techniques to understand sound.

Akiyama and Sterne write about the phonautograph as not only a sound writer but also a 'sound-chaser' - creating a representation of the sound without any chance of repeated listening. "The phonautograph's relationship to sound could best be described as post sonic. It produced an image after the occurrence of a sound - a record of a past sound event that it did not seek to reconstruct sonically" (Akiyama and Sterne 2012, p546). Indeed, all forms of media that aim to express or make sound always deal with the absence of the source: even when the source is known, it is never present at the time of reading, performing or playback. The illusion of voice is the struggle Connor writes of in his essay Panophonia. Connor writes that "there are no disembodied voices; for every disembodied voice is always also what I called a 'voice-body', the body implied by or intuited from the voice… there is never in fact…a voice and nothing besides, for if the voice is always our way of being beside ourselves, there is always something else – an implied speaking body – beside or behind it. So, while the voice is a powerful proof of the idea of origin, it can never itself be originary" (Connor 2012). Sound holds semantic and semiotic meanings that are expressed through description, transcription and the inscription of memory. The materiality of sound comes not from the event, but from what is left behind: the documentation and the memory thereof.

Sound eduction[4] has little in the way of literature. Patrick Feaster's Grammy-nominated text and recording Pictures of Sound stands alone. Feaster begins his experiments with a series of questions: What defines a recording? Can we consider documents that have been sonified amongst the canon of acoustic and electric recordings made since the nineteenth century? Feaster poses the question: "If we define a sound recording or recorded sound in terms that

[4] Listen to Phonautograms from 1857 by Patrick Feaster (Track 2 of Accompanying Recordings)

are truly broad enough to encompass the full range of current practices - as an inscription that expresses sound in terms of amplitude or frequency as a function of time - and then look back through the historical record for inscriptions that fit this definition, what will we find?" (Feaster 2012, p5-6) Feaster employs the software programs that take a high-resolution photo of the recording media and render sound from it. Though this particular software program claims that "every sound you've ever heard can be represented as an image and all possible sounds can be made from an image", neither the creation of an image from sound nor that of sound from an image are straightforward processes. To analyse a phonautogram on a technical level, one must adjust the level of visual sensitivity until the waveform is most visible. Feaster's approach attempts to reverse the process of the needle vibrating onto the recording medium. On a more interpretive level, one must identify which visual artefacts are part of the music, rendering a listening experience that is dictated by the listener as much as the original document.

Sound Media Theories

Many questions arise from reviewing sources that employ acoustemic techniques: What media theory can be applied to a body of literature concerned with sound? Does writing change as a consequence of an enchantment of sound? What formats, or literary styles, develop accordingly?

To study a history of writing about listening and aurality is to study a history of media. Musicologists are constantly thinking about the media of recorded music, especially in the digital realm, and its effect on distribution networks. As of late, media theorists have begun to think of a format theory: by this Jonathan Sterne means the social and political influences that develop "codes, protocols, limits and affordances" (Sterne 2012). So, in thinking about a literary theory of sound, we need at the same time to think of a media theory of sound, and also a set of format theories. Each way of interacting with a medium and a format creates a relational ontology between the media, the messages and our bodies. As Connor's "Panophonia" suggests, we re-contextualize voices and sounds with every reading and listening, and our bodies are essential to understanding the agency attributed to sonic materials. We embody sounds upon listening, just as we put words into new contexts with every reading. We make and remake soundings through each expressive form, each medium and each format.

To return to field recording, which is ultimately the sound media of concern to this dissertation, a recording may contribute to acts of preservation and activism. It provides listeners with a sense of place that may be entirely unfamiliar to them. Recordings that aim to preserve cultural heritage can act just like photographs of threatened environments - as a record and as a political tool. Listening to a field recording gives one the sensation of 'being there'. Recording sound to disc, tape or other sound media affords the phonographer the fixity of language and definitiveness of writing, with the immediacy of sonic immersion. With the introduction of recording technology came storytelling that benefitted from both orality and literary practices.

Chapter 3: The Mediatisation of Listening

Just as Chapter 2 reviewed the history of listening in light of oral and written modes of transmitting knowledge through sound media, Chapter 3 reviews the development of sound media machines and their effect on listening practices. Put simply, these are acoustic and mechanical devices that document and reproduce sound.

Sterne writes that a media theory must encompass social relations and, where possible, recount the history of their development and distribution. Format theory may offer valuable insights into the selection of materials for sound media, the ways in which they are designed, and the replacement of materials as technology advances. Sterne writes, "If there is such a thing as media theory, there should also be format theory. Writers have too often collapsed discussions of format into their analyses of what is important about a given medium" (Sterne 2003, p7). The formats in question - acoustic and mechanical sound recorders - are made up of various media. For example, the first acoustic recording instrument, the cylinder, used tin foil, wax, and celluloid during the time of active use in the late 19th and early 20th century. Discs used shellac or acetate, sometimes with a core of paper or aluminium. Sterne continues:

> Most crucial dimensions of format are codified in some way—sometimes through policy, sometimes through the technology's construction, and sometimes through sedimented habit. They have a contractual and conventional nature. The format is what specifies the protocols by which a medium will operate. This specification operates as a code—whether in software, policy, or instructions for manufacture and use—that conditions the experience of a medium and its processing protocols. Because these kinds of codes are not publicly discussed or even apparent to end-users, they often take on a sheen of ontology when they are more precisely the product of contingency.
>
> (Sterne 2003, p8)

As will be shown throughout this chapter, the formats that were created and standardised by inventors were heavily influenced by potential profitability. In addition, a number of conventions in recording, such as the usage of early direct-to-disc recorders, were commissioned directly by the American government during World War II, with iconography

that could be considered propaganda. As Nicholas Cook writes, "if such effects contribute crucially to phonographic performances of personae, and more generally to what recordings mean, then so do such non-auditory dimensions of recordings as cover-images and liner texts, not to mention the physical and social circumstances within which recordings are experienced. No analysis of the cultural meaning of recordings can be regarded as really complete without consideration of all these matters" (Cook 2009, p245). In the case of early recorders meant for amateur use, the ways in which formats were codified and shaped public use were hardly subtle, as will be shown through advertisements for supporting soldiers through recorded messages to be sent in the post.

A schematic similar to the phonautograph was created one year prior to Edison's cylinder: Charles Cros' Paleophone. The basis of the machine was the use of photoengraving to record sound waves, and it was referred to as 'voix du passé', translated as "the voice of the past" or "an ancient sound" (Pras 2013, p613). Like the phonautograph, the paleophone's transfer of acoustic information to media created a document of sound only to be seen, not heard. However, these machines represented a significant modification in thinking about sound transmission. Sterne writes that Alexander Graham Bell's "phonautograph is an artifact of a shift from models of sound reproduction based on imitations of the mouth to models based on imitations of the ear…Sound itself, irrespective of its source, became the general category or object for acoustics and the study of hearing" (Sterne 2003, p33-34). The mediatisation of sound as conceptualised separately by Cros, Scott, and Bell grouped the human voice, musical instruments, and all sound effects together simply as sound makers – the machine that recorded these sounds was made to simply listen.

If the recording devices of Cros, Scott, and Bell produced a post-sonic moment, wherein one could analyse acoustic information only after the fact without reproducing the auditory event, then the recorder-reproducer that followed produced a peri-sonic moment. It was capable of reproducing sound around the listener as if they were present in the room of the sound's origin with the same sense of linearity and ephemerality. The recorder introduced added complexity to listening: it could play back a sonic event in another location, as the radio could, but could skip around by placing the needle at any location on the media. The recording media also contained artefacts of the process, such as the scratching of the needle at the beginning and end of a session – a vestige of its diachronic function.

This chapter focuses on the mediatisation of listening through recording devices such as the wax cylinder, and electric, wired devices such as the acetate disc recorder. First, I talk about how spatial techniques enhance the sense of liveness developed in simultaneous transmission of sound through wired and wireless radio. I then discuss mechanical recording and the change in perception of temporality. To do this, I review the techniques of sound transmission recording leading up and into its introduction in North America and Western Europe. I begin with radio, and the ways in which the technology changed the perception of listening. Later in the chapter, I discuss the reception of the Edison phonograph as a source of intrigue for the print media and special interest publications on technology. This chapter also considers the major sources of funding for recording innovations: affluent business partners, early film production companies, and the military. I identify the beginning of public exposure to amateur recording and the phono-post - the development of home and public recording technologies and their distribution via mail - and address a gap in the literature about recording machines capable of creating early 'mixtapes': taken literally, these were recordings made and edited on tape and mastered to lacquer disc. These technologies enabled the consumer to become an amateur recordist, thus beginning the history of phonography. I conclude the chapter by pointing to present day practices that fetishise 78rpm records, the dominant medium of the early 20th century. Additionally, I will show in the course of this and the next chapter that these new recording technologies were not created exclusively for entertainment. They were shaped by social and political forces throughout the 20th century.

Théâtrophone

The technical innovation of recording took over 70 years to master. Without delving too far into the history of radio, which is the subject of many books worth reading for context (for example Douglas 2004; Balk 2005; Biewen and Dilworth 2012; Taylor, Katz and Grajeda 2012), radio played an essential role in the development of sound technology. Radio was meant to hear as the ear heard, constructing perceptions of sonic liveness. Paul Sanden defines liveness as "perceptual and therefore dependant on imagination…[it] always implies mediatization, because without electronic media, the concept of liveness is meaningless" (Sanden 2013, p33, 34), and goes on to describe the two most common conceptualisations of liveness: spatial and temporal. Spatial liveness implies physical presence - the performance is happening in the same place as the listener—whereas temporal liveness implies that while the performance may not occur in the same place, it is happening at the same time (Sanden 2013,

p33). Liveness extends to recordings through what Sanden calls "liveness of fidelity," when music (or in this case, any sound) is deemed faithful to the original, and "virtual liveness," the perception of a sound as being live even when it is not (Sanden 2013, p11). The experience of live music performance and live sound transmission is based on the presence of the features or signifiers of an event, as opposed to a series of components arranged together for listening. Categories of liveness are not meant to be discrete; rather, they are fluid, phenomenological states of listening. Simply, "liveness is lived" (Sanden 2013, p31).

The peri-sonic moment in listening history began with the radio, which constructed spatial and temporal separation - the 'you-are-there' experience, surrounded and enclosed by sound, experienced from afar. Cook writes that for listeners, "liveness subsisted in something you knew, or at least believed, about what you were hearing, and not in what you actually heard. Like an antique dealer's certificate of authenticity, the label 'live' was necessary because otherwise you couldn't tell the difference" (Cook 2013, p370).

Radio offered a stage for individual opinions to be heard: a new mediated public. Walter Benjamin believed that it would be an error on behalf of radio stations and producers "to perpetuate the fundamental separation between performer and audience, a separation that is undermined by its technological basis…it is in the interest of radio to bring anyone before the microphone at any opportunity, making the public witness to interviews and conversations in which anyone might have a say" (Benjamin and Rosenthal 2014, p363). Benjamin envisioned a public radio, one that would serve as the antidote to the inarticulate consumer. He continued, "Never has there been a genuine cultural institution that was not legitimised by the expertise it inculcated in the audience through its forms and technology[5]" (Ibid). Radio programmers wrote scripts that translated oral histories into sound documentaries that were transmitted over the airwaves: "The radio listener, as opposed to every other kind of audience, receives the programming in his home, where the voice is like a guest" (Benjamin and Rosenthal 2014,

[5] A modernised form of Benjamin's "genuine cultural institution" was later realised not only through talk radio, which facilitated public discussion, but through musical performances and playback of demos made on phonographic disc recorders, such as Elvis Presley's first recording, made on a home unit. (These machines will be discussed in greater detail at the end of the chapter.)

p363). The radio brought the voice into the personal space of people's homes for the first time, and the recording followed suit.

As radio documentary maker Siobhán McHugh notes, there are two clear benefits to radio: the ability to retain the 'orality' of oral history, and the public dissemination of histories to a wider audience (McHugh 2012, p187). Histories transmitted then became radio documentaries, structuring narratives around edited interviews. Radio had the added benefit of capturing the sonic environment. As McHugh writes, natural sounds "subliminally color how we hear the speech and how we understand the cognitive content of the oral history material…If sound itself can influence our mood and understanding, it makes sense that the infinite modulations of the voice and the expressiveness of the spoken word may also elicit an emotional response distinct from the meaning of the words themselves" (Ibid p191-192). Radio has the ability to mediate dialogue between performer and audience, as well as enrich the storytelling process through a composition of voice and environment. This compositional practice explained in Chapter 4, anticipates the sound documentary.

Though not yet wireless, radio originated as audio transmission from one location to another via a long set of wires. Wired radio initiated stereo signal experimentation: two separate transmissions of spaced microphones sent to the same location, to be listened to with a receiver on each ear. At the Exposition Universelle – now called the World Expo - in Paris, 1881, Clément Ader presented binaural sound for the first time to the public, calling it "Théâtrophone". Providing listeners with an early sense of simulated sonic immersion, transmission of the sound from the source to the ears was mediated by telephone signals, reproducing both sound and its perception: the Théâtrophone operated by sending the sound of two omnidirectional microphones separated by the width of the human head with a baffle between them, mimicking the way that the human ear receives auditory signals. Ader sent a transmission of Comédie-Française and opera performances through telephone cables from the Paris Opera to a listening room at the World Expo, two kilometres away. Nine years later, in 1890, Compagnie du Théâtrophone was commercialised as the first method of stereo: two-channel sound capture. This technology was mimicked by the Telefon Hírmondó in Hungary, 1893, and by the Electrophone in the United Kingdom, 1895. This is an obvious instance of temporal liveness, one that remote audiences delighted in. The Théâtrophone was heralded as an innovation of great pride to the French people by President Jules Grévy during Exposition Universelle.

The Théâtrophone also served to develop important technologies that affected sonic liveness. The microphonic technique used by the Théâtrophone to create an immersive sonic environment was rudimentary but was the earliest form of binaural audio transmission. In 1931, a three-channel version of this technology (translated to left, centre and right) was used to transmit a performance of the Philadelphia Orchestra from Philadelphia to a speaker system in Washington, D.C's Constitution Hall (Comstock 1953). That same year, Alan Blumlein patented stereo sound recording. He developed a technique that captures the stereophonic field by placing bidirectional microphones positioned one on top of the other. This technique was given the eponymous name, the Blumlein Pair. This imitation of the ear was based on the time alignment of each ear as it is separated by the head, though the idea was not yet fully realised.

Head-Related Transfer Function (HRTF), developed over the course of the 20th century and filed for patent in 1974, quantified the characteristics by which the ear perceives sound into an equation. This equation could be used to calculate the correct angle of incidence and the appropriate baffle size between microphones, much like a human head. In theory, the equation meant that a recording could accurately reproduce sounds moving from one direction to another, both horizontal and vertical. In 1975, the German electronics company and microphone manufacturer Neumann, famous for their tube and large diaphragm microphones, patented the KU80 - an artificial head for binaural recording that employed the HRTF algorithm (Kürer et al. 1975). A recordist could then set up the KU80 in any location, and record in binaural stereo, thus giving the listener a reliable approximation of the recorded sonic experience. The result is often considered to be so real and so different that listeners are uncomfortable during playback.

Used with additional microphones, and aligned to give multi-channel surround sound using a figure eight pattern, the KU80 microphone also created 3D sound, used in virtual reality applications, orchestral recording and film sound. While the desire for greater fidelity has been present throughout the entire history of recording, the focus on spatialised sound after the recording cylinder was invented represented a shift from the sound photograph to the construction of hyper-real sonic environments, so redefining the very nature of fidelity. This was a form of virtual liveness that developed throughout the 20th century, using production techniques to compose the sound field. The reproduction of sound brought the listener back to the moment of recording in a linear temporal sequence: though the recording is a record of

a moment already passed, it is experienced as if it is in the present. Liveness is then constructed by the perception of authenticity, fidelity, and individual memory.

An Omnivorous Ear

As mentioned in Chapter 2, the history of portable field recording commonly begins with mechanical recording. First made of tin foil, then wax and later Blue Amberol, or celluloid, cylinder recordings were hardly suitable for playback[6]. Tinfoil, in particular, barely reproduced the voice: it did not have the range in frequency response necessary for music capture, let alone any form of spatial imaging of an acoustic environment. It hardly allowed for the sound source to be heard at all, and many of the first recordings are of a person speaking loudly or yelling into the machine's horn just to make it audible.

Though history commonly mentions only two parties, Edison and Berliner, this only accounts for the patents that were made for technological innovation. Beginning with Edison's tinfoil cylinder, Bell and Tainter invented a cutting needle designed specifically for wax cylinders. Edison would improve upon this by introducing a working model, which is now known in the United States as the phonograph. The device took on many forms for consumers, coming in various sizes and materials, but the wooden box and metal horn became most common. The manufacturing of these machines, however, was facilitated by an entrepreneur from Pittsburgh, Pennsylvania: in 1888, Jesse H. Lippincott invested $200,000 USD to create the American Graphophone Company, and that same year invested $500,000 USD in the North America Phonograph Company, thus establishing himself as the largest stakeholder in sound reproduction in North America (Gellatt 1977, p41-42).

Edison first envisaged that the phonograph, like the radio, would be used chiefly for listening to the voice. Edison and Lippincott believed that they had cornered the market of the 'talking machine'. This, however, proved not to be a viable business: stenographers actively ignored the technology for fear of losing their jobs, and the rental prices of machines were too high for the common consumer. In 1890, the cylinder was instrumental in the development of the

[6] Only in recent years have these recordings been scanned electronically and played back, as in Carl Haber's restoration of an Edison tinfoil recording made in 1878 (for which Haber was awarded a MacArthur Foundation 'Genius' Grant). Only through digital technology is it possible to properly hear what was recorded.

music recording industry (Ibid, p47). Subsidiaries of Lippincott's company - The Columbia Phonograph Company and the New York Phonograph Company - were selling wax cylinders of brass bands for $1 USD (worth approximately $26 at time of writing). Correctly or not, the wax phonographic cylinder was seen as representing, for the first time, a reliable method of recording sounds and playback. Once recording was made possible by Thomas Edison's phonograph, techniques of listening could be further developed.

Figure 7: Thomas Edison listening to a wax cylinder phonograph, 1888, from the Museum of Innovation and Science in Schenectady, N.Y. (AP Photo/Mike Groll)

Thomas Edison's Phonograph cylinders were received with great curiosity and considerable enthusiasm, with press from academic and public-interest magazines. The excitement of reproducing the human voice was unprecedented: Friends' Intelligencer, which was published from 1853-1910, covered the story of Edison's new phonograph even though it had no access

to one. On Nov 26, 1887, the publication triumphantly announced that Mr. Edison had completed his phonograph for the public to enjoy. Their journalists wrote of the phonograph's alleged ability to revolutionise communication:

> To call it a phonograph, or sound-writer, is but a feeble Hellenism; for the phonograph not only writes down, but it talks back…It is perfectly docile. It listens with what is literally breathless attention… Instead of being merely a toy, it is now to be an instrument of great practical utility… If the newspaper reports concerning it are correct, it is capable of accurately recording and faithfully repeating human speech and all other sounds which may be poured into its omnivorous ear. As there are forgers with the pen, so clever ventriloquists may be able to perpetrate forgery with the phonograph; but, when honestly administered, it will have great value. It will preserve for future ages the tones of those now living…Who would not like to hear the voice of some of the world's great teachers, who, being dead, yet speak? If the phonograph has been really perfected, the human voice will enter a new period of its history equal to that which marked the advent of the telephone.
>
> ("The New Phonograph" 1887)

The recorder was imagined as an eternal listener - or, at least for as long as the cylinder could record, which was approximately 2-3 minutes. 'Perfectly docile', it would receive every audible signal in its range. Even though the first iteration of the cylinder reproducer required a signal that was the equivalent of a loud male voice, the illusion of the 'omnivorous ear' was accepted by consumers.

Figures 8 and 9: An Edison Phonograph Advertisement printed from 1909-1912. (From the Bill Bryant Archive)

Iconography of the time gives a false impression of what could be heard by the machine and how it was reproduced. Advertisements depicted the phonograph as a machine that could convince animals and children that the recorded sound was indeed in the room. Figures 8 and 9 illustrate this: "Jack Tries to Find The Cat" shows a dog bemused by the alleged presence of an animal to chase - a familiar piece of iconography made popular by 'His Masters Voice' in Nipper, the listening dog - while "Mr. Minstrel Shoots Out of The Horn" depicts a family entertained by the phonograph as if the (now recognized as racist) performer had joined them in the living room. The reality, of course, was that due to the low signal to noise ratio of the

machine, listeners were hearing sounds that 21st-century listeners, accustomed to digital recordings, would perceive as far from 'real'. What we now hear as scratchy, lo-fi audio was, according to public perception during the early 20th century, a convincing record of reproduced sound. In "Beyond The Score: Music as Performance" (2013, p362) Cook references the tone tests conducted by Edison. Audiences gathered in prestigious performance halls to hear small ensembles performing live. During the performance, the lights were dimmed, and the performers were replaced with a gramophone recording of the same repertoire, at which point the illusion would be revealed to the public's delight. This again demonstrates that sonic liveness is highly dynamic, affected greatly by the technologies available at the time, and therefore that listening is highly mediatised.

The first playback machines made by Edison were referred to as 'reproducers' - they were meant to duplicate the original sound with such exactitude that it was as if the sound was occurring within the room the listener was in. For this reason, practitioners of the sciences were attracted to the machine for archival purposes. Recordings of bird songs, endangered languages and other auditory ephemera were captured on wax cylinders, and later on acetate and tape recorders for university collections (notable amongst these are the Cornell Bioacoustics Lab co-founded by Arthur A. Allen and Peter Paul Kellogg, now a free online resource). Doctors proposed that with the recorder they would be able to keep record of bodily sounds that were previously only heard through immediate and mediate auscultation (listening to the body through the back abdomen, and then through the stethoscope). In this way, recorders were used outside the studio for a wide range of purposes including news gathering, filmmaking, and the recording of music or other acoustical information not reproducible in the studio. In effect, this was the birth of field recording.

The availability of recording technology meant that music, language, and oral histories (short histories, due to the limitation of recording time, but histories nonetheless) could be documented. A vast amount of recordings were created in the late 19th and early 20th century, ranging from Western Art Music to popular music, vernacular and non-Western music, all on the cylinder. These archives have been mined as part of various research projects. The vast majority of these were field recordings either on purpose or simply by circumstance, from Gilman's 1893 cylinder recordings at the Columbia World's Exposition to Bartok recording folk songs in Maramures. Examples of this include The Alfred L. Kroeber collection of American Indian sound recordings - a collection of 1078 songs, stories, and interviews that

preserve the cultural heritage of these communities - and the British Library's collection of 245 ethnographic wax cylinders. The largest of these collections is at the Department of Special Collections at the University of California, Santa Barbara, containing 10,000 cylinders of traditional music, spirituals, sermons, sacred music, string quartets, and national anthems from North America, Europe, and Asia. The contexts within which these recordings were made were largely academic. This is a critical point to be made in the history of folkloric sound recording: cylinders now housed in archives at major cultural institutions are both a record of the recorded subject and also part of the early history of sociology and anthropology, a colonialist endeavour across the globe. Capturing endangered languages and music is undoubtedly valuable. However, these recordings embodied the positivistic approach taken by scholars of the early social sciences.

In "Savage Preservation: The Ethnographic Origins of Modern Media Technology," Brian Hochman claims that the phonograph set a false precedent of "cultural authority" (2014): if it was recorded, it was thought to be true – an argument that could also be made of writing and photography. The phonograph's scholarly use was not to document heritage, but rather to document difference. This fetishisation of both phonograph and exotic cultural voice means that such recordings illuminate the racial and ethnic bias in academia in the late 19th and early 20th century. Recordings reflect beliefs, social and political values, and ideologies[7]. Though Edison, like his enthusiasts, maintained that he had created a machine to sit and listen unobtrusively, sound recording was, and remains, a highly disruptive, socialised practice. Theorising about the nature of the sound recorder as an unobtrusive listener is analogous to analysing the photographic method without acknowledging the frame, lens and focus. No recording is made without intervention, from production technique to social disruption. While records can be voyeuristically recorded without the knowledge of the subject, the recording's start and stop time only give context of the portion that is able to be played back.

[7] It is with this history in mind that a new method of sonic ethnography is formulated as a collaborative endeavour, detailed in Chapter 6.

The Gramophone and Electrical Recording

In 1889, Emile Berliner presented the gramophone record to the public. First released in Europe, the 5-inch record played by way of hand-cranked spring. It was commonly used as a toy due to poor sound quality in relation to Edison's wax cylinder phonograph or Columbia's graphophone. By 1894, improvements to quality by Berliner's business partner Eldridge R. Johnson allowed the gramophone to compete with the phonograph and to excel as a device for the reproduction of musical works (Milner 2009 p39). Berliner and Johnson parted ways in 1901, and that same year Johnson started the Victor Talking Machine Company. Johnson first introduced the 10-inch record, extending the play of recordings to 3 minutes, and two years later extended play to 4 minutes with the larger 12-inch record. The increase in recording duration gave the disc a considerable advantage over the wax cylinder. Edison responded by introducing The Blue Amberol cylinder, claiming higher fidelity sound reproduction. Eventually, the disc prevailed as a medium more suitable for mass production. With the cylinder's days numbered, Edison released the Diamond gramophone disc and kept it in production from 1912 to 1929.

At first, the speed of discs was entirely unregulated, varying between 60rpm and 130rpm. It would be decades before the rotation of the disc was standardised, and in 1925 a spring-operated rotation system was implemented into all Edison disc players to be played at 80rpm. Eventually, the sound quality of discs was more consistent than the cylinder. Discs were manufactured using shellac instead of celluloid, which became unavailable during the war. With the rise in popularity of 78rpm records, the Victor Talking Machine Company was hugely successful in selling records to those who would previously only listen to the radio. In 1924, the Columbia Phonograph Company employed electrical recording for the first time. Commissioned by Western Electric, this new form of recording allowed for signals to be amplified with electricity, and for the rotation of the disc to be automated. Perhaps more importantly was the adoption of the microphone as a separate device that could be switched out for a more suitable polar pattern according to the sound source. The Columbia Phonograph Company innovated again in 1931 by introducing the long-playing record for specialist transcription, a 12-inch disc that recorded and played back discs at 33 1/3rpm. Columbia Records and Audiophile introduced this format to the public in the 1950s.

The gramophone, once standardised by rotation speed and sturdy materials, was reliable enough for studios to begin mass-producing records. The process was relatively simple: a record was cut, an impression was made of the grooves, and a metal cast was made for pressing. Gone were the days of individual cylinders being cut in the studio, one after another. However, recording proved to be challenging in the early disc era as well. Like the cylinder, the 78 disc recording process required that the full frequency range of the orchestra be limited so as to not make the recording needle skip. Instruments continued to be shuffled around in the room, moving the loudest instrumentalists far away from the recorder to effectively 'mix' within the studio (Kennedy 1999, p63). The rearrangement of the music ensemble in the studio caused visual and social disruptions to the creative practice of performance. As musicologist Albin Zak writes, "sonic realism remained a slippery notion…The sound-gathering process still involved the translation of musical expression from one medium to another - from fluctuating air pressure to oscillating electric current - which, in turn, required feats of aural interpretation…Is the primary goal of a recording project to make an aesthetic object of delight or to strive towards some sort of truthful account" (Zak 2009, p64)?

Curious philosophers took up the topic of recording technology in the early 20th century. Adorno critiqued playback devices, writing, "The form of the phonograph record was virtually its nonform. The phonograph record is not good for much more than reproducing and storing a music deprived of its best dimension, a music, namely, that was already in existence before the record and is not altered by it" (Adorno and Levin 1990, p57). Adorno, critical of popular music, jazz and new technologies, here ignored essential dimensions of recorded music as a distinctive sonic and social practice. First, the recorder brings with it its own sonic signature, which with time provides additive meaning. Far from a mere storage device, the recorder and playback devices of the early twentieth century contained multiple experiential layers of meaning. The recording is born from the dimensions of production that give rise to phonographic modes of listening. Second, there is still a materiality to the music within the record. As Philip Auslander writes, the recording itself—the process of maintaining and playing music on a record player—is still visual and spatial: "Sound recording certainly did not render the visual aspects of music irrelevant; indeed, listening to recordings may always be a visual as well as an aural experience" (2008, p85).

The subject of music, record production, and liveness is a familiar one to musicologists. Scholars have observed and written extensively on the ways in which the recorder changed

how listeners experienced music, and how - despite its separation from the presence of the performer - phonographic listening was a socialised practice. Take for example the use of structured narratives and sound effects. "The Angels of Mons," the earliest surviving phonograph drama, produced in 1915, was a piece of British propaganda used during World War I to tell the story of the battle of Mons in 1914. The phonograph tells the dramatised story – composed using patriotic music, sounds of gunfire, and the chaos of war - to detail the divine intervention of angels to aid in the British Expeditionary Force's safe retreat (Crook 2014, p181). In "Vocalising The Angels of Mons", Crook theorises that the audio drama on record is representative of the rise of Christian nationalism during and after the war. As it will be shown, audio recording and the record industry benefited greatly from wartime nationalism in the United States during World War II. This is one example out of many in the history of recording where technological innovation was used to engage listeners in political agendas.

With the many advances made in sound reproduction, image-based entertainment was also generating a great deal of public interest. In the early 1910s, photography and the moving image quickly arrived in metropolitan cities across the United States. Hungarian-born William Fox distributed films through his company Greater New York Film Rental and produced films through the Box Office Attractions Company in 1913. He began opening theatres across the west coast of the United States in 1915 and purchased the failing Hollywood Selig Polyscope Company to move film production to California. By the 1920s, Fox had nearly monopolised the production, distribution, and screening of films in the United States.

Attempts to add sound to film were made by early sound technologists, though at first with limited success. Edison introduced his Kinetophone in 1895, a machine that ostensibly was meant to play music lasting the length of a film's duration. In 1902, Léon Gaumont presented the Chronophone, a dual phonograph system that connected to a projector for rough synchronisation. E.E. Norton, an engineer who had previously worked at the American Gramophone Company, created a device in 1908 that was nearly identical to the Chronophone, called the Cameraphone. Edison, Gaumont, and Norton's attempts to combine the then-popular phonograph with projection systems were, however, too expensive and temperamental to catch on with cinemas (Gomery in Weis and Belton 1985, p6).

Perhaps the first truly successful sound-for-film device was developed by Theodore Case. His laboratory, set up in 1914, first researched infrared communication systems for the American

war effort (Fielding 1967). Lee de Forest, who would become Case's partner, approached him to develop a Phonofilm system that would lay the theoretical groundwork for optical sound. Due to personal conflict, mainly because de Forest claimed the work for himself, Case left the partnership and in 1922 created the Movietone system. Complying to the 24 frame-per-second speed of the film reel and popular Vitaphone sound on disc system, the Movietone was used exclusively by Fox Films, who purchased it from Case in 1926 and renamed it The Fox Movietone. Sound for film was used in "The Jazz Singer" (1927, with the Vitaphone system) and "Sunrise" (1927, with the Fox Movietone system), both of which incorporated sound effects, music, and spoken word. "Sunrise" won the Academy Award for Unique and Artistic Production at the inaugural ceremony, and sound films became hugely popular among the public. By the end of 1930, Fox owned nearly 500 theatres. Thus, the Movietone sound-for-film system became the standard.

Field recording, too, was impacted by the new technology. Two years after the system's commercial debut, in 1928, the machine was adopted by Cornell University's Bioacoustics Lab, led by Arthur Allen and Peter Paul Kellogg, and altered to work with high sensitivity microphones for ornithological research. Allen and Kellogg's used the Movietone sound-for-film system for its fidelity. Their recordings formed the basis of what eventually developed into the Cornell Lab of Ornithology's audio archive (now digitised with thousands of audio files). The ability to hear what could not be seen and use the auditory experience as a basis for research was something quite new. Birds could be tracked, and patterns could be drawn from sounds alone. These are also some of the very first recordings purposefully recorded 'in the field,' as recordings meant to capture ambient sound as well as a particular source.

Phono-Post

A significant limitation of knowledge about early recording technology within music studies is the lack of literature on amateur rather than commercial record production, which I propose is the direct predecessor of the formalised practice of field recording. The shift towards phonographic listening developed further as amateur recording devices were made available in the United States and Europe. In 1904, Emilien Jean-Baptiste Brocherioux registered La Phonopostal in Paris. This patent was based on phonographs that could record sound directly onto postcards: a paper card would be coated in wax, acetate, or lacquer and inserted into a metal press with a pre-recorded message on it. By the 1930s, these cards came blank, and a

message could be recorded onto them by the home recordist. In the United States, disc recorders were sold in radio shops. Companies such as RCA Victor, Presto, Rek-O-Cut, Meissner, and Wilcox-Gay all developed home models of various shapes and sizes. RCA Victor and Presto developed more professional models, with an input allowing for interchangeable microphones. The Presto Recording Company developed models for permanent home installation, as well as portable models with a suitcase handle. The Presto K8 became popular amongst travelling recordists such as folklorists, as it contained a microphone preamp, a line input, and a built-in speaker in the lid. The recorder could also rotate discs at 78rpm, 45rpm, and 33 1/3rpm, and could record onto 10 and 12-inch discs. This was the recorder of choice for the Library of Congress and Alan Lomax. However, the Presto recorders were prohibitively expensive, costing around $350 USD in 1944 (the equivalent of $3,200 USD at present time of writing), making them out of reach for most home users.

Figure 10: Presto model K8 (Photo by the author)

The company that came to be hugely successful in home recording was the Wilcox-Gay Corporation of Charlotte, Michigan. The Wilcox company began in 1910, making radio components, kits, and transcription recorders. In 1926 they began manufacturing consumer radios. Five years later, Paul Gay joined the company and they incorporated as the Wilcox-Gay Corporation. The Recordio was launched in 1939 and garnered acclaim amongst amateur phonographers. Like the Presto and RCA Victor disc recorders, the Recordio included a microphone to record direct-to-disc 78s for playback on any home radio-phonograph system. These systems were advertised alongside radios, sold in the same shops, and featured in lifestyle magazines for the middle class. Many of the first demos recorded by country musicians were made on the Recordio, including Elvis Presley, Johnny Cash and Les Paul. It could also act as a crude PA system to amplify performances and could record from a telephone. The machine was much lighter than previous recorders: at 27 pounds, it fit on public transport. An even smaller, lighter, and less expensive model was also produced by Wilcox-Gay, the Recordette model 8J10.

Advertisements boasting high-quality sound reproduction enticed customers to try recording for themselves in radio and phonograph retail shops. In a column called "A Look Back," Alan R. Peterson wrote for Radio World that "The Wilcox-Gay Recordio [was] hyped as having full-range, hi-fidelity reproduction. In fact it most likely topped off at 5 to 7 kHz at best: by comparison, the professional 'broadcast quality' RCA 73-B disc lathe had a 10 kHz response. The ad copy went on to boast a full hour of recording time on one slow-moving five-inch reel" (Peterson 1996). Though fidelity was beginning to engender interest from the enthusiastic amateur recordist, other features were prioritised over high-quality recording. Like the cassette of the 1980s and the MP3 of present day, portability was valued over sound quality. The details of advertisements, iconography, and the sponsoring companies were hugely influential to the creation of these early home recordings.

Figure 11: An advertisement of the Wilcox-Gay Record home unit, 1942.

The companies that focused on home models incorporated a radio into their machines so that broadcasts could be recorded and kept for future listening, or sent along to men in military service. The recorders were also advertised as an alternative to the telephone: a more reliable way to send messages abroad. Phone connections were still very temperamental, required advance scheduling of connections, and often did not stay connected for an entire conversation. For soldiers in World War II, there was little to no chance of speaking to their families over the phone, so the phono-post was the next best thing. The phonograph

manufacturing companies, especially Wilcox-Gay, aligned themselves with the war effort. In Figure 11, we see an advertisement encouraging families to record their children and send off their hopeful messages to the front lines. From the advertisement: "Perched on neighbour Flynn's knee, Margie poured her message into the microphone. When Captain Edward Lee heard that record he felt like fighting the whole Nazi army, singlehanded. Few thrills match that of a recorded message. It's just like a heart-to-heart talk." Many records were designed exclusively for sending across the Atlantic to soldiers, "packed individually in patriotic mailing envelopes ready for the postman." Organisations that aided in the war effort such as the American Red Cross, Allied Creative Services, and Army Welfare Services all created discs designed to encourage the practice of recording for soldiers.

During World War II, many soldiers used army-owned disc recorders during deployment exactly as advertised, the way one might write a letter. Below is a transcript of a sound letter that a soldier in Washington DC sent to his partner in Connecticut. The record was sponsored by the Pepsi Recordisc Corp, shown in Figures 12 and 13.

> Hello Julie. The Pepsi-Cola Company is happy to bring you the voice of Walter, speaking to you from the show in Washington. [skip]
>
> [Walter Eddy:] Hi honey. I couldn't... They cut out that 3 day pass honey but I did get a pass to come to Washington. I'm here at this show where they have complete display of all types of foreign aircraft which has been shot from the sky. They also sell bonds here. I bought a $50 bond and I won a chance to hop on one of those Link trainers that they train the pilots with... I had a swell time. Going to go back to Washington now and see what it's like there. Haven't been here in so long I've forgotten what it looks like. Don't know what I will do tomorrow yet. I think I'll take in some of the beautiful buildings they have here and sights and so forth. I don't know when I'll get a chance to get home but probably will be around the 15th of September if I decide to spread the weekend pass a little. How's everything at home? Write more often if you can. I haven't got much more time now on this record so I'll just say good night. I wish you were here with me. Good night.

Figures 12 and 13: A Pepsi Recordisc Corp. communication between a soldier and his partner, 14 July 1944. (Asset #13258, ID WWW226)

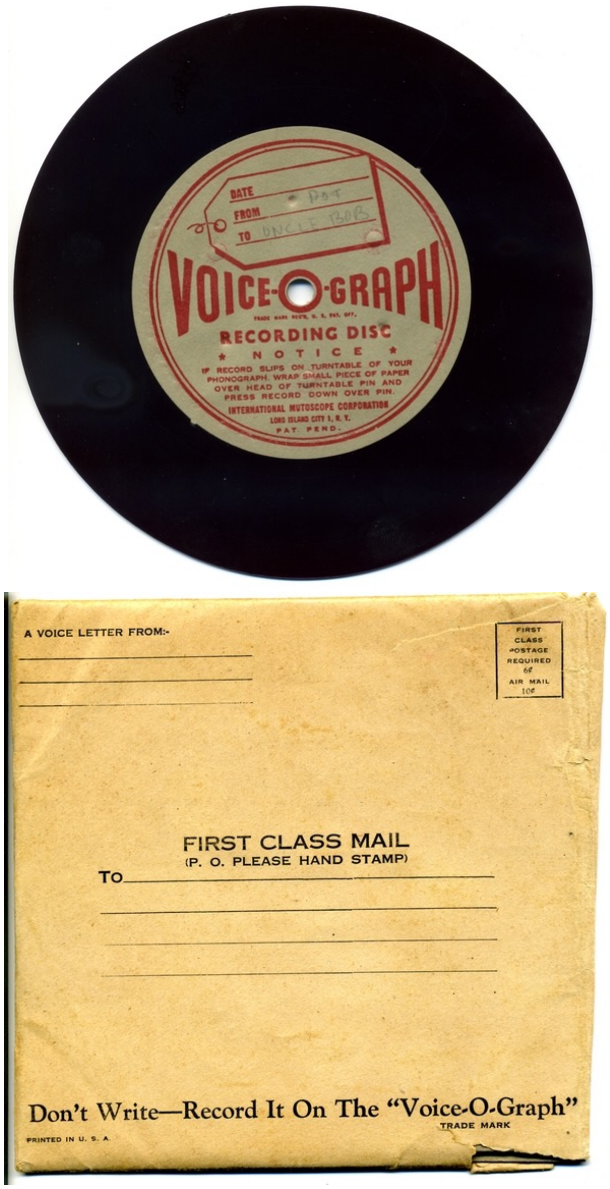
Other people used the recorders to send music to soldiers. This coincided with the halt in record production due to a musician-led recording strike against Capitol, Columbia, Decca, and RCA Victor from 1943 to 1949. The only recordings in production were made for military men in service, called V-Discs. These records were recorded by orchestras, big bands, and singers, and were not available to the public. Without the combination of nationalist sentiment and the lack of new recordings in circulation, amateur recording might not have been the success that it was amongst the American middle and upper class.

In the example shown below, side two of the disc features a mixed-gender choir singing the familiar *There's No Place Like Home*, adapted from John Howard Payne's 1823 opera Clari (The Maid of Milan), composed by Sir Henry Bishop:

> Mid pleasures and palaces though we may roam,
>
> Be it ever so humble, there's no place like home;
>
> A charm from the sky seems to hallow us there,
>
> Which, seek through the world, is ne'er met with elsewhere.
>
> Home, home, sweet, sweet home!
>
> There's no place like home, oh, there's no place like home!

Soldiers also sent messages back home, some of which contained musical performances. A collection of records from a Sgt. Salvatore Petron have him singing a variety of songs to his "folks", ranging from Happy Birthday to Italian folk songs to the jazz standard *All of Me* (written by Gerald Marks and Seymour Simons in 1931). These records, packaged to support the war effort, contained messages that participated in the political agenda of the United States of America.

Figures 14 and 15: An American Red Cross record from a soldier in Illinois, USA 1949. (Asset #10483, ID TYL237a)



Figures 16 and 17: Mutoscope Voice-O-Graph and letter, recorded in Woodside Park, Philadelphia, Pennsylvania USA. (Asset #12943, ID JAX 001 formerly 086 WWW)

Though the phono-post has no scholarly literature associated with it, it was a common means by which information was transmitted. During the war, it was used for official purposes by both the allied and axis militaries: information was cut to disc, sent via secure post, listened to, and destroyed. And in the years after the war, in addition to the small home units, larger record booths were set up as novelties for groups of friends or musicians who recorded voicemails, conversations, and songs onto 78 records. Some fancied themselves amateur technologists, and tested the recorders with a series of pseudo-scientific experiments: these

recordings were of conversations between the microphone operator and the recordist, keeping a record of changes in gain levels, the equipment used, and the speakers' proximity to the microphone. The machines were featured at state fairs, game arcades, tourist attractions, and even on the 86th-floor observation deck of the Empire State Building. They operated much like a modern photo booth: for 35 cents, a 60-second record could be made, supplied with an envelope for sending via post.

In addition to American nationalist iconography, records were used for purposes of advertising by manufacturing companies—such as Wilcox-Gay, Recordisc Corp., Audiodisc, Edison, Mutoscope, and Cartavox—and by museums and tourist landmarks. These recordings and the advertisements that they carried represent a brief moment in media history that has not received any attention from academia. However, that may change: Phono-Post, a collection of over 2500 home recordings, has been archived as part of the Thomas Y. Levin collection, which is housed at the Friedrich Schlegel Graduate School for Literary Studies at the Freie Universität Berlin and is now available to researchers.

By the late 1940s, the lathe recorder was already being replaced by tape machines. These were part of a long line of magnetic recording technologies, going back to 1877 when magnetic recording via metal wire was conceptualised by Oberlin Smith, an American engineer; it was put into practice by Danish inventor Valdemar Poulsen in 1890 with his Telegraphone. Perhaps only a footnote in recording history, the steel tape recorder was used primarily for dictation in Germany and Britain in the 1920s. The Poulsen machine was developed by German engineer Kurt Stille in 1924, and the Blattnerphone, an analogue to Stille's machine, was developed for the British government in 1925 by Louis Blattner. The Blattnerphone was used primarily to record speeches for the BBC, including those made by King George V. Conceived as a more efficient version of wire recording, magnetic tape was first used for recording sounds by Fritz Pfleumer in 1928, and by 1935 the German company AEG had developed the Magnetophon K1, a magnetic tape recorder. This machine was used throughout the war as a means of broadcasting the same message from multiple sources across Europe to confuse Americans listening in. Further innovations were made by the Germans during the war, with AEG patenting the stereo Magnetophon recorder in 1942; this machine was used to record Bruckner's 8th Symphony, performed by the Berliner Staatsoper with Herbert von Karajan. American recordists did not yet have the capacity to record over 3 minutes, and the fidelity of records was far inferior to the new magnetic tape. Stereo

recordings would not catch on in the United States until Emory Cook's collection of recordings in the 1950s.

An outstanding example of the American tape recorder aimed at the amateur market was the Wilcox-Gay Recordio 1C10 and 3C10 (model designations for home and portable units), which allowed for cutting and pasting recorded events. The brochure, published in 1953, stated that:

> The Recordio Model 3C10 is a two-way combination disc and tape recorder. Recordings can be made from tape to disc or disc to tape on the same machine. This Recordio is also a phonograph, public address system and provision is incorporated whereby recordings can be made from an external radio or played back from the same radio. An input jack is also provided for recording telephone conversations.

Peterson goes into greater detail:

> This was a unique device, part tape recorder and part disc cutter. Originally intended for music students, it was equally functional for touring pro musicians or in the home. Disc recorders of the day could only cut audio directly to disc, but the Recordio allowed recording to tape first, then a transfer to a 10-inch, 78rpm record blank. The tape could be erased and re-used, but it was also possible to make and edit a tape recording before committing it to wax, all inside one machine.
>
> (Peterson 1996)

In the case of the tape-to-disc recording machine, recordings ran under 3 minutes, which is all that a 78 disc could contain. Within these 3 minutes, however, recordists could omit whatever information they deemed extraneous or unwanted through cutting and pasting, resulting in a disc that appeared to the listener as unedited. This brought a new dimension of creativity to recording. The recordist could develop a narrative using simple tape editing, perhaps making fiction from non-fiction. The new technology afforded a significant shift in the understanding of recording—a shift from recordist to producer, or perhaps even electroacoustic composer. The introduction of magnetic tape - with its ability to create, through splicing, the impression

of a sonic event that had never actually taken place - changed the recordist from a simple consumer to a more involved user of technology.

This combination of a reel-to-reel tape machine that also recorded to disc and could play and record broadcast radio allowed users to create and listen to recordings on multiple media. Such inter-medial machines have come into existence at particular times in the last century – for example, the cassette and CD players of the 1990s, and VHS, DVD, and Blu-ray combination players in the 2000s. These are artefacts of format wars, representative of technological innovation and the fierce competition for global markets.

The Fetishised 78 in the Digital Age

In 2014, as part of a project to conserve the Paramount Records collection, rock and folk musician Jack White brought a 1947 Voice-o-Graph 78 disc-recording booth (see Figures 16 and 17) onto late night television with host Jimmy Fallon. Folk musician and noted activist Neil Young was guest starring on the show, and the two of them operated the machine for the audience, cutting a record live. Later, they used the machine to record an entire album, Neil Young's *A Letter Home*. Young's recording was also fed into a recording studio directly from the microphone. Thus the recording is available both as an LP transfer from the 78 discs in the Voice-o-Graph, and in a cleaner version from the studio, with a CD, DVD, and book box set. It seems ironic that Young would make the recording available in both low fidelity Voice-o-Graph and audiophile versions. Such experiments emphasise the fetishisation of the recorder in the 21st century and the social conditions by which American folk music underwent a nationwide revival.

Figure 18: Cover Art for Neil Young's A Letter Home (2014), recorded in a 1947 Voice-o-Graph booth

Young and White's collaboration is not the only project that revives the 78 recording process. The era of the portable phonography and the disc recorder are memorialised - and celebrated - through The 78 Project, an initiative started in 2012 to record music using antiquated recording technologies. The resulting recordings emphasise the perceived authenticity of low-fidelity acetate disc technology. With a 1930s Presto direct-to-disc recorder and a 1950s Shure 51, producers Alex Steyermark and Lavinia Jones Wright create monophonic recordings of musicians performing music from the American folk song tradition. Available online, a series of short films chronicles the recording process and playback of a songwriter's performance. The performers sit and listen with delight as they are transported to another era through the recording. One might immediately recognise the sense of nostalgia in these recordings, from both the performance of American folk song ballads and the acoustic qualities of the recorded medium. While Lomax's lathe recorder was amongst the best quality systems in its time, it was quickly replaced by magnetic tape (the Nagra recorder being the most popular for location recording, which will be discussed in Chapter 4). Similar to Young and White's collaboration, the products of The 78 Project are a collection of CDs, MP3s, and a series of documentary films.

Figure 19: Photo from The 78 Project at the music, arts, and multimedia festival South by Southwest (SXSW) in 2014. (Wiese 2014)

Both of these projects attend to the technologies of post-World War II America and their relationship to American folk music, with an ear to the machines as much as the instruments. The attention paid to these recorders, the Voice-o-Graph and the Presto, illustrates both fetishised practice and Lo-Fi aesthetics. This is perhaps a more extreme version of the use of cassette recording in the digital age amongst punk and alternative rock communities. As Ford writes, "Recordings, like photographs, are mass-reproduced traces of presence, pieces of sound and space broken off from the world and handed around, fetishized, and taken as surrogates of the real thing" (Ford 2013 p104). Sound artist and scholar Andy Stuhl writes of the move towards lo-fi aesthetics in recording and performance that "[Recordists] depend on the nontransparent imprints left on recordings by the equipment used to produce them as signifiers of the music's origin and legacy. Noise (e.g., the distinctive 'hiss' left by cassette systems [or in the case of the 78 record, monophonic sound, with pops, crackles and humming from uneven shellac surfaces]) is the most salient of these signifiers, tangibly reflecting the imputed characteristics of recording technologies" (Stuhl 2014, p45). Lo-Fi aesthetics are often employed as a claim to authenticity in process, performance and distribution.

Lo-Fi equipment encourages listeners to think of the performance as live-off-the-floor, without any treatment other than the presence of the microphone and machine. But there is more to it than that. Liveness is not only about the sense of a performance occurring for the listener, but also about the labour implicit within its making. The labour of phonography, to echo Adorno (1956), is fetishised for both the process of mediation and its result. The practice is also patently embodied. Recording to disc on shellac and acetate was hazardous due to the flammable nature of the materials. As the groove was cut into the disc, a string of the material would spread around the disc and had to be brushed away from the heated preamplifier tubes. These fetishised recordings and their listenership share in the same perception of listening as pre-tape recordists and inventors: they are products of an omnivorous ear. However, they assume a new meaning in the digital age. Eagerly, people attempt to step back in time, listening to 78s made in the 21st century, to hear sounds from 'a simpler time', when recording was done at the flick of a switch rather than the click of a mouse. But of course, this notion of a simpler time is an illusion. If we look back on the history of recorded sound, it is plain that

the 'simpler time' musicians and media makers now long for was socially constructed, bound up in political will and economic greed. Befitting its condition, the sonic signature of early recording devices - perceived as desirable for many - is actually an effect of the distortion inherent in the then cutting-edge technology of recording 78s.

Recording comprises a set of techniques used across disciplines and professions, largely for entertainment and communication. Each of these techniques corresponds with a method of distribution, demonstrating intersections between inventors, innovators, and amateur recordists. Phonography did not develop as a singular practice; however, it became formalised with the invention of new machines devoted to the practice. Technologies were being repurposed or developed exclusively by recordists for their own uses, and they discovered the distinct advantage of being able to bring the recorder to the event, rather than trying to emulate the event within an environment that silently imposes its own values. Though recordists would choose their own disciplines and develop their own methods of recording, the connections between acoustics and the environment, or the sense of place, were all maintained by the act of recording in locations outside of the studio. These practices of environmental and musical recording were connected by the desire to document environmental processes and cultural origins of performances. It is only now that the theoretical relevance of the practice of field recording is becoming a part of scholarly consciousness. Chapter 4 introduces the phonographers who pioneered the creative use of field recording to create nonfiction sound works. Amongst these recordists and expert media makers were Alan Lomax, Moses Asch, Stefan Kudelski, Tony Schwartz, Irving Teibel, and Emory Cook. We might refer to these as the 'first wave' of phonographers in the field.

Chapter 4: The Field Recordist

> "It is hoped that…some day, soon, the term "the art of recording" will really mean something more than the technique of recording."
>
> - Tony Schwartz, 1962

Angus Carlyle and Cathy Lane's "In The Field" (2013) is a text that is long overdue. Through interviews with artists and scholars, they conduct historical research and review the current landscape of field recording practice. Throughout the text, field recording is examined as the basis for new approaches to sound art, documentary, and music production. It begins with a short note on the missing narratives in the history of field recording:

> What today is understood as field recording is located at the confluence of a number of historical practices…Field recording practices were further broadened and deepened through strategies associated with experimental musics' incorporation of both environmental sound and the sound worlds that those early field recording practices opened up…Technical advances in microphones, cables, recording equipment and batteries have extended the horizons of possibility.
>
> (Carlyle and Lane 2013, p9)

Though early recordists would choose their own disciplines and develop their own methods of recording, the connections between acoustics and the environment were all impacted by the act of recording in locations outside the studio. Technologies were being repurposed or developed exclusively by the recordists for their own uses. Rather than try to emulate the auditory event within a controlled environment like the studio, they were discovering the advantages of bringing the recorder to the event. These field recording practices were connected by a desire to document environmental processes and the cultural origins of performance. It is only now that the theoretical relevance of the practice of field recording is becoming a part of scholarly consciousness.

The historical point that is often referenced as the 'birth' of field recording is the WSP. Sound studies scholars have devoted little time to those recordists who preceded and influenced it. This is even more remarkable when one considers the attention given to the WSP and the

composers who have come from this formalised soundscape research unit: R Murray Schafer, Barry Truax, Howard Broomfield, Bruce Davis, and Peter Huse. Though the WSP's contribution to field recording is undeniably important, they were not alone in the innovation of electroacoustic practice concerning music and the environment.

This gap in the literature that "In The Field" begins to close begs the question: why is it that we have ignored early sound recorders and recordists, those pioneers that developed the very techniques and concepts that underlie that hallowed term, 'the soundscape'? Western culture's deeply embedded visual bias has meant that sound is treated primarily as an augmentative effect of vision rather than as an epistemology in its own right. Jennifer Stoever-Ackerman quotes the recordist and media maker Tony Schwartz (to whom I will return in greater detail), telling a reporter that "History up to now has been writing and pictures. . . . I should like to start a public archive of the sounds of our times" (Stoever-Ackerman 2010, p61). Put simply, it has been easier for Western cultures to make sense of visuals because they are static.

The temporality of sound events makes them far more elusive to classification and analysis. Stoever-Ackerman rightly observes that historically, academic research has tipped the balance toward visual studies. Take, for instance, the development of Visual Culture departments and graduate programs that exist across the globe, whereas Sound Studies research centres are only emerging as a niche within communications and music. Experimentation in sound recording has often been treated as an offshoot of film sound (as early as the use of Edison's Kinetophone in The Dickson Experimental Sound Film of 1895, mentioned in Chapter 3) and electroacoustic studios.

But perhaps there are other reasons why there is little research concerning Schwartz and his contemporaries: Schwartz's work cannot be embraced within the 'academic' forms of folkloric research or music studies. Because it does not fit neatly into these categories, it is challenging to find a disciplinary foothold for his output as a 'media guru'. Schwartz is a perfect example of a recordist who might have gone by another name - perhaps a composer - had his work been conducted today. Yet it is not just Schwartz to whom this applies. Aside from Alan Lomax and Moses Asch – on whose recording projects there are comprehensive texts with extensive biographical information (Szwed 2012; Carlin 2008) - the work of professional recordists has gone relatively unappreciated in scholarship. Curiously, it is only in the late

twentieth century that the scholarly field of musicology has recognised the importance of recording as both a documentary practice and an act of interpretation.

The interpretive decisions embodied in recording contribute to how music and sound are perceived. These decisions are, in the first place, technical. The medium of recording, the speed of rotations for wax, disc, and tape recorders, and microphone techniques such as proximity and stereo placement all influence the act of recording. Whereas in a studio environment such decisions can be altered or simulated by effects like reverberation or delay, in the field the most critical factors are specific microphone techniques that construct immersive environments. Recording machines and microphones create the limitations within which recordists work and experiment. Within these limitations, experimenters and engineers have guided the trajectory of sound recording practices, defining for listeners what exists in the field. And here lies a paradox. Having gone into the field to retrieve sounds or music for the public to listen to, the recordist returns with a document of an unplanned event or an unknown, exotic musical tradition. Field recordings present themselves as 'authentic' and so rely on the naivety and curiosity of the listener, assuming that the recordist's positioning – both as an engineer and as a cultural interlocutor – has had minimal influence on the recording. The use of technology and the unpredictability of encounters in the field combine to dramatically affect field recordings.

In the late 1940s through to the mid-1960s, a spark of creativity surrounded the development of early portable recording technologies. This chapter locates practitioners of phonography within the development of portable recording equipment on the one hand and on the other the 'hi-fi' cultural movement in North America. These recordists self-identified under a number of different professions: media makers, folklorists, inventors and occasionally composers.[8] Practitioners included folklorists Alan Lomax from the Library of Congress, Moses Asch of Folkways Records, and Harry Smith, creator of the Anthology of American Folk Music; Stefan Kudelski, who helped to develop technologies that dramatically affected the practice of phonography and location recording in the film industry from the 1950s to the present; and media maker Tony Schwartz, among the first to create the sound documentary by

[8] While there has never been a universally agreed upon term for those who practice field recording, 'recorder,' which was once used frequently in publications in the early and mid 20th century, has largely gone out of fashion.

editing field recordings to create historical and cultural narratives. Again, the introduction of hi-fi technology stimulated the public's interest in the 'sounds of the world,' recorded at the highest quality available with proprietary systems that had often been developed by the recordists: Emory Cook's location recordings, for example, provided American listeners with the earliest recordings of Trinidadian Calypso music. The works of media maker Irving Teibel, who created environmental sound recordings and soundscape compositions, predate the development of the term 'soundscape' as coined by R Murray Schafer and the WSP team. Glenn Gould's CBC radio experiment, the Solitude Trilogy, also used environmental recordings and sound effects in creative ways, manipulating them along with recorded interviews and music from the canon of Western Art Music.

Since these recordists operated in various disciplines, their work went unrecognised as field recording. However, these are the first to create a social network of practitioners, before the WSP and the term sound studies emerged within the humanities. This chapter also reveals the Canadian orientation of field recording and sound studies before the WSP, which in fact began with Marshall McLuhan's relationships with his colleague Tony Schwartz and his fellow Canadian pianist who was also a theorist in his own right, Glenn Gould. I conclude the chapter by discussing the influence of these recordists on soundscape composition and sound art. As artist, critic, and author Richard Kostelanetz once identified Schwartz, the recordists' role as a 'Horspielmacher,' or media maker, emerged in a field that was then undeveloped.

Going Magnetic - The Hi-Fi Era

Audio fidelity only became a serious issue that was attended to by recordists and audiences in the "science-obsessed" 1950s (Barry 2010, p116). The developing relationship between sound and scientific innovation, therefore, made the recorder a useful tool outside the studio environment, capturing sounds that were never heard before.

Magnetic recording only became popular in the United States after World War II. The availability of tape recording media played an integral role in field recording as a documentary and creative practice. This in turn dramatically affected the understanding of sonic environments. For technologist, practitioner, and listener, it wasn't enough to have a recording that possessed clarity. The listener needed to be convinced that it was "indistinguishable from actuality…[an] idee fixe [that] threads its chimera way throughout the history of the phonograph" (Barry 2010, p115). So while listeners were not hearing what it would actually

sound like in the concert hall or directly in front of the recorded subject, the manipulation of recordings and microphone techniques fooled them into thinking that they had a similar sonic experience.

High fidelity, not just a term for selling consumer electronics, makes a cultural distinction between desirable sound and noise. The shift in thinking about sound that Middleton reflects on here is what drew recordists to collect the sounds around them:

> Fidelity here can at best be a hope, a utopian 'as if', a construction that, evidently, deconstructs itself as soon as it is thought…if the principal lesson of phonography is the revelation that embodiment is mutable and mobile, fidelity to this truth would have to be not only a critical fidelity, as Derrida proposes; it would have to recognise that, in offering us the tools to 'operate' processes of territorialisation and deterritorialisation, phonographic fidelity produces an irreducible ethical undecidability.
>
> (Middleton in Born [Ed] 2013, p297)

These tape recorders represented a shift toward high fidelity, both as a technological feat and a cultural interest. The availability of tape recording media played an integral role in field recording as a documentary and creative practice. Truax notes that the ability to splice tape and edit without sonic artefacts from the process "implies the possibility of many hearings, and therefore the designer of the tape documentary can profitably utilize different layers of meaning, some of which are apparent the first time and others which reveal themselves only with great familiarity" (Truax 1994, p215). As mentioned in Chapter 3, the ability to make fine edits to audio recordings allowed for an entirely new conceptualization of listening and developed new listening practices. This in turn dramatically affected the understanding of sonic environments.

Into The Field - Asch and Lomax in America

In the 1940s, as mentioned in Chapter 3, great strides were being made in folkloric recording and the documentation of endangered languages. Recording traditional musical performances and intangible cultural heritage became a priority for folklife centres and record labels. The largest amongst them was, and remains, the Library of Congress, which established the

Archive of Folk Culture. Prominent amongst those 'in the field' at the time was Alan Lomax, who recorded for Decca Records and The Library of Congress, and became one of the most celebrated recordists and folklorists of the twentieth century. He believed that recordings of the environment, of musicians, and of cultural customs reinforced his vision of an "objective world," a positivistic approach to the study of music and culture (Lomax 1968). Lomax developed concept categories for folk songs according to universal principles for understanding the cultures of the world. This attempt at the quantitative analysis of performance form, style, and content was called cantometrics. While ethnomusicologists have in the main refuted cantometrics, his recordings have remained an indispensable source for music scholars and historians (Potter and Sorrell 2012). Indeed, the history of field recording as a folkloric practice is often centred around the work of Lomax. His Library of Congress recordings are crystallised in the minds of aspiring folklorists as the golden era of folk: his writings detailed his tenure as the assistant in charge of the Archive of Folk Culture, from 1937 to 1942. For Lomax, every new location in the hills and valleys of the United States bore new musical discoveries captured by his Presto recorder.

Lomax's writing reflected an optimistic tone in collecting songs:

> It's a cool summer evening and you're seated around the campfire, just talking lazily and singing songs. One of the girls has brought her guitar and she's strumming it softly. Then she starts to sing…
>
> The singer takes a well-known tune—"Oh, Susannah," or "Pop Goes the Weasel"—and starts making up words, telling of the afternoon's adventure, strumming the accompaniment on her guitar. She changes the tune slightly to fit the new words. Soon all of you get the idea. It's fun, and you help with new verses and join in on the chorus…And when you sing a song about your own lives, you are doing the same thing they do—you are making folk music.
>
> America, with its colorful background—cutting trails across vast, quiet wilderness, breaking new soil, building new cities—is rich in folk music. It has come straight from the hearts of people, from their loneliness and hunger and cold, from the rhythms of their daily jobs, from their lovemaking and their dancing, and often just from the joy of being alive and strong and healthy.

> Since the beginning of the world, people have told their feelings in song. And they're still doing it. Doing it mostly in lonely spots where there are no radios and phonographs, no movies and concerts, where people have to entertain themselves…
>
> Yet these folk songs can easily be preserved. You, and all Americans, can find them right in your own back yards.
>
> (Lomax cited in Cohen 2005, p48, 50)

As seen in this quotation, Lomax championed American Folk culture as a noble pursuit of a nationalist tradition. This writing signifies a certain naivety and curiosity in Lomax, perhaps one that was necessary in order for him to do this kind of folklore. His writing style and approach betray a tendency to treat the country's cultural heritage as a 'new American frontier' to be explored. His work reads much like the advertisements found in the Phono-Post: a reflection of a bright-eyed American ideal, where the best is yet to come.

On the Lomax centenary in 2015, it is hard to speak of his work without discussing the degree to which his recordings are considered 'authentic'. Parker Fishel writes as part of a Lomax Centenary discussion on the Sounding Out Blog (2015) that his ability to take music from a community and make it part of a broader cultural landscape makes the task of distinguishing authentic and inauthentic performances all the more challenging. When a piece of music was added to his catalogue, it became a part of the Blues or Folk genres, not the music of a specific region or community—a homogenisation that occurred despite his efforts to meticulously catalogue musical features unique to each recorded performance. A similar criticism is expressed by Tanya Clements in her theorisation of Lomax's cantometrics, or what she calls Lomax's 'Global Jukebox.'

In creating a canon of musical works that, according to listeners, belonged to America and not to specific regions, Clements argues, Lomax acted not just as a documenter and recording engineer, but also as a facilitator between marginalised communities and the American listener. Ethnographers have critiqued his methodology, going from city to city to record, and never staying in one place long enough to develop a thick description of the performances. Folklorists have been wary of his treatment of music according to cantometrics. Yet despite the disapproval of scholars and sometimes of his peers, Lomax's legacy as a collector remains

strong in the international community of recordists. Musicians with a penchant for oral history and folklore often earn themselves titles as 'modern day Lomaxes'. This refers to someone who has passion and deep interest in folklore, emulating the 'wandering recordist' proclivity.

Unlike Lomax, Moses (Moe) Asch was a record label owner and manager. Born in 1905, Asch took an interest in recording from an early age. Keen to pursue a career in recording and media, he began work recording music and interviews for radio stations. His father, renowned Yiddish author Sholem Asch, took him to Princeton University to record a message to the European Jews from Albert Einstein, urging them to leave before the Nazis invaded. It was on this occasion that Einstein encouraged Asch to create an "encyclopedia of man's musical expression" (Carlin 2008, p4). Einstein's message became the first in a massive canon of culturally significant recordings made by Asch: over the course of his life, he recorded one record per week for 36 years (Ibid).

Asch's earliest records of jazz and blues were in greater demand than he anticipated, but what might be thought of as an early success for Asch's label in the end proved financially disastrous. Due to the high cost of manufacturing and distribution, he could not keep up with royalty payments. He filed for bankruptcy on two occasions, and Asch Records and Disc Records were both deemed failures. Asch's third attempt at maintaining a viable recording business was with Folkways, where he recorded discs for American folk revival musicians. These discs were often recorded in makeshift studios and radio stations, with minimal studio engineering or manipulation. Often Asch would set up a single microphone in a room and simply let the record run while musicians tuned and made conversation. These informal performances led to some of the best recordings of now famous songs by Huddie 'Lead Belly' Ledbetter (*Irene*), Woody Guthrie (*This Land is Your Land*), and Pete Seeger (Wimoweh),[9] musicians who also recorded with John and Alan Lomax. Asch began to work with musicians around the world, and developed a network of ethnomusicologists who brought back

[9] These performers were also recorded by Lomax, who had his own unique relationship with them. For Lomax, Guthrie in particular was an informant for his research into Cowboy Songs, collecting hundreds of song manuscripts for the Library of Congress

recordings from their fieldwork. Here, Nicholas Cook writes about the curious collection of music in one of Asch's compilation albums, produced by American composer Henry Cowell:

> Because sound recording is a less obviously interventionist technology than notation – because it does not reconstruct or Westernize the original as overtly as Les musiques bizarres inevitably did – it acted even more effectively to give a life to music divorced from context. As illustration, the contents of the fifth volume of the Folkways series "Music of the World's Peoples," issued in 1961, are listed as "U.S.A.: Cajun; South-West Asia; Malaya; Burma; Syria; Afrikaans; Poland; Bolivia; Morocco; Copts of Lebanon; Fiji; Scotland; Jamaica; Asturia; African Bushmen; Honduras; Byelorussia; Algeria; Zulu; Hawaii; Haiti; Ethiopia"; small wonder that a reviewer commented, "the reason for putting together these particular items escapes me" (Krader 1961, 227). Actually the reason may not be so hard to find, considering the Universalist beliefs of Henry Cowell, who compiled the series.
>
> (Cook 2013, p91)

Albums like *Music of the World's Peoples: Vol. 5* (FW04508/FE 4508 1961) are commonly found on the Folkways label. Asch was keen to work with artists and producers who had a unique perspective on the international musical landscape, and would compile songs in ways not seemingly obvious to outsiders. Commissioning Cowell as a producer likely would have had the same effect as commissioning Lomax, who shared in the 'global jukebox' ideal. Each of these releases included extensive liner notes, often with details of the socio-cultural context of the recorded songs, sometimes with the techniques used by specific musicians. For example, Seeger's recording *12-String Guitar as Played by Lead Belly* (FI 8371, 1962) showcases techniques used by Ledbetter through performance and liner notes that provide the listener/reader with a history of the 12-string guitar, a list of places to purchase an instrument in the USA, and instructions for taking care of it.

Asch also took a special interest in environmental sound. He released *Sounds of a Tropical Rain Forest* (FX 6120, 1952), produced for the American Museum of Natural History by Allen and Kellogg (who were mentioned in Chapter 3 as among the earliest environmental recordists), and *Sounds of North American Frogs* (FX 6166, 1958) by herpetologist Charles M. Bogert. Both releases were a part of Folkways' Science series, and included essays by the researchers,

notably Bogert's "The Biological Significance of Voice in Frogs." Recordings of animals made in 1955 by Winthrop Niles Kellogg at the Oceanographic Institute, Florida State University, with support from the United States Air Force Missile Guide Center, were some of the earliest underwater recordings made with hydrophones[10]. For many listeners, these recordings were novelties. However, they also contributed to the public dissemination of scientific knowledge concerning biological research and the natural environment.

Asch's eccentric approach to knowledge-rich liner notes meant that his label was uniquely in touch with cultural heritage institutions, universities, and museums. One could claim that his label was the first to engage in interdisciplinarity, and acted as an outlet for scholars looking to create media long before academia was ready for it. With a diverse catalogue and frugal spending, Asch was able to keep Folkways running throughout his lifetime.

When Asch died in 1986, two copies of the entire collection of recordings existed. One copy was moved from the family home to an office in New York City, where work began on cataloguing and archiving the entire collection. With interest from the Smithsonian Institution, the entire collection was archived by their first hire, Jeff Place (now a curator and Grammy award winner for his work with the archive), as well as by ethnomusicologist Anthony Seeger and Richard Kurin (currently the Under-Secretary of the Smithsonian Institution). The archive was used as the basis for restarting the label under the supervision of the Smithsonian in 1987 when it became known as Smithsonian Folkways Recordings. The second full set of recordings was preserved at the Canadian Centre for Ethnomusicology, University of Alberta, where Moe's son Michael Asch worked as an anthropologist. This was made available as a resource for music researchers and created a lasting relationship with Smithsonian Folkways through folkwaysAlive!, a satellite centre of Folkways at the University of Alberta for lectures and performances. While there is not a direct connection between this ethnomusicological archive at the WSP archive, Canadian scholars have since become highly attuned to the content and research methodologies employed in both.

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[10] Military and government-funded innovations in recording technology were quietly influential to field recordists. Note that many of the recordings mentioned in this dissertation were made possible by technological innovations funded by the United States military: for example, the American propaganda that helped sell disc recorders in the 1940s and the hydrophones that were created for the purpose of submarine sonar.

Through the entirety of Asch's career, the international record industry was dominated by Capitol-EMI, CBS, MCA, PolyGram, RCA Victor, and Warner Brothers. Many independent labels had either been sold off or crumbled under financial pressure. These defunct labels' catalogues were either thrown away or kept in family estates. The Smithsonian bought or recovered entire catalogues from the families of the deceased label owners, and incorporated sub-labels into Smithsonian Folkways, including Cook, Monitor, Fast Folk, Dyer-Bennet, and Paredon: many of the labels' owners had already developed working relationships with Asch, through which they had been able to expand their catalogues to regions such as Trinidad, Cuba, Puerto Rico, Canada, and Scotland. These record labels, similar in spirit to Folkways, recorded music and sound for its cultural, historical and scientific significance, and for those interested in the music and cultures of the world.

The legacy of Asch's collection is enriched not just by its content, but also by its purpose. As a series of cultural and historical sonic artefacts, the recordings represent both an archive and a label dedicated to entertainment and education. Thanks to the comprehensive liner notes and the preservation of the recordings within a museum, the label remains a model for education (in that the label's mission is primarily to educate) and sustainable archiving (in that it actually makes a profit from releasing recordings). This is a step toward understanding recordings as primary forms of scholarship.

Throughout his life, Asch commissioned folklorists to create compilation recordings for him. The most famous of his collaborations was with Harry Smith, whose *Anthology of American Folk Music* (FP 251; FP 252; FP 253, 1952) has become possibly the most famous bootleg of all time. Smith, a filmmaker, recordist, ethnographer, musicologist, artist, and mystic, was born in Portland, Oregon, and spent his early life travelling around Washington State with his family. His mother, a schoolteacher working on Native American reservations, helped Smith record his earliest films and sound recordings of Lummi ceremonies and rituals (Perchuk and Sing 2010, p175). By the 1940s, Smith was collecting 78 records of blues, country, folk, and popular music from the '20s and '30s. By the early 1950s, his collection ran into the tens of thousands, and it became the source material for the infamous anthology released in 1952.

Like Lomax and Asch, Smith canonised the American folk tradition with his selection of songs. He was less a folklorist than a collector and curator with a penchant for experimentalism. His films often depicted photographs of cultural artefacts abstracted from

their context: for example, *Heaven And Earth* Magic (1962) uses black and white photo cut-outs to create stop motion animation. Starting with mummies, the bodies are taken out of the caskets, and the remains take flight as birds made from leaves and trinkets. Not surprisingly, Smith's experimental practices extended to his record collection.

It has been suggested that the Anthology is far more nuanced than a simple 'best of' collection of American folk music. Kevin Moist writes that the collection became "a bible for the late-1950s folk revival and later … a spur for countercultural musical developments of the 1960s" (Moist 2007, p111). He goes on to argue that Smith's approach to cataloguing was not that of a conventional folklorist, who compiles recordings in order to survey a particular time and place. Rather, Smith was a cultural interlocutor whose methods were guided by techniques drawn from alchemy. According to the alchemical concept of transmutation, elements combine to create an entirely new object. Indeed, Smith saw his combining of recordings as giving rise to an entirely new cultural understanding of Folk. As Moist writes, "Since the fragments already exist in the world, even as the artist works to recast them they retain vestiges of their previous meaning so that what are being collaged are not just fragments of image/word/sound, but also fragments of meaning and culture" (Ibid p119). In creating cultural collages of music, song, and word, Smith created a holistic cultural artefact. This artefact was a curated anthology that spoke both to a socio-historical moment in the American folk music revival, and to Smith's personal aesthetic.[11] In this way, Moist concludes, Smith's Anthology places "an emphasis on the aesthetic qualities of recordings in the collection, rather than the quantity of recordings" (Ibid p91).

The folk revival heralded the canonisation of American folk music, and an individualisation of musical works that had previously been attributed to communities, regional practices and traditions. Smith's Anthology can be criticised as crediting individuals for the music of an entire community and attributing them a status as ambassadors of longstanding musical traditions. It can also be argued that Smith's Anthology homogenised the music, representing it as a national folk music tradition that in fact did not exist prior to his curatorial endeavour.

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[11] This argument is echoed by Roy Shuker in "Wax Trash and Vinyl Treasures: Record Collecting as a Social Practice." (2010)

Creating a recording compilation is an act of 'cultural transmutation': it condenses time and space into a disc's worth of recordings. This temporal transmutation is accomplished by recording songs over the course of weeks, months or years, and releasing them at once on a single disc. The spatial component operates similarly, by compiling songs from multiple regions.

Performing such a cultural transmutation has unpredictable consequences. Smith's Anthology helped to develop the popular, and perhaps detrimental, perception of American folk music as a broadly conceived and vaguely conceptualised national tradition, a perception that glosses over the particularities of regional and sub-regional styles (unless the listener carefully studies the liner notes, but few do). However, Smith's Anthology, when treated as a collage or sonic montage, might be understood as a carefully composed body of work that is more than the sum of its parts. It's no wonder then that New York folk musician Dave Van Ronk has said that Smith was 'not a mystic, he was a deranged rationalist' (Smithsonian Folkways Remembers Harry Smith 2015). Smith's infamous Anthology may be celebrated amongst musicians and folklorists, but it remains unappreciated as an art object.

Smith's methodology can be likened to Lomax's songbooks and discs, as well as Asch's compilation records of folk revival music. When a collection of songs from different regions have the same sonic signature - in the case of Smith's anthology, low fidelity capture from 78 discs - they acquire a social agency through their relationship to other songs on the compilation. By virtue of their inclusion in the anthology, the songs function not only as singular musical works but also as documents in dialogue via their sonic similitude. Consider the effect of creating a film montage using sources from different times and places. This would be considered an abstraction of the sources from their context. While perhaps disorienting at first, such a montage could be considered to offer the viewer an understanding that derives from the relation of the clips to one another. Anthologies such as Smith's, Asch's, and Lomax's operate similarly, placing songs next to one another and thereby creating a museological narrative of American Folk. Similar arguments have been made about the 'sonic collage' compositional approach in the work of Ludwig van Beethoven (Cook in Almén and Pearsall 2006; Cook in Richardson et al. 2013) and John Zorn (Kolek 2013). With this in mind, Lomax, Asch, and Smith's contributions to folkloric research can be seen as simultaneously an ethnology, an act of documentation, and a form of participatory action - in short, as much a performance as Bob Dylan's adopted persona of a Dust Bowl troubadour.

And yet, for all of the careful study and experimentation on behalf of Lomax and Smith, it is their position of power as curators of musical anthologies that remain unsettling. With no outright permission from musicians, these two freely created their own narratives of musical traditions across countries and continents. If this were to take place today, they very well might be accused of cultural appropriation, even though they were not performing the music themselves as claiming that they wrote it, they did not consult closely with their subjects before canonising the works to become a single form of music referred to as folk. The recording and presentation of a wide variety of traditions in a set of recordings, in effect, shifts the authority of the communities that have nurtured the traditions to the recorded object, presenting what is in fact merely a version of a song as a static entity. This act of musical canonization is ethically problematic because the musicians recorded could not choose whether they were to be identified as a part of the canon, they were simply included as a stop along the way in the Great American Songbook. In a way, the individuals recorded in these collections and the communities they come from are, ironically, silenced. While there is undoubtedly merit to Asch, Smith and Lomax's work, which are applauded by many avid listeners, they nevertheless represent an abuse of field recording with significant consequences for the way American music is heard and understood by the public.

Soundhunters

At the same time as Asch, Smith and Lomax were in the midst of expanding their catalogue of music and sounds, special interest recording groups were being formed in Europe. From 1950-1972, recordists engaged in practices of song and sound hunting. These soundhunters curated collections of sounds not commonly heard. The Fédération Internationale des Chasseurs de Sons (FICS), or the International Federation of Soundhunters, were a group of amateur recordists dedicated to recording sounds in high fidelity. FICS was an amalgamation of local recording clubs in France and Switzerland since 1948 (Aebi 1990). These clubs dramatically increased in size in the early '50s when magnetic tape became widely available.

More recently, the term 'soundhunter' has come back into vogue, referring to 'remixing' the sounds of the world into music.[12]

In 1950, French radio stations under the supervision of Jean Thévenot promoted the first European amateur recording contest, judged by their fidelity and the uniqueness of their content. In 1952, Swiss radio artist René Monat organised The International Amateur Recording Contest held in Lausanne, Switzerland. The first-prize winner was an engineering student, Stefan Kudelski, who won the competition with a homemade recorder that he called NAGRA: Polish for "to record" (Ibid). While Kudelski was developing the Nagra I in Switzerland, Allen and Kellogg at the Cornell Lab of Ornithology were repurposing recorders for scientific measurement of sounds. Up until the late 1940s, Allen and Kellogg had been using the Movietone sound-for-film system to record bird song (mentioned in Chapter 3). This machine was hardly suitable for the task of natural sound capture due to the recorder's high noise level and low dynamic range. With help from the Amplifier Corporation of American, or Amplicorp, Kellogg went on to develop the first American portable recorder in 1951, the Magnemite. The first iteration of the machine was built into a suitcase and included a built-in battery, a spring-wound mechanism and a wheel designed for rewinding the machine's tape spool. Amplicorp's Magnemite 610 sold for $725 USD, (which is $6,545.13 USD in 2015). The exorbitant price limited the use of the machine to universities and cultural institutions, such as Cornell University and National Geographic. Special versions of the portable recorder were also commissioned, built around a metal shell that could survive abuse in transit. The Halliburton Case Company, an affiliate of the multinational oil field services company, developed these military-grade cases.

[12] In 2015, a multi-format (TV and interactive) documentary was released about the resurgence of soundhunters, directed by Beryl Koltz. The interactive component is available at: http://soundhunters.arte.tv

Figure 20: An Amplicorp. Magnemite 610 tape player with a rewind wheel and starter crank, in a military-grade case commissioned by the Halliburton Case Company. (Photo by the author)

Despite the proliferation of tape recorders in the 1950s, more affordable formats were made available. The wire recorder was of comparable sonic fidelity to the tape machines made by Nagra and Amplicorp at a significantly lower cost of $150 USD ($1,456.06 USD in 2015). Chicago's Webster Company developed the 180-1 Electronic Memory model. Using a small spool of magnetised metal wire, users recorded from a built-in microphone and sent their message via post, just as was done with Phono-post records during World War II. However, the machine had debilitating mechanical faults. The metal wire became tangled, causing damage to both the recording head and the wire spool. As magnetic tape recorders became more affordable throughout the 1950s, the wire recorder became obsolete.

Figure 21: Webster Company model 180-1 Electronic Memory wire recorder (Photo by the author)

Media maker and advertiser Tony Schwartz used the wire recorder's uniquely portable format and inexpensive media to his advantage. As a hobby folklorist, Schwartz provided wire recorders to interested recordists around the world on the condition that they join his correspondence network so that he could create compilation albums for Asch's Folkways label. After only a few years of developing an international network of recordists, he had collected thousands of wire recordings. This culminated in the release of *The World in My Mailbox* (FW05562/FP 62/ FD 5562, 1958), an early sound documentary and music compilation distributed through Folkways.

Schwartz firmly believed that the best approach to recording was not to invite the sounds of the city into the studio but to capture the sounds in their place of origin. For his sound documentaries made in New York City, he used a combination of Kellogg's Magnemite and his own collection of customised recorders (Schwartz 1974, pxiii). Speaking of the audio recorder, Schwartz said:

> I use it for documentation, and I've documented the life around me for many years. I love Picasso's definition of documentation, or what he was doing in his work. He said his role as an artist is to look and to show—to look at life and show people what he sees. And I feel that's what I'm doing in the documentation area that I work on… I actually built the first portable tape recorder in the world…That was in the 1950s. I took an old phonograph motor for the power. I used batteries for the electronics, and I had all the controls on the outside; so I could have a VU meter facing me. Even before that, I built a control unit for my Magnacorder with a hundred-foot cord that would allow me to turn on and off the machine, control the microphone volume…I had the car battery work the recorder; it became a generator. Then I had the portable recorder, and later I bought the first Nagra in this country, a windup Nagra; and then I bought the first electric Nagra in this country. I still have the Nagras and I also use the Sony walkmans, the pro walkmans.
>
> (Schwartz and Kostelanetz 1996, p59)

Schwartz used sound documentary as a storytelling form and a communicative practice that emphasised the connection between music and sound in urban life.

Recordings made by Schwartz also had practical uses as sound effects in film and broadcast, as compiled on his record *Sound Effects, Vol. 1: City Sounds* (FW06170/FX 6170, 1958). He received an Academy Award for Best Short Subject - now Best Live Action Short Film - in 1973 for "Frank Film". However, he was forthright in his intention to record primarily for pedagogic and documentary purposes. Rather than canned sound effects, he was fascinated with the effects of sound. Examples are his records *New York 19* (FW05558, 1954) and *Sounds of My City: The Stories, Music and Sounds of the People of New York* (FW07341, 1956). Here, Schwartz identifies his approaches to composition: one, as Truax said, is as a 'sound mirror', the other as an intentional act of interpretation. As he said, "I've used the recorder in two ways: one for environmental re-creation—that's taking the environment and copying it; and the other for environmental recreation—that's playing with the auditory environment in the place we are in" (Ibid). At the time that Schwartz was writing, communications was a scholarly field growing quickly in parallel to the use of mass media. Schwartz's own livelihood came from producing commercials for political parties and records for Smithsonian Folkways

Recordings. Although he was recording folk and traditional music, like Lomax, Suisman notes that his approach was entirely different:

> Schwartz was not Lomax's twin but his opposite. Whereas Lomax did most of his recording in rural areas, Schwartz's milieu was New York City. Whereas Lomax roamed the world, Schwartz suffered from agoraphobia and found it difficult to venture outside his own Manhattan neighborhood, on the west side of Midtown. Whereas Lomax explored the world of music, Schwartz, it might be said, was more interested in sound and media. Whereas Lomax dedicated nearly all of his professional life to working as a folklorist and sound collector, for Schwartz, sound recording was an avocation, a labor of lifelong love, which he explicitly refused to make his livelihood, for fear that doing so would corrupt the kinds of sounds he would record.
>
> (Suisman 2013)

Like fellow recordists Moses Asch and Emory Cook, the collections of sound that he created defined locales in their time, recording an aural history and a sensory perception of place (Carlin 2008).

Schwartz's albums are evidence of some of the earliest sound documentaries that use soundscapes - long before Schafer coined the word – together with voice narration and tape editing to create nonfiction works. R Murray Schafer and his colleagues at the WSP would later borrow recording and compositional techniques from Schwartz's sound documentary approach to develop their understanding of sonic narratives. Truax writes:

> Once the microphone was turned towards the everyday soundscape, it reflected a different attitude towards what was worth recording from a social perspective, and gradually the larger soundscape became not incidental sound effects or background noise, but the subject of deliberate representation. By the early 1970s, both of these trends – music as soundscape, and soundscape as music – converge to what I call soundscape composition.
>
> (Truax 2012, p199)

Despite the recognition he gives to Schwartz's work, Truax's dating of the soundscape composition may be late by a decade. Various releases by Schwartz and the other recordists mentioned heretofore - Cook, Teibel, and Gould - can be considered compositions. Before the soundscape, Schwartz's recordings suggested such a relationship between "music as soundscape, and soundscape as music." Schwartz heard "an innate musicality in the way certain people speak, and also in the barkers at nightclubs or various places": he spoke for example of "the sound of selling…vendors going by on the street or people singing in the backyard or shouting in the backyard" (Schwartz in Gladstone 2012). Take, for instance, his recorded collaboration with Jimmy Giuffre, celebrated jazz clarinettist, composer, and arranger known for his innovative approach to improvisation and free jazz. On the album *You're Stepping on My Shadow* (FW05582/FD 5582, 1962), Schwartz's narration explicitly refers to the musicality of spaces. For the track *Music in Marble Halls* (Ibid), Schwartz had Giuffre respond to the sounds of footsteps in a marble hall in New York City, improvising with the sonic space. Treating the space as a musical instrument and interlocutor, this release indicates Schwartz's anticipation of the soundscape theory that would emerge in the 1970s.

For many of Schwartz's releases, he employed his own sono-montage technique[13], mixing narration, recorded interviews, and environmental sound. Consider Schwartz's release *Nueva York: A Tape Documentary of Puerto Rican New Yorkers* (FW05559, 1955) as an example of this technique. Made over the course of eight years in New York City, Schwartz collected urban environmental sound and interviewed newly arriving immigrants from Puerto Rico. The album documents the dramatic changes in the city that took place from 1948 to 1956, the development of a slum, and a reflection on a generation of Jewish and Eastern European immigrants already well established in the city. In the liner notes, Schwartz writes:

> When I was a child, I remember my father telling me about his parents' experiences in coming to New York from Europe. In future years I was shown places where they had first lived and worked. In the 1940's and 1950's I saw Puerto Rican families moving into the same areas. I heard and saw situations

[13] Listen to Why Collect Recordings?, Exchange by Mail, Sounds of the City, and Music in Speech by Tony Schwartz (Track 3-6 of Accompanying Recordings)

> that reminded me of the stories my father had told me. New Yorkers who a few years or a generation ago had been in the same situation were dealing with Puerto Rican New Yorkers with the same misunderstanding they had been dealt.
>
> (Schwartz 1956)

In "Splicing The Sonic Colour Line: Tony Schwartz Remixes Postwar Neuva York" (2010), cultural studies scholar Jennifer Stoever-Ackerman takes note of Schwartz's positioning as recordist, editor, and final authority as a producer:

> While Nueva York calls attention to the way in which sound functions as a set of social relations, its representational strategies also remind us that sound is not a utopic space devoid of power. The sono-montage technique problematically enables Schwartz to evacuate his audible presence from the final recording—except as a somewhat distanced arbiter of sound—creating a false boundary between the recorder and the recorded that allows his own cultural deaf spots to go unchallenged.
>
> (Stoever-Ackerman p79)

Here Stoever-Ackerman, one of Schwartz's few critics, rightly identifies an issue central to any form of recording members of marginalised communities. One could argue that any recording technique enables the kind of authoritative power relations that can be seen at play in Schwartz's *Nueva York*. Misrepresentation of peoples is most prevalent in the public eye through journalism: people argue that their words were taken out of context, a form of misquoting without the manipulation of the actual words. In presenting his interactions with individuals as informal, the danger of Schwartz's work that Stoever-Ackerman refers to is subtle. The very title of her paper about the *Nueva York* recording refers to sono-montage as a remixing technique. Like cinéma vérité, it is anything but direct[14]: it just makes the act of interpretation more muted. Historically, discussions of soundscape composition reflect on the challenge to faithfully represent place and create an artistic work. However, there is yet

[14] The use of sound in such films by Rouch and contemporary filmmakers is explored further in Chapter 5.

another layer that exists within the soundscape, which implicates interlocutors within the soundscape. This is the dilemma of cultural association and representation concerning art, place, and people. Schwartz's sono-montage technique and the resulting sound documentaries show evidence of the 'cultural dilemma'.

Later in life, Schwartz was a visiting professor at Harvard University's School of Public Health, and a guest lecturer at New York University, Columbia, and Emerson. Due to Schwartz's agoraphobia, he sent video recordings of all of his out of town lectures, some of which are available on YouTube.[15] Schwartz was awarded honorary doctorates from John Jay College of Criminal Justice, City University of New York, Emerson College, and Stonehill College.

Schwartz also wrote prolifically, publishing liner notes and two books. In "The Responsive Chord" (1974) he offers his approach to listening, one that is closely related to media theory. Using terminology such as feedback, reverberation, tuning, overload, regeneration, and fading, Schwartz employs the language used in the physics of sound to develop a theory of resonance in communications. The experience of sound overloading, for example in a public address system, is comparable to the production of information overload. Like the sounds of our environment, communication is ever-present: it is the development of mediums such as television and radio that allows producers of information to channel our cognisance of specific messages. Much like McLuhan's famous adage "the medium is the message," Schwartz says "our experiences with electronic media are coded and stored in the same way that they are perceived" (Schwartz 1974, p23). Our experiences of communication and sound are both perceived as an immediate whole; only in the analysis are their complexities revealed.

Throughout his later years in academia, Schwartz became close with Marshall McLuhan when they taught at Fordham University. While Schwartz was lecturing as a Professor of Auditory Perception, McLuhan was the Albert Schweitzer Chair in the Humanities. Here Schwartz writes of the profound influence McLuhan had on his work:

---

[15] Watch Tony Schwartz'ss lecture "We Hear More Than We See" at: https://www.youtube.com/watch?v=JTnum2_6wr4

> I think that Marshall McLuhan was like a shooting star going through the heavens, and all we mortals could do was fill in little holes in his path. I think he was phenomenal…I have over a hundred hours of recordings of Marshall McLuhan, and I had a student here all summer just transcribing them, so that I have them all transcribed now…I constantly use comments of his in my presentations. For instance, "Instant information creates involvement in depth." Or his comment that the inner trip that people take in the electronic environment is the same as we do in hearing. You can't understand anything unless you've heard it before. If I told you that we had a cold, you can know what he had; but if I told you he had an attack of "dragamougus," you wouldn't know what he had. You've never heard that word before. And so hearing is contingent upon previous experience, and you constantly take an inner trip into your brain to see how what you're hearing connects to your previous experience in your life…And I think in my book [Media: The Second God] I gave many examples of how media has affected people in God-like ways. McLuhan relates the structure of God to the structure of sound.
>
> (Schwartz and Kostelanetz 1996, p63)

One of Schwartz's independently released albums *On The Record: The Sound of Type, The Sound of Lettering* features a recorded conversation with Marshall McLuhan. In it, McLuhan gleefully comments on the musicality inherent within the spoken word and the cadences of well-written prose. Schwartz and McLuhan shared an unusual fascination for sound and sound recordings, and their ability to connect communities across borders. In McLuhan's collaboration with Quentin Fiore, "The Medium is the Massage: An Inventory of Effects" (1967; 2001), he intersperses visual elements with a fetishised perspective of what sound affords.

> The ear favours no particular 'point of view'. We are enveloped by sound. It forms a seamless web around us. We say, 'Music shall fill the air.' We never say, 'Music shall fill a particular segment of the air.' We hear sounds from everywhere, without ever having to focus. Sounds come from 'above,' from 'below,' from in 'front' of us, from 'behind' us, from our 'right,' from our 'left.' We can't shut out sound automatically. We simply are not equipped with

> earlids. Where a visual space is an organised continuum of a uniformed connected kind, the ear world is a world of simultaneous relationships.
>
> (McLuhan et al. 2001, p111)

McLuhan refers to sound as we passively experience it, but never as we critically listen. He also fails to acknowledge the ways in which we do shut out sounds as we listen closer to a voice, or filter out extraneous sound to focus on a faint piece of music in the distance, etc. It could be argued that the ways in which McLuhan and Fiore theorised about sound contributed to the audio-visual litany in a way that is detrimental to media theory, placing sight and sound in opposition with one another. For example, their works both contend that sound is immersive and that hearing is about affect and subjectivity. These are precisely the categorisations that Sterne warns against (2003, p15). This is not to discount McLuhan and Schwartz's writings and their historical significance. However, it does place their shared perspective within a paradigmatic shift towards sound studies in the 1960s and 1970s.

Hi-fi in the Field

In many ways, recordist and engineer Emory Cook shared Schwartz's and McLuhan's perspective of the immersive power that sound possesses. Cook was a pioneer of hi-fi and an inventor of recorders, microphones, and LP disc manufacturing equipment. Born in Albany, New York in 1913, he spent a year studying at MIT before enlisting in the Army Air Corps in 1932. When he was discharged in 1934, he enrolled at Cornell University and graduated with an engineering degree in 1938. After graduation, Cook worked for CBS in the general engineering and construction department. Subsequently, Western Electric hired him to work in the Field Engineering Force. During World War II, while working for Western Electric, he designed and supervised the installation of radar on destroyers. For this achievement, he received a military commendation which stated, "The [radar was] enthusiastically received by the Service and is, insofar as destroyer FireControl Radar is concerned, one of the most valuable training aids ever developed" (Quoted in AES 2002). In 1945, Cook began experimenting with tape-to-disc transfer technologies in his basement in Floral Park, New York. His invention improved upon previous transfer techniques with higher fidelity, less feedback, and lower noise, leading MGM to commission him to design three recording studios. Cook then branched out to designing microphones with lower self-noise and wider frequency range, appealing to engineers and audiophiles. Recordings of instruments were

made in the studios he designed and presented at the 1949 Audio Fair in New York City (Ibid).

His first records featured recordings produced with his innovative techniques. To demonstrate the aural fidelity possible using his microphones and modified preamplifiers, Cook recorded environmental and urban sounds: transportation sounds from trains, ships, and planes, thunderstorms, bull frogs, and wind rustling tree branches. Cook's commitment to high fidelity was noticed outside of the audiophile circles that he believed he would receive the most sales from, and his records sold out before he could finish pressing them. Interest in Cook's recordings on behalf of the general public was indicative of the fascination with technology that marked the developing hi-fi culture of the 1950s. Post-war America had a preoccupation with technologists' approximations of auditory realism, and Cook was a leader amongst those engineers. His most famous environmental record, *Rail Dynamics*, was introduced at the 1951 Audio Fair. The recording of New York Central Line's between the Hudson River and New York City was made by mixing and manipulating recordings captured from trees, railroad switches, and out the window of the trains.

In 1952, Cook developed the first binaural recorder for Atlantic Records. The recording head, based on a Scully Disc Recorder, recorded left and right signals simultaneously on separate grooves. For playback, consumers had to buy a proprietary playback device, made by Livingston Electronic Corporation in New Jersey, or purchase a special second head and cartridge that could be retrofitted to a regular turntable's tone arm. Each needle connected to a separate loudspeaker, creating one of the first stereo recordings. Cook also created a test series of discs, meant to check for inconsistencies in frequency response from consumer's new stereo turntables and speakers. Though the binaural tone arm ultimately was not commercially successful, it influenced the creation of the stereo record designed with a single groove that contained left and right signals, as shown in Figure 22.

Figure 22: Advertisement for the Binaural Tone Arm designed by Emory Cook for the Livingston Electronic Corporation, High Fidelity Magazine of September-October, 1953.

In 1955, Cook invented microfusion, a powdered form of vinyl that had fewer imperfections than the harder vinyl used by major record labels. Cook set up a small factory outside of Stamford, Connecticut, the new location of his home-based company. There he processed microfusion records for all of his releases. When travelling and recording in Trinidad from 1956 to 1962, he set up a record plant run by locals so that he could continue to directly supervise the production of his discs. At present, Cook's most collectible discs are these Calypso recordings, one of which is shown in Figure 23. Amongst these discs are recordings of 'Chinee' Patrick Jones, an early and prominent figure in of the Calypso genre.

Cook's "White Label" series delved further into the newfound interest in sound collecting that was part of 1950s culture. Since Cook was both a soundhunter and an engineer, this series was advertised as 'bespoke records'. The back of each disc sleeve read "Specimen Recordings of Unusual Subjects," and featured a stamp indicating the recording enclosed. The description read: "Even if we never make another one, the care and craftsmanship which went into this particular record will have been justified. The White Label Series is a drastically new idea in records. Deliberately designed for the specialist or special-interest collector, the record in this

jacket is practically 'hand made'." Cook was both a founding member and fellow of the Audio Engineering Society, and in 1985 was honoured with the AES Silver Medal for his contribution to the recording arts (Ibid).

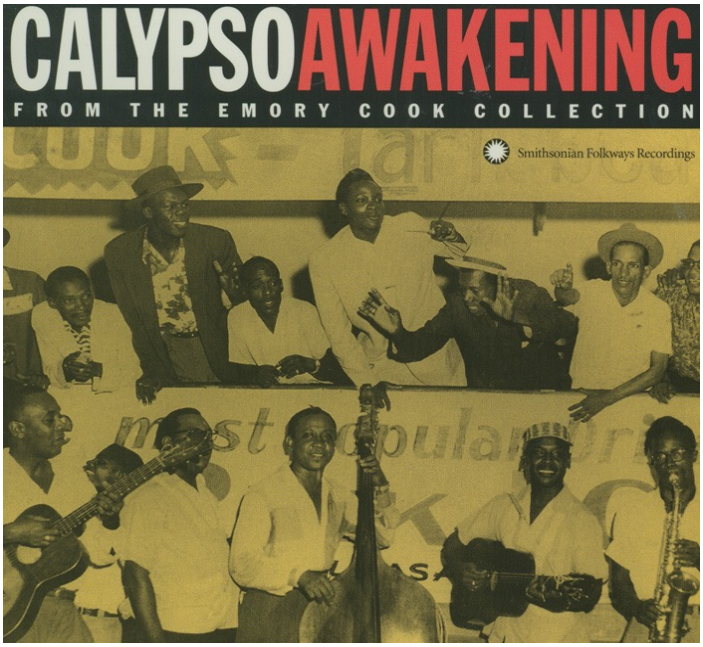

Figure 23: Front cover of Cook's Calypso Awakening, 2000 (SFW40453) with music originally released between 1956 and 1962, during Cook's time song collecting in Trinidad.

In addition to the White Label Series, Cook Laboratories released a wide diversity of recordings. His innovations in recording resulted in the sub labels Sound Effects, Sounds of Our Times, Road Recordings, and Sounds of the World. Sound Effects released recordings of railroads, and two records that became highly collectible: *Cook's Tour of Stereo* (COOK02004, 1958) and *Ionosphere: High Latitude Sounds Recorded at Various Speeds* (COOK05013, 1955).

Figure 24: Hunting Thru Audioland: Front cover of Cook's Tour of High Fidelity. (COOK01079, 1965)

Cook did not explain his philosophy of field recording in any publications, but based on album iconography alone—in particular, the cover of his *Tour of High Fidelity* (COOK01079, 1965) shown in Figure 24—one can surmise that Cook theorised his recordings sounded faithful to the sonic event. His *Tour of High Fidelity* also represented a sense of ownership over the sounds made. Once manipulated, they became Cook's sounds, despite their geographic or cultural provenance. This approach shows a disregard for the will of recorded subjects and how they wished for their performances to be contextualised. (This is a point that I will return to at the end of this chapter, and in greater detail in Chapter 6.) He treated performers the same as he did sound effects: as objects of curiosity. American recordists working abroad often operated outside of the contractual obligation that the big record labels demanded. Performers often did not receive any financial compensation, and if they did it was hardly commensurate to the quantity of records sold when the producer returned to the USA.

Human subjects therefore became auditory objects. However, his disc-cutting plant in Trinidad provided a micro-economic benefit, offering paying jobs to the locals. Cook's laboratory operations generated complex and often inconsistent valuations of labour: those working in the record plant were paid for, while musical performers often were not.

The Future of Music Isn't Music

Beyond Cook's experimentation with new audio engineering methods for environmental sound, other recordists were experimenting with high fidelity and the effects of sound on the mind and body. A leader in the otherwise highly technical field of psychoacoustics was Irving Solomon Teibel, photographer and field recordist (this is perhaps by default, since psychoacoustic recordings were not otherwise distributed outside of the laboratory despite the ground-breaking work of communications scientists at Bells Labs). Teibel was born in 1938, and worked as an art photographer for much of his life in New York City and later in Austin, Texas. First working freelance out of the New York west village commune Westbeth Artist Housing, Teibel quietly photographed and provided designs for the most prominent pop and conceptual artists of his time, such as Andy Warhol. Before Westbeth became the home of photographer Diane Arbus and painter Robert Beauchamp (amongst others), the complex was used by Bell Labs to develop the condenser microphone and the formats necessary for transmitting intelligible sound across phone lines. This site was considered to be the first psychoacoustic research centre, and as part of the company's public outreach, Bell Laboratories produced an album for Folkways called *The Science of Sound* (FW06007/FX 6007, 1958). And though the Bell Labs technicians, engineers, and scientists had left before he arrived, Teibel began his research into sound recording while living in the same location. Rather than release technical papers or albums that educated the public about the science of sound, Teibel recorded the natural environment, claiming healing powers for the mind that might be useful for the urban dweller. He released his first recordings of the *Environments* series through Atlantic Records. He then turned his research lab, Syntonic Research, Inc., into a record label to independently release the rest of the *Environments* series[16].

[16] Listen to 3101A Tintabulation by Irving Teibel, Track 7 of Accompanying Recordings

Teibel's electroacoustic compositions were composed of high fidelity recordings and cutting edge tape manipulation techniques. *Environments 3: Dawn & Dusk At New Hope, PA* (Atlantic 81766-2, 1971), contained the subtitle "The Future of Music Isn't Music." Teibel's creations encouraged the listener to rethink common sounds and cultural icons by literally and figuratively 'remixing' their meaning. In doing so, Teibel distorted the provenance and cultural associations of his recordings to generate new meanings. This technique can be seen as an extension of Smith's sonic collage and Schwartz's sono-montage. Perhaps Teibel's most famous composition is *The Altered Nixon Tape* (SRI 7004, 1973), Nixon's resignation speech remixed to a confession of his implication in the Watergate scandal[17]. In September of 1973, Billboard magazine wrote an article about *The Altered Nixon Tape*, called "Nixon Talk Taped—With A Difference." The media attention, which included further press from ABC Madrid (October 1973) and Daily News NY (Nov 1973), prompted a dramatic increase in demand from the Syntonic label.

[17] Listen to 44 Nixon Demo by Irving Teibel, Track 8 of Accompanying Recordings

Figure 25: Irving Teibel in his Flat Iron Building studio, New York City, early 1970s. (Courtesy of Syntonic Research, Inc.)

Syntonic released recordings that focused on both sonic realism and the therapeutic effects of well-produced field recordings. Side 1 of *The Psychologically Ultimate Seashore*, the first *Environments* disc (Atlantic SD 66001, 1969), was originally recorded for the film "Coming Attractions by Tony and Beverly Conrad" (1970). Teibel recorded ocean waves at Coney Island, only to realise the therapeutic effects that the recordings' possessed, and eventually abandoned the film project. Teibel then began a partnership with Dr. Louis Gerstman, a neuropsychologist and technologist who created the voice of HAL for Stanley Kubrick's "2001: A Space Odyssey" (1968). Gerstman and Teibel manipulated the seashore recording with an IBM 360 computer, using signal processing, filtering, and overdubbing to create a heightened sense of realism for the listener. The only Syntonic release to use entirely synthesised sound was the second in the series, *Tintinnabulation* (Atlantic SD 81765-2, 1970). Alone among the *Environments* series, *Tintinnabulation* is composed of a series of sounds resembling bells, meant to be played back in multiple speeds, from the 16-2/3rpm of transcription discs to the 78rpm of gramophone discs.

The *Environments* series was designed to improve the quality of life of the listener. Extravagant claims were printed on the back of the cover of *Environments 8: Totally New Concepts In Sound* (Syntonic Research Inc. SD 66008, 1974), such as "Almost like a vacation in itself" and "The most sensuous recordings ever made." Some of Teibel's claims implied the idea of hyperreality ("Better than the real thing"), while others suggested that the recordings produced performance improvements for mind and body ("Reading speed doubled" and "Fantastic for making love"). There were even claims for hallucinogenic effects ("Better than a tranquillizer" and "Room seemed brighter)".

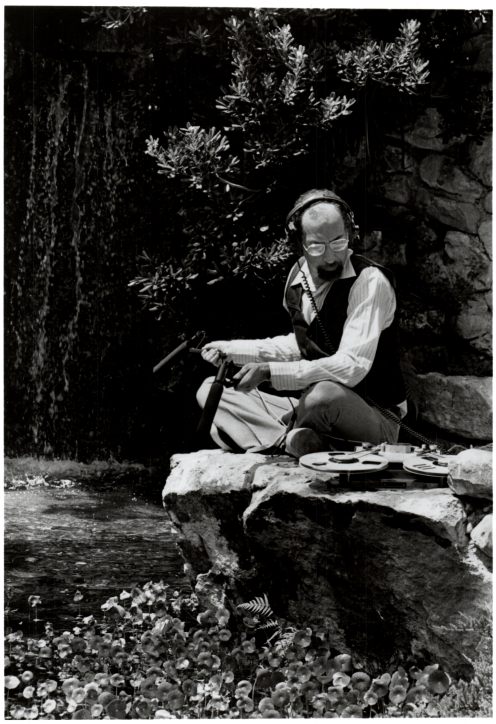

Figure 26: Teibel recording the Environments Series, mid-1970s. (Courtesy of Syntonic Research, Inc.)

Teibel's *Environments* series began a trend for imitative recordings throughout the 1970s and 1980s. A crossover between psychoacoustic research and New Age music, these releases carried with them similar claims of a restorative power through listening. Although *Environments* predated them all, Triebel never made any public association between his recordings and the New Age genre in either advertising or correspondence. Teibel never returned to field recording after the *Environments* series. After moving to Austin, Texas, his efforts shifted to re-releasing the entire series on CD through Syntonics. Teibel died in 2010, and while his legacy as a technologist or artist is perhaps unclear, his contribution to field recording and electroacoustic composition is monumental. His willingness to openly manipulate recordings in *Environments* for the sake of a better listening experience led him to develop techniques that were conceptually well ahead of his peers. By layering components of field recordings together to create lush textures, his recordings mimicked techniques that would be introduced into the field of sound studies only in the early 1980s with the granular synthesis techniques developed by Barry Truax and Hildegard Westerkamp.

Had Teibel and Schwartz's records been known to early practitioners of sound studies, the discipline might have developed long before the work of the WSP. Or perhaps their work should just be seen as a missing part of the history of sound studies, showing a combination of humanist and scientific perspectives. The effect of their work on sound studies was limited by the fact that they did not publish their research in print (save for "Media: The Second God" and "The Responsive Chord"). Consequently, it did not fit within the framework of scholarship surrounding electroacoustic composition, psychoacoustic research, or sound studies.

Gould the Electroacoustician

Like Teibel, Glenn Gould found the production studio to be a site for creative practice. Known for his virtuosity on the piano and for his eccentricity, Gould was also an advocate for recording, producing among many other publications the manifesto "Dialogues on the Prospects of Recording" (1965). His radio documentaries for the CBC have been identified as both radio drama and musique concrete. A representative example is *The Solitude Trilogy* which is made up of three parts: *The Idea of North* (1967) explores the imagination and nostalgia attributed to Northern Canada, *The Latecomers* (1969) about life on Newfoundland, and *The Quiet in the Land* (1977) about the Mennonites of Manitoba. At the time, *The Solitude Trilogy* received polarising reviews. Some were critical of his lack of experience in the studio, with a consensus amongst electroacoustic composers that it was a virtually unlistenable work. Scholars and biographers of Gould have since found it to be a subject of great interest, and while he is not considered to be one of the fine composers of his time, his novel approach to the materials suggests that *The Solitude Trilogy* is a demonstration and elaboration of some of his ideas expressed in his article "The Prospects of Recording", where the producer holds as much power in creative decision making as a musician might when interpreting a work (1966). Where "The Prospects of Recording" refers to the studio as a space for creative practice that extends the hand and technique of the musician to the soundboard and mixer, a nod to McLuhan's media theory, *The Solitude Trilogy* radically and chaotically interprets these ideas.

Gould's writing and broadcasts take the ideas of McLuhan and further complicate relationships between oral transmission, radio production technique, and electroacoustic composition. Referring to his work as 'contrapuntal radio', he composed through tape manipulation, using a fugue-like form in the overlapping of voices both literal and figurative.

Through this technique, words, vocalisations, environmental soundscapes, and western art music create textures that develop into compositions. I suggest here that *The Idea of North* is a source of knowledge production and a collection of works worthy of consideration in the company of other field recordists as an abuse of the technology. I will conclude the chapter by both problematising and contextualising his field recording technique.

Gould used the studios at CBC Radio in Toronto as a space for examining the ways in which place is constructed through memory. Curiously, his focus in *The Idea of North* was not on his hometown of Toronto, or his summer home in Simcoe: it was on the relationship between the imagination and regions of the Canadian Northern provinces and territories. For Gould, the cold, isolated environment of the Canadian North was analogous to purity and serenity.

Mantere (2005) suggests *The Idea of North* be treated as a text, the implication of which is that a hermeneutic analysis of the work is possible, and relates it to notable Canadian authors—such as Margaret Atwood—and their perceptions of the Canadian North. Following this logic, one could consider Gould's broadcasts as a part of his own canon of radical interpretations in performance and eccentric public appearances. However, Mantere's focus is on what Gould is attempting to convey by creating such a piece. What is the very meaning of *The Idea of North*, not just for Gould, but also in the context of Canadian art? As she writes,

> The Idea of North, an idea of Ultima Thule that directly influences relatively few Canadians, can neither be defined exactly, nor can its origin be traced back to any particular instance. It has nevertheless had a profound influence on Canadian culture and sensibility. I think it is safe to say that this idea of Canada's unique relation with the North has acted as a 'mental signifier' to much of Canadian culture, literature, poetry, music, and to the cultural identity it has served to build.
>
> (Mantere 2005, p90)

While Mantere's analysis of *The Idea of North* is of interest to Canadian art and literary history, it fails to identify what makes the work unique to scholars of radio and sound art. From the latter perspective, the question is less about what *The Idea of North* means, but how it is uniquely assembled to convey such a message.

Gould's work is not just radio or text, but an electroacoustic composition – a complex and challenging one that may be unpleasant to some, but worthy of listening if only for its form. *The Solitude Trilogy* is not analysed as a contribution to sound documentary, but perhaps it is the canon to which it most immediately belongs stylistically. Additionally, Gould's radio work has been identified by Truax (1994) as an influence on soundscape research. It has been argued that the understanding of Gould-as-producer in *The Solitude Trilogy* should be considered a part of his compositional canon of musical works (Sallis 2005; Cushing 2010). The interviews, music, and field recordings used by Gould are all elements that give the listener a sense of musicality and place and so are essential to make his contrapuntal radio effective. As Sallis writes, "Truax alludes to a process essential for sound documentary: developing relational frameworks through listening. Gould's storytelling involves voice and sound in relational simultaneity. If the term 'documentary' has stuck to *The Idea of North*, the reason has more to do with the context of its production than with its form or its content" (Sallis 2005, p117). Sallis here provides insight into Gould's *The Idea of North* as music: "In art, meaning is not merely constructed out of thin air; it is, or at least it should be, negotiated through a dynamic confrontation involving an attentive, knowledgeable listener actively contemplating an aesthetic object...If North constitutes a coherent aesthetic object, then it does so as music" (Ibid 2005, p133). Cushing's musical analysis of Gould's contrapuntal radio supports Sallis and further identifies harmony, form, texture, and space as musical elements in Gould's *The Idea of North*. The vocabulary for identifying musical features in the work, however, is still contested.

To respond to Sallis' claim that Gould's work is only coherent as music, I would then ask: what constitutes a musical sound as against a non-musical sound? The aging dialectic between music and sound as binary that Sallis write about is inevitably unproductive, rendering aesthetic and subjective judgements. However, the changing terrain of music studies and sound studies allow us to answer more productive questions. What kind of music is it? Are the movements from Western Art Music an early form of sampling, a technique used in sound art and electroacoustic composition? Can we also refer to the field recordings as samples? Just as field recording was practised prior to its identification as such, so Gould employed compositional techniques long before they were named by scholars or musicians.

Rather than analysing *The Idea of North* as exclusively text, or radio, or documentary, or music, it seems evident that a full understanding of the work lies between these definitions. Clear distinctions between them are made only from working definitions, ones that do not serve to

adequately contextualise the sonic practice. Treating *The Idea of North* as a hybrid of sound documentary, soundscape composition, and electroacoustic composition is thus beneficial to understanding the work's place within sound studies. Again, Mantere, Sallis, Cushing, and Truax all identify textural layers that contribute to Gould's composition. Thinking of this work as a part of both music studies and the broader field of sound studies, we can avoid confining the work to terminology from musical analysis that leads to an analysis of the field recordings' aesthetic effect. However, as an electroacoustic work, the field recordings need not be subjected to a binary judgement: extramusical or acousmatic. When analysing *The Idea of North* as an electroacoustic work, these field recordings are appreciated for their sonic effect and their relational meaning. Even if the aesthetic effect is perhaps an unpleasant one for some listeners, it is nonetheless present.

Gould's work compiled a series of recorded interviews, with sentences from each of the five interviewees spliced into short phrases to speak to his argument of an iconic, idealised Canadian North. Later in the piece, he has the interviewees discuss the idea of formulating an idea of North. One of them challenges the perception of a singular, or coherent, idea of North, "as if everything must have form, that you can sort of put in words" (Gould 1967). Almost as if speaking directly to the compositional form of the documentary itself, the interviewee's claim reinforces the value of Gould's eccentric approach to radio documentary as 'contrapuntal.' Further, Gould's use of field recordings throughout *The Idea of North* is meant to conjure up the listener's imagination of what these places might sound like.

The narration and sound effects – what Gould called "the noise of civilisation and its discontents" (Gould 1967) - work together with Herbert von Karajan's recording of *Sibelius' Symphony no. 5* to create meanings that operate on various levels outside of conventional musical analysis. These recordings interface with the narration and music, resulting in a range of semantic and semiotic meanings. Semantic uses of field recordings emphasise the relationships between the rhythms of the field recordings and those of Western art music, so developing an electroacoustic language unique to Gould. Semiotic uses of field recordings include layering them with interviews about the North, to develop a sensory understanding of its regions as both real and imaginary.

Gould's composition is important not only for the techniques employed in developing a sense of place but also for the recordings used in the process. These field recordings are not from

the locations mentioned: rather they are canned sound effects from the CBC archives. To paraphrase Schwartz, the sound effect is not of consequence; it is rather the effect of the sound that is important to the listener. These sonic illusions, one which claims to be a place in the context of the accompanying elements (the interviews Gould conducts in the studio), give the listener a factually false sense of place, despite its phenomenological authenticity. Recall that an integral component of the hi-fi movement is to create a sense of presence, accomplished through manipulation in production. Gould uses production techniques to create an 'auditory fallacy,' as illusory as our own perception of the Canadian North. In this way, misgivings that producers and critics may have about Gould's *The Idea of North* are in fact a reflection of the collective knowledge the nation has of its own land. Further, we can conclude that Gould's electroacoustic work speaks to the wider field of sound production through the 1950s and 1960s. Where recordings always construct auditory fallacies - or 'the field' - they are in fact the rule rather than the exception.

Ethics of the Field

The media makers discussed in this chapter were pioneers of portable recording and field recordings used in a wide variety of professional contexts. Their techniques dramatically broadened the scope of what can now be considered 'the field.' From recordings of sound effects to the composition of sound documentaries, their contributions were quietly influential to the academic field of sound studies. The WSP, known as some of the earliest sound studies scholars, were influenced by Schwartz's sound documentaries. With his recordings, the media maker - or as Kostelantz says, Horspielmacher - became a term applicable not just to literature or image manipulation, but also to audio works. Truax here reflects on the term:

> Attempts to define more elaborately what it is about the Horspiel which sets it apart from other genres have by no means been unanimous in accepting the dominant literary quality of the phenomenon. In fact, in an effort to stress the uniqueness of these works, champions of the Horspiel have as often denied an affinity to literature as embraced it. Some define the Horspiel in terms of its reliance on a technical medium, others in terms of its proximity to film and television, while still others remind us that a variety of definitions may be necessary for the variety of works actually produced.
>
> (Truax 1994, p266)

The Horspielmacher aims to develop works that have cultural resonance and promote an effect of cultural intimacy. All field recordists are technologists and therefore caught between life as Horspielmacher, as a cultural interpreter, and as an artist. This is precisely why a discussion of field recording must contain a balanced discussion of practitioners and their tools, their communities, and the conceptualisation of their 'field sites'. The folklorists, Asch, Lomax, and Smith, as well as the documentarians and technical innovators, Schwartz, Teibel, Cook, and Gould, have created landmark works of cultural listening that employ techniques of Horspiel and composition: the Horspielmacher-as-composer.

I have already observed that many of the musicians whom these recordists came across and extemporaneously recorded were not paid adequately, or at all. Like Smith and Asch's record contracts (or lack thereof), the recordings made by Smith and Cook stand as a reminder of the critical failure of 20th century folkloric phonography. The act of song collecting has been profoundly authoritarian, reinforcing power relations between recordists of privilege and marginalised cultures. As demonstrated throughout this chapter, hi-fi culture flattened our perception of bodies, objects, communities and environments. They all became subject to the technologisation of post-war American life. Field recording takes music out of its social and cultural context, thus creating its own version of colonialism. Rather than cast judgement on these individuals, I mention this as a condition of field recording throughout the 20th century; one that unfortunately extends into the 21st. Technology affords a certain authority on behalf of the recordist that it is challenging to overcome. And while simplified forms of recording exist that may facilitate or foster collaborative recording, these tools are not a complete solution for the problem of representation (Drever in Truax et al. forthcoming 2017).

At present, research ethics frameworks in North American universities do not require approval for recording 'open air' environments, rendering individuals and musicians who are performing in public places vulnerable. The issue is further complicated when sound documentaries or sound pieces are treated as works of art as if such a label eschews criticism of ethical practices concerning recording. Academic research ethics review boards do not recognise this problem, and many do not even consider the release of a recording as a part of the scholarly research output (Feld and Brenneis 2004). Despite the proliferation of copyright lawsuits in the music and entertainment industry, the legal profession is not yet equipped to assess the role of sound, rather than music, in the courtroom. A monograph by law professor James Parker (2015) suggests that there is a precedent for an "acoustic jurisprudence",

wherein recorded or performed sound and music can be used as a means of incurring damages[18]. In the case of many of these recordists, their recordings have appropriated sounds and music of individual and cultural value, resulting in forms of epistemological violence. Throughout the hi-fi cultural movement, field recording's history has been riddled with the same ethical issues that anthropologists deal with. The politics of collecting are codified within the site, designated as 'the field'.

[18] How this troubling issue translates into policy - or at the very least an ethical framework - will be explored further in Chapter 6, where I attempt to deal with the recordists' politics of representation using resources from ethnographers (Feld and Basso 1996) and cultural institutions (Reddy and Sonneborn 2013).

Chapter 5: Analysing the Soundscape

For many, the environmental advocacy movement entered into academia with the publication of Rachel Carson's "Silent Spring" (1962). Carson's text was meant to be a poetic exegesis of ecological destruction, prompting activists to galvanise and rally against the globalisation of industry and technological innovation. Here, Carson laments an imagined barren American countryside:

> It was a spring without voices. On the mornings that had once throbbed with the dawn chorus of robins, catbirds, doves, jays, wrens, and scores of other bird voices there was now no sound; only silence lay over the fields and woods and marsh....
>
> No witchcraft, no enemy action had silenced the rebirth of new life in this stricken world. The people had done it themselves.
>
> This town does not actually exist, but it might easily have a thousand counterparts in America or elsewhere in the world…A grim spectre has crept upon us almost unnoticed, and this imagined tragedy may easily become a stark reality we all shall know.
>
> (Carson 1962, p6)

For Carson, then, sound is a primary index of environmental health, and silence of its absence[19]. She goes on to write in Chapter 8, "And No Birds Sing," of this imagined polluted landscape becoming a reality due to the use of DDT across the United States in lethal doses:

> Spring now comes unheralded by the return of the birds, and the early mornings are strangely silent where once they were filled with the beauty of bird song. This sudden silencing of the song of birds, this obliteration of the color and beauty and interest they lend to our world have come about swiftly, insidiously, and unnoticed by those whose communities are as yet unaffected.

[19] Carson's conceptualisation of noise and the environment is in some ways the opposite of Schafer's approach to recording and decibel measurement, as will be discussed later in this chapter.

(Ibid, p103)

When "Silent Spring" was published, only the suggestion of soundscape studies existed. Carson's text was a call to action to lobby the government for regulation of chemicals that are poisonous to plants and animals, which led to the formulation of the Environmental Protection Agency (EPA).

But more than just wildlife was at issue. The environmental movement was and is a reaction to the technology industry, a seemingly unstoppable force. During this time of massive social and political change, the effects of pollution would be considered within the context of sound. In the early 1970s, 'noise pollution' became a term oft used by environmental advocacy organisations and within lawmaking. The Noise Pollution and Abatement Act of 1972 was established as an initiative to assess the loudness of engines, aircraft, and air conditioning; since 1981, the EPA has published reports on noise pollution across the USA and regulates the operation of industrial and construction equipment in residential areas. Noise, a term that in itself refers to an unwanted sound, is explored further as a by-product of the desire for technological innovation by Garret Keizer in "The Unwanted Sound of Everything We Want" (2012). References to the noise of industry and then-newly available computer systems can be seen in film and television (as mentioned in Chapter 1). One recent example is in the seventh season of the hit television show Mad Men (2014), set in the 1950s, where Michael Ginsberg (Ben Feldman) is convinced that the unnatural sound of the new office computer is turning men into homosexuals. He is escorted out of the ad firm strapped down to a gurney, screaming "get out while you can!" Examples such as this demonstrate the value-judgements associated with particular noises as embedded within sociocultural and - in the case of Ginsberg - technological contexts.

Throughout this dissertation, I discuss technological innovations that have a commonly identified origin, which I then present along with lesser known prototypes and sonic practices: in this way, I conduct an ethno-organology of the sound recorder, treating it as an instrument and communication tool that allows for creative practice within music studies, sound art, and the social sciences. Thus in Chapters 2 and 3, I wrote that the first public practice of recording sound took place as a part of the war effort with the Voice-O-Graph and Presto machines, while in Chapter 4 I identified the first soundscapes created by Schwartz, Teibel, Cook, and Gould decades before the WSP. This chapter continues that narrative by exploring the

relationship between sound, music, and the environment within the paradigm of the soundscape as theorised by the WSP.

In the first half of the chapter, I examine the research and compositional practices developed by WSP members, and the influence that they had on ecomusicology and sound art. What is the space between sound studies and musicology, and how does the term 'soundscape' help us to navigate that terrain? How does interdisciplinary music study lend itself to a discussion between scholars and practitioners? The history of portable recording technology, field recording as a creative practice, and theories of music, media, and environment all help us to understand how best to answer these questions. This chapter furthers the argument that there is no ontological distinction to be made between field recordings of music and field recordings of musical environments, what is commonly referred to as the soundscape. Both practices exist on a continuum of sonic practice. Therefore, listening to all field recordings requires an expanded sense of music, musicality, and composition that includes field recording without discounting its value outside of artistic practice, for example as a documentary practice.

In the second half of this chapter, I present two case studies where the application of soundscape analysis and, more broadly, critical listening might be useful. First, in what might previously have been called 'extramusical' elements of production, I identify the role of the recording medium in establishing discourses surrounding folk music listenership through The 78 Project. Second, I identify the use of environmental sound in contemporary composition, using as my example Geosonics, a software program created by recordist Chris Watson and virtual instrument designers Soniccouture.

The Soundscape and Acoustic Ecology

R Murray Schafer is responsible for coining the term 'the soundscape' in his seminal text *The Tuning of The World* (1977). In it, Schafer argues that natural sounds are sacred (he refers to them as high fidelity), and are endangered by industry and noise pollution from cities. Schafer refers to these sounds as low fidelity. From its founding in the late 1960s and until the late 1980s, Schafer ran the WSP and supervised the collection of hundreds of field recordings across Canada, which make up the WSP database, as well as recordings for CBC radio across Europe. This research laid the foundations for the soundscape, considered to be some of the earliest research in sound studies. Hildegard Westerkamp, who worked as an archivist for the WSP, used the soundscape as the basis for composing electroacoustic works and sound

art. Barry Truax, another member of the WSP, later maintained the database and helped to digitise it. As a departure from the WSP, Truax wrote "Acoustic Communication" (1984), a text that opens up the discussion of sound not only as something to be sensed or heard, but also as a powerful form of transmitting ideas through film, radio, art, and music. These contributions helped the arts and humanities communities to take critical listening practices seriously outside of music.

As I have argued throughout this dissertation, recording practice is never without its own mediation and interpretation: a recording always contains artefacts of the process, many of which have been embraced by record producers as containing a particular 'sound' associated with a genre. One example of this, mentioned in the previous chapter, is Lomax's single microphone 78 disc recordings of early folk and blues musicians. A by-product of the recording medium is a series of creative practices conceived out of technological innovation. Composers have made use of recording technologies for the creation of new sounds, thus developing what is called electroacoustic composition:[20] these sounds would be impossible to create through natural acoustics. At the same time, within field recording, the ability simultaneously to document acoustical environments and musical information encourages composers to explore the connections between music and environment (Schafer 1977; Schwartz 1983). What then might compel composers to record the sounds of the environment? How do field recordings and soundscape analyses connect music, the social, and the environment? How have field recording practices and soundscapes changed the way that we listen?

The study of recordings made outside of the studio affects our understanding of the sonic environment. Our listening has changed as recording technology has developed, and there is a connection between the history of recorded music, environmental studies of sound, and communication practices in the social sciences. The soundscape refers to the method of recording pioneered by the WSP on the one hand, and on the other to the aural attributes of sociocultural phenomena and histories of performance practice in particular regions. Both of these meanings are forms of place-making, be it through immersive installations, field

[20] Most notable is the composition Cinq études de bruits (Schaeffer, 1948), believed to be the first example of Musique concrète to employ electroacoustic manipulation.

recordings of performances that attempt to capture the environment that the music is played within, or written work dedicated to describing the socio-cultural context of sound. These two definitions of the soundscape are part of Schafer's larger disciplinary work in media studies and composition, which he termed acoustic ecology. This discipline has two practices associated with it: recording, and critical or focused listening. An integral part of the discipline comprises forms of training that Schafer developed in order to increase comprehension of sonic environments.

Schafer and his colleagues at the WSP developed acoustic ecology to analyse the meaning of environmental phenomena. Just as Carson aimed to bring the degradation of wildlife and the environment to public awareness, so Truax writes that "The main purpose of the WSP's work was to document acoustic environments, both functional and dysfunctional, and to increase public awareness of the importance of the soundscape, particularly through individual listening sensitivity" (Truax 2008, p103). Using Kudelski's Nagra IV portable stereo tape recorder, WSP members recorded environmental sounds across Canada. All of these recordings comprise The Music of The Environment series, archived in the WSP database at Simon Fraser University. Each field recording is a survey of a chosen region, recorded and annotated by time, date, and discernible sounds captured, as well as mapped with a legend of decibel variation in a given location. This approach may sound excessively clinical, and perhaps prescriptive, for a sound artist or a composer. However, Schafer's motivations clarify his method.

Schafer describes a crisis in the perception of recordings and electroacoustic constructions of a sonic environment: we experience them as separate from their source. This dislocation, called schizophonia, is triggered by technologies such as the loudspeaker and portable audio players and is said to be the catalyst for the decrease in natural sound. Schafer's terms 'clairaudience' and 'ear cleaning' describe the ability to train the ear to "listen more discriminatingly to sounds, particularly those of the environment" (1977, p272). The aim of clairaudience is to identify soundmarks: specific aural occurrences that are unique subjects for study within an environment. Schafer's aspiration to collect and organise sounds for analysis is a part of his pedagogic approach to identify soundmarks, and more generally to train musicians and non-musicians to engage in active, focused, critical listening. Aspiring to develop a sensory response to the destruction of sonic environments, Schafer developed a number of mapping systems based on decibel readings and frequency responses. Examples 1-

3 are taken from Schafer's "Tuning of The World", in effect a manifesto for the sanctity of the natural soundscape in the face of noise pollution.

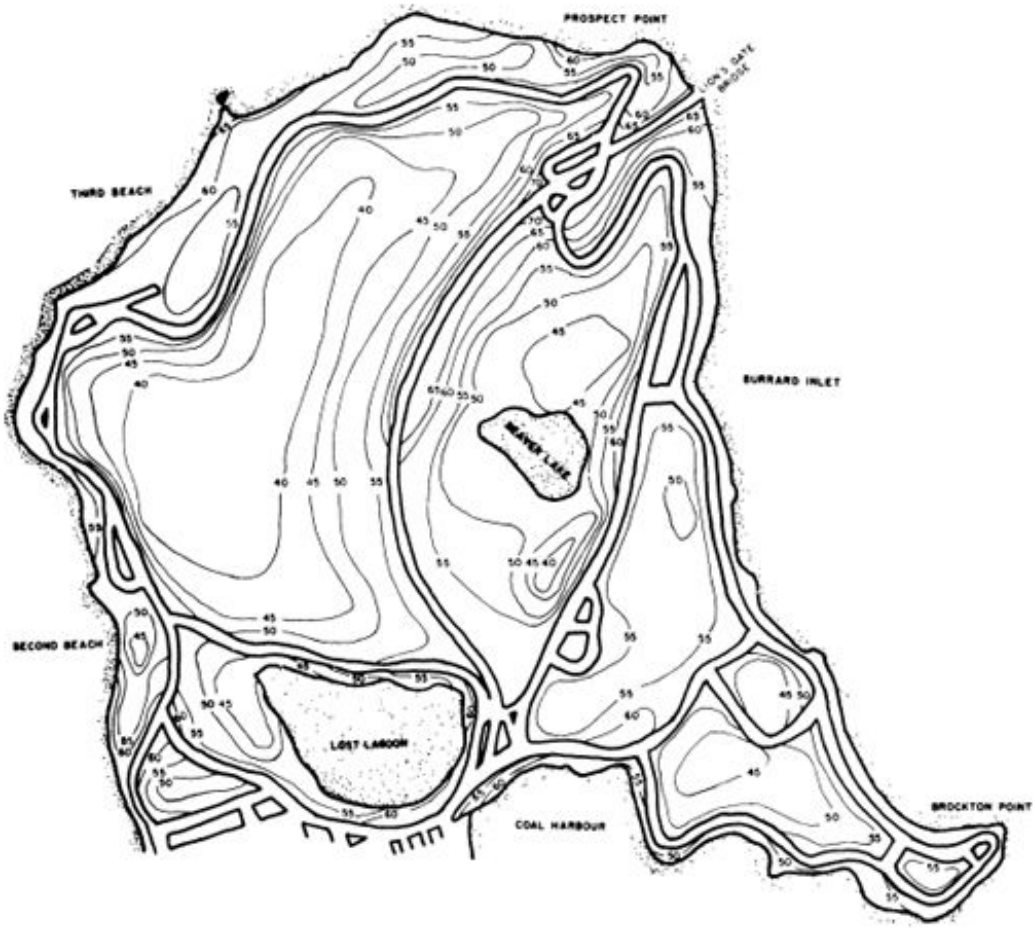

Figure 27: Isobel Map of Stanley Park in Vancouver, British Columbia, measured during the spring and summer of 1973. (Schafer 1977, p264)

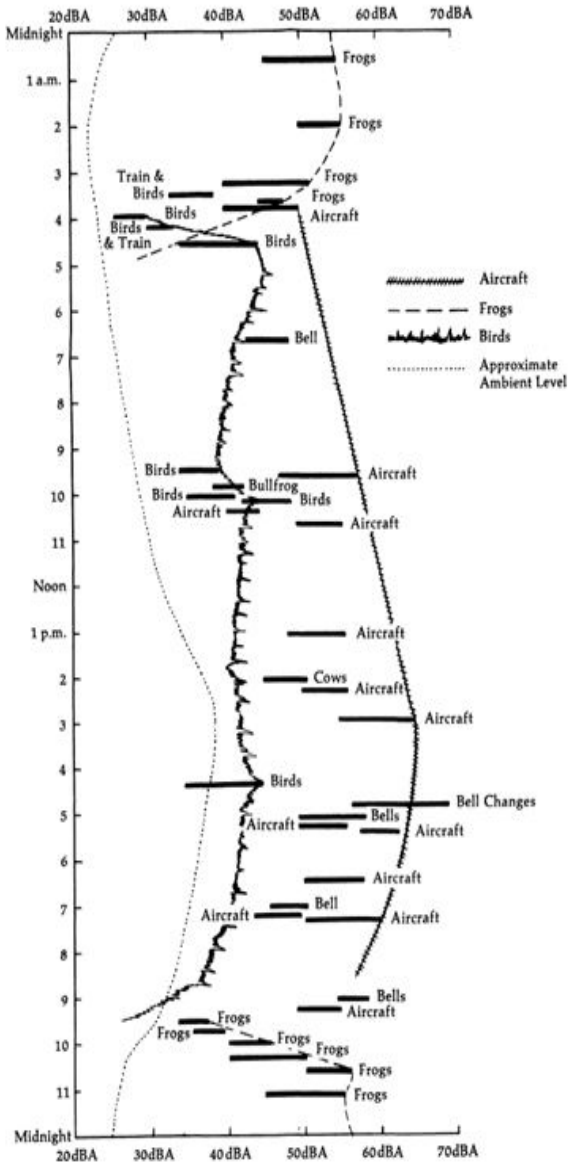

Figure 28: Log notes of sound events in British Columbia, comparing sound events in their locales as they occur spatially and temporally (Schafer 1977, p266). This method of sound capture, classification, and quantitative analysis has been perpetuated by digital sound maps (as shown in the appendix).

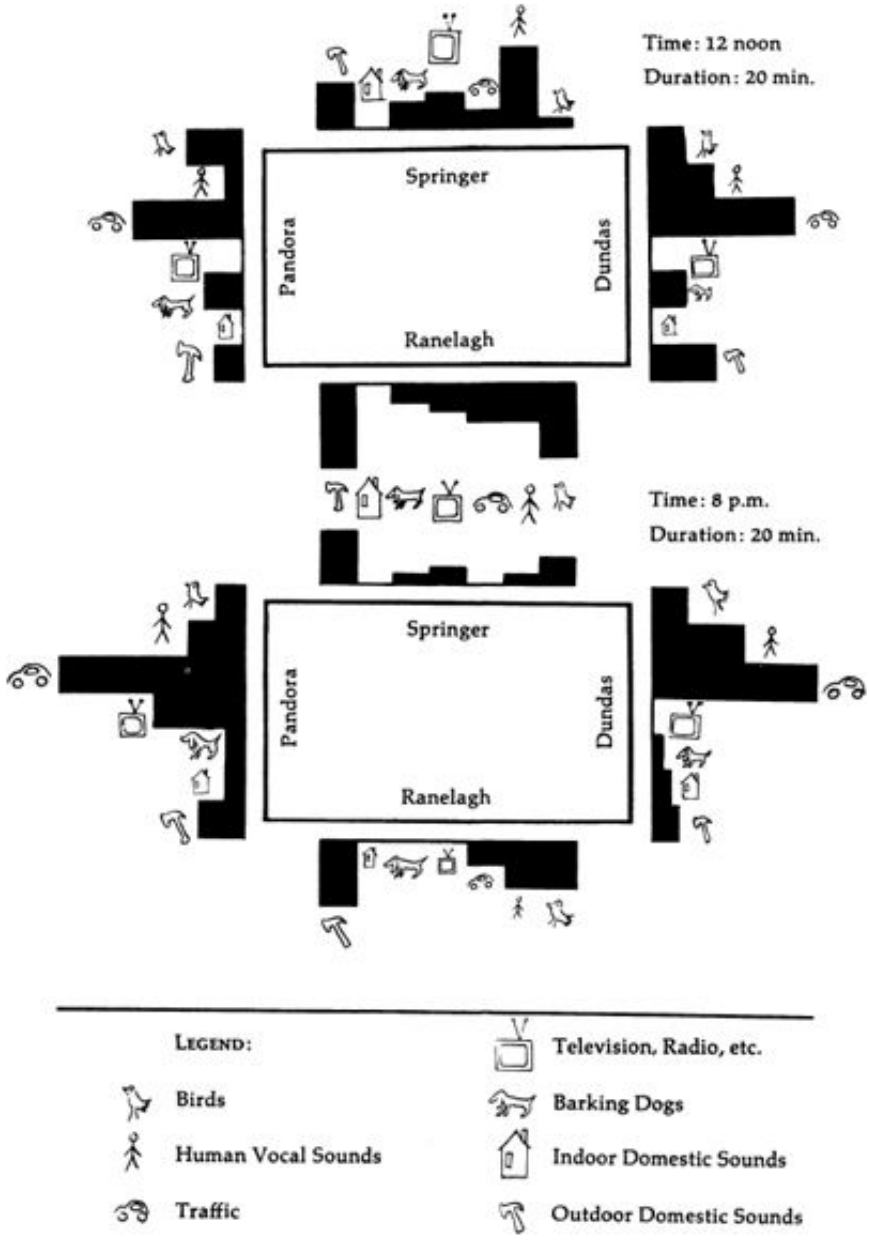

Figure 29: Comparative sound maps of a city block in Burnaby, British Columbia (Schafer 1977, p267). Latitude: 49.28445, Longitude: -122.98772.

The purpose of these maps was to emphasise the 'sonic vulgarities' present within the environments, by which Schafer meant noise from industrial machinery that masked the natural soundscape and degraded listening sensitivity. However, there is an epistemological dissonance in this approach to representing sound through image. In actuality, sound fields are not so easily contained within a map, because diffusion means that auditory events occur in multiple spaces at different times. For example, the sound of construction on a street block

may disrupt a neighbourhood or a park one mile away: though on-site levels may not reach above 120db, the sound may enter into a region where people and animal life are affected. Perhaps a more serious example is the flight paths of aeroplanes: commercial flights that fly over natural parks endanger the animals by changing the sound pressure and causing them to feel threatened in their own habitat (Keizer 2008). And while the map in Figure 28 addresses these changes, it cannot do so dynamically or accurately. The ways in which people and animals experience their sonic environment are challenging to document. Mapped data are only approximations, as mapping such dynamic data is impractical for a fixed system such as a printed map. Such approximations mean that any presentation of the data involves subjective interpretation. Though the decibel measurements used by the WSP are in themselves objective, the data are best understood as politicised, interpreted for the purpose of proving the existence of noise pollution.

Indeed, the WSP's sound maps contribute directly to their research in acoustic ecology. Sounds notated on the maps are chosen selectively by the individual who heard them, for example in Figure 29, where sounds of nature and machines are juxtaposed to show how lo-fi sounds dominate the sounds of nature. Figure 27 offers a more objective insight into decibel levels in Stanley Park: Schafer wanted to measure sound levels in different locations to emphasize the variations in exposure to noise, and we learn from this map that Stanley Park's noise exposure ranges between 30-55 decibels, similar to the sound levels of a quiet library or a normal conversation. Schafer was concerned that flight paths and industrial development would interfere with this sonic environment. The WSP's visualisations and maps, then, are designed as tools effective only within the field of acoustic ecology.

In recent years, Truax has reflected on the development of the soundscape and the work of a community of artists heavily influenced by the soundscape as a conceptual approach. Truax defines a soundscape composition in the following terms:

> (1) Listener recognisability of the source material is maintained, even if it subsequently undergoes transformation; [this is in contrast to Pierre Schaeffer's conceptualization of the acousmatic, wherein sounds do not take sonorous form in objects or places]

> (2) The listener's knowledge of the environmental and psychological context of the soundscape material is invoked and encouraged to complete the network of meanings ascribed to the music;
>
> (3) The composer's knowledge of the environmental and psychological context of the soundscape material is allowed to influence the shape of the composition at every level, and ultimately the composition is inseparable from some or all of those aspects of reality;
>
> (4) The work enhances our understanding of the world, and its influence carries over into everyday perceptual habits.
>
> (Truax 2000)

Perhaps the WSP's greatest accomplishment was the formalisation of sonic research as academic research, and so in this way bridging the gap between composers of acoustic music and field recordists is their legacy.

Sound Art

Parallel to the development of soundscape studies has been the popularisation of sound art. And in relation to musical composition, both sound art and the soundscape are considered independent from one another. It is through sound art that the compositional form of soundscapes finds its place outside of music and the art world. To wit, sound art is considered to be independent of conventional music genre labelling: "Sound art is not bound to any defining feature other than a concern with sound, which artists may express in any fashion. Sound art therefore has no canon of paradigmatic works" (Wong 2012).

Further, there is no specific venue that contains sound art. The concert hall is hardly suitable for sound art's forms of installation work or synthesised immersive environments. While museums have started adding sound art to their permanent collections, for example, the Museums of Modern Arts' acquisition of Alvin Lucier's "I Am Sitting in a Room," questions of art preservation and proper exhibition format for auditory media remain contentious. Lucier's work is part performance art, part musique concrete. The text read aloud during the piece describes the sequence of coming events:

> I am sitting in a room different from the one you are in now. I am recording the sound of my speaking voice and I am going to play it back into the room again and again until the resonant frequencies of the room reinforce themselves so that any semblance of my speech, with perhaps the exception of rhythm, is destroyed. What you will hear, then, are the natural resonant frequencies of the room articulated by speech. I regard this activity not so much as a demonstration of a physical fact, but, more as a way to smooth out any irregularities my speech might have.
>
> (Lucier 1969)

The end of the piece renders Lucier's speech rendered into a series of tones and textures, and the text incoherent. The work does not refer to a single recording, but rather a performance of it. The Museum of Modern Art's acquisition and archiving of the work required Lucier to perform it for that very purpose[21]. Lucier's work further complicates the relationship between the worlds of music and fine art, raising questions that are often posed about soundscape composition by those unfamiliar with the practice or the relevant research. Is Lucier's piece an electroacoustic composition? Is the Museum of Modern Art's version of Lucier's work a live recording, or the definitive version of the performance? While Lucier's focus is on the subject, does the manipulation of his voice and acoustic environment constitute a soundscape? To answer these questions, one can turn to soundscape studies for useful listening strategies.

Sound art often employs the soundscape compositional approach, although it rarely uses the system of annotations that Schafer advocated. However, it is not without its own complications, rooted in questions of locality and abstraction of sound. Truax writes:

> Artistic concerns have been traditionally framed in terms of musical sound, that is, sounds primarily related to each other, and only secondarily to their possible relationships to the environment or society at large … the 'inner complexity' of sound, whether acoustic or electroacoustic, as opposed to the 'outer

[21] Read more about the recording of "I am Sitting in a Room" online from: http://www.moma.org/explore/inside_out/2015/01/20/collecting-alvin-luciers-i-am-sitting-in-a-room/

> complexity' of the real world. The issues of relating inner and outer complexity become particularly problematic if the subject matter is drawn from the soundscape.
>
> (Truax 2012, p193)

In this way, the convergence of field recording in soundscapes and sound art raises a paradox: the emphasis on locale is subsidiary to artistic freedom for sound artists, though the use of the term soundscape and the act of field recording remains central to their practice. Truax identifies the spectrum of approaches concerning both sound art and soundscape composition: "The fixed spatial perspective emphasizing the flow of time, or a discrete series of fixed perspectives [presented as recorded]; moving spatial perspective…emphasizing a smoothly connected space/time flow [recordings altered by transparent manipulation]; and variable spatial perspective[s] emphasizing a discontinuous space/time flow [using granular synthesis and electroacoustic techniques]" (Truax 2002 p8). These approaches may be used in succession, to demonstrate the means of interpretation by which compositions are formed, from 'found sounds' to abstractions thereof.

Mapping The Soundscape

Many field recordists who are interested in heightened spatial capture using body-worn microphones create sound art installations both physical and digital. Since the mid-2000s, sound artists have been able to use digital resources to map their field recordings, adding another layer of spatial information. Many of these maps allow for users to upload their own recordings, creating maps with thousands of sound clips. Digital sound mapping techniques are also used to organise archival materials - geographically, spatially, and temporally – in such a way as to facilitate listener interaction. The capabilities of digital audio and synthesis have further distinguished sound art from soundscapes, resulting in compositions that are more abstract than any of the work of the WSP.

I suggest that the practice of sound mapping comes from a desire to establish discourses surrounding particular histories of listening, accomplished through the user's shift between what David Novak refers to in his text *Japanoise* as "the global view of the stranger" (Novak 2013, p68) and the privileged perspective of what sound artists Felicity Ford calls the local, domestic listener (Ford 2011). I will argue that geospatially locating recordings and sonic

cartography - or mapping sounds to demarcate sonic space-time relations - might further our capacity for listening critically to place.

The study of recordings made outside of the studio affects our understanding of the sonic environment. Biophony - the sounds of animals - and geophony - the sounds of a geographical region - play important roles in knowing places. Sound studies scholars have argued for their utility in mapping instead of visual cues. In "The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places", Bernie Krause (2013) gives an example from the Central Australian desert, where instructions to a nearby location are given to him by an Aboriginal community member: ""Travel along this route as long as you hear the green ants sing, then, when their song ends, head toward another voice (and so on) till you get to the place you want to go.' The directions taken during their walkabouts are determined, at least in part, by changes in the soundscape" (Krause 2013). What is a seemingly vague directive to an outsider is, in fact, an indication of how Western ears are tuned away from the signs that biophonic and geophonic sounds contain, both literally and figuratively. Becoming attuned to an environment is a practice that benefits from training with the ear and with immersive enculturation. It is, therefore, no surprise that digital mapping and soundscape composition help us discover new ways of knowing through sound: a cartographic operation of acoustemology.

Since the development of Schafer's sound mapping system and the proliferation of open source-based online resources for mapping, practitioners of sound recording and music have begun to use sound maps for their own artistic and research-based projects. Evidence of the popularisation of soundscape recording can be found in participant-interactive sound maps. These have been created as sound art installations: digital iterations of the experience of physical spaces. Sound artists engage with space and directionality by nature of their practice: critical reflection on sound and space can be found in Janet Cardiff's *The Walk Book* (2005) - a text that details a series of site-specific travels accompanied by an acoustic guide in the form of a cassette or disc walkman. Karen O'Rourke's *Walking and Mapping: Artists as Cartographers* (2013) catalogues the use of maps by performance artists throughout the 20th and 21st centuries: O'Rourke concludes her text by asking "Can we trace paths between existing nodes and networks, as possible destinations or entry points? Link up the major meta-mapping projects from these past few years, both local and global" (O'Rourke 2013, p246)? She suggests that we think further of the new modulated map as a destination itself: "The map can

be active, malleable, open source fed, and even, in a sense, intelligent and able to adapt" (Ibid). I would suggest here that, based on how it is used, the map as used by sound artists adapts according to changing perceptions and geospatial relations to recorded sounds. What follows are dynamic, interactive and ever-growing archives composed of recordings by artists and ethnographers.

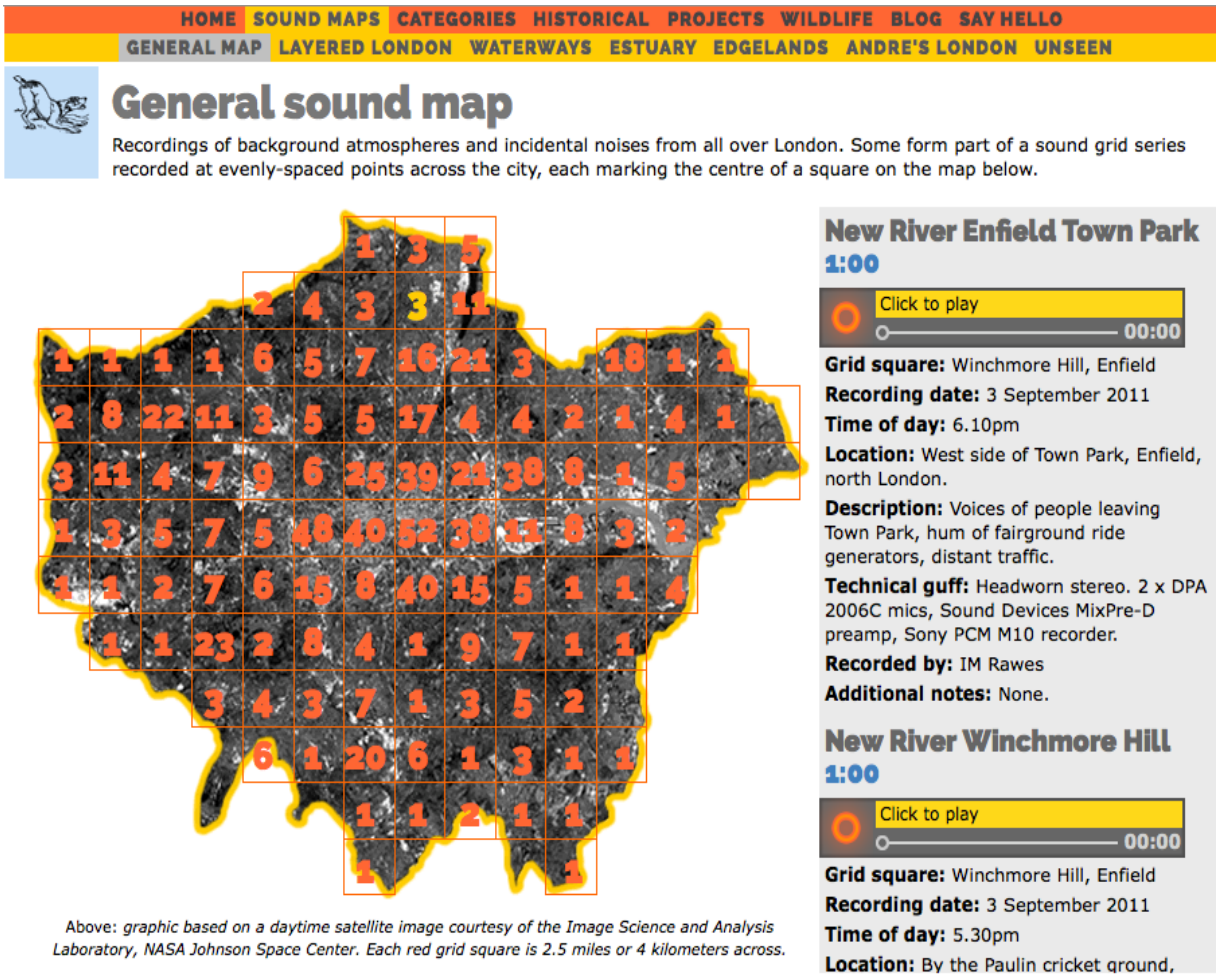

Figure 30: The London Sound Survey, General Sound Map at: http://www.soundsurvey.org.uk/index.php/survey/soundmaps/

One approach to sound mapping focuses on a particular set of geographic limits. An example of this is The London Sound Survey, shown in Figure 30, which provides a mixture of sound recordings that have been both curated and crowd-sourced by artists, then organised meticulously by sound archivist Ian Rawes. Rawes collects recordings from the British Library,

where he is the Sound and Vision specialist while developing and maintaining a framework for users to upload works of urban phonography, and situate them on a series of maps of London. Each map illustrates the city in a different manner. Figure 30 presents the cities ambient noises, while other maps focus on sounds of waterways, transportation, or sounds from particular historic eras.

Figure 31: Tactical Sound Garden, Belgrade at: http://www.tacticalsoundgarden.net/belgrade/mapper.html

Sound artists have also used the Google API format to develop collaborative sound installations, such as the Tactical Sound Garden in Sao Paulo, Brasil (shown in Figure 31). For five days, mobile device users could log on to Wi-Fi networks, record sounds of the surrounding environment, and upload them to a central map for playback by other users. An archive of the project is now hosted online for public listening.

Sound Transit (Figures 32A, 32B, 32C) allows users to create their own itinerary, which - as the soundscapes fade in and out of one another during these 'trips' – is to say their own compositions.

Figure 32A: Sound Transit booking at: http://www.turbulence.org/soundtransit/book/

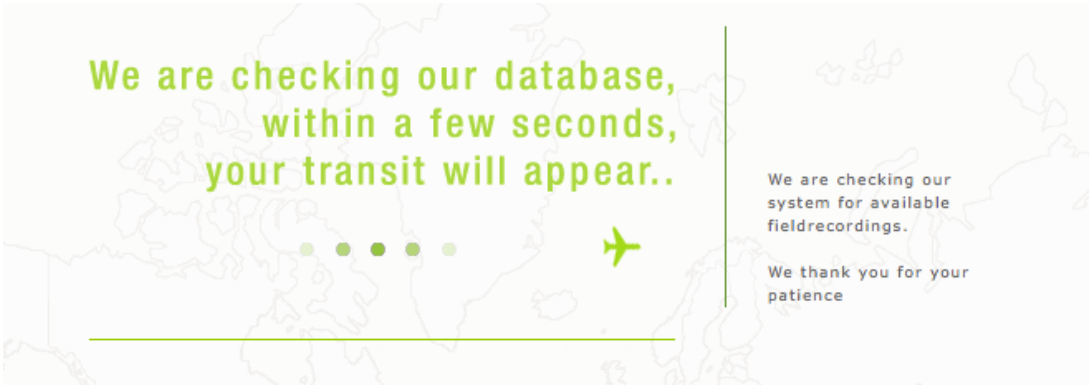

Figure 32B: Sound Transit database search at:
http://www.turbulence.org/soundtransit/book/

Download

Please wait, we are making your transit right now

You will be able to download your transit soon.

Information

		Sound	By
Departure	**Falmouth Tasmania** Australia	Various frogs near the Tasmanian East Coast hamlet of Falmouth	Stuart Thorne
Via	**Berlin** Germany	The soundtrack of looking at the at the pallasseum a.k.a. sozialpalast. -- Potsdamerstr/Goebenstr Schoeneberg	Jan Philm
Via	**Cabo Ortegal, Galicia** Spain	storm in 'Cabo Ortegal', Galicia, Spain. november 2003	Chiu Longina
Via	**Barcelona** Spain	Mechanical steady noise in a corridor at a tube station in Barcelona (binaural rec, recorded w/ soundman okm ii + hi-md sony mz-rh10) 04.05.2006	Pablo Sanz Almoguera
Arrival	**Kapellen** Belgium	during a " criterium " cyclists passing guided by police & music.	Planktone

Map View

MAP VIEW

Figure 32C: Sound Transit itinerary at: http://www.turbulence.org/soundtransit/book/

Among all the sound maps listed, Udo Noll's Radio Aporee (Figure 33) is the largest. Participants from all over the world upload soundscapes in what Noll refers to as "experiments on localized radio, performative broadcasting and affective geographies" (Noll 2014).

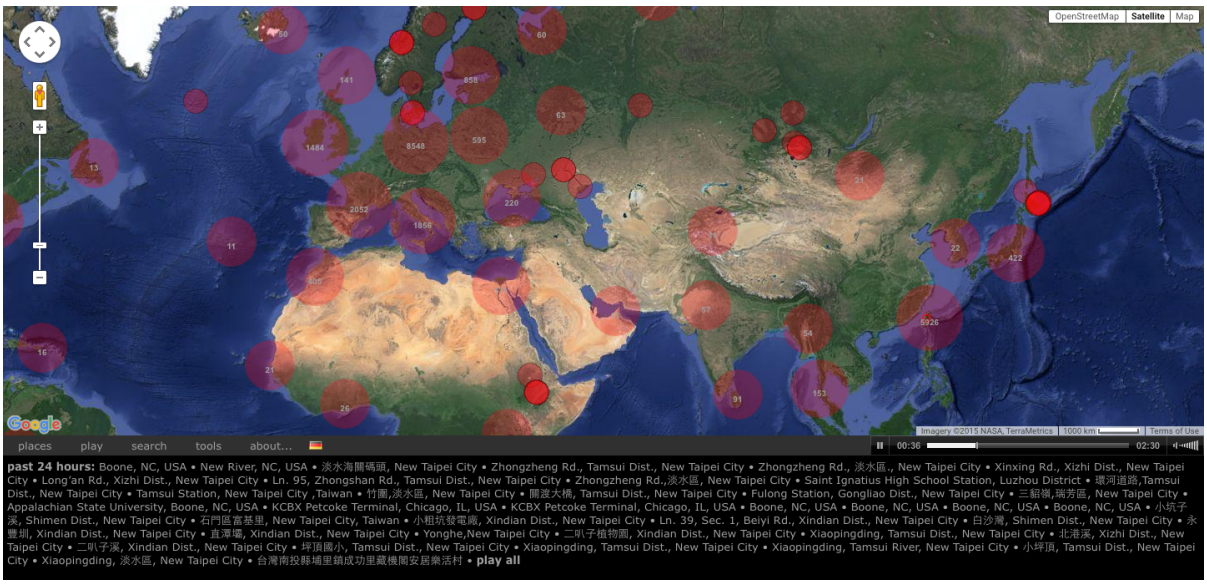

Figure 33: Radio Aporee at: http://aporee.org/maps/

Sound maps like Radio Aporee bring composition into the world of sound art, and the world of sound art into digital spaces. When these sound maps are inherently collaborative endeavours, the result is a circulation of recordings and electroacoustic manipulations that together create a meta-composition - a mosaic - constituted of sonic environments.

Sound maps are also used as historiographical indexes. Emily Thompson's web page The Roaring 20s[22] (Figure 34) uses archived noise complaints from New York City throughout the 1920s to demonstrate the changing sonic landscape:

> All of the noise complaints documented on this website come from the Municipal Archives of the City of New York…Two collections in particular have been utilized: The Mayoral Papers of Jaime J Walker (1926-1932) and the Health Commissioner's Paper, Department of Health (1930-1932)…The collection offers a unique view into the city's past. It documents not just the noises of New York, but also the attitudes and language of its citizens. These letters help us recover the texture of daily life on the street and in the dwellings of the seven million people who called the New York City home at this time.

[22] An addition to the online journal "Vectors, Journal of Culture and Technology in a Dynamics Vernacular"

(Thompson 2013)

While not the only interactive digital sound map that uses rigorous archival methodologies, The Roaring 20s is the first to be included in an academic journal. Further, Thompson's online map is not a figure within an academic article but serves in its own right as a source of knowledge dissemination concerning noise pollution and the sonic environment.

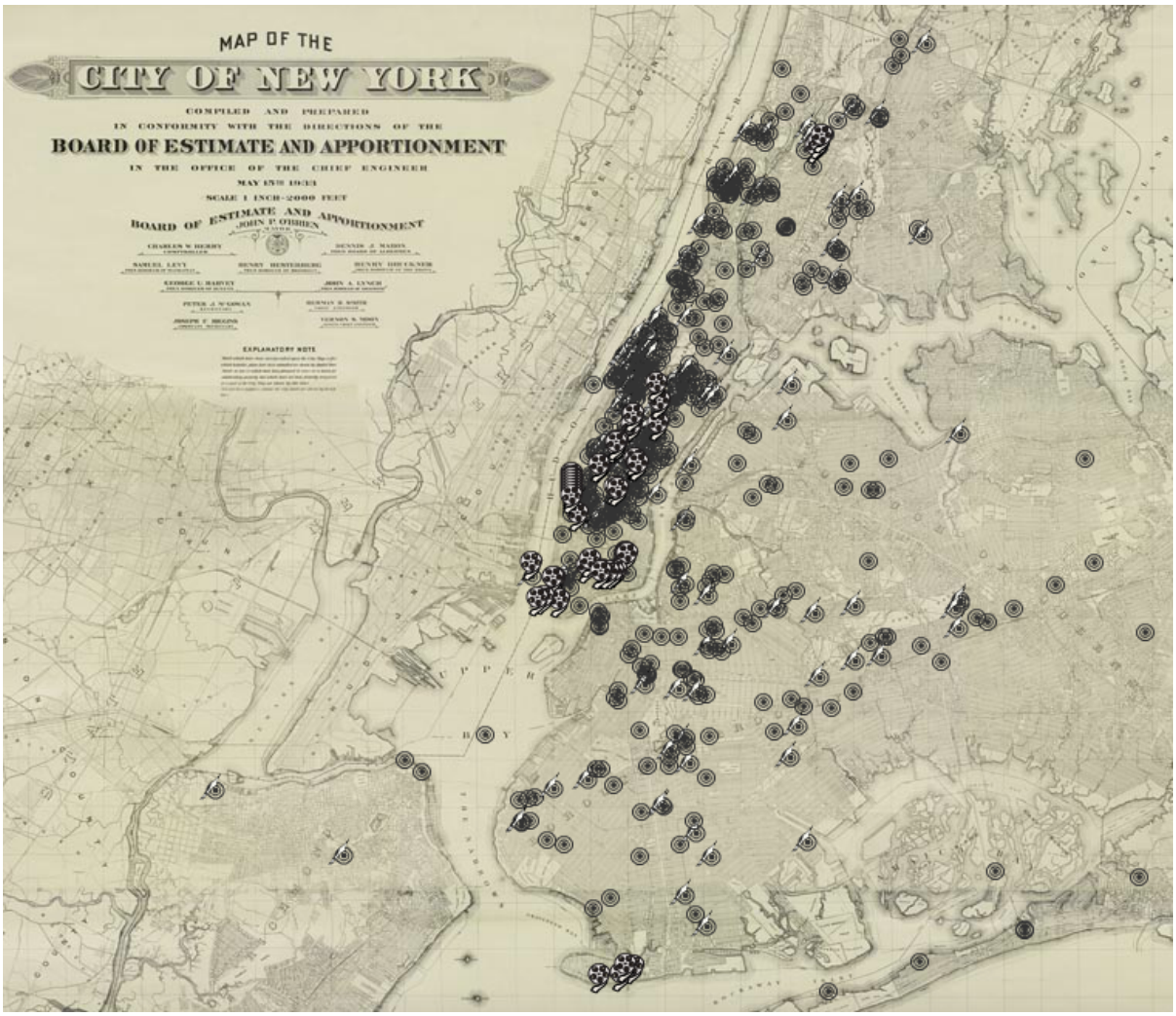

Figure 34: The Roaring 20s at: http://vectorsdev.usc.edu/NYCsound/777b.html

A collaborative effort by scholarly staff members, web designers, and interns at Smithsonian Folkways Recordings resulted in a sound map of their entire archive of their recordings, made exclusively using open source coding and Google APIs. As an intern and subsequently a visiting researcher, I contributed to these maps in 2012. These maps can be exported to KML

files for use in Google Earth (as shown in Figures 35 and 36) and can be edited individually to create lesson plans and listening sessions for musicological research and teaching. The release of the 2013 Google Map Makers program allowed for greater accuracy (precise latitudes and longitudes), as well as the inclusion of metadata input such as transcription of interviews, decibel readings, or PDFs of music notation. These maps are embedded using script-generated HTML codes for integration with blogs, research projects or academic web pages. As a participant in the conference series Exhibiting Sound in 2015, I presented these maps as part of my workshop for ethnomusicologists and anthropologists, 'Doing Creative Media Ethnography'.

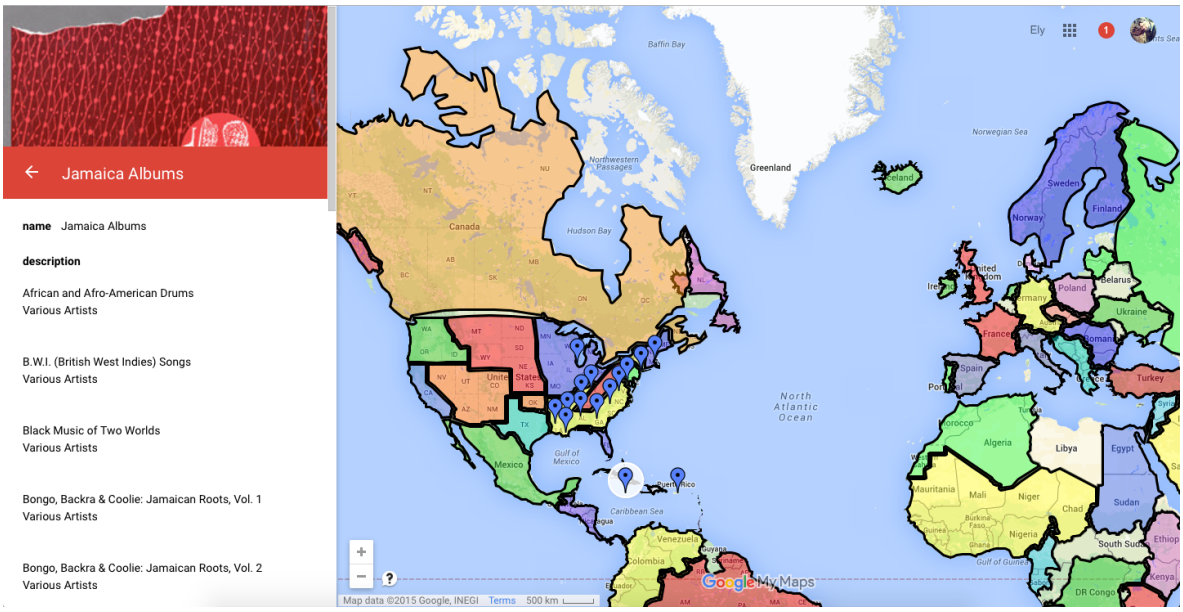

Figure 35: Smithsonian Folkways Album Map at: http://goo.gl/maps/wF2eJ

Figure 36: Smithsonian Folkways Lesson Map at: http://goo.gl/maps/exCDp

In 2013, work began on a series of digital sound maps for Dr. Marcia Ostashewski's project "East and Central European Communities and Cultures in Cape Breton, Nova Scotia" (which was funded by the [Canadian] Social Sciences and Humanities Research Council, and completed in 2015). These maps have both physical and digital iterations, both of which I developed and contributed to as a research assistant for the project. In May 2013, a series of physical maps was installed at York University, Toronto, Canada, with listening stations built into each map. Visitors chose a location on the map, wore the corresponding headphones, and listened to interviews conducted with residents, radio broadcasts of music and cultural events from the region, and environmental soundscape compositions. The sound recordings used in these maps were uploaded to a digital media map that compiles images, videos, text, and archival audio, and indexes them based on their location metadata (Figure 37).

When installed physically, the visitors listening to the sound maps activated the space as a research site. When listening to these recordings, many responded with their own stories or identified a reference point—often a location, a person's voice, or a date and time related to the recording. Installation attendees and community members then had the opportunity to record these responses through their own testimonials, which in turn contributed to the living archive associated accessible at the DiversityCapeBreton.ca web portal.

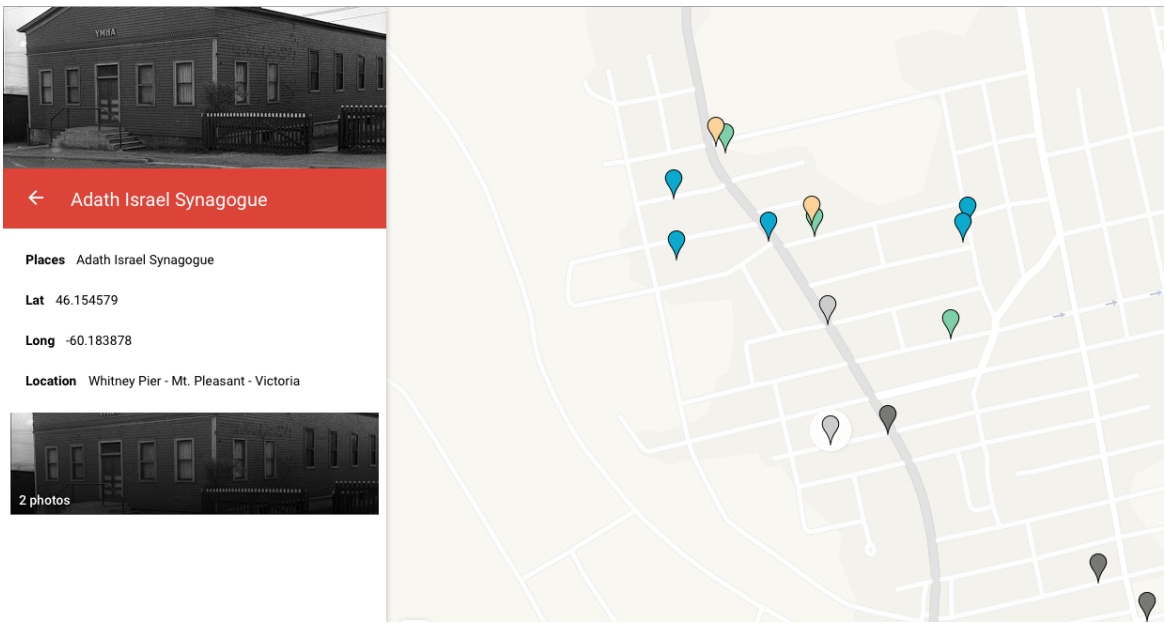

Figure 37: Cape Breton Stories: Multi Media Map at: http://diversitycapebreton.ca/ir/ce/cape-breton-stories/multi-media-map

Further research into sound mapping practices is being conducted to add time-based vectors to previous mapping projects. This would allow for the presentation of recordings from particular time periods with a slider embedded within the map, which could be used to show the development of musical practices in a given location or set of regions. Many of the sound map techniques pioneered by artists act as a guide or a set of cartographic templates for scholars and archivists. It is evident that the participatory sound map operates in such a way as to encourage teaching. What is most valuable about sound maps for teaching is the ability to use the same tools, notably Google APIs, for both researching and teaching. In short, we now have the opportunity to develop fluidity between research 'field notes' and presentation thereof.

In one of the few publications concerning sound mapping, Jacqueline Waldock warned scholars that the use of professional equipment might risk alienating amateur contributors:

> Binaural recording signifies a professional approach to recording sound. The type of equipment and techniques used for this kind of recordings are expensive and usually specialized. Binaural recording is often considered to present the most realistic experience of the sound; it is, however, limited by

> accessibility both in how it is created and heard. To fully benefit from the sound of a binaural recording you need good quality headphones.
>
> The addition of binaural recordings to online archives such as soundmaps is positive from an acoustical and historical perspective. However, their inclusion in open participatory soundmaps produces an acoustical VIP area, a specialists-only part of the map. The concern here is not that binaural recordings will damage soundmaps but that the growing professionalism of the soundmap will discourage new contributors or amateurs to contribute.
>
> (Waldock 2011)

In contrast to Waldock's approach, I contend that the use of professional equipment and expert techniques of recording further encourages listeners to explore these maps. When amateur recordings of the sonic environment are presented, a listener often hears more pre-amplifier noise than actual sonic ambience. Many techniques employed by field recordists have been documented in blogs and interviews published online, either on special interest blogs or on companion websites to sound maps. Radio arts websites such as Transom and sound map artists such as Stuart Fowkes (Cities and Memory) provide amateurs who are keen to begin recording with a list of equipment and tips for attaining high-quality recordings. Researchers of music, sound, and media now have the opportunity to capture unique and subjective perspectives of sonic environments in a highly accessible platform. Perhaps the most contentious component of interactive sound mapping is that professionals and amateurs alike may contribute to the same map, the result of which is a map with varying recording quality. Those who see this as a disadvantage to the platform are making an aesthetic judgment of the sound map, denying the importance of this form of democratic media. An acceptance of both professional recordings and amateur ones helps us tune our ears into the varying perspectives of sonic environments, according to both the technical ability and the level of sensitivity of the participant.

Ecomusicology

Musicologist Alexander Rehding has recently theorised the development of an ecomusicology, which is especially pertinent to recording practice. Rehding discusses two approaches to ecological studies of music. The first is an apocalyptic mode that references an impending

doom through human-inflicted environmental destruction. The second is a nostalgic imagination derived from musical works and performances, which is far more subtle but is a continuous presence. Rehding contends that these are closely related: "[Nostalgia] has always been a large part of the appeal of the environmental movement…which was fed by a romantic idea of a simpler, holistic past" (Rehding 2011, p412).

To contextualise the practice of field recording outside of Schafer's text, one can look to the field of ecomusicology. Ecomusicology helps researchers acknowledge the ways in which musicians and composers engage with environmental activism. This includes musicians who write environmentally conscious lyrics, or albums and concerts made to promote environmental awareness. The field has taken to analysing lyrics from popular music that addresses these issues. One example is of Joshua Tillman AKA Father John Misty's "Now I'm Learning To Love The War" from his album *Fear Fun*[23], a lamentation of artistic production and its environmental impact:

> Try not to think so much about
>
> The truly staggering amount
>
> Of oil that it takes to make a record
>
> All the shipping, the vinyl
>
> The cellophane lining, the high gloss
>
> The tape and the gear
>
>
> Try not to become too consumed
>
> With what's a criminal volume
>
> Of oil that it takes to paint a portrait

[23] Sub Pop B007IPAOLA 2012

> The acrylic, the varnish
>
> Aluminum tubes filled with latex
>
> The solvents and dye, oh
>
>
> Let's just call this what it is
>
> The jealous side of mankind's death wish
>
> When it's my time to go
>
> Gonna leave behind things that won't decompose
>
> (Tillman 2012)

While Tillman leaves the listener thinking that all artists are essentially narcissists who create a legacy at the expense of the environment, other musicians have used their musical releases as political statements. A recent example is the CD/DVD *The Monsanto Years* (Reprise B00XO12REY, 2015) by Neil Young with Lukas Nelson & Promise of the Real, which targets the monopolisation of food production by the controversial multinational agrochemical company of that name. While folk musicians' and singer-songwriters' advocacy work is often made possible by their commercial success and is separate from the content of their compositions, Young directly incorporates the activism within the music. Ethnomusicologist Kate Galloway describes the ways in which musicians become artists-activists, and create environmentally friendly spaces during performances and tours—what she calls 'Ecotopian spaces':

> The soundscapes and physical materials of environmental awareness permeate both the on-stage and off-stage work of musicians and activists. For an increasing number of environmentally minded artists their efforts are moving off-stage. Instead of only writing green lyrics composing green sounds that wax poetically on the value of the natural environment, they are establishing foundations, leading conservation drives and events, greening their tours, and engaging with the spaces and soundscapes that musically inspire them.

(Galloway 2014, p76)

As an illustration, Galloway cites Sarah Harmer's environmentally conscious album, *I'm A Mountain* (Universal Music Group B000BPO6NQ, 2005), and the political lobbying efforts that coincided with its release and subsequent tour. Musicians have also interacted with preservation sites in performance, such as saxophonist John Butcher and sound artist Akio Suzuki's 2006 Resonant Spaces tour. Butcher and Suzuki collaborated in the Orkney Islands and Smoo Cave, Durness (both in Scotland) for performances that interacted with the sonic attributes of the space, such as ambient sound and echo (Kopf 2006). This site-specific tour demonstrates how musicians interact with soundmarks while drawing attention to their vulnerability. Through ecomusicology, the study of these activities, music studies has merged acoustic ecology and ecological studies more broadly, as well as methods from media studies and ethnomusicology. Scholars are in a position to then use these disciplinary tools to analyse contemporary works, influenced by the relationship between music and environment.

Just as ecomusicologists and others seek to preserve the physical environment, so too are there are archivists, folklorists, anthropologists, and musicologists who advocate for preservation of recordings on vinyl, magnetic tape, wire and wax cylinders (Merrill 2007; Fullerton 2012). The sense of nostalgia attributed to recordings does not only derive from the information held on the recording medium: it is grounded in the medium itself. Pragmatically, it is common practice for institutions that have completely digitized their archives to retain the original documents, in case of digital artefacts introduced to the system. As digital standards rapidly improve, the reproduction of the original medium is deemed inadequate: an iterative process then becomes inescapable, attempting to revive decaying media through new and innovative digital conversion techniques and forms of interpretation that they afford. There is a resemblance to medical practices of gerontology and geriatrics as if the archive becomes a hospice for old tapes. In this instance, the ecomusicological allegory of the destruction of nature at the hands of humans has reversed: the natural materials of vinyl, wire recordings, and acetate age; they become brittle and lose their lustre, clarity, and eventually all of their information.

Digitisation becomes a palpable irony: conjuring up the nostalgic imagination of old recordings while the listener can hear the already-present crackles of degradation. It is apt then that those field recordings of inevitably fleeting music and culture are then recorded on media

destined to become obsolete themselves. Though my description of the archive is at first grim, it is the current relevance of the field recordings made by the pioneers of the practice that has reignited public interest in field recording. These recordists have developed theories concerning the philosophy of listening and media studies that are often based on the practice's thinly veiled and illusory sense of permanence.

The ecological approach illustrated in the analysis of field recordings also extends to that of perception. Take for example Eric Clarke's understanding of chordal relationships. While a chord may be perceived by the untrained listener to be a single entity (largely due to the timbral and dynamic similarities in performance), it may be understood through instruction that a chord consists of "a number of components…available in the stimulus information [that were] previously undetected" (Clarke 2005). An analogy can be made vis-a-vis field recordings: the perception of sounds based on significant components of the whole is the basis for Schafer's soundscape analysis. From the multiplicity of sounds, certain features are perceptually extracted for their significance in musical, environmental, and cultural terms

Listeners may adopt a particular attitude to further their empirical understanding of the soundscape. This may be understood in terms of Clarke's concept of subject position: "Part of a listener's experience of music is the manner in which he or she is invited to engage with the 'subject matter' of the music - seriously, ironically, authentically…" (Clarke 2005, p10). Clarke refers to an ecological framework as a dynamic logic which governs music perception. He contrasts this with the long-established 'information processing' approach according to which perception is based on a strict hierarchy of listening, from physiological sensation, through the cognition of form, tonality, meter, and scale systems, to a final stage of aesthetic valuation. This approach is problematic, as it imposes a hierarchy upon listening that does not accurately represent music perception. In contrast, an ecological approach to the perception of the music is based on the idea that "all knowledge rests on sensitivity" (Gibson 1966 cited in Clarke 2005, p32). This sensitivity to knowledge is affected by enculturation, and so reflexively affects listening perception. Referring back to the metaphor drawn from chordal relationships, the trained ear develops the capacity to understand the components of the chord. It is sensitivity to this knowledge that makes possible the aesthetic judgement of music and sound. Within field recording analysis, a self-conscious listening may be employed: one that focuses on the identification of object placement within a sonic environment. Self-conscious listening may intensify the feeling of presence within music based on movements within a tonal or rhythmic

structure, and the same applies to movements in and out of the immersive soundscape environments captured in field recordings.

Depending on the nature of the field recording style, many sonic attributes may be heard in the final recording that does not constitute music as defined in terms of rhythm, melody, or harmony. The longstanding notion of 'music proper' has been defined by reference to the canon. This territorialisation of music and sound denies the importance of many creative sonic practices. Field recordings can be conventionally musical at times, containing rhythmic, melodic, or harmonic patterning, but do not need to be in order for one to understand their importance as artistic work. Through analysis, we may come to understand that field recordings emphasise the importance of the medium in and of itself, extending the practice of listening beyond music making or documenting. The point can be made in terms of Steven Feld's acoustic stratigraphies (2010) and Marshall McLuhan's media ecology (1967).

Steven Feld's acoustemology - "the agency of knowing the world through sound" (2010) - deals with parameters of environmental listening and analysis similar to those of acoustic ecology. Speaking of his experience in recording relationships between music and environment in the Bosavi rainforest, Feld explains that "human histories are histories of listening, fabulously local eco-acoustic ways of place making…relational ontologies and their acoustemologies, their acoustic ways of knowing, tracking orientations to the world through sound" (Feld 2012, p126). The ecological approach developed by Feld is that of hearing "acoustically adaptive knowledge as co-aesthetic recognition…how each natural historic detail [has] symbolic value-added". This 'heard' knowledge is divided into components of stratigraphies, Feld's analogy for the act of stratifying layers of experiential listening to both a musical work and a sonic environment.

Like Schwartz's resonance theory (mentioned in Chapter 4), McLuhan's pioneering works in the field of media ecology predicate the development of stimuli, signals, and content to control environments through electronic media. McLuhan posited that when a new technology is more efficient than its predecessors or results in higher quality, it develops a new environment—a new context in which data is processed and interpreted according to the technology's socio-historical context: "New media are new environments. That is why new media are the message…[and] the old environments become art forms" (McLuhan 1967, p165). Thus, ecology leads our perceptual faculties to construct or augment our environment;

the post-production process of recording, for example, creates a controlled environment where sounds are emphasised to convey messages of place, space, and time. As ecology is a dynamic set of parameters through which we perceive, and environment denotes a sense of place, field recording encompasses both perception of music based on the medium and the act of place-making through immersive soundscapes.

Defining what exactly constitutes 'an environment' is useful for the analysis of field recording. The environment is commonly understood as an entity bound in the biological and social interactions of living and non-living things. The construction of place is wholly dependent upon the perception of the environment: a simultaneous occurrence of physiological sensation, psychoacoustic attribution, cognition of form, and aesthetic valuation. This place-making creates a reflexive relationship between the logic of understanding the world around us and the ways we change it based on our perception of it. Accordingly, social practices and technological and physical constructions are an integral part of the meaning of a field recording or soundscape.

For field recording, ecology provides the logic of the construction of place. It is the means by which the parameters of an environment are controlled. A sonic environment is constructed by a logic of perceptual listening and analysis, and in the case of a recording, a logic of composition. Field recordings present an ecology of acoustics and media, where the medium is embedded within the message, and the musical qualities extend into the medium itself. The sound recordists studied in this research (the members of the WSP, Tony Schwartz, Emory Cook, Steven Feld, and the sound art community) all embrace the recorded artefacts that pick up the acoustics in which performances are made, in some instances making these artefacts the focal point of the piece.

Using ecological frameworks of music, media and environment, I offer the hypothesis that we may be able to understand musical meaning in field recordings by way of soundscape analysis or component listening in a wider practice of critical listening. This involves listening to each component of a piece as experiential layers, similar to Monson's theorization of perceptual agency. Of the application of this practice to jazz, she writes:

> This practice of shifting the focus of attention is something that not only enriches the listening experience for audiences and consumers of recordings but is an integral aural skill for improvising musicians who must be able to

> locate themselves temporally and spatially and with respect to rhythm, harmony, melody, and the calls and responses of the other members of the band. The better one knows the tune the less conscious attention needs to be focused on the basics of its structure and the more attention can be freed up for aurally scanning other parts of the band for moments of improvisational opportunity. Perceptual agency as an embodied practice, it seems to me, is an aural skill central to musicians in many genres.
>
> (Monson 2008, p39)

Through critical listening in field recording, we may trace the histories of the performer or location, the performed content (i.e. song traditions), and the technology used to record this music. Implicit within this hypothesis is the suggestion that multiple ecological frameworks of listening can be employed as a relational practice within musicology. Field recording explicates the relational quality of ecomusicology by allowing us to listen into and pick apart components of a sonic environment, thus organising it for communicative understanding and its compositional value.

To illustrate the practice of critical listening, informed by theories of acoustic ecology, ecomusicology, perceptual agency, and media ecology, the remainder of this chapter focuses on two case studies. The first is The 78 Project,[24] a consciously anachronistic initiative used here to demonstrate the reading of experiential layers within recorded works through sonic visualisation. This is a simple empirical study that identifies sonic signatures within the medium. The second case study reviews the software program Geosonics, illustrating the usage of environmental field recordings and manipulation thereof for the creation of ambient musical works. Here I focus on what Truax refers to as 'the aesthetic dilemma' present in such works, suggesting that an ethical and cultural dilemma is present as well.

---

[24] Videos from The 78 Project are available for viewing at http://the78project.com/watch/

Case Study 1: The 78 Project

The music recorded through The 78 Project, an initiative started in 2012 to record songwriters using antiquated recording technologies, emphasises the perceived authenticity of low-fidelity acetate disc recordings. The number 78, referring to the rotations per minute of a disc during recording and playback, immediately alludes to the early days of song collecting in the USA. With a 1930s PRESTO direct-to-disc recorder and a 1950s Shure 51, filmmakers and producers Alex Steyermark and Lavinia Jones Wright create monophonic recordings of musicians performing music from the American folk song tradition. Available online, a series of short films chronicles the recording process and playback of a musicians' performance. The performers sit and listen with delight as they are transported to another era through the recording. Immediately we recognise the sense of nostalgia evoked in these recordings, both from the performance of American folk song ballads and from the acoustic qualities of the recorded medium. It is rather apt that the PRESTO is used above all other recorders, as it was the equipment of choice for Lomax (Rohter 2012, mentioned in Chapter 4). The recorder adds a sonic signature to the recordings made by Steyermark and Wright that intentionally links their project to Lomax's own initiative to create a survey of American folk song traditions.

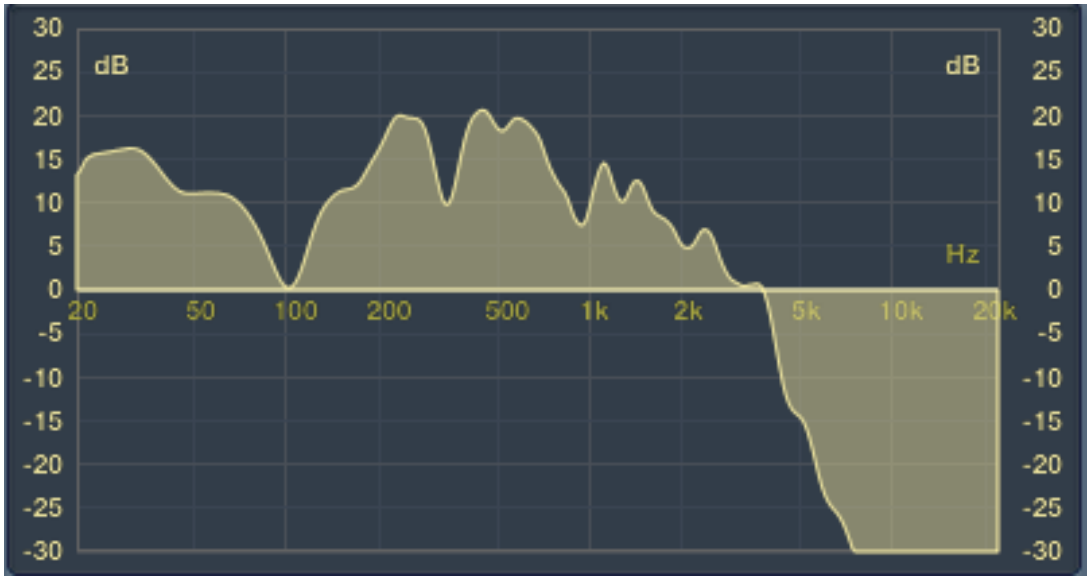

Figure 38: Frequency Analysis: "How Can I Keep From Singing", performed by Adam Arcuragi and recorded by Lavinia Jones Wright in Harlem, 2012[25]

This sonic signature I refer to here is of the recorder itself. Figure 38 presents the frequency data of a performance by Adam Arcuragi recorded in Harlem. The treble from 4.5kHz to 20kHz is nonexistent in this recording, and the bass steeply decreases in the 75Hz to 150Hz frequencies. For the listener, this recording is heard as confined to the middle audible frequencies of human hearing.

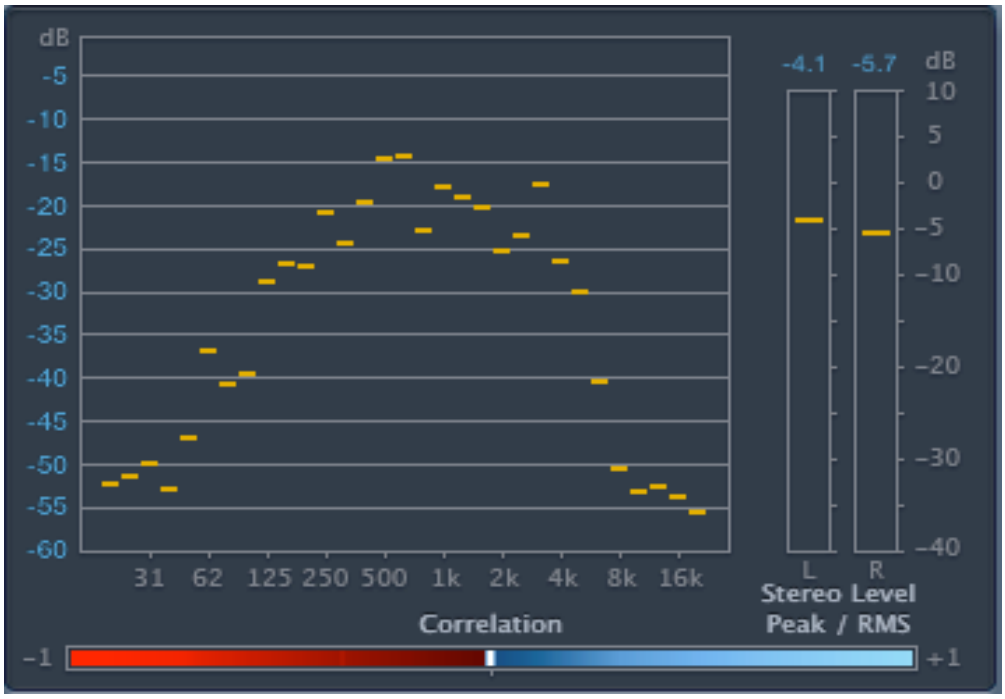

Figure 39: Multimeter Reading of Spectral Dynamics: "How Can I Keep From Singing", performed by Adam Arcuragi in Harlem, 2012. Spectral dynamics represent a mathematical analysis within a selection of audio, allowing for listeners to understand which frequencies are most prevalent over a given course of time, as well as their dispersion through the stereo sound field.

Similarly, the dynamic range is most prevalent in the middle frequencies, from 40Hz to 7kHz, as shown in Figure 39. Figure 40 illustrates noise of the acetate recording, modulating between

[25] Frequency analysis and Multimeter reading conducted using *Logic Pro*.

8.5Hz and 10Hz. While these frequencies are below the average range of human hearing, which cuts off at 20Hz, the sub-frequency vibration is felt rather than heard. The artefacts of the direct-to-disc recording technology bear significance within the social context of the musical performance. A moment in the history of recording is conjured up when the soundmark of the PRESTO is heard, and for that very reason the 78 Project is successful in creating spontaneous, Lomax-esque musical encounters (or at least emulating them convincingly). Consequently, the meaning of this sonic signature presents a dense network of associations to time and place making. This is a psychoacoustic experiential layer of the recording: a soundmark of the PRESTO recorder. A series of listening experiments were conducted by Daniel Leech-Wilkinson and Renee Timmers at the Centre for the History and Analysis of Recorded Music (CHARM), Royal Holloway University, based on taking modern recordings and adding the sonic signatures of 78s to them. In so doing, Leech-Wilkinson and Timmers demonstrated the significant effect of the recording medium on the listening experience.

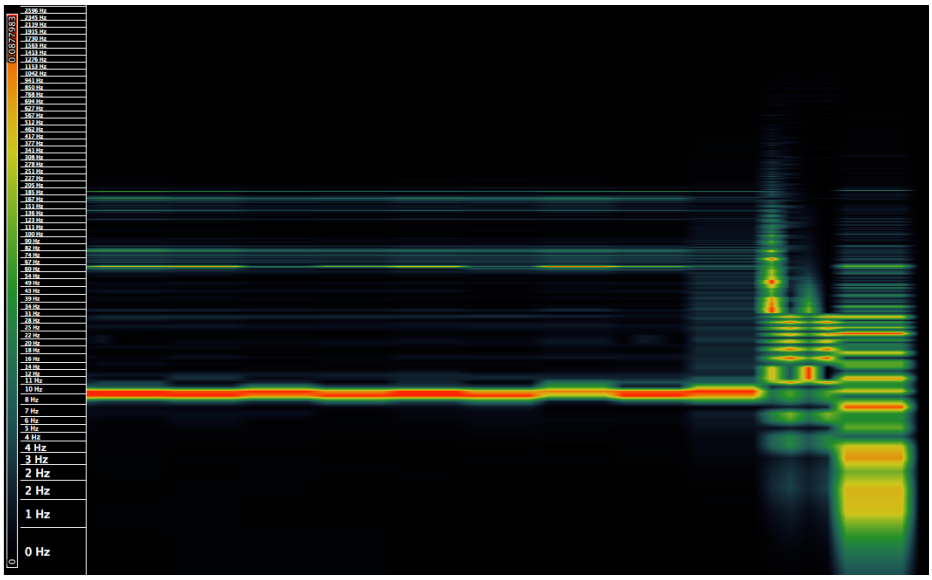

Figure 40: Spectrogram: "How Can I Keep From Singing", performed by Adam Arcuragi in Harlem, 2012.

Beyond a timbral or spectral analysis of the acetate recordings, the ecomusicological significance of the project emerges from the duality of these recordings-as-performances. The 78 Project overtly presents itself as an act of nostalgia by contextualising the practice within Lomax's Global Jukebox, and more recently interest in the recordings of Asch and the

Folkways record label. More subtle is the connection that The 78 Project makes with the present, and how it might extend into future media practices or comment on apocalyptic notions present within ecomusicological discourse. The 78 Project employs nostalgic messages as a means of formulating a creative practice, one that honours previous practices and encourages further performances-for-recording. This is in homage to Lomax's work throughout his life and the legacy left by Lomax's Cultural Equity, the online home of his research, and more generally a contribution to the performance of The Great American Songbook. Steyermark and Wright participate in this historically minded performance through the act of collecting and acknowledging Lomax's work in their full length 78 Project documentary.

The 78 Project may be seen as an acoustemological experiment in music making: performing for the field recorder, demonstrating listening memory through subject-position psychoacoustics, and constructing histories of listening as ways of knowing the sonic attributes of an environment. This practice and analysis present a dense network of musical meaning: time-space associations made by music technologies, the music traditions drawn on in the performance, and the sonic environment in which the recording is presented. In the same sense as Feld's stratigraphies, these are experiential layers of listening as they relate to their musical and social environment. The noise of the recorder is not significant in itself, but rather through its effect as a sonic signature that encourages specific performance and listening practices. For The 78 Project, recording using period technology relies as much on the recorder as a fetishised object as on its own antiquated status in recording practice.

My purpose in using frequency analysis, spectral dynamics, and spectrograms generated using Logic Pro and Sonic Visualiser is not so much to reveal positivistic truths about technology's psychoacoustic effect on listeners but to emphasise the observable quality of a sonic signature imparted by the recording medium. The frequency cut-off and dynamic compression characteristic of a lathe recorder such as the PRESTO machine, or of wire or analogue tape recorders, can easily be heard, and their colouration of performed material situates them within a history of sound capture. The consideration of such recordings as they are heard in the present day, linked to nostalgia and appended to a history of listening, is as much reflective of the recording medium as it is the listener, and in this way, it reveals multiple histories of listening. Creative practices employed within production processes reveal the uses of old technologies in the present.

Case Study 2: Geosonics[26]

While nostalgia plays an important role in the discussion of field recordings, it is merely one part of a larger discussion surrounding place-making. No matter the sound recorded, there is always an element of musicality embedded in social context, implying an aesthetic criterion tied to an enculturated practice. Another strategy employed by sound artists uses previously recorded soundscapes as a basis for further manipulation. Sound artists participate in an ecomusicological process of regeneration, bringing new and more vigorous life to recordings that are seemingly static in their documentary form. Recall from Chapter 4 that Schwartz used his sono-montage technique to identify the relationship between music and environment in his collaboration with Guiffre. By combining footsteps and room reverberation with jazz clarinet, his recording created the conditions for experimental musical improvisation and aleatoric composition. Teibel also used the sounds of the environment to create musical works at Syntonic Research Inc., albeit in locations without human interlocutors. His claim that "the future of music isn't music" points toward the musicality he heard in the environment, manipulated to sound purportedly 'more real than the real thing' similar to contemporary approaches to studio recording.

Identifying the relationship between sonic environments, aesthetics, and the politics of representation is precisely the problem Truax believes exists within all sonic works that employ field recordings. His writing on the aesthetic dilemma of sound artists formalises the discussion within academia. Though he has been wary of identifying field recording as an artistic practice throughout his career, Truax recognises the recorder as an instrument that both documents and manipulates sounds. A pioneer of granular synthesis, Truax used field recordings as the source materials for manipulation of spatial position, density, and layering to create new works. This compositional form demands creativity on the part of the recordist-cum-composer to make decisions of social and aesthetic consequence.

Much of what Schwartz and Teibel heard in the environment is expressed through soundscape theory, and further expanded upon by Geosonics, a software tool designed by Soniccouture for manipulating a library that includes field recordings made by Chris Watson. Born in

[26] http://www.soniccouture.com/en/products/28-rare-and-experimental/g44-geosonics/

Sheffield, Watson has been one of the most active environmental field recordists of the late 20th and early 21st centuries. He performed as a member of the experimental group Cabaret Voltaire throughout the 1970s and early 1980s. He then established himself as a recordist, contributing to radio, film, and television series such as BBC's Planet Earth. In 2010, Watson collaborated with children at the Alder Hey Children's Hospital in Liverpool, creating soothing sound recordings meant to calm other patients during injections—a project that bears striking resemblance to Schwartz's sound documentaries that feature children, as well as the ethos of Teibel's *Environments* series. Watson has gained acclamation amongst sound artists for his close-proximity recordings of wildlife, unique recordings made with hydrophones and contact microphones.

Figure 41: Screenshot of Beach Hydrophones window from Geosonics.

Soniccouture is a software company founded in 2005, run by Dan Powell and James Thompson. Formed as a boutique software enterprise, Powell and Thompson develop virtual instruments that utilise sample libraries, which can be manipulated through graphical user interfaces. Designed specifically for composers and producers who already use digital audio workstations and MIDI keyboards, their instruments are integrated into popular production software such as Ableton Live (commonly used amongst DJs and producers) and Native Instruments Kontakt. Their software and sample libraries include instruments from outside the Western Art Music canon, such as hang drums and the Balinese gamelan.

Amongst the programs designed for electroacoustic composers, most forms of synthesis rely on coding to trigger automation. Popular programs such as ChucK, FAUST, Max/MSP, Pure Data, Reaktor, and SuperCollider all require a comprehensive understanding of coding language. They are very powerful musical tools, but there is a substantial learning curve for musicians unfamiliar with programming. Powell and Thompson have created an alternative by reducing these complex computational operations to scripts generated by simple actions. This is an effort to introduce these complex algorithms and computational operations to producers who are used to graphical user interfaces rather than terminal commands. As with many other digital music applications, the keyboard, button, and rotor layout, similar to an analogue synthesiser, makes the program highly approachable for the average computer user.

Raw recordings of landscapes recorded by Watson can be transposed up and down by 36 semitones using the pitch bend wheel or rotor dial respectively shown at the bottom left and upper right corner of the GUI (Figure 41). The stereo width of the field recordings can also be manipulated by the Width control, placed on a virtual rotor (under the bracketed section EDIT). The interface allows for manipulation via low-pass and a high-pass filter, as well as LFO filters. A 'Mutate' button (under the bracketed section FILTER) chooses random effects to apply to the current loaded instrument patch. When pressing the shift key in addition to the Mutate button, the randomisation effect is made more drastic. Other operations include timing, velocity and pitch manipulation, while an arpeggiator allows for the recordings to be further abstracted from their original source.

Geosonics comes loaded with collections of samples commonly found on digital synthesizers, which can be layered over one another. These 'curated' sets include control voltage signals

with pre-applied filters (such as sine waves and sawtooth patterns), string samples, and also pre-processed versions of Watson's field recordings. Select samples have been pre-processed using Digital Signal Processing (DSP), including the granular synthesis developed by Truax.

Whereas in the previous case study the purpose of analysis was to divide the work into components and reveal experiential layers of listening, this case study requires just the opposite. The compositional tool itself presents recordings and manipulation tools for layering filters of a single sample, identified via the graphical user interface. This is a reverse engineering of clairaudience: the components are already divided and labelled, thus requiring none of the effort of critical listening. Though the resulting compositions possess a wide harmonic and textural range, they are stripped of their geolocative context (save for the single background image of the location indicated in the interface window). The soundscape then becomes wholly acousmatic, relying on perceptual agency for contextualisation. Geosonics is a tool that uses the exact same compositional methods as the WSP, but for the exact opposite purpose. There are no liner notes, no maps or visualizations to reference. The resulting compositions represent a curious result, likely unintended by Watson and the Soniccouture team: to evoke a schizophonic response.

The application of soundscape composition to ambient works is by no means a new phenomenon. Compositions that use wind, waves and other soothing sounds are often the basis for New Age music, though like Teibel's compositions, Geosonics is not labelled as such. At $180 USD – with a user requirement of the $400 Native Instruments Kontakt or the $450 Ableton Live - the program is clearly targeted at professionals and the niche consumer, likely composers for film and amateur sound artists.

Two questions arise from this form of composition. Firstly, do these compositions' relationships to experimental music - rather than New Age - only exist because of their context and affiliation with Watson? As with the case of Teibel's music, it seems that the distinction between genres is established solely by the professional and social context of the composer. Like Teibel, Watson works primarily with artists who produce experimental music and documentary media. Secondly, and far more importantly, does the methodology of soundscape composition reveal an inherent incongruity in the production of works purportedly created in the name of environmentalism? To ask this question is to interrogate the legacy of the soundscape.

One can turn to the history of science and technology for a greater understanding of how research into nature has gone hand in hand with its destruction. In "The Death of Nature" (1983), ecofeminist and philosopher Carolyn Merchant traced a history of the shift from organic cosmology to the natural sciences. Citing Francis Bacon, she identified the ways in which early scientific research dominated nature for human gain:

> The mechanistic view of nature, developed by the seventeenth-century natural philosophers and based on a Western mathematical tradition going back to Plato, is still dominant in science today. This view assumes that nature can be divided into parts and that the parts can be rearranged to create other species of being. "Facts" or information bits can be extracted from the environmental context and rearranged according to a set of rules based on logical and mathematical operations.
>
> (Merchant 1983 p290)

While Merchant's text does not touch on the relationship between sensory studies and the environment, her observation that the natural sciences extract information from the environment is precisely the methodology employed by soundscape composers. To what extent, then, is soundscape composition complicit in a manipulative and destructive process? Is 'nature's rule to art' ironically subverted and unintentionally undermined by Geosonics? When the soundmark is impossible to identify and is used ad hoc, is component listening in fact detrimental to the sonic environment?

While the intentions behind soundscape theory are often discussed, that does not apply to the effects on its listeners. Geosonics creates a form of artistry that relies on source materials that have already been manipulated and can be automated by pressing a short series of buttons. It is not just knowledge of the location that is bypassed in the creation of compositions with it: the same applies to recording process and electroacoustic manipulation. Referring to electroacoustic music such as that emanating from IRCAM, acoustic ecologist and sonic researcher John Levack Drever writes:

> A common facet of soundscape composition is that acousmatic music aesthetics and its concomitant technical innovation drive work. Such work bears little correspondence to the site of study, unless that site is where

> acousmatic music is a feature of the prevailing culture, otherwise such work will convey to the listener more about the composer's cultural clique and listening habits than of the intended field of study. Critical reflexivity should expose such tendencies and offer solutions. Perhaps through the unfolding of the work, artefacts derived from acousmatic music aesthetics could be peeled away.
>
> (Drever 2002 p25)

But in the case of Geosonics, the composer does not possess the tools or the information for 'peeling away' the layers of abstraction (though a critical listener might identify the effects used): components of the soundscape are pre-extracted for synthesis by Watson and the Geosonics developer team. Innovative compositional programs like Ableton Live and Native Instruments come with templates and presets that do not require knowledge of musical theory, and in the same way, Geosonics comes with soundscape libraries that do not require knowledge of their origins and significance: to contextualise these compositions would require discussion with Watson about the provenance of the recordings, and a trip to the location. Under such circumstances, Truax's aesthetic dilemma is more pertinently a cultural or ethical dilemma. Adding insult to injury, even the most environmentally conscious field recordings will, in Father John Misty's words, "leave behind things that won't decompose".

This has led field recordists to conduct ethnographic research of and through auditory media. As Drever suggests, a gentler hand and a more critical compositional approach can make use of the tools developed by the WSP in what is being called sonic ethnography—a field of composition that uses field recordings to better know communities and cultures. This field borrows methods from soundscape composition to immerse the listener in a sound field and cultural context. Chapter 6 will present some existing ethnographic techniques through multimedia, as well as offer new approaches to sonic ethnography. The chapter will focus on the contextualisation of field recordings as purposefully self-interrogating, scholarly works.

Chapter 6: Sonic Ethnography - Recording as social engagement

In the first two decades of the 21st century, in what Sterne has called the 'auditory turn', field recording has become a methodology formalised by artists and scholars. Contemporary art has rethought the prioritisation of the senses, shifting the balance of seeing and hearing. Since the 'auditory turn' of the late 70s, marked by soundscape studies composition, ocular-centrism has been replaced by audio fetishism.

But, as mentioned in Chapters 4 and 5, it remains devoid of an ethical framework. Whereas visual ethics in photography and videography are a mainstay of academic research, litigation, and our private lives, the same cannot be said for sonic materials. In an effort to reconsider our relationship to sonic materials, methods have been deployed through departments that regularly use sound recordings but do not focus on them: for example, film studies centres and journalism programs, as well as music, media and anthropology departments. Out of these ubiquitous and stable institutions come smaller research cells that focus on the importance of recording, composition, and manipulation. These include not only the WSP, as mentioned in the previous chapter, but also the Sensory Ethnography Lab (Harvard), the Sonic Arts Research Centre (Queen's University Belfast), The Sonic Art Research Unit (Oxford Brookes) and the Unit for Sound Practice Research (Goldsmiths, University of London). In the case of the WSP and others, these venues for sonic research started with soundscape studies, and have quietly begun research in sonic ethnography.

Sonic ethnography is a methodology composed by the necessity and the particularity of place. Firstly, sonic ethnography aims to capture unique acoustics that, as identified in my analysis of Gould's "The Idea of North," have semantic and semiotic meanings (see Chapter 4). Secondly, sonic ethnography dictates that a recording must be made in a location that represent a socio-cultural performance specific to a group, be it a community or culture. It uses compositional techniques to condense and manipulate social, political, and historical narratives. Considering that "ethnographic truths are always partial" (Dunbar-Hester 2012, p153), the manipulation of recordings in consultation (or collaboration) with the communities they are about has the possibility of enriching previously recorded materials. Sonic ethnography is a collection of methods that include and then move beyond Drever's assertion (2002) that soundscape composition is "the convergence of ethnography and acousmatic music," and further emphasises the socialisation of sonic environments. Whereas soundscape composition, as Budhaditya Chattopadhyay writes, is "a juxtaposition of field-based

ethnography and artistic practice incorporating environmental sound as basic ingredients" (Chattopadhyay 2012, p67), sonic ethnography treats sonic materials and the manipulation thereof not as the end, but as the means of understanding communities and cultures. One might call it 'applied composition', on the model of 'applied ethnomusicology'.

Sonic ethnography does not only focus on the prospects of recording with an ethnographic ear: it also takes into account the materials used and critiques the ways in which archival recordings were collected. In this respect, this entire dissertation is an example of doing sonic ethnography through historiography and social critique.

Some uses of sonic ethnography in and out of academia are:

- Documentary films that incorporate diegetic sound embodied in the medium and marked by the embodied act of recording;
- Immersive educational experiences, such as interactive sound maps (as discussed in the previous chapter) or releases of field recordings that use multimedia and transmedia;
- Sound installations, radio pieces, and physical/digital releases produced in collaboration with interlocutors and their communities; and
- Repatriation of intangible cultural heritage, such as retroactively attributing rights of recordings to families and/or communities.

As will be shown throughout this chapter, sound artists and ethnographers in the 21st century have begun to experiment with new forms of multimedia representation. Despite the prominence of the written monograph as the product of ethnographic research, methods from digital humanities are being adopted with increasing frequency by the social sciences and the arts. This chapter focuses on modes of critical listening, both ethnographic and embodied, and on some possible resulting sonic materials. I argue that these forms of listening are not mutually exclusive and that they are in fact useful to gain a wider perspective for active listening.

I begin with an explanation of relational practice in field recording, showing how the collection of sonic materials can be critiqued as best (or worst) practices according to an

emerging auditory ethical framework. These sonic practices encourage "a rethinking of both aesthetic and cultural representation" (Russell 1999, pxi). Accordingly, I explore ways of treating field recordings as art objects and documentary artefacts. To explain this process, I draw from works of George Cashel Stoney, a Canadian filmmaker working with the National Film Board to develop techniques of collaborative filmmaking and democratic media.

I will focus in particular on an emerging technique for socially contextualising field recordings in documentary film: this goes beyond the capture of voice in interview or ambience in order to give viewers an enhanced sense of immersion within the multimedia environment. Such experimental documentaries use embodied listening and soundscape composition to demonstrate relations in narrative and non-narrative film. If field recordings are indeed simultaneously cultural artifacts and art objects - which is the primary drive of this dissertation - than they are bound up within complex and identifiable socio-economic networks that can be deconstructed and composed with aesthetic and ethical considerations in mind.

The Responsible Sonic Act

Field recording is, of course, a sonic act: a technological progression from oral and written accounts that documents and describes events. Technological advances allowed recordings of acoustic events, which at first were meant to solve the problem of subjectivity. However, field recording only complicated matters further, by presenting media that was still highly subjective (in terms of audio editing and microphone placement) as objective source material. This encouraged sound artists to create works that elucidate the presence of the recorder and recordist. A recent example is Seth Cooke's *Four No-Input Field Recordings* (2013). Released on the aptly titled online imprint Every Contact Leaves a Trace, Cooke's recordings were made in Bristol and Portishead over the course of a year. In listening, the locations could be taken to be seemingly meaningless or too heavily veiled by the distortion of the preamplifiers to be heard at all. However, the microphone preamps pick up radio frequencies and other wireless signals that cannot be heard by the naked ear alone, revealing a sense of place captured only in the unique conditions Cooke has exhibited through the recorder. This frequency pickup reveals the ways in which all recordings leave a technological trace.

Given the compositional nature of field recording, and its nascent recognition in varying academic disciplines (notably media arts and communications), how might ethnographers respond to the claim that every contact leaves a trace, which is to say that every encounter has

a social impact? Returning to the beginning of this dissertation and paraphrasing Veit Erlmann, how can embodied recordings aid listeners to 'hear culture'? How does a scholar act as responsible 'earwitness'?

One strategy for responsibly linking sonic practices is not by comparative study, but by relational analysis, here understood in the context of Nicolas Bourriaud. In *Relational Aesthetics*, Bourriaud describes a relational art practice as one that relies on "human interactions and their social context" (Bourriaud 1998, p84). Bourriaud's text encourages the social study of art practice and performance. He asks the reader, how might the documentation and analysis of performance interactions manifest itself? One potential solution to the inherent ephemerality of performative interactions is through empirical scholarship based on recordings, through which musical events are made available for repeated analyses. While there remain obvious limitations to what a recording can capture, it creates a simulacrum of the actual performance for analysis and interpretation of a specific event. The ability to analyse and reinterpret particular performances challenges what a musical work is, and reveals the possibility of treating recordings, not as texts but rather as traces of events.

Like the sensory ethnographer, musicians of contemporary genres understand that multimedia may be suited to their music better than conventional forms of notation. A jazz musician knows that one cannot notate the shouting of encouragement from the audience during a bebop performance, just as a punk band knows that it is impossible to transcribe the cacophony of slam dancing during a concert. Multimedia allows musicologists the opportunity to identify elements of the music that are tied to the social act of performance. And if musicology is indeed a study of musical events, and experiences through documents, then none are more palpably demonstrative of the materiality of their documentation than recordings.

Aforementioned examples from sound recordists Tony Schwartz and the WSP (see Chapters 4 and 5) explicate a narrative of relational practices using field recording, demonstrating the social contextualization possible within the medium. One example of field recorded relational practice is in Schwartz's sound documentary, wherein he narrates the sounds of a locale, be it music, traffic noise, or children playing. Schwartz's sono-montage practice gave way to the soundscape and to the sonic practice of the WSP's soundwalk, where environmental sound narratives are explicated through the act of touring a set of locations that contain soundmarks.

The WSP community radio series, initiated by Hildegard Westerkamp, used interviews with Vancouver residents and environmental sound to create sonic narratives drawn from individual and collective experiences of noise pollution. Steven Feld's recordings in the Bosavi rainforest condensed days and entire seasons into hour-long sessions, allowing us to listen in to local narratives. These examples in particular use and further develop methodological frameworks of soundscape composition with community participation. What is not formalised, however, is the ethical approach.

Returning to the problem of auditory ethics in field recording methodologies, let us begin with the collection of recordings by new media-oriented journalists. A useful guide to 'bearing witness' is provided by the hour-long weekly radio program, On the Media, hosted by Bob Garfield and Brooke Gladstone. Produced by WNYC in New York City, and part of National Public Radio, On The Media's programming focuses primarily on journalistic methods that use mobile technology, as well as the First Amendment rights of Americans.

✂ CUT OUT AND TAPE NEAR YOUR COMPUTER OR TV

BREAKING NEWS CONSUMER'S HANDBOOK

Bearing Witness Edition

1. Hold your phone horizontally. It captures more of the action.
2. Keep your phone charged. So obvious. So easily overlooked.
3. Keep your distance. It not only protects you from charges of obstruction, it makes better videos.
4. Keep your mouth shut. Your mouth is closest to the phone's mic. If you comment (or yell) your voice will drown out the sound of the action.
5. Keep cool. Be respectful to police. Don't lose your temper, even if they do.
6. Know your rights. It is legal to film police, at least on public property. You don't need their permission, nor must you comply with requests to cease.
7. Get details. When the action's over, glean the who/what/where/when to provide context when you post the video. Talk to the officers, too.
8. Edit, but don't manipulate. If a video's short, it's more likely to go viral.
9. There's an app for this. The ACLU's Mobile Justice (or Stop and Frisk) apps can keep your video safe even if your phone is confiscated.
10. Go to the media. It's the best way to encourage virality.
11. But first, be considerate. Consider who is on screen and whether the family should see it first.

ON THE MEDIA

Figure 41: On The Media's Breaking News Consumer's Handbook Bearing Witness Edition available from http://www.wnyc.org/series/breaking-news-consumers-handbook

Apart from being hosted on the WNYC website, this guide (see Figure 41) is circulated through social media during national crises, riots in large American cities, and natural disasters. This simple list is meant as a helpful reminder to those 'close to the action', who have the means to approach the site of breaking news. The guide is meant to encourage responsible citizen journalism, and to protect those who capture footage that a news outlet may deem valuable. However, consider what is at stake when receiving consent during events where the recorded subjects are under duress. Can one claim to have proper consent, even if it is captured on audio or video, when the people recorded are pressed for time to consider the implications of their decision?

Further issues arise when 'stealth recording' is incorporated into the capture of events. Sound recording has become inexpensive, miniature, stealthy, and largely unobtrusive - save for the

microphone itself. Even then, there are lavaliere microphones with a noise floor low enough to capture ambience, most notably used by Chris Watson (see Geosonics in Chapter 5). But many social scientists and fine arts scholars use simpler setups that have microphone capsules, preamplifiers, and recorder in a single unit. Presently the most popular unit is the Zoom H4n, a small stereo recorder with particularly high fidelity.

Body-worn cameras and microphones are within economic reach of many consumers. And while the guide is designed for capturing video, there are important considerations to be made for audio as well. In a recent article concerning the viability of recording in public spaces, Mok, Cornish & Tarr examine the legality of audiovisual capture:

> In general, the question of the ethical acceptability of recording in public places is a grey, and changing area…Laws and regulations on filming in public places vary between countries, for example, France does not permit public filming in all public places, while the USA and the UK do, with some restrictions depending on political context. Moreover, norms, customs, and laws evolve in tandem with changing technologies and uses of those technologies.
>
> (Mok, Cornish & Tarr 2014, p312)

In addition to this, The Reporters Committee for Freedom of the Press has published on the limits of citizen recording:

> Courts and the government have made it illegal for information gatherers and others to engage in any of the following activities (Always keep in mind, however, that these prohibitions may not apply to law enforcement and other government officials):
>
> Bugging a room, secretly monitoring telephone conversations (to which the recording subject is not a party) or intercepting computer communications (publishers [newspapers, blogs, etc] may, however, disseminate illegally taped conversations if they are of great public interest and the publisher broke no law in acquiring them);

> hacking into telephone systems to acquire previously recorded conversations; and acquiring a person's phone records from a phone company by posing as someone authorized to see the records.[27]

For those who work within research institutions, there are additional steps toward receiving consent even in regards to bringing a recorder to an event or interview. As mentioned in Chapter 4, research ethics boards in the UK, Canada, and the USA require assessments of the risks involved in recording. However, recording in open-air spaces remains uncategorized: they are not qualified as interviews or performances. Like the laws and regulations that Mok, Cornish & Tarr identify, it is evident that grey areas remain in public spaces.

If one is to consider an open-air space as belonging not to a particular legal entity but to a community, then the issues involved in sonic ethnography are not legal but rather involve the ethical and moral imperatives of best practice. Take, for example, the recent cultural repatriation of recordings at Smithsonian Folkways Recordings. In "Sound Returns: Toward Ethical "Best Practices" at Smithsonian Folkways Recordings," Sita Reddy and D.A. Sonneborn voice questions, concerns, and an appreciation of the cultural value of sound recordings in museum exhibits and record distribution:

> While returning control over the use of a recording such as this is an important goal in theory, it raises several questions in practice. How should privacy, and restricted access to traditional knowledge, be balanced against greater public access to such material? What are museum obligations to balance respect for the privacy or secrecy of those groups who were recorded, with requests to hear and study them?…Archives of recorded music are not only sound sites, they are also contested sites of power, sites of reinvention, and self-determination. If we treat these diverse recordings as mere records or documentation of information about music traditions (some of which were recorded more than 70 years ago), we may end up reifying stereotypes about indigenous groups, denying them some capacity to recover their own traditional

[27] See more at: http://www.rcfp.org/browse-media-law-resources/digital-journalists-legal-guide/legal-limits-recording-conduct-and-conver#sthash.26prpAGl.dpuf

> resources for creating their own futures. But if we see the full social capacity of recorded songs (in terms of the real cultural work that they accomplish), and if we try consistently to redistribute this power and knowledge—to ethically transfer control over use—we will be in a better position to articulate the mission of museum collections.
>
> (Reddy and Sonneborn 2013, p133,136)

The practice of sonic ethnography requires that practitioners participate in the 'cultural work' of recording by working with the individuals and communities to whom the recordings are attributed. In this dissertation, I have examined the process of recording in an ethnographic context, often to reveal the way that recording compilations 'filter out' subtleties within a community or culture (for example, the use of wax cylinders to record and eventually represent indigenous and minority communities, and the creation of folk music anthologies, both discussed in Chapter 4). Treating the process of recording and production as a component of ethnography during the process provides researchers with a greater understanding of what the potential effect might be. Further, making the distribution network accessible to the community and open only to those approved by the community shifts the conventional power relation between recordist and recorded, and sets a precedent for collaboration with minimal compromise.

Democratic Media

The late George Cashel Stoney, a pioneer of filmmaking at the National Film Board of Canada, explored how audiovisual narratives can be created through collaboration. During his career, he developed 'democratic media', an approach to media making that valued both the financial cost of the medium itself and the structure of collaborative filmmaking:

> My own feeling is that film tends to dominate. Film tends to stereotype. Film tends to glamorize. Film tends to exaggerate. Videotape is a much more malleable medium. People don't take it so seriously because they can do it themselves. You've got the immediate playback which both de-mystifies it and makes it immediately apparent.
>
> (Stoney and Bennett 1973 p67)

Stoney's claim that "film glamourizes" is an acknowledgement of the complex technical processes involved in production as well as the aestheticisation of subjects. This is analogous to the recording studio, which dramatically affects the recorded material (as I have spoken about at length throughout the dissertation, particularly at the beginning of Chapter 3). Stoney goes on to discuss the aesthetic value of tape.

> And I think the only time that videotape doesn't hold up to film is when you want to show it to third parties, that is people who don't know the people involved. I don't have that kind of intensity of interest that you're required to have to watch that little screen intensely. Also, when you're trying to build a great unity in a group…I don't think we would have gotten the same group response with video. On the other hand, we're transferring a lot of that film to video for later use. One of the reasons I like video so much is that I can do it without a crew so that as an artist I feel much more in tune. I'm not having to work through lots of other people. Secondly, it's so much cheaper. So, for the first time in my life I haven't had to worry about the cost of shooting.
>
> (Ibid)

Much of what Stoney says about videotape crosses over to audiocassettes and digital audio tape (DAT) of the same era. Even wire recording, an early predecessor from the 1950s, was inexpensive enough to be purchased by consumers, as Tony Schwartz did for his recording network and subsequent releases. The democratisation of media is first an economic consideration, one that came in audio long before it did in film/video.

Just as Stoney delights in the access to inexpensive video equipment, we might today do the same concerning audio equipment. Most phones have some capacity to record sound, and therefore can be considered field recorders, albeit rudimentary ones. As discussed in the opening chapter of this dissertation, the availability of recording devices and social networks with which to share them allows us all to be producers. What then is possible when we consider that the materials for creating sonic artefacts are already embedded within the daily lives of our interlocutors? But Stoney's definition of democratic media has a second, and far deeper, meaning. William Carroll and Robert Hackett explain the role of activism in media making:

> Media activists differ not only in their social sources but also in their sites and strategies of intervention. Sites of intervention can be mapped in relation to successive stages in the political economy of encoding and decoding of media texts.
>
> Provisionally, these include the following:
>
> first, the institutional architecture of media organizations, including the technology, funding, control and access to production and distribution;
>
> second, the production process within media organizations (including notions of ethics and professionalism, as well as daily routines and relationships with sources);
>
> third, the content, or texts, frames, messages and programmes disseminated through that production process;
>
> fourth, media audiences, whose attention to and negotiation of the multiple but structured potential meanings of media texts condition the latter's ideological effectivity;
>
> and fifth, the cultural and structural 'environment' of communication institutions, including state policies towards the media.
>
> (Carroll and Hackett 2006, p85-86)

Stoney's holistic approach to media making can be translated into the creation of collaborative works in sonic ethnography. Taking into consideration the power relations established by a recordist holding a socially valuable piece of technology, the structure of the relationship can be augmented by:

- Providing community members with recording equipment;
- Including them in the process of editing materials;
- Using their own words and testimonials to develop textual materials related to the resulting composition;

- Giving the community control the of the dissemination of recordings; and
- Creating working models of institutional best practices.

This form of media making has been employed in field recording by artists and research practitioners alike. Many social scientists and ethnomusicologists, notably Feld, use their field recordings and transmedia works as a form of activism.

Sound Design and Audio Vérité

As identified in scholarship by ethnographers interested in observation and responsible intervention, field recordings may act in a similar manner to cinéma vérité (Feld 1990; Erlmann 2004; Karel 2011). Significant innovations in media ethnography came from the films of Jean Rouch, who pioneered the core practice of cinéma vérité: filming in the first-person to develop a direct connection between audience and subject (to be discussed further toward the end of the chapter). Rouch was concerned with the 'othering' of cultures in textual accounts of ethnographic research, and the claim to objectivity inherent in the 'fly-on-the-wall' style films of anthropologists. Matthew Losada writes online for Senses of Cinema (2004) that "Rouch addressed this imbalance by switching [the] medium from written academic discourse to the sounds and images of a filmmaking model that did not elide the presence of the (European) observer." The ability to convey the notion of mediation in filmmaking through the first-person mode gave ethnographers the tools necessary for an inquiry into both the study of cultures, as well as the European audience's reception of their own research. This reflexive critique of culture and of those who wrote it was instrumental to media and sensory ethnography, and to developing the connection between art practice and the social sciences.

Here I will examine the relationship between diegetic sound and narrative in documentary cinema, where techniques are used to draw focus to auditory information as a primary stimulus. These techniques have been developed by filmmakers, composers, and sound artists to promote critical listening. One early example of this technique is found in the work of Walter Ruttmann. His experimental film without images, "Wochenende" (1930), used an immersive sonic experience intended to make the audience visualise the imagery that might accompany the sounds. This approach to sound design in cinema is closest to cinema vérité where the immersive quality of the sound is meant to give the audience the experience of being in the scene.

If you search online for Audio Vérité, perhaps the first thing you will find is *Shut Up Little Man! – An Audio Misadventure*. This is a series of audio documentaries-cum-films, a long-term voyeuristic endeavour that is an observational film without an ethical imperative. According to Wikipedia[28]:

> Shut Up, Little Man! is the title of audio vérité recordings of two argumentative and violent alcoholics, Peter J. Haskett and Raymond Huffman in San Francisco. The recordings were made by 'Eddie Lee Sausage' and 'Mitchell D.', who lived in a bright pink apartment building dubbed the 'Pepto Bismol Palace' in San Francisco's Lower Haight district. Eddie Lee and Mitchell moved into the apartment in 1987, and discovered that their neighbours, Haskett and Huffman, argued nearly constantly, with Peter often shouting 'shut up, little man!' at Ray. Eddie and Mitchell began tape recording the arguments, and distributing copies among their friends.

Audio recordings of Haskett and Huffman are later accompanied by puppets re-enacting their arguments.

The voyeurism witnessed in "Shut Up Little Man!" may exist in anthropological film and observational documentary. Given the messiness - or multi-directionality - of sound, the same sort of recordings might be picked up in filming. Examples of this are also found in documentary cinema. In "The Act of Killing," Joshua Oppenheimer facilitates the documentation and dramatic re-enactment of scenes from the Indonesian genocide with the perpetrators themselves. The murderers are seen discussing some of the finer points of their cinematic portrayal of a genocide they committed decades ago, thus emphasising the perversity of their re-enactment. The final scene shows one of the perpetrators, Anwar, having an epiphany: the murders he has committed were not heroic. He begins to feel remorse and begins to retch as if he is attempting to release his inner demons. This painful scene is effective not because we watch him heave, but because he does so directly into the lavaliere microphone, far too close for the audience's comfort. This is an example where the sound not

[28] Shut Up, Little Man!, 2015. Wikipedia, the free encyclopedia.

only dictates the image but also is guided by embodied sounds. He heaves not into his handkerchief, but somewhat grotesquely - and to great effect – into our listening ears. Incorporating the recorder into the narrative of the film can add impact to a scene, for example in Errol Morris' final scene of "The Thin Blue Line," where a murder suspect concedes guilt after his trial to the rolling cassette tape - and in so doing proves his alleged conspirator's innocence. In this case, the visual framing reinforces techniques of focused - but not critical - listening.

In *Conventions of Sound in Documentary* (from the seminal text "Sound Theory/Sound Practice"), Jeffrey Ruoff speaks to the pragmatic usage of sound in documentary film:

> Because scenes in observational films are not usually shot under optimal conditions, such as those found in a Hollywood studio, the sound track lacks the clarity and directness signifying that the sound was created for the listener…. Location sound recording in observational documentaries does not clearly differentiate foreground and background spaces; rather, all sounds compete together in the middle ground. The lack of clarity of the sound undermines the communicative intent of these films.
>
> (Ruoff 1993, p26-27)

While true for many films, Ruoff's statement understates the ability of location recording to create creative possibilities for knowing through sound. In contrast to Ruoff's statement, Samuels et al. recognise the potential of sound recording techniques as demonstrated by the very different ways in which they can be used:

> Recordings have always included some representation of the space of performance, ranging from close-miked recordings, which seek to create the artifice that the performance is occurring outside of any physical space whatsoever (Brady 1999), to the classical concert-hall recording approaches, which seek to position the listener as an "ideal ear" (or ears) in an audience (Chanan 1995), to spaces that are invented, imaginary, or in which the spatial features are themselves part of the composer's (or producer's) compositional palette.

(Samuels et al. 2010, p337)

Listening to sound in audiovisual works has most famously been characterised by Michel Chion in his text "Audio-Vision." Chion locates three modes of listening in cinema: causal, semantic, and reduced. He writes that "Causal listening consists of listening to a sound in order to gather information about its cause (or source). When the cause is visible, sound can provide supplementary information about it…When we cannot see the sound's cause, sound can constitute our principal source of information about it" (Chion 1994, p24-25). In a field recording, spatial information is gathered through causal listening, locating objects and subjects within a sound field. In contrast, semantic listening "refers to a code or a language to interpret a message: spoken language...as well as Morse" (Chion 1994, p28). Reduced listening "treats sounds, whether they be verbal, played on an instrument [or] noises, [as] the object to be observed instead of as a vehicle for something else" (Chion 1994, p29). This form of listening treats all sound as acousmatic, embodied within space and form, inhabiting and moving between bodies and spaces. In observational cinema, sound does not have to be in temporal sync with the image: it can further a narrative while the image lags behind, or complete a sequence while the images change. Cinema manipulates the sound field of a room, be it on the silver screen or small screen, and replaces it with a shared immersive sonic environment through loudspeaker reproduction.

Soundscape analysis may benefit from Chion's modes of listening. A soundscape composition may include narration or dialogue that further situates all the other sounds heard within the context of a theme, social issue, or historical context. For example, Soundwalk Collective's *Kill The Ego* (2013) uses field recordings of New York City collected from 1998 to 2008, interviews with city residents, and music by DJ Romon Yang AKA Rostarr. Each component of the piece invites a different mode of listening. The field recordings, mostly comprised of the sounds of transportation, markets, and major city landmarks, operate within the causal mode. Soundmarks locate the listener within the sonic environment of New York City, a common practice in urban phonography. Field recordings used by Yang are interspersed with spoken word and poetry describing the city, which encourages semantic listening. The spoken words, as well as the music composed by Rostarr, act as descriptors of the sonic environment, simultaneously activating causal and semantic modes of listening. However, there are also moments within the piece where all of the sounds - environmental, spoken word, and music—coalesce into a mosaic of noise and textures. These sonic events encourage reduced listening,

shifting sound and meaning into the realm of the space of the acousmatic. Pierre Schaeffer would have referred to this as an instance of a recording becoming an 'objet sonore,' where "a misrecognition of the recording itself as an object" occurs (Dyson 2009, p57). However, the result of this noise is a new understanding of the sonic textures. They are not stripped of their meaning, only contextualised in their new relation to one another. The sound of a poet and the screeching of a subway car suddenly demonstrate resemblance to each other.

Kinaesthetic Listening

Techniques of critical listening are not limited to film sound or sound art. A more intensified version of embodied listening is found in sound installations or headphone listening, where sounds are highly localised. In cases where soundscapes are composed to be entirely immersive, be it binaural recordings or quadraphonic compositions, various vibrations can afford listeners an awareness of their own limbs. Proprioception, 'one's own' or 'individual' perception, is the sense of the relative position of neighbouring parts of the body and the strength of effort being employed in movement. Proprioceptive listening is most palpably an extension of causal listening, creating precise sonic relations in a sonic environment: for example, acoustic pressure changes from inside to outside when moving through locations. Media created to heighten the experience of embodied listening are virtual reality machines, such as the Oculus Rift. This technology engineers surround sound experiences to offer participants an immersive listening experience.

The desire for immersive listening that mimics our sensory experience leads Jonathan Sterne to offer theoretical insight into the perception of personal space through listening. Sterne refers to the manner in which listeners manipulate and interpret sounds as audile technique: "When audile technique is embodied within social practices of personalised or interiorized listening, it presents the auditory field as personal space" (Sterne 2003, p157). The example given by Sterne is the individual wearing headphones, but this phenomenological experience of listening is also present within soundscape composition, creating sonic works that create a sense of place and presence. Speaking of the development of directed listening in medical diagnoses and sound communications technologies such as Morse code, Sterne comments that "The 'spherical' field of auditory perception, as opposed to the forward directionality of vision, would logically better lend itself to new kinds of spatial relations. The placement of a

sound…in a listener's auditory field absent of other sensory data would be more like other, more familiar forms of auditory experience" (Sterne 2003, p153).

The technological limitations of sound reproduction rely on our ability to "imagine the more fundamental tones, but also to complete the sensation of immersion" (Sterne 2003, p156). The experience of listening to soundscapes and the sense of presence in listening can be called kinaesthetic listening: an immersive sonic environment is not only heard, but is sensed through listening with the body. Kinaesthetic listening is used as a compositional tool in the soundscape. 'Kinaesthetic intelligence' commonly refers to refined motor skills, athleticism, and dexterity through a heightened awareness of one's surroundings. These are useful tools in acting, dancing, and physical performing arts. The field recordist hears and feels changes in acoustic pressure, ambient sound, and components of the sound field in order to create or enhance sonic spaces for receiving listeners. That is, the experience of movement or spatialisation through sound enriches the sense of place that a recording imparts.

This method of listening acknowledges first that the recordist is the primary listener and the decision maker. The body must be considered an essential element of any listening practice – a way of knowing and experiencing all sound. Scullion and Treby call the body a "sensorium commune…the organ of total sensory receptivity, sensory perception within" (2010, p253). The soundscape that is heard and sensed by the recordist is translated into the field recording that is heard and sensed by the (secondary) listener, in which form—ironically—it is disembodied from its source. Using recording techniques often undocumented by the recordist, the listening experience is mediated by technologies and playback equipment. The soundscape is not only sensed for its content, but for its delivery system. Therefore, a sonic environment is embodied in the experience of reproduction as much as it is within the representation of the source.

Ironically, the best field recordings are often judged not on how faithfully the ambient field is reproduced, but on the fidelity of particular components. Watson's field recordings are a prime example of hyper-real sounds captured in closer proximity than what would usually be considered a soundscape. However, his recordings give listeners a strong sense of presence due to high bass response. Body-worn binaural microphones that attach to the ears or temples through designs similar to headphones may pick up breathing, limb movement, and even the wearer's pulse.

Kinaesthetic listening is apparent within those sounds that are on the threshold of listening: sounds that are felt but not heard. Examples of the sounds and vibrations that reside on this threshold are the lowest frequencies of subway trains and thunder, and the sonic boom of aeroplanes. Field recordings, particularly those that use contact microphones, can capture those moments with greater clarity than the human ear. Equipment that measures sound pressure through contact allows for manipulation of auditory information that cannot otherwise be recorded, for instance, Jacob Kirkegaard's piece "THROUGH THE WALL," a series of deep vibration recordings from the West Bank Barrier. Using contact microphones, Kirkegaard is able to listen through contested spaces into the droning of Israeli tanks and military trucks, embodying the soundscape of the Middle East conflict. Another example is "Vatnajokull" by Watson, a recording of an Icelandic glacier breaking in the Norwegian Sea. This recording captures yet another soundscape of political importance: global warming and the environmental impact on glaciers. The phenomenological experience of embodiment, as Droumeva & Andrisani (2011) suggest, must be approached "both as a methodological paradigm and as a way of understanding situated experience".

To summarise, I have attempted to present techniques of knowing through sound, of listening within acoustic epistemologies. These are manifest within and outside of the medial frame of observational cinema via sensation, spatialisation and form, and through components of soundmarks and the sensory perception of auditory space. These ways of listening, as defined by Schafer, Chion, and Sterne, aid our listening through relating sonic events to personal spaces, social spaces, and their natural and urban environments.

Lastly, sonic ethnography requires creativity. In the 2016 issue of "Senses and Society on the Anthropology of Sound," anthropologist Holger Schulze writes "The whole apparatus of material objects, of technologies of sound recording, processing, transmitting and reproduction, is to be understood as a huge imaginary of listening – that has materialized so powerful in our cultures and is hugely present everywhere" (Schulze 2016, p75). Accordingly, the materials that are used to record, the limitations of those recording systems, and the manipulations made possible through processing, transmission, and reproduction render infinite variations on the ways that communities and recordists can collaborate. Consider the

approach of Kirkegaard's sound art piece "EARS OF THE OTHER[29]," which was featured in "ART/E/FACT Issue 3: Experimental Folklore." Kirkegaard wrote:

> Twelve recordings were made in Ethiopia following interviews with twelve Ethiopians about their favourite sound from their everyday: They were asked to recall and describe a sound which they had often paid attention to, found characteristic or remarkable in one way or another. The sound was then recorded in collaboration with them. Like a kind of sonic postcard. The concept of a postcard is to tell a lot in a very short way, to offer an impression of a certain location to family or friends back home. Here, this idea is interpreted in sound. Each track is left untitled for your imagination.
>
> (Grytter and Rosenblum 2013, p22)

To which visual anthropologist Simone Grytter and I responded:

> While Kirkegaard has never deliberately worked within an anthropology of sound or placed his work in an ethnographic context, this audio-piece EARS OF THE OTHER attempts to understand the people around him through their ears, bringing Ethiopia to your listening space. Kirkegaard works from the perspective that the locals hear their country in a different manner than he does as a non-local: an other in Ethiopia. Through these twelve sound pieces, he shapes this local experience and the unique ways in which we know through sound. The connection to a sensory ethnography then seems obvious to the anthropological eye (or ear).
>
> (Ibid)

"EARS OF THE OTHER" demonstrates ways in which recordings offer the listener self-reflection as a documentary form and ethnographic experiment. If we agree with Schulze's assertion that sound media is an imaginary of listening, than surely the process of sonic ethnography is imaginative and creative, as heard in Kirkegaard's collaborative piece.

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[29] Listen to Ears of the Other by Jacob Kirkegaard, Tracks 10-21 of Accompanying Recordings

In this chapter, I have presented strategies for recordists and researchers that rethink the use of sound recordings. In this nascent field, the use of accessible media and digital formats is an essential component of sonic ethnography. Borrowing from documentary, creative film, sound design, and digital humanities, recordists might progress toward responsible recording. In so doing, they prioritise the will of communities and cultures.

Chapter 7: Conclusion - The fields remain while the recorder has long vanished

> Bloody preamps, no windshields…hours feet in
>
> the water, for almost nothing, time passed, I'm long
>
> gone, the fields remain[30].
>
> (D'Incise 2012)

An Omnivorous Ear - The Creative Practice of Field Recording has engaged with a series of seemingly disparate practices surrounding recording outside of the studio environment. I have attempted to trace cultural and historical origins of now commonplace practices in communications, anthropology, sound art, and multimedia. Throughout the first three chapters, I have examined the relationship between listening practices across oral traditions, and the development of the microphone and recorder based on the human body (see Sterne on mediate and immediate auscultation in Chapter 3). I then demonstrated the ways in which recording became industrialised and monetised through proprietary formats for film and music reproduction. As detailed in Chapter 3, the remarkable shift in recording practice from professional technologist to amateur user changed the nature of audio communications. The recording methodologies referenced thereafter are related to creative approaches to documentary and experimental representations of the environment, both rural and urban. Culminating in the coining of the term 'the soundscape,' where many practitioners often begin their research into field recording and sound studies, I then demonstrated the influence of the soundscape on multimedia interfaces that use, manipulate, and present field recordings.

While I depart from the chronological narrative of field recording practices in the final chapter on sonic ethnography, it is for the sake of reflection. This dissertation is meant to present innovations in field recording practices, and also to relate them to each other across disciplinary borders and periods of time. Some recordists use creative approaches to

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[30] Listen to The fields remain while the recorder has long vanished by D'Incise, Track 9 of Accompanying Recordings

presentation, such as enhanced interactivity, but do not consider the cultural implications of their practices. Others are deeply collaborative in spirit but do not present well to the public. Sonic ethnography is a method that may knowingly address sensitive cultural issues of representation addressed in anthropological and sociological theory while offering new ways of knowing through sound.

No matter the means of creation and manipulation of recordings - whether they are inscribed into wax cylinders or packaged in iPhone apps - the social interactions that take place leading up to, occurring during and resulting from the recording process all have a significant impact on the recordist and recorded subject. This dissertation ends where it began: we are all producers, simultaneously capturing sonic environments and manipulating them. In the digital age, the portable sound recorder no longer needs to be purpose-built. Every phone, camera, and consumer electronics device has the facility to record in the field. Snapchats, Instagram videos, live streams hosted by Facebook, and Periscope have popularised the making of daily recordings shared publicly. This has resulted in the integration of low fidelity sound in to public life, turning into lo-fi audio as the norm. Increasing levels of noise are abundant within our lives. However, these forms of noise are not banal – they are artefacts of the cultural and historical context from which they originate. In some cases, value and aesthetic judgments are made such that these noises are favourable in certain contexts. As narrated throughout the dissertation, playback technologies are often repurposed for new sonic works. Take, for example, the use of many purpose-built audio recorders - mainly those that record to analogue media – that have undergone a ritualisation tied to nostalgia, such as the 78 Project referenced in Chapter 6. Uses of old recording technologies are poetic - to paraphrase McLuhan, the media are the message, and old media render new art forms. Field recordings are created and experienced unknowingly throughout our daily communications, consumption of media, and artistic media practices. Social, historical, and embodied, field recordings are not isolated within auditory culture. They are present and actively affecting our experiences of film, video, photography and new media. Conversely, field recordings are bound up within the audiovisual experience of media consumption. For example, the album art of a field recording affects the way that we interpret the context of the production (see Figure 24: Hunting Thru Audioland). *All field recordings are mixed media.*

What can be learned first and foremost from this dissertation is that the contemporary practice of field recording is a culmination of multifaceted, interdisciplinary, and inter-

professional practices. Field recordings contain histories, which are cultural traces of the development of media and a variety of academic disciplines. Field recording has been shaped by the history of film, music, and communications technology, and has, in turn, affected them. The term encompasses a confluence of narratives developed by technological innovators, tinkering hobbyists, researchers, and artists. In many situations predating the soundscape, field recordists have not gone by that name: they are inventors presenting the latest technological advancement, folklorists documenting performances, soldiers and their families communicating across the Atlantic, and artists experimenting with ways of listening.

Field recording, like all major advancements in communications technology, is modeled after the human sensorium. Recording outside of controlled environments is a documentary practice, a creative practice, and a cultural technique. The act of field recording affords listeners an opportunity to listen actively, with strategies such as perceptual agency contributing to our understanding of the soundscape and of sonic ethnography.

Early recordists such as Teibel, or contemporaries like Kirkegaard, record and present field recordings in ways that we are not accustomed to hearing, both in terms of subject and approach. For Teibel, it was the synthesis of natural sounds for alleged physiological stimulation (see Chapter 5); for Kirkegaard, it is the recording of subjects that are normally beyond the threshold of human hearing to identify sociopolitical and military occupation (see Chapter 6).

Field recording reflects the current state of sensory studies, and highlights the importance of auditory research as a distinct but valuable practice that is inherently interdisciplinary. It has the capacity to be self-critical, and reflective of sound studies, media studies, anthropology, and musicology. One such example of the scholarly value of the practice is found in the recently published "Audio Papers - a manifesto" by Sanne Krogh Groth and Kristine Samson. Groth and Samson have developed a series of tenets for producing sound pieces that stand alone as academic works, much like a journal article or a monograph. The proposed media is meant to perform a self-interrogation of their content and materiality (a prospect for recording practice referred to in Chapter 6).

> The audio paper works with sensory and affective modes of knowledge. Sound has a material quality. Language is rendered through the voice with its attunement (Massumi 2002) to the surroundings, its rhythms and pace. Feelings

> and sensations are present in the audio paper and work side by side with the semantics of language and sound. The aesthetic, material aspects of the audio paper produce affects and sensations in the listener. Affects are felt. What is felt could be the body of the soundscape, the body of the voice, or the feeling and sensing body of the listener while listening[31].

Field recording is an embodied process, in both the act of recording and the act of listening. From the limitations of the early recording machines of the 1940s – Tony Schwartz' 20lb tape recorder slung across his shoulder - to the portable binaural systems of the present day that can be worn like headphones, recordists balance the technical knowledge they possess with the subjects they record. Nature recordists must remain unobtrusive to wildlife, while urban phonographers must be either stealthy *or* forthright in their intentions to record individuals. Listening to field recordings emphasises the relationship between sound and the body as both psychological stimulus and as phenomenological experience. Acknowledging the ways in which recording and listening are embodied practices affords possibilities for creativity, such as the use of field recording in virtual reality, where the sound field manipulated by the listener through interaction with the interface (for example, by 'moving' within the soundscape) creates an experience of virtual embodiment.

By drawing from traditions of orality and storytelling, archival studies, electroacoustic composition, modern art, and anthropology, recordings can be artful in approach. Consider Tom Erbe's performance of John Cage's *Williams Mix* (1952). Famously, Cage's scores and performances are the nexus wherein music and sound art converge. Cage develops linguistic and sonic vernaculars, such as Linnaean-like taxonomies for listening and sound categorisation. Like Cage's original piece, Erbe used 600 field recordings from a multitude of sources, collecting them according to categories: "A - city sounds; B - country sounds; C – electronic sounds; D - man-made sounds (including the literature of music); E - wind-made sounds (including song); and F - small sounds requiring amplification to be heard with the others" (Erbe 2016). Where Cage used tape as his audio format, Erbe uses digital audio and the programming language Pure Data to score and present the piece as samples, and

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[31] Audio Papers – Manifesto available from: http://seismograf.org/fokus/fluid-sounds/audio_paper_manifesto

automation to mix and spatialise the audio files for the resulting composition[32]. While Erbe's intentions are not to create an ethnographic work, music programming languages and interfaces that offer precise manipulation of recording have the capacity to create cultural remixes. Projects like Erbe's point toward new techniques and possibilities for sonic ethnography.

As I write the final words of this dissertation, the future of field recording is at once thriving in number of activities, while threatened by the fallibility of archiving new media. The London Sound Survey and the Cities and Memory project have collaborated on "The Next Station" - a sound map of the London Tube transport system – currently featured on the front page of The Guardian's website.[33] This project has received perhaps the most news attention that a sound map ever has, thereby reflecting the increasing acceptance of multimedia that focuses on the effects of sound. As discussed in Chapters 6 and 7, incorporating field recording into multimedia requires the development of user interfaces for navigating and listening. Whether it is sound maps or virtual reality headsets, field recording continues to be practised by many experimentalists across academic and professional fields, who create proprietary designs for presentation. At the same time, field recordings are threatened by their unique and unstandardized means of capture and storage. New media only gives the illusion of permanence in its storage media. With digitalisation and the opportunities for countless backup systems, we perceive recorded materials as secure, yet this is hardly the case. Web-based and mobile phone programs often make exporting files unstable or maintaining database structures complex and unsustainable. How we archive these projects, their sounds, and their interfaces remain unclear. Preservation efforts that are currently underway by archivists must account for the materials developed as part of scholarly initiatives in the digital humanities.

Field recording is a valuable teaching tool in both presentation and practice for qualitative researchers of all kinds. Visualisation and empirical analysis of field recordings strengthens

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[32] Erbe's Williams Mix V4 available from: https://soundcloud.com/tomerbe/williams-mix-v4

[33] "Subterranean sonic blues? A journey through the first ever London Underground sound map" is available from: https://www.theguardian.com/cities/2016/aug/26/first-ever-london-underground-sound-map-tube

perceptual agency and ear training. Careful examination of ambient sound may assist musicians and sound artists in developing a lexicon, and interpretive theory, of timbral effects on the body and mind. This phenomenological approach draws from art, music, sensory studies, and conceptualism.

Through contextualization of the individuals who are innovators in the field and theoretical critique, best practices are revealed. A framework for sonic ethnography will be further enriched as more cultural narratives are included in the growing collection of field recordings. Strategies of sonic ethnography highlight the ways in which sound media is embodied, trans-medial, and integral to cross-cultural collaboration. Further research practices that utilise the aforementioned strategies may allow for the cultivation of gift economies concerning sound recording. When the recording is treated as a gift, there is an acknowledgement of the act of recording and production as both a process and a product of social contact.

For recordists and researchers interested in pursuing further inquiry into the varied practices that comprise field recording, there are multiple paths that can be taken. The history of field recording has thus far been told from the vantage point of North American and Atlantic regions. While this dissertation has aimed to expand information and insights related to this history, others might recognise its limitations. Like research into many media practices, it suffers from a lack of diverse voices. Recordings made by women and individuals of colour are glaringly missing from this dissertation because they have not been included in prominent archives, and require further recognition on behalf of historiographers and archivists. As national archives identify and recognize new sources of field recordings, their adoption will help the process of diversifying the history of field recording. This dissertation lays the conceptual groundwork for further work on recordists and their contributions to the advancement of field recording practice. Now that multiple histories of field recording have been acknowledged, the cultural and historical threads can be further pursued. Accordingly, a history of field recording can be retold and reframed - or perhaps more appropriately, sounded out in new ways.

But of course, the description of the recorder as an omnivorous ear is false. While certain sounds can be overheard, it is the recordist who ultimately makes the decision on what the listener hears at the end of the production process. The recordist and the writer have this in common: the history of field recording will sound different when told by those in different

parts of the field, especially those whose stories have not yet been included from across the globe. It is the duty of researchers to find those recordists whose work still remains unheard. When these histories are researched and written about, they benefit from relational study. This dissertation has examined the work of inventors, researchers, artists, and communities in the company of one another, to present commonalities and differences in their approaches, and often to demonstrate the false disciplinary boundaries that exist between them.

Ultimately, this dissertation is a call to action: an acknowledgement of past practices and the suggestion of new ones. Using methods and knowledge from music studies, anthropology, media studies, and more, the content of this dissertation is as varied as the diverse histories that it draws from. Through the innovations detailed here, listeners may further experiment and reveal new sonic practices of recording, listening, and collaboration.

Appendices

Glossary

Binaural - A form of stereo recording that places two omnidirectional microphones separated by a baffle to simulate Head Related Transfer Function (HRTF), and the acoustic conditions of hearing through the human cochlea. Upon playback, this form of stereo alignment attempts to center the listener in the position of the recordist.

Clairaudience – A form of ear training to attune a listener to environmental sounds, as theorized and practiced by R. Murray Schafer and the World Soundscape Project.

Embodiment – The subjective experience of sonic perception related to physiological sensation. This included multi-sensorial approaches to listening and ways of sensing beyond the common allegory of the five senses, including tactile sensation of vibration and feelings of movement triggered by changes in acoustic pressure i.e. acceleration. (Chattopadhyay 2016)

Field Recording – An audio recording produced outside of the controlled studio environment. Historically, field recordings have been associated with folkloric and anthropological documentation, but can also include surveillance, voicemail, as well as ambience for radio and film productions. Since the advent of audiotape editing and speed manipulation, field recordings have been used for electroacoustic composition, such as the oft-referenced work of Pierre Schaeffer.

Immersion – the spatial effect of being present in a virtual environment, attributed to high quality audio often produced for stereo, binaural or surround playback on headphones or speakers in a controlled acoustic environment. (See Staffan and Holopainen 2004)

Presence – The manipulation of sensation in order to deceive an individual or group of people to believe they are experiencing an event without technological mediation. Forms of mediation that are commonly used to effect stimuli are body-worn devices over the eyes and ears, acoustically controlled rooms for playback, or even furniture using vibration to simulate movement.

Schizophonia – The crisis in perception where an audio source cannot be located or identified by place or subject. Coined by Schafer to describe the effect of industrial activity and urbanism on human's ability to listen to the natural environment, this term has been used by Feld (1993; 1995) to describe listener's changing relationship to language and place, and by Millar (2008) to study the role of music and sound in game design.

Senses of Place – The perception of geographical locations in relation to their cultural context. Feld and Pink both theorize sense of place as they are socially constructed by communities, how those relations to environments change over time and across borders and territories, as well as the manifestation of senses of place in rituals and customs. (Feld 1997, Pink 2009, 2011)

Sound Art – A form of electroacoustic composition that draws from theories and techniques in music, gallery and installation art, and audio-visual media. While its practice is primarily related to listening, it is distinct from music composition in its presentation and reception. (See Chapter 5)

Soundscape – The sounds a geographic region is composed of, both natural and human-made, as a subject for social or historical study; the use of sonic features to describe a region that a group of individuals live in; an electroacoustic composition made with manipulated field recordings; or a synthesized composition of ambient or new age music inspired by natural environments. These definitions, often in contradiction with each other, have been adopted by different groups of scholars, composers and listeners. (See Schafer 1977; Thompson 2002; Hill 2014)

List of Figures

List of Accompanying Recordings

Recordings are available from: http://bit.ly/2cic3Fb

1 If One Night by Ely Rosenblum	19:30
2 Phonautograms from 1857 by Patrick Feaster	4:28
3 Why Collect Recordings? by Tony Schwartz	1:41
4 Exchange by Mail by Tony Schwartz	4:29
5 Sounds of the City by Tony Schwartz	1:45
6 Music in Speech by Tony Schwartz	4:30
7 3101A Tintabulation by Irving Teibel	30:51
8 44 Nixon Demo by Irving Teibel	11:34
9 The fields remain while the recorder has long vanished by D'Incise	20:16
10 Ears of the Other - 1 by Jacob Kirkegaard	1:00
11 Ears of the Other - 2 by Jacob Kirkegaard	1:01
12 Ears of the Other - 3 by Jacob Kirkegaard	1:00
13 Ears of the Other - 4 by Jacob Kirkegaard	1:00
14 Ears of the Other - 5 by Jacob Kirkegaard	1:00
15 Ears of the Other - 6 by Jacob Kirkegaard	1:00
16 Ears of the Other - 7 by Jacob Kirkegaard	1:00
17 Ears of the Other - 8 by Jacob Kirkegaard	1:00
18 Ears of the Other - 9 by Jacob Kirkegaard	1:00
19 Ears of the Other - 10 by Jacob Kirkegaard	1:00
20 Ears of the Other - 11 by Jacob Kirkegaard	1:00
21 Ears of the Other - 12 by Jacob Kirkegaard	1:00

List of Digital Sound Maps

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