Disparate Soundscapes and Ecotones: Critically Sounding the Amazon and Arctic

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Abstract

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Popular media representations of jungles and arctic territories tend to center around either lush and pristine rainforests or remote Northern landscapes (e.g. Werner Herzog's *Fitzcarraldo* (1982), Robert Flaherty's *Nanook of the North* (1922)). Often beyond these captivating visual depictions lie complex soundscapes that reveal information about environments that is difficult to decipher through vision alone. *Disparate Soundscapes and Ecotones* is a research-creation project that proposes active and critical modes of perceiving and composing with environmental sound. This project takes the form of a long-form stereo soundscape composition incorporating audio field recordings I collected in the Northern Canadian community of Inukjuak, Nunavik during 2009 and the Brazilian Amazon during 2011. Cultural and natural sounds are digitally processed and arranged in order to investigate the deeper referential meanings of environmental sounds including their musical, social and ecological resonances. Furthermore, this project explores how the extraction of these environmental sounds from their original contexts and integration within a studio composition affect their communicational properties. The exploitation of studio processing and editing to both highlight and undermine indexical relationships between composed soundscapes and "real" soundscapes is at the heart of my investigation. This project draws from but also questions the conceptual aims and techniques of the soundscape composition genre. Additionally, I consider the importance of ethical studio methodologies when processing and consequently abstracting sensitive sound material such as Inuit throat singing and traditional kayak building.

Key terms: soundscape, acoustic ecology, field recordings, Amazon rainforest, Inukjuak, Nunavik, acousmatic, ecotone, ethics, dub music.

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Introduction

Imagine you are on a walk listening to the multi-layered sounds of a Brazilian Amazon rainforest soundscape with the drone of buzzing cicadas and the urgent calls of birds pulsing in and out in a hocket-like manner. Meanwhile an afternoon thunderstorm and heavy rainfall slowly builds up. However, immediately following one of the thunderclaps you hear what sounds like the eerie cries of huskie dogs. Why am I hearing huskies generally native to northern climates in the rainforest you question? You eventually move towards the edge of the rainforest canopy and arrive at a clearing soon realizing you are on the banks of the Inukjuak river rapids in Northern Quebec with the intense sounds of Arctic winds blowing past. Finally, you drop your underwater microphone under the river and start hearing what sounds like the sonar signals of Amazonian pink dolphins and the crackles of shrimp. It is difficult to differentiate between the geographically unique environments of the Brazilian Amazon and Northern Quebec. At other moments, the juxtaposition of these unique soundscapes creates a jarring sense of disjuncture. What meaning can one derive from hearing these different environments in combination? *Disparate Soundscapes and Ecotones: Critically Sounding the Amazon and Arctic* attempts to answer this question.

Disparate Soundscapes and Ecotones is a research-creation project that proposes active and critical modes of perceiving and composing with environmental sound. This project takes the form of a long-form stereo soundscape composition incorporating field recordings I collected in the Northern Canadian community of Inukjuak, Nunavik during 2009 and the Brazilian Amazon during 2011. Cultural and natural sounds are digitally processed and arranged in order to investigate the deeper referential meanings of environmental sounds. This includes the possible social significances of natural sounds as well as the inherent musical-like rhythms, tones and even melodies one may perceive within these sounds. Furthermore, this project explores how the extraction of these environmental sounds from their original contexts and integration within a studio composition affect their communicational properties. The studio mediation of my field recordings using various processing and editing techniques serves as a research method for demonstrating the epistemological potential of composing with environmental sounds. The

exploitation of the studio to both highlight and undermine indexical relationships between composed soundscapes and "real" soundscapes is at the heart of my investigation.

Popular media representations of jungles and arctic territories tend to center around either lush and pristine rainforests or remote Northern landscapes (e.g. Werner Herzog's *Fitzcarraldo* (1982), Robert Flaherty's *Nanook of the North* (1922)). Often beyond these captivating visual depictions lie complex soundscapes that reveal information about environments that is difficult to decipher through vision alone. Moreover, climate change and noise pollution are drastically transforming both our urban and rural soundscapes. The issue of soundscape endangerment (first raised by the members of the World Soundscape Project, as I critically discuss below) serves as an additional motivation for my research-creation project. Furthermore, there are several instances of contemporary artists who perpetuate colonial narratives or romanticized depictions when attempting to represent the sights and sounds of the Amazon or Northern Quebec[1]. *Disparate Soundscapes and Ecotones* draws primarily from the field of soundscape studies and its associated soundscape composition genre, as examined in my literature and media review chapters. However, this project also considers the importance of ethical studio methodologies when processing and consequently abstracting sensitive sound material. I have analyzed and processed my field recordings from Inukjuak and the Brazilian Amazon to create a soundscape composition that consists of four sections each of which focuses on different conceptual themes.

As a sound artist for the past decade, I have collected and composed with field recordings of sacred sites and bustling cities in Japan, Malaysia, and Vietnam. Thus I feel it is important to clarify why I felt it would be fruitful to combine my Inukjuak and Amazon recordings in particular and not any other recordings from other locations I have visited. My motivation for merging the geographically disparate soundscapes of the North and the Amazon within a composition developed from rereading my field journal notes and recalling my memories of listening and recording in both locations. Under the Brazilian rainforest canopy, the soundscapes

[1] Quebec filmmaker Dominic Gagnon's 2015 experimental documentary film *Of the North* uses collage techniques to splice together various publicly available videos from sites including YouTube that apparently depict life in Northern Quebec. The film drew a lot of controversy and numerous indigenous artists and activists described the film as racist for its inclusion of stereotypical depictions of Inuit people appearing drunk, vomiting, and crashing ATVs. http://www.cbc.ca/news/canada/montreal/tanya-tagaq-of-the-north-1.3336733

were often dense, loud, and even overwhelming with a polyphony of sounds overlapping and emerging from different directions. In contrast, my listening experiences in Inukjuak were tranquil as I often heard sparse and seemingly silent soundscapes in comparison to the Amazon. I often struggled to find "interesting" and "musical" sounds unique to the North. Only after about a week of spending long stretches of hours recording did I realize that the ubiquitous everyday Northern sounds that I thought were a nuisance (e.g. mosquitoes and wind) and which I previously attempted to conceal in my recordings, actually possessed subtle yet intriguing musical and cultural significances (as I further elaborate in Chapter Four). I felt that a compelling basis for my research-creation project would be comparing and contrasting these two unique listening experiences which, at least on a superficial level, may be perceived as polar opposites in terms of sonic density, intensity and musicality. Both these seemingly contradictory listening experiences left a lasting impact on the ways in which I now listen for "interesting" environmental sounds and how I critically perceive sounds that I otherwise tend to filter out because of personal preferences, as well as cultural and sensorial conditioning.

In the Amazon I collected such a large amount of explicitly rhythmic and melodic natural sounds that it was difficult sifting through my recordings database and narrowing down my choices for this project. On the other hand, my Inukjuak recordings generally involve long stretches of wind and calmness interspersed with quite brief sonic events that abruptly shift the listening focus (such as a passing ATV vehicle or a husky's barking echoing in the distance). It was thus easier and less time consuming from a studio editing perspective to hone in on which Inukjuak sounds I felt were the most intriguing raw compositional source materials.

When soundwalking[2] and field recording, soundscape composer Hildegard Westerkamp takes time to listen to places in depth in order to understand them, moving through landscapes, seeking out their resonances (McCartney 1999: 2). McCartney refers to this process as 'sounding'. My critical sounding of unique field listening and subsequent studio editing experiences and situating them literally in parallel helps structure both the theoretical framework and research methodology of my project. I argue that a rigorous theoretical discussion can emerge from juxtaposing my differing aural perceptions of Inukjuak's sparse but unique sonic

[2] Soundwalking is a creative and research practice that involves listening and sometimes recording while moving through an environment (McCartney 2014: 212).

events and the Amazon's acoustic intensity within a studio context. To reiterate, the primary research questions investigated through this project are: Does combining and digitally processing seemingly disparate soundscapes of Arctic Quebec and the Brazilian Amazon within a soundscape composition help articulate and enhance the referential properties of these environmental sounds such as their musical, social and ecological resonances and indices?[3] Or conversely, does sound studio mediation instead obfuscate these properties? Does something else emerge? Additionally, there are three other questions that serve as components of this broader investigation: 1. Does my use of processing and merging of soundscapes from unique environmental contexts challenge or confirm the principle mandates of soundscape composition (i.e. context-sensitive composition)? 2. What additional useful acoustic information and referential meanings do I obtain through the studio creation process of re-contextualizing and merging disparate soundscapes that I was not able to obtain through the past field experiences listening and recording in these environments? 3. What are the ethical implications of sampling and composing with culturally-significant and sensitive sounds including Inuit throat singing and traditional kayak building as well as non-human sounds such as birds and water?

My research adopts a studio composition-based research methodology to create a nuanced, metaphorical and self-reflexive representation of Inukjuak and the Brazilian Amazon's soundscapes. As a professional sound artist with previous experience producing soundscape compositions and sound installations, I have already developed techniques for manipulating field recordings for my previous works. However, I was required to devise new methodologies for combining geographically and sonically unique environments in both an aesthetically and conceptually intriguing manner for this current research-creation project. My initial plan for my project defense was to produce a multi-channel sound installation. However, after completing the stereo mixdown draft for the multi-channel version, I realized that the studio process of creating the stereo piece alone was already extremely fruitful in helping develop thoughts on how my creative practice links to the theoretical framework of my project. Additionally, listening back to the stereo mix allowed me to rigorously examine my research questions. Considering the scope of my project and time limitations, I decided to instead refine my stereo soundscape composition

[3] For the purpose of this project, I define the notion of aural indexicality as the ability for an environmental sound to refer to, signal or direct a listener's attention to musical elements, everyday cultural practices, or ecological phenomena.

and have it function as a prototype for a multi-channel soundscape installation that I plan to produce in the near future following the completion of my Master's degree. A brief description of this planned sound installation will be provided in my concluding chapter. Only the stereo composition will be presented at my project defense.

In order to effectively outline my research findings, this paper is divided into five chapters. The first overviews the history of the World Soundscape Project, as well as the conceptual foundations and compositional tenets of the soundscape composition genre. Through a literature review, I introduce the notions of "hi-fi" vs. "lo-fi" soundscapes, schizophonia, contextual meaning, and ethical composition. Chapter One ends with a media review in which I survey a selection of sound works that directly inform my project's research concepts and studio methodology. Chapter Two describes the theoretical framework of my project. I detail the following concepts related to my work and that of other composers and sound theorists working with environmental field recordings influential to my project: sonic abstraction; acousmatics; and ecologically-informed approaches to composition. Chapter Three is dedicated to outlining my research methodology. In particular, I draw from my composition journal notes and perceptions listening back to my final sound piece to link my research concepts to my actual studio processing and arranging techniques used for this project. The methods I employed were research-from-creation and creation-as-research, sonic ruptures, artificial ecotones, and self-reflexivity as an ethical studio approach. The fourth chapter provides a discussion of my research findings in which I analyze how effective my final sound piece was in interrogating my research questions. Does the final soundscape composition confirm or challenge my research concepts? The final chapter includes my concluding remarks and my plans for future developments of this project.

I hope this project fosters within my audience a deeper appreciation for the complex musical and communicational potential of environmental sounds. Such a shift in listening perception may, at least for some, encourage the protection of these environments that numerous acoustic ecologists and biologists have argued are under threat of endangerment.[4]

[4] Soundscape ecologist and bio-acoustician Bernie Krause has been recording and archiving natural soundscapes from around the worlds and has studied how marine and terrestrial soundscapes have changed over time or have been completely silenced due to climate change and industrial development . Similarly, sound artist David Monacchi's *Fragments of Extinction* is an ongoing research project that documents the sonic environments of

Chapter One - Literature & media review

This section provides a brief historical outline and theoretical overview of soundscape studies and introduces key compositional features of the soundscape composition genre. Additionally, the debates surrounding noise, abstraction and authenticity as related to environmental soundscapes are discussed. Providing the reader with this background knowledge is central to understanding my project. My project's sound composition at times seems contradictory to the traditional soundscape composition approach because of my use of seemingly disparate environments, my critique of the notion of environmental context, and my occasional integration of dub music techniques. However, my project is still deeply grounded in and influenced by the approaches of soundscape composers, Barry Truax and Hildegard Westerkamp, while questioning the principle mandates of the soundscape composition genre. Furthermore, the important but often controversial concept of the "soundscape" motivates my project because of the term's varying and contradictory definitions and utility among sound theorists. The idea that every real-world soundscape can be interpreted through a multitude of subjective filters among listeners intrigues me. Such listening subjectivity drives my approach to linking my field experiences in Inukjuak and the Brazilian Amazon to my final composition in which they are merged, compared and contrasted.

1.1 The World Soundscape Project and the debate over environmental noise

The soundscape studies field and soundscape composition genre grew out of the work of the World Soundscape Project (WSP) in Vancouver, Canada. The WSP was established by acoustic ecologist, writer and composer R. Murray Schafer during the late 1960s at Simon Fraser University. Schafer's initial aim with the WSP was to form an acoustic research group with the pedagogical focus of drawing attention to how noise pollution was rapidly changing Vancouver's soundscape with detrimental effect. Schafer was concerned with the endangerment of soundscapes due to human and machine-produced noise. The WSP's approach to raising

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primary equatorial rainforests. It was conceived as a vehicle for raising public awareness of the serious global issues pertaining to the loss of tropical forests and species extinction (Monacchi 2009).

awareness during their early years was didactic in nature in that they published educational booklets and essays concerning environmental noise and urban acoustic design.[5]

Schafer defines a soundscape as an environment of sound with emphasis on the way it is perceived and understood by the individual or by a society (Truax 1999). The concept of the soundscape is helpful in theorizing a critical analysis of everyday sounds through active listening rather than merely receiving sounds as signals through passive listening. Schafer questions which specific sounds we should aim to preserve, encourage, and multiply. He claims that once we identify these sounds, noise can be targeted: "The boring or destructive sounds will be conspicuous enough and we will know why we must eliminate them". However, he paradoxically also proposes that only a total appreciation of the acoustic environment can give us the resources for improving the orchestration of the world soundscape (Schafer 2012: 95-96). Some sound studies scholars have criticized Schafer's arguably selective preference for certain soundscapes over others and his failure to acknowledge subjective definitions of unwanted noise. For instance, Andra McCartney (2010) addresses how Schafer's concept of the "hi-fi" soundscape suggests sound as a signal, in other words, an ideal of clarity and clear communication to be searched for in preferably natural quiet soundscapes where sounds apparently overlap less frequently. Schafer associates "lo-fi" noisy soundscapes with modernity and busy city life and their resultant health risks on humans. McCartney argues that such a classification of soundscapes omits noisy nature and sparse city soundscapes. "Is overlapping bad, and unecological? Does signal articulation indicate a healthy acoustic ecology?", she questions. McCartney asserts that some environments can be important and ecologically sound despite being supposedly "lo-fi" (McCartney 2010). Similarly, ecosystem biologist and sound artist Francisco Lopez (1998) underlines how numerous natural sound environments including waterfalls, seashores, and some tropical rainforests are relatively noisy and perceivably "lo-fi". Additionally, for a Northerner such as Schafer, many Mediterranean or African towns would likely be interpreted as unbearably noisy, but the conceptions on sound environments are not uniform (Lopez 1998) and some residents of these towns may find cultural significance in such noise. It is thus evident how Schafer's dichotomous classification of "hi-fi" and "lo-fi"

[5] https://www.sfu.ca/~truax/wsp.html

soundscapes may serve as an obstacle in comprehensively understanding the deeper referential properties of environmental sounds.

My assertion regarding the subjective nature of noise does not diminish the importance of the numerous studies that have outlined the ecological and human health-related risks of environmental noise. In his book *In Pursuit of Silence* (2011), George Prochnik considers present-day noise pollution to be an environmental catastrophe and extensively lays out how urban noise is more than a nuisance but rather poses a substantial threat to our cardiovascular systems and mental health. Soundscape ecologist Bernie Krause (2012) has extensively examined the detrimental effects of human-produced noise on the health and communication abilities of animal populations including whales and birds. However, Karin Bijsterveld (2012) puts forth the complexity of assessing and remediating the risks of environmental noise. She discusses her study of European factory workers who were resistant to both industrial noise abatement and hearing protection. The issue of noise pollution is thus quite complex in that the degree to which environmental noise is interpreted as unpleasant or harmful may vary depending on factors such as cultural context and geographical location (i.e. whether the noise is being produced within urban or rural settings). It is beyond the scope of my project to investigate the multifaceted debate over noise pollution. My project incorporates field recordings of relatively isolated sound environments that many Westerners living in bustling urban centers may perceive as intriguing and even pleasant sounding. The Brazilian Amazon rainforest soundscapes that I recorded often include numerous sounds overlapping that may be interpreted as "lo-fi" if we were to strictly adhere to Schafer's classification of sound signals. My recordings of the Northern soundscapes of Inukjuak are often sparse and almost silent in contrast to the Amazon but they sometimes are punctuated by the loud sounds of all-terrain vehicles (ATVs) passing by or microphone noise caused by strong winds. Rather than attempting to investigate the ramifications of noise pollution, my project instead focuses on my own subjective interpretations of noise when recording in the rainforest and Inukjuak and how these interpretations influenced my compositional methods and analysis of the musical, social and ecological resonances of environmental sounds. I argue that while some of Schafer's theses concerning environmental noise are problematic and inconsistent, crucial knowledge is offered by his pioneering of the soundscape concept and how a critical and active sounding of our environments is an extremely

potent means of assessing not only their ecological health but their potential to be "orchestrated" like musical compositions as well.

1.2 The emergence of soundscape composition

In the early years of the WSP, members of the group studied environmental soundscapes by collecting audio field recordings both locally in Vancouver as well as across Canada and Western Europe. These recordings primarily served as archival material to be analyzed by the group or to be published on CD or broadcasted on radio using minimal editing and no processing effects as was the case with the *Soundscapes of Canada* (1974) program that was commissioned for CBC Radio (Truax 2002: 5). However, some WSP members including Barry Truax and Hildegard Westerkamp veered away from a purely didactic approach to soundscape research and became interested in expanding on the acoustic ecological concerns of the WSP by processing and composing with environmental field recordings. Drawing from Schafer's suggested orchestration or "musicalization" of natural soundscapes, Truax and Westerkamp's approach to composing with found environmental sound led to the creation of the soundscape composition genre.[6] The primary conceptual foundation of this genre proposes that although the composer may process and abstract urban or natural field recordings through the use of frequency filtering, tape-based pitch shifting or digitally based time stretching, these manipulations should never compromise the preservation of environmental context perceived by listeners hearing the soundscape composition. The aims of acoustic ecology are often implicated in this genre in that there is a professed emphasis on continuous connection and information exchange between the composer, the listener and the sound environment (McCartney 2010). Truax argues that the listener's past experiences, associations, and patterns of soundscape perception are called upon by the composer and thereby integrated into the compositional strategy (Truax 2001: 207). Thus soundscape composers should maintain a recognizable link between the original environment the source recordings derive from and the composition's fictional world.

However, although this recognizable link may be explicitly clear for the composer who, in most cases, recorded in the field, it is often subjective to her/his audience. Therefore, Hildegard Westerkamp embraces the ambiguous perception of studio processed natural

[6] Westerkamp's *Fantasie for Horns I* (1978) and Truax's *The Blind Man* (1979) are pieces that exemplify the early stages of the soundscape composition genre's development.

environments by adopting a more nuanced conceptual approach. She defines soundscape composition more broadly as the artistic, sonic transmission of meanings about place, time, environment and listening perception (Westerkamp 2002: 52). Westerkamp (1996) states that "on the one hand [she] want[s] the listener to recognize the source, and thus want[s] to establish a sense of place. But on the other hand [she is] also fascinated with the processing of sound in the studio and making its source essentially unrecognizable. This allows [her] as a composer to explore the sound's musical potential in depth". In lieu of an objective representation of the original environment she records, Westerkamp uses studio tools to help communicate the referential indices of environmental sound. Her use of abstracted sound serves as a metaphor for subjective listening practices, her memories, perceptions and imaginations while recording environments (Westerkamp 1996). For example, in Westerkamp's *Beneath the Forest Floor* (1992), water and bird sounds are slowed-down and sped-up using tape-based pitch-shifting (Westerkamp 2008) and are rapidly panned between the left and right sides of the stereo audio field in order to imitate the Doppler Effect psychoacoustic phenomenon. This processing effect is employed as a reflection, although a slightly exaggerated one, on Westerkamp's memories of natural psychoacoustic interpretations while recording in a Vancouver rainforest. Another example of an aural referential index conveyed through composition can be found in her piece *Kits Beach Soundwalk* (1989). She includes a frequency-filtered version of barnacle recordings. These processed high-frequency sounds are reminiscent of the smouldering charcoal discharge sounds heard in Iannis Xenakis' composition *Concrete PH* (1958). As part of Westerkamp's narration heard during this segment of *Kits Beach Soundwalk* (1989), she comments on how she was reminded of *Concrete PH* (1958) while recording the barnacles on the beach as if she is dictating her field journal but in the form of a composition.

1.3 Concerning aural authenticity and environmental context

The abstraction of environmental sound and aural authenticity are often contentious issues among sound theorists. Schafer suggests that recording technology's imposed mediation leads to *schizophonia* or the disassociation of sound from its source causing natural sounds to be perceived as unnatural (Akiyama 2010: 58). Critical of this claim, sound studies scholar Mitchell Akiyama argues that the World Soundscape Project's insistence on utilizing schizophonic technology such as microphones and tape recorders in their efforts to sensitize students to the

acoustic environment is clearly inconsistent with Schafer's critique of recording technology's mediation (Akiyama 2010: 58). Akiyama additionally calls attention to the standard trope of field recording that Schafer reinforces: the studio is supposedly a non-space, a site of intervention and is therefore inauthentic, whereas the field is the site of reality (Akiyama 2015: 244). However, because an acoustic vibration is always experienced at a distance from the body that produces it, it is arguable that schizophonia is the natural condition of acoustics itself and not just of electronically mediated sound (Stanyek and Piekut qtd. in Akiyama 2015: 309). Similar to the biased perceptions caused by studio technology, the ear itself mediates and frames our perceptions of soundscapes even in the field. It would therefore not be fruitful attempting to define a truly "authentic" soundscape and whether listening to a soundscape in the field provides a more "authentic" and realistic listening experience compared to listening to a recorded representation of an environment in the studio. It is arguably more interesting and critical to question how a soundscape composer can preserve contextual links while simultaneously advocating for the schizophonic mediation of sound via studio manipulation. For Truax, abstracted sound in a soundscape composition is a means for studio processing to bring out the internal aspects of sounds, and to enhance them, rather than obliterating the identity of the source material (Truax 2013). The processing effect most commonly used by Truax in his work is digital real-time granular synthesis (i.e. time-stretching), which allows a sound to be prolonged by any factor (i.e. lengthening the duration of a piece of audio without altering its pitch). This studio effect produces "environmental-like" processed sounds using sampled sound grains (Keller and Truax 1998) extracted from environmental field recordings. In other words, minuscule fractions of a sound file are isolated, sampled and significantly stretched out in time duration. Truax employs time-stretching software not merely to create immersive dense drones, but to "allow the inner timbral character of the sound to emerge and be observed, as if under a microscope" (Truax 1996: 61). For him, a processed sound often creates a sense of it being abstracted from its real world origins (Truax 2002) and thus schizophonic in nature. However, the soundscape composer is generally concerned with maintaining a level of recognisability in the use of sonic abstraction so that the listener may associate processed sounds with their real-world sources. Truax is able to achieve this compositional goal since the added duration resulting from time-stretching allows the sound to reverberate in the listener's memory, providing time for long-term memories and associations to surface (Truax 1994). Additionally, because time-

stretching maintains the original pitch of sound samples, the listener is often able to make such associations with real-world environmental contexts. For example, the sampled field recordings of church bells used in Truax's piece *Basilica* (1992) are time-stretched resulting in a sonic texture that resembles organ clusters slowly dying away in a reverberant cathedral (Truax 1994). *Basilica* (1992) preserves referential indices that cite the familiar resonant sounds of bells and situates the listener within an enhanced version of a real-world soundscape in which the spatial acoustics inside the Basilica of Notre Dame in Quebec City are magnified. Soundscape composition therefore serves as a form of referential and context-based sonic practice. The notion of contextual meaning in soundscape composition tends to refer to the known and recognisable sounds of a given environment that listeners of a composition are generally familiar with. It is environmental context that is preserved, enhanced and exploited by the composer (Truax 2001: 207). However, Truax's emphasis on context does not specify the need for the composer to have actually physically recorded within the environment being represented in the soundscape composition. Some of Truax's compositions including *Island* (2000) incorporate field recordings collected by other people. In my discussion section of Chapter Four I comment on the need for a better definition of environmental context if it is to play a critical role in the soundscape composition approach.

Westerkamp sometimes encourages her listeners to question their interpretations of environmental context when listening to her soundscape compositions, rather than consistently providing them with explicitly audible references to real-world environments. She addresses how once her compositions are inscribed onto CD, they become situated in an abstract place far away from their origins. Her compositions "now may have to put up with bad playback equipment and noisy living rooms, with car radios or distracted ears. A forest piece in an apartment by a freeway… can it draw the listener back into the forest? An urban piece in quiet country living… is it necessary?" she ponders (Westerkamp 1996). Westerkamp's work arguably adopts a nuanced understanding of schizophonia and challenges the notions of transparent and authentic audio representations of places. Rather than conveying romanticized aural depictions of nature void of human presence, Westerkamp sometimes inserts aural cues within her pieces to suggest her presence as a recordist and listener in the field. For instance, in *Lighthouse Park Soundwalk* (1977) she includes sounds of her footsteps through leaves and branches as well as microphone handling noise. Thus, her intervention within the environment while recording is explicitly cited

in the piece. Furthermore, the microphone, a schizophonic tool, is directly referenced rather than concealed from the listener as is the case in most radio documentary productions that incorporate on-site recordings. In this manner, the notion of contextual meaning within Westerkamp's compositions relates to her own subjective listening experiences field recording on site rather than attempting to define a seemingly objective and fixed context that all listeners can unquestionably identify and relate to.

Such a compositional method perhaps offers an ethical means of manipulating recorded sounds as will be further discussed in the methodology chapter of this paper. I will argue how my studio methodology and aesthetic choices used for this project problematize the perception of seemingly transparent or authentic documentations of environmental soundscapes similar to Westerkamp's approach. My project aims to contribute to and develop Westerkamp's creative appropriation of schizophonic sound and technology by re-contextualizing environmental sounds within my studio, thus highlighting their musical, social and ecological significances. Westerkamp (2002) exploits the possibilities of electroacoustic processing techniques (e.g. frequency equalization (EQ) and pitch-shifting) to "awaken our curiosity and to create a desire for deeper knowledge and information about our own as well as other places and cultures" (52).

1.4 Composer accountability

Some have debated whether composers working with culturally significant sounds should be assigned a certain degree of accountability. Andra McCartney (2009) contemplates what sonic manipulation as an aesthetic value implies about the relationship between a composer and sound sources, whether composers hesitate to manipulate some sources but not others, as well as the range of listener responses to processed sound (2). John Wynne (2002) explains that while processing field recordings of a local Luhyia musician in Nairobi for an electroacoustic composition, he wanted to avoid reducing his subject to the status of exotica (105). Anthropologist Steven Feld notes the potential for *technoaesthetics* to mask *technofetishism*. However, it is equally important to explore the potential for *technoaesthetics* to create cultural respect and musical empowerment (qtd. in Wynne 2002: 111). In Chapter Three, I will outline how my project attempts to satisfy this delicate balance between conceptual intrigue and ethical composition.

1.5 Artistic influences: From field recordings to dub music

There are several sound works by artists working in varying genres that reflect and inform the theoretical underpinnings of my research-creation project and serve as analytical points of entry to my research concepts.

Barry Truax's multi-channel soundscape composition *Island* (2000) plays an influential role in my project because of its merging of different environmental locations. Truax incorporates field recordings from several locations around the world collected by himself and other World Soundscape Project members. Truax mixes processed versions of these recordings alongside their unprocessed forms. He strategically edits the geographically disparate sound environments together in such a manner so as to give the listener the impression of a "visit to an imaginary island, beginning at the shoreline, proceeding up a rapidly flowing stream, visiting a resonant cistern, climbing to the windy peak of a mountain lake, descending again through a nighttime forest of crickets, and ending at a different shoreline".[7] The intermeshing and juxtaposition of geographically unique sounds both within *Island* (2000) and my research-creation project can be understood as symbolizing the ecological concept of *ecotonality*. The ecotone is a marginal zone and transitional area where species from adjacent ecosystems interact (McCartney 2010). In Chapters Two and Three, I will examine McCartney's suggested ecological approach to listening and I will present the concept of what I term an "artificial ecotone" and how my project employs it as a compositional tool used to effectively transition between or overlap seemingly disparate Amazonian and Northern soundscapes.

My project is also informed by several of Westerkamp's soundscape compositions including *Beneath the Forest Floor* (1992) and *Into the Labyrinth* (2000). More specifically, I adopt her technique of studio processing and arranging field recordings in a gentle and arguably ethical manner so as to explore the grey area between real and imagined sound. Westerkamp is concerned with using processing effects as a means of commenting on her musical and communicational interpretations of the environments she records, while at the same time respecting the inherent integrity of all sound, natural or human. In *Into the Labyrinth* (2000) Westerkamp processes but not distorts cultural sounds like traditional local musicians she

[7] https://www.sfu.ca/~truax/island.html

recorded during her travels throughout India. Rather than attempting to present a seemingly objective documentation of Indian culture from the perspective of a white Westerner, Westerkamp devises a self-reflexive and critical compositional approach for manipulating sounds that some local community members in India may consider as sensitive sounds including traditional religious music. Similarly, the concept of sensitive sounds is one that directly guides my project's methodology.

Francisco Lopez's composition *La Selva* (1998) combines and truncates recordings from the Costa Rican rainforest of the same name edited only through cross-fading without the use of processing effects. The piece reflects on the idea that the tropical rainforest constitutes a strong paradigm of 'environmental acousmatics'.[8] In other words, it is often challenging for a listener within an actual rainforest to visually identify the origins of most of its natural sounds. Rene Van Peer (1998) remarks that even though all sounds in *La Selva* (1998) are immediately recognizable as organic, the overall impression is musical and abstract similar to acousmatic forms of electroacoustic music. The idea of environmental acousmatics explored in Lopez's piece is significant within my project as my natural listening experience in the Brazilian Amazon was both acousmatic and ambiguous in that some rainforest sounds resembled synthesized or digitally processed natural sounds emitted from sources I could not locate visually. However, my project differs from *La Selva* (1998) in how I overlap and juxtapose unprocessed sounds with their processed counterparts as will be further examined in Chapter Three.

Sound artist Norman Long combines the processing techniques of Dub pioneer King Tubby with those of soundscape composers to investigate acoustic ecology and listener subjectivity. His soundscape installation *'scapes* (2015) incorporates processed field recordings of Chicago's West Loop urban space. He performs a "dub versioning" of the West Loop, offering an alternate way of moving through personal and public space. Long (2015) comments: "My emphasis is on the many versions of delay from echo to grain; EQ to focus on the more keynote sounds and time-stretching those moments out where there is a slippage between foreground and background, past/present". Considering that a large component of my current sound practice outside of academia investigates the potential intersections between soundscape composition and traditional dub techniques, drawing from Long's work for my research-creation

[8] http://www.franciscolopez.net/env.html

project provides an important point of comparison in practice and theory. In fact, discovering Long's work influenced me to further explore links between the seemingly disparate musical genres of Jamaican dub and soundscape composition. In a journal article I co-authored with Owen Chapman titled "Sounding Riddims: King Tubby's Dub in the Context of Soundscape Composition",[9] we seek to demonstrate the similarities between the studio compositional methods of King Tubby and those of Truax and Westerkamp. Rather than attempting to identify aesthetic and stylistic similarities between Tubby's dub music and soundscape composition, this article presents a comparative analysis focusing on artistic articulations of contextual meaning and acoustic communication within both compositional genres.

My present research-creation project intervenes with the soundscape composition practices of Truax and Westerkamp but through direct experimental creative practice. The studio methodology I employ is directly influenced by their compositional techniques and philosophies. However, my sound piece in some instances adheres to the principal mandates of the soundscape composition genre but at other moments calls into question the notions of environmental context and what Truax defines as "coherent soundscapes". Furthermore, some of the studio processing methods employed in my project situate King Tubby's classic "dropout" dub mixing technique alongside Truax's use of sonic ruptures in order to present a novel mode of referential composition unique from the existing repertoire of soundscape composition. I have previously argued how the macro-structural elements of Tubby's compositions can be linked to those of soundscape composers by examining his dropout technique as a mode of referential sonic abstraction. In particular, Tubby's music maintains links to the musical context of his pre-recorded reggae source material, while invoking past listening experiences of the physical context associated with that song (e.g. outdoor reggae dancehalls) for his listeners as Chapman and I argue in "Sounding Riddims". To my knowledge, no other composers asides from Norman Long have adopted soundscape composition techniques filtered through classic dub methods. Hence, my project arguably provides a new and critical contribution to existing scholarship and creative work related to soundscape studies.

[9] To be published in the Spring 2018 issue of *Organised Sound*

Chapter Two - Theoretical Framework

The following chapter details the theoretical underpinnings of my research-creation project. I draw from conceptual themes articulated through the works of other soundscape composers and sound theorists in order to formulate and refine my own research concepts relevant to my project. The research concepts I explore or define myself in this chapter are 1. threshold of abstraction, 2.environmental acousmatics, and 3. artificial ecotones.

The first section examines a common theme in soundscape compositions, that is, how composers combine environmental field recordings with their studio-processed versions. Listeners hearing soundscape compositions are encouraged by the composers to actively question their interpretation of environmental context and sonic familiarity. In this first section I also discuss what I term a *threshold of abstraction* and how I formulated this research concept by way of situating Truax and Westerkamp's navigation between familiar and abstract sounds alongside the dub drop-out technique, an important thematic tenant of King Tubby's music. The subsequent sections discuss environmental acousmatics and artificial ecotones respectively.

2.1 Referential composition through sonic abstraction: A delicate compositional balance

In discussing the macro-compositional approach employed by soundscape composers, Truax (2002) refers to the juxtaposition of environmental soundscape recordings and their processed counterparts in his piece *Pacific Fanfare* (1996). The first section of the piece involves a montage of unprocessed Vancouver sounds that a local might recognise, such as ship horns and church bells. However, in the second section, the sounds from the beginning of the piece are time-stretched and frequency-resonated, allowing the listener to aurally explore the harmonic characteristics of the original sounds and their symbolic associations (Truax 2002: 6). Thus Truax commences the piece with contextual information from Vancouver's soundscape to establish a sense of place and familiarity for the listener. The piece then employs a sonic rupture to abruptly shift to an abstracted soundscape. Because time-stretching maintains the original pitch of sound samples, the listener is still able to associate the abstracted sounds to the unprocessed sounds used in the piece, even if they become much longer in duration. Additionally, heterogeneous personal memories are evoked for some upon hearing these

common Vancouver soundmarks[10], but warped according to the composer's intent or sonic "instinct" in terms of digital signal processing and the subtle dynamics of aural indexicality.

Truax's *Pacific Fanfare* (1996) audibly delineates the border between the unprocessed and abstracted segments of the piece in a clear manner based on its timeline. Westerkamp instead articulates the grey area between real and processed sound through her piece *Beneath the Forest Floor* (1992) that uses field recordings of the Carmanah Valley forest of Vancouver Island. Throughout the composition, bird and water sounds are intermeshed with their processed versions that Westerkamp creates using a pitch-shifting effect (i.e. slowing down or speeding up sounds). Truax (2001) argues that the soundscape composer's intent is often to enhance the listener's awareness of environmental sound (237). Can Westerkamp's frequently fluctuating juxtaposition of natural recordings with their processed counterparts in *Beneath the Forest Floor* (1992) strengthen the listener's conception and appreciation for Vancouver's fragile old-growth forests? Does her piece convey a sense of place to the listener as effectively as *Pacific Fanfare* (1996)? Westerkamp's *Kits Beach Soundwalk* (1989) similarly fluctuates between original and processed sounds. However, she uses context-based sonic juxtapositions in her editing by placing a processed field recording in close proximity to its unprocessed source, highlighting the similarities and contrasts between the two. For example, in a transitional section between the beach and dream sequences, the original barnacle sounds are heard in close proximity to their frequency-filtered counterparts (McCartney 1999: 172). Hearing the two forms of the sound in such close relation allows the listener to be actively engaged with the processed sound in a way that highlights the link to the original. King Tubby's dub 'dropout' method (further discussed later in this chapter) similarly employs sonic juxtapositions comparable to Westerkamp's approach. He places the echo delayed and frequency filtered versions of guitar and horn fragments in close temporal proximity to their unprocessed versions encouraging listeners to compare and contrast the two.

Truax (2002) states that many composers create abstract imaginary worlds with processed sounds of various origins, and if the result is heard as a coherent soundscape, even if

[10] "Soundmark" is a term derived from "landmark" used in soundscape studies to refer to a community sound which is unique, or possesses qualities which make it specially regarded or noticed by the people in that community. Soundmarks, therefore, are of cultural and historical significance and merit preservation and protection (https://www.sfu.ca/sonic-studio/handbook/Soundmark.html).

unrealistic in its details, one can make a connection to the soundscape composition approach (6). He defines a coherent soundscape as one that keeps a "clear degree of recognisability in its sounds, even if some of them are in fact heavily processed, in order that the listener's recognition of and associations with these sounds may be invoked" (Truax 2002: 6). However, how can a composer ensure that all listeners will perceive a soundscape composition as coherent? It would be fair to assume that the listener's familiarity with the soundscape composition genre and the real-world environments that are sampled would influence her/his interpretation of coherency.

I am intrigued by such subjective and ambiguous forms of aural perception and (re)composition. The soundscape composition I created for this research-creation project alternates between unprocessed and processed field recordings, or in other words, referential and abstracted sounds. My composition sometimes situates these two categories of sounds as overlapping. However, my goal throughout the production process was to enhance listeners' awareness of the Brazilian Amazon and Inukjuak's soundscapes whether it be from a musical, social, or ecological perspective. My compositional approach drew from Westerkamp's aural aesthetic of abstracting an original sound only to a certain degree so as to avoid blurring its original clarity. She transforms environmental sounds in order to highlight their original contours and meanings, similar to the manner in which a caricaturist sharpens the contours and our perception of a person's face (Westerkamp 1996).

However, listening back to my soundscape composition I realize that it is difficult to ensure that listeners interpret the acoustic properties and referential meanings of the original environmental sounds considering the obscuring effect of studio processing and the fact that most of my listeners have not had direct listening experiences with Amazonian and Arctic soundscapes. I thus propose it is beneficial to consider a possible *threshold of abstraction* when listening to or creating soundscape compositions. Beyond what point of studio manipulation is a sound within a composition converted from referential to purely abstract with real-world referents completely obscured? Additionally, what are the relationships between specific studio processing tools (e.g. time stretching, pitch shifting) and this proposed threshold. I will question whether my project's composition effectively interrogates the threshold of abstraction concept in Chapter Four, but for now, I will discuss how this concept serves as a useful analytic point of

entry into understanding how my composition both adheres to and critiques the principal mandates of the soundscape genre.

Truax (2002) clarifies that a primary trait of soundscape composition is "not that the pieces use environmental sound materials, but rather that most pieces can be placed on a continuum between what might be called 'found sound' and 'abstracted' approaches" (6). The imagination evoked while recording in the field, as well as the memories of the listening experience often inform soundscape compositional methods. Westerkamp states: "Most of my pieces, including *Beneath the Forest Floor* (1992), are riding this edge between the real and the imaginary. When one takes that further, the ways in which real and processed sounds interact in the piece, very much reflect my relationship to the environment" (Westerkamp 2008). My project is greatly influenced by this idea of navigating a border between familiar sounds and abstracted sounds. During the research-creation process I paid close attention to how my past on-site listening experiences in the Brazilian Amazon and Inukjuak affect how I now gauge to what degree my composition preserves environmental context. Furthermore, I noticed that these real-world experiences framed and influenced my choices in processing tools and to what extent I processed my field recordings. For example, during the "Break of Dawn" segment of my composition, the unprocessed sounds of mosquitoes buzzing in Inukjauk are occasionally heard entering in the foreground of the piece as they approach my microphone. However, during one instance of the segment, I chose to add a time-stretching effect to the buzzing sound in order to hone in on this seemingly mundane sound on a microscopic level and draw the listener's attention to it.

During my first week recording in Inukjuak, I treated mosquito sounds as a nuisance, both logistically and aesthetically, and I often felt frustrated when a mosquito interrupted a natural soundscape I was trying to capture. However, I was later told by an Inuit elder that when there are too many mosquitoes out on the water, it is not advisable for locals to go fishing on their kayaks. It is more ideal to go out during relatively windy conditions that imply fewer mosquitoes. This local knowledge drastically shifted my perception of the mosquito sound and I decided to highlight it in my composition to articulate the social significance of this everyday sound. More specifically, I emphasize this sound's function as an aural index linked to Inuit daily life and survival. My inclusion of wind, river and kayak building sounds as soon as

mosquitoes are no longer audible in the piece further accentuates the referential meaning of seemingly mundane Inukjuak sounds. Furthermore, when time stretching the mosquito, I chose to add this effect in a relatively subtle manner so that it is likely ambiguous for my listeners to determine whether or not I even added an effect. My intent in doing so was to accentuate and even exaggerate the original contours and meanings of the mosquito sound but not distort it rendering it completely abstract, therefore, evoking Westerkamp's caricaturist analogy mentioned above. In this specific example of my studio processing, it is clear that my composition does not surpass my proposed threshold of abstraction. Thus, an interesting aural extreme of the abstraction spectrum can be identified when studio processing is applied in such an inconspicuous and minimal fashion. In *Talking Rain* (1998), Westerkamp uses recordings of rain falling on streets and rooftops as source material. Although processing effects are applied to these recordings, at times it is done in such a subtle manner that it is very difficult for the listener to determine what type of studio manipulation is being used if any at all. Listening to Westerkamp's piece, I find myself at times questioning whether the sounds of rain drops on a tin roof are looped by her because of the almost consistent musical rhythm produced by her rain sounds. The metallic timbre of the rain hitting tin also makes one wonder whether a subtle frequency resonance effect is applied. Although Westerkamp applied some noise reduction to the recordings, the fact that she used very high-fidelity and close-range recordings of the rain creates a sense of hyperrealism for a listener who is accustomed to everyday dense urban soundscapes. Honing in on delicate rain sounds with a naked ear in real-life would be difficult when there are acoustic distractions caused by traffic noise and footsteps.

In contrast, during a later section of my "Break of Dawn" segment, recordings of Inuit youths hammering and filing down wood pieces to build a kayak are heavily processed using time stretching and reverb effects. This overtly abstracted passage immediately follows a sonic rupture before which the segment included sounds easily recognizable as sourced from natural environments. If this heavily processed passage were to be heard out of context from the rest of my composition, it would likely be perceived by many listeners as sounding non-referential and therefor more akin to acousmatic electroacoustic compositions. Listeners would find it difficult to link the heavily processed sounds to wood-building sounds and would likely be unable to link them to the original environmental context of the Inukjuak workshop studio where I recorded these sounds. Therefore, my use of processing in this instance during my composition arguably

exceeds the threshold of abstraction but only temporarily. It also demonstrates how this threshold is contextually sensitive and depends on the piece itself in terms of its other moments or key elements (i.e. including less or zero-processed versions of the same sounds, other related sounds from the original source, etc.). Several minutes before this heavily processed section, I incorporate samples of the original wood-cutting and filing sounds very minimally processed using gentle EQ and delay echo so that it is quite evident for my listeners that these sounds are associated with a real-world environment. A sense of place is established for my listeners through my conveyance of contextual information to them. Additionally, there is a single occurrence towards the beginning of the heavily processed section during which I overlap a brief sample of a hammer hitting wood on top of the abstracted sounds that resemble radio static and industrial machinery noise. My intent in part is for listeners hearing this segment to question whether there is in fact a link, perhaps an obscure one, between the unprocessed and processed sounds. Westerkamp's sonic juxtapositions in *Kits Beach Soundwalk* (1989) in which she places processed sounds in close temporal proximity to their source recordings influenced this specific editing choice in my composition. Truax (2002) suggests the poignancy of compositions with largely abstracted sounds that return, even if momentarily, to the untransformed original material through an experience of revealing (7).

In commenting on Westerkamp's *Beneath the Forest Floor* (1992), Akiyama emphasizes the sounds of wind blowing through leaves, crows cawing, and streams gurgling that mesh with sounds not of that environment such as creaking doors, heavily abstracted rumbles and drones to create a haunting, poetic soundscape. Large sections of the piece dissolve into diaphanous tones stripped of reference according to Akiyama. He proposes that it is debatable as to whether or not this piece follows Truax's mandate: the preservation of environmental context (Akiyama 2010: 59). However, in my opinion the ominous low-pitched tones Westerkamp produces by means of pitch-shifting bird calls are applied in a subtle manner. These sonic manipulations are assigned a lower volume level compared to the unprocessed natural sounds that occur more predominantly in the foreground throughout the piece. I would argue that although there are occasional passages of seemingly unnatural sounds that resemble synthesized electronic drones, *Beneath the Forest Floor* (1992) as a whole gives the listener the "feeling" of listening in the forest, although with more of a dramatic cinematic impression at times. The sounds in the piece can be associated with the original context, through their affective dimensions. Westerkamp (2016) clarifies that

through her compositional approach in general, she wants the listener to know where they are and understand the sounds they are hearing, but she simultaneously aims to create a more abstract musical atmosphere that encapsulates the real sounds heard in her pieces. Whereas in my composition, I occasionally apply time stretching in a more intense manner so as to interrogate whether my use of explicitly schizophonic studio methods to create a musical atmosphere conflicts with the conceptual mandates of the soundscape composition genre, in particular the preservation of context. This is precisely where the research-creation contribution of my work is situated – within this nexus of testing while creating.

My role as a composer in playfully prompting listeners to constantly shift their focus as well as to compare and contrast familiar sounds with abstracted sounds as suggested by my discussion above is also informed by Jamaican dub music pioneer King Tubby's studio remixing techniques. The most recognisable sonic trope of dub music is the "dropout" or the fragmentation of the reggae song surface through the cutting out of formerly continuous musical material and then intermittent re-insertion of its various multi-tracked instrumental parts. Tubby was the master practitioner of this mixing technique (Veal 2007: 121). Although dub dropouts unquestionably help establish a dynamic musical tension and release, there is a subtle conceptual theme at play that links dub to soundscape composition, namely, the idea of contextual meaning. Whereas the notion of context in soundscape composition tends to refer to the known and recognisable sounds of a given environment, in Tubby's dub, the context refers to the known and recognisable sounds of a given popular reggae A-side single tune. While Tubby's dub dropout technique uses pre-recorded music rather than environmental field recordings, its referential and mnemonic potential for the listener is comparable to Truax's sonic rupture in *Pacific Fanfare* (1996). Tubby's dubs navigate the border between the familiar and abstracted or, in other words, enhanced sounds of a well-known piece of music, whereas Truax navigates the border between the familiar and abstracted sounds of a well-known location (assuming the listener is a local).

Tubby first conveys contextual meaning within many of his dub remixes by documenting the sound material sourced from another producer's recording session master tape. Hearing the familiar unprocessed reggae source material in Tubby's studio dubs provides listeners with a sense of place in relation to the real-world environmental context of the outdoor dancehall party where they likely first heard the original reggae A-side songs. He references the dancehall

soundscape in his studio work using transparent mixing so that the traces of his technological intervention start as relatively concealed, similar to the found sound editing approach employed in the WSP's *Soundscapes of Canada* (1974) CBC radio series. Once context is established, Tubby abruptly introduces dropouts and processed instrumental samples (e.g. guitar and horn samples heavily processed with EQ and delay echo) to achieve perceptual shifts between familiar and abstracted sound. His deconstruction and subsequent re-assembling of sampled material uses spatial effects like reverb and echo as cohesive elements in the bonding of displaced sonic fragments of music. Similar to Truax's description of soundscape compositions, Tubby's dub compositional approach can be interpreted as referential and context-based and his remixes can be placed on a continuum between "found sound" and "abstracted" approaches.

Situating Tubby's dropout technique alongside the perceptual shifts between real-world and abstracted sounds in Truax and Westerkamp's compositions through the praxis of my project's studio methodology is a generative way of building upon current approaches to soundscape composition. Such a parallel positioning of diverse studio methods helps to further unpack my proposed threshold of abstraction concept and the notion of environmental context. The description of my research methodology presented in Chapter Three details the ways in which my specific processing and arranging techniques merge Tubby's approach with Truax and Westerkamp's referential composition methods.

I have so far proposed that the notion of sonic abstraction is multifaceted and complex in that it exists on a listening interpretation spectrum. My threshold of abstraction concept assists in examining the perceptual shifts between familiar and abstracted sounds from the perspective of listeners. Understanding this concept in conjunction with the concept of contextual meaning in compositions demonstrates the link between soundscape composition and traditional Jamaican dub approaches.

Another compositional genre that warrants a comparative analysis in relation to soundscape composition is that of musique concrète. Although the primary conceptual tenets of musique concrète, a traditionally acousmatic musical genre, and soundscape composition are fundamentally distinct from each other, the following section argues that the concept of acousmatics itself can function as a critical lens for interrogating more complex and nuanced facets of soundscape composition's use of sonic abstraction. This section elaborates the second

element of my theoretical framework, namely environmental acousmatics as a potential creative tool for soundscape composition.

2.2 An acousmatic approach to listening in soundscape composition

The term acousmatic derives from the Greek *akousmatikoi* used to refer to Pythagoras' pupils who were required to listen to his lectures while he spoke behind a veil so as to encourage focused concentration without visual distractions. An acousmatic sound is defined as "a noise which is heard without seeing the causes from which it originates" (Chion 1983: 18). The French term "acousmatique" was popularized by musique concrète pioneer Pierre Schaeffer during the 1950s. Schaeffer applied the acousmatic concept to his studio approach of manipulating recordings of musical instruments, human voices, as well as environmental sounds such as trains and boats collected on phonograph records and later on magnetic tape. However, unlike the soundscape composition approach, Schaeffer and other acousmatic composers generally apply an abstracted syntax such that the acoustic properties of sounds themselves are used to determine how sounds are organised in a composition rather than real-world associations (Truax 2002: 7). As such, these composers separate the sound from its original context, and create a purely aural experience. Schaeffer treats all sounds as finite objects or *objets sonores* that are employed as compositional tools and exploited for their inherent acoustic properties rather than their real-world referents. He pioneered early sampling techniques like playing sounds backwards, slowing them down, speeding them up, and juxtaposing them. He would also sometimes remove the attack portion of a recorded sound's amplitude envelope in order to obscure any sense of familiarity and aural indexicality whether in relation to musical instruments or environmental soundscapes. Schaeffer proposed that the listener must disconnect the sound from any physical, cultural and psychological references and indexes (Chion 1983). Perhaps his intent was encourage listeners to discard their personal biases towards certain everyday instrumental and environmental sounds they have become accustomed to and instead reconsider all these sounds as novel compositional resources.

Interestingly, Westerkamp reimagines the usefulness of Schaeffer's *object sonore* as a composition tool shifting it away from its traditional acousmatic function. In describing her approach to composing with sounds she captures during her travels, she states: "If they are recorded at close-range I may use them as sound objects and process them to extract musical

material that would reflect the atmosphere of the trip" (Westerkamp 2016). Schaeffer, on the other hand, attempts to evacuate all contextual meaning from sounds in order to deploy them as finite objects. He encourages a "blind listening" experience in which the listener suppresses mental linkages between the composition's sounds and the physical world. In contrast, Westerkamp's sound objects are specific sounds that she hones in on in the studio while still articulating their referential potential using contextual aural cues. Although her sound objects are de-contextualized when placed in a soundscape composition, Westerkamp's composition approach aims to emphasize how these amplified and highlighted discrete sounds evoke the strongest memories from her recording experiences.

Schaeffer's compositional approach obfuscated referential cues and abstracts concrete real-world sounds. However, his approach fails to acknowledge and exploit the existence of naturally abstract acousmatic soundcapes present in the real world. Of course we may identify common everyday listening experiences that adhere to the literal definition of acousmatics in which a sound is heard but its source not seen: phone conversation, voices heard over P.A. system in shopping mall, or non-diegetic sound in film, etc. However, natural sonic environments and ecosystems can provide highly nuanced manifestations of acousmatics. The inherent acousmatic properties of the rainforest soundscape, for instance, create an ambiguous listening phenomenon comparable to musique concrète compositions in which sound identities are intentionally obscured. I argue that soundscape composers would benefit from further tapping into the rich compositional potential of such naturally acousmatic soundscapes. Considering the concept of acousmatics is seldom referenced in soundscape literature, exploring environmental acousmatics would perhaps encourage soundscape composers to question their definitions of environmental context (as I will further argue in Chapter Four) and perhaps even draw from Schaeffer's "blind listening" approach to devise new ways of thinking about referential composition. The environmental acousmatics of the Brazilian rainforest are largely a result of the forest's thick foliage and tree canopy. Because of the absence of visual cues and my unfamiliarity with the environment, it was difficult for me to identify sound sources in the rainforest. I was often unable to distinguish between frog, insect and bird sounds. While in the moment on-site this acousmatic experience obscured real-world acoustic indices and referential meaning for me, I found myself meditating on the inherent musical qualities of these confusing Amazonian sounds. Only after listening to my raw rainforest sounds numerous times in the

studio was I better able to identify some of the sound sources. In the acousmatic musique concrète tradition, it is common to hear snippets of environmental recordings abruptly juxtaposed with human voice recordings or synthesized sounds. This creates a sense of obscurity in relation to the real-world origins of some of the composition's sounds and encourages the listener to hone in on the subtle musicalities of these sounds. Similarly, during my listening experiences in the rainforest, I often perceived the soundscape as a collage of ambiguous sounds deriving from distinct sources that were spatially dislocated – a natural surround-sound acousmatic electroacoustic music performance in a sense. At times the intensity of the cicada cries closely resembled harsh electronic tones and the choruses of clicking frogs evoked the time-stretching processing effect often heard in both electroacoustic compositions and Truax's works. My relatively "blind" listening in the rainforest influenced me to perpetually shift between a grounded sense of place when my surroundings sounded "natural" and, in stark contrast, an occasional schizophonic disconnect from the environmental context because of its abstract and musical qualities. The soundscape composition created for my project sometimes reflects on and symbolizes the sonic ruptures between referential and acousmatically abstracted sounds I experienced in the rainforest by way of overlapping and juxtaposing my field recordings both in their unprocessed and processed forms. My studio processing effects were sometimes employed to create a mediated or composed response to my acousmatic listening experience in the field. I take up this question of composed vs naturally occurring acousmatics again in my discussion section (Chapter Four). This perceptual shifting between grounded and obscured listening in the field also influenced how I now listen on an everyday basis. As I walk through the dense downtown streets or more tranquil parks of Montreal, I pay attention to sound sources I can clearly identify and those I cannot and, more importantly, how they intersect to form the overall soundscape. Are these obscured sources machine-produced noise or are they natural? Listening to these intersections can provide insight into our dependence on visual cues in Western societies, noise pollution levels and even intriguing subjective orchestrations a listener can produce mentally simply by walking through a city honing in on naturally-occurring counterpoints and polyrhythms.

The preceding section has demonstrated how the concept of acousmatics must be critically re-examined to appreciate its potential contribution to the philosophical framework of the soundscape composition genre. While the studio can serve as an analytical point of entry for

better understanding acousmatics as an ecological rather than artificial mode of listening, the overlapping and juxtaposing of environmental recordings can also symbolize the ecological concept of ecotonality.

2.3 Ecotonality as a compositional tool

Marginal zones existing in nature known as ecotones are notable for interspecies interaction, but also for providing rich and unique habitats for other species to thrive that would not be found elsewhere. The edges between forests and grasslands as well as the stratified fresh and salt waters of the confluence where a river meets sea are examples of ecotones. McCartney explores the concept of the ecotone as a means of articulating the relationships that become apparent through close listening to audio environments. Drawing from this ecological phenomenon and applying it to soundscape studies, McCartney encourages us to pay attention to how sounds overlap and rub up against each other in any context including a composition (McCartney 2010). Owen Chapman (2015) has also discussed the notion of the ecotone in relation to urban soundscapes with rural qualities, such as abandoned forested areas within a city. Studying a stretch of urban wilderness in Montréal known as the Falaise St. Jacques by means of field recording and sound mapping, Chapman reveals instances of bird sounds intermeshed with construction noise, car traffic, as well as the footsteps of field recordists. The notion of an "authentic" natural soundscape void of human-related noise is thus critiqued and Chapman instead applies the ecotone concept to better understand the organic ways that urban sounds interact. He argues that if we consider space as produced by interrelations, then it follows that those interrelations are multiple and plural as well as complex and unpredictable as they shift and incessantly affect each other over time (Chapman 2015).

My project draws from this phenomenon of ecological interrelations within "natural" soundscapes but applies it to a studio-composed work that proposes relations between the disjointed Inukjuak and Amazon environments. Rather than demonstrating natural ecotones already existing within a specific site I recorded, I use my compositional method as a means of creating what I call *artificial ecotones*. I argue that Truax's *Island* (2000) effectively articulates the concept of artificial ecotones. Listening to the piece conjures aural images of a virtual soundwalk through an imagined island. The source materials include crickets in an Italian forest and waves on a Cayman Islands beach both recorded by Truax. Interestingly, he also

incorporates recordings collected by other World Soundscape Project members that include Vancouver Island beach wave sounds. Using gentle cross-fade edits as transitions and occasional superimposition between these geographically unique recordings, Truax creates artificial transitional areas where species from seemingly adjacent ecosystems interact. At one point during *Island* (2000), seagulls on a beach in either Vancouver or Cayman Islands and crickets in Italy are heard simultaneously. This gives the listener an aural impression of standing at an island forest's edge where s(he) can hear the low rumble of the beach shoreline in the near distance while seagulls and crickets vocalize. Additionally, specific elements from Truax's realistic sound sources including dripping water in a cave and a raven in a forest are abstracted using high-pass or low-pass frequency filters, frequency resonators, as well as granular synthesis. These abstractions sometimes produce drones as well as grainy and choral-like textures and are heard during the cross-fade segments or "transitional areas" between displaced ecosystems. The transitory processed sounds heard sparingly throughout *Island* (2000) perhaps symbolize fictionalized unique "species" that thrive in marginal zones existing in nature.

Taking inspiration from Truax's *Island* (2000), my composition merges geographical extremes (i.e. Arctic and tropical ecosystems) and, in some instances, sounds from one general location but recorded on different days. During my project's "Ecotone" segment, I edit rainforest sounds and Inukjuak river sounds together using slow cross-fading. The listener thus imagines emerging from a heavy rainstorm under the rainforest canopy and walking towards a set of large rapids on a river just outside the forest's edge. However, the rapids were in fact recorded in Inukjuak. The listener then walks along the river shore (my footsteps are heard in the recording) towards a quieter flowing stream. Asides from my footsteps, I intentionally chose to include other human-related noise such as ATVs, motor boats, and speaking to demonstrate how both natural and human sounds frequently overlap in an ecotonal manner sometimes amplifying interesting sonic aggregates as well as important indices concerning the ecological health of a specific environment.

This chapter has outlined the theoretical foundation of my project. Firstly, I have discussed how the soundscape composition philosophies of Truax and Westerkamp, the dub dropout method of Tubby and my studio approach for this project are comparable in their dynamic uses of sonic abstraction. In particular, I propose my threshold of abstraction concept as

an effective means of analyzing the relations between studio processing and environmental context, coherency and the referential properties of sound. Secondly, I argue that the notion of environmental acousmatics serves as a fruitful theoretical bridge between traditional soundscape composition practices and Schaeffer's musique concrète approach. Finally, I draw from McCartney's ecotonal listening but revise it to formulate my own artificial ecotone concept. Artificial ecotones permit me to merge and study seemingly disparate environments in parallel within a studio context. The proceeding methodology chapter will detail how my project's specific studio editing and processing techniques communicate and intervene with the above theoretical arguments.

Chapter Three - Methodology

My project employs a multi-disciplinary methodological approach. This includes research-creation modes and studio methods that I have designed or that have been influenced by other composers and sound theorists. The following chapter first provides a summary of my studio approach in terms of organizing my field recordings and devising compositional themes. I then go on to detail my specific studio composition methods, namely, research-from-creation and creation-as-research, sonic ruptures, artificial ecotones, and self-reflexivity as an ethical studio approach.

3.1 Making sense of my field recordings

Working with such a large collection of field recordings (over 80 hours in total) required me to design an efficient means of organizing and narrowing down my database to a limited selection for this project. Rather than listening to all my recordings in their entirety, I instead chose to first review my field journal notes and skim through the majority of my recordings, often listening to just the beginning and middle parts of (in some cases hour-long) recordings. I sometimes also used sonic visualization software to plot frequency and amplitude changes over time for my recordings. This allowed me to quickly hone in on specific moments when a notable sonic event took place (e.g. bird call or noise of ATV). After reviewing and limiting my selection of recordings, I started drafting the literature and media review chapters of this project. This writing and studio listening process helped me formulate the following conceptual themes I used to guide my compositional process: aural indexicality, environmental acousmatics, the inherent musicality of natural sounds, ecotonality as well as sensitive sounds. This was a new studio approach for me as in the past, I would simply compose a soundscape piece using a relatively limited collection of field recordings. Only after completing the piece or sometimes during the composition process did I start to think about conceptual themes. These themes often influenced my written program notes for public performances. However, the present research-creation project is the first time I based my sound sources, editing, and structural choices on pre-determined themes. Due to the scope of my M.A. project, I had to create a soundscape composition less than one hour in duration despite the exceedingly large collection of recordings from Inukjuak and the Brazilian Amazon I had at my disposal. Thus, I employed these themes as both creative and logistical means for focusing my compositions. Being conscious of these

themes while listening back to my field recordings allowed me to sketch out on paper four segments I used to divide up my composition. Each segment aims to focus on one or two of the themes, but there is also overlapping thematic influence. This guided my categorization of raw recordings into four different sound banks paying attention to their acoustic properties (e.g. inherent rhythms or interesting timbres), indexical properties (e.g. aural cues linked to cultural traditions) as well as the memories evoked for me listening back to some sounds. Creating four different sound banks, each of which serving as a source for a compositional segment, helped clarify how I discarded parts of recordings I felt were not relevant to my compositional themes and what types of processing effects I would use. While this compositional approach was more methodical and complex in comparison to my relatively spontaneous previous studio work, my research-creation project has encouraged me to critically investigate my perceptions as a listener and sound organizer in a studio context.

The following are brief notes on each of the four segments of my project's long-form soundscape composition and their chronological order within the piece (please see Appendix 1 for listening instructions):

1. "Break of Dawn": The segment juxtaposes and sometimes overlaps Inukjuak and Amazonian recordings. I focus on the conceptual themes of sensitive sounds and aural indexicality (in particular the social and cultural significances of environmental sounds).

2. "Acousmatics": This segment explores the relationship between composed and environmental acousmatics. Only Amazonian recordings are used. My threshold of abstraction concept is tested quite effectively during this segment

3. "Wind": Only Inukjuak recordings are used in this segment. The theme of environmental sound as an indexical marker of cultural traditions is revisited during this segment. Very light processing is applied in order to hone in on the inherent musicality of the Arctic winds. I also meditate on the theme of sensitive sounds primarily through my use of processed Inuit throat singing recordings.

4. "Ecotone": This segment focuses on the potential of superimposing and juxtaposing

recordings from seemingly disparate environments to create artificial ecotones. I transition back and forth between Inukjuak and Amazon sounds.

3.2 My studio tools

All compositional work was done using the multi-track editing software Adobe Audition. The built-in processing effects of Audition I used for this project were EQ, frequency resonators, reverb, echo/delay, and pitch-shifting (i.e. slowing down or speeding up sounds). I also processed some sounds using the real-time granular synthesis software TimeToy and them imported them back into Audition. TimeToy's visual graphic controller allowed me to move my mouse up or down, left or right, quick or fast in an improvised manner across the waveform shown on the screen so as to continuously adjust time stretching parameters in an improvised manner. This flexible processing control produced compelling and evolving drones and timbres including scratchy and hissing sounds.

In the remainder of this chapter, I detail the specific studio-based research methods that make up the overall methodology of my project. These methods are research-from-creation and creation-as-research, sonic ruptures, artificial ecotones, and a self-reflexive ethical method for composing with sensitive sounds.

3.3 Research-from-creation and creation-as-research

Chapman and Sawchuk (2012) argue that a research-creation approach can be read as a methodological and epistemological challenge to the argumentative form(s) that have typified much academic scholarship. I believe that the primary research questions central to this project could only have been interrogated through an experimental studio approach rather than a traditional thesis paper. I articulate and question my research concepts through what Chapman and Sawchuk describe as *creation-as-research* (2012). This notion was directly related to the specific processing and mixing methods I decided to employ in my studio approach as well as my perceptions and critiques of my final sound piece. My compositional process produced theoretical investigations, critiques and interpretations in parallel with iterative production stages. It is hard to distinguish where the "research" now sits – in the written elements or the audio production – this is what "creation-as-research" is meant to signify. Furthermore, drawing from Chapman and Sawchuck's alternative (but related) *research-from-creation* category,

creation was required for research to emerge and knowledge to be extracted (Chapman and Sawchuk 2012). Rather than merely theorizing about my experiences field recording in Inukjuak and the Brazilian Amazon, my research derived from the real-time processes of re-contextualizing these past recordings within my studio. As I annotated my specific sound source choices and how I processed them using a composition journal, I paid attention to my selections and how they addressed my research questions. For example, what social or ecological indexes were present in my raw recordings and how were they affected by my processing? The overall goal of my studio approach was to highlight the multifaceted nature of environmental sounds including their musical, social, and ecological indices.

3.4 Sonic ruptures

In Chapter Two I discussed Truax's sonic rupture method used in *Pacific Fanfare* (1996) to abruptly transition from recognizable unprocessed soundscapes to their processed counterparts. Composer John Wynne similarly uses abrupt editing cuts in his soundscape composition *Upcountry* (1999) that shifts back and forth between documentary-style sonic portraits and abstractions of Kenyan environmental sounds and traditional musicians he recorded (Wynne 2002: 106). He applies his own unique sonic rupture technique to achieve these perceptual shifts: "a sudden, complete gap of silence after which the same sound materials reappear but with their apparent perspectives radically altered, as though the ground has fallen away, leaving only the figure" (Wynne 2002: 107). For Wynne, the "manipulation and abstraction of acoustic source material can, rather than obscuring the actuality from which it was derived, convey meanings and reveal characteristics hidden from the senses in the context of real-time experience" (Wynne 2002: 110). Such compositional themes of comparing and contrasting familiar sound with abstract sound as well as sonic presence and absence can be situated with dub techniques. King Tubby was one of the pioneering figures behind the dub "dropout" mixing method or the dropping out and intermittent re-insertion of a sampled reggae song's instrumental parts (Veal 2007: 64) through a remixing process. Drum and guitar parts will often abruptly drop out of the mix and reappear later but in fragmented and processed forms with tape delay and reverb studio effects. For my research-creation project, I developed a sonic rupture editing method directly influenced by the techniques of Truax, Wynne and Tubby.

While I employ the sonic rupture during the "Break of Dawn" segment of my

composition, the "Acousmatics" segment articulates this method most effectively. The first half of the segment includes an hour-long rainforest recording that I truncated and overlapped sounds from. However, no processing effects were applied. Eventually the intensity of piercing cicadas and frog choruses builds up to an acoustic climax that subsequently triggers an abrupt sonic rupture. The second half of this segment following the rupture begins with high-end frequencies of rainforest sounds heard faintly. I achieved this effect using the sweeping EQ filter effect in Audition that modifies a sound file so as to slowly reveal more of its frequency components over time. Only the tinny high-frequency sounds of crickets are heard at first followed by a frequency sweep of the rainforest through which recognizable sounds from the first part of "Acousmatics" but with processing effects applied. My dramatic use of EQ was directly informed by Tubby's unique performance on his MCI mixing console's built-in high-pass filter knob. Rather than employing this EQ filter in its static mode (i.e. setting and leaving it at one frequency setting), Tubby dynamically adjusted it through musical improvisation (Williams 2013). Furthermore, the filter permitted him to compose directly with the timbral intricacies of his sampled source material. Interestingly, Truax engages in a similar form of timbral play with granular synthesis, revealing a deeper level of signification inherent within the original sounds (Truax 1994). A critical listening of Tubby's use of the high-pass filter in *Young Generation Dub* (1976) evokes the aural image of a microscope or narrowly focused flashlight rapidly scanning and zooming into specific frequency components of the drum hi-hat's overall spectral profile. Unlike Tubby's rapid EQ scanning, the slow EQ sweep in my "Acousmatics" segment hones in on the different timbral components of the rainforest. This scanning EQ effect is potent in symbolizing my ear scanning different rainforest sounds while I was in the field and my mental filtering of specific frequencies in the overall bandwidth of nature.[11]

Furthermore, the earlier rainforest sounds from "Acousmatics" return but are now played backwards or drastically processed using time stretching and pitch shifting. Similar to Truax's *Pacific Fanfare* (1996) and Wynne's *Upcountry* (1999), the same sounds re-appear with their

[11] In composing this segment I was reminded of acoustic biologist Bernie Krause's (2012) acoustic niche hypothesis which argues that each animal in an ecosystem carves out its own bandwidth in order to communicate effectively.

apparent perspectives radically altered allowing my listeners to compare and contrast previous contextual sounds with heavily processed ones. Short snippets of highly abstracted bird calls sneak in and out of the piece in a fleeting fashion that recalls echo-drenched guitar and horn samples abruptly entering and leaving the foreground of Tubby's dub dropouts.

The sonic rupture in "Acousmatics" thus signals a narrational shift from unprocessed sounds perceived as "natural", but which are already inherently ambiguous due to environmental acousmatics, to an overtly composed passage during which referential meaning is obfuscated in a more extreme manner.

3.5 Artificial ecotones

In discussing improvised forms of listening during soundwalks, McCartney (2010) points out that sounds are heard and recorded in their wild state, overlapping in an environment that changes unpredictably ("Soundwalking and improvisation"). Recordists can additionally create their own subjective "live" remix in the field itself by moving their microphones in improvised manners so as to pick up interesting combinations of sounds that seem to form spontaneous natural musical orchestrations.[12] My project draws from this notion of improvised listening and remixing in the field but appropriates it to a studio mixing context using the artificial ecotone method. I superimpose or gently cross-fade recordings from Inukjuak and the Brazilian Amazon in order to produce fictional marginal zones where species from these distinct environments can co-exist and overlap in unpredictable manners. My application of the artificial ecotone method alludes to the soundwalking practice, but I instead use studio editing to create a bridge between two environments conveying a virtual soundwalk between the two. This method not only encouraged me to mix Arctic and Amazonian sounds together in improvised fashion, I was often surprised by the intriguing conceptual and acoustic interrelations spontaneously generated through such overlapping. Therefore, I engage with shifting listening perspectives and the unpredictable mixing of sound in nature not by re-directing a microphone, but instead by

[12] McCartney describes a soundwalk experience accompanied by Westerkamp in Vancouver's Queen Elizabeth Park: "I felt Westerkamp respond to various sounds with her microphone, moving to intensify certain patterns and bring the microphone into a closer interaction with the sounds (McCartney 1999: 69). As we walked over from the sculpture towards the Conservatory, an airplane passed overhead, with its characteristic falling glissando. Westerkamp guided the microphone towards the building vents of the Conservatory, timing her motion so that the sound of the airplane seemed to be swallowed by the rising amplitude of the broadband vent sound, in one continuous gesture" (McCartney 1999: 203).

remixing geographically-unique soundscapes. Through improvisation, I sample a sonic element from one environment and try overlapping it onto different parts of the other environment's recording to hear what results emerge. For instance, during the "Ecotone" segment, the eerie cries of Husky dogs in Inukjuak are briefly heard overlapping frog and thunder sounds in the Brazilian rainforest. While at first listen, this may seem like an absurd juxtaposition, nuanced and critical listening reveals interesting timbral contrasts between the dog and frog sounds as well as musical polyphonic textures created by hearing them in unison. My use of subtle and strategic editing techniques with no processing effects can trick some listeners into thinking that the dogs were actually in the rainforest. Furthermore, what meaning related to aural indexicality and environmental context does hearing these disparate sounds mixed together produce? Perhaps some listeners may interpret the urgent calls of both the dogs and frogs as signaling an impending severe rainstorm. Also, simultaneously hearing two environments each with their own unique acoustic and spatial properties (e.g. the sparse and extremely reverberant Arctic vs. the dense and overlapping acoustic signals within the rainforest) may permit the listener to compare and contrast these physical environmental contexts more effectively.

My artificial ecotone method serves as an effective means of bringing together two personal field listening experiences that prior to this project I would have not considered carefully in conjunction. I subtly weave the Inukjuak and rainforest environments into each other so that it is sometimes difficult for my listener to determine whether all sounds heard in the composition derive from a single geographical location or multiple ones. Because I do not use processing effects in most instances when employing the artificial ecotone method, the listener is guided along a perceivably realistic soundwalk through once disparate but now merged environments in which distinct acoustic and indexical properties intermesh. Schafer defines a "hi-fi" soundscape as an environment where "sounds overlap less frequently; there is more perspective—foreground and background" (McCartney 2010). However, McCartney (2010) instead encourages us to listen for characteristics of ecotonality in a soundscape rather than searching for single clear signals devoid of problematic noise. Allowing multiple distinct environmental soundscapes to overlap and rub up against each other, sometimes even in abrupt and jarring ways, is generative in thinking about the referential properties of sound, context and improvised listening in novel ways.

3.6 A self-reflexive ethical method for composing with sensitive sounds

I am influenced by ongoing debates concerning the manipulation of what I call "sensitive sounds". My project incorporates field recordings of Inuit throat singers and traditional carvers. Such sounds are considered a crucial part of Inuit heritage. Could my manipulation of this sensitive material be perceived by some as cultural appropriation and a transgression of Inuit traditions? There are numerous instances of Hip-Hop artists facing censorship or copyright infringement lawsuits for sampling without legal clearances.[13]

Aside from academic research ethics clearances, the issues of copyright and censorship of "offensive material" are very seldom discussed in literature related to soundscape composition and other field-recording based music genres. McCartney does, however, reference the complex issue of sensitive sounds in discussing her reception studies with listeners of Westerkamp's *Moments of Laughter* (1988), a composition involving processed recordings of Westerkamp's young daughter's voice. Some listeners considered the manipulation of human sound sources to be ethically suspect and were concerned that the composer could potentially alter the child's voice and make it sound robotic or machine-like, hence de-humanizing the child (McCartney 2009: 2). Similarly, for *A Walk Through The City* (1981), Westerkamp processed a field recording she collected in a Downtown Eastside, Vancouver park in which an intoxicated homeless man is heard rambling incoherently. She likely had good intentions in trying to frame this man's dismal situation in a positive way by demonstrating the inherent musicality of his voice as she suggests in the 2017 "Ecology of Sound" episode of CBC's *Ideas* radio program.[14] However, could some listeners, especially the Vancouver homeless community, find it disrespectful for an artist to aestheticize abject poverty? This leads me to consider the need for ethical methodologies in soundscape composition. Should the sounds of throat singing and traditional wood carving be treated as intellectual property of the Inuit people that must be protected under law? Do some communities consider the sounds of rainforest birds as sacred and

[13] In 1985, Tipper Gore co-founded the Parents Music Resource Center (PMRC), a committee that essentially waged a censorship war against popular music it deemed offensive, violent and sexually explicit leading to the introduction of parental advisory stickers attached to primarily rap albums. As for copyright, in 1991 rapper Biz Markie was involved in arguably one of the first high-profile lawsuits involving a hip-hop artist accused of sampling original recordings without legal clearance. More recently, Kendrick Lamar has been sued multiple times for his illegal sampling of artists including Alan Parsons Project in 2014, Willie Jones III in 2014, and Bill Withers in 2016.

[14] http://www.cbc.ca/radio/ideas/ecology-of-sound-hildegard-westerkamp-1.3964242

that therefore they should not be manipulated by a composer? Directly addressing these debates is beyond the scope of my project. However, thinking about these questions has helped me to examine the ethical implications of composing with field recordings. I engaged in a self-reflexive composition process through which I remained conscious of my sound manipulation choices and what possible implications they may have for my listeners and the communities I recorded.

During the "Break of Dawn" segment of my composition, I incorporate samples from Inuit throat singing recordings I collected in Inukjuak. While throat singing has been popularized in mainstream music primarily due to singer Tanya Tagaq, it has occasionally been misused in arguably offensive and even racist manners by non-Inuit artists (e.g. Dominic Gagnon's 2015 film *Of the North*). So when deciding how to compose with sensitive material like throat singing sounds, I attempted to devise respectful ways of doing so. Therefore, for "Break of Dawn" I applied a time stretching effect to a throat singing sample in a very subtle way simply to slow down the singing while maintaining the original pitch. A listener would have to pay very close attention to detect that the time stretching effect was even applied. I felt that applying time stretching in a more drastic and overt manner would have made the singers' voices sound too robotic and unnatural, thus distorting both the musical intricacies and cultural resonances of their songs. Additionally, I overlapped the time-stretched samples with two other unprocessed throat singing samples as well as a recording of an Inuit traditional soapstone statue carver filing down stone. All three of the throat-singing samples involve the singers imitating sawing sounds. My overlapping of saw-like vocal sounds and stone filing sounds is meant to not only create an interesting polyrhythm but more importantly to convey the common conceptual theme of Inuit crafts and art forms. Although multiple samples are heard simultaneously, it does not sound chaotic and cluttered but rather evokes the image of a chorus of multiple singers surrounding the listener across the stereo field. My aim is more to ensure the listener makes the indexical link between the singing and carving sounds as opposed to focusing on experimental processing effects. This subtle digital processing approach suggests my attempt at a more hands-off and transparent representation of cultural sounds. While it may seem paradoxical, my composition at other times applies a seemingly amateur editing aesthetic through which my technological intervention with the source material is overtly expressed.

Sonic activist Chris DeLaurenti explicitly subverts notions of transparent editing and professional audio fidelity through his "protest symphony" studio compositions that incorporate field recordings of overtly political soundscapes including activist marches and oral testimonies from marginalized citizens. He uses what he calls "aggressive editing" which includes abrupt stops, dead silence, frenetic intercutting, and obviously artificial polyphony (DeLaurenti 2005). He suggests this editing aesthetic serves as a radiophonic analog to Brecht's distancing effect reminding the listener of the piece's artificial and poetic construction (DeLaurenti 2015) as opposed to an objective documentation of his often sensitive source material. He consequently aurally articulates his subjective interpretation and intervention with the environments he situates himself within and their recorded soundscapes. DeLaurenti's aggressive editing technique played an influential role in helping me develop ethical editing techniques for this project. In particular, throughout my composition I vary my approach to juxtaposing two recordings by either using cross-fades or, in contrast, sharp cuts (i.e. sonic ruptures). In my "Ecotone" and "Wind" segments, I use smooth cross-fades between recordings from two different environments or, in the latter case, recordings from Inukjuak but recorded on different days and locations. The effect of such gentle and seemingly transparent editing is to have listeners imagine they are being guided through a virtual soundwalk within a realistic wordly environment. It is thus evident my composition abides to the mandates of the soundscape composition genre in these instances; that is, the preservation of environmental context and a sense of place.

In contrast, at 9:35 of my composition during the "Break of Dawn" segment, I employ an abrupt cut with a short gap of silence to shift from seemingly transparent documentation of Inukjuak cultural sounds to a passage with microphone handling noise, sounds of me zipping my backpack, as well as a motor boat approaching. By including these sounds that many recordists would consider unwanted noise, I create a stark aural contrast in relation to the immediately preceding passage. My intent is for the listener to experience a jarring perceptual shift when they go from hearing a sleekly composed passage to a completely raw and "noisy" field recording that may be interpreted as having been recorded by mistake. An effective visual analogy to describe the audio effect I convey would be a film director yelling "cut" and then the listener hearing the backstage sounds of equipment being set up and the film crew chatting. Hearing the noises of me setting up my gear signals that the constructed compositional world of my piece has been temporarily suspended and the listener is now hearing the unpolished background noises of the

field. Through this ethically-minded approach, I remind listeners that my composition is essentially an artificial construction intended as a subjective and perhaps culturally-biased interpretation and musical meditation on environmental soundscapes rather than an objective documentation or anthropological study. Similarly, at the very start of the "Acousmatics" segment, rather than using a gradual fade-in to the rainforest sounds, I intentionally left in the noises of me pressing record and adjusting the recording levels giving the impression of a raw unedited field recording. I am completely up front about and make explicitly audible my presence and intervention in a foreign environment as an outsider and recordist. DeLaurenti similarly uses traditionally undesirable recording technology noise in his works as a conceptual theme. He states:

"As a phonographer, I seek to liberate the forbidden elements of field recording—mic handling noise, hiss, narrow frequency response, distorted proximity effect, haphazard directionality, drop-outs, device self-noise, glitchy edits—and not only erode the erroneous idea that recordings objectively represent one "reality" but admit those overt flaws as music. Such *verboten* elements can serve as a framing device, enabling transitions from transparent sequences to obviously recorded ones or may amplify, subvert or dispel the sense of place so fundamental to soundscape composition" (DeLaurenti 2005).

Earlier in my "Break of Dawn" segment, only smooth cross-fades are used between bird and water sounds. So hearing the later abrupt cut amplifies the personal framing I transpose onto the environments I record as well as what Katharine Norman calls a meta-narrational presence (Norman 1994: 106) as a recordist. Furthermore, I superimpose a motor boat recording from the rainforest with a recording of an ATV vehicle passing by in Inukjuak which produces an interesting musical effect when heard in unison. More importantly, I chose to merge these sounds as a personal commentary on my disappointment in having to travel around on such vehicles during my recording trips, sometimes being dropped off and picked up like an audio tourist and, hence, disturbing the environments with my own noise pollution. In this manner, my editing choices are driven by my self-reflexive compositional approach and function as an aural articulation of my field journal notes that describe intriguing but also unpleasant experiences in the field. By allowing my personal preferences and hesitations to filter through my composition in a candidly demonstrative way, my studio methodology and aesthetic choices work to

problematize the perception of seemingly transparent or authentic documentations of environmental soundscapes.

This chapter has detailed my studio process of sifting through, categorizing and editing my field recordings from Inuakjuak and the Brazilian Amazon. I have also specified the software and processing effects employed for this project and have described by studio-based research methods. The following chapter puts forth my reflections and comments on how effectively my studio methods and final sound composition address my research questions and concepts.

Chapter Four - Discussion

The following discussion chapter puts forth my interpretations as to how effectively my final soundscape composition responds to my project's research questions. I also investigate in what ways my composition articulates or challenges my research concepts. I present my discussion in sections each of which links parts of my composition to specific research concepts and studio methods.

4.1 Notes on context-based composition and abstraction

4.1.1 The utility of my threshold of abstraction concept

My project interprets the principal mandates of the soundscape genre through a critical lens, sometimes adhering to these mandates and sometimes challenging them. Although my composition shifts, at times jarringly, between context-based segments and purely abstracted ones, it arguably still sounds like what Truax defines as a coherent soundscape. Processing effects evidently stay below the threshold of abstraction at moments and drastically exceed it at others, all the while ensuring that overall the composition heard as a whole communicates references to the original environmental contexts of Inukjuak and the Brazilian Amazon. Such perceptions of coherency and context are of course subjective and feedback from a public audience hearing my composition may present alternate interpretations. My threshold of abstraction concept helped me gauge the varying degrees of processing I employed and to develop reference points to which I measured my abstraction levels against a perceived contextual meaning and sense of place. However, my understanding of such a threshold is biased and limited in that I was present in the field in Inukjuak and the rainforest and consequently am familiar with my source material.

In the near future, I hope to present my project's soundscape composition publicly and directly engage with audiences via discussions and a written survey. The survey would pose specific questions related to the threshold of abstraction concept and instances during my composition when audience members were maybe unable to identify sound sources. I predict analyzing varying public opinions will give me a better idea of the utility of threshold of abstraction as an analytical tool for understanding subjective listening perception and as a composition tool that could guide a composer's processing parameters.

Testing my threshold of abstraction concept within the current project consequently also led me to question why Truax and Westerkamp limit their studio processing approach to only a few audio effects and often apply them in an overtly referential manner. This is suggested by Westerkamp's use of only pitch-shifting and EQ in *Beneath the Forest Floor* (1992). She proposes that she sometimes makes sound sources essentially unrecognizable using studio effects to permit an exploration of the sound's deeper musical potential (Westerkamp 1996). However, expanding her processing toolkit to include more "extreme" effects akin to Tubby's dub method (e.g. heavy reverb or delay echoes that trail on for several seconds) would arguably present an even more elaborate demonstration of the musical potential of natural sound. On the other hand, Westerkamp's *Cricket Voice* (1988) is a noteworthy example of her ability to sometimes make sound sources relatively unrecognizable and clearly exceed the threshold of abstraction. Recordings of a cricket in a desert are slowed down to such a significant degree that they sound like rhythmic electronic pulses. Without reading the program notes to *Cricket Voice* (1988), listeners would likely be unable to link the piece to their preconceptions of what deserts sound like.

Truax generally focuses on only two audio effects in his compositions, those being time stretching and frequency resonation. Furthermore, he only applies these two audio effects to the tail-end of Vancouver soundmarks in *Pacific Fanfare* (1996). We hear the beginning attack of ship horn amplitude envelopes and only the end of the sounds' envelopes are processed. It is thus quite evident that the processed sounds are directly extracted from the Vancouver harbor sounds. Both Truax and Westerkamp seem to prioritize the conveyance of a sense of place rather than a diverse exploration of studio manipulation in their approaches. This is understandable considering the role acoustic ecology plays in informing the soundscape composition genre and the importance of listeners feeling a closer affinity to natural sound by way of listening to compositions. This is in contrast to the non-referential methods of acousmatic electroacoustic music that often prioritize technological exploration. However, my project investigates the ways in which elevating the level of technological experimentation in relation to current practices of soundscape composition can produce a studio methodology that still adheres to or even enhances the principal mandates of the genre.

4.1.2 The sonic rupture and its articulation of environmental context

As suggested by my preceding discussions of my project's "Break of Dawn" and "Acousmatics" segments, my sonic rupture studio method draws from both soundscape composition techniques and Tubby's dropout method to amplify and convey elements of environmental contexts. The rupture creates perceptual shifts prompting listeners to playfully compare and contrast familiar and abstracted sounds. In particular, the jarring disruption of narrative flow resulting from the rupture encourages listeners to actively listen for the deeper resonances or previously missed subtleties of the environmental sounds, allowing the musical or social significances of everyday sounds to surface. I argue that if my composition exclusively used unprocessed sounds in some segments and only processed sounds in other segments without the inclusion of ruptures, it would perhaps be difficult to encourage my listeners to move beyond the explicitly audible properties of the sounds. Hearing an environmental sound suddenly lifted from its natural context and dropped into an abstracted and obviously composed context is what causes listeners' ears to perk up as they question whether they are still listening to a traditional soundscape composition or an acousmatic work in which real-world referents are obscured.

The obscuring if not complete visual concealment of natural sound sources in the rainforest complicates the notion of environmental context as employed in the soundscape composition approach. The concept of acousmatics is seldom cited in soundscape studies literature because of its seemingly antithetical relation to real-world referential meaning. One may thus assume that acousmatic music and soundscape composition are mutually exclusive genres in terms of their compositional mandates and philosophies concerning real-world context. My project disrupts this assumption and successfully demonstrates the relevance of acousmatics to soundscape composition as I first suggested in Chapter Two. At times, listeners (assuming they are not local to or have spent significant amounts of time in the Brazilian rainforest) may find it difficult to interpret my composition as a coherent soundscape with a clear degree of recognizability in its rainforest sounds. However, I still adhere to the primary mandate of the soundscape composition genre – that is the preservation of environmental context. The natural context of the rainforest is itself acoustically ambiguous especially from the perspective of a foreigner to this environment such as myself. So the link to real-world sound sources and the conveyance of a sense of place to my listeners is obscured at times as a consequence of the

rainforest's naturally acousmatic and obscure acoustic properties (i.e. sound sources heard but not seen). Despite my composition sharing these acousmatic characteristics and, thus, sometimes sounding like abstract electroacoustic music at least on a superficial level, I still present a work that is directly influenced by real-world listening experiences and strongly linked to my listening memories and associations related to the field. The concept of natural environmental context traditionally associated with Truax and Westerkamp's composition methods is thus critiqued and revised in my project.

4.1.3 Composed acousmatics

Unlike Lopez's piece *La Selva* (1998) that avoids the use of digital processing effects in order to preserve the natural environmental acousmatics of a Costa Rican rainforest, my project overlaps and juxtaposes unprocessed sounds with their processed counterparts. I do this in a subtle manner so that I am not only reflecting on my natural acousmatic listening experience within the rainforest, but I also introduce the notion of what I call "*composed acousmatics"* through the studio manipulation of field recordings. In order to symbolize my experience of being unable to distinguish certain sounds I was hearing in the rainforest from unnatural or synthesized sounds I knew from other contexts, I simultaneously present both natural and composed acousmatics to my listeners. For instance, bird and frog sounds are mixed in with a very brief and audibly faint segment of a time stretched bird during the "Acousmatics" segment. The listener has barely enough time to carefully analyze the processed sound and is left pondering whether what they just heard was natural or composed. Similarly, I was often unable to differentiate between bird and frog sounds and they both resembled electronic tones created and modulated in the studio through sound synthesis techniques and technologies. My subtle and faint processing technique is meant to articulate how a compositional approach informed by acoustic ecology can still incorporate acousmatics. Additionally, during the heavily processed second half of "Acousmatics" I drastically slow down bird calls to low ominous pitches. Listening back to these modified bird sounds in my studio immediately reminded me of the haunting howler monkey calls I would sometimes hear echoing in the distance in the rainforest. I was never able to capture recordings of these monkeys, so it was striking for me to hear how my composed acousmatics approach could mimic actual rainforest sounds. My studio methods thus reference my ecological mode of listening in the field that involved analyzing the ambiguous

bird and frog sounds and constantly attempting to locate their sources and identify interesting sonic textures.

In contrast, my experience recording kayak-building sounds in Inukjuak was far from acousmatic as I always saw the wood pieces workers were filing and cutting. Sound sources were generally always visible to me as I recorded unlike the cloaked environmental acousmatics of my rainforest experience.[15] For the heavily abstracted section of "Break of Dawn" when wood sounds are time stretched (as discussed in Chapter Two), I use the dynamic control of the TimeToy granular synthesis tool to abruptly insert a composed acousmatic element that jarringly contrasts the largely referential unprocessed material heard prior to this section. My aim in using TimeToy was to convey an aural image of the human ear zooming into the delicate and barely audible timbres of wood pieces being filed and chips falling to ground. Therefore, the concept of acousmatics can be beneficial in critically analyzing diverse environments, even those for which listeners can mentally visualize sound sources. A temporary abstraction of sound sources permits a perceptual shift disrupting normalized listening habits.

4.1.4 The multifaceted nature of acousmatics

Furthermore, my project comments on the multiple levels of acousmatic abstraction that filtered both my field-listening experiences in the rainforest as well as my subsequent studio listening. When recording in the Amazon, I would generally first listen to the environment for five to ten minutes before actually setting up my recording gear and starting to record. However, once I started recording, I would leave the recording site and remain at a distance about a ten to fifteen minute walk away. This helped to reduce the likelihood of my recorder picking up noise produced by myself and the group of fellow recordists I was with.[16] This permitted me to occasionally capture the sounds of birds that approached my microphone closely. However, I was often hearing certain rainforest soundscapes for the first time only later in my Amazonian lodging where I listened back to my recordings. In this manner, it was even more difficult to identify the sources of certain sounds as I was listening to recordings of naturally acousmatic

[15] In fact, because of the vast open landscapes of Inukjuak with its absence of tall buildings obstructing my view, I could often see ATVs and children playing far away while hearing the echoed sounds they produced.

[16] My recording trip in the Amazonian village of Manaus was part of a group artist residency organized and led by Francisco Lopez. I was joined by about ten other fellow field recordists.

soundscapes in a studio setting without visual cues and relatively disconnected from the original recording site. The recording medium itself (i.e. my lonely microphone) thus adds an additional layer of acousmatic abstraction to the rainforest listening experience. Of course adding processing effects to my raw recordings in the studio amplifies the inherent acousmatics of these sounds that have already been mediated through my microphone.

It is important to note that for Truax's piece *Island* (2000) some of the recordings were collected by other members of the WSP. In other words, Truax was not physically on-site to experience firsthand some of the soundscapes he represents in the piece. This raises the question as to whether Truax can effectively preserve environmental context in his piece even if he did not hear, smell, and touch these environments himself. Without having witnessed sound sources in the field, Truax is essentially working with other people's recordings through an acousmatic mediation similar to my Amazonian recording experience. Can *Island* (2000) still be considered a context-based composition?

In sum, I propose that the assumed bond between environmental context and physical space in soundscape compositions be challenged. The notion of context should be expanded to include not only firsthand experience with an environment but also a listener/composer hearing an environment in a studio or compositional context acousmatically. One should be free to make listening associations and attempt to connect with environments represented in someone else's recordings through subjective interpretation rather than tangible experience.

A technologically mediated acousmatic listening experience is also incorporated into my composition using underwater hydrophone recordings of the Amazon river with its ultrasonic waves and dolphin sonar signals that are impossible for the naked human ear to detect. The piezo transducer inside the hydrophone mediates these otherwise invisible and inaudible sound sources hidden below the water and transforms them into audible electrical signals that I manipulate as compositional source material. I describe such a listening phenomenon as *amplified acousmatics*. The rich and inherently acousmatic soundscape below the river is amplified via the hydrophone, but my subsequent use of EQ on specific underwater sounds exposes and enhances their subtle musical properties. The deep bass of the sonar signal's rhythmic pulses alongside frequency-filtered high-pitched fish crackles and dolphin calls brings to mind the beats and novel sound effects of classic Jamaican Dub music of the early 1970s. I attempt to evoke this "feeling" of dub

music in the last part of my "Ecotone" segment during which the hydrophone recordings are heard.

4.2 The conveyance of motion through artificial ecotones

Chapman (2015) proposes that soundmaps, soundscape compositions and other creative forms of audio expression produced using field-recorded material act as representations of the constellation of interrelations felt by the recordist/composer while moving through the space of recording. I propose we thus consider the role motion can play in ecotonal listening. While many of my Inukjuak recordings represent moving perspectives (i.e. recording while I soundwalk), all the Amazon recordings used for this project were collected from a stationary perspective. I therefore apply the ecotone concept as a studio-mediated and artificial mode of mobilizing previously static recordings to evoke the aural image of a virtual but relatively realistic soundwalk. However, I attempt to ensure that such mobilization still articulates the environmental contexts of my diverse source material. For example, juxtaposing a walk along the Inukjuak river with a single aural perspective in the rainforest not only serves to comment on the interrelations among the different water timbres in Inukjuak interpreted by me as I physically moved through the space, it also repurposes the composition studio in a way that allows me to move through Inukjuak and the Amazon at the same time. In this manner, one may study the possible relations and differences between two environments combined in the studio. This is analogous to someone comparing and contrasting the sounds heard while moving through a real environment, sometimes mentally remixing different sounds in an improvised manner.

4.3 Further reflections on aural authenticity and the ethical implications of manipulating environmental sounds

Sound theorists have debated whether or not it is the composer's duty to convey a so-called authentic representation of environmental and cultural soundscapes when working with field recordings in the studio. Akiyama addresses the paradox of soundscape composers attempting to create authentic representations of places: "To compose with environmental sound requires an immobilization and an ordering of the fluid, immaterial sonic world that is seemingly at odds with the ecological and sometimes romantic hands-off philosophies espoused by many of its practitioners. Soundscape composition begins with the act of recording, a gesture that, like taking a photograph, involves some measure of framing and exclusion" (Akiyama 2010: 54).

Akiyama's observation suggests a contradiction between the soundscape composition genre's mandate to foster a deeper awareness and appreciation of environmental soundscapes among listeners and soundscape composers' selective framing and studio manipulation of the natural and human world. Similarly, in discussing notions of authenticity in studio production approaches, McCartney poses the following questions that have led me to think critically about the ethical implications of my juxtaposition and overlapping of Inukjuak and the Brazilian Amazon in this project: "Do all sound sources need to come from one local place? Should they be played back in that same place, or can they travel? Is schizophonia negative or can it be a bridge between places?" (McCartney 2010). While my project has suggested ecotonality as a fruitful concept that can guide compositional methods, can the mixing of certain sounds, each possessing unique ecological, spiritual or cultural significances, be perceived as a form of sonic tourism or flippant and unethical by some listeners? My written survey to be used for the public presentation of this project in the near future will be able to gauge whether my artificial ecotone method is perceived as offensive sonic tourism by some.

Furthermore, I processed both biophonic (i.e. animal) and geophonic (i.e. non-biological) sounds including frogs, birds, dolphins, insects, water, and wind for my project. As an artist inspired by the acoustic ecology movement that calls for a more balanced relationship between humans and natural soundscapes, I am committed to appropriating soundscapes in a respectful manner that can draw attention to the intrinsic musicality of environmental sound and consequently raise awareness to issues including ecological and cultural fragility. Soundscape composers seek to discover the sonic and musical essence contained within their field recordings and thus within the place and time where they were recorded according to Westerkamp (Akiyama 2010: 55). Akiyama suggests that this essential and ontological connection to place obliges the composer to respect the integrity of the recording in the same way that one has a responsibility to respect the place and vice versa. However, he is then drawn to ask: "But what does it mean to compose with such charged recordings, to assemble musical works from what are taken to be fragments of the world?" (Akiyama 2010: 55). Westerkamp's response would perhaps be that sounds have their own integrity and need to be treated with great care and respect. This belief in the inherent integrity of real-world sounds is implied by her comments on studio processing: "Why would I process a cricket's voice but not my daughter's? If the cricket had come from my own garden, had a name and would talk to me every day, would I still be able

to transform it in the studio? I remember when I had to say 'stop' to electroacoustic experimentation: the cricket was in danger of being obliterated" (Westerkamp 1996).

Lopez, on the other hand, refuses the need for indexical links between edited field recordings and their sources and believes a musical composition must be a free action without having to refuse any extraction of elements from reality. According to him, the composer also has the full right to be self-referential, and not be subjected to a pragmatic goal such as a "supposed, unjustified reintegration of the listener with the environment" as he believes is enforced by soundscape composers (Lopez 1998). I would argue that Lopez's proposed holistic liberation of environmental sounds from their respective contexts for purely aesthetic and musical purposes may be considered irresponsible in some instances. His philosophy could be interpreted by some communities who value particular human and non-human soundscapes as reinforcing offensive cultural appropriation practices. Through my future public presentation of my project, I would be interested in determining whether the definition of a sensitive sound is subjective depending on the composer and listener. Surely my audience's age, gender, cultural background, and musical knowledge would influence their interpretation of my processing techniques as ethically problematic (or not) in some instances.

My music practice outside of academic work often combines electronic beats, my own field recordings, as well as samples of traditional music from Zimbabwe, Papua New Guinea, Japan and Haiti (among other sounds from around the world that I collected from online archives or CDs). Although I make very little profit from my music production and have never had to legally clear my samples, I am fully conscious of my position as an outsider re-contextualizing and digitally processing such sensitive cultural and spiritual sounds that could potentially offend some listeners, despite my good intentions. I am very aware that sample-based music like my own can be interpreted as sonic tourism and cultural fetishism by some listeners. As an artist, I am self-reflexive during my creation process and I sometimes self-censor some of my choices in sound sources in order to be culturally or ecologically conscious. While my beat-based non-academic music and my research-creation project employ quite different source material and compositional aesthetics, situating both my studio approaches alongside each other has allowed me to question the ethical spectrum that exists between the practices of sampling copyrighted

source material in popular sample-based music (e.g. Hip-Hop) and sampling field recordings in academic-based music.

4.4 Revisiting my primary research question

The fundamental research question I aimed to investigate through this project was whether combining and digitally processing seemingly disparate environmental soundscapes helps articulate and enhance their referential properties such as their musical, social and ecological resonances and indices.

I feel I have clearly articulated the inherent musicality of the natural and cultural soundscapes represented in my project. For instance, I superimpose time-stretched Inuit throat singing with a recording of wind passing through metal stair rails at a local Inukjuak school. Because the rails had small holes in them, the wind passing through them created eerie flute-like melodies. So the metal structure functioned like a found instrument amplifying the hidden music of Arctic winds. Furthermore, Inuit throat singers traditionally use their voices to imitate the sounds of nature and wildlife. The throat singers heard in the mentioned segment of my composition are imitating wind sounds. Therefore, through my combination of the actual wind sounds with throat singing, I convey both the social significance of Arctic environmental sounds and how these everyday sounds inform a traditional musical practice.

Effectively conveying the ecological resonances and indices of environmental sounds was more of a challenge for me. Considering the stark contrast in wildlife and general acoustic properties of Inukjuak and the Brazilian Amazon, I struggled in devising both a compositionally and theoretically compelling method for bridging unique ecological features within a single composition. Through my initial drafts for the composition, I found that directly overlapping the two environments throughout would likely make the composition as a whole sound too artificial and disconnected from the traditional soundscape composition approach and aesthetics. So I decided to use overlapping more sparingly. Therefore, when the two environments are briefly heard in unison, a perceptual shift occurs and the listener questions the context and sound sources used. This hopefully fosters a more playful but critical listening mode with the listener comparing and contrasting familiar and abstracted sounds. My seemingly absurd and artificial superimposition of Husky dog cries with rainforest frog and thunder sounds creates a musical harmony and counterpoint. More interestingly, hearing contradictory acoustic properties of these

two ecosystems simultaneously is arguably what encourages listeners to think critically about their preconceived notions and assumptions as to what the North and the Amazon sound like and whether their ecosystems are truly disparate.

My composition also employs the artificial ecotone concept as a method for juxtaposing and smoothly transitioning between two environments. While this method results in less of a sonically dramatic effect than overlapping does, it still effectively suggests how my unique listening experiences and memories from each environment intermesh and "speak" to each other in the world of my composition. The artificial ecotones in my project serve as metaphors for interspecies interaction in real-world ecotones. In this manner, my soundscape perceptions and associations in geographically disconnected fields are situated in dialog rather than isolated, thus allowing me to rigorously investigate my listening and recording practice more holistically.

Conclusion

This research-creation project *Disparate Soundscapes and Ecotones* has aimed to demonstrate the ways in which combining geographically unique environments within a single soundscape composition can both articulate and question the referential meanings communicated by natural and social soundscapes. Through my juxtaposing and superimposing of Inukjuak and Brazilian Amazon field recordings, in both their processed and unprocessed forms, I have critically sounded out and compared the inherent musicality, social aural cues, and ecological resonances of these seemingly disparate environments. While my listening experiences within each of these environments revealed unique indexical and mnemonic potentialities of natural and cultural sounds, situating these varying communicational properties of sound in dialog has proven to be a fruitful epistemological intervention in relation to traditional soundscape composition practices. In particular, my project explores how the studio can both highlight and undermine indexical relationships between composed soundscapes and "real" soundscapes. I have examined how digitally processing and merging these two environmental soundscapes can critique and build upon the principal mandates of the soundscape composition genre, specifically focusing on the works of Barry Truax and Hildegard Westerkamp. Through the process of creating my long-form soundscape composition for this project, I have investigated and at times challenged notions such as environmental context and coherency that are prominent in Truax and Westerkamp's approaches.

The theoretical framework of my project has involved three main components. Firstly, I have drawn from Truax and Westerkamp's use of sonic abstraction to create perceptual shifts between familiar and abstracted sound. However, I have also suggested that King Tubby's dub remix approach may be interpreted as a mode of referential context-based composition comparable to soundscape composition philosophies. I proposed the concept of a threshold of abstraction as a means of gauging how varying the degree of sonic manipulation in a composition affects the referential properties of environmental sounds. Secondly, I have critically studied the concept of acousmatics and how its novel integration into the soundscape composition approach could question the importance of sound source recognizability and help expand accepted understandings of environmental context in composition. Finally, I have

devised the concept of an artificial ecotone as an ecologically-informed mode of comparing and contrasting disparate environments and merging them within a studio context.

Inukjuak and the Brazilian Amazon surely have distinct environmental sounds that inform the local knowledge and everyday practices of the inhabitants of these environments in often divergent ways. However, my composition questions what interesting referential meaning can emerge from hearing disparate environments together. Feld argues that schizophonic sound can produce schismogenesis or the birth of new perspectives from inserting soundscapes into new geographical contexts (McCartney 2014: 223). I have examined the results of overlapping the indexical associations of multiple soundscapes. For example, what is the result of combining a chorus of Amazonian birds that signals the break of dawn with strong early morning Inukjuak winds that imply good fishing conditions? Does this provide a deeper understanding of aural cues (i.e. sound as a marker signaling the start of daily outdoor practices for locals) or does it solely provide an interesting musical orchestration? My project suggests it can do both.

Chapman and Sawchuk (2012) argue that "in research-creation approaches, the theoretical, technical, and creative aspects of a research project are pursued in tandem, and quite often, scholarly form and decorum are broached and breeched in the name of experimentation". The research methodology created for my project was experimental in nature. In particular, I chose to take inspiration from Truax and Westerkamp's studio techniques, but also critically examined them and tested their compositional limitations by sometimes incorporating more extreme forms of studio processing reminiscent of acousmatic music and King Tubby's dub remix methods. Situating these diverse compositional approaches alongside each other influenced me to create my own sound editing and processing techniques that demonstrate links between Truax and Tubby's common use of sonic ruptures and timbral play.

My artificial ecotone method evoked the aural image of a virtual soundwalk through Inukjuak and the Brazilian Amazon simultaneously. This method was employed through my improvised mixing of the two environments in my studio as a metaphor for the improvised mental remixing of natural and cultural sounds I often engage in while listening and recording in the field. During some instances of my composition, I subtly weaved the different environments into each other in an ambiguous manner with little or no processing applied so that it is sometimes difficult for listeners to determine whether all sounds derive from the same location

or separate ones. However at other points, such ecotonal fluidity is disrupted and the artificially constructed nature of the piece is explicitly presented through heavy processing and jarringly abrupt sonic juxtapositions.

These diverse applications of studio manipulation ranging from seemingly realistic and authentic representations of environments via artificial ecotones to overtly composed and artificial representations led me to consider the ethical implications of my compositional methods. My goal was thus to devise ethically-minded and self-reflexive approaches to appropriating environmental sounds for this project. For instance, I used a time-stretching effect on throat singing recordings in a very subtle manner so as to preserve and accentuate the inherent musicality and cultural meanings of the sounds rather than distorting them. However, I also applied a seemingly paradoxical means of composing with sensitive sounds in a respectful manner; that is, openly acknowledging my technological intervention with natural and cultural sounds in the studio and my biased role as curator selecting elements from and framing environmental soundscapes. I feel I have achieved this through my use of aggressive editing influenced by the work of sonic activist Chris DeLaurenti (e.g. abrupt editing cuts and gaps of silence) to remind my listeners that I am conveying a subjective and composed representation of Inukjuak and the Brazilian Amazon. I also audibly convey my intervention in the field itself, often disturbing natural ecosystems as a recordist with equipment and self-produced noise. I included microphone handling noise, my footsteps and the loud noise of my transportation (e.g. ATV vehicles and motorboats) in order to clearly articulate that my composition is not intended as an "authentic" representation of environments.[17]

A limitation of my project is that only through collecting feedback from public audiences would I be able to assess whether my composition is successful in terms of the ethical path I attempted to follow in relation to respecting the inherent integrity of natural and culturally sensitive sounds or whether it veers more towards sonic tourism, technofetishism, and cultural appropriation. I would use written surveys and casual conversations with audience members to

[17] Chapman (2015) addresses the limitations of field-recording based representations of sonic reality. Such representations "vary immensely depending on the disposition of the recordist—whether or not she interacts with objects or people in the environment, for example, to create sounds for recording (tapping on trees, etc.), not to mention the question of including her voice" (Chapman 2015).

gather their opinions and interpretations of my composition. My plan for a future presentation of this project is to transform my current stereo composition into a multi-channel sound installation played back through multiple loudspeakers (most likely eight) surrounding the audience. As visitors interact with my installation by tilting their heads or moving closer to specific loudspeakers, they may hear unique layers of sonic textures and perhaps even discover their own subjective musical and referential meanings hidden in the gallery space. Listeners' ears perhaps can function as natural sound mixing consoles. I hope to use constructive feedback from audiences as a means of testing the functionality of the research concepts and studio methods I investigated and employed in this project. Only through critical interpretations and evaluations of the future evolution of my composition by other listeners will I be able to further develop and improve my current practice as a composer and soundscape researcher. These considerations notwithstanding, the production of *Disparate Soundscapes and Ecotones*, in its current form, has allowed for a detailed critique of certain strands of traditional soundscape composition theory without a wholescale refutation of the genre. As such, this project works to sound out the subtle meanings that reside below the surface of environmental sounds. Hearing the geographical extremes of the Arctic and Amazon in parallel encourages novel ways of reinterpreting and orchestrating the diverse soundscapes that surround us.

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Appendices

Appendix 1

For practical purposes, I have divided my long-form soundscape composition into four sound files according to the below four segments. Please import the four WAV audio files into your media player (e.g. iTunes) in the following chronological order:

1. Break of Dawn (15’52’’)
2. Acousmatics (12’12’’)
3. Wind (7’10’’)
4. Ecotone (13’30’’)