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# Noise as Music: Effects of Physical and Digital Noise in One's Life

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Noise as Music: Effects of Physical and Digital Noise in One's Life

by

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An undergraduate honors thesis submitted in partial fulfillment of the

requirements for the degree of

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in

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## Introduction

This thesis follows the development of five short sonic compositions created from field recordings taken of my various environments between June 2020 and March 2021 during the COVID-19 pandemic. While the pandemic is not the focus of the project, it had a significant impact on the result, as when life changes so do the noises and sounds present within it. This paper will detail the literature which informed its creation, describe the creative process, and seek to provide an answer to the question: how has the sound in the spaces surrounding me, both physical and digital, influenced my worldview and relationships?

Sound is something to be thought about critically. It is not just a part of our world, but it helps define it. The sounds I hear in my physical settings and my digital world are instruments. They have been alongside me as I have formed and let go of deep connections, offering insight into how I interact with my environments. I am not alone in this, as each person has a unique relationship with sound. These compositions explore how sounds have impacted my and other people's lives. They also encourage others to think about the noises in their own life, and how noise and music are not as unrelated as many people may think. Sound is expansive and can push people to understand how noises may play a meaningful role in their environments. Additionally, critical thought about sound can and should push meaningful experiences with music and sonic environments outside of academic discourse into the mainstream.

## Background

Most people in the western world view music as a delicately crafted collection of notes, harmony, and rhythm. Noise, on the other hand, like traffic, is often considered as being a nuisance, industrial, and having no connection to music. The western concept of using noise in music emerged in the early 1900s under the influence of modernism. In 1913, Luigi Russolo wrote *The Art of Noises*, a futurist manifesto letter to fellow composer Francesco Balilla Pratella. At the beginning of the letter, Russolo mentions how even "the most complicated orchestra can be reduced to four or five categories of instruments with different sound tones."<sup>1</sup> He calls for a change saying, "We must break at all costs from this restrictive circle of pure sounds and conquer the infinite variety of noise-sounds."<sup>2</sup> In the 1930s, Edgard Varèse, an American immigrant from France, began writing entries describing the development of a concept he called "organized-sound." Varèse was determined to gain the "right to make music with any sound and all sound" and advocated for the use of technology.<sup>3</sup> The idea of including electronics was not popular with composers at the time. Still, Varèse stated that "electronics is an additive, not a destructive

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1. Luigi Russolo, *The Art of Noises*, trans. Robert Filliou (New York: Something Else Press, 1967), 6.

2. Russolo, *The Art of Noises*, 6.

3. Edgard Varèse, and Chou Wen-Chung, "The Liberation of Sound." *Perspectives of New Music* 5, no. 1 (1966): 19, <https://doi.org/10.2307/832385>.

factor in the art and science of music."<sup>4</sup> He brought this into his compositions of organized sound, such as "Poème électronique," a piece in which he utilized electronics and tape.<sup>5</sup>

John Cage is one of the most prominent figures within the western movement to expand societal ideas of noise and music. In his writing, "The Future of Music: Credo," he talks about the future of rhythm in music, stating:

The composer (organizer of sound) will be faced not only with the entire field of sound but also with the entire field of time. The 'frame' or fraction of a second, following established film technique, will probably be the basic unit in the measurement of time. No rhythm will be beyond the composer's reach.<sup>6</sup>

Beyond just the inclusion of noise, there is a link between music's future and its relationship to time. Rhythm expands beyond the concept of measures or notes. Noises do not follow set rhythms and cannot be notated accurately with the symbols western music currently holds in the highest regard. Exploring with noise in composition inherently pushes it into a space that expands upon western ideas of rhythm. Going beyond the traditional bounds of time moves music into a new dimension.

In the 1950s, Cage experimented with noise in a piece called "William's Mix." The work was arranged to be played on eight magnetic tapes and was the first noted demonstration of octophonic music. In the recording, the textures and timings of different

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4. Varèse, "The Liberation of Sound," 19.

5. Edgard Varèse, "Poème électronique," Track three on *Varèse: The Complete Works*, Decca Music Group, 1998.

6. John Cage, "The Future of Music: Credo," in *Sound*, ed. Caleb Kelly (Cambridge: The MIT Press, 2011), 24.

noises come together in unique ways due to the live splicing of tapes.<sup>7</sup> Other minimalist composers, such as Steve Reich, have also experimented with noise. Notably, in the late 1980s, Reich composed a three-movement piece called *Different Trains*. In the piece, a string quartet plays repetitive chords, while the sound of horns, trains running on tracks, and speech samples fill out the arrangement. The speech samples were taken from interviews with people in America and Europe before World War II and allowed Reich to explore the aspects of his environment and life as a Jewish man.<sup>8</sup>

Just over 100 years since western composers began to expand music to include noise, modern composers now use noise consistently to explore environments. In 2015 composer Tod Machover debuted *Symphony in D*, a piece honoring the city of Detroit. The composition featured both sounds and speakers from the city to explore and paint a picture of its history and current state.<sup>9</sup> Just a few years prior, Gascia Ouzounian published an article detailing sound art in Belfast, Ireland. Projects such as *The Belfast Sound Map*, which collected and displayed field recordings on a digital map, and *Resounding Rivers*, which publicly displayed the sounds of rivers that once flowed through the city, have helped people begin to critically explore their environment through sound.<sup>10</sup> Recently, in April of

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7. John Cage, "Williams Mix," Track two on disc three of *Cage: The 25-Year Retrospective Concert of the Music of John Cage*, Wergo, 2012.

8. Steve Reich, *Different Trains/Electric Counterpoint*, Nonesuch Records, 1990.

9. Tod Machover, *Symphony in D*, Detroit Symphony Orchestra, 2015, <https://openmusiclibrary.org/videos/5720/>.

10. Gascia Ouzounian, "Recomposing the City: A Survey of Recent Sound Art in Belfast," *Leonardo Music Journal* 23 (November 12, 2013): 47–54, [https://doi.org/10.1162/lmj\\_a\\_00154](https://doi.org/10.1162/lmj_a_00154).

2020, Fiona Apple released *Fetch the Bolt Cutters*,<sup>11</sup> a vividly percussive album that Apple crafted using a combination of musical and non-musical objects to explore her home environment.<sup>12</sup>

Contemporary music often uses sounds recorded from artists' environments through a technique called sampling. Pop music, or modern-day contemporary music, is a genre of music that *eats itself* through its use of sampling.<sup>13</sup> Andrew Goodwin, a late professor of communication, describes sampling as a critical part of pop music. One of the main results of the use of sampling in the late 1980s was the "removal of any immanent criteria for distinguishing between human and automated performance."<sup>14</sup> Speech samples used in many minimalist compositions, such as Steve Reich's *Different Trains* and John Cage's "William's Mix," help demonstrate this inability to distinguish between the two. Furthermore, Maarten Beirens, analyzing the use of speech samples by David Byrne, Brian Eno, and Steve Reich, asserts that the manipulation of speech in music is an act of violence because it destroys the speech's original form. However, Beirens concludes this violence transcends being a negative force and instead becomes a way of "facilitating sonic

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11. Fiona Apple, *Fetch the Bolt Cutters*, Sony, 2020.

12. Zelda Hallman, "Allow Fiona Apple to Reintroduce Herself," *Vulture*, April 17, 2020, <https://www.vulture.com/2020/04/fiona-apple-fetch-the-bolt-cutters.html>.

13. Andrew Goodwin, "Sample and hold: pop music in the digital age of reproduction," *Critical Quarterly* 30, no. 3 (1988): 34.

14. Andrew Goodwin, "Sample and hold," 39.

dimension, of enabling more direct access to the expressive content, transmitted by the voice."<sup>15</sup>

Sampling has also been used as a form of resistance. One notable example lies in house music, used in Ballroom at events called Balls, which serve as cultural gatherings of Black and Latine LGBTQ+ people. "The Ha Dance," released in 1991 by Masters at Work,<sup>16</sup> has become the quintessential ballroom piece, featuring a sample from the movie *Trading Places*. The "ha" sound on every fourth beat, known as the "Ha Crash," comes from a scene featuring a character in blackface.<sup>17</sup> The Ha Crash, first established in "The Ha Dance" has since been used in countless pieces of music, many of which have been created by MikeQ.<sup>18</sup> The continual reclamation of that sample for cultural celebration of Black LGBTQ+ people is a direct form of resistance against the systemic oppression Black LGBTQ+ people experience in the United States.

Music and samples have been used as a form of resistance for Indigenous peoples as well. In his doctoral dissertation, Ryan Shuvera writes about the Indigenous music group A Tribe Called Red, currently known as The Halluci Nation, who blend genres such as hip-hop

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15. Maarten Beirens, "Voices, Violence and Meaning: Transformations of Speech Samples in Works by David Byrne, Brian Eno and Steve Reich," *Contemporary Music Review* 33, no. 2 (April 2014): 221, <https://doi.org/10.1080/07494467.2014.959277>.

16. Masters At Work, "The Ha Dance," Cutting Records, 1991, [https://www.youtube.com/watch?v=\\_URFoqkwWLY](https://www.youtube.com/watch?v=_URFoqkwWLY).

17. Sound Field, "The Sound of NYC's Underground Vogue Scene (Feat. Qween Beat)," YouTube Video, 13:55, August 5, 2019, <https://www.youtube.com/watch?v=ULzamll1Ehw>.

18. Sound Field, "The Sound of NYC's."



and dance with First Nations music. The group has thrown monthly Electric Pow Wow parties to create a space for Indigenous youth, and Shuvera describes their importance:

These gatherings allowed an urban Indigenous population to navigate, articulate, and determine what it means to be an Indigenous person living in an urban area in settler colonial Canada in the twenty-first century. As people from other cultures took notice, the parties became a space of cross-cultural recognition despite always remaining a space of Indigenous self-determination and “embodied sovereignty.”<sup>19</sup>

The Halluci Nation has mixed traditional and modern music to redefine what it means to be Indigenous in urban environments. Through their music and performances, they have created space for Indigenous youth, inspired education, and carried knowledge. These are all active forms of resistance against settler colonialism, a system of structural genocide where white settlers have taken Indigenous land to settle permanently, forcibly destroying Indigenous communities both physically and culturally.<sup>20</sup>

In one of their most famous songs, “Electric Pow Wow Drum,”<sup>21</sup> the group uses multiple samples from music within their environment. One sample of note comes from a recording of the Grass Dance,<sup>22</sup> a significant cultural dance stemming from “the northern

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19. Ryan Shuvera, “Sounding Unsettlement: Rethinking Settler States of Mind and Re(-)cognition through Scenes of Cross-Cultural Listening” (PhD diss., The University of Western Ontario, 2020), 142, Electronic Thesis and Dissertation Repository. <https://ir.lib.uwo.ca/etd/7208>.

20. Patrick Wolfe, “Settler Colonialism and the elimination of the native,” *Journal of Genocide Research* 8, No. 4 (2006): 387-409.

21. The Halluci Nation, “Electric Pow Wow Drum,” Track one on *A Tribe Called Red*, A Tribe Called Red, 2012.

22. CBC Music, “The Creation of ‘Electric Pow Wow Drum’ | A Tribe Called Red,” YouTube video, 1:52, November 16, 2016, <https://www.youtube.com/watch?v=L8YQFjpgTBk>.

plains tribes—particularly Omaha-Ponca and Dakota-Sioux.”<sup>23</sup> Wanbli Charging Eagle (Lakota Sioux and Ojibwe) says, “when I dance, I feel like I’m representing my family and my tribe. When I travel, when I go all over with this dance, I take them with me and represent them the best way I can. I’m dancing more for my people than for myself.”<sup>24</sup> In sampling a moment of the Grass Dance, The Halluci Nation moved this dance into a sonic space mixed with electronic music, and a physical one created explicitly for Indigenous youth. This again, serves as an active form of resistance against the systems of settler colonialism which have stripped Indigenous peoples from their culture and land, and that white settlers created and continue to uphold.

According to Jonathan Gilmuary, “listening to sound is key to the way in which we experience and understand the world we live in.”<sup>25</sup> Including sounds from our natural environment in music can allow for connection at a broader level. My work takes inspiration from all forms of noise inclusion in music. Each artist discussed has used sounds from their environments to represent their thoughts and experiences. Their work has influenced both my techniques and expressions. Using sounds from my digital and physical worlds provides me with three levels of analysis: 1) examination of my own identities and relationships, 2) a reflection of music and its structures, and 3) how sound shifts between environments over time and space. Through composition using field

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23. ICT Staff, “Origins of the Grass Dance,” *Indian Country Today*, Spetember 13, 2018, <https://indiancountrytoday.com/archive/origins-of-the-grass-dance>.

24. ICT Staff, “Origins.”

25. Jonathan Gilmurray, “Sounding the Alarm: An Introduction to Ecological Sound Art,” *Musicological Annual* 52, no. 2 (September 2016): 77, <https://doi.org/10.4312/mz.52.2.71-84>.

recordings taken during my time as an undergraduate student in Portland, in my home state of Colorado, and of my digital world, I have found that sound shapes the perception of one's environment uniquely and allows us to critically examine structures in music. Sound can help one process change and provides insight into how we can navigate the constant transitions of life. The latter half of this paper will detail the techniques I used and additional literature and compositions I took inspiration from as I created each piece.

## **Process**

In the summer of 2020, I collected approximately two hundred field recordings from Portland, Colorado, and my digital spaces. In the fall of 2020, I began sifting through the hours of field recordings and began composition. As I started this process it became clear I would have five pieces exploring different topics, techniques, and environments. They each draw upon various works and methods and help me answer my question with the three levels of analysis I presented previously. They also serve as records of my sonic experience during the COVID-19 pandemic. The sections below detail what techniques I used and answers I was led to in each piece.

### In Search of Comfort

This piece was initially inspired by a radio segment on the show *99% Invisible* hosted by Roman Mars. The episode "Sound and Health: Cities" discusses the effect that sounds, or noise, as it has been referred to in this paper, impacts people's health.<sup>26</sup> Mathias

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26. Roman Mars, "Sound and Health: Cities," *99% Invisible*, May 16, 2019, Podcast, website, 19:09, <http://www.99percentinvisible.org/episode/sound-and-health-cities/>.

Basner, a professor at the University of Pennsylvania who studies how noise affects sleep states:

The World Health Organization published a report on the burden of disease by environmental noise. And they basically showed that in the Western European member states alone, 1.6 million healthy life years are lost every year due to the exposure to environmental noise.<sup>27</sup>

Unwanted noise that people do not have control over has the most significant impact on people's health. Earlier in the episode, Basner states that "noise is stress, especially if we have little or no control over it."<sup>28</sup> Because of this, bodies will release stress hormones which have been shown to stiffen arteries after just one night of noise exposure. Basner states, "people who are irrelevantly exposed for a prolonged period have an increased risk for cardiovascular disease including high blood pressure and myocardial infarction, but also in some studies a higher risk of stroke."<sup>29</sup> Kate Wagner, an architecture and design critic, who focuses on sound, explains later that communities of color and low-income communities are more likely to be pushed towards environments with a lot of underregulated mechanical noise.<sup>30</sup> Many laws centered around noise in cities have been created. However, they are inequitable because the laws have been created by wealthier people who have tried to create a "bourgeois idea of what the ideal soundscape would be for the city."<sup>31</sup> This fact has shaped different communities' thoughts around what sounds

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27. Mars, "Sound and Health," 07:37

28. Mars, 06:43.

29. Mars, 07:00.

30. Mars, 09:26.

31. Mars, 10:46.

are good and bad in any given environment. Noise is *extremely subjective*. It plays a significant role in individual and community health, and wealthier white community members in cities have created a system in which they have more control over environmental noise compared to communities of color and low-income residents.

Coupled with this information, I began thinking about access in music. In Christopher Small's book *Musicking*, he describes how the way western music is studied, performed, and centered, "suggests that it is a sacred object, which is not to be tampered with, whose authority over the actions of all the musicians playing here tonight is absolute, which commands absolute stillness and silence from those devotees who have assembled to hear it performed"<sup>32</sup> This is one particular way of experiencing music, and one that does not welcome participants who have different ideas, do not study western musical tradition, or are not classically trained within it. These exclusionary practices make a considerable majority of western music inaccessible. Most of it is shared through scores using western musical notation, and cultural ideas suggest that only those who have had instruction on how to read it can begin to "properly" understand how to play and perform it. However, artists such as Pauline Oliveros and Yoko Ono have opened music and performance through the use text scores.

In the forward to her collection of text scores published in the book *Anthology of Text Scores*, Oliveros writes about her work in the medium stating that the "use of text is a way to move from traditional note-bound composition to a freer area of music making that

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32. Christopher Small, *Musicking* (Middletown, CT: Wesleyan University Press, 1998), 118.

is reliant on ways of listening and responding.”<sup>33</sup> She later comments on how scores in the collection allowed her to mix trained and non-trained musicians together in performance, and non-trained students could sometimes outperform their peers.<sup>34</sup> Oliveros viewed text scores as a way for people to practice listening attention rather than trained performance. One of her pieces, “David Tudor,” written for singers and instrumentalists, asks performers to do two things, “‘Find a sound that you like.’ ‘Find a way to express it.’”<sup>35</sup> The score does not look for proficiency on an instrument. The concept of proficiency or correctness is bypassed completely. Instead, it demands excellent listening skills and an honest effort of open-ended sonic expression.

Yoko Ono also explored text scores in her book *Grapefruit*. In her score “Voice Piece for Soprano,” she asks performers to:

Scream

1. against the wind
2. against the wall
3. against the sky.<sup>36</sup>

In this score, less is demanded in terms of listening, but a great degree of thought and imagination are required. It, like Oliveros’ work, pushes sonic expression into a space outside of music. It asks people to utilize different skills and ones that are not reliant on traditional western music training.

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33. Pauline Oliveros, *Anthology of Text Scores*, ed. Samuel Golter and Lawton Hall (Kingston, NY: Deep Listening Publication, 2013), v.

34. Oliveros, *Anthology*, v-vi.

35. Oliveros, 55.

36. Yoko Ono, *Grapefruit* (New York, NY: Simon and Schuster, 2000), 20.

Thinking about both the impact of one's sonic environment and wanting to make a piece accessible outside of western music, I created a text score titled "In Search of Comfort."<sup>37</sup> In a series of three steps, I asked people to record their name, think about and record a sound that brought them comfort, and then state and record a few words about how the sound makes them feel. The bottom of the text score features a graphic element contextualizing the piece in western music notation. *Self* moves to *Sounds*. *Sounds* are repeated, but at some point, there is a return to a new *Self*. There is no double bar line, and the phrase *D.C. al fine* is written above the second *Self*. This phrase means *from the beginning*. Usually, a double bar line or the words *fine* would end this command, but these gestures are not written. Instead, the cycle repeats forever, signaling how our sonic experiences are influenced by who we are, and also shape who we are. The two are interconnected.

Once completed, I gave the score to Portland State's Advanced Laptop Ensemble, which I am a part of. Members of the ensemble recorded their performance of the text score, and then I manipulated their recordings within a DAW using the graphic element of my text score as a guide. I began by rhythmically layering the names of the performers, representing *self*. Then slowly, I introduced their *sounds*. Cats are purring, rain falling, piano melodies, and the sound of book pages. I did not process these sounds beyond using equalization (EQ) to clean them up to make them more audible to listeners. I wanted the sounds to exist in the piece as they had in the environment they were recorded in. These sounds of comfort are layered, along with some of the sounds I recorded that brought me comfort over the past year. Then, the piece's ending features everyone's names coming

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37. See Appendix A.

back into focus and their sounds returning—a return from *sounds* to *self*, but with a new understanding. The cycle repeats.

My overall intention was for people to critically listen to their environments and think about the enjoyable sonic elements. Unwanted sonic elements exist, and we collectively need to direct attention towards them and create new systems that provide all communities with equitable sonic experiences and autonomy of sonic choices. It is also powerful to consider the sounds you do love in your environment. Sounds shape us repeatedly. They are with us through growth. A sound you find comfort in now may be neutral or uncomfortable in other places and times. Taking a moment to recognize a sound's comforting presence allowed me and other performers of the score to consider our environments. This piece can be performed by anyone, any number of times, allowing people to track personal growth through the sounds they recognize. In personal reflection and performance, I was able to find a greater appreciation for the sounds in Colorado I would not have experienced if the start of the COVID- 19 pandemic in March 2020 had not forced an unexpected move back home. The piece allows all performers to track their relationships and environments through noise, music, and other sounds.

### Portland, Granular Transition, and Colorado

The main body of my work falls into these three pieces, “Portland”, “Granular Transition,” and “Colorado.” They explore two distinct physical locations, joined by a segment of granular transition. They explore the relationship between the two physical environments I had in college, Portland, OR where I moved to for school in September of 2018, and the state of Colorado, where I grew up and returned to in March of 2020 due to



the start of COVID-19 pandemic. The three pieces together can be thought of as a sonic collage.

I rely heavily on Hildegard Westerkamp's writing "Soundwalking"<sup>38</sup> but expand upon it to create a collage as I explore the differences and transition between spaces. Below is a reflection and analysis of the three pieces.

## **Portland**

This piece is built from field recordings taken in June of 2020, when I returned to the city of Portland for a week to move out of the apartment I had abruptly left in March 2020. Returning was a sudden change. I took a variety of recordings, knowing I would not be returning to the city any other time during composition. I wanted to record sounds in a way that would allow me to create a sonic scrapbook of the city in a pre-pandemic state. One specific recording to highlight is the sounds of my boots clicking across the pavement. I had purchased a pair of boots in 2019 and worn them everywhere until my sudden move in March. Upon reflection, I realized they provided a steady rhythm to my existence in the city and on campus. It is the central component of the piece, providing a meter, almost like a metronome but taken from my environment. The sound of walking helped me track time and movement in my life and the piece.

The piece in its entirety details what one day of sounds could look like. I narrowed down the field recordings I took over four days and crafted them into what an average pre-

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38. Hildegard Westerkamp, "Soundwalking," *Hildegard Westerkamp Inside the Soundscape*, January 1, 2001, [https://www.hildegardwesterkamp.ca/writings/writingsby/?post\\_id=13&title=soundwalking](https://www.hildegardwesterkamp.ca/writings/writingsby/?post_id=13&title=soundwalking).

pandemic day would have sounded like. It starts with the sound of opening my blinds, followed by the horn of the Max Light Rail train. I grab my keys, open the door, and experience the city through the noise. People speaking, busses stopping, my boots clicking, and accessible crosswalks are all layered over each other. Then finally, I make my way back to the apartment, where it becomes noticeably quieter and more insular. It shows a stark sonic difference between inside and outside space. There is less reverberance, and a feeling of control. The sound of the boots remains. It exists in both the inside and outside space—a sound that keeps time in both environments.

An important thing to note about the technique in this piece is that I did not edit the recordings destructively. They are kept relatively unprocessed, like the sounds in the following pieces and “In Search of Comfort.” In her writing, Westerkamp defines a soundwalk as “any excursion whose main purpose is listening to the environment. It is exposing our ears to every sound around us no matter where we are.”<sup>39</sup> When speaking about soundwalk composition, she asks people to “create a dialogue and thereby lift the environmental sounds out of their context into the context of your composition, and in turn make your sounds a natural part of the music around you.”<sup>40</sup> In the compositions “In Search of Comfort,” “Portland,” “Granular Transition,” and “Colorado,” I was exploring concepts of emotion and transition. Because of this, I felt the destruction of sounds would not represent the sounds as a natural part of the music around me. If they were made unrecognizable through intense processing, they would not tell the story of my environment or allow listeners to relate the sounds to their environments. By leaving the sounds in their original

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39. Westerkamp, “Soundwalking.”

40. Westerkamp, “Soundwalking.”

state, I hoped to create an ongoing dialogue of sonic transition, storytelling, documentation, and exploration.

### **Granular Transition**

“Granular Transition” features two elements. One is a segment of talking I recorded as I was moving out of my Portland apartment discussing how I was struggling with the transition, the unknowing nature of the pandemic, and the way I had experienced a change in both of my physical environments. It is raw, emotional and provides critical insight into how I experience Portland and Colorado differently. The other component is a stereo recording of granular synthesis. Granular synthesis is the process of taking and rearranging tiny samples of sound, called grains. In his book *Microsound*, Curtis Roads describes a grain of sound as a “brief micro acoustic event, with a duration near the threshold of human auditory perception, typically between one-thousandth of a second and one-tenth of a second (from 1 to 100 ms). Each grain contains a waveform shaped by an amplitude envelope.”<sup>41</sup> Grains capture two dimensions, one being time information, and the other being frequency information.<sup>42</sup>

Most of Roads’ other commentary on the work investigates the math-centered, acoustics, and computer science-based aspects of the technique. However, the statement Roads makes which is most central to my work is:

The granulation of sampled sounds is a powerful means of sound transformation. To granulate means to segment (or window) a sound signal into grains, to possibly

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41. Curtis Roads, *Microsound* (Cambridge, MA: The MIT Press, 2001), 86.

42. Roads, 87.

modify them in some way, and then to reassemble the grains in a new time order and microrhythm.<sup>43</sup>

Granular synthesis allows you to take any sound and reassemble it into something familiar but new. New frequencies and patterns can be brought out when sounds are processed and created in this way. Most of my inspiration with granular synthesis came from working with it under the direction of Christ Denton in the Sonic Arts and Music Production Laptop Ensemble (SAMPLE) at Portland State University. Additionally, I took inspiration from recordings of Paul Lansky's "Notjustmoreidlechatter,"<sup>44</sup> and "Small sand stream on Beach" by Toshiya Tsunado,<sup>45</sup> both of which use granular synthesis as a compositional technique.

The stereo track, which featured my work with granular synthesis, was recorded using Max, a visual programming language by Cycling '74. The specific patch I used is called "Grainfields," created by Kasper Fangel Skox, a sound designer and Ph.D. student in Denmark, in 2016. This patch turns a monome 128 grid, created by the company monome, into an eight-voice granular synthesizer. You can control things such as grain density, base pitch, deviation, duration, loop rate, amplitude envelope slope, and stereo spread through the patch. Users can cycle through different sections of the recordings they upload to the patch using the monome grid. They can also change the mentioned parameters to explore sections of grains, timbers, and textures. In my piece, I recorded one stereo track from the patch and focused on the modifying parameters of base pitch, grain density, and stereo

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43. Roads, 98.

44. Paul Lansky, "Notjustmoreidlechatter," Track 5 on *More Than Idle Chatter*, Bridge Records, 2005.

45. Toshiya Tsunoda, "Small Sand-stream on Beach," Track six on *Audible Geography*, ROOM40, 2004.

spread. Going through the open-source audio driver, *BlackHole*, by existential audio, I was able to record data from “Grainfields” directly into my DAW as I manipulated sounds I had selected live.

I selected three sounds from Portland and five from Colorado to fill the eight voices. More than half these field recordings contained sounds of the movement of water. While going through my recordings, this was a similarity between the two places. The other sounds included electric fans, chickens, improvised singing, and typing. I placed the Portland sounds in the first three voices and the Colorado ones in the final five. In the live recording, I start with the first voice and then sequentially bring in the others, always allowing the new recording to make its presence known and settle into the mix. By the time I reach the introduction of the fourth voice and transition into the Colorado sounds, I have faded out the first voice. As I add in voices, I sequentially take out earlier ones. This process continues until the eighth voice, the sound of me typing, is the only sound remaining, which then cues the transition into the piece “Colorado.”

This section of granular synthesis represents how sonic transitions between two environments are not smooth. You may find similarities in the two sonic environments, but the former environment does not remain as time progresses. However, as one environment fades to the next, it allows you to pick out elements of sound in your new sonic environment that have been colored by the former environment. This is exemplified by the overlapping grains in the Portland and Colorado recordings, which color each other and create unique microrhythms. It allows you to listen to colors and timbres that would not have been possible without the sonic transition. Additionally, it brings up an idea of sonic individuality. Everyone experiences sound differently. In this piece, the only thing that can

connect the two environments is me, the performer. No one else has experienced the transition or its context in the way that I have. Everyone experiences their sonic transitions in unique ways. Knowing this, you can go out, listen, and ponder how your sonic environments, past and present, have influenced your sonic perceptions.

## **Colorado**

The final piece in this series, “Colorado,” is based on recordings I took from July 2020 to March of 2021. It is dedicated to the four children I nannied throughout my time in Colorado. I spent around 10 hours a week with the children for a year. I watched the youngest grow from a baby to a toddler. She learned how to walk, celebrated her first birthday, started to speak, and explored her sonic environment. The next oldest turned four, contemplated dropping out of preschool, and engaged in sweet conversation on our weekly walks where we would read house numbers aloud, discuss our favorite foods and speak about other pressing matters. In the summer, with the help of the two oldest children, we recorded the sounds they loved in their house, including their chickens, the trampoline, pans banging together in the kitchen. I allowed the children to take the recorder, put on the headphones and explore. Their words and the special moments we shared make up a significant portion of the piece.

This piece does not take the structure of a day in the life like “Portland” did. Instead, there is the consistent sound of typing, which fades in and out. Then, a selection of sweet moments and thoughts fills the rest of the space. There are chickens clucking, a toddler asking what headphones are, the baby laughing on a trampoline, sounds of hiking with my family, and my dog speaking on command. I collected these sounds over eight months

rather than the recordings from “Portland,” which were recorded in a few days. The piece represents my entire experience moving back to Colorado during the pandemic.

Typing, a central aspect of the piece, is faded into from “Granular Transition,” which ends on granular synthesis of the same sound. During the pandemic, like many people, I went from being on my computer three to four hours a day to ten or twelve hours on most days. The typing represents this aspect of my life and helps the listener keep track of time. Sometimes it becomes disorienting, or unnoticeable, like it did in my life. It also represents how I felt as though I lived in two different worlds during my time in Colorado. I shared one world physically with the children and my own family, and then I had another in Portland, where I virtually worked and went to school. They existed at the same time, despite being in two vastly different physical locations.

The final section of “Colorado” features a recording I took on my iPhone. It was my last day with the children. After dropping the four-year-old off at school, I had a few hours to hang out with the youngest. I took a video as we sat down at the piano together, where she and I began playing. She loves the sound that smashing the keys together makes. It is one of her methods to make sense of the world and understand it sonically. In the video, she is aware that I am playing and begins doing it too. At that moment, we, as two individuals existing in the same sonic space, complete the same task with two different understandings. This then fades into an improvised piece of songwriting I recorded moments later. The lyrics are:

*I'm gonna miss this place.  
I'm gonna miss your faces.  
I'm gonna miss your smiles.  
I'm gonna miss your sounds.  
I'm gonna miss the words that you're learning every day.  
I'm gonna miss this place.*

I bring in sounds relating to the words after every phrase as a nod to those moments. Finally, you can hear me stop singing. It seems to be quiet, but you can faintly hear the baby in the background. She is singing too, mimicking my sonic expression.

“Colorado” answers my question in a way the other pieces do not. Relationships are built upon sounds—especially ones in which you may serve as a guiding figure to a child. Through my sonic explorations, whether that be singing, playing piano, or recording with the children, the children were learning how to interpret their sonic world too. The children’s sounds were just as big a part of my sonic environment as mine were to theirs. By existing together in sonic spaces, we all learned from each other. Sound was something we could connect through. It enhanced our friendships. Dropping bottles, expansive storytelling, daily trips to the park, and learning to speak were sounds I would not have experienced without their presence in my life. Additionally, the children would not have heard certain words, music, and other sounds if I were not around them. When we share sonic environments with others, it allows for an exchange, a fusing of experiences, that pushes us into a deeper understanding of the sounds that happen in the world. These exchanges are vital to expanding one's sonic environment.

### Social Media Escape

This piece differs drastically from all the others. I did not collect field recordings for this piece. Instead, I randomly selected various social media posts and recorded myself reading them out loud. While I included some of my own social media posts, most were other people’s words. The usernames and platform from which each post came from were



noted.<sup>46</sup> In the piece, I do not focus on the words themselves but rather their sonic quality as they begin to overlap and distort. This piece is effectively a digital soundwalk that relies on Maarten Beirens idea that the destruction of speech can facilitate sonic dimension.<sup>47</sup>

I recorded the words of 20 tweets randomly from Twitter. I scrolled through three places to select tweets: my timeline, my bookmarked tweets, and my own tweets. I selected 20 tweets of interest that I felt represented my timeline on the application on any given day. There were funny tweets, emotional tweets, advertisements, and news. Then, I collected twenty recordings of Instagram captions. I do not use Instagram as much as Twitter because I have become increasingly resistant to the platform's push into advertising and shopping. To represent this, I selected Instagram captions to record by selecting the first twenty Instagram advertisements I saw. These recordings were then edited for clarity. After this, I created a map for the piece on a sheet of paper, which laid the foundational structure.<sup>48</sup>

The piece starts with a clear focus. Entire sections of content can be heard before the next recording starts, and it is easy to grasp the ideas they are conveying. Reflecting on my social media use, I often feel this way when opening any social media application. I can read or watch complete sections of content; my focus is not yet thrown into multiple directions. Then as the piece progresses, more recordings of content begin. They appear in different spaces in the stereo field and begin to overlap. The recordings of tweets enter in every three bars, while the recordings of the Instagram advertisements come in every four

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46. See Appendix B.

47. Beirens, "Voices, Violence and Meaning," 221.

48. See Appendix C.

bars. If the sounds were shorter, this would create a recognizable four against three polyrhythm. Because the recordings extend and overlap, it is not identifiable, but still plays an essential role in the piece. The Instagram advertisements coming in against the tweets demonstrate the tension between social media and corporations' desires to make money. Many people use social media to share their stories, organize, learn, connect with friends and family, and for entertainment. However, social media applications are corporations, and the way the applications continue to run is through advertisements. Their goal is money, not connection, creating a distinct tension between the two sides. Neither one has the other's interest at heart.

As the piece moves forward, the growing overlap of my voice creates unique sonic textures. Specific phrases of the content are heard, but it is almost impossible to follow a recording from start to finish as other sounds come in seconds later, shifting the focus in the stereo field. At a certain point, the sound begins to wash over the listener. It becomes exhausting trying to search for a moment of focus. This is another parallel to my experience on social media. After the initial clarity of opening the application, it progressively gets more overwhelming. There are so many people talking about vastly different things. There are puppy pictures right below a post honoring a deceased loved one's life. It is a disorienting shift between topics every few seconds.

Finally, at the end of the piece, the disorientation begins to swell. The recordings repeat, but this time they are stretched. The speech has been destroyed from its original state. It feels robotic and different frequencies and sonic textures begin to form. The listener can understand nothing. This feeling represents that social media can become so disorienting that one may not recognize what is going on within it over time. What is an

advertisement? What is a genuine connection? How do these topics appear in people's local environments? From March 2020 to March 2021, and before that time, I often found myself turning to social media to escape. There is clarity and moments of connections, but there are also moments of extreme disorientation. It can be challenging to take in a mass amount of information on new topics every second. If you use social media, you must find ways to process the information and take your experiences on digital platforms with you into productive action in your physical environment. With this piece, I am not suggesting that people abandon social media. Instead, I am commenting on the need for people to think about how disorienting social media may or may not be for them. How can we each make changes within our personal lives to create a digital environment that benefits us and our physical environments?

## **Conclusion**

Sound is a critical element, offering a window into how each of us understands the world. We each hear different sounds, exist in different sonic environments, and have created unique emotional responses to noise. Coming back to the three levels of analysis previously mentioned, the compositional process has directed me towards multiple answers to my original research question.

### Personal Identities and Relationships

My sonic environments have shaped who I am. Just as I wrote in the "In Search of Comfort" score,<sup>49</sup> at any given moment, we exist as ourselves. Sound then shapes us,

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49. See Appendix A.

creating a deeper understanding of who we are. This cycle repeats infinitely. In “Colorado,” I explored how sharing a sonic environment can deepen your relationships through shared experience. The children I nannied have a different understanding of the world than I do. We all brought sounds into each other’s environments that were not previously there. We created a sonic environment that *only we* shared, deepening our relationship through sound. In “Granular Synthesis” and “Portland” I explored how sound serves as a point of transition between physical spaces, influencing the relationship of time and place within my life. Finally, in “Social Media Escape,” the relationship between what is genuine or not was explored. Digital noise is not always noise in the physical sense. The constant reading of words can be just as abrasive as unwanted mechanical noise. The “noise” on social media can also be beneficial. It has also created unique ways in which we transition between topics and relate to each other. We must continue to address how noise positively and negatively impacts all our spaces. We should seek to build more equitable, positively associated sonic environments to better understand ourselves and foster genuine relationships in our communities through them.

### The Structure of Music

Because of its scope, this paper was not able to cover in depth how noise in music has been used as a form of resistance, mainly in communities of color against systems of white supremacy. Additionally, it could not cover the full scale of how noise in music has been used in many cultures before Russolo’s manifesto, which brought it to the attention of the white western world. Other scholarship, such as *Music and Modernity Among First*

*Peoples of North America*,<sup>50</sup> and organizations such as Decolonizing the Music Room,<sup>51</sup> provide more information on music outside of the dominant and limiting structure of western music.

As discussed previously in the paper, western music theory is one way of learning music and is exclusive. Through my compositions, I have joined other electronic music composers in challenging the traditional structures of western music. My pieces do not rely on a strict time base. They do not rely on music theory. They do not rely on orchestral or even contemporary instruments. They are built almost entirely from the sounds of my environment. This project has broadened my view of what music and sonic art can be and what purpose it can serve.

We must continue to challenge the ruling power of western music, which does not center Black, Indigenous, Latine, Asian, Pacific Islander, Disabled, and LGBTQ+ communities, as well as women. We must highlight and make space for existing music that challenges and exists outside of this structure, and welcome new music and composers. Music and sonic expressions should be something that everyone can explore to express their own experiences. The current structure does not allow this to happen equitably and must change. Additionally, sonic exploration does not and should not exist in a solely academic space.

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50. Victoria Levine and Dylan Robinson, ed., *Music and Modernity Among First Peoples of North America* (Middletown, CT: Wesleyan University Press, 2019).

51. "Decolonizing the Music Room," Accessed May 2021, <https://decolonizingthemusicroom.com>.

## Transitions Over Time and Space

Just like every sonic environment is different, our understandings of them are also unique. I have determined this unique understanding exists because previous environments impact how we will transition into new ones. When I moved from an outside to an inside space in "Portland," the outside sounds, particularly the sounds of the boots, impacted how I listened in the indoor space. Certain sounds exist in multiple environments but are colored differently in each one. In "Granular Transition," I explored how environments fade into each other through sound. As we transition to new environments, we remember sounds from our previous ones, and it shapes our listening in the new space. However, over time we begin to create an entirely different understanding of our new environment. This cycle can repeat throughout any number of transitions one may have in their life.

Knowing this, if we listen carefully, we can seek to understand our spaces and environments better, allowing us to become more aware of what sounds we love and which ones we would like to experience less—sound impacts our health, relationships, and understandings. As communities, we must work to create sonic environments that benefit the entire community, not just white and wealthier people who have influence over noise laws and, with access to wealth, can choose how to create wide-reaching sonic spaces. Large sonic environments, like neighborhoods, should not be individually shaped in this way.

Through this composition process, I have gained greater insight into how noise, sound, and music have touched every corner of my life. They impact my relationships, health, understanding of transition, and who I am as a person. I do not believe I am alone in

these feelings as evidenced by the other compositions and composers I have referenced. Everybody's life is impacted by sound. As we continue to make our transitions between sonic environments, we should all seek to think about how they have affected our lives. Critically thinking about sound will lead us to a better understanding of ourselves and others.

## Appendix A

“In Search of Comfort” Score.

**In search of comfort**

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1. Take a deep breath and ground yourself. State your first name.
2. Play/perform a sound that brings you comfort. Ideas include:
  - \* A drawer closing.
  - \* Your favorite chord progression.
  - \* The sound of your feet on the pavement.
  - \* Your favorite guitar.
  - \* The sound of your dishwasher.
  - \* Anything else you think of.

Repeat that sound, or hold it until it feels appropriate to stop.
3. Speak the first two to five words that come to your mind about the sound. Why does this sound bring you comfort?

*D.C. al fine*

**SELF ||: SOUNDS :|| SELF**

**Image Description:** Dark, black text sits on a pink background. On the pink background there are many different shades of pink forming unique geometric shapes. The text on the score reads as follows:

In search of comfort

1. Take a deep breath and ground yourself. State your first name.
2. Play/perform a sound that brings you comfort. Ideas include:
  - a. A drawer closing.
  - b. Your favorite chord progression.
  - c. The sound of your feet on the pavement.
  - d. Your favorite guitar.
  - e. The sound of your dishwasher.



f. Anything else you think of.

Repeat that sound, or hold it until it feels appropriate to stop.

3. Speak the first two to five words that come to your mind about the sound. Why does this sound bring you comfort?

On the bottom of the score there is a graphic element. The word "self" is written followed by a repeat sign, taken from western music notation. The word "sound" is next, followed by another repeat sign, meaning that "sound" is repeated. Then the word "self" is written again. Above the second "self" in smaller font reads the words "D.C. al fine." This phrase means repeat from the beginning. Normally you would then stop this command once you reached the word "fine" or a double bar line. In this score both of those are absent, meaning this cycle repeats infinitely.

## Appendix B

Lists of the usernames and platforms I recorded content from for the piece “Social Media Escape.”

### Twitter

@ryandouglassw  
@ItsKrich  
@cnkerr  
@DellSmallBiz  
@nhannahjones  
@\_A13x4ndr4  
@minjinlee11  
@moneycaa  
@DocumentingMN  
@amazonmusic  
@Kristen\_Arnett  
@crocfanpage  
@womensaudio  
@glittersnot  
@MereSophistry  
@crucifiedfurby  
@EleanorMargolis  
@remiwolf  
@CBCAlerts

### Instagram

@parade  
@everlane  
@underarmourwomen  
@wearewildfang  
@outdoorvoices  
@tomboyx  
@tentree  
@byteofficial  
@starface

@nalgene

@teva

@heyharpershop

@theraggedpriest

@rvca

@smap.skateparks

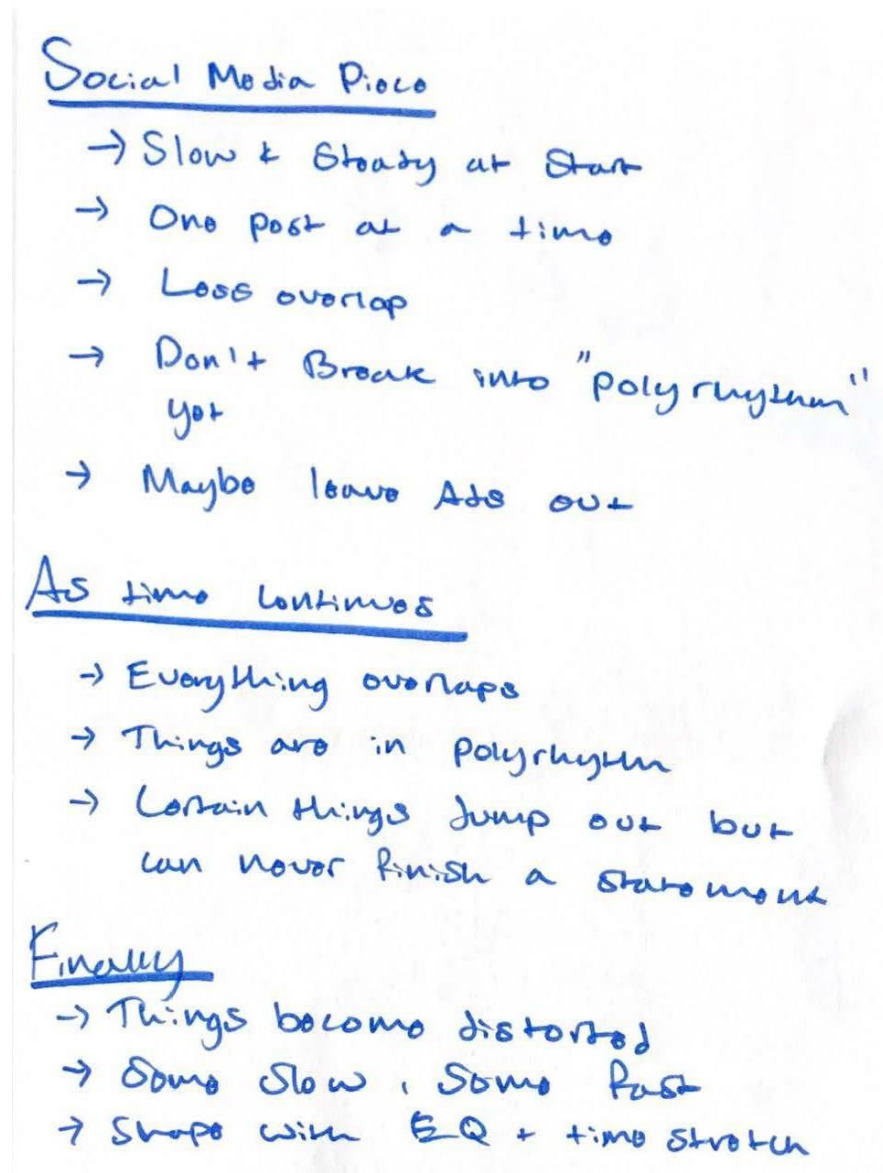
@threadup

@adika

@bamboova

## Appendix C

"Social Media Escape" Map.



**Image Description:** Text written in blue marker fills a large white sheet of paper. There are three sections headings with multiple bullets underneath each heading.

The first heading reads “Social Media Piece.” The bullets underneath it are as follows:

- Slow and steady at start.
- One post at a time.
- Less overlap.
- Don’t break into “Polyrhythm” yet.
- Maybe leave ads out.

The next heading reads “As time continues.” The bullet points underneath it are as follows:

- Everything overlaps.
- Things are in polyrhythm.
- Certain things jump out but can never finish a statement.

The final heading reads “Finally.” The bullet points underneath it are as follows:

- Things become distorted.
- Some slow, some fast.
- Shape with EQ and time stretch.

## Bibliography

Apple, Fiona. *Fetch the Bolt Cutters*. Sony, 2020.

Beirens, Maarten. "Voices, Violence and Meaning: Transformations of Speech Samples in Works by David Byrne, Brian Eno and Steve Reich." *Contemporary Music Review* 33, no. 2 (April 2014): 210–22. <https://doi.org/10.1080/07494467.2014.959277>.

Cage, John. "The Future of Music: Credo." In *Sound*, edited by Caleb Kelly, 23-25. Cambridge, MA: The MIT Press, 2011.

Cage, John. "Williams Mix." Track two on disc three of *Cage: The 25-Year Retrospective Concert of the Music of John Cage*. Wergo, 2012.

CBC Music. "The Creation of 'Electric Pow Wow Drum' | A Tribe Called Red." YouTube video, 1:52. November 16, 2016. <https://www.youtube.com/watch?v=L8YQFjpgTBk>.

"Decolonizing the Music Room." Accessed May 2021. <https://decolonizingthemusicroom.com>.

Gilmurray, Jonathan. "Sounding the Alarm: An Introduction to Ecological Sound Art." *Musicological Annual* 52, no. 2 (September 2016): 71–84. <https://doi.org/10.4312/mz.52.2.71-84>.

Goodwin, Andrew. "Sample and hold: pop music in the digital age of reproduction." *Critical Quarterly* 30, no. 3 (1988): 34-39.

Hallman, Zelda. "Allow Fiona Apple to Reintroduce Herself." *Vulture*, April 17, 2020. <https://www.vulture.com/2020/04/fiona-apple-fetch-the-bolt-cutters.html>.

ICT Staff. "Origins of the Grass Dance." *Indian Country Today*, September 13, 2018. <https://indiancountrytoday.com/archive/origins-of-the-grass-dance>.

Lansky, Paul. "Notjustmoreidlechatter." Track 5 on *More Than Idle Chatter*. Bridge Records, 2005.

Levine, Victoria, and Dylan Robinson, edited. *Music and Modernity Among First Peoples of North America*. Middletown, CT: Wesleyan University Press, 2019.

Machover, Tod. *Symphony in D*. Detroit Symphony Orchestra. 2015. <https://openmusiclibrary.org/videos/5720/>.

Mars, Roman. "Sound and Health: Cities." *99% Invisible*, May 16, 2019. Podcast, website, 19:09. <http://www.99percentinvisible.org/episode/sound-and-health-cities/>.

Masters At Work. "The Ha Dance." Cutting Records, 1991.  
[https://www.youtube.com/watch?v=\\_URFoqkwWLY](https://www.youtube.com/watch?v=_URFoqkwWLY).

Oliveros, Pauline. *Anthology of Text Scores*, edited by Samuel Golter and Lawton Hall. Kingston, NY: Deep Listening Publication, 2013.

Ono, Yoko. *Grapefruit*. New York, NY: Simon and Schuster, 2000.

Ouzounian, Gascia. "Recomposing the City: A Survey of Recent Sound Art in Belfast." *Leonardo Music Journal* 23 (November 12, 2013): 47–54.  
[https://doi.org/10.1162/lmj\\_a\\_00154](https://doi.org/10.1162/lmj_a_00154).

Reich, Steve. *Different Trains/Electric Counterpoint*. Nonesuch Records, 1990.

Roads, Curtis. *Microsound*. Cambridge, MA: The MIT Press, 2001.

Russolo, Luigi. *The Art of Noises*. Translated by Robert Filliou. New York, NY: Something Else, 1967; Reprinted by UbuClassics, 2004.

Shuvera, Ryan. "Sounding Unsettlement: Rethinking Settler States of Mind and Re(-)cognition through Scenes of Cross-Cultural Listening." Ph.D. diss., The University of Western Ontario, 2020. Electronic Thesis and Dissertation Repository. <https://ir.lib.uwo.ca/etd/7208>.

Small, Christopher. *Musicking*. Middletown, CT: Wesleyan University Press, 1998.

Sound Field. "The Sound of NYC's Underground Vogue Scene (Feat. Qween Beat)." YouTube Video, 13:55. August 5, 2019. <https://www.youtube.com/watch?v=ULzamll1Ehw>.

The Halluci Nation. "Electric Pow Wow Drum." Track one on *A Tribe Called Red*. A Tribe Called Red, 2012.

Tsunoda, Toshiya. "Small Sand-stream on Beach." Track six on *Audible Geography*. ROOM40, 2004.

Varèse, Edgard. "Poème électronique." Track three on *Varèse: The Complete Works*. Decca Music Group, 1998.

Varèse, Edgard, and Chou Wen-Chung. "The Liberation of Sound." *Perspectives of New Music* 5, no. 1 (1966): 11–19. <https://doi.org/10.2307/832385>.

Westerkamp, Hildegard. "Soundwalking." *Hildegard Westerkamp Inside the Soundscape*, January 1, 2001. [https://www.hildegardwesterkamp.ca/writings/writingsby/?post\\_id=13&title=soundwalking](https://www.hildegardwesterkamp.ca/writings/writingsby/?post_id=13&title=soundwalking).

Wolfe, Patrick. "Settler Colonialism and the elimination of the native." *Journal of Genocide Research* 8, No. 4 (2006): 387-409.