

From Soundscapes to Songs:
A Creative Music Production Project

by
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Dedication

To my grandparents, Jim and Judy Chase, Brenda Phillips, and Larry Coates. Thank you for sharing your love of music with me throughout our time together. You all are with me every day.

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First, I'd like to thank my family: Mom, Dad, Steffen, Gannon, and my entire extended family. You all have surrounded me with music my entire life and helped drive my passion for audio and the world of music. Thank you for always pushing me to do better and believing in me. I wouldn't be here without you all.

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Abstract

This creative project explores how soundscapes can be used as source material for electronic music compositions. The written component of this project consists of research into the history of soundscapes, the history of soundscapes within music, notable figures in the soundscape movement and any techniques and approaches they may have towards recording soundscapes and creating soundscape compositions. The creative component consists of recording soundscapes, using the recorded soundscapes as source material for musical compositions and the process of editing and mixing these samples into full length songs. A written breakdown of each song explores techniques used from the research, the process of creating these songs and challenges faced along the way.

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List of Terms

For the purpose of citing, it is important to understand the following terms:

Battery 4: A drum-sampler from Native Instruments that provides miscellaneous tools for editing audio samples. It can be used through different DAWs as a plug-in.

Cell: Related to Battery, an individual slot for sample placement.

Compressor: A device that reduces the dynamic range of an audio signal.

Digital Audio Workstation (DAW): A device or software used for recording, editing, and producing audio files

Dynamic Range: The difference of the quietest and loudest sounds present in a signal.

Equalizer or EQ: A device that allows for the boosting or cutting of specific frequency bands within the frequency spectrum.

Filter: A device usually used for cutting frequencies above or below a frequency.

Modulator: A device that changes a specific parameter of a sound over time.

Pitch Envelope: A type of modulator specifically dealing with how pitch changes over time.

Plug-in: An audio processing tool that affects the sound of an audio file.

Pro Tools: A specific DAW released under Avid Technology that has become the industry standard in the world of audio.

Volume Envelope: A type of modulator specifically dealing with how volume changes over time.

WAV files: The standard file format for uncompressed audio files, as opposed to compressed file formats like MP3s

I. Introduction

Project Overview

As with almost everyone involved in the Recording Industry program at MTSU, music has been a constant in my life from as early as I can remember. I would listen to anything and everything, and as a result I have developed a vast and sometimes unusual music taste over the years. Pop music, alternative music, indie music, and even country music have all been favorites of mine at some point during the past twenty-two years of my life. With all of this considered, I knew going into this project that I wanted to do something outside of my comfort zone. I wanted to explore something with which I didn't have a lot of experience. I also knew that I wanted this to be an independent project for the most part. I landed on the concept of soundscapes and how they could be captured and then used as source material for a collection of songs in the format of an EP. The use of soundscapes allowed me to work on the project mostly on my own, as the source material wouldn't be instrumentalists and vocalists, but rather audio recordings of acoustic environments.

A soundscape is an acoustic environment as perceived by humans, or an audio recording or performance of sounds that create the sensation of experiencing a particular acoustic environment (Bylica n.d.). Due to their flexibility and diversity, soundscapes have been used in a number of ways throughout history. They are used to document how a specific environment sounds at a specific moment in time, and in some cases, they are studied by city planners. Soundscapes are also used in film to create realistic sounding scenes. Before starting this project, I didn't have any knowledge about soundscapes and their uses. Now, I view them as extremely important in preserving moments in time. Just

like a picture can transport one and move one somewhere, soundscapes can do the same, offering a completely different insight into environments of the past.

Soon after soundscapes were defined in the 1960s, soundscape compositions were also defined. A soundscape composition is defined as a form of electroacoustic music that was characterized by the inclusion of recognizable and distinct environmental sounds, taken from a soundscape recording (Truax “Soundscape Composition”). Initially soundscape compositions were mainly used to document environments and preserve them, especially as noise pollution and the urbanization of cities continuously exert influence. However, composers soon realized that they could use the soundscapes as source material for creative projects that still invoked memories and an emotional response, which is the main goal of a soundscape composition

While trying to narrow down exactly where I’d be recording these soundscapes and what my limitations were, I ran into many problems. Initially this project was to be recorded on a study abroad trip to New Zealand and would focus on capturing a variety of settings and locations in a different country. However, due to circumstances out of my control, the direction of the project shifted. I decided to focus on locations in Tennessee, and from there it was narrowed down specifically to downtown areas of different cities, which tend to be the liveliest locations and would offer a variety of source material. This shift also allowed the project to have a cohesive theme.

Before attempting this project, I completed research on soundscapes in order to make informed technical and creative decisions. This research included history of soundscapes in a much broader sense, the history of soundscapes and their use in music and classifications of soundscape compositions, and artists of the soundscape

composition genre and techniques used by them. The main goals of this project focused not only on this research, but recording and collecting my own personal soundscape recordings, cutting samples from these soundscape recordings that would be used as the source material, and then producing a collection of songs created from these soundscape recordings. This project will allow me to explore the more technical side of using software to shape these songs, plus allow me to explore the creative side of producing desired sounds from collected source material.

II. History of Soundscapes

Soundscapes can be defined in a number of ways, but the simplest definition is that a soundscape is a combination of sounds occurring in a specific location or environment (Southworth 1970). The origins of the term soundscape are unclear, but R. Murray Schafer, a Canadian composer, is usually credited as bringing attention to the word. He led much of the work on the subject in the 1960s and helped establish an interest in the world of soundscapes. The term soundscape has appeared in numerous disciplines and can have differing definitions depending on the use. Interestingly enough, Schafer revealed in an interview in 2013 that he credited the term to Michael Southworth, a city planner who led a project in the 1960s on sonic environments and wrote a report titled “The Sonic Environment of Cities” (Sven 2015). Southworth was investigating sonic environments as he felt they were often overlooked and not considered as important as other elements, like visual or olfactory elements of cities. Instances like this showcase how soundscapes as a concept aren’t completely limited to the world of acoustics and audio but can be applied in a variety of disciplines.

Following the initial popularization by Schafer, he was able to recruit colleagues and establish the World Soundscape Project, or WSP, an international research project based at Simon Fraser University in Canada (Truax “The World Soundscape Project”). The project includes goals such as soundscape education and noise pollution awareness, balancing soundscapes in the environment with the human community, and recording and cataloguing soundscapes from around the world (Truax “The World Soundscape Project”). It was established by Schafer to draw attention to how noise pollution is affecting sonic environments, reflecting a personal distaste for some of the more harsh

and loud noises entering Vancouver's soundscape (Truax "The World Soundscape Project"). With the help of many young students and other composers, Schafer was able to establish the project and begin publishing their findings on different soundscapes. They began with Vancouver as it was their immediate surrounding area and were able to publish *The Vancouver Soundscape* in 1973. Two larger tours followed, one throughout Canada and one visiting five villages in different countries in Europe. The establishment of this project has helped lead to similar projects being created in different countries, allowing others to start focusing on soundscapes in their regions.

The Vancouver Soundscape in 1973 helped bring attention to soundscape recordings. The original intent behind the project was to capture how noise pollution was degrading the Vancouver soundscape. Schafer did not like how the Vancouver soundscape was changing and wanted a way to document the changes. The project's goals consisted of many of the same goals of the World Soundscape Project, which wanted to draw attention to the soundscapes around us and how noise pollution was affecting the soundscapes we experience. The outcome was several recordings of soundscapes and soundmarks, which are defined as sounds that are unique to a specific area, like a landmark (Schafer 1994). There was also a documentary-like spoken recording from Schafer in which he analyzed good and bad acoustic design within Vancouver; he also provided extra example recordings. Although almost all of the recordings in this project were found soundscapes, meaning they were just soundscapes recorded as they were with no editing or manipulation done, there were some early signs of the more compositional aspects of soundscape recording in which a longer soundscape is cut down to focus on the highlights and important aspects of said soundscape. *The*

Vancouver Soundscape in 1973 also had a follow-up project titled *Soundscape Vancouver 1996* in which new soundscape recordings were done in an attempt to show how drastically the soundscape of Vancouver had changed in the twenty-three years since the first project. This project focused more on composition rather than just documentation. It also included another narrated documentary track similar to Schafer's narrated track on acoustic design.

The second project of the World Soundscape Project was the *Soundscapes of Canada* project in late 1973. Two members of the first project set out on a tour of Canada during which they would document changing soundscapes throughout the country. They wanted to preserve sounds that were becoming less and less common due to technology, such as natural ambiences, distinct sounds from devices such as bells, chimes, and foghorns, and mechanical and industrial sounds that were changing due to new technologies and devices (Truax "Soundscapes of Canada"). The project ended up being released as ten one-hour episodes of a radio series in 1974. Again, this project was drawing attention to how drastically the sound environment in Canada was changing due to noise pollution and trying to influence others to consider the sound environments they found themselves in every day.

The third project finally took the World Soundscape Project outside of Canada. The *Five Village Soundscapes* project took place in Europe in 1975. It involved a larger group of people than the previous projects, mainly because it was larger in scale. It was similar to the previous tour but focused on more rural and better preserved soundscapes. There were workshops and lectures throughout the tour, but the main goal of the tour was recording soundscapes from five villages in five different countries in Europe. Following

the recordings in Sweden, Germany, Italy, France, and Scotland, there were two publications released about the tour. The first was a narrative recounting of the trip titled *European Sound Diary* and the second was a soundscape analysis titled *Five Village Soundscapes*. Similar to the Vancouver project revisit, a group of Finnish researchers revisited the same five villages in 2009, more than thirty years since the original tour. They analyzed how the soundscapes in the villages had changed and how urbanization had altered the soundscape.

Through Schafer's work and experience with many of these projects, he was able to write and organize a book titled *The Soundscape: Our Sonic Environment and the Tuning of the World*. This book compiles a large amount of information, along with Schafer's own experiences and research, becoming an encyclopedia on all things related to soundscapes written by the man who popularized the term himself. In the book, Schafer defines three significant features of soundscapes. The first term and feature, keynote sound, is taken from music. The keynote in music is the fundamental tone of the composition that helps identify the key of the piece. In soundscapes, keynote sounds are those associated with its geography and climate (Schafer 1994). Sounds of wind, water, birds, and animals would all be considered keynote sounds. Similar to its purpose in music, keynote sounds in soundscapes help identify what type of environment the soundscape is from; they also offer insight on what type of people live in the same space. The second term and feature, signal sounds, are sounds in the foreground that are listened to consciously (Schafer 1994). Because any sound could be listened to consciously, Schafer further defines signal sounds as sounds that must be listened to because they constitute acoustic warning devices. Bells, whistles, horns, and sirens all would be

considered signal sounds. Lastly, the third term and feature, soundmark, comes from the word landmark. Similarly to how a landmark is an object or feature of a landscape that is unique to that location, a soundmark is a sound within a community that is unique, specific, and specially regarded by the members of the community (Schafer 1994). Schafer makes a point of mentioning how soundmarks should be protected once identified, as they make the soundscapes of communities unique and different from one another. First with popularizing the term soundscape and then by releasing this book, Schafer has been able to provide a very solid foundation and clearly define what soundscapes are. The impact of this is still felt today, as soundscapes are routinely being studied, recorded, and presented all around the world.

Along with Schafer in Canada, there was another major advocate for soundscape recordings here in the United States. Launching Wild Sanctuary in 1968, in the same timeframe as Schafer and the World Soundscape Project, Bernie Krause began traveling the world to record, archive, and research natural soundscapes (“About Wild Sanctuary” n.d.). Krause seems to focus more on soundscapes occurring naturally in the world, usually environments untouched by humans. Through his organization, he has managed to record and archive a plethora of environments over the past fifty years, some of which have completely changed since they were initially recorded. From locations like the Arctic, to the Antarctic, to the Amazon, a massive archive is available on the organization’s website, which not only preserves the soundscapes of these environments, but allows people all over the world to experience the sounds of locations they may never be able to visit (Leonardson 2013). Throughout the years of running Wild Sanctuary, Krause has published multiple books and articles, as well as leading a TED Talk on

natural soundscapes. One of his most notable articles titled “Anatomy of the Soundscape: Evolving Perspectives” was published in January of 2008 in the *Journal of the Audio Engineering Society* (Krause 2008). In this article, Krause defines and outlines three different active acoustic sources that compose a soundscape; sometimes these sounds are independent of each other, and sometimes they are naturally linked and working together. Whereas Schafer defined three key features of soundscapes, Krause set out to define the three types of acoustic sources that compose all soundscapes. The first acoustic source, geophony, refers to the natural sounds deriving from nonbiological sources in a given environment or habitat (Krause 2008). He even breaks geophony down further into four main subfields, including: the effects of wind, water, weather, and geophysical forces. These sounds could include the sound of wind rustling grass, a running stream, a storm, or even an earthquake or volcano. If it is emanating from a nonbiological source, then it would fall into this category. The second acoustic source, which Krause actually defined first, is biophony (Krause 2008). Biophony refers to all of the biological sources of sound in an environment or habitat. All of the organisms and animals, from microscopic to massive, make up this category of acoustic sources within soundscapes. Biophony is not broken down into different categories, but Krause does draw attention to the fact that it is by far the most complex, especially in dense biomes. The third acoustic source is defined as anthropophony, which refers to all of the sounds generated by humans. Krause breaks anthropophony down into four types as well: electromechanical, physiological, controlled sound, and incidental sound. Controlled sound would include things like music, or language, whereas the other categories focus mainly on sound that is incoherent and usually regarded as just noise, which can greatly interfere and impact the biophony of a

certain environment or habitat (Krause 2008). While these definitions do differ from the definitions put in place by Schafer, both are still relevant and can be used to breakdown soundscapes and the sounds occurring within them.

Together, Schafer and Krause, along with many of their colleagues, were able to clearly define and publicize the world of soundscapes in a way that had not been done before. Krause is still running his organization today, which continues to record and archive soundscapes all across the globe. As we have moved into an era where it is much easier to produce recordings at a heightened production level, numerous artists and recordists capture soundscapes and organize exhibitions and public showings that combine their recorded soundscapes with other media obtained throughout the process, such as pictures. Nathan Wolek is a sound artist and audio researcher with focuses on sound design and audio field recording who has completed a number of soundscape recordings and exhibitions as recently as 2020, when he presented his Canaveral Soundscape, which was a result of a 2020 residency at the ACA Soundscape Field Station (Wolek 2021). Over the course of six months, Wolek made seventeen trips to the Canaveral National Seashore and was able to record over 100 hours of audio, resulting in the final presentation, combined with photo collages taken during the process (Wolek 2020). As soundscapes around the world continue to shift and change, the focus on preserving and recording them will continue to grow.

III. Soundscapes in Music

The use of soundscapes in music started heavily during the 1960's and since then it has continually evolved and grown. Soundscape composition quickly became the term used for music utilizing soundscapes. The term was coined at Simon Fraser University as a result of the World Soundscape Project (Truax "Soundscape Composition). Soundscape composition was defined as a form of electroacoustic music that was characterized by the inclusion of recognizable and distinct environmental sounds (Truax "Soundscape Composition). The end goal of these compositions was to cause the listener to be brought to that soundscape's location and bring emotional responses, memories and any associations the listener may have with that particular soundscape's location back to the forefront. It is important to note that soundscape compositions usually focus on a soundscape from one specific environment. The environment could be more general, like an entire city, or more specific, like a specific street within a city. A soundscape composition focusing on Nashville as the environment and source material wouldn't include source material from a city outside of Nashville. This distinction is important in establishing how a soundscape composition is a specific subset of a *musique concrète* composition, which we will define next.

When soundscapes are recorded and then changed and manipulated into soundscape compositions, they usually fall into two categories of music: *musique concrète* and the broader category of electronic music. *Musique concrète* is a term that was established in the early 1940's by Pierre Schaeffer in France. The term is meant to signify music that uses sounds and sound fragments from the natural world, or "concrète" sounds occurring in the real world (Holmes 2003). Schaeffer wanted to take the usual

approach to composition and attempt something drastically different. Rather than composing a piece on paper with notation and instrumentation, Schaeffer wanted to collect any concrete sounds he could, and then search for musical aspects within the recordings (Reydellet 1996). In Schaeffer's first *musique concrète* pieces, he used locomotive sounds from a train station, music instruments like piano and xylophone, human voices, pots and pans, and boats. The workflow for *musique concrète* starts with the sound material being obtained, then moves into editing and processing the sounds, and ends with the edited and processed sounds being recorded into their final structure. Soundscape compositions easily fall into the category of *musique concrète* and would be considered a subset of the genre. They both are focused on natural sounds and transforming those sounds into musical pieces; the only real difference is that soundscape compositions are specifically focusing on sounds from one specific environment, whereas *musique concrète* is focusing on any natural sounds and is usually composed of natural sounds across multiple environments.

The second category, electronic music, tends to be broader and more general; it also encompasses *musique concrète*. Electronic music is simply defined as music that uses electronic music instruments, digital instruments, or some other circuit-based technology in its creation (Hiller 2021). Often times, because the soundscapes act as samples to be referenced by different electronic devices, like synthesizers, the soundscape music is considered electronic. The synthesizers will allow the sample, in this case a section of the soundscape, to be manipulated with different controls built into the synthesizer. Although soundscape compositions usually fall into this category, there have been many instances where the final composition is a natural soundscape that has not

been edited or manipulated hardly at all. In 1970, Luc Ferrari released *Presque Rien No. 1: Le Lever du Jour au Bord de la Mer*, which translates to “Almost Nothing No. 1: Daybreak by the Seashore” (Geyer 2019). This piece was a 21-minute composition constructed entirely of soundscape recordings Ferrari made from his window during daybreak (Geyer 2019). He would record in the mornings almost daily, searching for reoccurring sounds and comparing new sounds to previous days. The final piece ended up being assembled of many different fragments from the different daily recordings with hardly any editing or manipulation done to them. This piece was significant because it was one of the first instances of soundscapes being used in music, and beyond that it was using the soundscapes as they were rather than using them as samples. It is also of note that this was happening right as the World Soundscape Project was being established and starting its first tours in Canada. Soundscapes and soundscape compositions gained popularity during the late 1960s and early 1970s, and they were occurring all over the world. This helped establish soundscapes in music as global phenomenon and not something limited to one specific location; it was more widespread than one might think.

During the early beginnings of soundscapes as a music format, there were some restrictions and limits on what exactly was considered a soundscape composition. Although this has changed over the years, it is important to know where the genre started and how it has evolved. Simon Fraser University and the World Soundscape Project are often found when researching soundscape recording and soundscape compositions because so many of the pioneers of the genre started their work under the school and project. Many of these early pioneers, like R. Murray Schafer and Barry Truax, have written many books and articles that have covered much of the early history, defining

moments and projects, and even definitions of terms and vocabulary often used in the genre. Along with many of these definitions, like soundscape composition, there are records of techniques and methods used and how they evolved over time. An article from Simon Fraser University titled “Soundscape Composition” details principles and approaches that I believe are important to establish and take note of before I begin working on my own compositions (Truax “Soundscape Compositions”). There are four central soundscape composition principles listed. The first principle is that the “listener’s recognizability of the source material is maintained,” meaning that the source material should be at least somewhat recognizable at some point in the piece (Truax “Soundscape Compositions”). Completely destroying and modifying the source material beyond recognition defeats the entire purpose of soundscape compositions, which is to invoke the listener’s memories and associations of the soundscape. The second principle is that the “listener’s knowledge of the environmental and psychological context is invoked,” meaning that if the listener has knowledge of the environment and how they felt when in the environment, those feelings should be brought to the surface by the composition (Truax “Soundscape Compositions”). The third principle is that the “composer’s knowledge of the environmental and psychological context influences the shape of the composition at every level,” meaning that the composer should be considering all the environmental and psychological information they gathered when visiting and recording the soundscape (Truax “Soundscape Compositions”). The weather and temperature, the types of buildings and stores, the amount of people and noises happening would all be things I would consider when piecing together my compositions based on different downtown locations. Lastly, the fourth principle is that “the work enhances our

understanding of the world, and its influence carries over into everyday perceptual habits,” meaning that the composition changes how we understand the sounds constantly surrounding us and influences how we listen to soundscapes of specific environments following the piece (Truax “Soundscape Compositions”). These principles are so focused on invoking memories, sensations, and changing how we perceive sounds related with specific soundscapes because one of the main goals of the World Soundscape Project is to generally increase awareness of soundscapes. This means that the principles defined by the World Soundscape Project would coincide with the goals of the project.

The three different approaches to soundscape composition are also important to consider as I start my compositions, mainly because they offer general techniques and methods to utilize. The first approach, titled fixed perspective, focuses on “emphasizing the flow of time or a discrete series of fixed perspectives” (Truax “Soundscape Compositions”). Variants considered under this approach are factors like time compression or a narrative element. Some techniques used with a fixed perspective composition include heavy layering in both stereo and octophonic formats, utilizing found sound, which is sound that is mostly unedited and unprocessed, use of a narrative element, and transitions between fixed perspectives. The second approach, moving perspective, focuses on smoothly connected space and time flow and is seen as more of a journey (Truax “Soundscape Compositions”). Variants within this approach include simulated motion and transitioning from real to imaginary. Techniques within this approach include classical cross-fade and reverb use, layering smaller parts of the soundscape and even whole sections of the soundscapes, and layering completely untransformed sounds with transformed sounds. The last approach is the variable

perspective, which looks at a discontinuous space and time flow (Truax “Soundscape Compositions”). It is the most abstract approach, consisting of variants like multiple or embedded perspectives and symbolic or abstract sounds. Techniques under this approach include multitrack editing, heavily splitting and dividing sounds to be embedded, and an extremely abstracted perspective. When starting on my compositions, it will be helpful to pick an approach and try to stick to it in order to successfully create a composition. Applying multiple approaches to a single composition would get extremely messy and overwhelming and could easily ruin the composition in the long run.

While these principles and approaches have emerged and remained over the years, there were a number of smaller transitions of techniques that have evolved. Initially, soundscape compositions were meant to document and keep record of what different environments sounded like. This meant that many of the first soundscape compositions consisted of very obvious and clear editing not meant to transform the sound, but only edit pieces together. This is where the Luc Ferrari piece, *Presque Rien No. 1: Le Lever du Jour au Bord de la Mer*, comes in again, as it is a perfect example of this. The piece was only edited in order to stitch the soundscapes from multiple days together. Ferrari was not processing the soundscapes and editing them at all. These types of soundscape compositions are known as found compositions, which are compositions that are meant to be as close as possible to the original environment. However, following these initial soundscape compositions, some composers began to realize that they could use the soundscape recordings they were gathering to create new pieces that transformed the soundscape into something new and creative. Boundaries were pushed and pieces became more and more abstract, which is when the lasting principles and approaches would

become much more apparent. Composers such as Barry Truax and Hildegard Westerkamp helped push the boundaries of soundscape composition beyond found compositions and helped shape the genre into what it is today.

Barry Truax, a Canadian composer, is known for his real-time granular synthesis work that involves using sampled sounds and soundscapes (Truax “Biographical Note”). Granular synthesis is a technique that is based on the production of a high volume of small acoustic events (Brown 2019). These small events are called grains. They are less than fifty milliseconds in length, and usually average around ten to thirty milliseconds in length. These grains can be sourced from a number of places, including wavetables, FM synthesis, or sampled sounds. Barry Truax was able to merge granular synthesis with soundscape composition by using soundscape recordings as the sample for the grains. When applying granular synthesis to soundscape compositions, Truax reveals that a key component is the grain envelope (Truax “Granular Synthesis”). Because the grains are such small moments in time, clicking and popping may be added when dividing the source material. The grain envelope allows one to manipulate settings like the attack and decay in order to omit the popping and clicking. Truax says that a short linear attack and decay are the keys to preventing these artifacts from being present in your pieces (Truax “Granular Synthesis”). Granular synthesis can become very technical and complex and is usually not a starting point for soundscape composition. It may be something I use someday, but for this project I do not think it will be used. Mentioning Barry Truax and researching his accomplishments is still significant and important because he was a huge force under R. Murray Schaeffer in getting soundscape composition and the World Soundscape Project where it is today.

Truax has influenced other artists, such as Hildegard Westerkamp, whose compositions focus on soundscapes and acoustics within the environment (MacKenzie 2001). She graduated from the University of British Columbia with a focus on music studies, and then joined the World Soundscape Project as a research assistant (MacKenzie 2001). Joining the project changed how she viewed music and composing. It also drew her attention to noise and its effect on the acoustic environment (“Biography of Hildegard Westerkamp” n.d.). Most of her compositions focus on a variety of soundscape environments, ranging from rural to urban, or even wilderness. Elements from those environments are then put into focus, including voices, noise, silence, and even different cultural sounds occurring in specific environments in different parts of the world. She has also participated in a variety of sound design and composition for filmmakers, including a film in 2016 titled *Koneline, Our Land Beautiful* by Nettie Wild (“Biography of Hildegard Westerkamp” n.d.). In a variety of articles and essays written by Westerkamp, she has revealed some of her techniques and approaches to soundscape composition. In “The Microphone Ear: Field Recording the Soundscape,” she writes about three different approaches she has when using microphones to field record (Westerkamp 2021). The first approach, the moving microphone, is the most dominant one. She would often walk-through environments rather than have the microphone stationary, allowing it to record as she moved through the space. This allowed her to capture sounds as one would hear them if they were walking through the environment. The moving microphone approach also allows her to get extremely close to different sound sources and capture a variety of sonic textures, rhythms, timbres, and resonances (Westerkamp 2021). Westerkamp gives the example of recording a flowing creek, noting the difference between recording from a

few feet away as opposed to recording three inches above the water's surface. The bigger picture is captured as opposed to the finer details. When writing about the moving microphone technique, Westerkamp says, "I have found that it is precisely this back and forth between the soundscape as a whole and the fine details within it that has become the essence of my compositional approach," which showcases just how important this technique is to her compositions. The second approach, which she describes as an extension of the moving microphone, is the searching microphone. The searching microphone technique is searching for sounds produced by usually silent objects. It usually requires the objects to be touched or manipulated, like banging on a lamp post, bike rack, or a bench (Westerkamp 2021). In some environments where there may not be very much happening, this could be vital to collecting sounds. Westerkamp gives the example of recordings she did in the extreme quiet of a Mexican desert, where she was tapping and playing on cacti and dried leaves in order to capture sounds of the environment (Westerkamp 2021). The final approach, the stationary microphone, involves leaving the microphone in a stationary, single position for the duration of the recording. This approach is used a lot in nature recordings, as the sounds and noises of animals could be significantly reduced by movement and the presence of someone with the microphone. All three of these microphone techniques are important to consider when recording acoustic environments, as they all offer very different outcomes and can impact soundscape compositions depending which techniques are used.

There are other composers in the genre that have taken on huge environmental soundscape projects, such as Petri Kuljuntausta from Finland. Kuljuntausta has worked closely with scientists in order to produce music for underwater installations created out

of underwater materials, music using whale calls, and even the sounds of the northern lights by utilizing audio feedback (Kuljuntausta 2018). He works closely with scientists to make all of this happen, and is often doing scientific research on different media, how sound interacts with the media, and how humans would hear sound interacting with the media. His work has been highly influential in the development of the genre; he continues to push the boundaries and present new and exciting projects that may not have been done before. In an interview posted on his website, Kuljuntausta, similar to Westerkamp, mentioned how during his time capturing soundscape compositions, he is always in motion and moving (“How Authentic Is Electronic Music?” 2016). This again emphasizes how important Westerkamp’s moving microphone technique is, as it is mentioned once again by another prominent soundscape composer.

Overall, soundscapes being used as source material is nothing new, as it started almost immediately after the establishment of the World Soundscape Project. While some artists prefer to focus on leaving the soundscapes mostly unedited, like Luc Ferrari, others are willing to alter and change the soundscape source material, like in some of Petri Kuljuntausta’s works. Although some techniques and approaches were established by Simon Fraser University and their soundscape department, soundscape compositions have expanded and will not always meet these requirements. Soundscapes and how they translate into music will continue to grow and shift, especially as new technology and techniques become apparent.

IV. Song Breakdown

01. “Franklin”

Capture Notes

The first recording and song that I worked on was “Franklin,” named from the downtown location from which the soundscape was taken. I visited Franklin on September 18th, 2021, only bringing my Zoom H1N handheld recorder and headphones so I was able to monitor the recording. It was 75 degrees Fahrenheit, cloudy and had been raining earlier in the day. It was very windy, which was one of the biggest issues with this recording. It was a Saturday, so the downtown was filled with people moving in and out of shops, visiting restaurants, and talking up and down the streets. I started my soundscape recording at 5:08 P.M., and concluded the recording at 5:38 P.M., giving me a 30-minute recording to work with. The route I took was mostly focused on the main street, but I did walk some less busy streets off of the main drag. For the most part, I was walking the entirety of the recording, except for a small five-minute portion of the recording where I was sitting on a bench. The handheld recorder, the Zoom H1n, included two microphones in a stereo X-Y 90-degree pattern, which are fixed and not able to be changed or moved into other patterns. The X-Y stereo miking technique involves using two microphones that have the capsules placed as close together as possible without touching at a 90-degree angle. The two microphones are mostly capturing sounds to the left and right of the immediate area. The downside of X-Y is that it does not provide the widest stereo image, but I have the ability to pan specific sounds during editing so that is not a major concern.

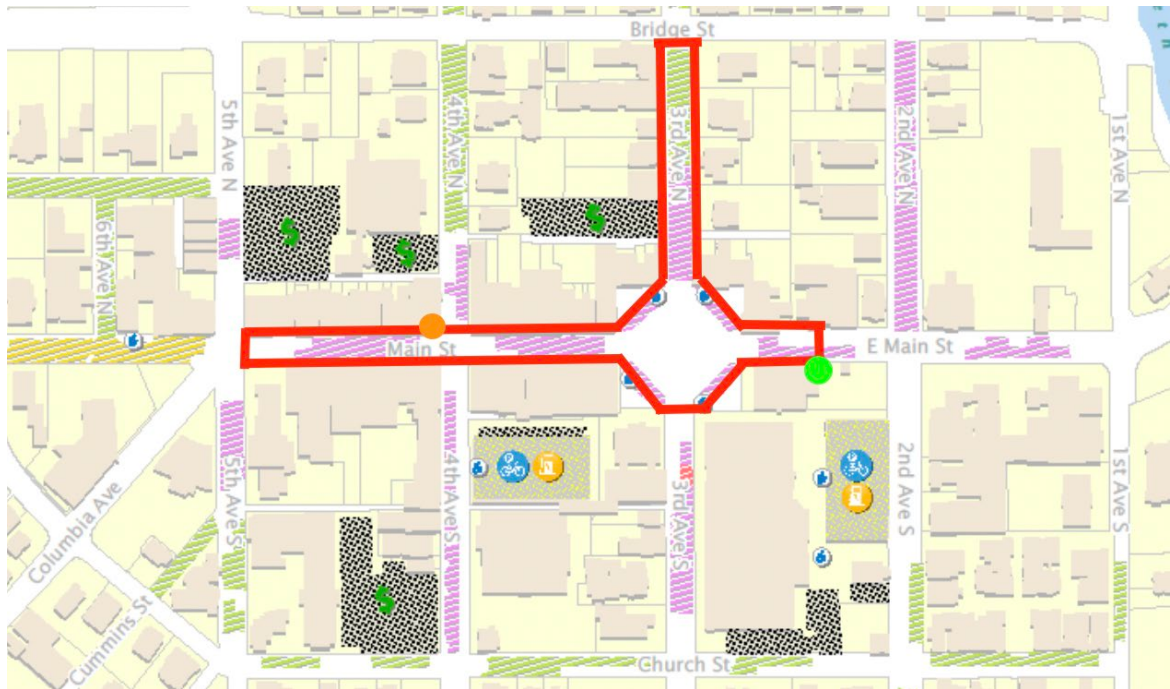


Figure 1 - Map of downtown Franklin (“City of Franklin, TN” n.d.). The red lines represent my route, with the green dot being the starting and stopping point, and the orange dot representing the bench I sat on to record the stationary portion of the soundscape recording.



Figure 2 - Picture taken during the soundscape recording in Franklin, Tennessee.



Figure 3 - Picture taken during the soundscape recording in Franklin, Tennessee.



Figure 4 - Picture taken during the soundscape recording in Franklin, Tennessee.

Process

The process for all of these songs had a similar format, but they also had their differences. “Franklin,” being my first song, was mostly focused on experimenting and getting comfortable with the process and tools. One of the first decisions I had to make following recording was which DAW, or Digital Audio Workstation, I wanted to use to construct these songs. A DAW is a device or software used for recording, editing, and producing audio files (Shields 2021). There are many DAWs; some are single software programs that can run simply on a laptop, and there are some that consist of multiple software and hardware components controlled by a central computer. Every DAW has its own advantages and disadvantages depending on one’s goals and what kind of project one is creating. Personally, I knew that my DAW of choice would be Pro Tools. In the music industry, Pro Tools is usually seen as the industry standard and the DAW of choice, especially in major studios and editing workstations. I am also much more comfortable with Pro Tools and felt tackling an entirely new DAW, like Ableton Live or Logic Pro, would present a new set of challenges and issues that was outside the main focus of this project.

After I chose my DAW, I had to import the recorded soundscape into a session within Pro Tools. I plugged the Zoom H1n directly into my laptop, transferred the WAV files onto my external hard drive, and then imported the audio into a track within Pro Tools. From there, I then began the process of scrubbing through the soundscape for sounds that I felt stood out and could be edited and manipulated to compose a song. This process mostly focused on listening intently and with purpose, as I would hear sounds and immediately begin considering what their purpose would be and how they’d be

transformed. For example, in the soundscape, there was a short, high-pitched tinny sound that I believe was something metal like a soda-can being thrown in a metal trashcan. This immediately stood out to me as a potential sound for a cymbal like sound, similar to a closed hi-hat, or even some other short percussive sound like a triangle. When I discovered sounds like this that I immediately had an idea or vision for, or even some that I thought would work in some capacity, I would use markers in Pro Tools to mark the location, and then I would separate the specific region from the entirety of the 30-minute clip. This allowed me to then export the individual samples as smaller WAV files that I could then pull in for editing in a much more digestible format rather than a full 30-minute WAV file. Following this process, I would then move into the true editing and manipulation of these samples.

The main tool or plug-in that I utilized to completely transform these samples was Battery 4 from Native Instruments. Battery 4 is usually used for programming beats and drum sounds, but allows users to import their own audio samples, which is exactly what I needed. It also provided me with a grid-like cell system that would allow me to have multiple samples imported into one instance of Battery, giving me the opportunity to have as many as 48 different sounds being played through one track and one use of

Battery, as opposed to having to have 48 individual tracks for each individual sample to be played.

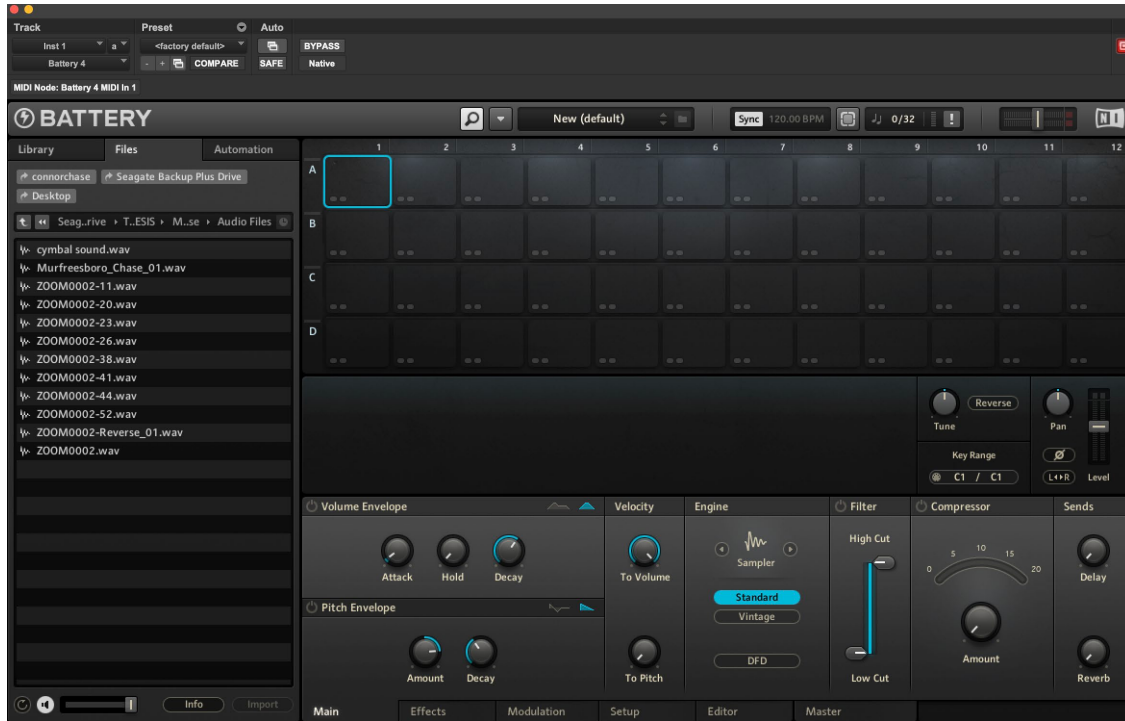


Figure 5 - Screenshot of how Battery appears on launch.

The cells can be played through Battery itself by clicking on them or played through a MIDI controller. MIDI, or Musical Instrument Digital Interface, is a technical standard that includes a communications protocol for electronic musical instruments to be able to communicate with one another through a physical interface using a digital language (Akins 2010). For this project, I primarily used my laptop's keyboard to act as my MIDI controller, as it was most convenient for me. I would open the MIDI keyboard window within Pro Tools, which turned different computer keys, like the letter A, or S, into

corresponding notes on a piano keyboard, like a C or a D. Then, within Battery, each individual cell was assigned a piano keyboard note as well. When I played my computer keys, it would create MIDI messages that were then sent to Battery, which would then play the corresponding cell that had the same piano keyboard note assigned to it.

Of course, I couldn't record and compose these pieces until I had my samples edited. This part of the process was most definitely the most time consuming, because of how many parameters and effects can be manipulated within Battery. The parameters that I found myself using the most across all three songs were the filter, the volume and pitch envelope, the tuner, the compressor, and the editor window for looping. The filter parameter has a more condensed window, which is just limited to a high-cut or low-cut filter, and a more detailed window that incorporates equalizers, or EQs, as well as filters.



Figure 6 - Condensed Filter view.



Figure 7 - Expanded Filter and EQ view.

In terms of audio, a filter is a way to filter out the frequency content above or below a specific frequency. If I wanted to reduce the amount of frequency content below 500

Hertz for a specific sample, I would use the condensed filter in Battery and move the low-cut point to 500 Hertz. It doesn't completely cut everything out below that; there is a gradual curve as it removes everything below 500 Hertz. The window that incorporates filters and EQ is more complex, as EQ allows for more options. The difference between EQ and filters is that filters are primarily used to reduce, or attenuate, frequency content, and that filters are mostly only used for cutting frequencies below a certain frequency or above a certain frequency, which we see in the screenshot. EQ is primarily used for both boosting and attenuating frequency content, and it allows this to be done in different frequency bands; it is not limited to only cutting below or above a certain frequency. For example, with EQ, I could attenuate the frequency content below 500 Hertz, boost the frequency content from 1,000 Hertz to 3,000 Hertz, attenuate the frequency content from 7,000 Hertz to 10,000 Hertz, and then boost the frequency content above 13,000 Hertz. EQ allows for much more complex shaping of the frequency content. Both filtering and equalizing the frequency content were usually the first steps I took with samples, as I was often trying to isolate a particular sound from the surrounding content. Removing unwanted frequency content was important to ensuring the samples were clean and clear. Otherwise, the sample would be muddy and potentially lost in the context of the other surrounding noises. The second parameters, the volume and pitch envelopes, were used to shape how these particular properties of sound change over time.



Figure 8 - Volume and Pitch Envelope windows within Battery.

The volume envelope contained five settings. The attack setting is the amount of time it takes for the sound to go from silence to its peak volume once the key is pressed. The hold setting is the amount of time the envelope stays at the peak volume before entering the decay stage. The decay setting is the amount it takes for the sound to go from the peak volume reached during the attack stage to the sustain level. The sustain setting is the volume at which the sound stays between the decay stage and release stage while the key is still being held. The release setting is the amount of time it takes for the sound to end after the key is released. The pitch envelope acts similarly, allowing the pitch to be manipulated in a way similar to the volume; the pitch will change over the course of a key being pressed, following through the same cycle of stages. These parameters, particularly the volume envelope, were used regularly to shape how a sound responded once the keys were played. The tuning parameter was extremely important for trying to create a full scale of notes to play as a melody. Once I had a sample in a place which I liked, I was able to copy and paste the sample to other cells. I then adjusted the tuning

parameter up or down by a half-step repeatedly until I had an entire octave of notes to play All of the main melody lines in these songs were done this way, as I found it a great way to marry the more abstract soundscape elements with the more stereotypical musical elements.



Figure 9 - Tuner window within Battery.



Figure 10 - The result of duplicating cells and tuning them each differently to have multiple octaves to play.

The compressor within Battery was another extremely helpful parameter, as it provided a lot of balance to some of the samples. Compressors are used to reduce the dynamic range of a sound, which is the range between the softest and loudest sounds. Compressors usually consist of five main settings: threshold, ratio, attack, release, and output gain. The threshold is the level at which the compression effect is engaged; only when a level passes above the threshold will the sound be compressed. The ratio is the amount of attenuation that is applied to the signal. The ratio defines this in terms of input to output, so a ratio of 2:1 tells us that for every 2 decibels of input, we will get 1 decibel of output. The compressor was very helpful because most of my samples were unpredictable and had a very wide dynamic range, so compressing them to make them more uniform and regular was very important for the balance of these songs.



Figure 11 – Compressor window within Battery.

Lastly, another parameter that was helpful in a handful of ways was the editor window, which allowed me to loop samples. A problem I ran into early on in the creation of these songs was not having samples that were very long in duration. Almost all of my edited samples were short in duration. The looping tool helped me be able to have my samples loop as long as a key was pressed, which allowed me to create parts that replicated chords or a bass line to support the foundation of the songs. As seen below in Figure 12, the top portion of the looping window, below the cell grid, shows the audio sample. I am able to add a loop section, which is outlined with a border. This section represents the portion of the sample which is being looped. It is possible to have multiple loop sections as well, allowing for only one specific part of the sample to be looped rather than the entire sample. The window allows one to select whether the loop is played until the volume envelope has passed its release phase, or to the exact moment the key is released, which is the mode setting. It also allows you to set a specific number of times the loop plays before continuing through the same sample if the loop selection is not the same as the entire sample. Tuning is available for each loop selection as well. The editor window also houses a wave editor that allows many options for editing and manipulating the samples. The editor window overall was one of the most helpful once I understood how it operated.



Figure 12 - The loop window within Battery, with an audio sample loaded and a loop range set.

Now that I have covered some of the basics of Battery, I want to dive into the process and approach specifically for “Franklin.” As I mentioned above, first I would listen through the soundscape and mark and cut portions that I found interesting. Once I had a good selection of samples, I then would pivot to experimenting with the samples in Battery. With “Franklin,” I started with the samples I wanted to use to replicate a drum kit. I chose deeper and heavier samples like a car door slamming, shop door closing, and heavy footsteps. I also had a sound of a metal trashcan which I used to replicate the sound of a closed hi-hat, one of which was a thinner sound while the other ended up being more electronic sounding.



Figure 13 - Screenshot of the final Drum sounds within Battery, and how they look loaded onto the cells.

The sound for the kick drum was a car door, and the sound for the tom drums was a different car door, tuned differently to give me the same tom drum sound with another pitch. I had a great sample of a crosswalk meter that I was able to use as another percussive element. I used a high-pass filter aggressively in order to isolate only extremely high frequency content. It was pitched slightly down, had reverb and compression added, and a low-frequency oscillator, or LFO, engaged to modulate pitch. A low-frequency oscillator is a type of modulator. In synthesis, modulators are used to change the original sound in some way. On this sample, I used an LFO with a sine wave to modulate the tune of the sample. As a result, the sound has a lot of movement, almost like a pulsing effect.



Figure 14 - Screenshot of the LFO window and the settings used on the crosswalk meter sample.

The sound I used for the melody sample was some sort of metal sound that was collected from the soundscape. I used a band-pass filter, allowing the midrange frequencies to pass while attenuating the extreme lows and highs. I used a considerable amount of compression and reverb, along with individual tuning so that I had multiple octaves allowing for harmonies as well. Other sounds like thuds and trucks revving their engines were used underneath the melody, like bass lines and a loose chord element.

As far as approaches and techniques incorporated from my research, I took a variable perspective with all of these songs. The variable perspective allowed me to explore transforming some of these samples as much as I did and didn't tie me down to restrictions and limits based on what I could and could not do with these soundscapes. I quickly realized when beginning to gather my soundscapes and revisiting the four principles and three major approaches from Simon Fraser University that these principles and methods are more geared toward soundscape compositions that focus on leaving the soundscapes in more recognizable formats, whereas I wanted to focus on the ability to completely change the samples. This is why most of these principles and approaches were not used throughout the entirety of my soundscape composition process.

Other components of my research did provide useful though, especially Hildegard Westerkamp's differing microphone techniques. In a way, I was able to try and test all three of her recommended microphone techniques. Just like her, I found the moving microphone technique the most useful and beneficial. I was able to collect sounds as I moved through the environment, which allowed me to get much closer to the sound sources, allowing accurate captures. I also incorporated the stationary technique, in which I sat on a bench for a few minutes and was able to leave the microphone stationary as it continued to record. This technique was interesting, but not as useful as most of the sounds in the downtown environments were moving, so sounds would come and go quickly. The last microphone technique, the searching microphone, was also used, albeit unintentionally. The searching microphone is one that revolves around searching for objects that are usually silent and touching them to produce sound. Although I wasn't the one touching them to produce the sound, plenty of usually silent objects, like shop doors, lamp posts, trashcans, and benches were being touched to produce sound that was captured in my soundscapes.

As far as other techniques from my research, categorizing the sounds in the soundscape based on their source, like Krause did, proved interesting as it quickly became evident that almost all of the acoustic sound sources were anthrophony, meaning all the sounds were being created by humans. This really brought to my attention just how much humans can influence the natural sounds of an environment and completely shift the sonic qualities to almost exclusively be anthrophony.

02. “Murfreesboro”

Capture Notes

The second recording and song that I worked on is “Murfreesboro,” once again named from the downtown location from which the soundscape was taken. I visited Murfreesboro on November 30th, 2021, only bringing my Zoom H1n handheld recorder and headphones so I was able to monitor the recording. It was 60 degrees Fahrenheit, and a mostly sunny. Following my Franklin recording, I was able to get a windscreen to help block some of the wind while recording the final two soundscapes. It was a Tuesday in the middle of the afternoon, so the downtown area wasn’t very busy. I started my soundscape recording at 12:30 P.M., and concluded the recording at 1:00 P.M., again capturing a 30-minute soundscape recording. The route I took mostly focused on the main square, but I also took some outside roads off of the square as well. Again, I focused on the moving microphone technique for the most part but incorporated another portion where I sat on a bench and took a stationary recording portion. The recorder was the same Zoom H1n with two microphones in a stereo X/Y 90-degree pattern. In terms of content from the soundscape, this song and “Nashville” felt a bit emptier and had soundscapes that were less intense than in “Franklin.” This most likely had to do with the time of year, as it was beginning to get cooler and not as many people were around, and the time of day, as I visited these locations earlier in the afternoon. I also visited both of these locations on a weekday as opposed to Franklin, which I visited on a weekend.

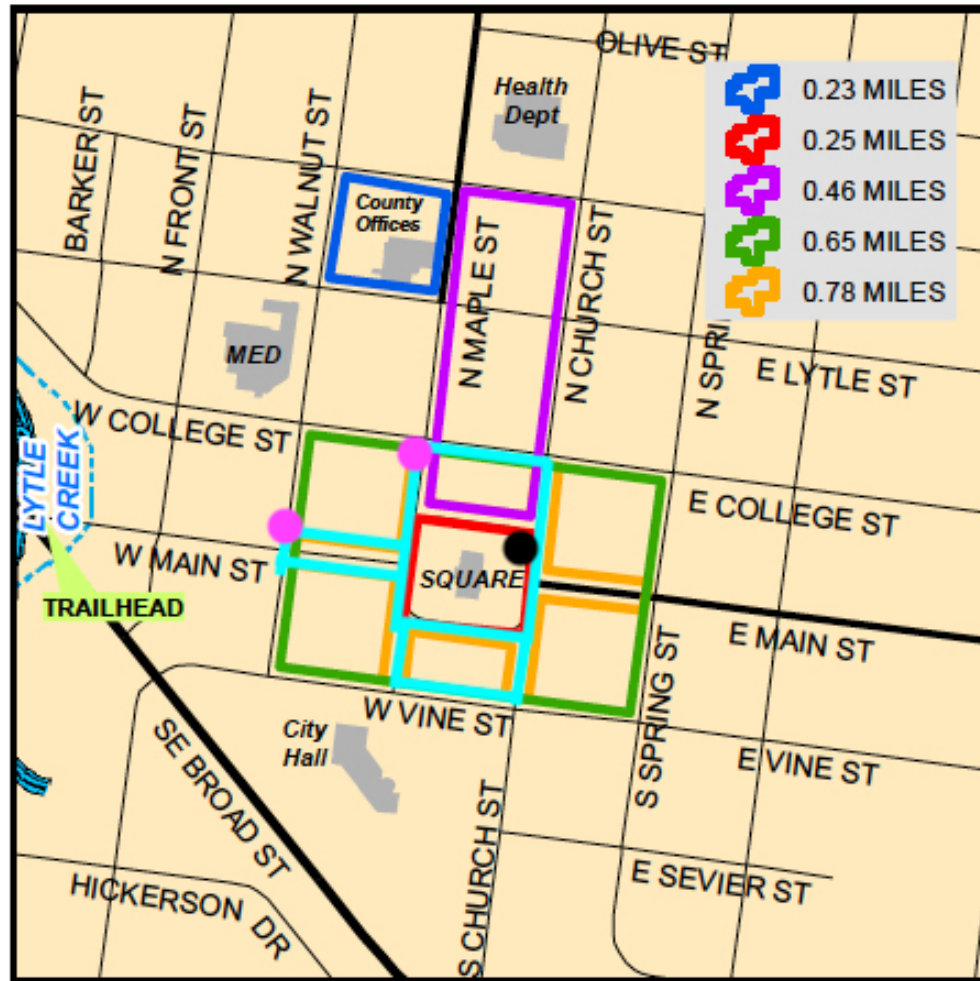


Figure 15 - Map of downtown Murfreesboro, Tennessee (“Downtown in Motion” n.d.). The sky-blue lines represent my route, with the black dot representing my starting and stopping point, and the pink dots representing pausing points of stationary recording.



Figure 16 - This location is the first spot on my route where I paused for about five minutes to use the stationary miking technique.

Process

After completing “Franklin,” the process seemed to move much faster as I had a much better idea of what exactly I wanted to do and how I wanted to execute these songs. Again with “Murfreesboro,” I began the process with importing my soundscape into a Pro Tools session. I then began scrubbing through the soundscape, marking any interesting sounds and cutting and exporting the shorter clips, similar to the process in “Franklin.” Once I had a good foundation of starting samples, I created instrument tracks in Pro Tools and opened Battery on these tracks, where I would then drag in the samples and begin editing with the different windows within Battery that were described in more detail above. The general approaches were similar; I started with drums, before moving to a main melody sound, and then would build more components, like bass and a chord sound to lie underneath and support the melody.

The looping window within Battery played a larger part in this song as well as “Nashville” because I understood the window much better. I had a much easier time creating sounds that had a longer duration because I was able to have them loop while the keys were being held. This did come with its own challenges though, as it was very hard to pull sounds from the soundscape that were at an extremely consistent pitch. Specifically with the sound that I ended up using for the chords on this song, there was a bounce or change in pitch as the sound looped. With some samples this was okay and wasn’t extremely noticeable, but sometimes it kept me from using a certain sample because there was just too much variation for the type of instrument or sound the sample was meant to represent. This all comes back to the scrubbing process of finding samples

that would work; sometimes I would have to come back to the soundscape recording and adjust samples I had already chosen or pick new ones altogether.

As far as approaches taken from my research on soundscape compositions and soundscapes in music, I wanted to try incorporating one of the soundscape composition principles that are usually used when putting together a soundscape composition that focuses on leaving the soundscape in a more natural place. My approach for this was to focus on the first principle listed in the “Soundscape Compositions” article, which is that the listener’s recognizability of source material is retained in some capacity throughout the piece. I decided that in order to accomplish this, I wanted to start the song with a portion from the soundscape that was completely unedited, and then using a sound from that portion, transition into the main portion of the song. I ended up choosing a sound from this soundscape that stood out in the soundscape but also was repeating as it made it easier to keep repeating the sound as it was already happening. The sound ended up being the “back-up beep” from a delivery truck that was delivering packages in downtown Murfreesboro. In order to make this transition sound proper, I first isolated the truck beeping and exported that small portion of the soundscape. I then did some very light effects processing within Battery because I wanted this sound to retain its recognizability. From there, I played the unedited soundscape portion, and after a few cycles of the beeps, I started playing my slightly edited beep through Battery along with the soundscape portion. I then had the unedited portion completely fade out but continued playing the beeps I had edited through Battery as my transition. The hardest part of this was having to get the timing for the transition right. I needed to slow down from the tempo of the beeps in the original soundscape to the tempo of the song. I then used the beeps

03. “Nashville”

Capture Notes

The final sound recording and song that I worked on is “Nashville.” I visited Nashville on October 20th, 2021. The temperature was about 70 degrees Fahrenheit, and it was mostly sunny. It was a Wednesday, so the downtown area was not super busy. I mostly recorded around Capitol Hill and Bicentennial Mall. I started my soundscape recording at 1:25 P.M. and concluded the soundscape recording at 1:55 P.M. This recording was entirely a moving microphone recording with no stationary elements used, unlike the other two recordings. The Zoom H1n was used again, with the windscreen, in order to reduce wind noise.

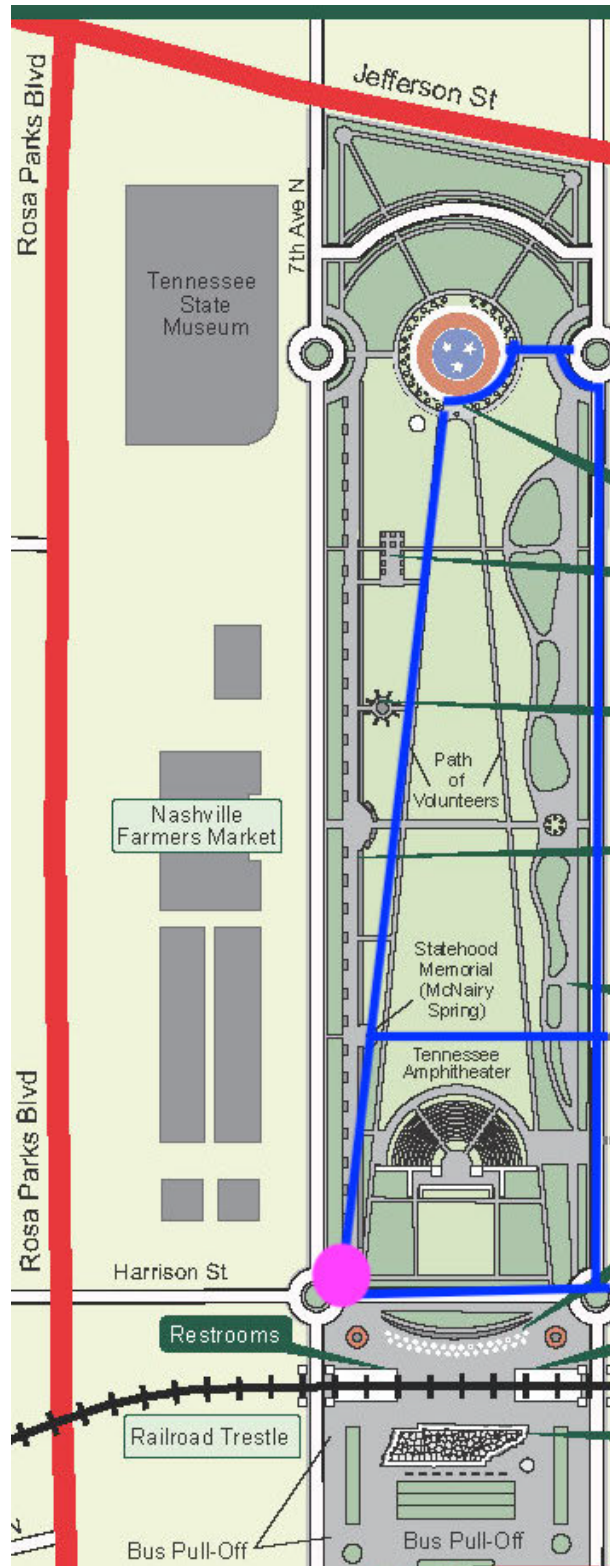


Figure 18 - Map showing Bicentennial Mall (“Bicentennial Capitol Mall State Park” n.d.). The route I took is in dark blue, with the pink dot representing the start and stop point.

Process

The process for “Nashville” was similar to both of the previous pieces. “Nashville” moved much faster, similar to “Murfreesboro,” as at this point, I had my approach down solidly, along with being much more familiar with the tools within Battery. The process began with scrubbing the recording for interesting samples, exporting those smaller portions to be able to then import into Battery. I liked starting with drums and melody because it felt like a lot of the other components came much more quickly if I had these two key components in place first. As a way to again try and incorporate some of the principles of soundscape compositions, I wanted to do another transition introduction from the unedited soundscape to the piece. Rather than find a sound that repeated like the truck beeps in “Murfreesboro,” I found a distinct sound that I could manually repeat myself. The sound that I chose for this was a tinny metal sound. It reminds me of something like a stone or pebble being kicked against a lamp post or metal bench. I wanted the transition to have a sweeping EQ effect, as a way to isolate the high frequency content within the sample. In order to do this, I first duplicated the main unedited portion multiple times on a track within Pro Tools. I did this about three times, with crossfades between each point so that they played back more seamlessly. Then, on this track, I placed a single band EQ plug-in that allowed me to roll off some of the low-end frequency content, as there was some wind and low noise that I wanted to remove. After this, I added a multiband EQ plug-in that I automated to sweep across the frequency spectrum. Automation is the process of having a DAW perform tasks like moving knobs, faders, or flipping switches over time. I was able to have the high-pass filter on this EQ plug-in start at a low frequency and then move upwards while the clip is first repeating,

gradually removing more and more of the low frequency content, isolating the high-pitched metal sound that was the focus of the sample in the first place. I also had a reverb effect automated to bring in more and more reverb into the sound as well. From there, I went to another track and loaded the clip into Battery. I then edited the clip on different Battery cells, increasing the pitch as the second part of the transition into how I wanted the sample to sound for the piece. Figure 19 below shows the unedited clip and how it was duplicated. It also shows the automation lanes, one of which is for the sweeping high-pass filter and the other of which is the reverb signal, The Battery track used for the transition is also seen in this figure.

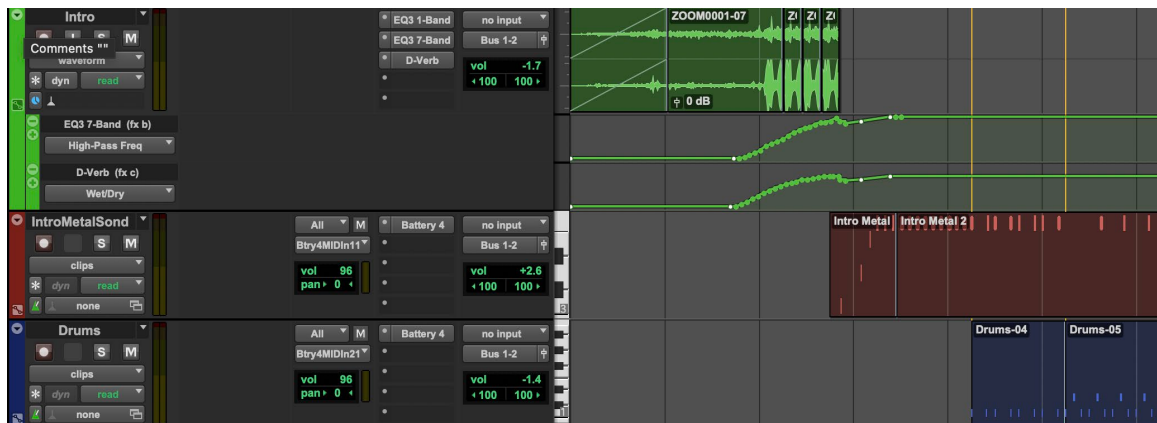


Figure 19 - Screenshot showing the unedited soundscape with the two lanes of automation, as well as the edited transition portion and beginning of the drum track.

I like that this approach allowed me to still edit the samples from the soundscape recording while still showcasing the sound in its unedited form. This allowed it to be more recognizable and emphasizes the idea that these songs are composed from material from different soundscapes. I used the same previously mentioned microphone

techniques from my research, strictly relying on the moving microphone technique for this piece. On both this song and “Murfreesboro,” I incorporated a technique that I did not see anywhere in my research, but greatly helped me when composing these pieces. I wrote out a general structure for the song before I started in order to provide a roadmap for where I was going. This outline included suggested lengths of song sections, such as verse and chorus, so that I wasn’t just starting without an idea of when sections of the song were starting and ending. In “Franklin,” I didn’t make any sort of outline or plan, which resulted in the structure being more abstract than a typical song structure. While that approach is acceptable, I preferred having a loose outline to work with rather than jumping in blindly.

V. Reflection

Critical Assessment

Although this thesis project came with a wide variety of challenges and issues throughout the entire process, the main goals of the project were completed successfully. I was able to dive into an entirely new field of compositions from a specific type of source material that I had never researched and even heard of until the beginning of this process. I not only was able to research and learn about the history of soundscapes and soundscapes within music, but then was able to try my own hand at collecting soundscape recordings and using those as source material for my own compositions. Wearing multiple hats throughout this project taught me a lot about what responsibilities specific roles have throughout the process of creating music; the responsibilities of a field recorder as opposed to a programmer, producer, or mixer are all extremely different and have different priorities. The ultimate goal of creating a collection of songs created from samples taken from recorded soundscape environments from different downtown areas throughout Tennessee was met.

The research component of this project was challenging in that most available resources on soundscape compositions tend to focus more heavily on keeping the soundscapes in a more natural and unedited place. This was not my goal, as I wanted to focus on transforming these soundscape recordings and samples into sounds that were more typical in electronic music. Although I was able to find a lot of great resources on different soundscape composition techniques and approaches, these tended to not translate well when applied to soundscape compositions that were much more abstract and transformative. Some of the techniques and principles I planned to use as key points

for these pieces had to be abandoned and hardly used at all as they did not apply to the goals of my pieces. Although some of this research was not able to be used, I did still find some smaller ways to incorporate one or two of the approaches and techniques, just not as fully as they are typically used. Along with this, some other points of my research did prove useful, like microphone techniques for capturing soundscapes and categorizing the sound elements heard within the soundscape as a way of assessing how they should be used in the piece. The research component also allowed me to explore many works that I did not even know existed, which have continued to inspire me not only for this project but for other classes within the program.

The recording and capturing portion of this project came with its own set of challenges, but still managed to teach me a lot. Most of my recording experience prior to this project was set in our studios here on campus, which are built and made for recording. Field recording and attempting to get quality recordings while out in the real world proved a big challenge, as I always felt something sounded off in the recordings. The first venture resulted in a recording with a lot of wind noise, as I hadn't purchased any sort of wind guard or shield. This resulted in the Franklin soundscape having a lot of noise and a wide range of record levels as I was constantly adjusting the input of the mic to try and compensate for the wind noise. I quickly purchased a wind shield for my other recordings, but then ran into issues with the way the microphone needed to be held and positioned, as it seemed to pick up every little movement in my hand. Some sort of stabilizer or device that would allow me to have the microphone not directly in my hand would have been helpful, but I couldn't get one in time for my subsequent sessions. Recording out in the real world brings in an entirely new set of questions and issues to be

addressed, some of which I overlooked and was blindsided by once out doing the recordings. Even with these challenges, I was still able to use a new type of microphone that I had never used before, record in entirely new settings and environments, and test microphone techniques that are almost exclusively used in field recordings. The recording process taught me a lot about things to consider going forward, and it brought issues to light that I would've never considered until I had actually been in this scenario.

The compositional portion of the project, along with the editing, which included picking out samples, editing and manipulating them, playing them through a MIDI controller, and then mixing and editing these songs had the steepest learning curve of all of these sections. There was so much I had to learn, especially regarding the plug-in software like Battery, that made this portion quite daunting and time consuming. Not only that but managing my time and balancing this thesis project along with my other recording projects for my graduate classes became extremely stressful and quite honestly has left me feeling burnt out.

As far as editing and implementing changes into these songs goes, there were a great number of issues, especially with factors like the tuning of specific sounds. In "Murfreesboro," the main sound that I was using as the melody was falling extremely flat and attempting to address this with other tuning tools was not successful, so the decision was made to completely remove the melody all together and focus on other elements of the song. A similar issue occurs in "Franklin," but the tunings do not clash as much as they did in "Murfreesboro," which allowed for me to keep the elements all present and treat the song as the most abstract of the three. Trying to tune sounds from a soundscape and have them be the exact same pitch was a very challenging aspect of the production of

these songs, as the initial samples had no pitch relationship with each other to begin with. Addressing these issues was the biggest challenge of the editing portion of these songs, but these issues also taught me a lot about considering pitch and tuning at the forefront of a production like this rather than leaving it until later in the process. Although both the compositional process and the editing process had its issues, I was able to power through and continue working. I have a much better understanding of Battery and the way it operates now. As I was creating these songs, it was amazing to become more and more comfortable with the software and to realize that I was understanding it much better. It allowed me to explore more complex ways of incorporating unedited source material in the final two songs, and I am extremely grateful for the opportunity to work on a project that was mostly done through software and digitally as opposed to the majority of projects I have done here at MTSU that focus on studio work and hardware.

On reflection with this project, there are many things I would do differently if I had the chance. The number one would be my time management and balancing my scheduling better. Any creative project like this always requires more time than one would think, and this project was no exception. While the final outcome of this project is not perfect by any means, I was extremely happy with some of the samples and sounds I was able to create from my source material. With more time and resources, like additional plug-ins and software on my at-home setup, this project could have been taken to the next level and improved upon. Along with investing in more software, I would also go back and invest in more hardware for the recording process. Accessories like wind shields and stabilizers for the microphone from the start would've made the entire recording process much smoother. Possibly having an assistant or second set of hands to

take more detailed notes and photograph the areas while I was recording also would've been helpful, as trying to do all of these components at once was very overwhelming. I also would've changed some of the focus to have a heavier emphasis on musique concrète, as my final creative output is more reminiscent of a soundscape composition and musique concrete crossover piece rather than strictly a soundscape composition.

Some of the biggest lessons from this project had less to do with the actual creation of these songs and more to do with the general concept of soundscapes. Before this project, I had hardly ever considered how a particular environment sounds and what characterizes different sound environments. Even further, I had never considered how drastically humans have changed the way the world sounds and how we are negatively affecting the natural sounds all around us. My project specifically focused on the soundscapes of downtown environments, and it is astonishing to listen to these soundscapes and hardly hear any sounds that are natural to the environment. Almost every single sound within these soundscapes would be deemed anthrophony by Krause, meaning that all of these sounds are being created by humans. The other categories are almost completely lost, mainly due to the fact that we are covering them up with our own sounds. More focus should be put on highlighting the natural elements of particular soundscapes, especially since more and more of these natural elements are being lost due to humans. It feels very full circle to come to this realization personally that humans are drastically affecting natural soundscapes all over the world, as this realization was extremely important to R. Murray Schafer and his work and development of programs like the World Soundscape Project, which was some of the first research I did for this project.

Although the final outcome is nowhere near perfect, and I am not the proudest of the it, I am still happy that I was able to meet the major goals of the project. With more time and resources, I believe the quality of the project would greatly increase. With deadlines approaching and other health issues hindering my ability to devote as much time as I would've liked to devote to this project, I had to get to a point where I was satisfied with the pieces and move forward. I would love to revisit these pieces at a later date in order to polish and refine them. This could also lead to a potential release and marketing campaign, possibly combining recordings of the unedited soundscapes with the songs and other media taken from the project into a larger project, even with the possibility of visiting more cities and capturing more soundscapes to create a longer full-length album. However, these plans would be quite a bit away, but the marketability of a project like this is something I find very interesting and appealing.

Although the final songs are not absolutely perfect and have their issues, I stay satisfied with my ability to transform these source recordings and do believe that I met the main goals of the project. Research was conducted into the history of soundscapes and soundscape music, soundscapes of different downtown settings throughout cities in Tennessee were adequately captured, and these soundscape recordings were used as the only source material for a small collection of songs. Beyond this, I was able to complete a project with much wider parameters than my usual creative projects, focus on almost all elements independently, and get much more comfortable with working with strictly software and digital components for music creation.

Final Words

The final outcome may not have been the most polished and refined collection of songs, but I was able to take soundscape recordings and successfully use them as the only source material for the production of multiple songs. The research allowed me to explore an entirely new category of sound and trace its history as it was implemented into music with the development of a new subgenre. The creation of these songs taught me a good deal about different elements of the creative process and how to address specific issues and challenges. Lastly, it allowed me to explore and develop skills that are not necessarily emphasized within the Recording Industry Department, along with giving me an immense amount of creative control over the final outcome.

The completion of a project of this scale is extremely important to me, and a major success in terms of personal development and experience. As someone who tends to be more academic focused, I was extremely pleased that I was also able to create a creative output that was mostly left to my own decisions and abilities. This project taught me an immense amount about the discipline and determination that a project of this scale requires; it also taught me to stay resilient and not give up, even when things get tough and new problems arise. Even with the completion of just three songs, this project helped me better understand the work that goes into any sort of recording and creation of music, the different stages of the process, and what it truly takes to get it all done. The reflection portion helped me grapple with what I'd like to do differently next time and improvements that should be made, but also allowed me to feel proud of what I was able to accomplish.

Following this project, I am extremely motivated to continue to create more works and explore areas with which I may not be as familiar with. As I continue in the master's program for Recording Arts and Technologies here at MTSU, I have already begun evaluating what changes and adjustments need to be made for the next time I complete a project of this scale. I will continue to do better and push myself in ways that allow me to grow and develop my abilities. I am extremely proud of everything I accomplished with this project, and how I persevered through the abundant challenges and difficulties. I have learned so much about so many different processes and roles within the scope of creating a collection of songs, all of which will greatly help me as I move forward in the music industry and continue my education. This project has opened more doors that I want to continue to explore and learn more about, serving as a new source of inspiration moving forward. Above all, this project has reinforced my love not only for music, but for audio in general, and has shown me that I have made the correct choice in my field of study.

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