

EverWind: ORIGINAL COMPOSITION AND ANALYTICAL ESSAY ON THE ROLE
OF INSPIRATION AND NATURE IN MUSIC

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This paper provides an overview of the inspiration, research, and creative process involved in the composition of *EverWind* for orchestra and electronics. *EverWind* is based on field recordings from the American Southwest. The composition uses pitch material derived from spectral analysis of the recordings, and it incorporates a fixed media element using the field recordings that are then electronically manipulated to various degrees; this fixed media element is played alongside the orchestra. The paper also analyzes John Luther Adams' *Dark Waves for Orchestra and Electronics* and R. Murray Schafer's *Music for Wilderness Lake* in order to place *EverWind* within the broader musical context.

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PART I
CRITICAL ANALYSIS

Chapter 1

Introduction

Where we are—where we grow up, live, and work—has a profound effect on who we are. For me, music can be a powerful tool of reflection and study. By examining the places around me through composition, I gain a deeper understanding of where I am, and by extension, who I am. For this project, I focused on exploring the wilderness areas of the American Southwest. I examine the role that location plays on music, and the ways in which the medium of an orchestral and electronic composition can be used to express those experiences.

The composition of this work occurred in three main stages: experience, reflection, and realization. All of the material was inspired by a trip out of Denton, Texas, traveling to the Chihuahuan desert, then circling the Colorado Plateau, before coming back through Mesa Verde in Colorado and ending in Texas. The focus of the trip was the national parks where I camped: Guadalupe Mountains, Carlsbad Caverns, Petrified Forest, Grand Canyon (north and south rim), Zion, Bryce Canyon, Capitol Reef, Arches, and Mesa Verde. But the process of traveling (mainly by car) from each place to the next also had an influence on the final product.

Setting out on the trip, I made a concerted effort to not anticipate what I would find; I allowed my experiences and the sounds I recorded to speak for themselves. Some of the elements that became central to the piece (e.g. sound pollution, beauty) I intended to explore; other elements (such as silence) came about through reflection both during and following the trip.

The piece itself is written for orchestra (instrumentation: 3.3.3.3/4.3.3.1/T+3/

hp/piano/strings) and electronics, with movements using subsets of the overall instrumentation. The piece is in four movements: the first movement for the full instrumentation, the second for a reduced subset of the orchestra (2.2.2.2/3.2.2.1/T+2/strings), the third for string orchestra, and the final movement again for the full instrumentation, but including electronics. Two spoken interludes with a background of fixed media are interspersed in the piece: one between the first and second movement and the other between the third and fourth. The complete piece is 25 minutes in duration.

Three main ideas weave through the piece and connect disparate ideas: first is an exploration of sound pollution in natural environments, often taking the form of obtrusive sounds or harmonies, but also manifesting itself as sounds which could be seen as mimicking sound pollution—for instance a bass drum roll representing a passing plane; second, a focus on the harmonic overtone and undertone series, especially partials nine to fifteen; third, distinctive rhythmic motifs are shared among the movements and developed over the course of the piece.

The first movement in many ways serves as an introduction to the piece and to the three connecting elements in the work. The second movement explores noise sounds and silence. The third movement, for string orchestra, focuses on rhythmic elements and uses polyrhythms pulled from field recordings. The final movement combines the orchestra with a fixed media element: the orchestra part uses limited indeterminacy and repeated motifs to complement a relatively quiet and open electronic part.

The piece as a whole examines the sounds from the aforementioned locations,

and also explores the implications of these sounds from an environmental perspective. The musical material of the movements is largely governed by the locations from which they are derived, and connecting narrative strands pull distant places together (for instance, the idea of silence connects the deserts of Arches with the painted desert of the Petrified Forest). The idea of a journey is also a unifying element in the work.

The spoken interludes use texts extracted from journal entries made during the trip. The fixed media element of the first interlude uses sounds that are relatively pure and unaltered, and it explores the idea of man-made sounds in conflict with those of nature. The second interlude foreshadows the themes of the final movement by juxtaposing unaltered sounds with ones that have been heavily processed.

The recordings were made using a ZOOM H-5 along with a Rode NTG-2 shotgun microphone with a blimp wind screen. The sounds were spectrally analyzed using Spear and Orchids. Dorico was used as the engraving software. For editing and producing the playback tracks for the composition I used Max/MSP and Logic Pro Studio.

A Brief Aside on Environmentalism

From early on in this project, I knew that I would need to decide how environmentalism would feature in my composition, and that it might often be interpreted as a central (if not the central) element of my work. It was clear from the outset that my decision on the degree to which I would focus on environmental concerns would be a defining aspect of my work. There are those, inside and outside the realm of music, who have strong opinions (in either direction) on whether a

composer writing music based on nature should be using their influence to preserve the environment.^{1 2}

With this understanding, I decided to take the position of an observer in my work. I will not ignore the impact of human action on these natural landscapes—far from it, sound pollution features heavily in the motifs I explore—but I do not attempt to pass value judgments in this work. The air traffic of our nation is certainly loud wherever you are, but there are obvious benefits of air travel that even the staunchest of environmental advocates would be hard-pressed to discount. Another reason why I have chosen not to explicitly advocate for any particular conservation agenda is a lack of knowledge on my part. I will leave it to those who have studied the myriad ways that humans impact our environment to propose solutions and pass judgment. It is my hope that this work will provide an appreciation of the National Parks for those who have not visited these places, to remind those who have done so of the beauty and majesty there, and for all listeners to increase their awareness of the sounds all around them—whether they be natural or man-made.

¹ Stephen Lias, Phone Interview with Author, (July 2018).

² Bernie Krause, *Notes From the Wild, The nature recording expeditions of Bernie Krause*, (Roslyn, NY: Ellipsis Arts, 1996), 12-13, 23-25.

Chapter 2

Literature Review

Two main kinds of literature are the most relevant to the focus of this composition project: first, works that examine the role of nature in music—how nature can inspire sound for instance, or literal uses of natural sound in a composition; second, works that examine the processes of spectral analysis. My work represents the confluence of these two approaches. In addition to examining works of scholarly writing, I will look at pieces that have been composed in the same vein as this project.

Writings on the role of environment in music are as diverse as the composers and theorists who have cared to weigh in on the matter. One approach has been that of site-specific music. Christina Rusnak (a member of the Landscape Music collective) has written on music that is tied to a particular location. Her thesis, *161 Glass: Site Specific Music in an Artistic Context*, while focusing principally on the interaction between architecture and music, provides a basis for examining the interplay between location and music.³ Of particular interest is her statement that, “At some point, site specific art and performance transforms the sites themselves.”⁴ Rusnak has continued to write site-specific music, and has developed an interest in composing works based on nature. One of her most recent works is inspired by the Oregon Trail.⁵ She writes about her compositional process and how she intended to compose based on the landscape; but

³ Christina Rusnak, *161 Glass: Site specific music in an artistic context*, 2-9.

⁴ Ibid, 8.

⁵ Christina Rusnak, “Composing the Oregon National Historic Trail,” (Landscape Music; 2018).

the emotions of those who travelled on the trail, and even her own emotional responses, found themselves expressed in the piece as well.⁶

R. Murray Schafer in *Tuning of the World* sets forward a series of ideas pertaining to the soundscape of the world in general, and how music plays a role within it. Throughout the book, Schafer makes arguments and observations that are sometimes self-evident, yet profound. The first section provides an overview of how the soundscape of the world has evolved over time.⁷ He moves into specific examinations of sound pollution in the modern era and sets out various methods by which people can explore the soundscape around them. He concludes by advocating for a new system of educated listening, without which, he argues, we will continue the dangerous trend that we have been perpetuating.⁸ The first and second sections of this book were the most useful to my work in particular, as they provided a system for cataloging the sounds in any given soundscape, and provided a historical perspective against which to contrast my experiences.

The Book of Noise,⁹ also by R. Murray Schafer, provides useful research and information on noise pollution. Schafer examines different sources of sound pollution, and the section of the book dedicated to airplane noise serves to show how pervasive

⁶ Rusnak, Composing the Oregon National Historic Trail.

⁷ R. Murray Schafer. *The Tuning of the World*, (Vancouver: Price Point, 1977), 15-67.

⁸ Ibid, 71-259.

⁹ *The Book of Noise* is possibly on the edge of what can be considered an academic source: the book is very short (31 pages) and uses pictures and drawings extensively. The writing's purpose is to create an accessible, educational source on noise pollution. While the book distills information, the core research and facts are illuminating and not at all lacking in scholarly rigor.

this particular source of noise pollution is.¹⁰ The book also includes guidance and suggestions for mitigating the effects of noise pollution moving into the future.

Bernard (Bernie) L. Krause is an American Musician and Soundscape Ecologist. He has worked to preserve the world's soundscapes through recording and political activism. He has coined such terms as biophony (meaning sound created naturally by living organisms and not by human action—e.g. a deer rustling leaves in the forest or the heartbeat of an animal),¹¹ and has written extensively on the elements of soundscapes and humankind's relation to them.

In his book, *Voices of the Wild*, Krause dives into the natural soundscapes that exist in the world and, more interestingly, society's reaction to them. He points out that, especially for how attenuated we are to visual disturbances, people are remarkably unable to notice the intrusions of man-made sounds into natural soundscapes.¹² In other writings, Krause makes further observations on the relationship between humans and sound (and between music and sound). In *Notes from the Wild*, he points out that recordings are only the *consequent* of sounds and cannot capture the sound itself.¹³ He also draws attention to the strange controversy around incorporating human sounds with natural ones in a soundscape composition. For instance, the author provides an example where he was dealing with a corporate marketing department while producing

¹⁰ R. Murray Schafer, *The Book of Noise*, (New York: A.A. Knopf, 1970), 16-18.

¹¹ Bernie Krause, *Voices of the Wild: Animal songs, human din, and the call to save natural soundscapes*, (New Haven: Yale University Press, 2015), 4-13.

¹² *Ibid*, 1-5.

¹³ Krause, *Notes from the Wild*, 10.

a soundscape with accompanying classical music. Krause wanted to include human sounds, but the company refused. Krause says, “We were already pairing human-produced music with nature sounds...” but the company insisted on the sounds all being natural.¹⁴ Krause’s research into the nature of soundscapes is extensive and provides a background for my work in portraying the soundscapes of the American Southwest.

Spectralism is a diverse musical movement that has branched into multiple different subcategories. The influence of spectralism had a profound effect on my research for this project (especially in the area of instrumental synthesis), and while a full review of the literature on spectralism is beyond the scope of this paper, a brief overview is relevant here.

“A Provisional History of Spectral Music” by Julian Anderson traces the development of spectralism.¹⁵ In this article, Anderson examines some of the contributing factors that led to the creation of this style, as well as some of its important practitioners. Anderson makes an astute point in observing that there are actually very few stylistic similarities that connect “spectral composers”:¹⁶ unlike minimalism or serialism, which have a recognizable aural aesthetic, spectralism is a broad term that includes those who use spectra in their compositional process and is more akin to a mindset.

Another writing that attempts to examine part of the impetus behind spectral

¹⁴ Ibid, 12-13, 23-25.

¹⁵ Julian Anderson, A Provisional History of Spectral Music, (*Contemporary Music Review*. Vol. 19, Part 2, p. 7-22, 2000).

¹⁶ Ibid, 7-9.

music is *The Role of Texture in French Spectral Music* by Kari Besharse.¹⁷ Besharse begins by speaking about how truly unique French Spectral music is: here sound itself becomes the basis for composition instead of some external form or aesthetic device.¹⁸ In addition to examining the role of texture in this music, Besharse also succeeds in contextualizing these developments within the use of texture in other kinds of music from the twentieth-century.¹⁹

In addition to being a noted composer of spectral music, Tristan Murail has multiple writings which attempt to explore the development and concepts of spectral music. "The Revolution of Complex Sounds" for instance examines the genesis of spectralism.²⁰ Murail draws attention to the way in which spectral music represents a confluence of multiple elements and factors (such as the influence of electronic music and the new analytical tools afforded by advances in computer technology).

Joshua Fineberg in his article "Guide to the Basic Concepts and Techniques of Spectral Music" examines many of the underlying elements that composers of spectral music have used.²¹ He describes the process of instrumental synthesis (using instruments to play the constituent frequencies of an analyzed spectrum) and multiple other techniques that composers have used.²² An overarching common theme in his

¹⁷ Kari E. Besharse, *The Role of Texture in French Spectral Music*, (University of Illinois at Urbana-Champaign, 2009).

¹⁸ Ibid, 1-3.

¹⁹ Ibid, 27-76.

²⁰ Tristan Murail, "The Revolution of Complex Sounds," (*Contemporary Music Review*. 24. 2005: 121-135).

²¹ Joshua Fineberg, "Guide to the Basic Concepts and Techniques of Spectral Music," (*Contemporary Music Review* 19, no. 2 March 2000: 81-114).

²² Ibid, 82-89.

writings, and others' on this topic, is that there are a diverse variety of spectral techniques and many composers have used these techniques in myriad ways.

Composers basing their music on a given location—even national parks in particular—is not an inherently new idea. Ferde Grofé's *Grand Canyon Suite* is perhaps the most widely known example of a classical piece based on the national parks, especially of an orchestral piece (Grofé also composed suites based on other natural locations in the United States including the Mississippi River and Death Valley.)^{23 24 25} Stretching back to the earliest music and through the Renaissance there is an effort to evoke nature through music—Haydn provides a great example from the classical-era of such a composer (most famously, his work *The Seasons* is inspired by nature); the same influence is also apparent in works such as *L'Allegro ed il Penseroso* by Handel where members of the orchestra are called upon to imitate natural features (such as woodwinds evoking a gently rolling countryside).^{26 27 28} A more contemporary example comes in the work of Stephen Lias, who has dedicated an entire series of works to the National Park System in the United States.²⁹

The list of composers who use nature as a primary source of inspiration for their

²³ Ferde Grofé, *Grand Canyon Suite*, (New York: Robbins Music Corp, 1943).

²⁴ Ferde Grofé, *Death Valley Suite*, (1949).

²⁵ Ferde Grofé, *Mississippi: a tone journey: a descriptive suite in four movements*, (New York: L. Feist, 1926).

²⁶ Schafer, *Tuning of the World*, 104.

²⁷ Franz Josef Haydn, *The Seasons*, (1802).

²⁸ George Frederic Handel, *L'Allegro ed il Penseroso*, (1740).

²⁹ Stephen Lias, *Mount Rainier Search and Rescue*, (2012).

compositions is too plentiful to adequately explore here. However, two such composers who have been of particular inspiration to me are Olivier Messiaen, whose use of bird song shows a deep connection to nature,³⁰ and Toru Takemitsu, whose exploration of natural sound provides a great example of the interplay possible between nature and music.³¹

Composers have also used natural sounds in their compositions in various ways (sometimes referred to as being in a style known as “Biomusic” based on Bernie Krause’s vocabulary).³² This style did not emerge until the twentieth century as it necessarily followed the introduction of recording and playback technology. Ottorino Respighi was the first composer to use recorded sounds in classical composition. At the conclusion of the third movement of *Pines of Rome* he calls for recorded bird songs to be played back on phonograph.³³ Biomusic has continued to develop concurrently with technology: as recording technology has improved and become more portable, the applications of combining recorded sound with acoustic instruments has also evolved.

Richard Blackford is a composer who has written for orchestra and electronics with a specific emphasis on using natural sounds in the classical arena (particularly focusing on using the orchestra to enhance the audience’s understanding and appreciation of the natural sounds). Blackford was inspired by the soundscape recordings of Bernie Krause and used his work (such as recordings of whales and

³⁰ Oliver Messiaen, *Catalogue d’Oiseaux*, (1956-58).

³¹ Toru Takemitsu, *Toward the Sea*, (1981).

³² Krause, *Voices of the Wild*, 4-13.

³³ Ottorino Respighi, *Pines of Rome*, (1924).

thunder) as the basis for his orchestral composition *The Great Animal Orchestra* (taking its name from a book of the same title by Bernie Krause).³⁴

Among living composers who are engaged in using nature as either a source of inspiration or as a fundamental element of their work are those who have formed a group that write what they call “Landscape Music.”³⁵ Composers such as Stephen Lias, Christina Rusnak, and Stephen Wood³⁶ are all members of this collective, and each has his or her own take on the role that nature should play in music.

Paul Lansky’s work *Imaginary Islands* is a piece that has a similar confluence of influences as those present in my own composition. Lansky’s work incorporates electronic sounds with orchestra, and also places a heavy influence on the exploration of natural sounds through the abstraction of those sounds and their combination with acoustic instrumental material.³⁷

No discussion of contemporary music based on nature would be complete without examining the works of John Luther Adams. An Alaska-based composer, his works often explore environmental issues or are based on wilderness locations. *Dream in White on White* is an excellent example: written for small orchestra, the piece portrays the arctic tundra with snow falling upon layers of already lain snow.³⁸ *Become Desert* is another work of Adams’ which relates in particular to *EverWind* as it attempts

³⁴ Richard Blackford and Bernie Krause. *The Great Animal Orchestra: symphony for orchestra and wild soundscapes*, (2014).

³⁵ landscapemusic.org

³⁶ Stephen Wood, *A Wilderness Dream*, (Stephen Wood Publishing, 2003).

³⁷ Paul Lansky, *Imaginary Islands*, (2013).

³⁸ John Luther Adams. *Dream in White on White*, (2002).

to portray the sparseness of some of the world's most arid regions (some of which I explored as a part of this project).³⁹ In addition to his compositions, Adams has written multiple books and articles that explore the interplay between composition and nature. *Winter Music* is a prime example, which doubles as a kind of journal, revealing a window into the composer's process.⁴⁰ Adams' writings in the *New York Post* provide further insight into the work of the composer, while simultaneously increasing awareness of these pressing issues with the general public.⁴¹

Overall, there has been a considerable amount of writing about soundscapes and noise pollution, but there have been relatively few pieces of music that explore this issue. Conversely, there have been many pieces composed that use nature as a source of inspiration, but little analysis done on these works. Spectralism is an increasingly popular approach to composition, whose practitioners include composers using sonic spectra as the basis of their work and theorists who analyze these works and write about the development of these styles. The present work and critical essay reflect my own interest in spectralism as it relates to the use of natural sounds in composition, both literally and through inspiration.

³⁹ Adams, *Become Desert*, (2017).

⁴⁰ Adams, *Winter Music: Composing the North*, (2004).

⁴¹ Adams, "Leaving Alaska," (*The New Yorker*, 2015).

Chapter 3

An Analysis of John Luther Adams' *Dark Waves*

John Luther Adams is an American composer of the twentieth and twenty-first centuries who combines multiple sources in his work. He simultaneously incorporates the contemplative, repetitive environments of postminimalism and the raucous worlds of eclecticism and electronic music.⁴² He is best known for his environmental music, especially those pieces that are based on the Alaskan wilderness where Adams lived for the greater portion of his compositional career.⁴³ Born in Meridian, Mississippi in 1953, he grew up in New York, engaging with composers and performers from multiple styles and backgrounds. He has been recognized with numerous accolades over his long career, perhaps most notably the Pulitzer Prize in Music (2014) for his composition *Become Ocean*. Many of his works are innovative, either in their source material or in their musical components, all while maintaining a particular sound and aesthetic that has come to be associated with his distinctive style; *Dark Waves*, written in 2007, is one such piece.

Dark Waves, for orchestra and electronics, is a twelve-minute exploration of overlapping sounds. It is unique within Adams' compositional output in its use of electronics and its structural design. It is also somewhat unusual for Adams to write for full orchestra (many of his compositions tend to focus on chamber ensembles), and even more unusual for him to include electronics. The work arguably has an environmental focus with the evocation of waves, but the piece does not explicitly reflect

⁴² Adams, *A Brief History of Noise: John Luther Adams and Allen Otte in conversation*, (2005).

⁴³ Adams, *Winter Music*, 7-15.

or examine any natural phenomena.

The work has three connecting elements that also serve as its structural foundation. First is the extensive use of micropolyphony: overlapping rhythmic figures obscure almost any sense of pulse throughout much of the work. Second is a consistent harmonic language: quartal and quintal chords constitute the majority of the harmonic material. Third and finally, the use of overlapping dynamics becomes a driving force and compositional tool. All of these, to be explored further below, are combined with an effort to create a strikingly homogenous sound.

Before delving further into these connecting elements, it is useful to examine the form of the piece as a whole. Lacking themes or motifs in the traditional sense, the work depends on other musical elements to provide a structural framework: namely, complexity (both rhythmic and harmonic) and dynamic contrast. Mirroring the title of the piece, these two elements change in “waves,” each of which comprises a major section of the piece. Each wave starts from a relatively simple level of complexity, slowly adds other instruments and harmonic levels until it reaches a climax, then reverses the process.

On the macro level, the piece follows the same general structure as each of these localized “waves” does. It opens with an emphasis on the quintal harmony E, B, and F# (see Ex. 3.1). Each individual wave introduces more pitches until the climax point at bar 106 (exactly halfway through the piece’s 212 bars—see Ex. 3.2), where all 12



Example 3.1: Pitch material of *Dark Waves*.

chromatic pitches are used and the highest dynamic level (*fortissimo*) is achieved. The rhythmic complexity also increases incrementally up to this point, then subsequently decreases throughout the second half of the piece. This demonstrates that Adams conceived of the piece as a large arch form, with each “wave” building successively higher up the arch, and the waves slowly reversing the process in the second half of the piece (mm. 107ff—see Ex. 3.1).

In addition to this approach to form, Adams’ instrumentation choices throughout the work are very intentional. Instrument families are assigned one main function and almost exclusively carry out that purpose over the course of the piece (or at least over the course of a given section): the strings have alternating figures of fifths, which provide the unsteady rhythmic basis; the brass provide sustained tones, which create a wall of sound; and the piano is a constant background player, becoming audible at quiet points throughout the work.

Additionally, the use of electronics in this work is noteworthy—and surprisingly subtle. The composer addresses in the performance notes his process of designing the electronics, writing, “[I] began with an impossible orchestra—large choirs of virtual instruments, with no musicians, no articulation and no breathing—sculpting layer upon layer into expansive waves of sound. Then I added the human element.”⁴⁴ This serves to create a work where both the electronics and performers fulfill complementary roles and are both crucial to the proper performance of the piece.

⁴⁴ Adams, *Dark Waves: for orchestra and electronic sound*, (2007), 4.

106 **F**

The musical score is a complex orchestral arrangement, likely for a film score, spanning measures 106 to 110. It is divided into two systems, each marked with a box containing the letter 'F'. The score consists of numerous staves, including strings (Violins I, Violins II, Violas, Cellos, Double Basses), woodwinds (Flutes, Oboes, Clarinets, Bassoons), brass (Trumpets, Trombones, Horns), and percussion. The music is characterized by dense, rhythmic patterns, often featuring sixteenth and thirty-second notes. Dynamic markings such as *sf* (sforzando), *f* (forte), and *sfz* (sforzando) are used throughout, indicating moments of increased intensity. The score is presented in a standard musical notation format with clefs, time signatures, and various musical symbols.

106

22

Example 3.2: Midpoint of *Dark Waves* mm. 106-110.

Rhythmic micropolyphony is perhaps the easiest surface-level factor to discern in the work. The string parts are often pitted rhythmically against each other: for instance, one part will be given eighth-note septuplets, another sextuplets, and another will have straight sixteenth notes. While these patterns do coincide at every beat, creating an underlying pulse, this too is obfuscated to varying degrees by other parts, which move off of the major beats. For instance, at bar 110 (see Ex. 3.2), Adams uses all of the aforementioned rhythms in the strings and winds and combines those with the brass, which plays long held notes that move at irregular intervals and off of the main beats. All of these factors combine to obscure the sense of rhythm and meter throughout the piece and contribute to its overall undulation atmosphere.

Micropolyphony is not only an evocative element in the work, it also serves a structural purpose. Throughout the piece, the interlocking rhythms are used to denote different sections: five plus seven in one section, six plus seven plus eight in another, etc.

Example 3.3: Violin II part, measure 76, *Dark Waves*.

The most notable ratios are 3:5:7

(see Ex. 3.3),⁴⁵ all of which are prime numbers and therefore create complex large-scale patterns while using relatively small generative durations; these three subdivisions

⁴⁵ At this particular point (m. 76), the second violins are given sextuplets, which are double the generative ratio of 3, but the basic relationship is maintained.

of the beat also contrast with the traditional divisions of 2:4:8 achieved by using eighth notes, sixteenths, and thirty-seconds, respectively. This creates subtle gradations of inflection that give each section a unique character within a strongly homogeneous framework.

Looking at the harmonies used in the work, a few notable elements stand out. First, from observing the bass parts and the order in which pitches are introduced, it becomes apparent that there is a focus on intervals of a fifth: in fact, the piece opens with three pitches (E, B, and F#) which form a stack of perfect fifths. As more pitches are introduced, they almost exclusively represent a progression along the circle of fifths (see Ex. 3.1). This quintal focus can also be seen within individual parts—especially in the strings—with sections playing notes a fifth apart (see Ex. 3.3). This focus on the interval of a fifth lends the piece an open quality, but not in the same sense as that found in Copland's work, for example: here, the fifths provide a bedrock for the harmonies, but as the piece progresses, these fifths are pitted against other fifths in the same range and at dissonant intervals from each other. This creates a distinctly dissonant texture, but one tempered by the openness of the quintal collections that comprise the composite texture.

Putting aside other theoretical aspects, dynamics are perhaps the most obvious driving force in this work. This makes sense from a programmatic perspective, where the rise and fall of the dynamic levels are meant to represent the ebbing and flowing of waves of sound. But there are more layers of nuance to the use of dynamics than that. For one, they are used as an organizing force with the quietest dynamics (*pianississimo* & *pianissimo*) marking the beginnings and ends of smaller sections—this is particularly

effective in the middle of the piece, as different instrumental families start and end sections at different times—thereby creating an overlapping effect, as though different waves are colliding. The single use of *fortississimo* comes at the climax point of the piece (m. 106—see Ex. 3.2), where all of the waves finally collide and align for one brief moment, before unwinding and reversing the process. Dynamics, while seemingly simple, serve a very powerful and efficient function in this work, and are perhaps the primary element that makes this piece as effective as it is at communicating its core idea: that of crashing and overlapping waves.

Within this conception of waves is an overarching concept of homogeneity. From beginning to end, Adams is exploring the same basic idea. Every element contributes towards an overall plan to reference the idea of waves: the chromatic saturation and dissipation, the ebbing and flowing dynamics, and the increasing and decreasing rhythmic complexity—all of these elements combine to create washes of sound. Detractors might consider this an overly simplistic piece that lacks variety, though in reality, the opposite is true: it takes an enormous amount of restraint to limit oneself to a single idea for more than twelve minutes, and an even greater amount of artistry to make it interesting in the process. This focus on a single idea inspired me to limit my own exploration in order to delve more deeply into the material I am exploring in my work. This is perhaps most apparent in the second movement of *EverWind*, “Flat,” in which I explore noise elements and combine them with pitches from the harmonic overtone and undertone series, all within a quiet and contemplative atmosphere.

Analyzing this work led to ideas for ways to explore sounds in *EverWind*. The electronic part in *Dark Waves* examines how to express the concept of waves and the

relationship between nature and humanity. It also provides an example of an effective integration of electronics and orchestra, which was useful in delineating the balance between both of these elements in the fourth movement, “Switchback.” Creating a work where the electronics do not overpower the orchestra or vice versa is challenging enough on its own, but creating two such parts that mutually enhance one another is an even greater challenge.

Dark Waves was also a useful template for one way in which music can represent an element of nature without resorting to direct imitation. Adams does this by using musical elements (e.g. dynamics, chromatic saturation, etc.) to create an indirect comparison between the two. This was realized in *EverWind* and specifically in “Switchback” by first abstracting the experiences and locations before expressing them in music.

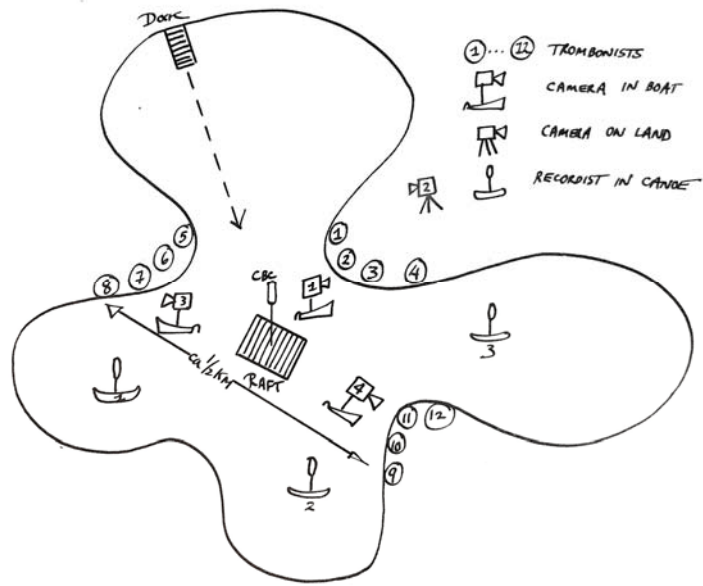
Chapter 4

An Analysis of R. Murray Schafer's *Music for Wilderness Lake*

R. Murray Schafer is a composer, educator, and environmentalist, primarily known for his work in education and sound pollution mitigation. His piece *Music for Wilderness Lake* sets 12 trombones around the perimeter of a lake and uses them to spread the musical material over a physical dimension, while examining the interplay between locale and music. There are two movements, “Dusk” and “Dawn”: as suggested by the titles, the first movement is to be performed as the sun sets and the second the next morning as the sun rises. A central element of the piece is listening (for instance the delay inherent in sound traveling from one location to another and the time it takes for it to be processed by the other performer): the main rhythmic framework relies on the performers' ability to discern other players' sounds and react to them. Crucial to the aural effect of the piece is spatialization: throughout the work Schafer uses multiple devices (some notated, some inherent in the outdoor venue) to create a work that is not only multi-dimensional, but which will sound vastly different based on the listener's location.

Schafer has picked a locale that will have a massive impact on the final sonic product of the piece. While the first performance of this piece took place at a lake that was dear to the composer, any lake will suffice for the performance of this work. Ideally, any other lake used would mimic the properties of the original (being roughly $\frac{1}{2}$ kilometer wide and having three equidistant points on land from a middle point), but any lake can serve as a performance venue for this piece. Technically, the impact of the lake is likely no stronger than that of a concert hall, perhaps less so—as evidenced in

the common refrain of the performer that a given hall completely changes their sound. Being an outdoor location, there is also the obvious addition of natural sound; the composer even specifies in his notes that the performance time should be selected in such a way as to facilitate the greatest bird noise



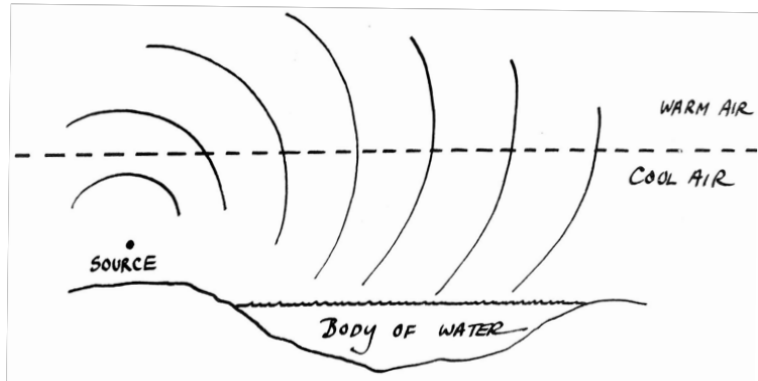
Example 4.1: Diagram of the lake and individuals involved in the premier performance

possible (mid-spring is given as a suggestion—though the premier was in early autumn).⁴⁶ By choosing such a distinctive venue, however, Schafer is drawing the listeners' attention to those assumptions that have shaped their perception after listening to so much music in the concert hall.

The outdoor space also has physical implications on the sonic result. First, at a lake with no reflective walls, the sound is able to diffuse in every direction; this creates a unique atmosphere for the performer. Sound also travels differently across a body of water—especially at early morning and late evening (when the two movements are to be performed). The cold air rising off of the lake and the smooth surface of the water create a reflecting wall for the music to travel across. This contrasts with the more diffuse warmer air above through which the sound waves travel more slowly. The diagram below depicts this phenomenon (see Ex. 4.2). In other words, the sound waves

⁴⁶ R. Murray Schafer, *Music for Wilderness Lake: for 12 trombones*, (1981).

are refracted by the lake, making for unimpeded listening across a great distance.⁴⁷ This, compounded with the fact that the trombones are spread around the lake itself, creates an intricate sound complex—and all



Example 4.2: Drawing by R. Murray Schafer showing the propagation of sound waves across a body of water.

of this before even taking into account the actual musical directions given by Schafer.

It is worth taking a brief aside at this point to examine Schafer's choice of 12 trombones as the vehicle for his wilderness music. They have the benefit of being loud—but so do other brass instruments. Trombones are highly flexible in pitch, which certainly plays a role in their selection, as the composer makes use of this flexibility throughout the piece. However, trombones also occupy a sonic frequency space that is often absent in nature. This allows the music to exist in harmony instead of in conflict with the natural sounds around it, all while creating a homogenous texture.

Moving now beyond the site-specific aspects of the music and focusing on the directions and notation of the score itself, some unique techniques of the composer may be noted. Recurring throughout the piece is a direction for the performers to listen to the other players and react to them. There is also an element of satire employed, as a “conductor” is placed in the middle of the lake with a varied collection of colored flags. The combination of these devices results in a spatialized effect.

The most prominent aspect of this spatialization is that the trombones are spread

⁴⁷ Schafer, *Music for Wilderness*

in quartets around the lake, creating three main sound sources to work with. It is interesting that Schafer did not elect to spread all 12 trombonists evenly around the lake, or to divide them into four trios, or some other combination. While he makes no direct mention of the rationale for this distribution in his composer notes, three quartets do provide a nice balance of focused sound sources spread around the lake. For further reference in this essay, the quartet made up of Trombones 1-4 will be referred to as quartet A (the center quartet), Trombones 5-8 as quartet B, and Trombones 9-12 as quartet C.

Players are often called upon to enter at a set number of seconds after hearing another player begin. Listening within a quartet provides little difficulty, but listening across a lake can introduce delays and unpredictable (though certainly intended) effects. This delay will also vary based on the lake in question, the weather, and the time of year. While this is a useful way to organize a piece without a traditional conductor, it also incorporates an element of indeterminacy into the performance.

The opening of the piece includes an example of Schafer's use of listening across the ensemble. The piece begins with two melodic cells in the first trombone (which outline much of the harmonic and melodic material for the piece), before beginning a long chain of staggered attacks, where each instrument must enter after they have heard the previous player. With each player entering on the same note, it becomes increasingly difficult to discern individual players as the figure progresses. In this instance Schafer addresses this problem by having the trombones rotate as they are playing (thus creating a visual as well as an aural cue for the next player), but it still results in a highly unpredictable sound mass that will travel all the way around the circle,

starting in Quartet A and moving counter-clockwise to Quartet C (see Ex. 4.3).

Throughout the work, these panning motions are central to the piece's construction.

The image displays a musical score for the opening of *Music for Wilderness Lake*. It features a sequence of 12 staves, numbered 1 through 12. Staff 1 is marked with a box labeled 'A' and contains a melodic line with a fermata and a dynamic marking of *p* (piano). Staves 2 through 12 are arranged in a vertical column, each beginning with a circular arrow pointing to the right, indicating a panning effect. Each of these staves contains a melodic line with a fermata and a dynamic marking of *f* (forte). The staves are labeled with the number of instruments playing: 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12. A bracket on the left side of staves 2 through 12 is accompanied by the text: "INSTRUMENTS FOLLOW ON! WHEN THE PREVIOUS ONE IS HEARD". Above the first three staves, there are markings for the number of instruments: 7, 6, and 7.

Example 4.3: Opening of *Music for Wilderness Lake* showing the panning effect.

There is another kind of motion that Schafer employs, where events are marked as happening in unison on the page, but because of sound delays will actually be slightly offset in practice. Letters F-H in the second movement provide an example of this (see Ex. 4.4). Here multiple instruments are instructed to play as soon as they hear trombone 5 sound an accented pitch. Three of these responding trombones are in the same quartet, while the remaining are drawn from Quartet A, resulting in staggered entrances. Another effect is the ingenious use of delays of varying lengths throughout the piece. In

these instances, players are instructed to wait for a specified amount of time before entering (Letter J in “Dusk,” for example—see Ex. 4.5). This allows events that are closely linked motivically to be separated in time, creating an aural disconnect. Because every player will have a slightly different interpretation of the given time lag, this incorporates yet another element of indeterminacy in the piece.

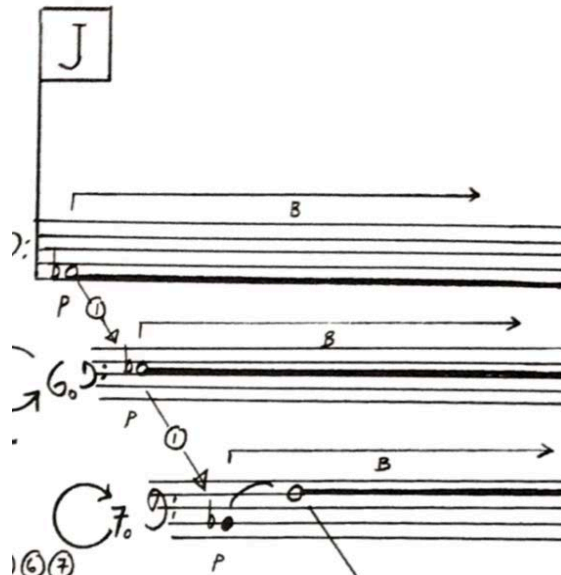
The image shows a handwritten musical score for 12 instruments, numbered 1 through 12. The score is divided into three sections labeled F, G, and H. Each staff has a circled number and a key signature change. Annotations provide specific performance instructions:

- Staff 5: ALL INSTRUMENTS PLAY AS SOON AS THE "B \flat " IS HEARD FROM 5
- Staff 9: ALL INSTRUMENTS PLAY 2 SECONDS AFTER "D" IS HEARD
- Staff 3: PLAY AS SOON AS "E" IS HEARD FROM TBN 5
- Staff 10: ALL INSTRUMENTS PLAY AS SOON AS "E" IS HEARD FROM TBN 5
- Staff 8: PAUSE UNTIL THE ECHO OF 5 HAS DIED AWAY

The score includes various musical notations such as notes, rests, and dynamic markings like *sfz* and *psub*. A *MOLTO* marking is also present.

Example 4.4: Letters F-H, “Dawn,” *Music for Wilderness Lake*.

Of course, this spatialized result will sound different from every vantage point, which introduces the last major variable in the work: that of the listener. The “conductor” is in the middle of the lake and receives all of the aural input with roughly the same delay. But every performer and audience member will likely be on the shore and perceive a drastically time-warped version of the performance. This is



Example 4.5: One second delays between trombones five, six, and seven’s entrances.

not a drawback, but rather an important perceptual element of the piece.

Controlled indeterminacy is incorporated with these spatializing effects and serves as a foundational element of the work. Two examples of this indeterminacy have already been examined. Another instance of this may be found at letter C in the first movement, where the trombones are instructed to repeat a particular cell 8 times. The resultant intervals will vary with each repetition, and will be dependent on where the listener is situated. This limited indeterminacy complements the spatialization to create an environment imitating the natural world.

There are a few motifs and devices throughout the work that provide a window into Schafer’s thinking about the piece. Fundamentally, this piece can be viewed as a conversation among the players (and the listener). An example of this may be found on page 6 of the score, where players are instructed to turn to their left and right, which will either amplify or obscure the sound for those players who are listening for their cues

(see Ex. 4.6). This same device is employed later in the work, such as at letter N in the first movement where trombones 7 and 10 are each instructed to point their bells away from each other.

Handwritten musical score for trombones, featuring various parts and performance instructions:

- Part 1:** A simple melodic line with an upward-pointing arrow.
- Part 2:** A melodic line starting with a *p* dynamic. Includes the instruction: "REPEATING. THE DURATION OF THE GLISSANDO VARIES FROM SLOW TO FAST AD LIB. THE GENERAL TENDENCY WILL BE TO BECOME PASTEL & LONGER. CUT WHEN ① IS HEARD".
- Part 3:** A melodic line starting with a *p* dynamic. Includes the instruction: "REPEATING. SEE NOTE FOR ②".
- Part 4:** A rhythmic pattern of eighth notes with accents, marked *sfz*. Includes the instruction: "BEGIN IMMEDIATELY AFTER ① PLAYS MOTIVE FOR 3RD TIME".
- Part 5:** A melodic line with a "HARMON MUTE" instruction. Includes the instruction: "START RATHER SLOWLY. REPORT GETTING FASTER. 10-12. THEN SLOW DOWN AGAIN. TOTAL DURATION OF EFFECT 10-12 SECONDS".
- Part 6:** A melodic line with a "STRAIGHT MUTE" instruction. Includes the instruction: "SAME AS ⑤ STARTING 2 SECONDS LATER".
- Part 7:** A melodic line with a "PLUNGER MUTE" instruction. Includes the instruction: "SAME AS ⑤ STARTING 4 SECONDS LATER".
- Part 11:** A melodic line with the instruction: "REPEATING 2 SECONDS AFTER ③ SEE INSTRUCTIONS FOR ②".
- Part 12:** A melodic line with dynamics *mp*, *mf*, and *f*. Includes the instruction: "KNOCK SQUASH BELLS".

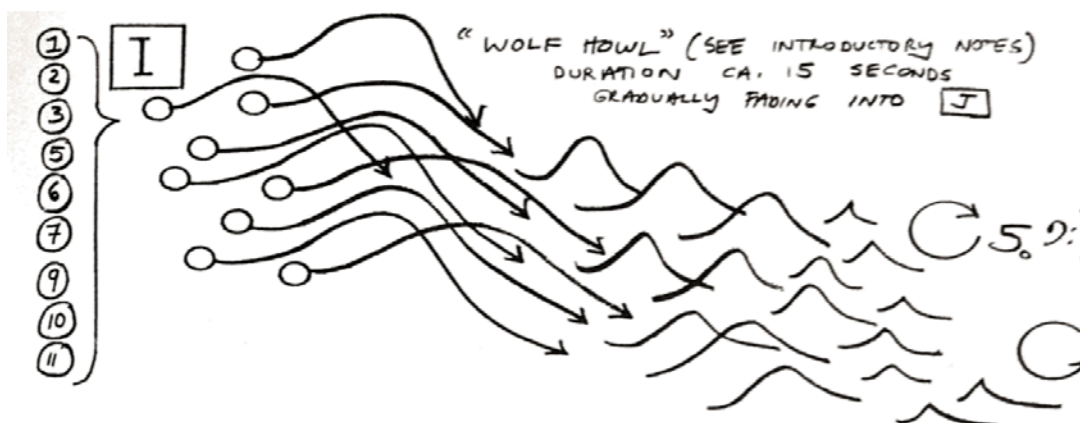
Additional annotations include "REMOVE MUTE" and "BEGINS IMMEDIATELY AFTER ④".

Example 4.6: Page 6, "Dusk." Includes arrows instructing Trombones to turn their bells to the left and right, pointing either towards or away from the players who are listening for their cues.

Contrasting with the immense unpredictability of so much of the work, Schafer incorporates a few moments of concrete coordination between the parts. One such

place comes in “Dawn” at letter M: here the players are instructed to raise and lower their bells in time with the movement to a new pitch. This allows the sound delay that is so central to the piece to be subverted momentarily and highlights the composer’s use of indeterminacy in the other sections of the piece.

Another unifying element of the piece is an emphasis on nature in the music. The trombones are frequently called upon to imitate howls in their playing (see Ex. 4.7), and some of their other material can be seen as imitating animal noises (such as the timbral trills in “Dawn,” which can be heard as imitating the sound of buzzing bees). Presented within the context of the natural sounds themselves, these elements highlight the way that Schafer was thinking about this piece as an extension of the natural world.



Example 4.7: Wolf Howl imitation at letter “I” in “Dusk.”

Tables 4.1 and 4.2 combined show a condensed graph of the piece, focusing primarily on motivic elements and aural effect. C stands for clock wise, CC counter-clockwise, L to R means the sound pans from the left of the lake to the right (from the perspective of a listener standing across the lake from quartet A) or vice versa, and omni means that sound is coming from every direction.

Table 4.1: Graph showing motivic and spatial progression over the course of section 1.

Dusk

Rehearsal Letter	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Motif	a	a'	b	b'	b''	C	C'	d	e/d	a	e		e		e'	a''
Pitch Direction	CC	C		Scatter	C	O	O	CC		L to R	R to L		Center	To L		R to L
Comments									Howl		Canon					

Table 4.2: Graph showing motivic and spatial progression over the course of section 2.

Dawn

Rehearsal Letter	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Motif	a	a'	a	a'	b	b'			c	d	e	d'	f	f'	f''	f'''
Pitch Direction	Counter-clockwise			Center	Omni	Omni			R	Center	Omni		CC			
Comments					Bee	Echo			a motif of Dusk	e motif of Dusk	Quintal	Howl	Visual			Fade

A few large-scale structural conclusions can be drawn from this graph. First, both movements begin with counter-clockwise motion. Part of this stems from the organization of the score, resulting in that same motion when playing from top to bottom, but also creating a distinctive kind of sound mass that serves as a unifying structural element, which returns throughout the piece. Motifs also tend to have a particular way in which they are spatialized. The opening motif of the “Dusk” movement, for instance, is always passed around the ensemble, and both times it appears, it is passed in one direction, and then back in the opposite direction. A three-part structure can also be derived from the spatializing effects: both pieces begin with sound moving from one area to another; transition to a relatively more hectic middle section where the sound complexes are perceived as more omni-directional; then return to either an antiphonal or rotating conclusion. These three-part structures give the piece formal clarity and demonstrate how central these spatial elements are.

Music for Wilderness Lake represents the intersection of meticulous design and aleatory integrated into a piece that is highly dependent on place and space. No two performances of this piece will sound the same, and any recording will necessarily abstract the experience on at least one level. Additionally, the emphasis on natural sounds highlights the primary focus of this piece. This is a work which attempts to challenge many of the preconceptions of Western Art Music, while simultaneously creating a beautiful work of music.

The influence of this piece was instrumental in the creation of the final movement of *EverWind*. Schafer provides a framework for ways in which acoustic instruments can interact with each other to create a spatialized result. I employed a similar device by

distributing wind instruments around the audience in the fourth movement of the piece. While the setting is obviously quite different (a concert hall as opposed to a lake in the wilderness) the acoustic challenges and devices are certainly related.

Music for Wilderness Lake also provides a unique example of how a composer interacts with nature. Throughout the piece, Schafer uses natural sounds on the trombones, sometimes with the intention of direct imitation, and at other times with the goal of indirect evocation. I strove for this same balance in my own work, especially in the third movement, "Widforss," where I attempt to represent the sounds of bugs in the wilderness.

Chapter 5

Composition Overview and Process

The composition of *EverWind* involved the combination of multiple influences and inspirations. Each movement of the piece explores a separate aspect of the aforementioned trip to national parks in the American Southwest and of the nature of sound. Because of the highly varied nature of each movement, I approached each slightly differently, with connecting elements woven through all of the movements. While the movements are interconnected, they can also be extracted as stand-alone works. The connecting elements explore contrasts between opposites: silence and sound, for instance, are prominently featured, especially in the second movement; the interaction between processed and pure sounds is another continuum of exploration; and perhaps most prominently is the difference between natural and man-made sounds.

Central to the project was an identification of inspiration, with direct and abstract inspiration both playing a role in the realization of the piece. Similar to Christina Rusnak's observation that even when her focus was to compose the landscapes around her in an objective way, the emotions of people present and past could not help but make their way into the music,⁴⁸ I also found myself moved by the age of the locations and the massive scale of places such as the Grand Canyon. The piece attempts to portray that awe and to represent in music these enormous contrasts (see Appendix).

Movement I -"PERMIA"

Stretching from Central Texas to Southeastern New Mexico, the Permian basin is

⁴⁸ Rusnak, *Composing the Oregon National Historic Trail*.

a part of the Mid-Continental Oil Field. The Chihuahuan Desert overlaps with a significant portion of the basin. Guadalupe Mountains and Carlsbad Caverns are situated within both and were the first locations of my multi-state journey. These locations and their sounds provide the primary source of inspiration for this first movement.

The first pitch sounded in “PERMIA” is a concert B by the solo horn. This is the pitch that results from the predominant frequency found in American electronics (60 Hz),⁴⁹ and is meant to evoke the urban environment as a point of departure from which other elements take over. From that single pitch, the first main melody of the piece unfolds. This picturesque horn theme is slowly transformed and passed around the orchestra (see Ex. 5.1). Versions of this motif reappear in whole or in part all the way through the final movement.



Example 5.1: Opening melody in horn.

The other defining aspects of the movement are a set of chords symbolizing the Guadalupe Mountains. These chords are mainly played by the strings, and are interjected into the middle of raucous material played by the brass section. This brass material includes flutter-tonguing, both as a stand-alone element and combined with either trombone glissandi or timbral trills in the trumpet, and represents a man-made fire that decimated the Guadalupe Mountains National Park in the mid-1990s.

⁴⁹ Schafer. *The Tuning of the World*, 98-99.

The harmonic material for this movement places a strong emphasis on the intervals of the second and seventh (major seconds and their equivalent minor sevenths are used predominantly, but minor seconds and major sevenths are also used, mainly as contrasting tones in harmonies that become more saturated by using at least five tones). While not specifically derived from the harmonic series, these harmonies do foreshadow those that will predominate the second and third movements (both of which are specifically drawn from the harmonic series).

While the piece is primarily through-composed, there is a sense of return to a place of rest between more energetic sections, resulting in a quasi-rondo form in five parts. The foreshadowing of elements in the following movements attempts to frame the composition and provides a foundation on which to build the work.

Interlude - "Helicopters"

This first interlude, "Helicopters," provides one of the more overt moments of environmental commentary in the piece. An 8-channel audio track provides the background for the spoken voice part. In this first interlude, the sounds are almost completely unprocessed. The sounds used include a helicopter flying above Grand Canyon National Park, the Virgin River in Zion National Park with a plane passing above, a distant thunderstorm, and the fields surrounding the entrance to Carlsbad Caverns. The helicopter and plane sounds interject over the top of the more peaceful and reflective sounds.

The text for the interlude comes from a journal entry made on the first night of my trip to the peak of Guadalupe. There was no one else camping on the mountain that night and being in such a silent space was a shock in many ways. The silence was all

the more drastic as it contrasted with the noise of the busy highway and city just a few miles away. This contrast provided the germinal inspiration for this interlude and influenced the entire piece. The text attempts to explore some of the ways that people interpret sound, playing on the fact that our brains can begin to filter out sounds that are repeated or which become monotonous.

The following text is used in this Interlude:

Time is tied to a perception of progress. A perception tilted by stimuli.
Sound for sounds sake. On a walk to a point...

A sound sustained is a sound ignored.
What is new left to hear?
To bathe in silence is to both cleanse and shock the system; the slightest ripple encompassing an ocean.

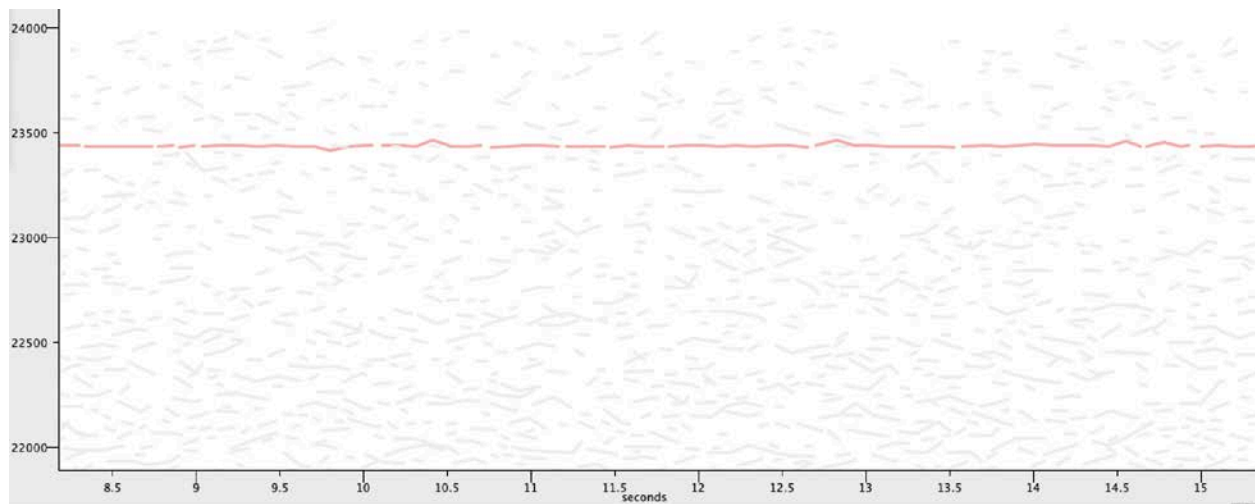
Movement II - "Flat"

Traveling across the Colorado Plateau, I was often struck by a sense of immense emptiness—not loneliness, but more amazement at the amount of flat, unoccupied space. Of course, these spaces are not truly unoccupied, they are teeming with life and wind and sound—but on first glance, they appear barren. I wanted to write a piece that seems just as barren as that landscape.

The instrumentation for "Flat" is a stripped-down version of the full instrumentation. Only the first two woodwinds play (with no doubling), and the brass, percussion, and strings are reduced to match. The time signatures and tempo were also designed to convey the sense of immense slowness and reflection.

Quiet sounds are central to the movement; harmonics and *col legno battuto* constitute the majority of the strings' material; the brass instruments principally play air sounds, many of which are designed to create distinct gestures (the trumpet for

example is called to play figures across multiple registers with only air blown through the instrument). Even though there are technically only seven discrete pitches available to the brass through air sounds,⁵⁰ the placement of notes in different ranges provides the player with a more traditional framework within which to interpret different sounds (i.e. a note above the staff will inherently require more air than one below the staff, creating a different interpretation of the figure). In the same way, traditional music directions like trills are used here in a non-traditional way to create unique sounds using familiar notational devices.



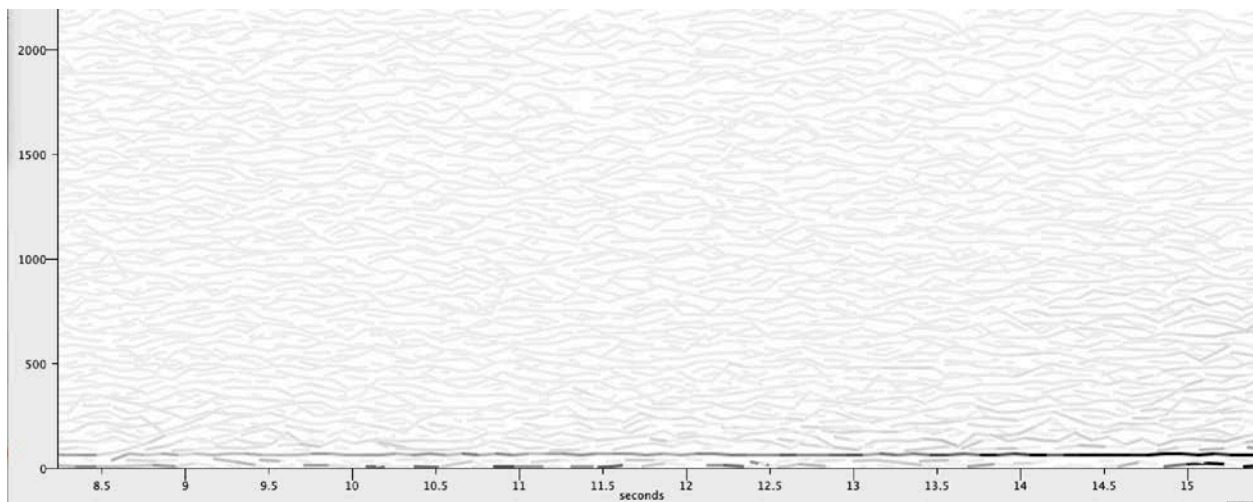
Example 5.2: Screen capture from SPEAR showing high sustained frequency at the salt flats near Guadalupe National Park.

The constituent pitches of the movement were derived from recordings made at the Salt Flats near the Guadalupe Mountains, the Painted Dunes in Arches, and the Painted Desert in the Petrified Forest. The Salt Flats are of particular interest in that they sit at the relatively low elevation of 3611' but are located barely three miles from the highest point in Texas (Guadalupe Peak 8751'). Standing in the shadow of that

⁵⁰ Eight pitches are technically available to the trumpet because of equivalent fingerings—this also does not count slide tuning on the trumpet, the range of microtones available to the French horn, or the pitch continuum available to the trombone—the point being that air sounds are relegated to a single octave.

massive mountain range makes the long, stretching lakes of white sand that much more striking. In the recordings there is a constant high pitch at 23448 Hz (beyond the range of hearing) which is roughly equivalent to an F-sharp (see Ex. 5.2). This is realized through string harmonics and high woodwind pitches, which, while they are not technically in the same octave as the original sound, do attempt to portray the nature of the high pitch. The F# also provides the core of the high harmonic material and is present in almost every chord.

In the painted dunes at Arches National Park, there is a fair amount of noise accumulation, which creates a rumble right below the boundary of human hearing at around 10Hz: this works out to roughly a concert E (see Ex. 5.3). This low pitch sustains through almost the entire movement and provides the bedrock for the harmonic material. The whole-step conflict between E and F# is the primary source of tension for the movement: this tension is foreshadowed in the harmonies of the first movement and continues in the harmonic material through the end of the piece.



Example 5.3: Screen capture from SPEAR showing prominent low pitches in the Painted Dunes in Arches National Park.

There are sections in the piece that incorporate micropolyphony as well, not

unlike the figures used in *Dark Waves* by John Luther Adams. Here the micropolyphony comes in waves and is mainly played by woodwinds. Overlapping rhythms in divisions of three, five, and seven, combine with more even divisions of two, four, and eight, creating a sound mass effect. The *col legno battuto* also contributes to the micropolyphonic effect, though here the goal is to simulate random movement in order to create an ever-changing sound mass, as opposed to using repeating rhythmic figures to create a block of sound.

Movement III – “Widforss”

Of all the movements, the third is the most focused on a single location, as reflected in the title—Widforss being the name of a trail on the North Rim of Grand Canyon National Park. There was a fire near the North Rim through August 2018, so my options were limited as to where I could hike. I selected the most remote option available, the Widforss trail, which winds through a forest of white fir, engelmann and blue spruce, and aspen, as well as massive ponderosa pine trees. This forest is marked by the scars of past fires, but the new young pine that have grown out of the ashes blanket the fields alongside the trail in brilliant shades of green. The trail leads through this diverse forest and comes to a unique vantage point into the canyon, with the layers of rock spread out in gradually sloping waves. The north rim lacks the expansive panoramas of the more popular south rim but compensates for that in solitude. All of these elements from the trail are abstracted and reflected in this movement.

When I visited, it had been raining on and off throughout the day, so I initially brought only the Zoom microphone on the trail to prevent water damage to the more expensive recording equipment. As I returned to the trail head there were two insects

making repetitive noises that merged into a kind of polyrhythm. After recording the sound for a few minutes, I went to retrieve the Blimp and Rode NTG-2 in order to record a higher quality sample of the insects. As soon as I returned to the polyrhythmic insects, they stopped making noise; coincidentally, however, a tree happened to fall in the exact direction I was pointing the mic—the sound of which features prominently in the final movement of the work.

“Widforss” focuses on the interlocking rhythms of the two insects at the trailhead. To better evoke the solitude of the trail and to match the sprawling forest and insect noise, only the strings are used in this movement. This sets the movement apart as being one of the most homogenous, as well as being the most consistently high-energy. The movement is designed to provide sonic contrast while exploring these ideas of polyrhythm and the harmonic series. An added benefit of using only strings is that the winds are able to leave their places on stage before the start of this movement and use that time to take their positions around the hall for the final movement.

The pitch material for this movement is derived from the harmonic series, especially the ninth through fifteenth partials. F# (the eleventh partial when building the overtone series off of C) is a central element of the movement: it is both the first and last prominent pitch, and it serves as a pivot pitch between different pitch complexes. The eleventh partial is shared by the overtone and undertone series, and therefore provides a useful link between the two. Ex. 5.4 shows the principal chord complexes over the course of the movement. There is a great deal of parallel motion in the movement between these sonorities, but much of that is obfuscated in performance through instrumentation and gradual changes in register.



Example 5.4: Graph showing the principal chord complexes of “Widforss”—based on the overtone and undertone series.

Interlude – “Silence”

The transition from the first interlude to this one reflects the transformation of sounds across the entire piece. In this interlude, the main sound is a malfunctioning microphone that I used at Cape Royal at the North Rim of Grand Canyon National Park. The other sounds used (dripping water in Carlsbad, the hum of cicadas at Indian Garden, and a passing car in the Petrified Forest) are electronically manipulated to a higher degree than in the first interlude.

The text is a reflection on silence and the ways in which we as a society can move towards noise pollution reform. For instance, the entire Petrified Forest National Park is along a road, and very few visitors are able to experience the park’s beauty without the constant hum of traffic noise providing an unwelcome backdrop, hence the passing car sound that concludes the interlude.

The following text is used in Interlude 2:

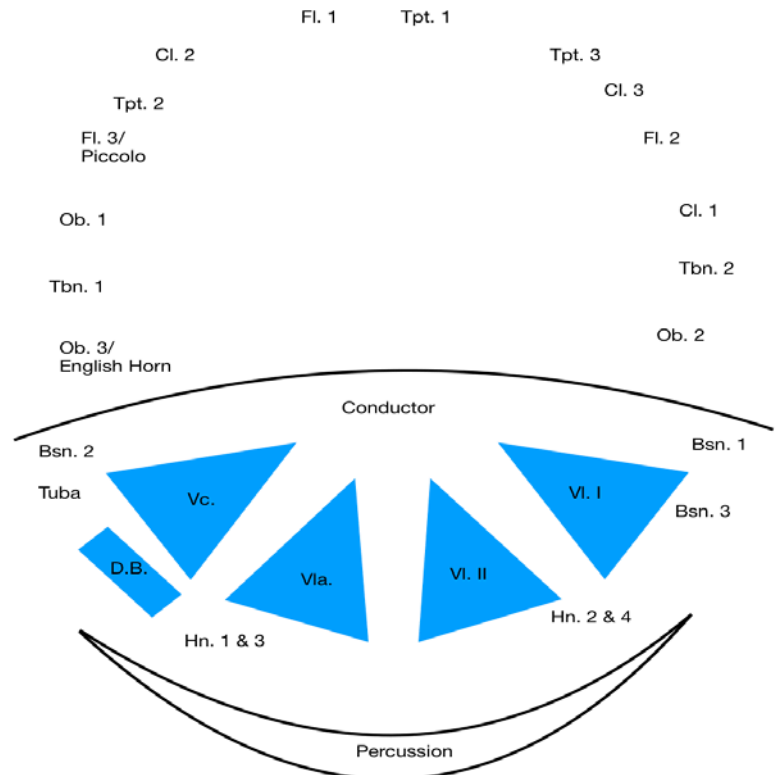
Shh. —Crack!
 The opposite of noise is not silence
 In those times where an immobility of spirit is the greatest catalyst for growth;
 What do we say to silence?
 When something is less than nothing.
 Whispers coagulate across gulfs of time—Culminate in a moment, a place need
 not be grand to be profound: just solitary.
 The opposite of noise isn't silence—but peace.
 Shhhhhhh.

Movement IV – “Switchback”

The final movement in many ways serves as a recapitulation for the entire work. The narrative strands of human interaction with nature and sound pollution weave through this movement, and harmonic and rhythmic content from the earlier movements are revisited. The greatest departure from the earlier movements is that this one employs a fixed media element and that members of the orchestra are in different locations in the concert hall (see Ex. 5.5).

During the third movement (which uses only

strings) and the preceding interlude, the winds take their places at predetermined locations around the performance space. The low brass and bassoons remain closest to the stage, the percussionists stay in their place along the back of the orchestra, and the horns, in antiphonal pairs, sit between the strings and percussion on either side of the stage. The rest of the brass and woodwinds surround the audience. The spatialization that results is intended to mirror that of the fixed media element of the piece—which is employed to further examine the topics of sound pollution, as well as to represent, in a



Example 5.5: Diagram of player distribution in “Switchback.”

more concrete way, the locations that have been represented in other parts of the piece. Some of the sounds are pulled from earlier movements, such as the wind of Guadalupe (movement 1), and the polyrhythmic insects from the Widforss trail (movement 3), but other sounds are unique to this movement. One such sound is from Devil's Hall in Guadalupe Mountains National Park, where the rocks that make up the wash can produce specific pitches when struck together. Recordings of these rocks struck against each other are comb filtered to varying degrees. Cave Swallows from Carlsbad Caverns, the Virgin river of the Narrows from Zion National Park, and the falling tree at the North Rim of the Grand Canyon are also used.

Sounds are presented with varying degrees of electronic processing, and often transition from processed to pure sound, or vice versa. This is intended to represent how human noise and intrusion can impact these locations (and be undone)—though of course, some interaction is necessary between humanity and nature, and even desirable. For instance, the rock from Devil's Hall is heavily comb-filtered when it first enters close to the beginning of the movement, but the effect is reduced over the course of the piece, until it is finally heard in its pure form as a single pitch at the conclusion of the work.

Other recordings are used as a more literal commentary on the pertinent issues of the piece. Throughout the middle of the work is a recording of a low flying plane—a sound that I was often unable to escape during my travels. This reference attempts to clarify what the low sustained tones, particularly those of the bass drum, in this and preceding movements were intended to portray.

There are other sounds beside the low-flying plane that are mirrored to varying

degrees in the orchestra. For instance, the comb-filtered rock from Devil's Hall is often accompanied by a percussion and keyboard hit in the orchestra, and the polyrhythmic insects from the Widforss trail coincide with flurries of activity in the woodwind section. Other sounds are referenced in a more abstract manner.

The metric structure of "Switchback" is fundamentally different than the preceding movements. "Switchback" uses mobile form and cues from the conductor to coordinate the ensemble (see Ex. 5.6). The time signature of each "measure" indicates the number of cues that occur during a given bar, and the conductor is provided with timestamps and a waveform to follow the audio track. Precise alignment between the acoustic and electronic elements is not required--especially within measures—but the main timestamped "measures" should come at roughly the point indicated in the score. Each player can follow the main cues in their part to determine entrances and cut-off points. In order to avoid an excessive use of dashed bar lines, cue numbers are used in the denser measures to delineate the order of instrumental entrances. The bars will slightly fluctuate in length, but ideally, each bar will be roughly 20 seconds long and the score will be realized as being roughly proportional.

The movement ends with a wedge of sound, starting in the middle of the orchestra's range, and expanding in either direction until only the highest and lowest pitches remain. The fixed media part returns at the end to its original state of almost total silence, and the final sound will be a high note on the piccolo and the residual echo from low notes on the string bass, tuba, and timpani—referencing the final pitches from the second movement and representing a transition away from the opening B of the entire piece.

The image displays a musical score for the piece "Switchback" (IV), covering measures 10 to 12. The score is organized into two systems. The first system (measures 10-11) features a complex metric structure with time signatures of 2/40, 2/43, and 3/16, and a common time signature 'C'. The second system (measures 11-12) features a 3/8 time signature and a 3/16 time signature. The score includes staves for various instruments: Flutes (Fl. 1-4), Oboes (Ob. 1-2), Clarinets (Cl. in Bb 1-3), Bassoons (Bsn. 1-2), Saxophones (Sax. in F 1-4), Trumpets (Tpt. in Bb 1-3), Trombones (Tbn. 1-3), Violins (Vln. 1-2), and Cellos/Double Basses (Vcllo/Bs.). The score contains numerous musical notations, including notes, rests, dynamics (p, f, pp, mp), and articulation marks. A metric structure system is overlaid on the score, consisting of large numbers (2, 3, 8) and arrows indicating the duration of metric units. A tempo change is indicated by 'C' and '3' symbols. A specific rhythmic pattern is highlighted with a box and labeled '(-3'04')'. The score concludes with a waveform visualization at the bottom.

Example 5.6: Metric structure system demonstrated in "Switchback," mm. 10-12.

Chapter 6

Conclusion

Music can exist independently of any contextualization or outside influence, but in this essay, I set out to examine the primary influences in my work and some of the ways in which music can be tied to something concrete—thereby enhancing both the object of that inspiration and the music itself. The three main influence types—inspiration of place, of natural sounds, and of spectral analysis and extrapolation from that analysis—were all combined in this project, often overlapping in their implementation.

Inspiration of place (i.e., site-specific music) is an overarching idea of the project, but principally explored in the first movement with the focus on the Guadalupe Mountains. Natural sounds again weave through the entire piece, but are the principal focus of the third movement where the orchestra realizes the rhythms and timbres of bugs sounding together on the Widforss trail. Spectral analysis is the focus of the second movement pulling frequencies from wind and quiet areas at the Salt Flats and Painted Desert. The fourth movement then combines the motifs from the preceding movements and realizes them in conjunction with concrete sounds.

It is tempting to infer a message or attempt to draw conclusions about environmental stewardship from this project. Environmental stewardship is crucial; however, to reiterate my opening statements on environmentalism, this project is not meant to advocate any particular stance. The National Parks themselves provide an apt illustration of the delicate balance involved in environmental issues. By opening wilderness areas to the public and encouraging their utilization, there will be additional

strain placed on these resources beyond what they would have been subjected to otherwise. But the counterbalance to that strain is that the national parks allow the public to experience natural treasures while simultaneously creating a management system to preserve the wilderness areas. I would also like to point out that not all of the sounds created by society are bad: even the constant air traffic noise (often represented in the work by a bass drum roll) provides a backdrop to the other sounds of nature—everything is relative.

Looking forward, numerous opportunities are available for further research. For site-specific music, the national parks are a great source of inspiration; but many locations, even beyond wilderness areas, could be used as resources for musical interpretation. Some composers are exploring locations such as cityscapes in their music, but even places as yet undiscovered could provide a field for inspiration. As R. Murray Schafer's history of soundscapes suggests, it is likely that sounds will become commonplace in the near future that are, as of yet, unheard.

One area of sound analysis that holds opportunities for further exploration is that of sounds outside the range of human hearing. Many of the sounds I encountered included an inaudible component, especially insect noises. By recording with a higher sample rate, sounds which are inaudible to humans can be analyzed by a computer and transcribed for realization by instruments. This could be achieved by transposing down multiple octaves, or by using the spectra to provide a template for a more abstract realization.

Incorporation of electronics with orchestra is an area that composers and technologists have been exploring for decades, but which is still subject to further

advances. This piece combines a fixed media part with orchestra and places the onus of coordination on the orchestra itself, though it attempts to encourage coordination through a rethinking of the underlying metric structure. While other methods of coordination are possible, some following in the vein of John Luther Adams, designing a system that allows the conductor to more specifically control the electronic part (perhaps even in a non-linear way) could bring the electronic part closer to an equal partner with the orchestra, as opposed to imposing a restrictive control.

EverWind explores just a few of the avenues for inspiration and incorporation of natural sound with acoustic music. The relationship between place and person is complex and multi-faceted. Humans have been exploring this relationship throughout the ages for as long as music has existed, as demonstrated in works such as Schafer's *Music for Wilderness Lake*. *EverWind* provides yet another example of this interplay, specifically in its use of spectral analysis and fixed media to further integrate the strands of music and nature.

Appendix: Locations of Sounds by Movement—Latitude and Longitude

Movement I — PERMIA

Guadalupe Peak

31° 53' 29.26" N, 104° 51' 38.56" W

Carlsbad Caverns

32° 08' 52.28" N, 104° 33' 24.17" W

Interlude I — Helicopters

Virgin River, Zion National Park

37° 18' 24.08" N, 112° 56' 51.68" W

Petrified Forest National Park

34° 54' 35.96" N, 109° 48' 24.45" W

Movement II — Flat

Salt Basin Dunes, Salt Flat, TX

31° 55' 24.6" N, 105° 0' 25.2" W

Painted Dunes, Arches National Park

38° 36' 59.71" N, 109° 37' 11.45" W

Movement III — Widforss

Widforss Trailhead, Grand Canyon National Park

36° 13' 25.32" N, 112° 03' 52.92" W

Interlude II

Cape Royal, Grand Canyon National Park

36° 7' 33" N, 111° 56' 96" W

Indian Garden, Grand Canyon National Park

36° 4' 39" N, 112° 7' 43.68" W

Movement IV

(includes all sounds referenced in previous movements)

Observation Point, Zion National Park

37° 16' 695" N, 112° 56' 425" W

Devil's Hall, Guadalupe National Park

31° 54' 24" N, 104° 50' 51" W

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PART II

EverWind

EverWind

for orchestra

24'

(Transposed Score)

I. PERMIA

Interlude: Helicopters

II. Flat

III. Widforss

Interlude: Silence

IV. Switchback

2018-2019

Garrison Gerard

Instrumentation

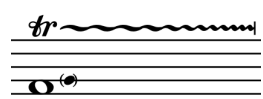
Flute I	Horn in F I	Violin I	Timpani
Flute II	Horn in F II	(4 part divisi)	Percussion I
Flute III (double Picc)	Horn in F III	Violin II	Bass Drum
Oboe I	Horn in F IV	(3 part divisi)	Snare Drum
Oboe II	Trumpet I	Viola	Crotales
Oboe III (double eng. hn.)	Trumpet II	(3 part divisi)	Tubular Bells
E♭ Clarinet	Trumpet III	Violoncello	Percussion II
B♭ Clarinet I	Trombone I	(3 part divisi)	Wood Block
B♭ Clarinet II	Trombone II	Double Bass	Suspended Cymbal
B♭ Clarinet III	Bass Trombone	(2 part divisi)	Vibraphone
Bassoon I	Tuba		Percussion III
Bassoon II		Harp	Marimba
Bassoon III (double contra)		Piano	Triangle
			Brake Drum

Performance Notes

The score is notated in transposed pitch.

Brass are called upon to make air sounds throughout the piece—these sounds should be played as if producing the pitches and following the directions indicated. For instance, when a gesture encompasses more than an octave, the amount of air used should be greater in the upper octave. Players should try to focus their air in such a way that longer phrases are possible, but not so focused that vibrations of the lips and thus pitches are produced.

Feathered beams indicate *accelerandi* and *ritardandi* in tempo from and to a speed corresponding to the number of beams used in the figure. The rhythmic space occupied by the figure is notated.



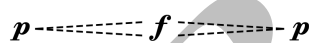
The line following the trill marking indicates the relative speed of the trill. The pitch in parentheses indicates the top note of the trill.

f.t.

(accompanied by a tremolo marking) Indicates a flutter tongue.

Timbral Trill
(t.t.)

Indicates a trill to the same note using an alternate fingering.



Crescendo & decrescendo at any desired speed with the marked dynamics serving as upper and lower bounds of dynamic level. An effort should be made to listen to the other sounds and meld with them.



(strings) Indicates overpressure of the bow.



(strings) Bow on the bridge. The number of vertical lines indicates the number of strings that the bow should contact.



(strings) Bow on the tailpiece.



(strings) Snap pizzicato (Bartok Pizz.)



(strings) Ricochet bow. The bow should be thrown forcefully across the string, creating noise and unpredictable pitches.



(piano) Dampen with hand inside the instrument.



(harp) Thunder slap. Open palm strike on the lowest octave(s) of the harp.

Movement II

The meters in the second movement are designed to provide a framework for the sounds, and should not (especially in the opening and closing of the movement) be perceived or overly accented.

The string harmonics (particularly those where the player is directed to create a false harmonic a minor third above a fingered pitch) are not intended to produce a pure, clear tone or distinctive pitch. They are employed to create a shimmering effect on top of the sounds of the rest of the orchestra.

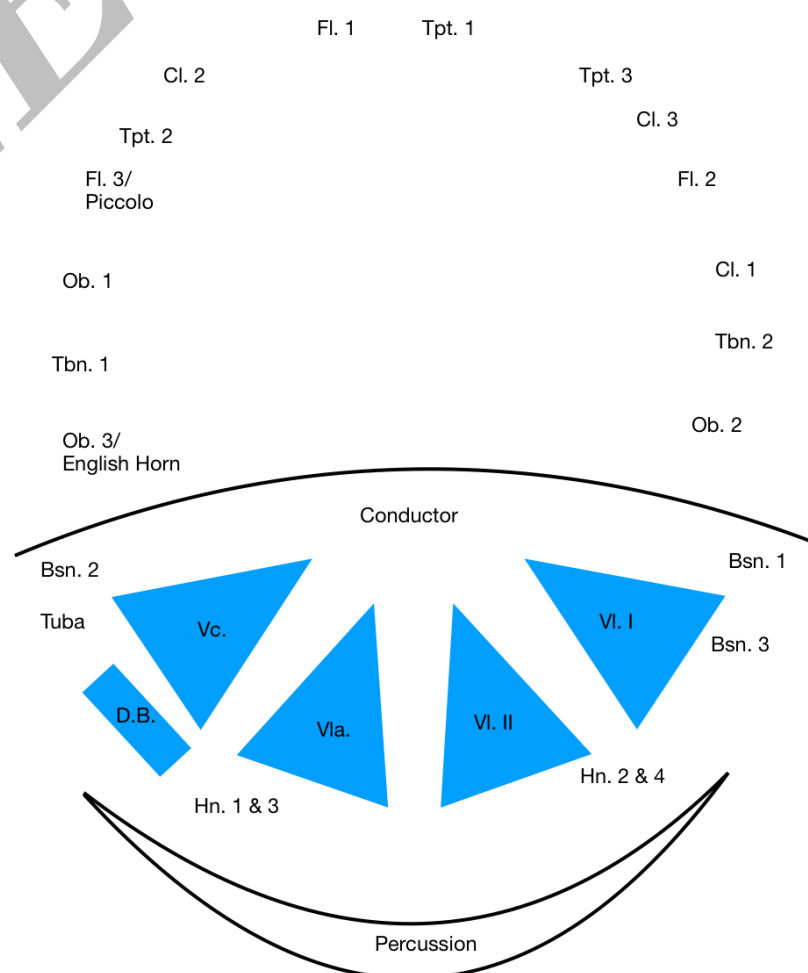
Movement IV

The fourth movement uses an untraditional system for indicating the metric framework of the movement. Each number (placed where time signatures would usually be situated) represents the number of cues that the conductor should give within that "bar." The location of these cues comes at each of the dashed bar lines. More prominent cues are given solid bar lines, and a timestamp which corresponds to the fixed media track. (It is possibly a prudent idea for the conductor to differentiate these solid bar line cues by some method such as a downbeat in both hands, or by being careful to not use a clear downward motion in any of the secondary cues, reserving that indication for the more prominent cues.) Some of the dashed bar lines are given approximate time stamps in order to facilitate coordination with the fixed media element. Precise alignment is not the principal goal.

When instruments are directed to sustain pitches or figures for long periods of time, if possible, they should stagger their breathing or bow changes with other sustain instruments. (e.g. the French horn air sound crescendo in bars 2 and 3).

The bottom line of the staff in this movement is a waveform visual representation of the fixed media track. Written descriptions are included at prominent points throughout the movement.

Additionally, this movement calls for instruments to spread around the hall as in the diagram. It is likely prudent for the winds and brass (with the exception of horns) to exit the stage between the second and third movements. It is appropriate for them to reenter the hall (usually from the back, depending on the performance space) during the second interlude.



Interludes

The text of both interludes (appearing after the first and third movements) are included in the score and parts to assist the players in framing the piece within context. The score includes the wave form of the fixed media element of the interludes to aid the conductor. A speaker reads the text and is free to sit on or off stage during the movements.

Program Note

EverWind was written as my Master's Thesis during my studies at the University of North Texas. It was written following a visit to the Chihuahuan Desert & Colorado plateau. Many of the ideas in the piece are drawn from real locations in the Midwest: Widforss, for example, is the name of a trail at the North Rim of Grand Canyon National Park, where I came across multiple amiable hikers, some raucous bugs, and one very cooperative tree. The influence of the locations is most clearly felt in the fourth movement, which uses actual sounds recorded on the trip. The piece also seeks to explore larger environmental issues, using these real places as jumping-off points.

The first movement, "PERMIA," opens with a concert B—the note that is most common in American cities and homes, owing to the 60Hz hum that is created by our electrical system—that is meant to mark a starting point, from which other material will take over in the journey to the wilderness.

"Flat" represents those places of repose where objects come to and stay at rest. It is particularly inspired by the salt flats of West Texas. There—less than two miles from the highest elevation in the state—is the lowest point for miles in any direction. Salt has collected from years of runoff and erosion. The white fields almost touched by the shadow of Guadalupe peak stand barren and largely ignored. This movement explores these elements of silence and rest by combining very quiet sounds with hints of pitch derived from the natural overtone series.

Written for string instruments only, "Widforss" uses rhythms recorded at the north rim of Grand Canyon National Park as its foundational material. String noise elements are combined with strongly pitched material derived from the higher partials of the overtone series.

The final movement, "Switchback," is a recapitulation of the narrative strands of the piece. The brass and woodwind players are spread around the audience—in much the same way that the fixed media element is spatialized around the hall. Sounds of the Virgin River in Zion National Park and Cave Swallows from Carlsbad Caverns are electronically manipulated to varying degrees while the orchestra provides commentary on the myriad of noises.

Locations and Coordinates

Movement I – PERMIA

Guadalupe Peak

31° 53' 29.26" N, 104° 51' 38.56" W

Carlsbad Caverns

32° 08' 52.28" N, 104° 33' 24.17" W

Interlude I – Helicopters

Virgin River, Zion National Park

37° 18' 24.08" N, 112° 56' 51.68" W

Petrified Forest National Park

34° 54' 35.96" N, 109° 48' 24.45" W

Movement II – Flat

Salt Basin Dunes, Salt Flat, TX

31° 55' 24.6" N, 105° 0' 25.2" W

Painted Dunes, Arches National Park

38° 36' 59.71" N, 109° 37' 11.45" W

Movement III – Widforss

Widforss Trailhead, Grand Canyon National Park

36° 13' 25.32" N, 112° 03' 52.92" W

Interlude II

Cape Royal, Grand Canyon National Park

36° 7' 33" N, 111° 56' 96" W

Indian Garden, Grand Canyon National Park

36° 4' 39" N, 112° 7' 43.68" W

Movement IV

(includes all sounds referenced in previous movements)

Observation Point, Zion National Park

37° 16' 695" N, 112° 56' 425" W

Devil's Hall, Guadalupe National Park

31° 54' 24" N, 104° 50' 51" W

I. PERMIA

Garrison Gerard

Uneasy $\text{♩} = 38$

Flute 1
Flute 2
Flute 3
Oboe 1
Oboe 2
Oboe 3
Clarinet in Bb 1
Clarinet in Bb 2
Clarinet in Bb 3
Bassoon 1
Bassoon 2
Contrabassoon
French Horn in F 1
French Horn in F 2
French Horn in F 3
French Horn in F 4
Trumpet in Bb 1
Trumpet in Bb 2
Trumpet in Bb 3
Trombone 1
Trombone 2
Bass Trombone
Tuba
Timpani
Crotales
Suspended Cymbal
Brake Drum
Harp
Piano
Violin I
Violin II
Viola
Violoncello
Double Bass

1 2 3 4 5 6 7 8 9

A Piu mosso

Fl. 1, Fl. 2, Fl. 3, Ob. 1, Ob. 2, Ob. 3, Cl. in Bb 1, Cl. in Bb 2, Cl. in Bb 3, Bsn. 1, Bsn. 2, Bsn. 3, Cbsn., F. Hn. in F 1, F. Hn. in F 2, F. Hn. in F 3, F. Hn. in F 4, Tpt. in Bb 1, Tpt. in Bb 2, Tpt. in Bb 3, Tbn. 1, Tbn. 2, B. Tbn., Tba., Timp., Croc., Sus. Cym., Tri., Hp., Pno., Vln. I, Vln. II, Vla., Vc., D. B.

Dynamic markings: *p*, *mf*, *f*, *pp*, *mp*, *ff*, *fff*, *fit.*, *tr.*, *timbral trill*, *chromatic cluster*.

Performance instructions: *To Picc.*, *To Eng. Hn.*, *To B. Dr.*, *To W. Bl.*, *To Sus. Cym.*, *Br. Dr.*, *Tri.*.

Tempo/Time signature: **3/4**

Section marker: **A Piu mosso**

rit.

D

Fl. 1
Fl. 2
Picc.
Ob. 1
Ob. 2
Ob. 3
Cl. in Bb 1
Cl. in Bb 2
Cl. in Bb 3
Bsn. 1
Bsn. 2
Cbsn.
F. Hn. in F 1
F. Hn. in F 2
F. Hn. in F 3
F. Hn. in F 4
Tpt. in Bb 1
Tpt. in Bb 2
Tpt. in Bb 3
Tbn. 1
Tbn. 2
B. Tbn.
Tba.
Timp.
Sn. Dr.
Sus. Cym.
Tri.
Hp.
Pno.

3/4

3/4

3/4

ff, *p sub.*, *mf*, *pp*, *fl.*

To Mar., Mar.

f sub., *p*

pp, *mf*, *pp*

4:3, 4:3, 4:3

rit.

D

Vln. I
Vln. II
Via.
Vc.
D. B.

3/4

ff, *pizz.*, *f sub.*, *arco*, *mf*, *mf*, *f*, *pp*

FL. 1
FL. 2
Picc.
Ob. 1
Ob. 2
Ob. 3
Cl. in Bb 1
Cl. in Bb 2
Cl. in Bb 3
Bsn. 1
Bsn. 2
Cbsn.
F. Hn. in F 1
F. Hn. in F 2
F. Hn. in F 3
F. Hn. in F 4
Tpt. in Bb 1
Tpt. in Bb 2
Tpt. in Bb 3
Tbn. 1
Tbn. 2
B. Tbn.
Tba.
Timp.
Sn. Dr.
Sus. Cym.
Mar.
Hp.
Pno.
Vln. I
Vln. II
Vla.
Vc.
D. B.

Interlude

Helicopters

Time is tied to a perception of progress. A perception tilted by stimuli.

Sound for sounds sake. On a walk to a point.

A sound sustained is a sound ignored.

What is new left to hear?

To bathe in silence is to both cleanse and shock the system; the slightest ripple encompassing an ocean.

FOR REVIEW ONLY

B $\text{♩} = 72$

poco accel.

Fl. 1 *f* *pp* *mp* *f* *mf*

Fl. 2 *pp* *f* *p*

Ob. 1 *pp* *f* *pp* *p*

Ob. 2 *pp* *f* *pp* *f* *pp*

Cl. in B♭ 1 *pp* *f* *pp* *mp* *airy tone*

Cl. in B♭ 2 *pp* *f* *pp* *f* *pp*

Bsn. 1 *pp* *pp*

Bsn. 2 *pp* *p*

F. Hn. in F 1 *f* *f*

F. Hn. in F 2 *f*³

F. Hn. in F 3 *ff* *f* *f* *mf*⁵

Tpt. in B♭ 1 *f* *ff* *mf*³ *fpp* *ff*

Tpt. in B♭ 2 *p* *sfz* *p* *f* *p* *fpp*

Tbn. 1 *pp* *mf* *p* *sfz* *p* *pp*

Tbn. 2 *pp* *mf* *p* *sfz* *p* *pp*

Tba. *pp* *mf* *p* *sfz* *p* *pp*

Timp. *fp* *pp* *mf* *p*

Sn. Dr. *sfz* *pp* *mf* *p* *W. Bl.*

Sus. Cym. *mf* *pp* *fp* *mf*

B $\text{♩} = 72$

poco accel.

Vln. I a *f* *pp* *f*

Vln. I b *f* *pp* *f*

Vln. I c *f* *pp* *f*

Vln. I d *f* *pp* *f*

Vln. II a *mf* *f_{sub.}* *f* *p*

Vln. II b *mf* *f_{sub.}* *f* *p*

Vla. *pp* *f* *p*

Vc. *p < f* *mp*

D.B. *ppp*

12 13 14 15 16 17 18 19 20

2/4

2/4

2/4

D ♩ = ♩

Fl. 1: airy tone, *pp* → *mf* → *p*

Fl. 2: *mp*

Ob. 1: *mp*

Ob. 2: *mp*

Cl. in B♭ 1: *p*

Cl. in B♭ 2: *p*

Bsn. 1: *p*

Bsn. 2: *p*

F. Hn. in F 1: *mp*

F. Hn. in F 2: *p*

F. Hn. in F 3: *pp*

Tpt. in B♭ 1: *mp*

Tpt. in B♭ 2: *pp* (air), *ff* (air), *ffp*

Tbn. 1: *f* → *pp*, *ffp* → *f*, *p* → *f* → *p*

Tbn. 2: *pp*, *ffp* → *f*

Tba.: *f* → *pp*, *p*

Timp.: *p*

B. Dr.: *f* → *pp*, Sn. Dr. fingers on snare head (snares on) *ppp*

W. Bl.: *mp*

D ♩ = ♩

Vln. I: *p*

Vln. II: *f* → *mp*

Vla.: *mf* → *mp* → *pp* → *mf*

Vc.: *ppp*

D. B.: *mp*

35 36 37 38 39

III. Widforss

A

Elusive (♩ = 50) **accel.** ----- **Driving** ♩ = 64

Violin I a, b
Violin II a, b
Viola a, b
Violoncello a, b
Double Bass a, b

Measures 1-10. Dynamics include *pp*, *f*, *mf*, *mp*, *ff*, *p*, *col legno tratto*, *col legno battuto*, *normale*, *sul pont. senza vib.*, *fp*.

Measures 11-18. Dynamics include *mf sub.*, *f*, *pp*, *ff*, *mp*, *p*, *ff*, *ff*, *pizz.*, *arco*, *sul tasto*, *ff*, *ff*, *ff*, *ff*.

Violin I (Vln. I) parts a and b, Violin II (Vln. II) parts a and b, Viola (Vla.) parts a and b, Violoncello (Vc.) parts a, b, and c, and Double Bass (D.B.) parts a and b.

Measures 19-27. Dynamics include *mp*, *ff*, *f*, *p*, *mf*, *pizz.*, *sfz*, *dim.*, and *pp*. Performance instructions include *sul tasto* and *arco*. A large number '2' is written vertically on the left side of the page.

Violin I (Vln. I) parts a and b, Violin II (Vln. II) parts a and b, Viola (Vla.) parts a and b, Violoncello (Vc.) parts a, b, and c, and Double Bass (D.B.) parts a and b.

Measures 28-34. Dynamics include *pp*, *p*, *mf*, *ff*, *ppp*, *normale*, and *arco*. Performance instructions include *arco* and *normale*. Large numbers '9', '4', '15', and '16' are written vertically on the left side of the page.

C

Violin I (a, b), Violin II (a, b), Viola (a, b), Violoncello (a, b), Double Bass (a, b)

Measures: 35, 36, 37, 38, 39, 40

Large numbers: 15, 16, 10, 16, 2, 4, 3, 4, 4, 9, 8, 5, 4

Dynamics: *mf*, *f*, *pp*, *mp*, *normale arco*, *ff*

Performance instructions: *arco*, *pizz.*, *sub.*

Violin I (a, b), Violin II (a, b), Viola (a, b), Violoncello (a, b), Double Bass (a, b)

Measures: 41, 42, 43, 44, 45

Large numbers: 5, 4, 4, 9, 8

Dynamics: *dim.*, *pp*, *mf*, *f*, *p*, *normale arco*, *ff*

Performance instructions: *arco*, *pizz.*

Musical score for measures 46-52. The score includes staves for Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), and Double Bass (D.B.). Dynamics range from *sfz* to *pp*. Articulations include accents, slurs, and *tr* (trills). A large watermark "PREVIEW" is visible across the score.

Musical score for measures 53-60. The score includes staves for Violin I (Vln. I), Violin II (Vln. II), Viola (Vla.), Violoncello (Vc.), and Double Bass (D.B.). Dynamics range from *mp* to *pp*. Articulations include accents, slurs, and *tr* (trills). A large watermark "PREVIEW" is visible across the score.

E
♩ = 64

accel.

Violin I (Vln. I) parts a, b, c; Violin II (Vln. II) parts a, b, c; Viola (Vla.) parts a, b, c; Violoncello (Vc.) parts a, b, c; Double Bass (D.B.) parts a, b.

Measures 61-68. Includes dynamic markings: *f*, *mp sub.*, *pp*, *ff*, *mf*, *p*, *senza vib.*, *arco*, *b^b*, *ff*, *pp*.

Tempo change: 4/4 to 3/2.

string.

Violin I (Vln. I) parts a, b, c; Violin II (Vln. II) parts a, b, c; Viola (Vla.) parts a, b, c; Violoncello (Vc.) parts a, b, c; Double Bass (D.B.) parts a, b.

Measures 69-77. Includes dynamic markings: *mf*, *p*, *pp*, *f*, *ppp*, *col legno battuto*, *col legno tratto*, *n*.

Tempo change: 3/4.

Interlude
Silence

Shh. –Crack!

The opposite of noise is not silence
In those times where an immobility of spirit is the greatest
catalyst for growth;
What do we say to silence?
When something is less than nothing.
Whispers coagulate across gulfs of time—Culminate in a
moment, a place need not be grand to be profound: just
solitary.
The opposite of noise isn't silence—but peace.

Shhhhhh.

IV. Switchback

Unmeasured & Roughly Proportional

24"

The score is divided into two main sections by a vertical dashed line. The first section is labeled 'Unmeasured & Roughly Proportional' and the second section is labeled '24"'. Large numbers 3, 2, and 6 are placed above the staves to indicate measures or groups of measures. A large diagonal watermark 'FOR REVIEW ONLY' is overlaid across the score. At the bottom, there are two horizontal timelines: 'Wind' with a dashed arrow and 'Footseps' with a solid arrow and a waveform-like pattern.

1'32" 1'44"

Fl. 1
Fl. 2
Picc.
Ob. 1
Ob. 2
Eng. Hn.
Cl. in Bb 1
Cl. in Bb 2
Cl. in Bb 3
Bsn. 1
Bsn. 2
Cbsn.
F. Hn. in F 1
F. Hn. in F 2
F. Hn. in F 3
F. Hn. in F 4
Tpt. in Bb 1
Tpt. in Bb 2
Tpt. in Bb 3
Tbn. 1
Tbn. 2
B. Tbn.
Tba.
Timp.
Tub. Bells
Vib.
Tri.
Hp.
Pno.
Vln. I
Vln. II
Via.
Vc.
D. B.
Fx. Md.

To Ob.

3 2 1

3 2 1

ord. *mf*

Mar. *mf*

To Cro.

f *dim.* *pp*

mp *f* *p* *f*

mf *f* *pp*

Bell 5 Bell 6

5 6

1'57" B 2'04" (~2'15") 2'24"

Fl. 1, Fl. 2, Fl. 3, Ob. 1, Ob. 2, Ob. 3, Cl. in Bb 1, Cl. in Bb 2, Cl. in Bb 3, Bsn. 1, Bsn. 2, Cbsn., F. Hn. in F 1, F. Hn. in F 2, F. Hn. in F 3, F. Hn. in F 4, Tpt. in Bb 1, Tpt. in Bb 2, Tpt. in Bb 3, Tbn. 1, Tbn. 2, B. Tbn., Tba., Timp., Crot., Vib., Mar., Hp., Pno., Vln. I a, Vln. I b, Vln. II a, Vln. II b, Vla., Vcl., D. B., Fx. Md.

To Fl.

1 5 2 3

1 5 2 3

1 5 2 3

Thunder storm Metal 8 Metal Spring 9

The image shows a page of a musical score for 'IV. Switchback'. It includes staves for woodwinds (Flutes, Oboes, Clarinets, Bassoons, Contrabassoon), brass (French Horns, Trumpets, Trombones, Tuba, Timpani, Cymbals, Vibraphone, Maracas, Snare Drum, Bass Drum, Cymbals), strings (Violins I and II, Viola, Violoncello, Double Bass), and Percussion (Piano, Thunder storm, Metal, Spring). The score is divided into four measures: 1'57", B 2'04", (~2'15"), and 2'24". A large 'FOR REVIEW ONLY' watermark is overlaid diagonally across the page. The bottom of the page features a timeline with labels for 'Thunder storm', 'Metal', '8', 'Metal', 'Spring', and '9'.

(~3'55") (7) 4'06" 4'19" (~4'31") (~4'55")

Fl. 1 *f cresc.* (8) *pp sub.* *mf*

Fl. 2 *f cresc.* (9) (11) *pp sub.* *mf*

Picc. *f* *pp* *mf*

Ob. 1

Ob. 2

Eng. Hn.

Cl. in B♭ 1 (8) *f* (8) *pp* (2) *mf* 4

Cl. in B♭ 2 (8) *f* (8) *pp* (2) *mf*

Cl. in B♭ 3 (8) *f* (8) *pp* (2) *mf*

Bsn. 1 (8) *mf*

Bsn. 2 (8) *mf*

Cbsn. (10) (12) *ff*

F. Hn. in F 1

F. Hn. in F 2

F. Hn. in F 3

F. Hn. in F 4

Tpt. in B♭ 1 *sfz cresc.* *ff dim.* *p*

Tpt. in B♭ 2 *sfz cresc.* *ff dim.* *p*

Tpt. in B♭ 3 *sfz cresc.* (8) (12) *ff dim.* (4) (6) (5) (7) *p* 4

Tbn. 1 *ff* (8) (12)

Tbn. 2 *ff* (8) (12)

B. Tbn. (12)

Tba. (12)

Timp.

B. Dr.

Sus. Cym. (13) To Vib.

Mar. (9) *cresc. & dim. at will* 4

Hp. play in any order *f*

Pno.

(~3'55") 4'06" 4'19" (~4'31") (~4'55")

Vln. I a *f* (3) *pp* (3) (4) (11)

Vln. I b *f* (3) *pp* (3) (4) (11)

Vln. II a *f* (3) *pp* (3) (4) (11)

Vln. II b *f* (3) *pp* (3) (4) (11)

Vla. *f* (4) (11)

Vc. *f* (4) (11)

D. B. *f* (10) *f*

Fx. Md.

Insects Bell Spring Bell Bell Birds Metal

15 16

(~5'51") 6'08"

Fl. 1
Fl. 2
Picc.
Ob. 1
Ob. 2
Eng. Hn.
Cl. in Bb 1
Cl. in Bb 2
Cl. in Bb 3
Bsn. 1
Bsn. 2
Cbsn.
F. Hn. in F 1
F. Hn. in F 2
F. Hn. in F 3
F. Hn. in F 4
Tpt. in Bb 1
Tpt. in Bb 2
Tpt. in Bb 3
Tbn. 1
Tbn. 2
B. Tbn.
Tba.
Timp.
Sn. Dr. To Sn. Dr.
Vib.
Br. Dr.
Hp.
Pno.
Vln. I a b
Vln. II a b
Vla.
Vc.
D. B.
Fx. Md.

(5) *p*
(5) *p*
(7) To Fl.
Eng. Hn. *p* *pp* *f*
(6) *f*
Bsn. 1 *mf*
Bsn. 2 *p*
air *p*
Tbn. 1 *f dim.*
Tbn. 2 *f dim.*
B. Tbn. *p cresc.* *f dim.*
Tba. *f dim.*
Sn. Dr. *p*
Br. Dr. *pp cresc.*
Pno. *p* (4) play in any order *f* *pp*
(~5'51") (4) arco *f* 6'08"
(5) *ff* (5) *ff*
(7) arco *f*
(5) *ff* (5) *ff*

3 6 3 6 3 6

Metal

Treefall

21

7'12" (~7'27") 7'54" 8'00"

Fl. 1, Fl. 2, Fl. 3, Ob. 1, Ob. 2, Eng. Hn., Cl. in Bb 1, Cl. in Bb 2, Cl. in Bb 3, Bsn. 1, Bsn. 2, Cbsn., F. Hn. in F 1, F. Hn. in F 2, F. Hn. in F 3, F. Hn. in F 4, Tpt. in Bb 1, Tpt. in Bb 2, Tpt. in Bb 3, Tbn. 1, Tbn. 2, B. Tbn., Tba., Timp., Croc., Vib., Tri., Hp., Pho., Vln. I, Vln. II, Vla., Vc., D. B., Fx. Md.

p, *pp*, *mp*, *f*, *ff*, *cresc.*, *air*, *tr*, *To Picc.*, *To Tri.*, *arco*, *pp cresc.*

Picc. (2) (3) *p*

(2) *ff* *pp* *n*

(2) *ff* *pp* *n*

(2) *ff* *pp* *n*

5 3 5 3 5 3