

CHILNUALNA: NUMEROLOGY, SPEECH ORCHESTRATION, AND NATURAL SOUND

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Includes supplemental files:

1. Aux Imagistes II: Wide Arc – Low in the Northern Sky (2016) – Full Score (*Aux Imagistes II\_Wide Arc\_Low in the Northern Sky\_Full Score.pdf*)
2. Six Silver Rings of (((Aquamarine))) (2017) – Full Score (*Six Silver Rings of Aquamarine\_Full Score.pdf*)
3. Linguaglossa (2018) – Full Score (*Linguaglossa\_Full Score.pdf*)
4. Songbird (2018) – Full Score (*Songbird\_Full Score.pdf*)
5. Chilnualna (2019) – Full Score (*Chilnualna\_Full Score.pdf*)

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## Abstract

This dissertation consists of five musical works composed at Stanford University between 2014 and 2019.<sup>1</sup>

*Aux Imagistes II: Wide Arc – Low in the Northern Sky* (2016)

String Octet

Ca. 13 min.

Written for the JACK and Spektral Quartets

*Six Silver Rings of ((Aquamarine)))* (2017)

Flute, Clarinet, Electric Guitar, Percussion, Violin, Viola, Violoncello

Ca. 5 min.

Written for Distractfold

*Songbird* (2018)

String Quartet and Birdsong (Tape)

Ca. 10 min.

Written for the JACK Quartet

*Linguaglossa* (2018)

Vocal Sextet, Narration, Film

Ca. 16 min.

Written for Ekmeles Vocal Ensemble

*Chilnualna* (2019)

Two Voices, Natural Sound, Chamber Orchestra

Ca. 14 min.

Written for Ensemble Dal Niente

In the following sections, I will outline the practices employed within individual pieces and sketch a broader trajectory spanning these works. Although beginning as poetic etudes in mimesis, my music becomes oriented towards a deeper introspective journey, in which each piece is understood as a pathway to self-discovery.

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<sup>1</sup> A complete list of works composed at Stanford University between 2014-2019 is included in **Appendix I**.

## Acknowledgements

If I am to reflect a little, I would say that one thing I have realized about myself through these pieces is how important the places and people I surround myself with are to my life and music.

My first experience of California was with the wilderness, as I drove across the country with my father from my hometown of New York City – the Great American Adventure, where we watched the landscape shift slowly over many days, discovering beautiful places and sharing meaningful moments as father and son. Living, as my brother Adam said in *Chilnualna* (2019), by moving “far and slow.”

It should be no surprise then that my music became concerned with the natural world and with family, though in fact it was a surprise to me. Living in California allowed me to delve into the essence of those aspects of my being which have always been present, yet unrealized until called forth by experience and met by music. In many ways, composing has driven me to a life of adventure, which in turn always seems to lead back to music.

As I move forward into the unknown, I wonder what new experiences lie ahead, and what people and places I will meet along the way.

For now though, with an awareness of the impermanence of the present moment, I want to thank all of those who have shared this time with me and made the last five years at Stanford a truly special chapter in my life.

Andrew Watts

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## Introduction

In the five works introduced in the abstract, three salient compositional models may be observed:

1. Numerology
2. Speech Orchestration
3. Natural Sound

These models are briefly outlined below, along with references to representative pieces that illustrate their corresponding history in my music.<sup>2</sup> Though individually distinct, I regard them as contributing to a single artistic purpose. As such, each work is discussed in relation to more than one model, culminating with *Chilnualna* (2019) as the only piece that uses all three.

1. “Numerology” refers to the belief in a mystical relationship between numerical patterns and the structures of reality. Being oriented around symbolic expressions of abstract numerical devices, this model is used to generate multi-dimensional rhythmic frameworks from which emergent or designed shapes may be orchestrated and further refined using secondary ornamental principles.
2. “Speech Orchestration” refers to the practice of deriving musical material from patterns found in human speech and the use of text as a new type of rhythmic framework.<sup>3</sup> Evolving from my use of numerology, these texts are often distributed in heterophonic geometrical patterns, by which I intend to endow abstract materials with human characteristics, reflecting both phraseology and semantics.
3. “Natural Sound” refers to the three components of sound present in the natural world: *Biophony*, sounds produced by non-human organisms; *Geophony*, sounds of the Earth itself; and *Anthropophony*, sounds produced by human beings.<sup>4</sup> In my music, I respond to the natural world by reflecting on my own experiences in the wilderness through representations of *biophonic* and *geophonic* phenomena and the use of original field recordings.<sup>5</sup>

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<sup>2</sup> An “\*” indicates that a piece beyond the five addressed in this dissertation, referenced for its relevance in the discussion of the three models.

<sup>3</sup> The origin of this model may be traced back to one of my earlier pieces, *E la tua veste é bianca* (2016)\*, in which two voices work as one to recite Salvatore Quasimodo’s poem of the same name. Being a written text, this piece is performed by using the natural rhythm of spoken Italian rather than an acoustic model such as recorded speech.

<sup>4</sup> “The Organized Sound of Life Itself.” *The Great Animal Orchestra*, by Bernie Krause. New York, Little, Brown and Company, 2012, p. 80.

<sup>5</sup> In my practice as a field recording artist, I have captured sounds in twenty locations throughout Northern California, as well as Austria. These include over thirty sources of *biophony*, including amphibians, birds, insects, and mammals, and twelve sources of *geophony* such as water, wind, thunder, and trees. A full account of this collection is included in **Appendix I**.

\*

*Aux Imagistes II: Wide Arc – Low in the Northern Sky* (2016)  
Numerology/Natural Sound

*Aux Imagistes II: Wide Arc – Low in the Northern Sky* (2016) is divided into eight movements, forming an abstract narrative of natural imagery based on the poems “On Gay Wallpaper” (1928) and “The Storm” (1944) by William Carlos Williams, along with quotations from Ludwig Van Beethoven’s String Quartet No. 14 in C# minor, Op. 131, interspersed as three *Interstices*.

In this piece, I began the practice of expressing numerical values musically by orchestrating an infinite sequence of rhythmic cycles, using values two through nine.<sup>6</sup> Musical characteristics which define this polyrhythmic sequence include heterophonic lines that are gradually pulled apart, contrapuntal coincidences between values, and traceable cyclic patterns.

Departing from a common point of origin, each rhythm is sustained for one prolation greater than a full measure of its base value, thereby taking one measure more than that base to complete a full palindromic cycle. For example, a base value of seven is sustained for eight equal subdivisions within a measure and takes eight full measures to return to its point of origin.

As the piece’s central image, the rainbow Williams describes in “The Storm” is evoked a variety of ways.

A perfect rainbow! A wide  
arc low in the northern sky

(lines 1-2)<sup>7</sup>

For example, the eight colored circles in the score denote the distribution of this sequence within an orchestrated rhythmic framework – red (9), orange (8), yellow (7), green (6), blue (5), indigo (4), violet (3), and black (2) – one value for each instruments and color of the rainbow (with the addition of black). By distributing values both horizontally and vertically throughout the octet as a scale from one to eight, a diagonal multicolored pattern is created as an analogy to the prism of a rainbow.

In the fifth movement, *Rainbow Explosion*, this method is used to distribute not only eight rhythmic values among the octet, but eight string techniques as well. Emerging from this kaleidoscopic texture, a G# major chord bends down in a long arcing glissando.<sup>8</sup> As the functional dominant of C# minor, the tonic key of the Op. 131 quartet, this chord connects to another arc-like gesture in the first violin part of the *Adagio (dopo Allegro moderato)* which is quoted in the final *Interstice*.

Other examples of natural imagery represented in this manner include “*Strands of Light*” from the eponymous first movement, “*Listless Stars*” in the second, and “*Waves*” in the third. In these movements, stanzas and lines are often combined or elaborated as creative reimaginations of

<sup>6</sup> **Appendix II:** *Aux Imagistes II: Wide Arc – Low in the Northern Sky (Rhythmic Sequence)*.

<sup>7</sup> “The Storm.” *The Collected Poems of William Carlos Williams Volume 2: 1939-1963*, by William Carlos Williams. Ed. Christopher MacGowan, New Directions, 1988, p. 86.

<sup>8</sup> *Aux Imagistes II: Wide Arc – Low in the Northern Sky*, pp. 49-52.

Williams' poetry. Additionally, mathematical patterns such as the Fibonacci sequence are used to articulate and ornament phrases within each section.

While this piece does not focus on natural *sound* per se, I view it as a significant milestone in the development of my mimetic technique in relation to the natural world. In particular, the third movement, *Black Lake – Waves*, may be viewed as a predecessor to the representation of natural sound as it draws its material from a natural source which is perceived both visually and aurally, and was therefore composed with both senses in mind.

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\* \*

***Six Silver Rings of ((Aquamarine)) (2017)***  
Numerology/Natural Sound

In *Six Silver Rings of ((Aquamarine)) (2017)*, I explored cyclic forms of storytelling by using a chiasmic ring structure, a symmetrical narrative form which inverts elements in reciprocal phrases and places its dramatic climax at the center. Based on expansions of the polyrhythmic sequence developed in *Aux Imagistes: Wide Arc – Low in the Northern Sky (2016)*, this piece aims to represent original imagery rather than use outside texts as a model.

After *Aux Imagistes II: Wide Arc – Low in the Northern Sky*, I expanded the set of values used in the sequence to include numbers one through ten. By aligning rationally similar values into a series of four vertical levels, I was able to organize these as an abstract musical device.<sup>9</sup> When applied as durations, these relationships may be expressed both metrically and non-metrically: as rhythms pivoting between values.<sup>10</sup>

These relationships may also be expressed conceptually: by subgrouping values based on notions of rhythmic harmony and dissonance. For example, the final section of *Ten Paths to the Rising Moon (2016)\*, III. At Rest – by the compass of a soothed heart*, uses only the values on the lowest vertical level of the device in order to create a harmonious polyrhythm. As values one, two, four, and eight are based on the same proportional subdivision, their rhythmic cycles produce more contrapuntal coincidences than those from different vertical levels, which produce conflicting rhythms by contrast.

This method of organization may be viewed as a rhythmic variant of the Pythagorean *tetractys*, though it should be noted that mystical interpretations of similar numerical systems have been practiced throughout history in a variety of cultures. One such example may be found in the *Tree of Life* of esoteric Judaism, which assigns spiritual meaning to values one through ten, including a phantom eleventh.

In *The Sephiroth Tree (2016)\**, I sought to interpret these subgroups symbolically by representing the ten *sephiroth*, or emanations, and twenty-two paths in the *Tree of Life*. For this piece, I created ten subgroups of values for each *Sephirah*, from which performers pivot through a series of rhythmic pathways at a tempo and formal duration proportional to the corresponding movement's numerical value.<sup>11</sup> For example, *Sephira I* represents the "Highest Crown" by selecting value seven – the topmost and only singular value of the *tetractys* – at a tempo of eighth note equals 110 out of 200 for a duration of ten seconds out of a total 100 seconds.

In *Six Silver Rings of ((Aquamarine))*, I expanded the *tetractys* by a further dimension, now including values sixteen, twelve, twenty, and fourteen – one subdivision for each vertical level.<sup>12</sup> When applied to the existing polyrhythmic sequence, this development unlocked a clearer sense of

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<sup>9</sup> **Appendix II:** *Tetractys (10)*.

<sup>10</sup> **Appendix II:** *Non-metric pivoting*.

<sup>11</sup> **Appendix II:** *The Sephiroth Tree*.

<sup>12</sup> **Appendix II:** *Tetractys (14)*.

form and phrase, as the addition of these rhythmic points made interlocking shapes more perceptible. This may be likened to the increase of sample rate as a method of achieving greater resolution.

Furthermore, in this piece I began to move away from the use of sequential systems towards the creation of more intuitively designed rhythmic frameworks. While in *Aux Imagistes II: Wide Arc – Low in the Northern Sky* I used a continuous sequence departing from a point of origin, in *Six Silver Rings of (((Aquamarine)))* I extended the newly expanded sequence to a terminus of 1,008 measures, or 84 cycles of twelve-measure phrases, from which to select emergent shapes.

These twelve-measure phrases are perceived in the form of recurring polyrhythmic cadences, in which values one, two, three, and five cycle together continuously. In other words, if each rhythm is sustained for one prolation greater than a full measure of its base value, a phrase forms every twelve measures. In this phrase, value one completes six cycles, value two completes four cycles, value three completes three cycles, and value five completes two cycles. As each value begins a new cycle on the thirteenth measure, a space with only events from other values opens in the twelfth measure, thus causing a cadential effect on the downbeat of the next phrase.

As the remaining values shift through the sequence, phrases with particularly evident shapes may be selected as raw material for a rhythmic framework. In this piece, I chose seven twelve-measure phrases, sculpted these to fit proportions based on the Fibonacci sequence, and pieced each together in a string of rhythmic cadences to form an elaborate progression of complementary shapes.

In order to create a chiasmic ring structure, this rhythmic framework was then restated in reverse, before concluding at the center of the second half. Encased as the centerpiece to this form, *(((Aquamarine)))* (2017)\* was itself divided into fractal sections formed by its golden spiral structure, one in which the full fourteen-value sequence extends both forwards and backwards from a central point of origin.<sup>13</sup>

As in *Aux Imagistes II: Wide Arc – Low in the Northern Sky*, the poetic representations which populate this form are based on my own experiences of the natural world. For example, the central “orb” of the first half of the piece imitates the sound of a flowing stream heard at Stanford University’s Lake Lagunita, complete with leaping flecks of water.<sup>14</sup>

In this section of the framework, two layers of sequentially derived phrases are superimposed and distributed throughout the septet in order to represent the natural complexity of this *geophonic* sound. As its chiasmic counterpart, the central “orb” of the second half of the piece inverts this representation as “*a nebula of stars, twinkling in the shadows of space,*” in which sound becomes image and each layer of rhythm is presented in retrograde and re-orchestrated.<sup>15</sup>

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<sup>13</sup> **Appendix II:** *Six Silver Rings of (((Aquamarine))) / (((Aquamarine)))*.

<sup>14</sup> *Six Silver Rings of (((Aquamarine)))*, p. 6.

<sup>15</sup> *Six Silver Rings of (((Aquamarine)))*, p. 16.

\* \* \*

***Songbird (2018)***

Numerology/Natural Sound

*Songbird* (2018) features two natural soundscape recordings from Northern California's Windy Hill Open Space Preserve, alongside a string quartet performing imitative musical gestures designed to transform *anthropophonic* noise, shape our perceptive experience, and embody the spirits of individual birds heard within. These birds include the Redwinged Blackbird, California Quail, American Coot, American Crow, Steller's Jay, Pileated Woodpecker, Nuttall's Woodpecker, Marsh Wren, Pacific Wren, Wild Turkey, and three varieties of Song Sparrow.

When we capture sound in a microphone, we are recording it from the microphone's perspective, which does not filter information and noise in the same way the human ear does. When recreating the acoustic reality in which natural sound is captured, we may accept the impartial document that the microphone creates, or shape its perspective towards the hyper-real as a means of recreating the distortions of our own perception.

In *Songbird*, I tend towards the hyper-real in order to reflect on the immersive experience of listening to natural sound, as described by Richard Wagner in his *Letter on Music, Addressed to the French*.<sup>16</sup>

Great melody must produce an effect on the soul similar to that produced by a beautiful forest, in the setting sun, on the city stroller. This impression, which I leave to the reader to analyse according to his own experience, consists in all its psychological effects of the perception of an increasingly eloquent silence. It is sufficient in the cause of art to have produced this fundamental impression, to govern the listener by it without his knowing and to dispose him to a higher design; this impression awakens spontaneously in him his higher tendencies. He who walks in the forest, overcome by this general impression, abandons himself thus to a more lasting contemplation; his faculties, delivered from the tumult and noise of the town, tighten and acquire a new mode of perception endowed so to speak with a new sense, his ear becomes more and more acute. He distinguishes with growing clarity an infinite variety of voices which awaken for him in the forest; they become more and more varied; some of them he hears as if never before; with their number, their intensity grows, too, in a strange way; the sounds become still more resonant; to the extent that he hears a great number of distinct voices, of varying modes, he recognizes nonetheless in these sounds which become clearer, swell and overwhelm him, the great unique melody of the forest: it is this very melody which, from the beginning, had seized him with a religious feeling. It is as if, one beautiful night, the deep blue of the firmament entranced him; the more he abandons himself without reserve of this spectacle, the more the armies of stars in heaven's vault reveal themselves distinctly to his eyes, clear, sparkling and innumerable. This melody will leave an eternal resonance in him; but it is impossible for him to recount it; to hear it again he must return to the forest, to the setting sun. How foolish he would be to want to seize one of the gracious singers of the forest and take him home in order to be taught a fragment of nature's great melody! What would he hear, then, if not some tune in the Italian style?

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<sup>16</sup> "The Universality of Sound Models." *Music, Myth, and Nature: or, The Dolphins of Arion*, by François Bernard Mâche, Harwood Academic Publishers, 1992, pp. 52-53.

Richard Wagner died in 1883. This was 41 years before Ottorino Respighi recorded the song of a nightingale onto a phonograph and specified that it be played at the end of the third movement to *I Pini di Roma* (1924) – the first instance of recorded birdsong in music. While Wagner’s experience of “an increasingly eloquent silence” remains true, and indeed personally relevant to me, what does modern technology reveal about our ability to recount “nature’s great melody”? We now have the means to record entire soundscapes rather than merely “seize one of the gracious singers of the forest.” Yet even the most sophisticated field recordings pale in comparison to the experience of listening to these sounds in the wild.

As a foolish Italian with a microphone and a string quartet, I wanted to investigate the role of artistic mediation as a way to balance these experiences. By choosing to my frame my own natural soundscape recordings artistically, I sought to convey an individual perception of natural sound itself in which music “produces this fundamental impression,” as Wagner puts it.

For example, to create an illusion of immersion, the first natural soundscape recording featured in *Songbird* is slowly crossfaded with a parallel copy, one processed with heavy reverb. As the dawn chorus unfolds over four minutes, the reverb gradually saturates the acoustic space, thereby bringing out individual voices in the *biophony* and moving the listener’s perspective from the “real” to the hyper-real. To sustain this effect, the string quartet is used to transform the *anthropophony* of the recording into a “*Magical Wind, soaring across the sky*,” akin to the mind filtering out noise.<sup>17</sup>

From this illusory soundscape, a composed *biophony* of Song Sparrows emerges as a trio alongside the string quartet, after which follows “*like a forest of whispering leaves, speaking with the voice of the wind*.” As birds tend to sing in iterative cycles, or “rhythmic niches,” these entities are represented by the same twelve-measure polyrhythmic phrases found in *Six Silver Rings of ((Aquamarine))* (2017).

This behavioral model is then applied as a rhythmic framework in order to animate both the string quartet and birds as an electroacoustic dawn chorus, thereby drawing each closer to the other. For example, as both groups share the same “rhythmic niches,” we hear a mimetic “*whirlwind of chirps and birdsong*” as the string quartet darts around the recordings, highlighting the most salient pitches sung by the Song Sparrows: E and C#.<sup>18</sup>

When an airplane enters in the second soundscape, the reverb is slowly removed so that the *anthropophonic* sound breaks the immersive experience. The string quartet remains silent as the listener’s perspective returns to reality, no longer able to maintain the illusion.

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<sup>17</sup> *Songbird*, p. 5.

<sup>18</sup> *Songbird*, p. 9.

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***Linguaglossa (2018)***  
Numerology/Speech Orchestration

In *Linguaglossa* (2018), I explored my own personal history by adapting text from the travel journals of John D. Virzi, my father, written in 1986 during a pilgrimage to our ancestral home of Lercara Friddi, Sicily, as well as film from the personal collection of Leonardo DiBella, my great uncle, recorded during the years 1965-1987 in both Italy and America. By orchestrating my own recorded narration of this story, I sought to create a musical halo enveloping speech, adding a third generation to my family's continuing journey of artistic self-exploration and reflection through the media of film, literature, and music.

*Linguaglossa* is a small town at the base of Sicily's Mount Etna, formed at the divergent point of a volcanic lava stream in 1566 – and, along with Lercara Friddi, another place to which my family may claim ancestral lineage. Literally translated, *Linguaglossa* means “tongue tongue,” with *lingua* as the modern Italian word for tongue, or language, and *glossa* as the ancient Sicilian word of the same meaning.

As such, this town represents the meeting point of the new and the old, the past and the future, with the forked tongue of Etna's fiery mouth singing outward from the eternal present. Throughout the text, there are several references to this mythical sense of time. For example, it is implied that Lercara Friddi was founded in the year 0, or perhaps 1 AD. A similar mythic ethos surrounds other aspects of my father's experience – most notably, space, character, and image.

Over the course of the piece, each of these four aspects of the text is articulated by the vocal sextet, punctuating the drone which imitates the hum of the film. Pitch language and figuration are gradually associated with individual entities, where each aspect is given its own harmony, and each time, space, character, and image are given a unique figuration. For example, every time my great-grandfather Antonino Virzi is mentioned, the same heterophonic figures for his first and last names are used, along with the harmony for all characters in the story.<sup>19</sup>

In the four intervening movements across the main narrative, I set the names of locations seen in the film, or ones of personal significance: *Linguaglossa*, *Randazzo*, *Passopisciaro*, and *Piedimonte Etneo*. Departing from the use of numerical sequences entirely, these movements are instead orchestrated from designed rhythmic frameworks based on expressions of each vertical level, in which larger values are seen as fractal subdivisions of a fundamental base.<sup>20</sup> For example, from this perspective values ten and twenty are subdivisions of five rather than independent cycles in polyrhythm, thus allowing phrases to be written on multiple time scales.

As the story unfolds, the patterns in the speech orchestration evolve from vague impressions to clear geometric shapes,<sup>21</sup> informed by and informing the dimensionality of these numerical frameworks. Within these emergent shapes, vowels yield way to words, and additional sounds such as whispers

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<sup>19</sup> *Linguaglossa*, pp. 38, 39, 70, 73.

<sup>20</sup> *Linguaglossa*, p. 48.

<sup>21</sup> *Linguaglossa*, pp. 6, 75.

and melodic fragments are added to the tapestry of sound,<sup>22</sup> thereby portraying a sense of awakening memory.<sup>23</sup>

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<sup>22</sup> *Linguaglossa*, p. 52.

<sup>23</sup> *Linguaglossa*, p. 45.

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***Chilnualna* (2019)**

Numerology/Speech Orchestration/Natural Sound

*Chilnualna* (2019) represents a musical unification of the essential forms of sound present in the natural world: *Biophony*, *Geophony*, and *Anthropophony*. In this piece, each of these elements is given a musical voice through the use of original field recordings captured in the wilderness of Northern California during the years 2017, 2018, and 2019, at eighteen locations throughout the state.

Using a “natural sound instrument” created specifically for this composition, *Chilnualna* features recordings of over twenty species of birds, a water scale spanning from small droplets to epic waterfalls hundreds of feet tall, and a monologue by Adam Virzi, my brother, recorded spontaneously on April 1, 2018 (Easter Sunday), during a rigorous twelve-hour session at Yosemite National Park’s eponymous Chilnualna Falls.

While creating this instrument in Ableton Live, I divided the recording of Adam’s monologue into six digital samples based on phrasing and semantic content, to be triggered by the keyboardist. In performance, the singers, keyboardist, and chamber orchestra anthropomorphize both musical and natural sound materials by blending ensemble sounds with the characteristics of his speech, and using the transcribed text as a rhythmic framework for speech orchestration.

Over the course of five *Watersongs*, the recorded speech is orchestrated using vocal and instrumental combinations alongside the water scale, in order to evoke “The Voice of Water.”<sup>24</sup> This “Voice” develops from whispering, to speaking, and finally to singing, as exemplified by the mezzo-soprano part. Beginning by articulating only vowels (*sprechgesang*, *half whispered/half sung*), she gradually incorporates partial words (*half spoken/half sung*), and finally sings complete phrases in counterpoint with the soprano, all the while increasing in dynamics, pitch variety, and complexity of figuration.

While composing this piece, I became less concerned with reacting to the phrasing and semantics of the speech and began orchestrating elaborate geometric patterns over larger phrases of the abstracted text. This adaptation allowed me to move past the limitations of sentence structure and focus instead on ensemble sound as well as broader forms of representation. Rather than abandoning the monologue, these often-symmetrical patterns are meant to represent images central to the piece, such as waterfalls.<sup>25</sup>

*Chilnualna* alternates between these *Watersongs* and movements from *Phoenix* (2019)\*, a song based on the epic poem *The Conference of the Birds*, composed during the 12<sup>th</sup> Century by the Persian poet Farid Ud-Din Attar. As an allegory for purification and the attainment of enlightenment, this literary masterpiece follows the birds of the world on their quest for the Simorgh, the sovereign king of all birds. Led by the wise Hoopoe, a real bird whose onomatopoeic song appears ephemerally throughout the piece,<sup>26</sup> and a mystical figure in many literary works (such as

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<sup>24</sup> *Chilnualna*, pp. 3, 6, 13, 22, 25.

<sup>25</sup> *Chilnualna*, p. 26.

<sup>26</sup> *Chilnualna*, p. 1, 5, 20, 30.

Aristophanes’ “The Birds”), the birds journey through the Seven Valleys of the Way in search of the Simorgh.

The first stage is the Valley of the Quest;  
Then Love's wide valley is our second test;  
The third is Insight into Mystery,  
The fourth Detachment and Serenity –  
The fifth is Unity; the sixth is Awe,  
A deep Bewilderment unknown before,  
The seventh Poverty and Nothingness –

(Lines 3224-3230)<sup>27</sup>

The subtitle *Phoenix* refers to an abstraction of the processes of death and rebirth which one must confront in various guises during the Seven Valleys of the Way in order to sacrifice those human faults which prevent one from reaching enlightenment, and to reclaim those virtues essential to the quest. Throughout the poem, the birds seek the Simorgh, losing many of their number along the Way. This is later revealed to be a pun – thirty (*si*) birds (*morgh*). The thirty birds who survive the journey find that they themselves are the Simorgh, and the metaphysical embodiment of the King which they sought.

The journey was in Me, the deeds were Mine –  
You slept secure in Being’s inmost shrine.  
And since you came as thirty birds, you see  
These thirty birds when you discover Me,  
The Simorgh, Truth’s last flawless jewel, the light  
In which you will be lost to mortal sight,  
Dispersed in nothingness until once more  
You find Me in the selves you were before.

(Lines 4256-4263)<sup>28</sup>

In *Phoenix*, I once again expanded the *tetractys* to include irrationals emanating from the original series, beginning with eleven, and ascending to thirteen, fifteen, seventeen, eighteen, and nineteen.<sup>29</sup> In this case, the eleventh emerges as a single cycle spanning an entire twelve-measure phrase, now including values one, two, three, five, and eleven. As a numerical representation of the Simorgh, I sacrificed all remaining values outside these five.

I then extended this new phrase backwards by two measures – the nearest rhythmic cadence – and repeated the fourteen-measure phrase to create a doubled palindrome. The self-similarity of this form produced a need for alternate perspectives of ornamentation, such as the counterpoint with non-sequentially generated material and refinement through dimensional patterning.<sup>30</sup> Therefore, *Phoenix* represents a further step away from unified systems towards a more flexible, yet wieldable approach to numerical expression.

<sup>27</sup> “The Conference of the Birds.” *The Conference of the Birds*, by ‘Attār Farīd ud-Dīn et al., Penguin, 1984, p. 166.

<sup>28</sup> “The Conference of the Birds.” *The Conference of the Birds*, by ‘Attār Farīd ud-Dīn et al., Penguin, 1984, p. 220.

<sup>29</sup> **Appendix II: Tetractys (20).**

<sup>30</sup> *Chilnualna*, p. 24. For comparison, see above discussion on *Linguaglossa*, p. 8.

In *Chilnualna*, water and birdsong are often used as a means of transition between *Watersong* and *Phoenix* sections. For example, as a path of “metamorphosis” between these two worlds, the ensemble may either merge with the water “*imitato – becoming water*,” or emerge from the water “*animato – as water*.” Similarly, as a bird that has evolved to live near forest streams, the Pacific Wren was a natural choice for the role of a guide through such a metamorphosis. Being both melodically complex and adapted to coexist with the sound of water, this bird’s song is able to appear both alongside the melodic lines of *Phoenix*, as well as take part in the soundscape of the *Watersongs*.

Like my father’s text in *Linguaglossa*, Adam’s monologue is a poetic reflection on time and space, as he notes the “juxtaposition of experience” between moving “far and fast, and far and slow.” As he suggests, while living in the modern world allows one to travel faster and experience more, we often lose the presence of mind and depth of appreciation earned through the devotion of our time and energy.

The juxtaposition of long, sustained water recordings in *Chilnualna* and the ephemeral, birdlike passages of *Phoenix* is intended to represent the differences between these two types of lived experience, as well as between Adam’s and my own. For example, at that point in time I had lived in California for five years, while he had just arrived. Yet we found ourselves standing together, sharing the present moment, as he said, “looking out upon a valley which I saw fill with light.”

As the piece comes to a close, these two worlds come together as one. The soprano and mezzo-soprano, once separated in *Phoenix* and *Watersong* sections respectively, now sing together as a single sustained voice. Alternating on the last word of the *Phoenix* text, “know?,” this unified voice is enveloped by natural sound as the water scale is slowly revealed as an eleven-part chord, from the smallest source to the largest.<sup>31</sup>

With a final “barbaric yawp” – as read in Walt Whitman’s “Song of Myself” – the voice echoes through the soundscape as music flowing down a creek, through an estuary, and into to the ocean, led on by the rhythms of the natural world.<sup>32</sup>

I too am not a bit untamed – I too am untranslatable;  
I sound my barbaric yawp over the roofs of the world.

(Lines 3-4)<sup>33</sup>

In this penultimate section, twelve waves from the *Estuary of Big Creek and the Pacific Ocean* recording are divided into four measure phrases based on the cyclic pattern of the waves: (1) creek alone; (2) waves fade in; (3) waves fade out; (4) creek alone. The tempo indication “Natural Time” refers to the organization of musical events based on patterns heard within a natural soundscape, rather than the use of metric divisions.

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<sup>31</sup> *Chilnualna*, pp. 34-35.

<sup>32</sup> *Chilnualna*, pp. 36-38.

<sup>33</sup> “Song of Myself, Section 52.” *Leaves of Grass by Walt Whitman: the 1892 Edition*, by Walt Whitman, Bantam Books, 1983, p. 73.

As an estuary is the meeting point of a river or stream and the ocean, the chamber orchestra is divided into two subgroups, each acting as one of these two water sources: (1) A septet of winds, horn, percussion, harp, and electric guitar; and (2) the string quintet. Via mimesis in “Natural Time,” the septet becomes the perennial stream of *Big Creek*, and the quintet the undulating waves of the *Pacific Ocean*.

During the first seven waves of the recording, a new instrument from the septet enters the soundscape (*animato* – ...as *Big Creek, flowing into the Pacific Ocean...*) and unfolds a seven-note quintal chord of all possible natural pitches. Each pitch is sustained for five measures over the four measures used to trace the phase of the wave – the same prolotion technique first used in the polyrhythmic sequence of *Aux Imagistes II: Wide Arc – Low in the Northern Sky* (2016).

With each subsequent wave, the strings reach out from the ensemble as a five-note quintal chord of all possible sharp pitches, following the push and pull of the ocean (*imitato* – ...as *Waves of the Pacific Ocean...*). As the soundscape fades, the septet follows *Big Creek* to silence. Meanwhile, the quintet is suspended to a thirteenth wave beyond the recording, “*animato* – ...as *Waves of the Pacific Ocean*,” as the voice reborn.<sup>34</sup>

And there you are suspended, motionless,  
Till you are drawn – the impulse is not yours –  
A drop absorbed in seas that have no shores.

(Lines 3231-3233)<sup>35</sup>

As human beings living in modern societies, we often consider ourselves apart from the natural world. When we do seek to commune with nature, we sit silent, hoping to catch a rare vision of the wild untouched by our own influence. How then are we to truly belong, when, inevitably, we must act?

In *Songbird* (2018), I silenced my own voice, aspiring instead to embody the natural world through mimesis. Yet when the world called to me, I found I could not truly answer. In *Chilnualna*, I sought to reclaim this lost sense of self by embracing music as the voice of my own humanity, with *Phoenix* as a recognition of the profound role anthropophony may play in our communion with nature.

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<sup>34</sup> *Chilnualna*, pp. 38-40.

<sup>35</sup> “The Conference of the Birds.” *The Conference of the Birds*, by ‘Attār Farīd ud-Dīn et al., Penguin, 1984, p. 166.

## Appendix I

### List of Works – Stanford University (2014-2019)

- |   |   |
|---|---|
| <p><i>Gravity</i> (2014)<br/>Solo Cello<br/>Written for Séverine Ballon</p> <p><i>The Garden of Eden</i> (2015)<br/>Solo Voice<br/>Written for Tony Arnold</p> <p><i>E la tua veste é bianca</i> (2016)<br/>Two Voices<br/>Written for Quince Contemporary Vocal Ensemble</p> <p><i>Aux Imagistes II: Wide Arc – Low in the Northern Sky</i> (2016)<br/>String Octet<br/>Written for the JACK and Spektral Quartets</p> <p><i>Ten Paths to the Rising Moon</i> (2016)<br/>Flute, Clarinet, Electric Guitar, Percussion<br/>Written for Ensemble Liminar</p> <p><i>The Sephiroth Tree</i> (2016)<br/>String Quartet<br/>Written for the Soma Quartet</p> | <p><i>Six Silver Rings of (((Aquamarine)))</i> (2017)<br/>Flute, Clarinet, Electric Guitar, Percussion, Violin, Viola, Violoncello<br/>Written for Distractfold</p> <p><i>(((Aquamarine)))</i> (2017)<br/>Solo Kingma System Flute with Glissando Headjoint, Seven Recorded Flutes<br/>Written for Rachel Hacker</p> <p><i>Songbird</i> (2018)<br/>String Quartet and Birdsong (Tape)<br/>Written for the JACK Quartet</p> <p><i>Linguaglossa</i> (2018)<br/>Vocal Sextet, Narration, Film<br/>Written for Ekmeles Vocal Ensemble</p> <p><i>Phoenix</i> (2019)<br/>Soprano, Flute, Clarinet, Percussion, Violin<br/>Written for the TAK Ensemble</p> <p><i>Chilnualna</i> (2019)<br/>Two Voices, Natural Sound, Chamber Orchestra<br/>Written for Ensemble Dal Niente</p> |
|---|---|

## Field Recording, Sounds Captured – Northern California, Austria (2017-2019)

### Locations:

- |   |                                       |
|---|---------------------------------------|
| 1. Armstrong Redwoods State Park                | 11. Palo Alto                         |
| 2. Bedwell Bayfront Park                        | 12. Pescadero Marsh Natural Preserve  |
| 3. Big Basin State Park                         | 13. Portola Redwoods State Park       |
| 4. Big Sur, Big Creek Reserve                   | 14. Russian River                     |
| 5. Castle Rock State Park                       | 15. Sagehen Experimental Forest       |
| 6. El Corte de Madera Creek Preserve            | 16. Skyline Ridge Open Space Preserve |
| 7. Grass Valley                                 | 17. Sunol Regional Wilderness         |
| 8. Graz, Austria                                | 18. Thornewood Open Space Preserve    |
| 9. Loch Lomond & The Trossachs<br>National Park | 19. Windy Hill Open Space Preserve    |
| 10. Mount Diablo State Park                     | 20. Yosemite National Park            |

### *Biophony:*

#### Amphibians:

1. Pacific Tree Frog
2. Sierran Tree Frog
3. California Newt

#### Insects:

1. Crickets
2. Fly
3. Unidentified  
buzzing insects

#### Mammals:

1. Cattle
2. Chipmunk
3. Coyote
4. Gray Fox: pair
5. Squirrel

#### Birds:

- |   |                                  |
|---|----------------------------------|
| 1. Acorn Woodpecker                             | 14. Marsh Wren                   |
| 2. Allen's Hummingbird                          | 15. Mockingbird                  |
| 3. American Coot                                | 16. Mourning Dove                |
| 4. American Crow                                | 17. Nuttall's Woodpecker         |
| 5. American Robin                               | 18. Osprey                       |
| 6. Band-tailed Pigeon                           | 19. Pacific Wren                 |
| 7. Barn Swallow: Flight, Adults,<br>Nestings    | 20. Pileated Woodpecker          |
| 8. Black American Duck                          | 21. Redwinged Blackbird          |
| 9. California Quail                             | 22. Red-shouldered Hawk          |
| 10. Great Blue Heron                            | 23. Song Sparrow: Nine varieties |
| 11. Great Horned Owl: Alpha Male,<br>Parliament | 24. Steller's Jay                |
| 12. Hairy Woodpecker                            | 25. Swainson's Thrush            |
| 13. Hermit Thrush                               | 26. Western Gull                 |
|   | 27. Wild Turkey: Rafter          |

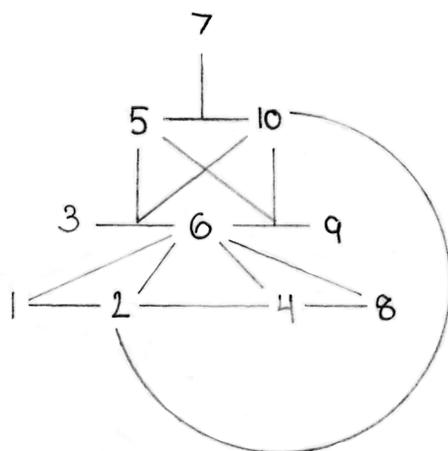
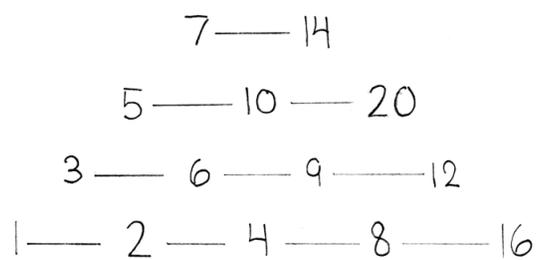
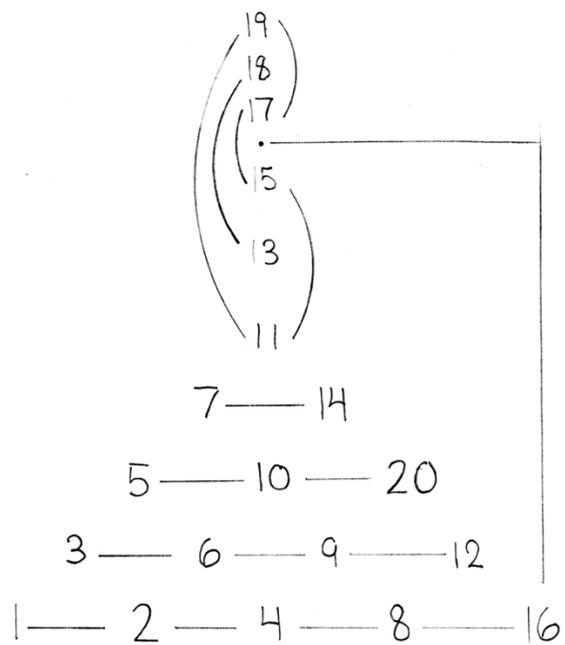
### *Geophony:*

- |                   |            |                 |
|-------------------|------------|-----------------|
| 1. Creek          | 5. Rain    | 9. Trees        |
| 2. Dripping Water | 6. River   | 10. Waterfall   |
| 3. Estuary        | 7. Sand    | 11. Warm Spring |
| 4. Ocean          | 8. Thunder | 12. Wind        |

## Appendix II

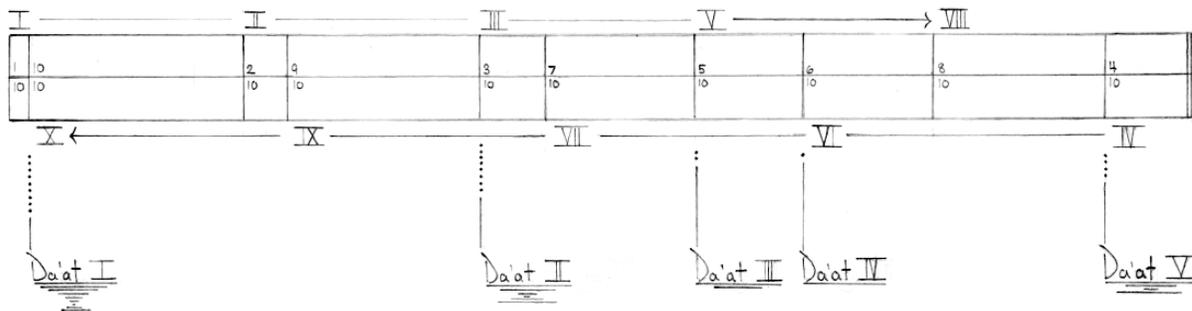
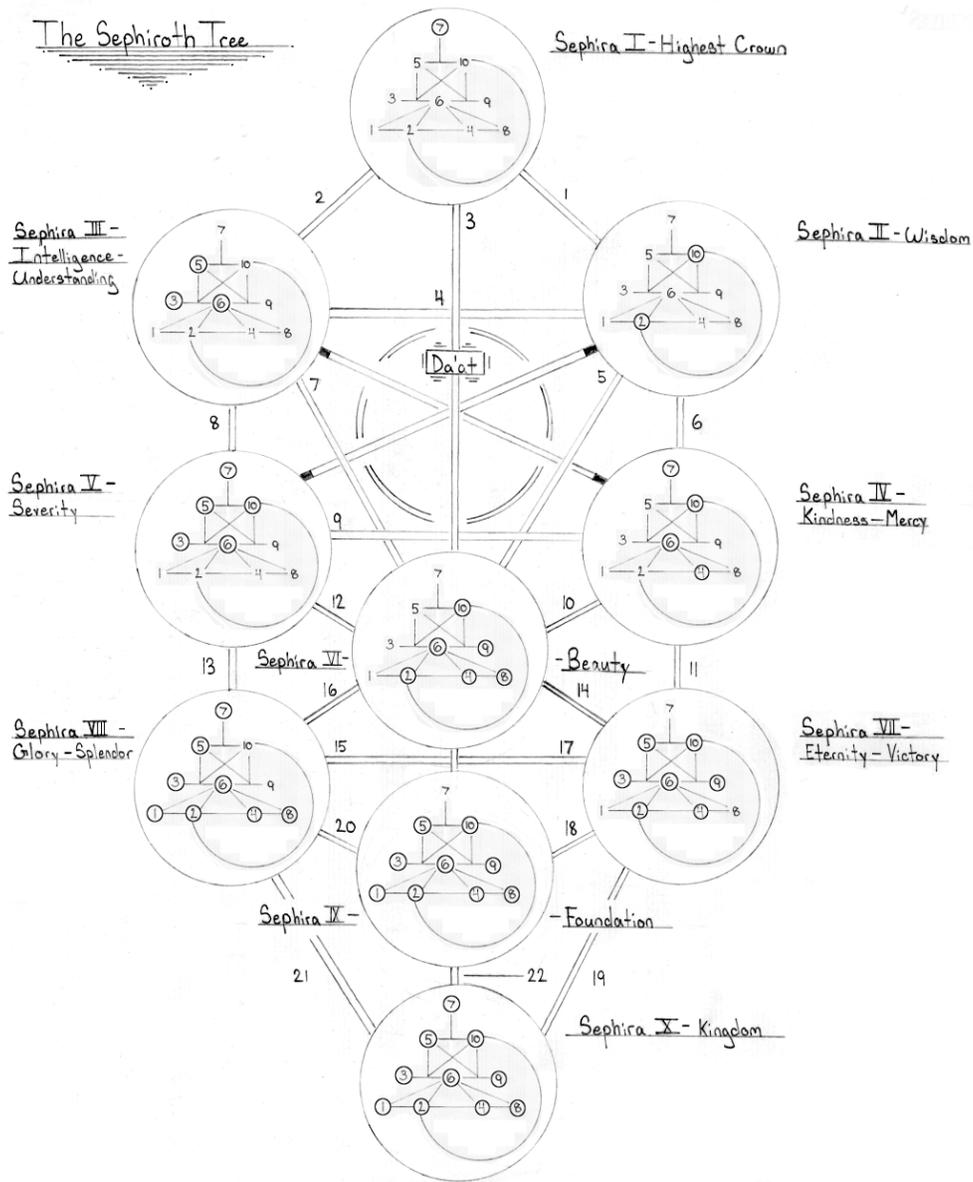
*Aux Imagistes II: Wide Arc – Low in the Northern Sky (Polyrhythmic Sequence)*

The image displays a musical score for a polyrhythmic sequence. It consists of eight staves, each with a 4/4 time signature and a colored circle above it. The staves are color-coded as follows: red, orange, yellow, green, blue, pink, purple, and black. The score is divided into two measures by a vertical line. The first measure contains a whole note on the first line of each staff. The second measure contains a sequence of notes with various rhythmic groupings indicated by brackets above the notes: 9, 9, 7, 6, 5, 3, and 3. The notes are connected by wide arcs, and the colors of the notes correspond to the color of the staff they are on.

*Tetractys (10)**Tetractys (14)**Tetractys (20)*



### The Sephiroth Tree



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