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THEOPHANY: SOMEWHERE BETWEEN THE CANYON AND STARS

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SCHOOL OF MUSIC

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Without a doubt, there have been important people throughout my personal and professional life that have made this achievement possible. I would like to take a moment to express my gratitude for their contributions.

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My parents have been encouraging of my musical activities from the start, when it began as a teenager playing Rock music in their garage into all hours of the night. They supported my decision to study music as an undergraduate, and even helped me move from Virginia to North Carolina to pursue a master's degree in Music Theory and Composition. It has been a long journey, and I am thankful to have had a positive family.

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Finally, I am thankful for the many friends and colleagues who have enriched my life and who continue to play important roles in my education.

“...I should like to recall an experience that must have been shared by many others, both before and after me – that sudden feeling of attraction to a master of whom one knows, with an inexplicable sense of certainty, that it is he, and only he, that is going to reveal you to yourself.”

From Pierre Boulez’s speech celebrating Olivier Messiaen’s 70th birthday

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ABSTRACT

Theophany: Somewhere Between the Canyon and Stars is a three-movement, electroacoustic work written for Bass Clarinet, Alto Flute, Soprano Saxophone, and Electronics. It is created in homage to Olivier Messiaen and his orchestral composition titled *Des canyons aux étoiles...*, and this document serves to explain the creative process and technology employed in producing the final piece.

Messiaen frequently drew his inspiration from nature, and in this case it came from places in the western United States, specifically three national parks in southern Utah: Bryce Canyon, Cedar Breaks National Monument, and Zion National Park.

For my work I wanted to experience at least one of Messiaen's physical places of inspiration, as well as utilize some of his compositional techniques and extramusical interests to see where the experiences and materials would lead me. The physical places I witnessed were Utah's Bryce Canyon National Park and Mount Messiaen, the compositional techniques I incorporated were Modes of Limited Transposition and Non-Retrogradable Rhythms, and the fields of Theology, Ornithology, and Asteroseismology functioned as primary sources for creative inspiration.

Theophany is the result of a year-long physical and mental excursion. The document that follows offers further detail on my sojourn in Utah, in the studio, and in Messiaen's footsteps.

INTRODUCTION

During the week of March 18-25, 2018, I travelled to southern Utah from Norman, Oklahoma. The objective was to visit Bryce National Park and Mount Messiaen. I wanted to see, experience, and record one of the places that inspired Olivier Messiaen's *Des canyons aux étoiles...*, as well as the place that was dedicated to him in response to his monumental symphonic work. The field recordings that I took during this time were intended for my dissertation project *Theophany: Somewhere Between the Canyon and Stars*. The trip was made possible by a travel grant from the University of Oklahoma Graduate Student Senate and a Robberson Research Grant.

The timing was fortuitous in that I was able to avoid the high tourism season, though there were certainly still some tourists. At first I was somewhat disappointed with the scant wildlife present, as one of my main objectives was to collect recordings, particularly of birdsong. That disappointment soon wore off, however, as I became overwhelmed with the silence, especially when contrasted with the visually stimulating colors and textures of the landscape. It occurred to me that I was experiencing the reverse of Acousmatic music, which offers the listener nothing to see, but everything to hear. The silence also seemed to diminish distance. When birds did sing or cry out, I could hear them from what seemed like miles. Eventually, I began to wonder how the silence, sense of space, and the visual and aural contrast could inform my creative work; this I will further describe in the body of this document.

My interest in Messiaen's work began as an undergraduate. Initially, I was struck by what appeared to me a paradox: A Catholic Avant-gardist. Before encountering his work, I associated

such creative freedom with a sense of nihilism, if not an outright antagonism.¹ And yet, in his work I found an example of unrestrained creativity and piety beautifully blended together. It was this unlikely combination that led me to wonder if his theological beliefs extended beyond the titles of his compositions and permeated the very marrow of his works. I was not disappointed in what I found. In a way, *Theophany* is an extension of my Master's thesis, in which I explored the idea of perceivable and imperceptible symbolism, specifically numeric symbolism, in Messiaen's *La Transfiguration de Notre Seigneur Jésus-Christ*. During my study, I realized that, while there were in fact symbolic gestures, his subjective aesthetic judgments played an equally important role, which offered an evocative infusion of idyllic religiosity and a personalized sense of beauty. This was an important lesson to learn before beginning, as I did not want self-imposed limitations to tyrannize the work, but rather to serve as guiding ideas toward my own subjective aesthetic expression.

The purpose of recounting this is simply to explain that in the work that follows I have decided to try "walking in his footsteps." I did so not to sound like Messiaen, though I certainly employ some of his compositional methods, but rather to utilize ornithological influences and theological symbolism as the overarching guiding compositional parameters of the work.

¹ Poggioli, *The Theory of the Avant-garde*, chapter 2 "Concept of a Movement" and 4 "Agonism and Futurism."

INFLUENCES

There are two kinds of influence present here: those who have had an impact on my artistic output generally and those who have had a more specific, perhaps audible influence, particularly on this work. While a catalogue of the former kind may be too long to provide here, there are two worth mentioning, and while the names may seem like common textbook examples, these were the names during my undergraduate studies that set me on the path on which I currently find myself: John Cage (1912-1992) and Pierre Schaeffer (1910-1995).

The way Cage articulated his interest in sound was liberating for me. For years I had enjoyed everyday sounds, but the closest they ever came to being utilized creatively for me was in Rock music, like the song “Money” by Pink Floyd. But that interest eventually faded, because it felt like these sounds, which had their own intrinsic interest, were being incarcerated by conventional compositional practices (i.e. the various sounds associated with currency in the song “Money” exist in a strict rhythm). I liked how Cage let the sounds be what they were, and seemed to hardly impose anything on them.

Admittedly, much of electroacoustic composition, and especially Acousmatic music which has been my main focus in recent years, does subject the sounds to drastic alterations. The alterations are a reflection of the composer’s desire more than merely letting the sounds exist as themselves, which is why Cage’s influence was only partially responsible for putting me on this journey. That said, for many, the goal of Acousmatic music is to synchronize personal aesthetic interest with intrinsic qualities of the sounds, which is to say the sounds have more agency in the final outcome of the work, as opposed to being forced to fit into a predetermined stylistic framework. While it may sound mystical, the composer must consult the sounds to learn

where the composition will go and in what ways the sounds should be altered. Composers of this music listen intently to their chosen sounds for nuances and idiosyncrasies, especially for those that are unique to the original sound. These observations help in the composer's creative decision making process. For example, in Davidovsky's *Synchronisms no. 6* the piano's inability to naturally sustain sound (i.e. the key must be repeatedly struck to create the illusion of sustainability) was addressed in the electronic counterpart.

Schaeffer used common sounds as springboards toward more imaginative journeys in a genre of music that became known as *Musique concrète*. One of his most commonly referenced works, "Étude aux chemins de fer" (1948), uses recordings of trains as the foundational material for all other created sounds.² While this sort of creative work has come a long way since Schaeffer, he was the first to open my ears years ago as an undergraduate. His technical and creative work piqued my interest in exploring everyday sounds and ultimately set me on a path toward electroacoustic composition.

While the influence of Cage and Schaeffer can indirectly be heard in *Theophany*, there are others who have had a more direct influence on the work musically and conceptually. Musically, Hildegard Westerkamp and Jonty Harrison played important roles, while R. Murray Schafer's book *The Tuning of the World* and Olivier Messiaen's *Des canyons aux étoiles...* were guiding influences conceptually and musically.

During the recording process, Westerkamp actively influenced some of my decisions. Her role was vital to the life of this project. It was Westerkamp's words recounting her recording project for "Cricket Voice" that came to my mind while I was faced with the unrelenting silence

² *OHM+*: *The Early Gurus of Electronic Music (1948-1980)*, Disc 1 track 3

of Utah's early spring.³ In her program notes she shares her experience being in the Mexican desert called the "Zone of Silence," where she captured her primary sound source: a cricket; but she also commented on her experience and inspired reaction to such silence, "The quiet of the desert also encouraged soundmaking."⁴ I followed her guidance and began making and recording my own music in each location of the trip, though it felt especially fitting on Mount Messiaen. The bark of a dried tree, rocks on the mountain, and large rocks on a frozen lake a few miles away from the mountain became my instruments.

Although initially vexing, the magnitude of the silence, especially in direct contrast to the visually vibrant surroundings, was profound. The day I recorded at Mount Messiaen it was overcast. The next day was predicted to have several inches of snow. I needed to get my recordings, but was even more limited there than I was at Bryce Canyon. The first sound I noticed was near Messiaen's plaque, a rivulet not yet frozen. The only other sound the mountain yielded naturally was water falling from icicles into recently formed puddles. Another work by Westerkamp that was in my mind during the trip, and certainly during the compositional process of the second movement, was her album *Into India*, which, for me, achieves a mesmerizing middle ground between Soundscape and Acousmatic, where the sounds are permitted to be themselves, but are also explored by the composer to create an enticingly mystical journey.⁵

Harrison's influence is most noticeable in how recorded materials were dealt with later in the studio. The sound of playing the bark of a tree brought his work "Splintering" to mind, which uses wood and ambient nature as the primary sound sources. Additionally, the idea of starting the movement by offering the listener an extended period of unprocessed sounds is reminiscent of

³ Westerkamp, *Transformations* CD, track 4

⁴ Transparent Tape Music Festival, <http://sfsound.org/tape/westerkamp.html>

⁵ Westerkamp, *Into India: A Composer's: A Composer's Journey* CD

“Klang.”⁶ It is difficult to overstate how influential Harrison’s work has been to my recent output. It was his compositions that solidified my desire to further study electroacoustic music. Indeed, while Schaeffer was the first to pique my interest in the field, Harrison’s oeuvre absolutely captivated me.

Most of the previously listed influences are artists and their creative outputs. One, however, is an artist’s philosophical output. While R. Murray Schafer’s music is laudable in its own right, it was his book *The Tuning of the World* that influenced my imagination most. The sensitivity to sound the book explores has made it a continual reference. Of particular interest during my initial reading was his description of natural sounds and their various meanings throughout history. Indeed, the chapter on symbolism was illuminating, where he describes the sound of the sea:

The sea has always been one of man’s primary symbols in literature, myth and art. It is symbolic of eternity...change...brute power...Modern man is moving away from the sea. Ocean travel has given way to air travel. The sea...has come to be treated as a trough into which pollutants are dumped.⁷

Having grown up near the ocean, reading Schafer heightened a sensitivity in me for what these natural sounds have meant and have not meant to me and my culture, in comparison to past generations. Sounds of the ocean in 21st-century America certainly conjure up images of vacation and relaxation, but eternity, change, or power? Perhaps power, if the recording is during a storm.

The chapter on morphology, which comments on how the sounds of society have changed over the centuries and regions, offered an awareness of unchanging natural sounds that can be experienced universally (e.g. while birdsong is different in different parts of the world, it is still birdsong). “I intend it [morphology] to apply to the changing forms of sound across time

⁶ Harrison, *Évidence matérielle*, tracks 1 & 4

⁷ Schafer, *The Tuning of the World*, p. 170-171

or space.”⁸ His observations on the change in materials in society (“From Wood to Plastic”⁹) and transportation (“From Feet to Air Tires”¹⁰) are enlightening.

The most direct influence of his writing on *Theophany* can be heard in the second movement. Undoubtedly, I was more sensitive to my surroundings during field recording, as his chapter on symbolism was in the forefront of my mind during recording and also during composing. Additionally, I wanted to be delicate in my initial handling of birdsong, as “no sound in nature has attached itself so affectionately to the human imagination as bird vocalizations. In tests in many countries we have asked listeners to identify the most pleasant sounds of their environment; bird-song appears repeatedly at or near the top of the list.”¹¹ I say “my initial handling,” because in the second and third movements the manipulations of birdsong is what heightens the drama, most likely because of Schafer’s observations: something universally adored is being distorted.

Perhaps the most intentional reference in the narrative of the second movement is the incorporation of wind. Admittedly, keeping this sound in the final mix breaks the “fourth wall,” in that it risks making the listener aware that s/he is listening to a recording, since the wind was not captured blowing through something, like trees, but rather directly into the microphone. This is something that is typically avoided in recording, but when composing I liked its sudden interjection and felt it added to the drama of the narrative. The capricious tendencies of the wind, along with the ominous overcast, brought the section titled “The Deviousness of the Wind” to

⁸ Ibid. p. 161

⁹ Ibid. p. 162

¹⁰ Ibid. p. 164

¹¹ Ibid. p. 29

mind, where Schafer articulates, “Without its tactile pressure on the face or body we cannot even tell from what direction it blows. The wind is therefore not to be trusted.”¹²

ON MESSIAEN’S INFLUENCE

Conceptually the strongest influence on this work was Olivier Messiaen’s propensity for expressing his faith musically by incorporating religious symbolism into his compositions, as well as his profound admiration for nature, specifically ornithological and geological. The initial idea for this work came from his love of nature; religious symbolism was simply a method I decided to employ, as it is one of the many attributes that creates depth and intrigue in his music.

In the early 1970s, Messiaen was commissioned by New York City philanthropist Alice Tully to compose a work celebrating America’s bicentennial, a work that was to be premiered in Alice Tully Hall at Lincoln Center. Messiaen agreed to the commission, but expressed his desire to visit some of America’s natural wonders, specifically its mountains, for the source of inspiration, rather than any of the thirteen original colonies (what the piece was to be celebrating) or the modern wonders of New York City (where the piece was to be performed).¹³ She agreed to his request and arranged for him to take a trip to southern Utah in the spring of 1972 to visit Bryce Canyon, Cedar Breaks, and Zion national parks. The result of his trip to America’s West was *Des canyons aux étoiles...*, which has three sections. The final movement of each section is named after each of the locations he visited. *Des canyons aux étoiles...* premiered on November 20, 1974.¹⁴

¹² Ibid. p. 171

¹³ Hill & Simeone, *Messiaen*, p. 286

¹⁴ Ibid. p. 301

One of the unique attributes of the work was what became a “cycle of inspiration.” Messiaen was moved by the mountains of southern Utah, so he created an orchestral composition; Julie Whitaker was touched by Messiaen’s composition that honored the beauty of her home state (she spent her summers near the three parks that Messiaen visited), and so initiated a reciprocating homage to the composer – to name a mountain (or, as Robert Fallen refers to it, an “outcropping of impressive rocks”) in his honor.¹⁵

As explained in the Introduction, the very reason for my trip to Utah was to experience what affected Messiaen by visiting the location named after him in an attempt to partake in this cycle of inspiration and to then pay homage to his legacy by contributing a uniquely electroacoustic composition of my own. Unfortunately for me, time did not permit visiting all three parks and Mount Messiaen, so I chose to visit Bryce Canyon and the mountain dedicated to him, a mountain he never saw.¹⁶

And so, in the spring of 2018, almost exactly 46 years after his visit, I spent a week partly seeing what inspired him and partly seeing the place Julie Whitaker was inspired to name after him. Initially the goal was not to mimic his sound, but rather to see where his interests would take me; eventually, however, some of his compositional methods did find their way into the work, which will be further elaborated upon in subsequent chapters.

¹⁵ Dingle and Fallon, *Messiaen Perspectives 2*, p. 325-327

¹⁶ *Ibid.* p. 328

THE MEANING OF TITLES

Another aspect of Messiaen's music that influenced this work is in the overt religiosity of most of his titles and subtitles. My title, *Theophany*, Meriam-Webster defines as "a visible manifestation of a deity,"¹⁷ while the Catholic dictionary defines it as "a direct communication or appearance by God to human beings."¹⁸ I did not choose this word as the title because I believe the music to be of such quality that it could summon the supernatural. Rather, I chose it because a visual arts professor lecturing in a course I took on medieval architecture and music commented on the stone sculptures above the entrance portals of various cathedrals, one of which she described as a theophany. The thought of a creative work preparing a visitor's mind for a sacred space struck me then, and resurfaced while I took in the hoodoos, nature's sculptures, at Bryce Canyon. The subtitle *Somewhere Between the Canyon and Stars* simultaneously indicates where to find the theophany and references Messiaen's work.

The titles of the first and second movements are not clearly religious. However, there is little evidence to suggest that Messiaen compartmentalized his natural and supernatural interests; therefore, I did not feel the need to limit myself to compartmentalize these either.¹⁹ His "natural" titles still evoke a sense of reverence for many. "Among the Hoodoos" references both the compositional choices and the first stop of my trip in Utah. As was previously mentioned, the hoodoos brought to mind my former professor's comment about a theophany and planted the seed for the title of the work. "Olivier's Birds: A journey to the mountain" is both a reference to Messiaen's ornithological interest and the physical trip to Mount Messiaen. The content of the

¹⁷ <https://www.merriam-webster.com/dictionary/theophany>

¹⁸ <https://www.catholicculture.org/culture/library/dictionary/index.cfm?id=36841>

¹⁹ Griffiths, *New Grove Dictionary of Music and Musicians*, p. 493-494

movement, however, alludes to something more substantial – a more meaningful journey. “Toward the Heavens” continues with the idea of a journey from the second movement toward the sacred space beyond the initial theophany (heavens, in this instance, being meant in the literary sense of the firmament).

THE SETUP

Theophany was not created with a traditional concert hall in mind. In fact, it was specifically designed for a large black-box-theater room. There are three reasons for such specificity. First, as was briefly discussed in the Introduction, my trip to Utah in the spring provided a stark contrast between what was to be seen and heard. The colors were vivid, but sound was nearly nonexistent. I wondered how to interpret this visual feast with auditory deprivation. I decided to provide the inverse. This concept is customary for purely Acousmatic music, but admittedly less common for instrumental music. Throughout the performance there is to be no theatrical lighting. The only light permitted is either from music stand lights or from tablets, if performers prefer to use them. However, there should be uniformity in the lighting chosen by the performers, and their lights should be turned off for the second movement.

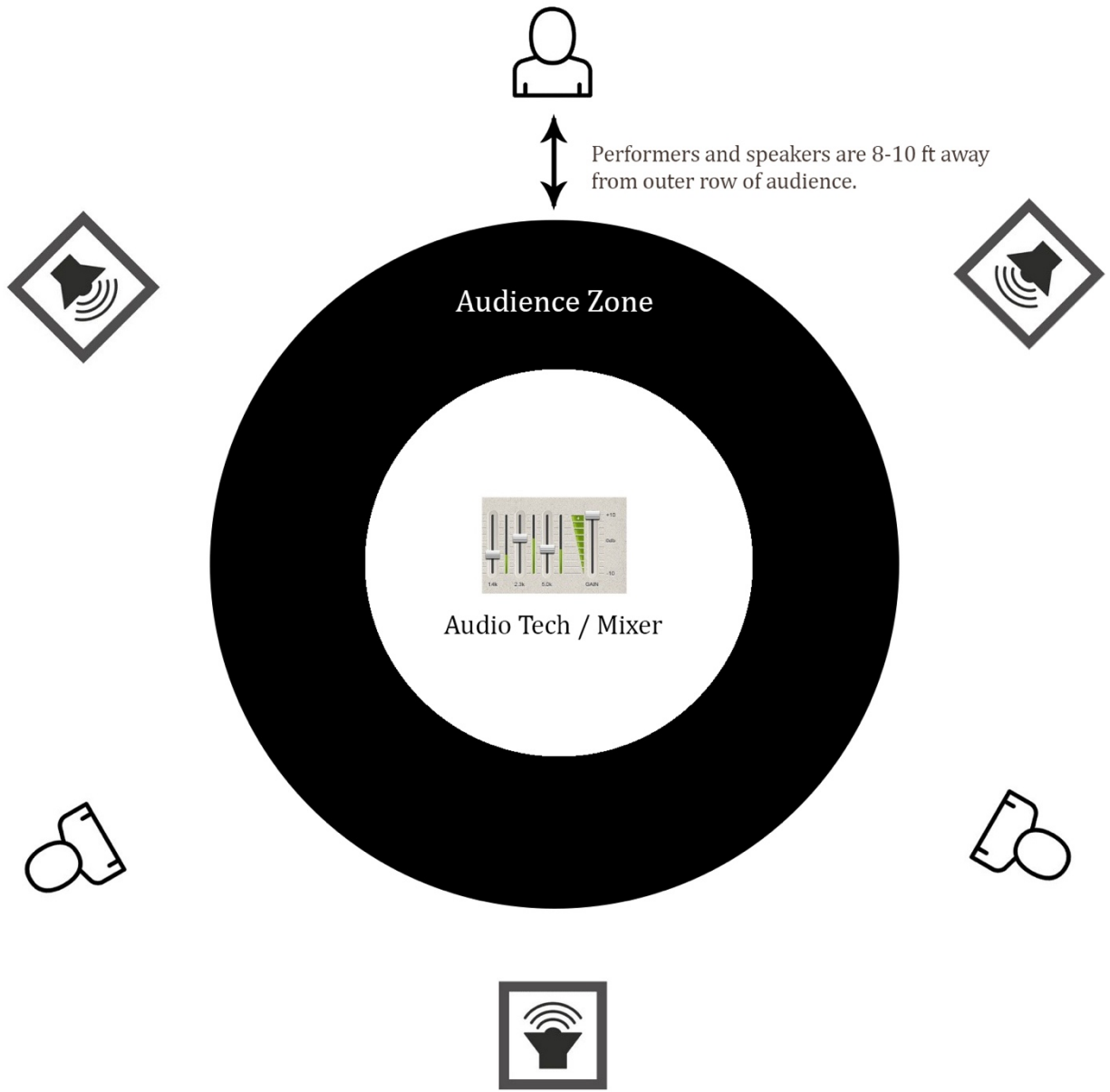
Secondly, I wanted to explore surround sound that was devoid of traditional concert orientation (i.e. front, rear, left, right). Instead, I want cushions for the audience to be placed in a circle around the mixer (rows are fine, though strict uniformity is not necessary). Audience members are encouraged to face outward toward the instrumental performers and speakers, not toward the audio technician; preferably two sound sources will be in front and four sound

sources behind each listener, but audience members are also given the liberty to adjust their listening orientation however they see fit.

This decision stems from the idea that, while audiences may experience the same material in the same space offered by the same performers, what they bring into the hall with them ultimately shapes their perspective of the work, and they are therefore able to have “different” experiences. The desire of the seating is to augment this idea, where each audience member is hearing the same material in the same space by the same performers, but each has a different point of view on how the piece is heard. While this could be achieved with the audience members facing inward, I wanted to heighten the concept of them experiencing something different by limiting their aural perception, while also keeping them between the audio technician and surrounding performers and speakers. This way every listener will experience sound from all directions, but everyone will have a different sense of front, side, and rear.

The third reason, symbolism, is because each triphonic setup (the three performers and three speakers) create the shape of two superimposed triangles. When isolated, as in the first and second movements, they served, in my imagination, as Trinitarian references; when merged together in the third and last movement, they form the Star of David, the final star. The audio technician is to be setup in the middle of the audience, this way s/he will be able to make the mix they deem best and diffuse the sound throughout the performance. One final note, the required equipment for this piece is as follows: a computer with the software Max/MSP, an audio interface with three inputs/outputs (mics should be sent directly to interface), KORG nanoKONTROL2, three speakers, and three condenser microphones (one for each performer).

Figure 1: Concert Setup



FIRST MOVEMENT
“AMONG THE HOODOOS”

In the first movement I wanted to explore two of Messiaen’s compositional techniques: modes of limited transposition and non-retrogradable rhythm.²⁰ However, I did not want the movement to be completely reflective of his methods, rather I wanted to merge them with my own personal aesthetic. For this reason, only one instrument (the alto flute) uses a mode of limited transposition, while the other two (a soprano saxophone and a bass clarinet) use sets that contribute numerological significance and were simply to my liking. Another characteristic of Messiaen’s compositional style that is not mentioned in his book of techniques, but that I wanted to incorporate in this movement, is his tendency to make sudden and often stark sectional transitions.²¹ For this reason, I avoided gradual transitions, wishing to mimic his monolithic style.

The overall form of the first movement is an alternating A B form, which has six sections total, resulting in an A B A’ B’ A’’ B’’ A’’’, though the A’’’ could also be thought of as a brief coda. The A sections are a combination of solo instrument and polyphony, and are more freely composed. For instance, the opening section begins with solo alto flute, but eventually the bass clarinet and soprano saxophone provide counterpoint. This occurs in each A section, though the solo instrument changes each time. The B sections are homorhythmic, non-retrogradable rhythmically, and serialized in terms of pitch content. The only commonality between the two alternating sections is the use of Messiaen’s second mode of limited transposition, which is

²⁰ Messiaen, *The Technique of My Musical Language*, V. 1

²¹ Griffiths, *New Grove Dictionary of Music and Musicians*, p. 495

assigned to the alto flute throughout. The A sections are most indicative of my own creative interests, while the B sections are intentionally more restrictive.

Throughout the first movement, each instrument has a specified tonal vocabulary, though the saxophone and clarinet alternate between sets for the A and B sections. For the B sections, the soprano saxophone uses the (0 1 2 3 4 5 7 8) set, while the bass clarinet uses the (0 2 3 4 5 6 7 9) set. The alto flute uses (0 1 3 4 6 7 9 T), which is transposable three times. I chose this mode for its aural characteristics, but also because it is one of the most limited and it sounds, to my ear, uniquely Messiaen. The first mode of limited transposition is the whole-tone scale, which I wanted to avoid for its other historical associations. In regard to the second while it is not unused by other composers, it is certainly less common than the whole-tone scale. According to Messiaen, “One already finds traces of it in *Sadko* by Rimsky-Korsakov; Scriabin uses it in a more conscious fashion; Ravel and Stravinsky have used it transiently.”²²

Furthermore, being that numeric symbolism was functioning as a compositional guide, the fact that the second mode has eight pitches was significant, as eight is the number of rejuvenation or new life.²³ This influenced me to find two other sets with eight pitches each, which would result with the number 24. A number that is significant apocalyptically for the 24 elders.²⁴ And, finally, Messiaen’s it is transposable three times. The number three in Christian tradition is historically interpreted as a Trinitarian reference. In short, the mode was aurally pleasing, avoided unwanted historical associations, and had two levels of numerological significance.

²² Ibid. p. 59.

²³ <https://www.catholicculture.org/culture/library/dictionary/index.cfm?id=35179>

²⁴ Revelation 4:4

In the more polyphonic sections, the second mode and other two sets were used freely with the only alteration being transpositions. The alto flute kept Messiaen's second mode, while the soprano saxophone had (0 1 2 3 4 5 7 8) and the bass clarinet had (0 2 3 4 5 6 7 9). In the homophonic/rhythmic section I decided to use matrixes, both as a pitch-mapping generator and as an homage to Messiaen's influence on Integral Serialism.²⁵ While it would have been appropriate to serialize more than just pitches for such a tribute, my interest in using non-retrogradable rhythm superseded. The mapping in the final section is a clockwise spiraling motion that begins with the top left number and gradually works its way into the center of each matrix found on page 18.

The final homorhythmic section was the first composed, while the two others that precede it were fragmented from it. Each section uses a non-retrogradable rhythm, is slightly longer than the one that came before it, utilizes the same serial and mapping technique, and repeats a few pitches toward the end. In the final section each pitch set functions at T⁰, while the first homorhythmic section the soprano saxophone is composed at T³ (3 4 5 6 7 8 T E), the alto flute at T¹ (1 2 4 5 7 8 T E), and the bass clarinet at T⁸ (8 T E 0 1 2 3 5); while the middle B section the soprano saxophone is at T⁸ (8 9 T E 0 1 3 4), the alto flute at T² (2 3 5 6 8 9 E 0), and the bass clarinet at T³ (3 5 6 7 8 9 T 0). The opening rhythm is identical in each section; however, the pitch material differs both in terms of mode and transposition, and also in a unique melody made from the mode which is then used to create the matrix: First section: Sop. Sax (3 4 E 8 T 6 5 7), Alto Flute (4 5 7 2 8 T 1 E), B. Clarinet (8 T 5 E 2 1 3 0) Second section: Sop. Sax (8 3 E T 9 0 4 1), Alto Flute (2 5 6 9 8 E 3 0), and B. Clarinet (3 8 T 7 5 0 6 9).

²⁵ Hill, *The Messiaen Companion*, p. 15

The following matrixes are the result:

Figure 2: Matrixes

First Homorhythmic Non-Retrogradable Section:

<u>Sop. Sax</u>	<u>Alto Flute</u>	<u>Bass Clarinet</u>
3 4 E 8 T 6 5 7	4 5 7 2 8 T 1 E	8 T 5 E 2 1 3 0
2 3 T 7 9 5 4 6	3 4 6 1 7 9 0 T	6 8 3 9 0 E 1 T
7 8 3 0 2 T 9 E	1 2 4 E 5 7 T 8	E 1 8 2 5 4 6 3
T E 6 3 5 1 0 2	6 7 9 4 T 0 3 1	5 7 2 8 E T 0 9
8 9 4 1 3 E T 0	0 1 3 T 4 6 9 7	2 4 E 5 8 7 9 6
0 1 8 5 7 3 2 4	T E 1 8 2 4 7 5	3 5 0 6 9 8 T 7
1 2 9 6 8 4 3 5	7 8 T 5 E 1 4 2	1 3 T 4 7 6 8 5
E 0 7 4 6 2 1 3	9 T 0 7 1 3 6 4	4 6 1 7 T 9 E 8

Second Homorhythmic Non-Retrogradable Section:

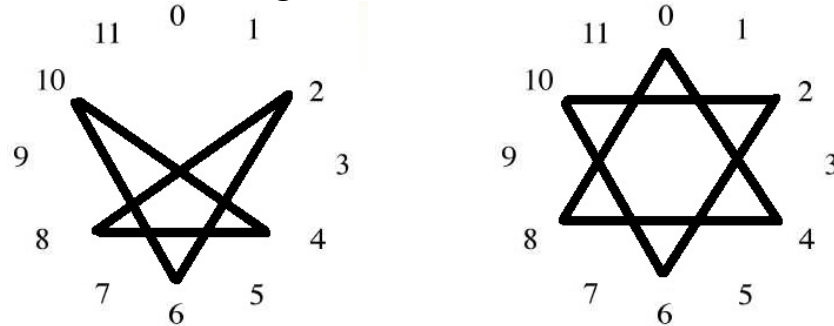
<u>Sop. Sax</u>	<u>Alto Flute</u>	<u>Bass Clarinet</u>
8 3 E T 9 0 4 1	2 5 6 9 8 E 3 0	3 8 T 7 5 0 6 9
1 8 4 3 2 5 9 6	E 2 3 6 5 8 0 9	T 3 5 2 0 7 1 4
5 0 8 7 6 9 1 T	T 1 2 5 4 7 E 8	8 1 3 0 T 5 E 2
6 1 9 8 7 T 2 E	7 T E 2 1 4 8 5	E 4 6 3 1 8 2 5
7 2 T 9 8 E 3 0	8 E 0 3 2 5 9 6	1 6 8 5 3 T 4 7
4 E 7 6 5 8 0 9	5 8 9 0 E 2 6 3	6 E 1 T 8 3 9 0
0 7 3 2 1 4 8 5	1 4 5 8 7 T 2 E	0 5 7 4 2 9 3 6
3 T 6 5 4 7 E 8	4 7 8 E T 1 5 2	9 2 4 1 E 6 0 3

Third and Final Homorhythmic Non-Retrogradable Section:

<u>Sop. Sax</u>	<u>Alto Flute</u>	<u>Bass Clarinet</u>
0 4 5 2 1 3 8 7	0 7 3 4 1 9 T 6	0 9 6 5 3 2 4 7
8 0 1 T 9 E 4 3	5 0 8 9 6 2 3 E	3 0 9 8 6 5 7 T
7 E 0 9 8 T 3 2	9 4 0 1 T 6 7 3	6 3 0 E 9 8 T 1
T 2 3 0 E 1 6 5	8 3 E 0 9 5 6 2	7 4 1 0 T 9 E 2
E 3 4 1 0 2 7 6	E 6 2 3 0 8 9 5	9 6 3 2 0 E 1 4
9 1 2 E T 0 5 4	3 T 6 7 4 0 1 9	T 7 4 3 1 0 2 5
4 8 9 6 5 7 0 E	2 9 5 6 3 E 0 3	8 5 2 1 E T 0 3
5 9 T 7 6 8 1 0	6 1 9 T 7 3 4 0	5 2 E T 8 7 9 0

While the symbolism that guided the B section is numerological, the pitch material in the A section for the soprano saxophone and bass clarinet is derived from a separate source of theological symbolism: stars. Using the circle of fifths and a clock face,²⁶ I mapped out two stars that historically have religious significance: The Pentagram and Hexagram, the former of which is frequently associated with Satanism and the latter, known as the Star of David, with Judaism. The incorporation of both began with the simple idea of good versus evil. However, the commonality between their pitch content obscured clear delineations, which therefore yielded a more complicated story. The pitches for the Pentagram are (2 4 6 8 T),²⁷ and the Hexagram's are (0 2 4 6 8 T). This drama unfolds further as the acoustic instruments abandon one star for the other. Ultimately, good emerges from the moral ambiguity; the last one melodically outlined is the Star of David.

Figure 3: Stars in Clock Face



The difference between the two is negligible, until various transpositions are applied or until an aural drawing is attempted, which creates (T 6 2 8 4 T) for the Pentagram and (T 6 2 T /

²⁶ During this process I noticed that the circle of fifths (C.F.) and a clock face (more often used for set theory) have something in common: the even numbers of the clock line up with the pitches of the C.F., while the odd numbers do not (e.g. 2 on the clock is the pitch D and in the same spot whether using the C.F. or clock, but 1, which is C#, are in different locations).

²⁷ Normal Form (0 2 4 6 8)

8 0 4 8) for the Star of David. These aural drawings first occur in the final pitches of the saxophone and clarinet in the opening A section, where the clarinet creates the Pentagram and the saxophone the Star of David. It is interesting to note that in terms of set theory, the second mode of limited transposition and the Star of David do not have a normal form.

Figure 4: Normal Form of Second Mode and Star of David

<u>2nd Mode</u>	<u>Star of David</u>
0 1 3 4 6 7 9 T = T	0 2 4 6 8 T = T
1 3 4 6 7 9 T 0 = E	2 4 6 8 T 0 = T
3 4 6 7 9 T 0 1 = T	4 6 8 T 0 2 = T
4 6 7 9 T 0 1 3 = E	6 8 T 0 2 4 = T
6 7 9 T 0 1 3 4 = T	8 T 0 2 4 6 = T
7 9 T 0 1 3 4 6 = E	T 0 2 4 6 8 = T
9 T 0 1 3 4 6 7 = T	
T 0 1 3 4 6 7 9 = E	

In the A' section, the saxophone becomes the solo instrument and abandons the Star of David for the Pentagram. After its initial outline the material then begins traveling through each transposition one at a time, slowly manipulating the star on the clock face. In the A'' section, the clarinet takes over as solo instrument, and it too trades stars. In this final iteration of the A section it outlines the Star of David. The two triangles that make the hexagram were treated as two separate sets that journey around the clock face in opposite directions. The triangle that points upward is (0 4 8 0), while the inverted triangle is (2 6 T 2). This method of generating pitch material and mapping revealed an interesting pattern: alternating sets contrast and overlap, like two intertwined double-helices. Also, the center sets, where the triangles finally overlap, are obviously identical. The chart below maps out each triangle's path around the clock, the inverted becomes the top triangle and vice versa.²⁸

²⁸ Each listed set either adds or subtracts one from its previous set

Figure 5: Triangle Path Around Clock Face

<u>Inverted Triangle</u>	<u>Triangle</u>
2 6 T 2	0 4 8 0
3 7 E 3	E 3 7 E
4 8 0 4	T 2 6 T
5 9 1 5	9 1 5 9
6 T 2 6	8 0 4 8
7 E 3 7	7 E 3 7
8 0 4 8	6 T 2 6
9 1 5 9	5 9 1 5
T 2 6 T	4 8 0 4
E 3 7 E	3 7 E 3
0 4 8 0	2 6 T 2

SECOND MOVEMENT

“OLIVIER’S BIRDS: A JOURNEY TO THE MOUNTAIN”

It is well known that Messiaen considered himself an ornithologist at some level, and that he attempted to notate birdsong (though there is much debate around the accuracy of his transcriptions into the Western 12-note system), and that he put the names of the birds he was referencing directly in his scores.²⁹ For this second movement of *Theophany: Somewhere Between the Canyon and Stars* I made a list of all the birds he referenced in his work *Des canyons aux étoiles...*, along with how many times each bird was used. Only after completing this arduous task did I discover Robert Fallon’s list, which also includes English translations of the bird names and their regions. But my work was not in vain, as there was one bird missing from Fallon’s list: Pape inigo, which occurs only once in the work in the “Zion Park et la Cité

²⁹ Johnson, *Messiaen*, p. 117

celeste” movement. There are a total of 100 birds represented in *Des canyons aux étoiles*.... For my second movement, I wanted to pay homage to Messiaen’s ornithological interest, the title of his work, and my personal journey to Bryce National Park and Mount Messiaen, so the three primary audio sources for this movement are birds, stars, and field recordings.

For the birdsong, I limited my selection to the birds that were most frequently referenced in *Des canyons aux étoiles*.... It should be noted that Messiaen did not feel the need to limit his creative choices to birds native to the southern region of Utah, and so neither did I. Thanks to a few online resources, the Cornell University Ornithological database being primary, I was able to incorporate literal sounds of Messiaen’s birds, with one significant addition: the Scissor-tailed Flycatcher, which is the state bird of Oklahoma.³⁰

The complete chart of birds utilized in this piece is as follows:

³⁰ White-rumped Shama recording from whatbird.com. White brown Robin recording from <https://www.xeno-canto.org/species/Cossypha-heuglini>. Chinese Thrush recording from <https://www.xeno-canto.org/species/Turdus-mupinensis>. All others from <https://www.allaboutbirds.org>

**Figure 6: Catalogue of Birds
Des Canyons aux étoiles... (1971-74)**

Catalogue of most frequently referenced birds in each movement.³¹

Title	French Name	IOU English Name³²	Region	Occurrences
Le désert	Moqueur Polyglotte	Northern Mockingbird	NA, MA	3
Les Orioles	Troupiale des Vergers	Orchard Oriole	NA, MA	4
Ce qui est écrit sur les étoiles...	Solitaire de Townsend	Townsend's Solitaire	NA, MA	4
Le Cossyphe d'Heuglin	Cossyphe d'Heuglin	White-browed Robin*	AU	1
Cedar Breaks et le Don de Crainte	Pic Flèche Rouge	Northern Flicker	NA, MA	5
	Casse-noix de Clark	Clark's Nutcracker	NA	5
Appel interstellaire	Grive Geai de Pékin	Chinese Thrush	EU	1
	Troglodyte des Canyons	Canyon Wren	NA, MA	1
Bryce Canyon et les rochers rouge-orange	Merle Noir à Tête Jaune	Yellow-headed Blackbird	NA, MA	6
	Geai Bleu de Steller	Steller's Jay	NA, MA	6
	Troupiale de Scott	Scott's Oriole	NA, MA	6
Les ressuscités et le chant de l'étoiles Aldébaran	Grive Rousse	Brown Thrasher	NA	5 (total: 9)
Le Moqueur Polyglotte	Moqueur Polyglotte	Northern Mockingbird	NA, MA	7
La Grive des bois	Grive des Bois	Wood Thrush	NA	6
Omao, Leiothrix, Elapaio, Shama	Shama	White-rumped Shama*	OR	9
Zion Park et la Cité celeste	Roselin de Cassin	Cassin's Finch	NA	8

³¹ Extracted from Robert Fallon's list, *Messiaen Perspectives 2*, p. 135-139

³² Ibid. Robert Fallon derived the English names from the International Ornithologists' Union, abbreviated IOU.

Creating with birdsong presented an interesting challenge, primarily with timbre and frequency. While there could be a wide variety in their utterances, the timbre, in some cases, varied only slightly, and the frequency for each of them was, not surprisingly, high. Isolating the birdsong brought to my attention how other sounds of nature, such as wind, people, other wildlife rummaging through leaves, etc., balances out the frequency spectrum. Since this movement was relying on Acousmatic compositional techniques, I did not feel limited to utilizing the unprocessed material (i.e. pure soundscape). That said, I felt the work needed something else to stabilize the imbalance, which is where the field recordings and stars come in.

Asteroseismology is the science that studies the internal structure of stars by the interpretation of their frequency spectra.³³ At first, this may seem puzzling, since sound cannot exist in a vacuum. However, stars do not emit sound, rather scientists have discovered sound waves exist within them. Don Kurtz, professor of astrophysics at the University of Central Lancashire, helps simplify the idea by using laymen's terms, "Stars have sounds in them...we can use those sounds to 'see' inside the stars."³⁴ The frequency spectra of stars is inaudible to the human ear, and therefore it must be transposed. Selecting which stars to use was considerably easier than which birdsong, because there were simply less recordings from which to choose. After some basic online research, I was able to find four stars that had been transposed to an audible level for human hearing.³⁵

The desire to incorporate the sound of stars was symbolic, continuing with the pentagram and hexagram used in the first movement, but I also wanted to take advantage of the opportunity

³³ Cosmo Stat, <https://www.cosmostat.org/research-topics/asteroseismology>

³⁴ "Asteroseismology – The Songs of the Stars – UCLan," *YouTube*. Online video clip, <https://www.youtube.com/watch?v=wwy-9TMYZso>

³⁵ University of Birmingham, http://bison.ph.bham.ac.uk/~miglioia/M4PR/M4_beta0.html

to use real sounds that are only alluded to in Messiaen's work, much like using real birdsong instead of transcriptions of birdsong forced into the Western 12-note system. While the sounds of stars are not found in the score of *Des canyons aux étoiles...*, stars play an important role in the narrative of the work, most specifically in the third, sixth (or first movement of the second section), eighth (or first movement of the third section) and final movements. Indeed, the title of the eighth movement translates to "The Resurrected and the Song of the Star Aldebaran," on which Griffiths expounds, "...the song is that of the star Messiaen has adopted as his own...the principal star of Taurus."³⁶

The field recordings for this movement were from the Mount Messiaen portion of my expedition, which also includes recordings taken at Panguitch Lake in the Dixie National Forest on the way to the mountain. The edges of the lake were mostly frozen, and the shore where I parked was covered with large stones. Again adhering to Westerkamp's advice, I knew I would need to create my own music. The space was beautiful, but audibly dead. The sound of walking through the stones first caught my attention, but eventually I began tossing the stones onto and through the ice. The other sounds that were used were from my time on the mountain. The sound of a rivulet, of water dripping from icicles, and of picking at the bark of a dried tree.

As for the technical aspects of this movement, most of the processed sounds were created in the Digital Audio Workstation (hereafter abbreviated DAW) ProTools with INA-GRM and Michael Norris (hereafter abbreviated MN) plugins. It was mixed in the DAW Reaper, which was more user friendly for non-stereo mixes, and composed for a triphonic setup. The plugins I favored for this movement were primarily GRM Freeze and Bandpass and MN DroneMaker, and

³⁶ Griffiths, *Olivier Messiaen and the Music of Time*, p. 229

secondarily GRM Delay and MN Freezing, with some daisy chaining between Freezing and the DroneMaker.

Most frequently electroacoustic works, and particularly fixed media, use speakers in sets of two: stereo, quadraphonic, hexaphonic, and octaphonic are the most common. As was discussed in the chapter titled “The Setup,” I had reasons for wanted to explore an unconventional speaker arrangement. The primary challenge faced with the triphonic setup was trying to stay true to the desire of eliminating the sense of traditional concert orientation. This was difficult simply because we always have a sense of front, rear, left, and right. If all the activity took place in one speaker or even across a stereo field, it may give listeners the notion of where a “front” was. To avoid this, I paid close attention to where sounds were placed, whether or not a specific speaker felt overused, and I forced myself to frequently re-listen to the movement with my chair facing different speakers in the triphonic setup created specifically for development of this movement.

The asymmetrical design has its advantages, particularly in redefining spaces and orientations, and I am open to exploring this concept further in future projects. The biggest drawbacks to asymmetrical designs are that multichannel composition is more cumbersome than stereo and the triphonic’s unconventionality makes it less concert-friendly as it requires a unique speaker formation and seating arrangement.

The formal construct is one that I have favored the last couple years in my works that attempt to merge reality with fantasy, which overall could be thought of as a sort of ternary form in which the A section offers the listener something familiar and the B section provides contrast with unrecognizable sounds. In other words, the movement travels from representational to

abstract back to representational. This form, for me, is indicative of a dreamlike state, where the listener slowly drifts from consciousness to the fantastical, but ultimately wakes up to reality.

That said, however, the second movement does not take the same monolithic approach as the first movement. I wanted to emphasize the idea of transition, and therefore frequently merged reality and fantasy in an attempt to create a sort of “brackish” in-between state, like the place many of us experience while falling asleep. Therefore, while the aforementioned ternary form was in my mind during the creative process, I did not feel the need to adhere to it strictly. I was attempting to create a space that merged both A and B. Nevertheless, the A sections can fundamentally be understood as birdsong, whereas the B section utilizes field recordings and stars.

Out of the list of birds most frequently used in *Des canyons aux étoiles...*, the opening section uses the Northern Mockingbird, Orchard Oriole, Townsend’s Solitaire, Northern Flicker, and Clark’s Nutcracker. I chose the Mockingbird to start the movement, because its smooth and brief ascending and descending glissando of a fourth immediately captivates the ear. It is quickly followed by an ascending contour with a grainy texture that somewhat resembles the flutter-tongue technique. These two contrasting ideas of smooth and jagged, delicate and coarse, play roles throughout the movement that are further elaborated on by the four other birds in the opening section. The Oriole further emphasizes this contrast by offering the listener clear pitches in a pointillistic texture concluded with a beautifully smooth descending melodic line. The Townsend’s Solitaire serves a similar role as the Oriole in terms of texture and contour. In contrast to those two birds, the Northern Flicker is brash with a monotone chirping consisting of eighth notes at approximately 170 bpm. Equally brazen as the Flicker, but seemingly more

patient as it offers brief silences between calls, the Clark's Nutcracker heightens the drama with its yelling song.

The Scissor-tailed Flycatcher was used for the transition from the A to B section, where it is heard along with all of the A section birds run through the MN Dronemaker and also the introduction of stars. The only new birdsongs in the B section are the Canyon Wren, chosen for its timbre, descending contour, and natural ritardando, and Cassin's Finch, chosen for how its granular-like sound contrasted the Canyon Wren and drones.

This left the Yellow-Headed Blackbird, Steller's Jay, Scott's Oriole, Brown Thrasher, Wood Thrush, Chinese Thrush, White Browed Robin, and White-rumped Shama to be explored later in the movement. The Blackbird, Jay, and Shama provided a similar impertinence as the Northern Flicker and Clark's Nutcracker in the opening section, the strongest of which is indubitably the Yellow-Headed Blackbird with a song that sounds more like a scream. All the other birds incorporated in the section were used to contrast the audacious spirit of the other three and to ensure that all predetermined birdsong was actually used in the movement.

THIRD MOVEMENT

"TOWARD THE HEAVENS"

While the first movement focuses on acoustic instruments, and the second movement features only speakers, the third movement combines them, providing the listener with all six sound sources together for the first time. The presence of all six sound sources completes the auditory presence of the Star of David. Like in the first movement, the material for the acoustic

instruments is derived from Messiaen's modes of limited transposition and sets based on the pentagram and hexagram.

The only similarity between the electronic parts of the second and third movement is the use of birdsong. The third movement does not incorporate field recordings or sounds derived from asteroseismology, and, instead of being fixed, focuses more on real-time manipulations of the material played by the acoustic performers in an improvisatory manner with them. For clarity, it may be best to discuss the acoustic and electronic materials separately.

THE ACOUSTIC MATERIALS OF THE THIRD MOVEMENT

The first section of the third movement primarily focuses on extended techniques; pitches are only used in the form of birdsong. Breathing through the instruments, key clicks, slap tongue, and tongue rams (in the case of the flute) are the sounds used, though arguably the breathy sounds are the most dominant and most important. Since the focus was on breath, the abandonment of traditional notation was a necessity. While it is possible to inhale and exhale in time, it feels rigid and unnatural. Moreover, I did not want performers to count complicated rhythms when simply listening to their colleagues would suffice. This notation provides the performers with more liberty and helps the section "breathe" better. The use of extended techniques in the acoustic writing is more prevalent in this movement than the first. A similarity, however, between the first and third movements, as far as the acoustic instruments are concerned, is the use of Messiaen's modes of limited transposition and the symbolic use of religious stars for the pitch content.

The pitch content for the acoustic instruments is primarily based on the fourth mode of limited transposition, which consists of (0 1 2 5 6 7 8 E) and is transposable six times. The difference between each transposition is minimal, and so to maximize variety T^0 and T^3 (3 4 5 8 9 T E 2) were primarily used, as the greatest pitch difference is between those two. This mode is first heard as a klangfarbenmelodie at the beginning of the second section, in measures 1-3 on page 3. It is the only time all three instruments share the same mode. Afterward, the bass clarinet continues with T^0 , while the soprano saxophone plays the mode in T^3 . The alto flute reuses pitch content based on the pentagram and hexagram.

An additional symbolic reference in the final movement is the incorporation of plainchant, which Messiaen also occasionally used in his work (e.g. *La Transfiguration de Notre Seigneur Jésus-Christ*, though there it is used in a more traditional manner sung with text). In the third and final movement of *Theophany*, the chant is heard in the instrumental parts, starting in the bass and gradually working its way up to the soprano.

Incorporating chant was in the back of my imagination when I began this project. I had used chant from the Greek Orthodox tradition for my composition titled *From Sacred Texts*, which piqued my interest in using it in future theologically inspired projects. When I began this work I was unsure which chant to use, but ultimately found my inspiration at a Catholic church in Oklahoma where I was singing at the time. The chant I finally decided to use in this movement is the *Gloria* we sang several Sundays. The beauty of the music struck me, and the meaning of the text seemed appropriate to the notion of moving toward the heavens. The Modern Catholic Dictionary defines the *Gloria* as, “the second section of the Catholic Mass; a psalm or hymn of praise to God sung in Latin or vernacular on occasion...”³⁷

³⁷ Modern Catholic Dictionary, <http://www.therealpresence.org/cgi-bin/getdefinition.pl>

THE ELECTRONIC MATERIALS OF THE THIRD MOVEMENT

In regard to the electronic material, multiple audio files of birdsong were incorporated, while the software Max/MSP was used for triggering and real-time manipulations. The electronic effects that are used in this movement include reverb, flange, delay, chorus, and harmonizers. The last three are utilized the most with a variety of daisy chaining (running one effect through another before hearing the result [e.g. incoming sound passes through a harmonizer, the result of which then passes through a reverb, the result of which is what is heard]).

A KORG nanoKONTROL2 was the MIDI controller used to alter the various parameters constructed within the Max patch. The patch was also designed to resemble the KORG in an attempt to be more user friendly for the audio technician performer. The role of the technician changes between the second and third movements. In “Olivier’s Birds” the his/her role (besides setting everything up) is essentially to press play, while in “Toward the Heavens” s/he becomes a fourth performer. The technician is to follow along in the score and execute commands, just as the acoustic performers do. The piece is designed so that there will be an active “conversation” between the electronics and acoustic instruments. Each performer, including the technician, is to be comfortable and competent with improvisation.

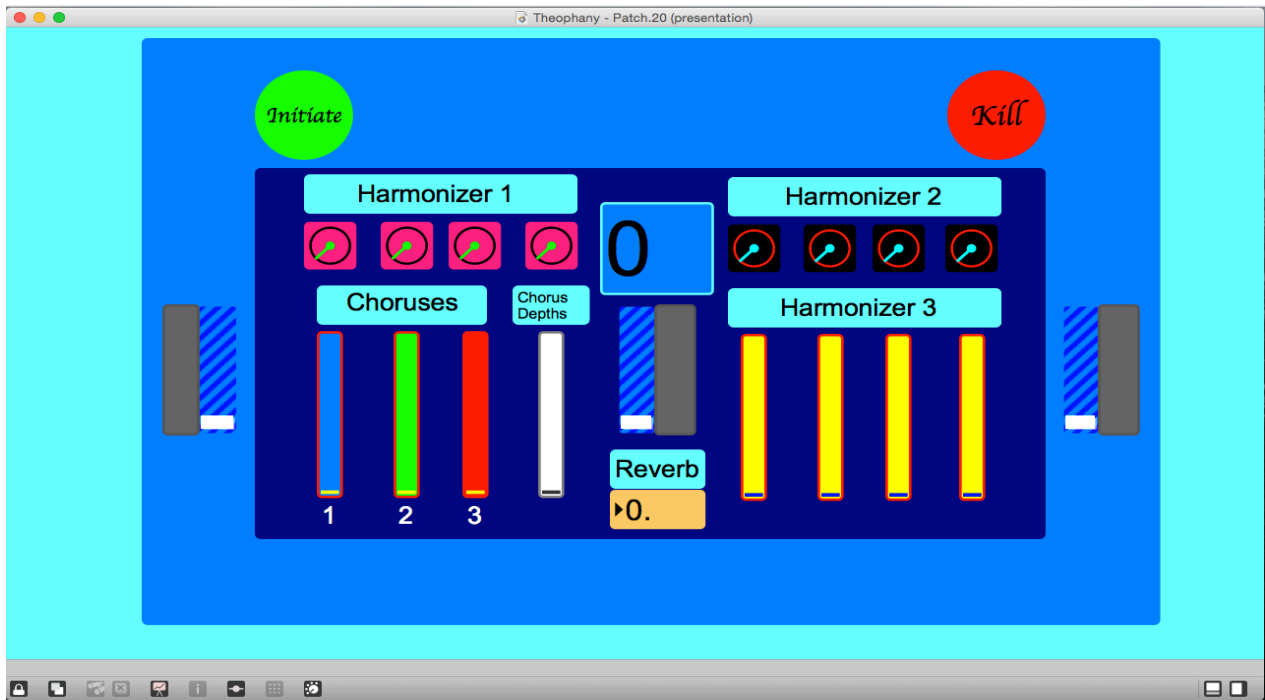
Figure 7: Diagram of the KORG



When the Max patch is opened, it is programmed to immediately go to what is called the “Presentation Mode,” which is distinct from “Edit Mode.” In Presentation Mode, the technician is offered a simplified view of the patch, with only the necessary information for operating it successfully. In Edit Mode, the technician sees the internal workings of the patch and can make alterations. The goal of this design is to be as user friendly as possible, especially for those unfamiliar with the programming environment.

A quick glance at the initial appearance of the patch demonstrates its similarity to the hardware to which it corresponds (i.e. the KORG). The green “Initiate” button in the top left corner activates the patch for performance; the red “Kill” button in the top right corner is primarily how to turn the patch off when the performance is finished, but also doubles as an emergency button in the event anything malfunctions.

Figure 8: Presentation Mode of the Max Patch

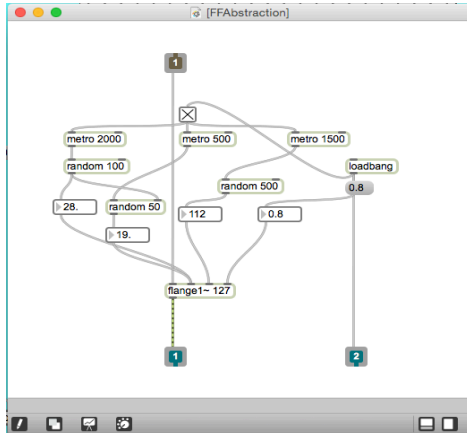


The patch is designed so that the technician will have a visual representation of what s/he is doing on the MIDI controller, at least in terms of the harmonizers and choruses. The reverb effect, which is visible in the above image, and the delays, which are not visible in Presentation Mode, are controlled by a mouse or trackpad. There are other audio sources and effects within the patch that are also not visible, but are in the score to be executed (specifically birdsong, flange, and delays, which will be discussed later in this chapter).

While the delays and birdsong could have been visually represented in the patch, it did not seem necessary, as the first relies on using a mouse or trackpad and the other requires multiple buttons on the KORG to be pressed simultaneously to be executed correctly. The items that were incorporated in the final version are there as a last resort. If for some reason compatibility fails between the MIDI controller and computer, the technician can still operate the primary effects (harmonizers, choruses, and reverb). More importantly, the visual representation demonstrates connectivity between the hardware and software. The electronics cannot be

performed correctly without the MIDI controller. The flange was left out of Presentation Mode, because it does not require any input from the audio technician. It has been programmed to operate on its own, including frequently altering its own parameters by use of alternating metro objects.

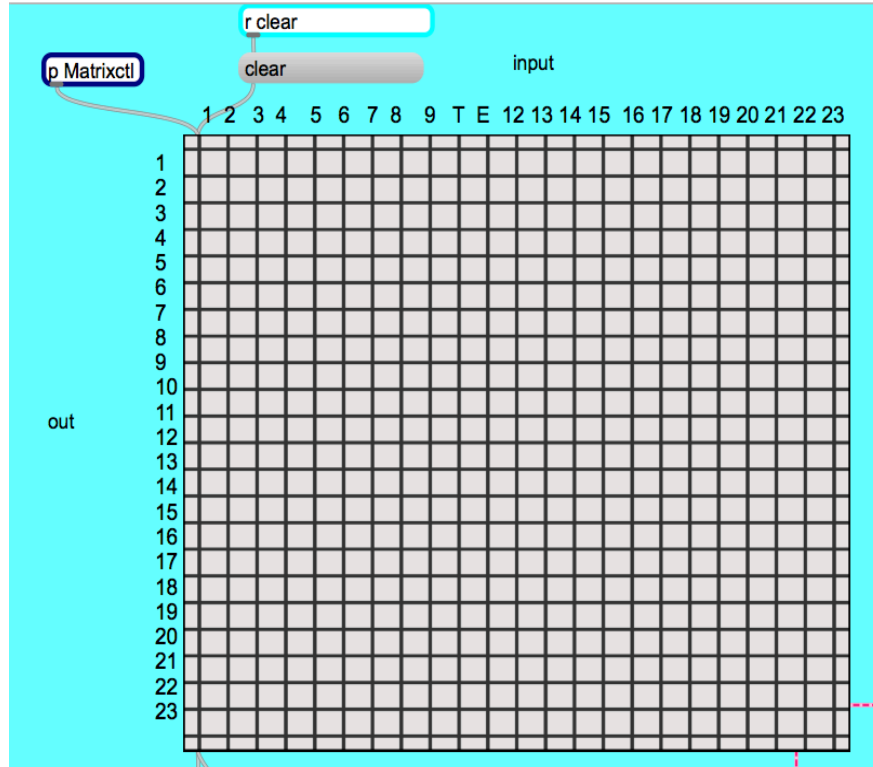
Figure 9: Flange Abstraction



The large number in the center of the patch in Presentation Mode, directly between Harmonizer 1 and 2, simply informs the technician which “event” s/he is on, which should line up with the event number in the score. There are three gain controllers accompanied with meters, one for each speaker. This gives the technician more control over audio output, but also provides a visual aide to whether or not sound is travelling to the outputs.

Opening the patch, or taking it out of Presentation Mode and putting it in Edit Mode, reveals objects at work that are vital to the function of the patch. All audio signal travels into a `matrix~` object, which is controlled by the `matrixctrl` object (the grey box with black vertical and horizontal lines marked “input” and “output”), before going to the digital audio converter, or audio signal output. The `matrixctrl` object provides easy signal routing and visual representation of the routing, but needs the help of the `qlist` object and subpatch titled “p Matrixctl” for it to be controlled by the hardware.

Figure 11: Matrix Control Object



Inside the Matrixctl subpatch are all the potential signal configurations, from simply running audio input from a microphone directly to the speakers to sophisticated daisy-chaining through every available effect. The subpatch is filled with abstractions, all of which begin with “mtrxlink.” These abstractions “wirelessly” receive data from the qlist object, which ultimately is what controls the patch. Each abstraction is connected to the sole output, which is connected to the input of the matrixctrl object.

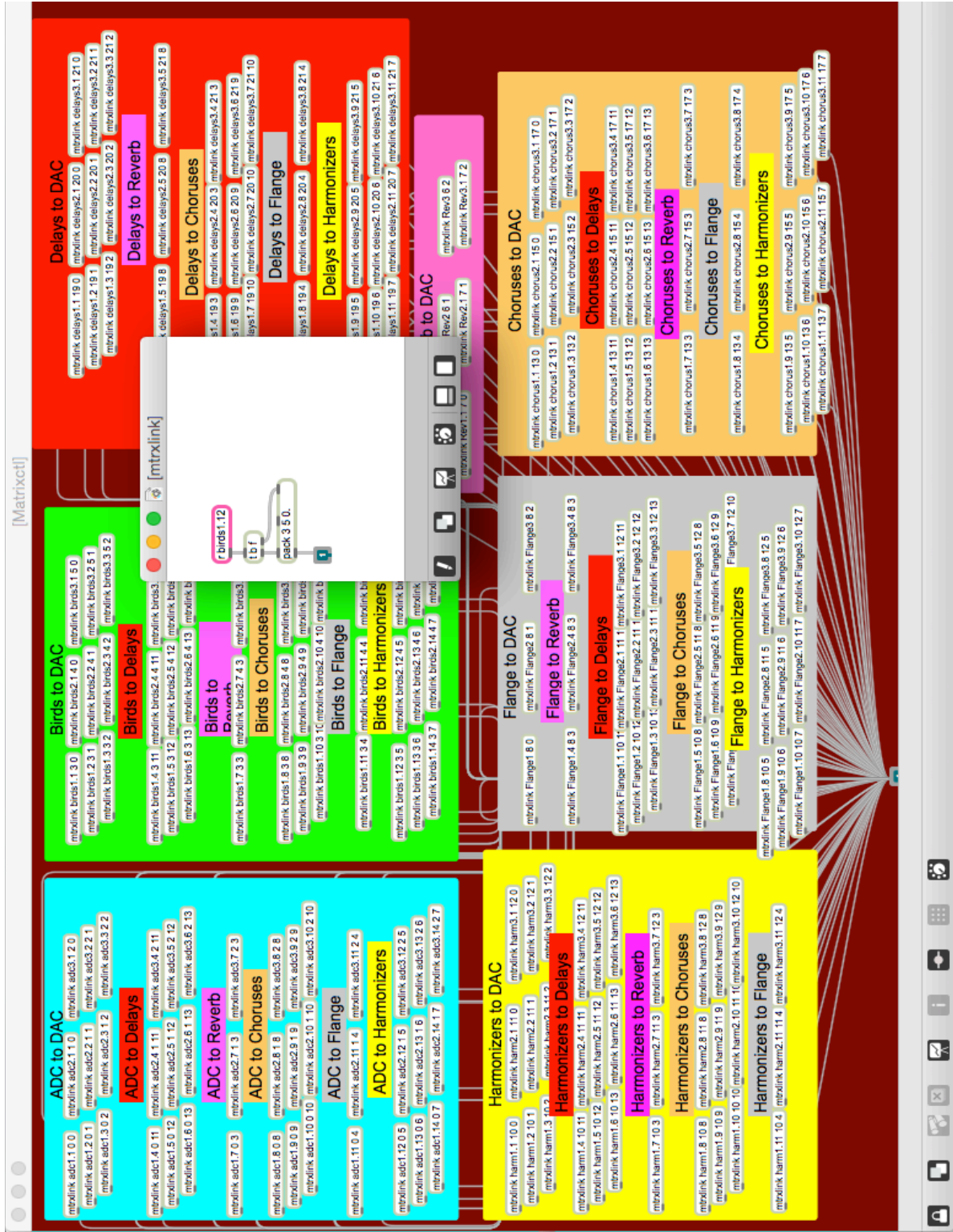
Figure 12: Inside Matrix Control Subpatch

[Matrixctl] (presentation)

The screenshot displays a grid of audio processing modules in a Matrix Control Subpatch. The modules are organized into several categories, each with a distinct background color and a title. The categories include:

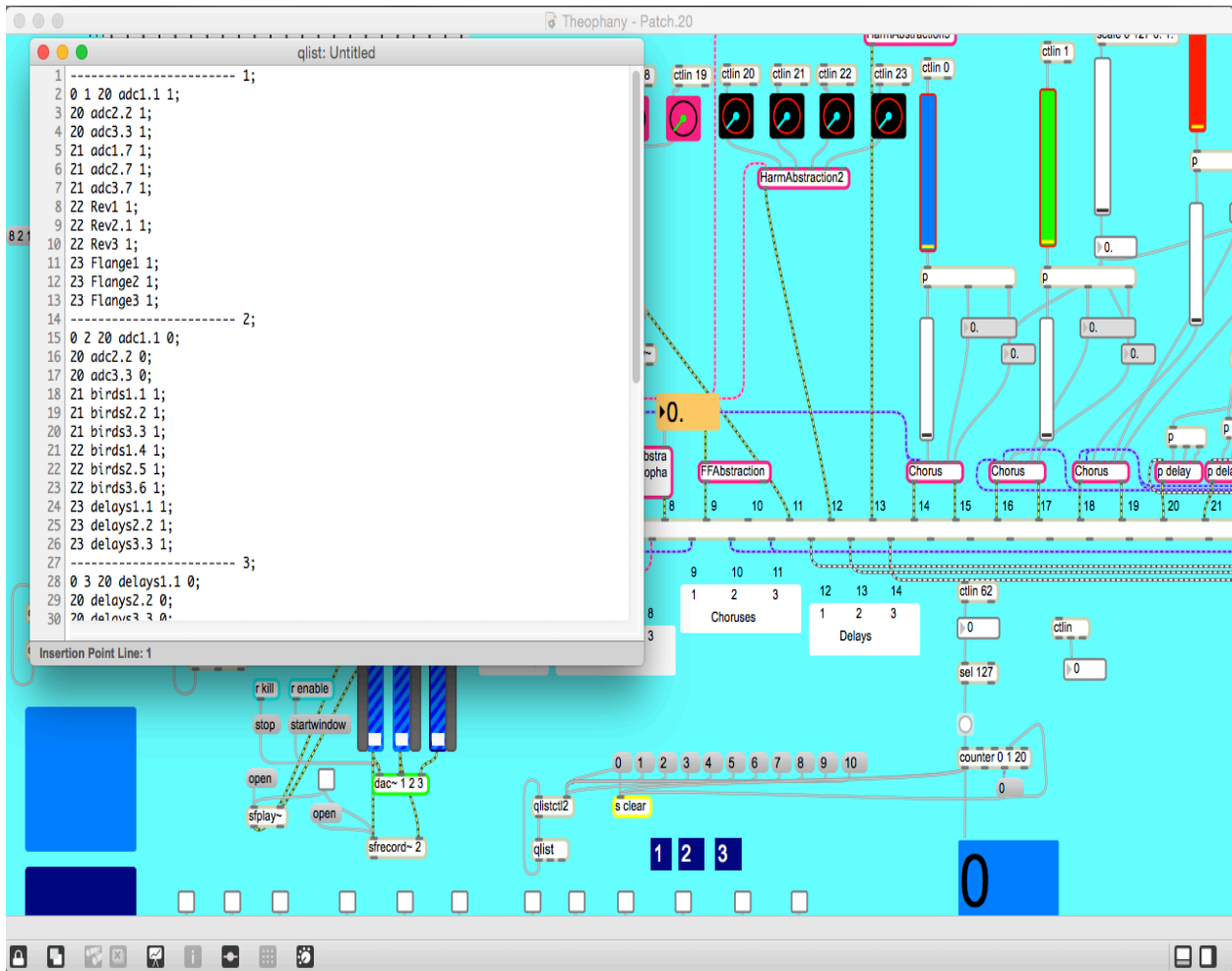
- ADC to DAC (Cyan):** Contains modules like `adc1.1.0.0` through `adc3.1.2.0`.
- ADC to Delays (Cyan):** Contains modules like `adc2.4.1.11` through `adc3.4.2.11`.
- ADC to Reverb (Cyan):** Contains modules like `adc2.7.1.3` through `adc3.7.2.3`.
- ADC to Chorus (Cyan):** Contains modules like `adc2.8.1.8` through `adc3.8.2.8`.
- ADC to Flange (Cyan):** Contains modules like `adc2.11.1.4` through `adc3.11.2.4`.
- ADC to Harmonizers (Cyan):** Contains modules like `adc2.12.1.9` through `adc3.12.2.9`.
- Birds to DAC (Green):** Contains modules like `birds1.1.3.0` through `birds3.5.13`.
- Birds to Delays (Green):** Contains modules like `birds2.4.4.11` through `birds3.4.5.11`.
- Birds to Reverb (Green):** Contains modules like `birds2.7.4.3` through `birds3.7.5.3`.
- Birds to Chorus (Green):** Contains modules like `birds2.8.4.8` through `birds3.8.5.8`.
- Birds to Flange (Green):** Contains modules like `birds2.11.4.4` through `birds3.11.5.4`.
- Birds to Harmonizers (Green):** Contains modules like `birds2.12.4.9` through `birds3.12.5.9`.
- Chorus to DAC (Yellow):** Contains modules like `chorus1.1.13.0` through `chorus3.1.17.0`.
- Chorus to Delays (Yellow):** Contains modules like `chorus2.15.11` through `chorus3.15.11`.
- Chorus to Reverb (Yellow):** Contains modules like `chorus2.15.12` through `chorus3.15.12`.
- Chorus to Flange (Yellow):** Contains modules like `chorus2.15.13` through `chorus3.15.13`.
- Chorus to Harmonizers (Yellow):** Contains modules like `chorus2.15.14` through `chorus3.15.14`.
- Flange to DAC (Yellow):** Contains modules like `flange1.8.0` through `flange3.8.2`.
- Flange to Delays (Yellow):** Contains modules like `flange2.11.11` through `flange3.11.11`.
- Flange to Reverb (Yellow):** Contains modules like `flange2.11.12` through `flange3.11.12`.
- Flange to Chorus (Yellow):** Contains modules like `flange2.11.13` through `flange3.11.13`.
- Flange to Harmonizers (Yellow):** Contains modules like `flange2.11.14` through `flange3.11.14`.
- Harmonizers to DAC (Yellow):** Contains modules like `harm1.10.0` through `harm3.12.0`.
- Harmonizers to Delays (Yellow):** Contains modules like `harm2.11.11` through `harm3.11.11`.
- Harmonizers to Reverb (Yellow):** Contains modules like `harm2.11.12` through `harm3.11.12`.
- Harmonizers to Chorus (Yellow):** Contains modules like `harm2.11.13` through `harm3.11.13`.
- Harmonizers to Flange (Yellow):** Contains modules like `harm2.11.14` through `harm3.11.14`.
- Reverb to DAC (Pink):** Contains modules like `rev1.6.0` through `rev3.6.2`.
- Delays to DAC (Pink):** Contains modules like `delays1.19.0` through `delays3.21.0`.
- Delays to Reverb (Pink):** Contains modules like `delays2.20.1` through `delays3.21.2`.
- Delays to Chorus (Pink):** Contains modules like `delays2.20.3` through `delays3.21.3`.
- Delays to Flange (Pink):** Contains modules like `delays2.20.4` through `delays3.21.4`.
- Delays to Harmonizers (Pink):** Contains modules like `delays2.20.5` through `delays3.21.5`.

Figure 13: Inside Unlocked Matrix Control Subpatch and One Matrix Link



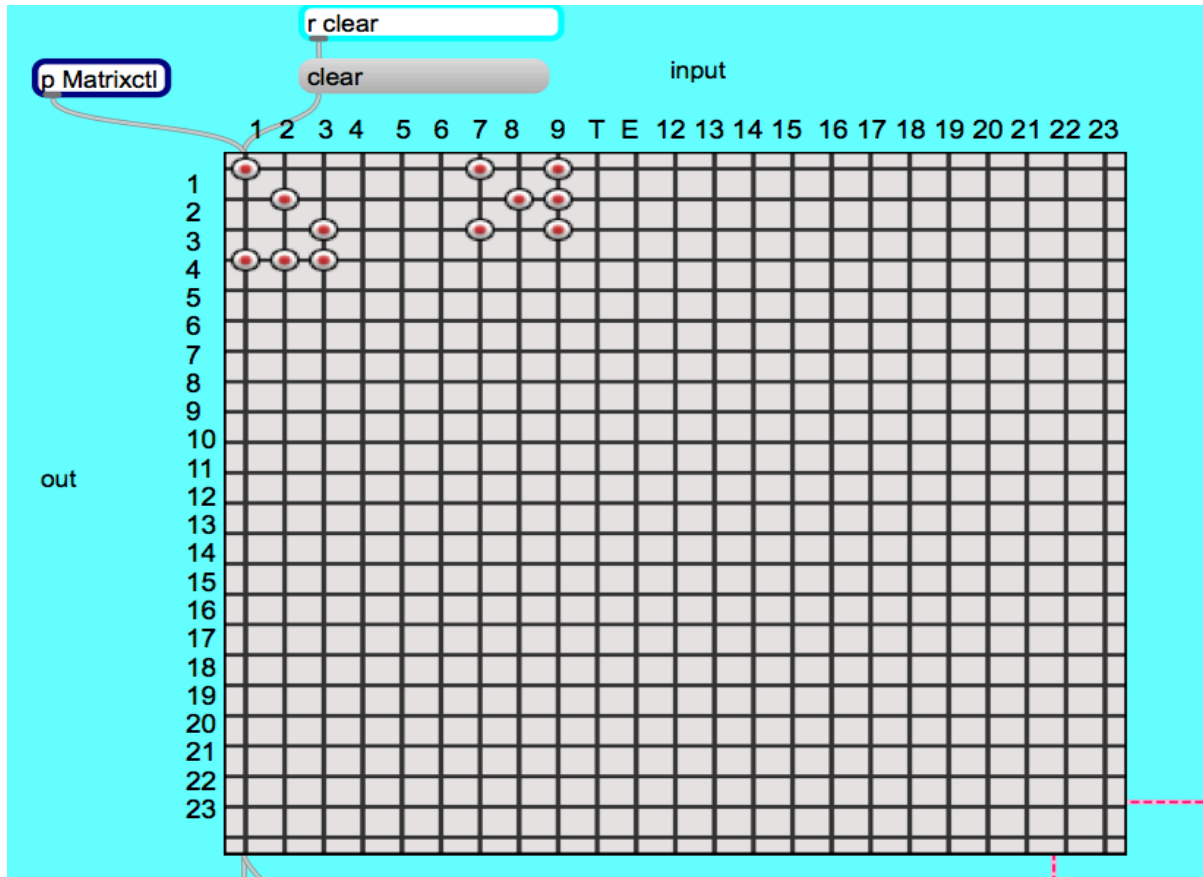
The qlist object looks the most like traditional coding. It communicates a series of 1's and 0's to the Matrixctl subpatch, which translates to “on” and “off.” Each section of the qlist creates an event and is separated by a series of dashes followed by a number and a semicolon.

Figure 14: Inside Qlist Object



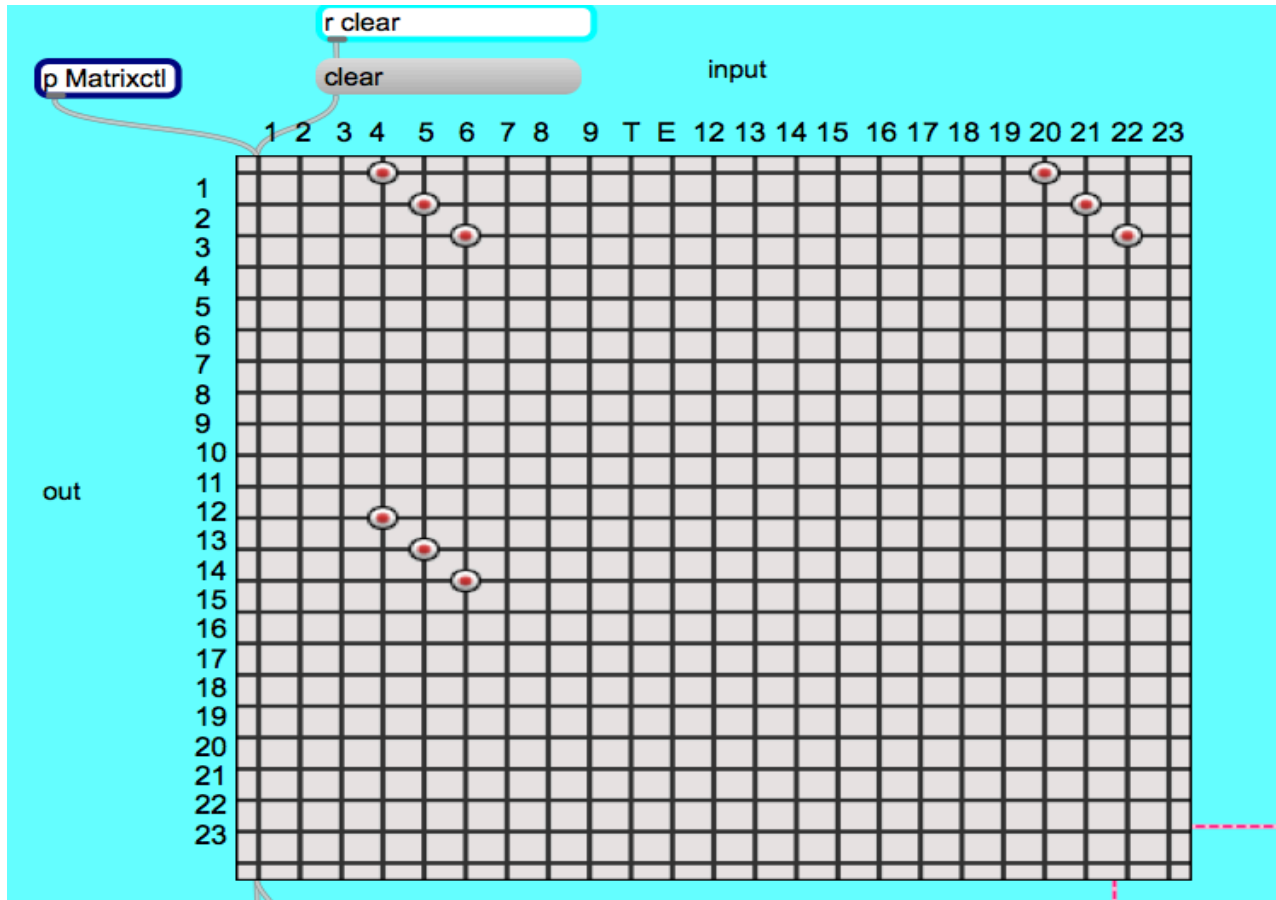
As an example, the first event in the previous image is “turning on” the adc and allowing audio to pass through the reverb and flange effects.

Figure 15: First Qlist Event



Audio signal from the microphones is sent directly to the speakers and to the reverb effect, resulting in the listener hearing both unprocessed and processed audio simultaneously. The first event also activates the ninth column, which controls the flange effect; however, since the flange does not have any incoming signal, its processing will not be heard even though it is turned on. In another example, the second event sends birdsong both to the speakers and to the delay effects.

Figure 16: Second Qlist Event



The Matrixctl subpatch is configured in such a way that all combinations are possible, as long as they are appropriately “turned on and off” in the qlist.

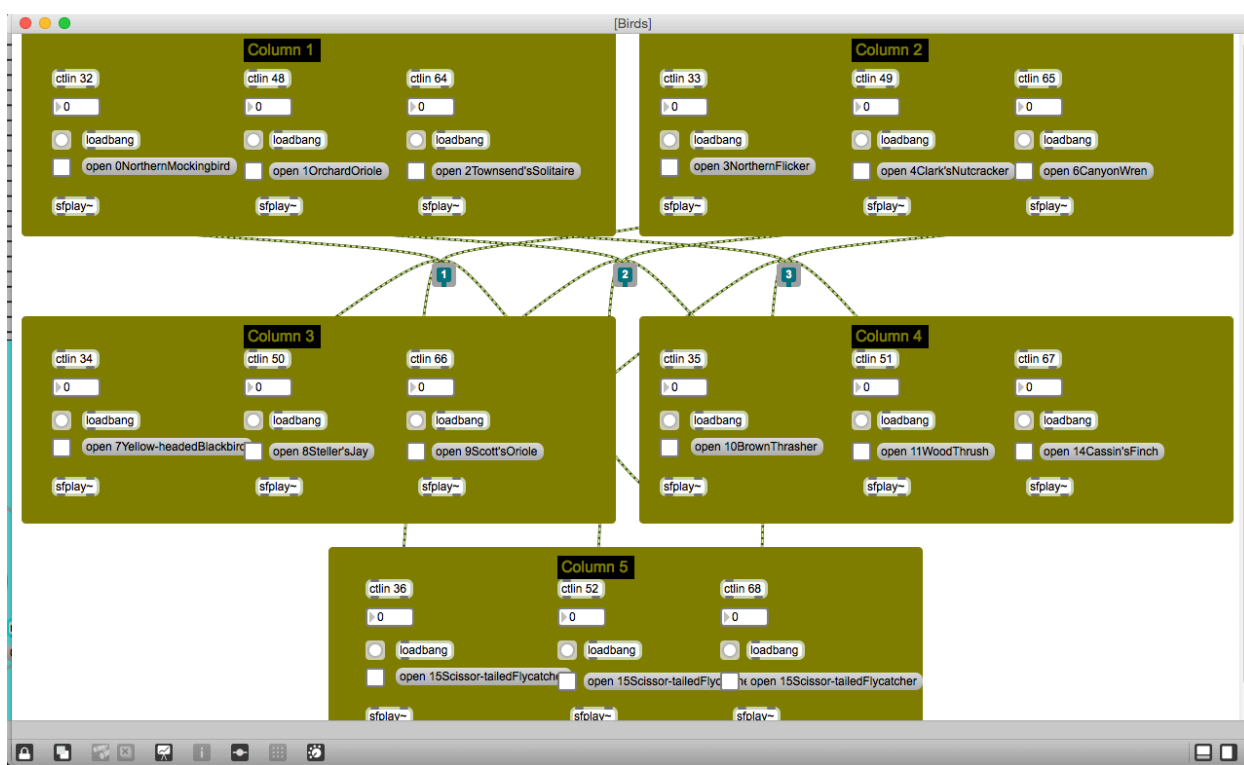
Figure 17: Qlist’s Event List

Event 1	Unprocessed Birdsong → DAC (directly to speakers)
Event 2	1) ADC → DAC (input from microphones directly to speakers); 2) ADC → Harmonizers → DAC (input from microphones pass through harmonizers before traveling to the speakers)
Event 3	Unprocessed Birdsong → DAC
Event 4	1) ADC → DAC; 2) ADC → Harmonizers → Delays → DAC
Event 5	1) Unprocessed Birdsong → DAC; 2) Birdsong → Choruses → DAC
Event 6	1) Unprocessed Birdsong → DAC; 2) Birdsong → Choruses → Flange → DAC
Event 7	Unprocessed Birdsong → DAC
Event 8	ADC → Choruses → Harmonizers → Delays → DAC
Event 9	Unprocessed Birdsong → DAC
Event 10	Bass Clarinet’s ADC → all DAC
Event 11	ADC → Harmonizers → DAC
Event 12	ADC → Harmonizers → Delays → DAC
Event 13	ADC → Harmonizers → Choruses → Delays → Flange → DAC
Event 14	ADC → Harmonizers → Choruses → Delays → Flange → Reverb → DAC
Event 15	ADC → Reverb
Event 16	OFF

Previously mentioned were audio files and effects that were not visible in the patch’s Presentation Mode, but that the technician would be required to operate. The subpatch titled “p Birds” has within it birdsong used in the second movement. The columns referred to in the subpatch correspond to the columns of buttons, slider, and knob on the MIDI controller. More specifically, the buttons in the first five columns (from left to right) initiate birdsong. All “S”

buttons go to the first speaker, “M” buttons to the second speaker, and “R” buttons to the third speaker.³⁸ Each button initiates a different birdsong, with the exception of the fifth column, in which the Scissor-tailed Flycatcher is assigned to each button. In the score, the technician will simply read an “S,” “M,” “R,” or any combination thereof. They are permitted to choose which birdsong and/or combination to initiate, as long as the notated button is pressed as each button is assigned to a specific speaker.

Figure 18: Inside Birds Subpatch



In addition to the flange, the other unseen effects are the delays, which, as previously mentioned, are set up to be controlled by a mouse or the trackpad of a laptop. The three delays are configured slightly differently so that each instrument will have contrasting results, which

³⁸ Refer to diagram of MIDI controller on p. 30

will be heard in different speaker (i.e. the clarinet's result will be heard in one speaker, the flute's in another speaker, and the saxophone's in another). The parameters titled "offset" and "delay" utilize directives in the message boxes attached to the "mousestate" object to produce varying outputs for each instrument.

Figure 19: Delay Subpatches controlled by Individual Subpatches

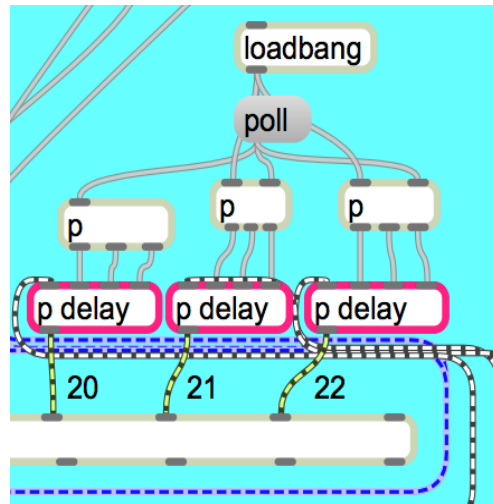
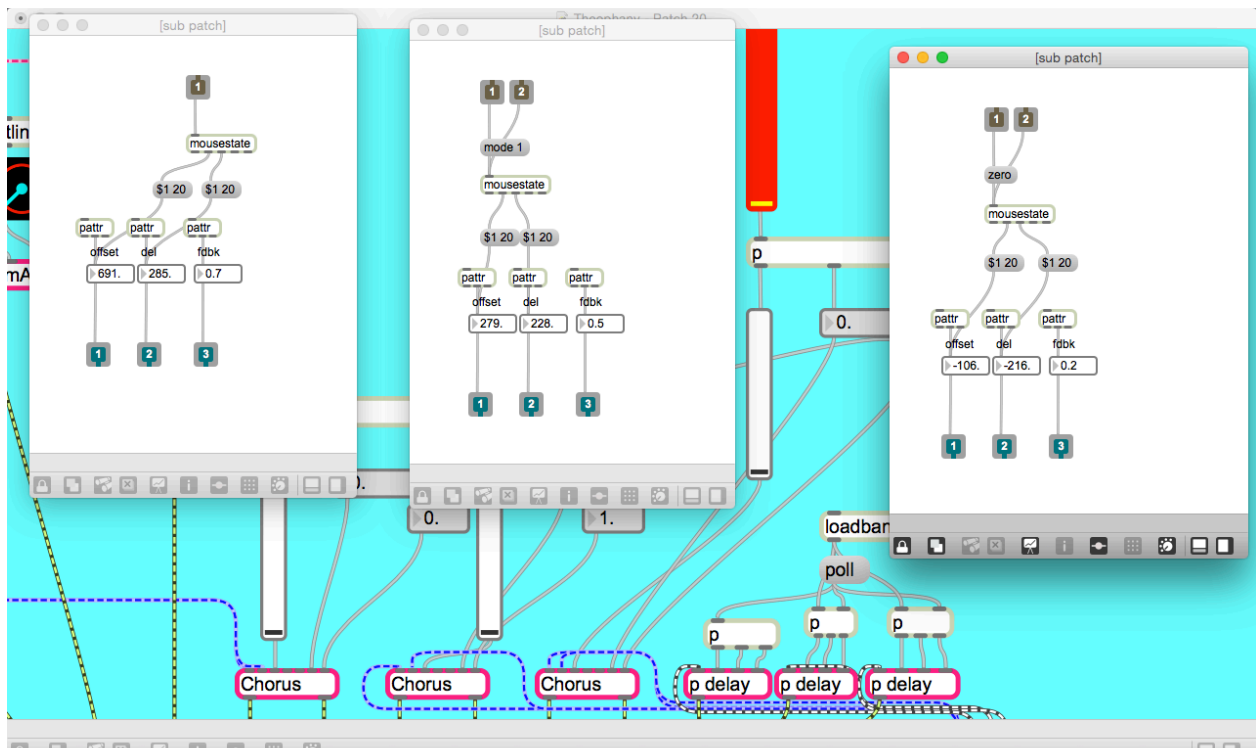


Figure 20: Inside Each Subpatch that Controls the Delay Subpatches



The technician need not see this subpatch information. All that is necessary is that s/he utilize the trackpad on the laptop in an appropriate fashion (e.g. sections in the score will instruct him/her to move his/her finger across the trackpad in various patterns, though frequently the pattern is left to his/her creative discretion).

While the delays and reverb require the technician to utilize a mouse or trackpad, the rest of the patch is entirely operational from the MIDI controller. Though s/he may use the patch directly, some of the required configurations would only be possible with a multi-touch monitor. The patch can be initiated with the “Play” button, killed with the “Stop” button, transition events with the “next” marker button. Audio signals are manipulated with the sliders, knobs, and “S, M, R” buttons, all directly on the KORG MIDI controller.

THE FORM OF THE THIRD MOVEMENT

The form of the final movement is in four sections. The first and third are non-metrical and primarily use extended techniques. In regard to the first section, pitch is only present in the first in the form of birdsong. The effects used are harmonizers, delays, choruses, and a flange. The non-metrical element made measure numbers superfluous, so they are omitted; however, measure numbers are used in the second and final sections, where there is a more clearly defined sense of time. The second section, which begins on the third page, has meter, a moderate tempo, introduces the fourth mode of limited transposition, utilizes previously-used symbolic pitch material based on the pentagram and hexagram, and primarily uses the following daisy chain:

ADC → Choruses → Harmonizers → Delays

The third section is similar to the opening. In fact, it is almost identical to the opening gesture of the movement (top system of page ten). The bulk of this portion is an improvisation between the three acoustic performers and the audio technician. The instrumentalists are given general instructions. The technician is to follow the instructions too, but is to change events at various points throughout the improvisation whenever it feels appropriate to him/her. This adds new effects and therefore intensifies and complicates the improvisation. The instructions state that the improvisation should last approximately two minutes, but in actuality that applies mostly to the bass clarinetist. Whenever s/he feels it appropriate, s/he will begin playing the chant in measure 37 on page 11. While the improvisation will continue between the soprano saxophone, alto flute, and technician, the bass clarinet beginning the chant signifies the beginning of the fourth and final section. In measure 53 on page 12, the alto flute will cease improvising and join the bass clarinet. The soprano saxophone and technician will continue improvising, but the instruction requests that their activity begin calming, as if being drawn toward the chant. In measure 90 on page 14 the soprano saxophone joins the alto flute and bass clarinet, at which point the improvisation has finally ended. The final effect the technician implements is reverb that s/he will gradually increase to an “infinite reverb,” meaning the sound will reverberate indefinitely. Well after the performers have finished their chant, the technician will slowly decrease the reverb from infinite to silence.

CLOSING REMARKS

While *Theophany* began as a simple homage to Messiaen, it ultimately proved to be a culmination of my aesthetic, academic, and technological interests during my studies at the University of Oklahoma. It challenged me to utilize newly formed skills, specifically in the areas of field recording, multi-channel composition, and programming for live electronics. I am unsure if I will use the triphonic setup again, but I am confident I will continue to explore unique speaker placements. Variation in this area adds the element of space to an otherwise purely time-based art form. From here I intend to further explore live electronics for musical performance and perhaps for multi-media collaborations as well.

In regard to symbolism as a compositional method, I am not opposed to using it again, but it will not be a part of any projects in my immediate future. I believe it to be a useful tool, as it helps composers create a coherent inner logic to their creative work and can add depth to the work for its audience and appreciators. That said, I do believe the mark of a good work is that it is successful apart from a comprehensive understanding of the inner workings or initial inspiration. Therefore, if I have done my job well, *Theophany* will produce a satisfying experience for listeners whether or not they have read this document.

My goal for this work was to pay tribute to the artists and teachers who have inspired and helped me along this journey. It is my hope that it will instill a sense of mystery and wonder for its listeners, like I felt when looking up from the canyon to the stars.

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Theophany

Movement One: Among the Hoodoos

Soprano Saxophone, Alto Flute, & Bass Clarinet

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Performance Notes

The score of this movement contains symbols that designate specific performance techniques. They should be read as follows:

Shh ord.

“Shh” sound through flute



Mimic the shakuhachi flute and follow basic contour shape



X-shaped note heads indicate a slap tongue for the bass clarinet



Flutter tongue



Glissando while flutter tonguing



Gradually evolve into flutter tongue

Theophany

Among the Hoodoos

Joshua Tomlinson

$\text{♩} = 120$

Soprano Saxophone

Rubato

Shh ord.

Alto Flute

sf > *pp* *mf* > *mp* *sf* > *pp*

Bass Clarinet in B \flat

5

Shh ord.

dolce rit.

pp *mf* *sf* < *mf* *mp*

10

Shh ord.

Shakuhachi-like molto accel.

sf *pp* *pp* < > *ff*

14 $\text{♩} = 120$

dolce

p \leftarrow \rightarrow *pp*

dolce

sf \leftarrow *p* \leftarrow *mp* \rightarrow \leftarrow *p* \leftarrow *mf* \leftarrow *p* \leftarrow *mf*

19

mp

f

mp

mp

p \leftarrow *f* \rightarrow \leftarrow *mf* \rightarrow \leftarrow *pp* \leftarrow *f* \rightarrow \leftarrow *mp*

24

mp

mp

mp

52

p

28

sempre bruscamente
agitato

accel.

f

mp

sf p ff

sf p ff

sf p ff

31

ff p

ff p

ff p

34

mf \triangleleft *pp* *mf* \triangleleft *f*

mf \triangleleft *pp* *mf* \triangleleft *f*

mf \triangleleft *pp* *mf* \triangleleft *f*

37 dolce ma non troppo

p

p

p

40 poco rit. a tempo

p \triangleleft *mf* \triangleright *pp* *pp* \triangleleft *f* *p* \triangleright *pp* *mp*

pp

pp

45

$b\flat$ $e\flat$ $b\flat$

mf *p*

48

ff

50

ff

52

Musical score for measures 52-53. The top staff contains a complex melodic line with many accidentals and slurs. The middle and bottom staves are empty.

54

Musical score for measures 54-56. The top staff contains a melodic line with slurs and accents. The middle and bottom staves are empty. The time signature 4/4 is indicated at the end of each measure.

57 *con spirito*

Musical score for measures 57-60. The top staff is marked *pp* and contains a melodic line with slurs and accents. The middle and bottom staves also contain melodic lines. Dynamic markings *pp*, *mf*, and *mp* are present. The time signature 4/4 is indicated. A measure number 56 is written below the bottom staff in the second measure.

60

p *ff* *f*

p *ff* *f*

p *ff* *f*

This system contains three staves of music for measures 60, 61, and 62. The music is written in treble clef with a key signature of one flat (B-flat). Measure 60 is in 4/4 time, measure 61 is in 5/4 time, and measure 62 is in 4/4 time. Each staff begins with a dynamic marking of *p* (piano). A crescendo line spans across all three staves, leading to a fortissimo (*ff*) dynamic in measure 61, which then transitions to a forte (*f*) dynamic in measure 62. The notation includes various rhythmic values such as eighth and sixteenth notes, often with beams, and rests.

63

f *mp*

f *mp*

f *mp*

This system contains three staves of music for measures 63, 64, and 65. The music is written in treble clef with a key signature of one flat (B-flat). Measure 63 is in 4/4 time, measure 64 is in 4/4 time, and measure 65 is in 4/4 time. Each staff begins with a dynamic marking of *f* (forte). A decrescendo line spans across all three staves, leading to a mezzo-piano (*mp*) dynamic in measure 64, which remains in *mp* through measure 65. The notation includes various rhythmic values such as eighth and sixteenth notes, often with beams, and rests.

66

Musical score for measures 66-68. The score is in 5/4 time and consists of three staves. The key signature has one flat (B-flat). The music features a complex rhythmic pattern with many eighth and sixteenth notes, some with accents. The first staff has a treble clef, the second a treble clef, and the third a bass clef. The piece ends with a double bar line and a 5/4 time signature.

69

Musical score for measures 69-71. The score is in 5/4 time and consists of three staves. The key signature has one flat (B-flat). The music features a complex rhythmic pattern with many eighth and sixteenth notes, some with accents. The first staff has a treble clef, the second a treble clef, and the third a bass clef. The piece ends with a double bar line and a 5/4 time signature. Dynamic markings include *mf* (mezzo-forte) with accents in measures 70 and 71.

72

Musical score for measures 72-74. The score is in 5/4 time and consists of three staves. The key signature has one flat (B-flat). The music features a complex rhythmic pattern with many eighth and sixteenth notes, some with accents. The first staff has a treble clef, the second a treble clef, and the third a bass clef. The piece ends with a double bar line and a 5/4 time signature. Dynamic markings include *ff* (fortissimo) in measures 72, 73, and 74.

76

Musical score for measures 76-79. The score consists of three staves. The top two staves are mostly empty with rests. The bottom staff contains a complex melodic line with various rhythmic values and accidentals. Dynamic markings *p* and *ff* are present.

80

Musical score for measures 80-83. The score consists of three staves. The top two staves are mostly empty with rests. The bottom staff contains a complex melodic line with various rhythmic values and accidentals. Dynamic markings *p*, *pp*, *mf*, *p*, *f*, and *ff* are present.

84

Musical score for measures 84-85. The score consists of three staves. The top two staves are mostly empty with rests. The bottom staff contains a complex melodic line with various rhythmic values and accidentals. A dynamic marking *f* is present.

86

Musical score for measures 86-89. The score consists of three staves. The top two staves are mostly empty with rests. The bottom staff contains a complex melodic line with various rhythmic values and accidentals.

90

Musical score for measures 90-92. The system consists of three staves. The top two staves are mostly empty with some rests. The bottom staff contains a melodic line with eighth and sixteenth notes, including a triplet of eighth notes in measure 91.

93

pesante

Musical score for measures 93-95. The system consists of three staves. The tempo marking *pesante* is placed above the first staff. The dynamic marking *ff* (fortissimo) is placed below the first and second staves. The music features a complex rhythmic pattern with many sixteenth and thirty-second notes.

96

Musical score for measures 96-98. The system consists of three staves. The music continues with a dense texture of sixteenth and thirty-second notes. The dynamic marking *f* (forte) is placed below the second and third staves in measure 98.

99

Musical score for measures 99-101. The system consists of three staves. The time signature changes to 5/4 in measure 99. The dynamic marking *pp* (pianissimo) is placed below the second, third, and bottom staves in measure 101. The bottom staff has a *60* marking below it.

101

f *ff* sempre *ff* sempre *ff* sempre

agitato

104

106

61

108

Musical score for measures 108-110. The score consists of three staves in 4/4 time. The first staff has a treble clef and a key signature of one flat. The second and third staves have a bass clef and a key signature of one sharp. The music features a complex rhythmic pattern with many sixteenth notes and rests. There are dynamic markings of accents (< >) in the second and third measures of each staff.

111

Musical score for measures 111-113. The score consists of three staves in 4/4 time. The first staff has a treble clef and a key signature of one flat. The second and third staves have a bass clef and a key signature of one sharp. The music features a complex rhythmic pattern with many sixteenth notes and rests. There are dynamic markings of accents (< >) in the first two measures of each staff. In the third measure, there are dynamic markings of *pp* and *ff* in the second and third staves.

114

Musical score for measures 114-116. The score consists of three staves in 4/4 time. The first staff has a treble clef and a key signature of one flat. The second and third staves have a bass clef and a key signature of one sharp. The music features a complex rhythmic pattern with many sixteenth notes and rests. There are dynamic markings of accents (>) in the first measure of each staff. In the second measure, there are dynamic markings of *f* and *mp* in the second and third staves. In the third measure, there are dynamic markings of *p* in the second and third staves. At the bottom of the page, there is a page number 62.

117

animato

Musical score for measures 117-118. The score consists of three staves in treble clef, 4/4 time signature. The tempo is marked 'animato'. The dynamic is marked 'mp' (mezzo-piano) in all three staves. The music features a complex rhythmic pattern with many sixteenth notes and rests.

119

Musical score for measures 119-120. The score consists of three staves in treble clef, 4/4 time signature. The dynamic is marked 'mf' (mezzo-forte) in the first half and 'p' (piano) in the second half, with a hairpin indicating the transition. The music features a complex rhythmic pattern with many sixteenth notes and rests.

121

Musical score for measures 121-122. The score consists of three staves. The first two staves are in treble clef with a key signature of one flat (B-flat major). The third staff is in treble clef with a key signature of two sharps (D major). The music features a complex rhythmic pattern with many sixteenth notes and rests. Dynamics markings include *f* and *mf* with hairpins indicating crescendos and decrescendos.

123

molto bruscamente

Musical score for measures 123-125. The score consists of three staves. The first two staves are in treble clef with a key signature of one flat (B-flat major). The third staff is in treble clef with a key signature of two sharps (D major). The music features a complex rhythmic pattern with many sixteenth notes and rests. Dynamics markings include *f* and *ff* *sempre* with hairpins indicating crescendos and decrescendos. The tempo marking *molto bruscamente* is present above the first staff.

126

Musical score for measures 126-128. The score consists of three staves. The first two staves are in treble clef with a key signature of one flat (B-flat major). The third staff is in treble clef with a key signature of two sharps (D major). The music features a complex rhythmic pattern with many sixteenth notes and rests. The time signature changes from 5/4 to 4/4 between measures 126 and 127. A page number '64' is visible at the bottom of the page.

129

Musical score for measures 129-131. The score consists of three staves in 7/4 time. The first staff has a treble clef and a key signature of one sharp (F#). The second and third staves have a bass clef and a key signature of one flat (Bb). The music is characterized by a complex, rhythmic pattern of eighth and sixteenth notes. The dynamic marking *ff* (fortissimo) is present in the second and third staves.

132 Presto

Musical score for measures 132-134. The score consists of three staves in 7/4 time. The first staff has a treble clef and a key signature of one flat (Bb). The second and third staves have a bass clef and a key signature of one flat (Bb). The music is characterized by a complex, rhythmic pattern of eighth and sixteenth notes. The dynamic marking *ff* (fortissimo) is present in the first and second staves. The second staff has a note marked *pp* (pianissimo) and a note marked *sf* (sforzando). The text "Shakuhachi-like" is written above the second staff, with lines pointing to specific notes. The third staff has a note marked *sf* (sforzando).

Theophany

Movement Three: Toward the Heavens

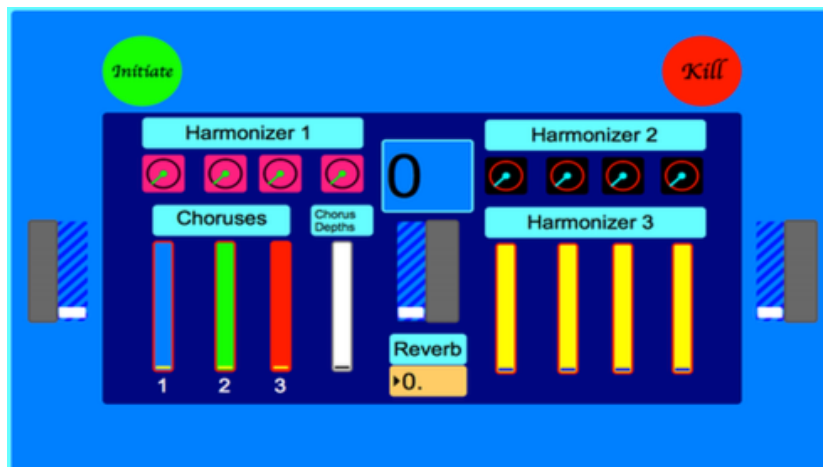
Soprano Saxophone, Alto Flute, Bass Clarinet, & Live Electronics

© 2019 Joshua Tomlinson

Performance Notes for Audio Technician

All electronic sounds and effects can be initiated from the KORG MIDI controller except for the Reverb, Delays, and some parameters of the Choruses. For Reverb, adjust the number at the bottom of the patch; for Delays, move the mouse across the computer screen, as each delay has been programmed to the movement of the mouse; for Choruses, quickly press the “S,” “M,” and “R” buttons of the first three columns on the KORG to alter the “DryWetMix” and “ChorusRate.”

The patch can be initiated with the “Play” button (▶) and killed with the “Stop” button (■) on the KORG.



2 Apply slight modifications to Harmonizers
↓
▽

Hollow arrows in the score indicate to advance scenes. Press the “next marker” button on the KORG, located directly above the “record” button. The number above the arrow is the scene to be executed. This number should match the number in the center of the patch upon opening. The note to the right of the arrow indicates what has been “turned on” and actions to take.

S

The letters “S,” “M,” and “R” are used in the score to indicate birdsong. The letters correlate to the first five columns (from left to right) of buttons with the same letters on the KORG. Each letter is assigned to a different speaker (all “S’s” go to the first speaker, all “M’s” to the second, and all “R’s” to the third). The bracket is an approximation of how long to sustain the birdsong. Note: the buttons must be held; as soon as the button is released, birdsong will cease.

Theophany

Movement Three: Toward the Heavens

*Soprano Saxophone, Alto Flute,
Bass Clarinet, & Live Electronics*

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Performance Notes for Acoustic Performers

The score of this movement contains symbols that designate specific performance techniques. They should be read as follows:



In unmetered sections, this symbol indicates breathing through the instrument and to crescendo from silence.



In unmetered sections, these symbols indicate individual key clicks.



In unmetered sections, this symbol indicates rapid key clicks.



This symbol indicates a slap tongue for the bass clarinet and a tongue ram for the alto flute.

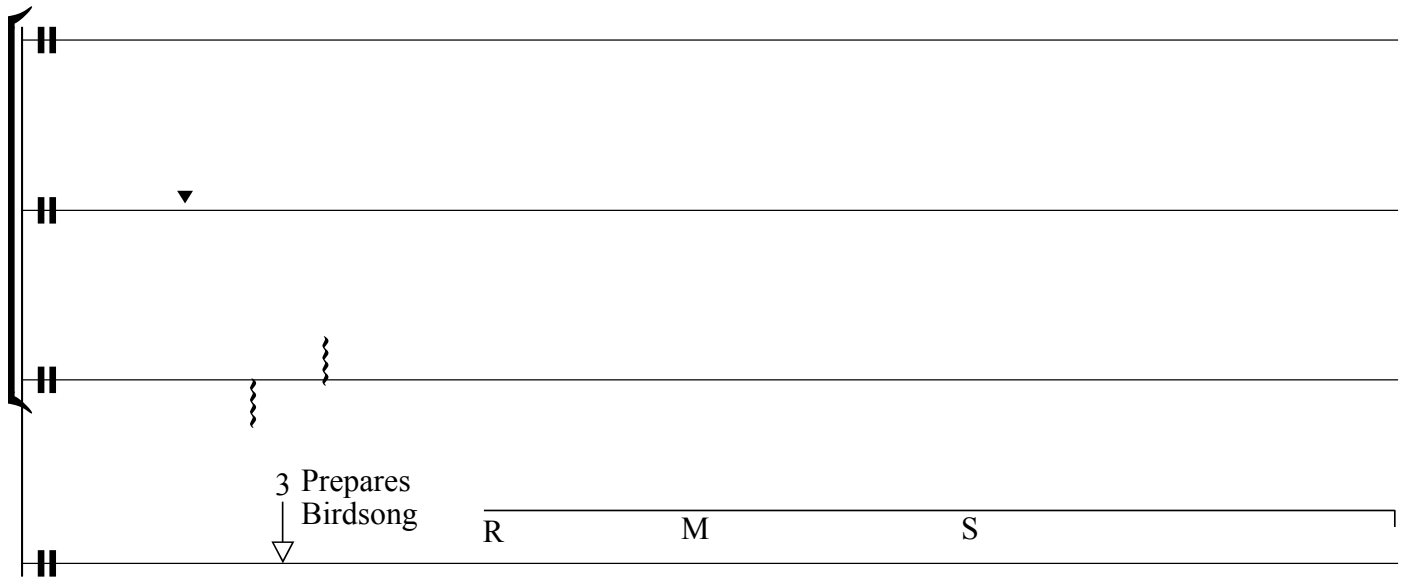
Theophany

toward the heavens

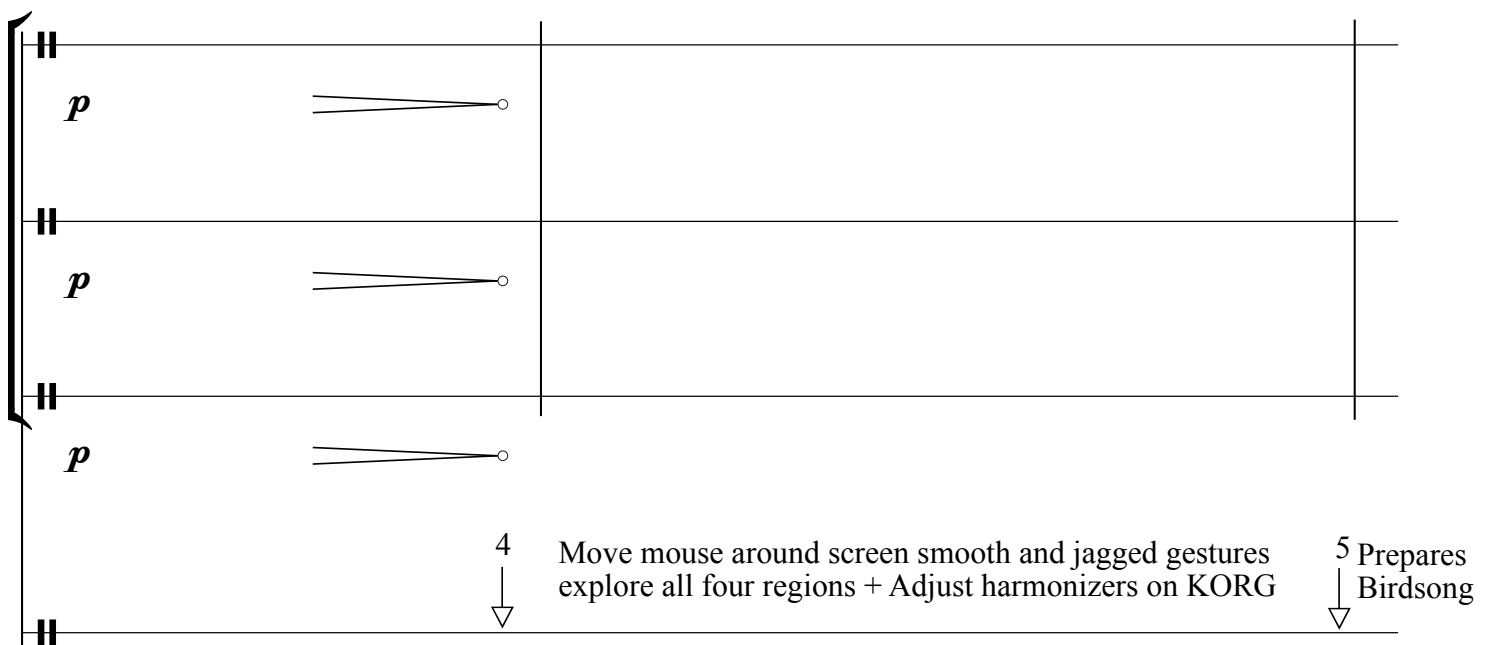
Joshua Tomlinson

Musical score for Soprano Saxophone, Alto Flute, Bass Clarinet, and Computer. The score consists of four staves. The Soprano Saxophone staff has a double bar line, a wavy line, and two downward-pointing triangles. The Alto Flute staff has a dynamic marking *sf* with a wedge-shaped hairpin, followed by a dynamic marking *sf* < *p* with a hairpin that narrows and then widens. The Bass Clarinet staff has a hairpin that widens and then narrows, and an 'x' mark at the end. The Computer staff has a downward-pointing triangle with the number '1' above it and the text 'Prepares Birdsong' to its right.

Musical score for Soprano Saxophone, Alto Flute, Bass Clarinet, and Computer. The score consists of four staves. The Soprano Saxophone staff has two downward-pointing triangles and a long hairpin that widens and then narrows, with a dynamic marking *mf* at the end. The Alto Flute staff has several downward-pointing triangles. The Bass Clarinet staff has a dynamic marking *p* and a hairpin that narrows. The Computer staff has a bracket labeled 'S' and a downward-pointing triangle with the number '2' above it and the text 'Apply slight modifications to Harmonizers' to its right.



Fast, aggressive key clicks random brief silences not synchronized approx. 20"



Mimic bird sounds
approx. 30"

×

R"
M" **Improvise with Choruses**
S"

6
↓ Flange has been added
▽ Continue improvising w/choruses

0

$\text{♩} = 90$

pp

pp *ff* *sf*

dolce

7

↓ Unprocessed Birds
▽ Scissor Tail"

pp *f* *pp*

5/4

4 $\text{♩} = 120$

Musical score for measures 4-6. Measure 4: Treble clef, whole rest. Bass clef, quarter notes G4, A4, B4, C5. Measure 5: Treble clef, whole rest. Bass clef, quarter notes G4, A4, B4, C5. Measure 6: Treble clef, eighth notes G4, A4, B4, C5, D5, E5, F5, G5. Bass clef, quarter notes G4, A4, B4, C5. Dynamics: *f*.

7

Musical score for measures 7-8. Measure 7: Treble clef, eighth notes G4, A4, B4, C5, D5, E5, F5, G5. Bass clef, quarter notes G4, A4, B4, C5. Dynamics: *ff*. Measure 8: Treble clef, eighth notes G4, A4, B4, C5, D5, E5, F5, G5. Bass clef, quarter notes G4, A4, B4, C5. Dynamics: *mp*.

8
 ↓
 8 Impvise w/Harmonizers,
 Delays, and Choruses

9

f

3

11

sfp *mp* *p* *f* *sub. pp*

ff

3

13

Musical score for measures 13-14. The top staff features a treble clef and a dynamic marking of *ff*. The middle staff has a treble clef and dynamic markings of *f* and *ff*. The bottom staff has a treble clef and is mostly empty. A double bar line is at the end of the system.

15

Musical score for measures 15-18. The top staff has a treble clef and dynamic markings of *pp*, *f*, and *p*. The middle staff has a treble clef and dynamic markings of *pp*, *f*, *p*, *sub. ff*, and *pp*. The bottom staff has a treble clef and dynamic markings of *pp* and *f*. A double bar line is at the end of the system.

9
 ↓
 Fades out &
 Prepares Birdsong

19

Musical score for measures 19-21. The score consists of three staves. The top staff has a treble clef and a whole rest in measures 19 and 20, followed by a half note G#4 in measure 21 with a dynamic marking of *p < ff*. The middle staff has a treble clef and a common time signature. It begins with a *pp* dynamic, followed by a series of eighth notes in measures 19 and 20, and a final eighth note in measure 21. Dynamic markings include *p < ff* and *mf*. The bottom staff has a treble clef and a common time signature, with eighth notes in measures 19 and 20, and a final eighth note in measure 21. Dynamic markings include *p < ff*. A double bar line is at the end of measure 21.

22

Musical score for measures 22-23. The score consists of three staves. The top staff has a treble clef and a key signature of one sharp (F#). It features a whole note G#4 in measure 22 and a series of eighth notes in measure 23. A dynamic marking of *ff* is present. The middle staff has a treble clef and a common time signature, with eighth notes in measures 22 and 23. A dynamic marking of *ff* is present. The bottom staff has a treble clef and a common time signature, with eighth notes in measures 22 and 23. A dynamic marking of *ff* is present. A double bar line is at the end of measure 23.

24

pp sf mf ff

pp sf mf ff

pp sf mf ff

27

molto dolce Bird Improv Approx. 15"

pp mp

6/4 5/4 6/4 5/4

Improvise with Unprocessed Birdsong

6/4 5/4

31

33

35

Musical score for three staves. The top staff has a wavy line at the beginning and two downward-pointing triangles later. The middle staff has a dynamic marking *sf* followed by a crescendo hairpin, then *sf* < *p* followed by a decrescendo hairpin. The bottom staff has a crescendo hairpin and an 'x' mark. A downward-pointing triangle with the number '10' above it and the text 'Put 200 into Reverb' below it is positioned between the middle and bottom staves.

Frantic, aggressive breathing and key clicks
 in & out of sync with each other
 pitch material is welcome, as long as it
 is based on previously used sets
 approx. 2'

11 Improvise
 ↓ w/Harms

12 Improvise
 ↓ w/Harms&Delays

13 Improvise
 ↓ w/Harms, Delays,
 & Choruses

Improvisation continues between sax,
flute, and electronics
though slightly less frantic

37

dolce,
pp sempre

14 Add 50 to Reverb
Continue Improvising

43

5/4 4/4 3/4

48

Musical score for measures 48-52. The score is written for four staves: two treble clefs, two bass clefs, and a drum set. The time signature changes from 3/4 to 5/4, 6/4, 5/4, 6/4, and finally 4/4. The music consists of rhythmic patterns in the lower staves and melodic lines in the upper staves.

53

Improvisation continues between sax and electronics; still use active gestures, but overall calmer than previous improvisatory sessions

Musical score for measures 53-59. The score is written for four staves: two treble clefs, two bass clefs, and a drum set. The time signature changes from 4/4 to 2/4 and 5/4. The music is marked *p sempre* (piano) and includes descriptive text about improvisation.

60

Musical score for measures 60-64. The score is written for four staves: two treble clefs, two bass clefs, and a drum set. The time signature changes from 5/4 to 6/4 and 4/4. The music continues with rhythmic patterns and melodic lines.

65

Musical score for measures 65-70. The score is written for three staves: a treble clef staff with a key signature of two sharps (F# and C#), a bass clef staff with the same key signature, and a percussion staff. The music features a complex rhythmic pattern with frequent changes in time signature. The time signatures are 5/4, 4/4, 5/4, 4/4, 5/4, and 4/4. The melody in the treble staff consists of quarter and eighth notes, while the bass staff provides a steady accompaniment of eighth notes. The percussion staff shows a simple drum pattern.

71

Musical score for measures 71-75. The score is written for three staves: a treble clef staff with a key signature of two sharps (F# and C#), a bass clef staff with the same key signature, and a percussion staff. The music continues with a complex rhythmic pattern and frequent time signature changes. The time signatures are 2/4, 5/4, 6/4, and 5/4. The melody in the treble staff uses quarter and eighth notes, and the bass staff provides a steady accompaniment of eighth notes. The percussion staff shows a simple drum pattern.

76

Musical score for measures 76-80. The score is written for three staves: a treble clef staff with a key signature of two sharps (F# and C#), a bass clef staff with the same key signature, and a percussion staff. The music continues with a complex rhythmic pattern and frequent time signature changes. The time signatures are 4/4, 3/4, 4/4, and 5/4. The melody in the treble staff uses quarter and eighth notes, and the bass staff provides a steady accompaniment of eighth notes. The percussion staff shows a simple drum pattern.

82

5/4 6/4 4/4 5/4

poco rit.

87

♩ = 130

mf sempre

mf sempre

mf sempre

15

Gradually increase reverb
 6 from 0 to infinity with decimals;
 4 gradually decrease from infinity
 after performers have stopped

91

4/4 5/4 4/4

96

The musical score consists of three staves. The top two staves are in treble clef with a key signature of one sharp (F#). The bottom staff is in bass clef. The time signature starts as 4/4, changes to 2/4 at the beginning of the third measure, 5/4 at the beginning of the fourth measure, and 6/4 at the beginning of the fifth measure. The word "molto rit." is written above each of the three staves in the fourth, fifth, and sixth measures. The piece concludes with a double bar line at the end of the sixth measure.