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Seeing the Music, Hearing the Dream

A Multimedia Suite (Six Pieces) for Instrument(s) and Electronics

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Seeing the Music, Hearing the Dream

A Multimedia Suite (Six Pieces) for Instrument(s) and Electronics

By

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Seeing the Music, Hearing the Dream

A Multimedia Suite (Six Pieces) for Instrument(s) and Electronics

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Seeing the Music, Hearing the Dream is a forty-five minute multimedia suite consisting of six pieces written for various instruments and electronics, which consist of electronic sounds and video. The instrumentation includes solo cello, solo flute, solo piano, solo marimba, and flute and trombone duet. This suite is a compilation of multimedia works, all of which feature the connection and interaction between live instruments, electronic music, and visual art. The first chapter of this dissertation discusses the background and development of the multimedia performing arts field, as well as three different artists/groups and their works. The second chapter is a piece-by-piece analysis of the multimedia suite, complete with explanations of major motives, harmonic language, formal structure, and configuration of and relationships between audio and visual elements of the pieces.

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Chapter 1: Multimedia Performing Arts

1.1 Introduction and Background

The term "multimedia" refers to the use of a combination of different content forms, such as text, audio, images, animations, video, and interactive content. The first use of this term is attributed to singer and artist Bobb Goldsteinn, who has worked in many areas of the entertainment industry and is well regarded for the art he has produced. In his show, "LightWorks at L'Oursin," which took place at Southampton, Long Island in 1965, Goldsteinn integrated film, music, and lights, among other forms of media. It was here that Goldsteinn first presented his new style of blending media, which would push art into a new era for modern society. [1]

Living in modern society, we are constantly inundated with multimedia in the form of text messages, television, theatre, and the internet. Hence, we have become accustomed to receiving information in more than one form at the same time. Although they may not be aware of it, today's audiences are expecting and looking for new and different ways to experience the performing arts.

Along with the development of technology, society has subconsciously formed basic standards of what constitutes a good multimedia product. It is not simply about how the end product looks, sounds, or feels, but also how easy it is to understand, to use, and to navigate. Various media that support each other, rather than conflict in a way that would

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[1] Richard Albarino, "Goldstein's LightWorks at Southhampton," *Variety*, August 10, 1966. Vol. 213, No. 12.

tend to cause distraction, create a positive overall user experience. We also make subjective judgments and choices about what we personally like and dislike, what intrigues and evokes strong emotions, versus what leaves us untouched or bored, and what confuses and distracts, rather than enlightens and clarifies. These daily experiences of being an audience member for multimedia creative works make us all potential experts at evaluating them. Experiencing art in multimedia form has become so commonplace that, over the past few decades, the use of multimedia in the performing arts often goes unnoticed in the context of the art event itself, such as in opera, theater, and dance.

1.2. *The Magic Flute* by Komische Oper Berlin

Theatres are moving old-fashioned operas and Broadway musicals into the digital age. Today, many theaters commonly use video projection in their productions; some have invested in million-dollar multimedia displays. From contemporary concert settings to classical repertoires, multimedia has brought new experiences to audiences. A prime example is *The Magic Flute* by Komische Oper Berlin, based on Mozart's opera with the same title. This multimedia production is an enchanting, good-natured, enjoyable mix of whimsical animation, lively stagecraft, and traditional opera.[2] *The Magic Flute* was the first large-scale production by *theatre company 1927*, and their first attempt at tackling a pre-existing work. The opera was co-directed by Suzanne Andrade and Barry Kosky, with

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[2] Molleson, Kate. "The Magic Flute at Edinburgh festival review – all the makings of a classic." The Guardian. https://www.theguardian.com/stage/2015/aug/28/magic-flute-festival-theatre-edinburgh-1927-barrie-kosky-paul-barritt-makings-of-a-classic (retrieved March 26, 2018).

full-scale animation created by Paul Barritt. The production premiered at the Komische

Opera Berlin in November 2012. Since its opening, it has been a sensation not just in

Berlin, but around the world, including being well received by audiences and critics in the

United States, across China, throughout Europe, and, most recently, in Tokyo and Seoul.[3]

       In her review of the Edinburgh festival, music critic Kate Molleson wrote of *The*

Magic Flute:

> When I first saw the production at the Komische, I worried
> that the musical performance was restricted by the film,
> despite 900 live cues that make the movie tick on the night.
> This time I worried less. Conductor Kristiina Poska
> summoned flexibility and bright spirit in the pit – some of
> the Komische orchestral playing was rough-edged but the
> energy was right, and give me that over polite cleanliness
> any day. The cast isn't starry but it is solid . . . . [and] the
> star of the show is Barritt's animation. His is a whole world
> of marvelous mechanical winged creatures and pink
> elephants that references vaudeville and steampunk and
> Weimar expressionism . . . . One of the things this
> production does so brilliantly is to take down the opera's
> inherent misogyny with an artillery of sheer cuteness. It
> would be hard not to be charmed.[4] (Figure 1.1, Figure 1.2)

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[3] Schikaneder, Emanuel. "The Magic Flute." Komische Oper Berlin. https://www.komische-oper-berlin.de/en/whats-on/a-z/magic-flute/ (retrieved March 28, 2018).

[4] Molleson, Kate. (2015). "The Magic Flute at Edinburgh festival review – all the makings of a classic." The Guardian. https://www.theguardian.com/stage/2015/aug/28/magic-flute-festival-theatre-edinburgh-1927-barrie-kosky-paul-barritt-makings-of-a-classic (retrieved March 26, 2018).

Figure 1.1: Fantasias … *The Magic Flute* at Festival theatre, Edinburgh.
Photograph: Murdo MacLeod for the Guardian.

Figure 1.2: The Queen of the Night. Photograph: Murdo Macleod for the Observer.

As we can see from *The Magic Flute*, multimedia productions can enrich traditional musical performance through a combination of forms of expression, such as audio, imagery, video, acting, dance, and all the potential combinations of interactive content.

1.3. Quixotic Fusion

There are many multimedia performance ensembles (companies) that are very successful in the popular art field, especially circus arts. One of the leading groups is Quixotic Fusion, an innovative performance art collective that fuses imagination with technology, dance, projection mapping, and live music to create fully immersive, multi-sensory experiences. (Figure 1.3) Anthony Magliano, a founding member and sound designer who holds the position of Artistic Director, describes the group as:

> [A] band, a live music ensemble between five and eight performers. We usually have four to ten dancers and a whole team of visual effects artists. It's kind of a hybrid — what we're really trying to do is create a theatric production and a live music performance all at once. We basically go somewhere, think of what we can do, and then create a specific, custom installation performance.

Figure 1.3: Quixotic Fusion | Corporate Entertainment Reel 2017.[5]

Quixotic Fusion brings collaboration with local and international artists within music, fashion, theatre, dance, circus, and puppetry to create a magical odyssey of live musicians, 3D projections, acrobats, and light and sound effects. Whereas Quixotic Fusion falls under the umbrella of commercial art, there are also some contemporary classical composers whose works involve multimedia. They use technology to expand and enhance their compositions in order to provide a multi-dimensional experience for the audience. Chinese contemporary-classical composer Tan Dun is one of the best examples in this category.

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[5] Quixotic Fusion. "Quixotic Cirque Nouveau | Corporate Entertainment Reel 2017." Vimeo. https://vimeo.com/197433212 (retrieved March 6, 2018).

1.4. Tan Dun's *The Map*

Tan Dun's creations can be "unabashedly populist, radically experimental, or, most frequently, both."[6]   While his work does not fit neatly within preexisting categories, Tan Dun has created several new artistic forms that encompass sound, sight, narrative, and ritual. He creates orchestral theatre works, which re-contextualize the orchestra and the traditional concert-going experience with new realms of sound. He utilizes primal elements, such as water, paper, and stone, and multimedia extravaganzas, which incorporate a variety of cutting-edge technologies.[7]   Tan Dun is a conceptual and multifaceted composer and has made an indelible mark on the musical world with a creative repertoire that extends the boundaries of classical music through multimedia performance. Drawing from both Eastern and Western traditions, his work also erases the boundaries between cultures and artistic disciplines.

In Tan Dun's video-music compositions, he explores the use of video as a means of documentation, bringing folk song, natural sounds, news, and text together as a counterpoint to his music. His *The Map: Concerto for cello, video and orchestra* is an epic example of his multimedia creations and is scored for cello and orchestra, with an accompanying video projection on a screen behind the ensemble, as shown in Figure 1.4. In the piece, sometimes the musical instruments dominate the soundscape, sometimes the video footage is the center of the piece, and sometimes the audio track of the accompanying video is heard in synchronization with the live musicians on stage.

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[6] Dun, Tan. "About Tan Dun." Tandun.com. http://tandun.com/about/ (retrieved March 6, 2018).
[7] Ibid.

Figure 1.4: *The Map: Concerto for cello, video and orchestra*. Picture from official website.

The second section (*Studies in Contrasts*) of Tan Dun's *The Map, Movement V* (*Feige*), can be considered as a highly contrasted dialogue between the video and various Western instruments on stage. *Feige* (飞歌) literally means "flying song" referring to an antiphonal song of courtship that is usually sung by a male and a female across great distances. In this movement, a young Miao woman is seen on the projection dressed in the traditional costume for her region. At the same time, a wash of strings and harp glissandi are performed on the stage as an accompaniment. The Miao woman, on the screen symbolically, exchanges "songs" with the cellist on stage, who then responds in imitation. Her vocal style is improvisational, rhythmically free, and florid with a piercingly nasal sound. When her songs are transferred to the Western compositional framework, they are tamed and rationalized in the cellist's answers with more structured melodic contours. Towards the end of this movement, the motion of the Miao girl in the video is drastically

slowed down, frozen, and eventually faded out, while the orchestra on the stage proceeds to the next section *Interlude*.

Tan Dun said in an interview:

> The Map is a multimedia concerto grosso. I wanted to discover the counterpoint between different media, different time-spaces and different cultures. The structures and musical textures are designed to create antiphonal music by counterpointing between the cello solo and video, orchestra and video, solo and ensemble, text and sound, and multi-channel video and live playing of stone. Metaphorically, the orchestra becomes nature, the soloist symbolizes people, and the video represents tradition. [8]

In 2004, Tan Dun also mentioned (in an article entitled *Mapping the Portrait*):

> My greatest wish in composing *The Map* was actually to meld technology and tradition. Rough tradition, technology can be humanized; through technology, tradition can be renewed and passed on.[9]

1.5. Laurie Anderson's *Landfall*

There are some composers who are in the middle of the popular/classical specturm. They have not only specialized in popular art, but are also leading contemporary performance artists. Laura Phillips "Laurie" Anderson (born June 5, 1947) is an American avant-garde artist who has cast herself in roles as varied as visual artist, composer, poet, photographer, electronics wizard, filmmaker, vocalist, and instrumentalist. [10]   Her

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[8] Dun, Tan. "The Map Concerto for Cello." Tandun.com. http://tandun.com/composition/the-map-concerto-for-cello-video-and-orchestra/ (retrieved March 6, 2018).
[9] Ibid
[10] Anderson, Laurie. "About." Laurieanderson.com. http://www.laurieanderson.com/about/ (retrieved March 6, 2018).

ambitious multimedia projects not only encompass music, but also poetry, photography, visual projections, film, dance, and, most importantly, spoken and written language, which is the cornerstone of all of her works.[11] She became well known outside the art world in 1981 when her single *O Superman* reached number two on the UK pop charts.[12]

In 2014, she united with the innovative ensemble Kronos Quartet for their first-ever collaboration, inspired by Anderson's experience with Hurricane Sandy. Anderson and Kronos created an evocative meditation on evanescence, combining emotional texts and live music fortified by innovative technology. *Landfall* juxtaposes a variety of different electronic forms, such as electronic music and video projection, with traditional string quartet music performed by Kronos. In the work, Anderson brings in powerful descriptions (spoken and written language) of loss, from water-logged pianos to disappearing animal species to Dutch Karaoke bars.[13] In the performance, dense and active projected texts are triggered musically via live cues in the software developed for the work. The video projections compound and overlay with Anderson's stories, bringing in saturated and dramatic "images" of the storm on the stage.[14] (Figure 1.5)

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[11] Vladimir Bogdanov, Chris Woodstra, and Stephen Thomas Erlewine, *All Music Guide: The Definitive Guide to Popular Music*, (San Francisco: All Media Guide, 2001), 1075.
[12] Ibid
[13] Nonesuch. "Laurie Anderson and Kronos Quartet's Landfall." Nonesuch.com. http://www.nonesuch.com/journal/laurie-anderson-kronos-quartet-landfall-first-collaboration-february-16-2017-12-04 (retrieved March 9, 2018).
[14] Bam, "Landfall." Bam.org. https://www.bam.org/music/2014/landfall (retrieved March 9, 2018).

Figure 1.5: "Landfall" performed by Kronos Quartet & Laurie Anderson at the BAM Harvey Theater (photograph by Stephanie Berger, all images courtesy Brooklyn Academy of Music).

1.6. Conclusion

These modern composers, who are taking inspiration from other fields and genres themselves, have contributed a new energy and enthusiasm to the contemporary music world. The increasing number of vibrant, energetic and exciting young performers and composers, who are using modern technology to blur the boundaries between different art forms and change the means of presenting them, has had a significant impact on the contemporary concert experience.

Bringing technology into the traditional concert hall is increasing the potential audience, attracting people from different fields, with different interests. Audiences feel less constrained by formal presentations and stuffy concert halls, and today, virtually any forum can host such an event. Over the past few decades, more and more people view

concert-going as a unique and pleasant experience, thanks to the diversity of forums and novel approaches to artistic presentation.

Chapter 2. Piece-By-Piece Analysis

2.1 Introduction

As a composer and video artist, I feel that I must stay in-tune and up-to-date with the new demands of the audience in the constantly changing digital media landscape. Beginning in my undergraduate years, I had a strong interest in both electronic and acoustic music composition. This continued into my Masters education, which, because of my interest in visual arts, culminated with a multimedia thesis concert. Then, throughout my doctoral studies at the University of Texas at Austin, I have devoted a significant portion of my time to cultivating and developing more sophisticated skills in writing multimedia concert pieces. Some of these works have involved collaborations with dancers, video artists, and stage lighting and design artists. Two years ago, after studying video design in UT's RTF (Radio, Television, and Film) department, I started to create my own video art for use with my music. Ultimately, my goal was to combine many different audiovisual components into my projects. This brings me to my dissertation where I have chosen to use electronic music, live performance, dance, and video art to enhance an audience's concert experience.

The process of creating a multimedia work is very similar, no matter what media is involved. For me, it always starts from an idea and once I have an idea that interests me, I will spend a significant amount of time exploring it, just as when I do research. I will make a draft, decide on the instrumentation, the musical language, and most importantly, how best to convey the theme of the artistic idea while putting it all together. An idea could be a piece of score, a video, or programming a Max/MSP patch. No matter what I am working

with, I always consider the context of the performance so I can eliminate the future technical issues from the very beginning. I routinely take advantage of this approach while creating my own audio-visual works to overcome the difficult but necessary step of collaborating with other artists in a foreign field.

In addition to this paper, my dissertation consists of a suite of six multimedia works, entitled *Hearing the Music, Seeing the Dream*. The six pieces comprising the suite are all scored for instrument(s), electronic music, and video. Although each is unique in its instrumentation, theme, and artistic/aesthetic goal, all six pieces possess similarities, especially in musical language, structure, and similar titles. Two of the compositions in the suite share a similar structure: ternary form, (intro) ABA' (coda), and two of the compositions in the suite share an altered ternary form, AB (B1 and B2) A. Often, the B1 section is short in size and one can consider it as interpolation section, leading to the main middle section (B2). Formal structures of six pieces are shown in Figure 2.1. Despite the similarities that these pieces exhibit, each piece can stand on its own and has many distinct characteristics in terms of content and inspiration. Therefore, I will speak about each piece individually.

Traditional ternary form ABA'	[intro]	A	B	A'	[coda]
On the Threshold of a Drizzly Reality	mm. 1-23	24-46	47-75	76-110	111-121
On the Fringe of a Whale's Tail	mm. 1-3	4-14	15-48	49-52	53-56

ABC form	[intro]	A	B	C	[coda]
On the Pivot of an Abandoned Carousel	mm. 1-15	16-55	56-99	100-137	138-147

Altered binary form ABA'B	[intro]	A	B	A'	B
On the Excenter of a Blindspot	[none]	1-20	21-38	39-71	72-88

Altered ternary form form AB1B2A'	A	B1	B2	A'
In the Rainfall of a Chinese Garden	1-38	39-50	51-90	91-120
On the Rime of a Fading Forest	1-49	50-60	61-91	92-119

Figure 2.1: *Seeing in Sound, Hearing the Dream*, formal structure.

In terms of the musical language, the six pieces are similar, but with subtle variations. For example, dissonant chords are common throughout the scores (often triads with an added dissonant second), and I frequently use tritones, diminished chords, and non-functional harmony. In the following chapter, I will analyze each piece's structure, musical language, and relationship with the incorporated visual elements.

In my pieces, I use live audio processing, such as reverb, delay, harmonizer, granular synthesizer, etc. I also incorporate fixed media playback, both audio and video. Therefore, the synchronization between the live musician(s), audio, and video can be very challenging. I overcome this difficulty by separating large audio files into multiple smaller, individual cues to be played in sync with specific matching video cues. Each new cue serves as a checkpoint that the musicians can resynchronize with the fixed electronics. I intentionally make each video file longer than its expected duration in performance, so it is easier for the live musician to synchronize with the fixed electronics and transition to the next video cue smoothly.

In the suite, I link the various forms of media together to support each other as a whole and create a beautiful audiovisual experience that engages the audience. In the following section, I will talk about how I organize the structures, themes/motives, and the pitches of the pieces to interact with the visual components in my multimedia works, as well as how I designed a unique timbral world between live instruments and electronic components.

2.2 *On the Threshold of a Drizzly Reality*

On the Threshold of a Drizzly Reality, a nine-minute piece for cello, electronic music, and video, was written for cellist Nora Krakousoglou. The piece attempts to describe a mixed world of both my ideals and the stone-cold realities of my life. I believe that everyone and everything enters my life for a certain reason, and at a certain time. This piece, too, came into my life with a purpose. It is a soul-searching piece for me. It describes

the powerful emotions of my mind and imagination and also reveals the various hard aspects of the reality that intrudes on my life all the time—perspective, drowning in illusion or dancing on the threshold of the reality.

The cellist is on the stage alone, which is symbolic of an individual's isolated existence in this world. The electronics, based on pre-recorded sounds of the cello, are the illusion. The processed cello reveals a mysterious world, which sings simultaneously with the live cello. They are tangled with each other and the audience is unable to distinguish what is real and what is the "illusion." In the middle rhythmic section, the repeating notes travel through the stage and surrounding speakers, creating an effect that represents how fantasy and reality seem so interfused sometimes. Reverb is added to the live cello and is used to introduce a spatial-temporal variation of reality, which is mixed with the preprocessed cello sounds in the electronic music. Essentially, I was interested in creating the illusion of a sound world completely dominated by the cello, rather than two disparate sources of sound, instrumental and electronic.

The basic form of *On the Threshold of a Drizzly Reality* is ABA', with the A section preceded by a twenty-three-measure introduction and the A' section followed by a brief ten-measure coda, as seen in Figure 2.2.

In this piece, I use different pitches to represent different stages of reality. The piece starts with the pitch C in the introduction (sighs of the reality), then it proceeds to D in the A section (songs of sadness). Then, the pitches Eb and E create conflicts in the B section (confusion and struggle) and, then, in the recapitulation section A', I restate the pitch, D. The same pitch, D, is also prolonged at the beginning of the coda and eventually

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goes back to the original C, just like a lifecycle.

	[intro]	A	B	A'	[coda]
On the Threshold of a Drizzly Reality	mm. 1-23	24-46	47-75	76-110	111-121
Pitch Centers	C	D	E/Eb	D	D-C

Figure 2.2: *On the Threshold of a Drizzly Reality,* formal structure and pitch centers.

In the introduction (mm.1-23), the music is based on one note, C2. Until the last note of the introduction, C2 rises up to C#2, which prepares for the next pitch center (D). The live cello brings in the lowest open string on cello (C2), which has the most resonance on the instrument. I think of this sound as representing the opening of a heavy gate to a gloomy and mysterious world. Later, the glissandi are introduced as a representation of sighs (deep exhalation expressing extreme sadness) and weeping sounds, as shown in Figure 2.3. In this opening phrase, the live cello also uses different string techniques to produce different timbres, as seen in Figure 2.3. The cellist performs this passage from an ordinary/usual bowing position and gradually shifts to bowing over the fingerboard (*sul tasto*), which creates a hazy sound from the mysterious world.

Figure 2.3: *On the Threshold of a Drizzly Reality, glissandi* "sigh motive" and timbre shifting, mm. 1-4.

In the introduction, another main motive of the piece is also introduced. This is a "snap pizz." (or *Bartók pizzicato*) pulsing motive, as shown in Figure 2.4 and it represents heart beats. It is scattered throughout the piece, and is also devoloped later in the B section.

Figure 2.4: *On the Threshold of a Drizzly Reality, pizzicato* pulsing, mm. 11-12.

In the video's introduction, when the open string C is being played on the cello, a round abstract waterdrop on the screen is gradually enlarged. This waterdrop leads the audience into another world, as seen in Figure 2.5. This round waterdrop represents two subjects, one is the lifecycle (the shape of the waterdrop) and the other is the gate of the mysterious world.
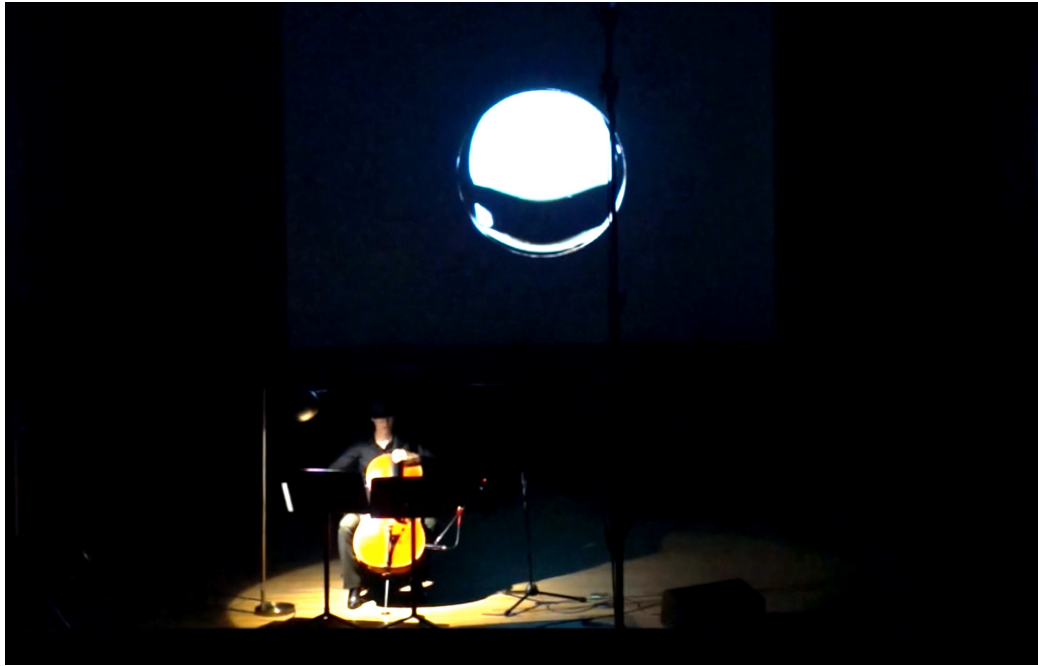
Figure 2.5: *On the Threshold of a Drizzly Reality*, life cycle symbol.

In this piece, the introduction is relatively heavy and extensive. Solo cello, live processing effects, and prerecorded soundfiles build up and become very active at the end of the introduction. This introduction previews many main motives, so it functions as one of the main sections of the piece in both length and importance. However, my intention when composing this section was to make it reveal the scene, set the mood, and very slowly build up to a point where I can effectively present the main A section. To me, the introduction is very thoughtful and weighty.

After the C# at the end of the introduction, the pitch D is introduced in the A section. In this section, the cellist plays very sad and expressive melodies, like a singer in a sad monologue. I use Max/MSP for live processed effects, such as different reverbs and delay

lines, to create a surreal environment and to dramatize the spatial world, as illustrated in

Figure 2.6.

Figure 2.6: *On the Threshold of a Drizzly Reality*, A section, mm. 37-39.

In the video of the A section (entered the mysterious world), everything is blurry

but with saturated colors portraying a feeling of being lost and experiencing vertigo in a

maze. As the cellist pours more emotions into the music, an endless pathway is shown on

the screen that continues going down the hallway, like there is no exit. Then, as seen in

Figure 2.7, the pathway turns upside down and in and out, and mixes with the blurry image.
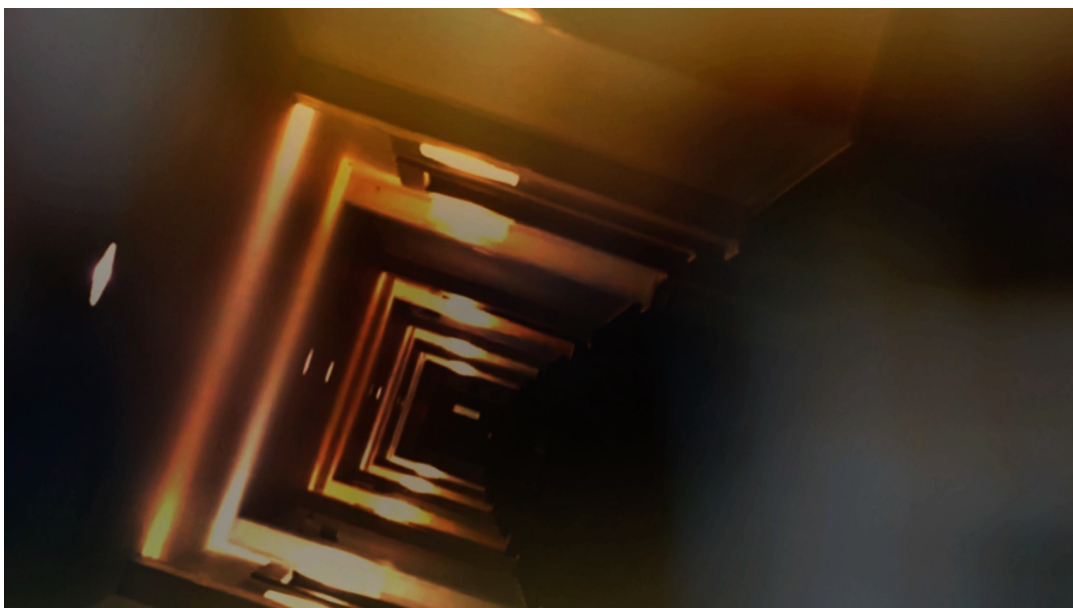
Figure 2.7: *On the Threshold of a Drizzly Reality*, endless passageway.

The A section ends on the pitch E, which is one of the main pitches in the middle rhythmic section (B section). In the middle section, the electronic part starts on two prerecorded cello *staccato* notes on E that serve as a very important cue to set the tempo of this section. Then, the cellist picks up the same E with the same articulation. The entire transition is seamless and the audience should not notice the difference between the fixed media and live cello.

In the rhythmic section, E and Eb are two primary pitches that strongly interact with each other. This half-step motive creates conflict in the music while the electronic music uses prerecorded cello sounds based on the same pitch material but with distorted sound effects. These electronic elements sound as if they come from a different world while the live cello sound punctuates and also offsets the electronic cello rhythmic pattern. The live

cello and the electronic elements sound like a duet between the cellist and the computer. In this section I intended to create a battle between the individul and reality (Figure 2.8).

Figure 2.8: *On the Threshold of a Drizzly Reality*, B section (the battle), mm. 49-52.

The video of the A section brings back the lifecycle symbol, which is developed in the middle rhythmic section (B section). In the B section, the waterdrop gradually turns to shady red colors and starts dancing with the music. The video interacts with the music, but the imagery is focused exclusively on the lifecycle material. In creating the video for this section, I intended to use the simple visual material to contrast with the complicated rhythm in the music, to represent that no matter how hard an individual fights reality, she will still have to live in that reality (Figure 2.9).
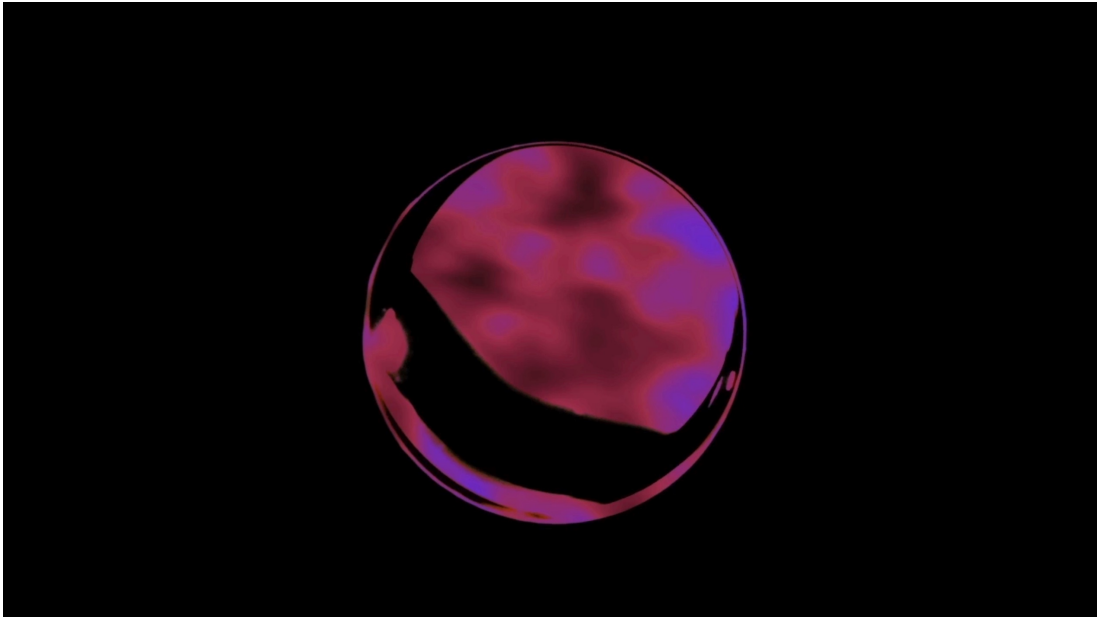
Figure 2.9: *On the Threshold of a Drizzly Reality*, red dancing life cycle symbol.

In the recapitulation (A'), the pulsing/battle motive overlaps the live cello solo (the song of sadness). While the conflicts are fading away, the sad and expressive melodies from the A section gradually come back and re-establish the pitch D as the center of this section. In the coda, D is prolonged by both live cello and electronic music. This prolonged D creates tension and expectation for the arrival of the pitch C, which is originally introduced in the introduction section. Finally, the piece ends on C, the lowest open string on the cello – also the most resonant, which represents entering another gate. Everything goes back to where it started, just like a lifecycle.

2.3 *On the Fringe of a Whale's Tail*

On the Fringe of a Whale's Tail, a seven-minute piece for piano and electronics, was commissioned by pianist Josh Straub. The piece attempts to describe an artist's world. It is sentimental, unreal, and full of adventures, creativities, and conflicts. To me, an artist is an explorer with dreams. As artists, it is our responsibility to show the world the powerful emotions of our beautiful minds and imaginations, and also to fight a harsh and uninspiring reality. Imagination is the artist's most powerful tool.

In this piece, the pianist is on the stage alone creating many different sounds on the piano. It represents the lonely reality of how an artist individually exists in this world, perhaps like standing on a whale's tail in the middle of the ocean. The electronics, based on pre-recorded sounds of the piano, are the little universe the pianist has created with her imagination. It is deep, dramatic, inspiring, exciting, and colorful, like the ocean.

The processed piano sounds in the electronic part reveal this mysterious world, which sings simultaneously with the live piano. They are tangled with each other. The desired effect is that the audience is unable to distinguish what is real (the acoustic piano) and what is the iimagined (the electronic part). It is a world of creativity and endless possibility. The effects added by processing the live piano represent how creative passion evokes inspiration and imagination, which sometimes contrasts with reality.

The form of *On the Fringe of a Whale's Tail*, like *On the Threshold of a Drizzly Reality*, is ABA', with the A section preceded by a one minute long introduction (three free measures) and the A' section followed by a free four-measure coda. The formal structure of this piece is as depicted in Figure 2.10. The meter is inconsistent and free because the

artistic goal of the piece is to convey a sense of creative freedom and inspiration. I removed

the bar-lines to represent the free spirit of an artist untethered to a sense of tempo. I used

many extended techniques such as a mallet striking the strings, plucking the strings with

fingers, glissandos directly on the strings, and half-muted strings.

	[intro]	A	B	A'	[coda]
On the Fringe of a Whale's Tail	mm. 1-3	4-14	15-48	49-52	53-56

Figure 2.10: *On the Fringe of a Whale's Tail*, formal structure.

In the introduction, the pianist uses a marimba mallet to hit the A1 and Bb1 strings.

The pianist improvises the rhythm from slow to fast, and then back to the slow tempo. In

this opening section, the music is unmetered with dotted bar lines representing phrases. As

the live piano slows down with a *decrescendo*, the electronic music part picks up the piano

sound with an enormous *crescendo* as displayed in Figure 2.11. After the piece reaches

the first peak, the second *crescendo* gesture slowly sneaks in with a heavy, distorted

electronic sound. After the attack, the live piano immediately plays another extended

technique in the high register (F5 and G5), plucking the strings inside of the piano. These

"reversed sound" gestures depict the opening scene of the piece, which is full of surprises.

I used computer-generated sounds blended with live amplified piano to build a seamless

texture and to form an intertwined relationship between piano and electronics.

Figure 2.11: *On the Fringe of a Whale's Tail*, introduction *crescendo* gesture.

In the A section, main melodies are scattered in the high register of the piano. These shimmery high pitches combine with the electronic part to create a timbral shift, especially in the repeating notes motive, as shown in Figure 2.12. Further implications of these timbral shifts occur while the live piano plays the repeated notes on C#6. The electronic part has a similar gesture, but it is elongated. Additionally, the electronic part provides a distortion effect based on the prerecorded piano sound and the shift of the pitch to B5. Then, pitch Eb emerges at the end of this electronic music passage. As the Eb appears in the electronic part, it cues the live piano to play the muted Eb. The performer then gradually adds a muted D and unmuted Bb, an effect similar to pitch shifting, but this time in the live piano. All these features contribute to the blending of the live instrument and electronic worlds through timbral effects.

Figure 2.12: *On the Fringe of a Whale's Tail*, repeating notes motives, mm. 6-8.

During the pulse-based section of the piece (B section), the electronic music part provides more dramatic and percussive effects. This rhythmic section aims to contrast the freer rhythmic character of the first section. After the electronic music part introduces a steady rhythmic pattern, the live piano also starts to play in a rhythmic manner with the electronic part. Other than providing an energetic rhythmic pattern, the electronic part also introduces timbral variety, which creates a shifting effect in combination with the live processed piano, as seen in Figure 2.13. This timbral play links the otherwise contrasting A and B sections together.

Figure 2.13: *On the Fringe of a Whale's Tail*, repeating notes motives, mm. 22-24.

During the energetic B section, the video is extremely responsive to the music. The yellow and blue strings dance together and react with the rhythm, as depicted in Figure 2.14. Electronic music, live piano, and visual elements continue to build up. At the climax of this section, everything suddenly stops, leaving only the simple quarter-note beats in the low register of the piano. This abrupt change in all the media creates great contrast and drama at this point in the work. The interaction between all the forms of media reinforces each of them other and significantly contributes to the dramatic trajectory of this section.
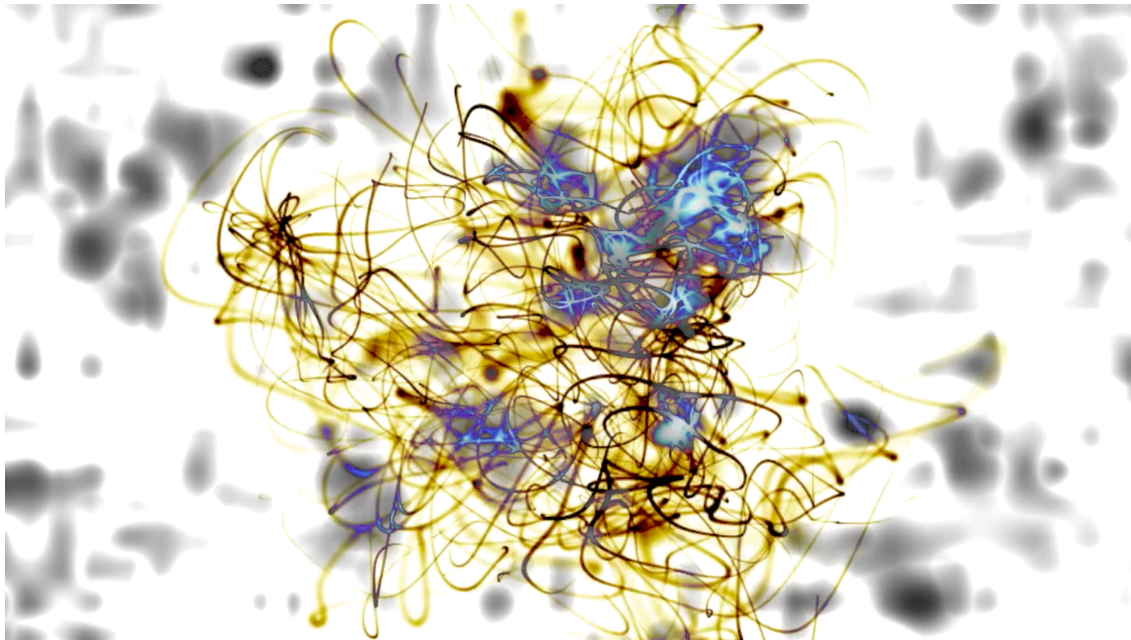
Figure 2.14: *On the Fringe of a Whale's Tail*, responsive visual elements in B section.

There is an eight-measure interpolating passage before the recapitulation where a simple harmony with a jazzy character combines with different shades of grey in the video, which brings melancholic emotions into the piece, as seen in Figure 2.15. In addition to the distinct quality of the harmonic language that suggests interpolation, the freer rhythmic nature of this section also hints of a return to the A section, or at least a transition from the previous pulse-based B section.

Figure 2.15: *On the Fringe of a Whale's Tail*, musical interpolation with grey shade patterns.

After a shortened and free recapitulation, there is a four-measure coda where the main motive and repeating notes motive mix with the chords introduced in the interpolation passage, as shown in Figure 2.16 recalling the repeated notes from the opening passage. The video also returns to the opening watery, shifting character combining with timbral effects from the electronics and live instrument. It was important to me that the piece had a rounded quality that was emphasized by all the media featured in this piece. (Figure 2.17).

Figure 2.16: *On the Fringe of a Whale's Tail*, coda.
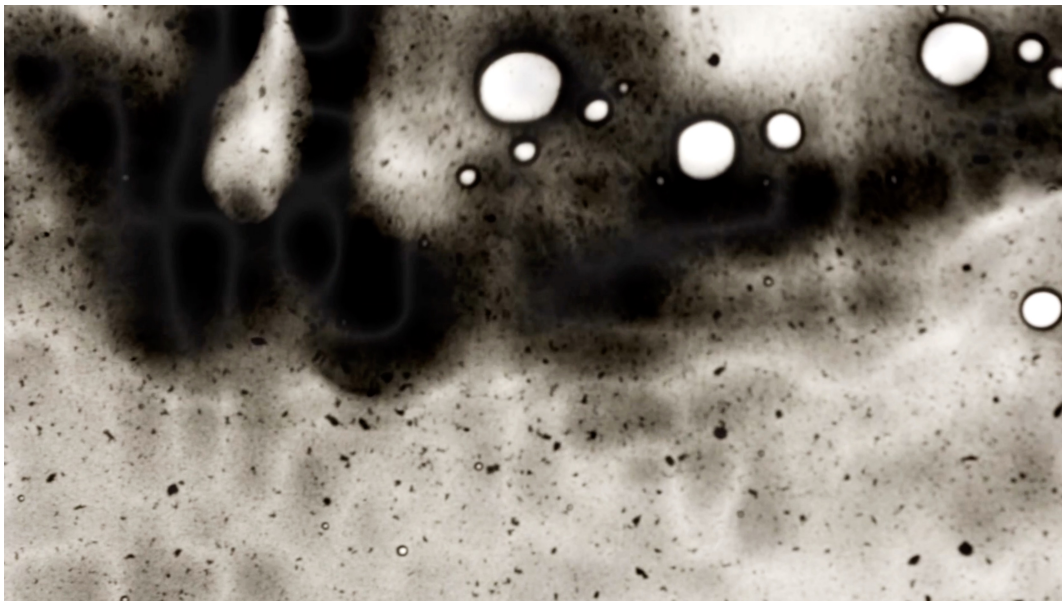
Figure 2.17: *On the Fringe of a Whale's Tail*, wave footage in the coda section.

In this piece, I focused on balancing the relationship between the piano and electronic sounds. Sometimes, the electronic part provides effective connections between phrases while at other times, it seems to be adding a special timbral effect to the live piano. Sometimes the tape part extends a passage by repeating the emphasized harmonic partials of an ending note/chord, and sometimes it provides a powerful rhythmic pattern to accompanying the live piano.

2.4 *On the Pivot of an Abandoned Carousel*

On the Pivot of an Abandoned Carousel, a nine-minute piece for flute, dance, and electronics, was written for flutist Kenzie Slottow. Before I started to compose the piece, Kenzie told me she is also a dancer and that she wanted a multimedia piece that she could interact with as a musician and dancer.

By working with artists from different fields, I learned that to achieve effective results from collaboration is never easy. An additional challenge with this particular piece is that there is a variety of media types, some of which have conflicting needs. For example, a standard video work requires a dimmer light or an all dark environment, but dancers on the stage require proper lighting with special designs. In order to find a solution that accommodated both needs, Kenzie and I met regularly over the course of writing the piece to discuss how to better integrate the different media in a way that one is not at odds with another.

On the Pivot of an Abandoned Carousel describes the haunted scene of a carnival that was once a beautiful place full of happiness and joy. Years ago, the calliope, a small

simple carnival organ, was a signature of the carnival, representing simple childhood happiness. Here, the flute, which I use to imitate the calliope, becomes increasingly more distorted until it collapses later in the piece. The scene becomes abandoned. The live flute and the pre-recorded flute in the electronics overlap so the audience cannot determine what is real and what is not. This mimics our memories, so as to show the exaggerations and delusions that form in our head. At times, music can recall amazing memories of wonderful experiences. At other times, it can seem creepy and haunted. The human brain can interpret things in a multitude of ways, and the music helps portray the mind's illusory power. In performing the music, the flutist is in costume and interacts with black and white projections through dance in the yellow and purple stage lighting.

The formal structure of *On the Pivot of an Abandoned Carousel* is basically ternary. However, instead of having the A section return after the B section as A', a new section is presented. This new section (C) uses new material, but it recapitulates the fast and lively mood of the A section. This approach effectively balances the musical structure as fast-slow-fast. Additionally, the A section is preceded by a fifteen-measure introduction and the C section followed by a ten-measure coda. The formal structure of this piece is shown in Figure 2.18.

	[intro]	A	B	C	[coda]
On the Pivot of an Abandoned Carousel	mm. 1-15	16-55	56-99	100-137	138-147

Figure 2.18: *On the Pivot of an Abandoned Carousel*, formal structure.

In this piece, I use many extended techniques for the live flute and prerecorded flute sound, such as air sounds, overblowing, singing, key clicks, glissandi, pitch bends, jet whistles, beat boxing, among others. These extended techniques create a rich and interesting sound palette, which also becomes the source of the electronic sounds. Sometimes the extended techniques are gentle and beautiful, sometimes they are harsh, sometimes they are aggressive and overwhelming, sometimes they are colorful and joyful. All the images represent different interpretations that I have of the abandoned carousel.

In the introduction (mm 1-15), the live flute begins with a half-step tremolo on C# and D. Two beats later, the computer plays back the same passage via a delay line. Then, the flutist plays a single D with only air sound and extreme dynamic changes. Finally, the passage ends on a C# (two octaves higher) in the electronic part. This dramatic opening phrase has an eerie feeling and unsettling character, like a particular musical passage in a horror movie that has a foreboding quality implying that something creepy is going to happen (see Figure 2.19).

Figure 2.19: *On the Pivot of an Abandoned Carousel*, eerie opening, mm. 1-3.

The visual elements that accompany this passage are equally spooky. The flutist/dancer half kneels on the spotted floor while the yellow and purple pattern on the floor matches the color of the panel lights on each side of the stage. In the middle of the stage, a black and white video is projected on the screen. Because of the monochrome video setting, the screen seems edgeless. The stage turns into a starry night scene, as seen in Figure 2.20.

Figure 2.20: *On the Pivot of an Abandoned Carousel*, eerie opening with visual elements.

Later in the introduction, free and singing melodies appear, which represent beautiful childhood memories of riding on carousels. As the melodies become more and more active and vivid, the electronic music introduces a rhythmic pattern, which leads to the spinning carousel theme in the A section, shown in Figure 2.21.

Figure 2.21: *On the Pivot of an Abandoned Carousel*, spinning carousel theme, mm. 14-18.

In the first seventeen measures of the A section, the main theme is presented in the middle register of flute, which has a sweet and expressive quality of sound. Later, in mm. 33, the live flute drops to the low register, adding some eeriness to the playful theme. This change symbolizes our beautiful childhood experiences being replaced by the horrifying images we see in popular culture/art as we grow up. The playful and active music collapses and unsettling feelings gradually appear in the second half of the A section (mm. 33-52), as seen in Figure 2.22.

Figure 2.22: *On the Pivot of an Abandoned Carousel*, dropped register of the theme, mm. 33-35.

While the main theme is being introduced, the video shows a black and white circus tent, which represents a nostalgic childhood memory. As the flute drops to the lower register, the video also becomes twisted and sinister, as shown in Figure 2.23.

Figure 2.23: *On the Pivot of an Abandoned Carousel*, twisted circus tent.

In the B section, the music is unmetered with dotted barlines giving it a mainly free character. In this section, I use many extended flute techniques, such as bending tones, singing while playing, random strong tonguing with strong lip-pressure, speaking while playing, gradually changing words while playing, jet whistles, key clicks, and glissandi to mimic ghost cries. The combined effect of all these features creates a spine-chilling scene. While the live flute provides the foreground of the haunted scene, the loud electronic sounds used in this section are heavily distorted, which emphasizes each strong dynamic peak. The electronic part also provides a hair-raising spatial background for the live flute. The notation can be seen in Figure 2.24.

Figure 2.24: *On the Pivot of an Abandoned Carousel*, spine-chilling B section, mm. 68-78.

In the B Section, the video is equally horrifying: the flutist trapped in a dark world and struggling to get out. Her shadow is distorted in a very disturbing way, as seen in Figure 2. 25.

Figure 2.25: *On the Pivot of an Abandoned Carousel*, distorted shadow of the flutist.

In mm. 88, the flutist raises up her instrument, dramatically performs a series of key clicks, and then the stage lights are turned off. The performer has disappeared in the dark, but the creepy flute sound sustains. The flute sound becomes more and more disturbing, and eventually triggers the second group of key clicks (mm. 96), which is the cue for the lighting technician to turn the stage lights back on (see Figure 2.26). In this section, the electronic part slowly introduces granulated electronic sounds. As it grows louder, the live flute also plays an intense *crescendo* from *piano* to *fortississimo*. Eventually, at the peak of the *crescendo*, the electronic part introduces strong and unexpected beats, which leads to another rhythmic section (C section).

All the aspects of this B section combine to produce the haunting character. The electronic part, lighting, video, and the performer (both dancer and flutist), together with the extended techniques, all play crucial roles in creating the overall effect of this section. The parts are all so integrated that the elimination of any of them would significantly decrease the effectiveness of the passage.
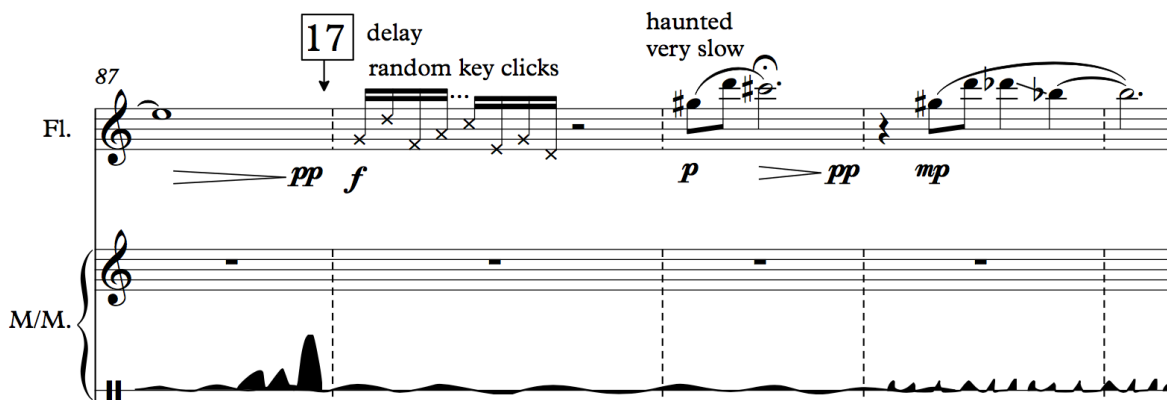
Figure 2.26: *On the Pivot of an Abandoned Carousel*, second group of key clicks, mm. 87-90.

In the C section, the live flute, along with the strong and dramatic electronic pulse, performs fast and short notes in the high register. Later in the C section, after the flute "spreads out," introducing notes in different registers, the performer begins beat-boxing, as shown in Figure 2.27. This striking extended technique on the flute adds a percussive, energetic layer to the musical texture. This section portrays a dance/fight with intimidating monsters.

Figure 2.27: *On the Pivot of an Abandoned Carousel*, leaping notes and beat-boxing, mm. 117-121.

At the same time, the flutist fights/dances with the skeleton that appears in the accompanying video. The whole scene becomes an unnerving horror story (see Figure 2.28). Again, the video, electronic part, dancer, live flute that includes beat-boxing along numerous other extended techniques, all help bring this section to life.

Figure 2.28: *On the Pivot of an Abandoned Carousel*, skeleton monster.

On the Pivot of an Abandoned Carousel is a piece that combines many different media that support each other, interact with each other, and evolve from one another. The dark, thrilling and atmospheric characteristics of horror culture/art can transform a once beautiful memory into an intriguing horror story.

2.5 *On the Excenter of a Blind Spot*

On the Excenter of a Blind Spot is a piece for piano and electronics approximately seven minutes in length. While preparing for my specialized comprehensive exams, I studied Mario Davidovsky's *Synchronisms No. 6* for piano and electronic sound (1970). I became particularly enchanted with the opening gesture and Davidovsky's use of a "super

piano." The piece opens with a single G on the piano, which naturally dies away because of the percussive nature of the piano. As the G dies away, the tape part picks up the note. The tape part then introduces a *crescendo* gesture on the same pitch G, which leads to two short punctuations: G in the tape and E on the piano. This gesture seems to emanate entirely from the piano, using only two pitches, but the timbres and dynamics of this electronic part cannot be produced by any piano. Throughout the piece, electronic sounds prolong the piano, expand the dimension of piano sounds, and break the limitations of the instrument. In *On The Excenter of a Blindspot*, I emulated this unique gesture.

In writing this work, I was also inspired by the famous children's book *Alice in Wonderland* by Lewis Carroll. It tells the story of a girl named Alice falling through a rabbit hole into a fantasy world populated by peculiar, anthropomorphic creatures. It seems like a simple fairy tale, but it goes much deeper than that. Carroll describes a struggle with self-identity, which he describes through a series of bizarre events. Feeling lost becomes a recurring theme in the book as Alice regularly expresses uncertainty about who she is after she enters Wonderland.

In my piece, the piano, electronic music, and video all become increasingly more distorted until they collapse. The scene becomes a hallucination. In Alice's story, she discovers the world through uncertainty and self-questioning. Her whole world is based on a hallucinogenic experience. Hallucination is a mental disorder in some traditional conceptions, but hallucination also often reflects the nature of the mind, perception, and our views and knowledge of the world. How do we perceive the world? Is our existence a series of hallucinations? In the following paragraphs, I will talk about how I organized

the relationship between the live instrument (piano), the electronic music, and the video to present a world full of hallucinations.

The formal structure of *On the Excenter of a Blindspot*, ABA'B, is different from most of the pieces in my suite in that it is not rounded due to the return of the B section. The A section is slow and has the main theme, which is developed and built-up over time. The B section is fast, rhythmic, and full of energetic beats. The A' section starts with new material and then gradually brings back the main theme. Within the A' section, the main theme builds up, becomes distorted, and eventually collapses leading to a return of the B section (see Figure 2.29).

	[intro]	A	B	A'	B
On the Excenter of a Blindspot	[none]	1-20	21-38	39-71	72-88

Figure 2.29: *On the Excenter of a Blindspot*, formal structure.

In the beginning of the A section, a half-muted note, A1, follows the electronic sound in the opening. This note naturally dies away because of the percussive nature of the instrument. However, the tape picks up the note (A1) with a *crescendo*. At the same time, the piano starts to play another motive defined by articulated legato (portato) notes in quarter-note triplets, which creates a distraction from the bass range *crescendo* in the tape. These triplet notes start on the A3 producing an echo effect with the half-muted A1. At the peak of the tape *crescendo*, which I made by creating a reverse piano sound, another

half-muted A1 strikes in the same low register and then naturally fades out. Then, the quarter-note triplet motive returns and expands to a higher note (G) in m. 6 (see Figure 2.30).

Figure 2.30: *On the Excenter of a Blindspot*, "Tritone triplets motive" (G A-C-Eb F), mm. 1-9.

The *crescendo motive* creates a gesture with quarter-note triplets from the first half-muted A1 to the second half-muted A1. This motive seems to emanate directly from the piano. It uses only one pitch, but with the highly dramatized timbres and dynamics that a piano cannot produce. This *crescendo motive*, along with the effects that create the 'super piano,' provides the framework for the aesthetic of the piece. The same style and structure can also be found in m. 11. The reversed piano sound (*crescendo motive*) in the tape part leads to another strike on A1.

The structure of the quarter-note triplets motive is based on a tritone interval (A-Eb) with two whole-tone expansions (G-A-Eb-F). In the first appearance of the motive, I omitted G and added an E as a false resolution after the D#. During the second appearance,

I fully present the motive (G-A-Eb-F). Eventually, in mm. 8-9, the center of the tritone (C) appears at the high point of the first system (G-A-C-Eb-F).

In m. 12, after the half-muted A1 appears the third time, the pace of the music grows faster and more dramatic. In mm. 12-13 the triplets motive begins to develop. In the development, eighth-note sextuplets combine with the tritone motive, which pushes the music forward emotionally and develops a sense of agitation (see Figure 2.31). This development also introduces distortion in the piano part leading to a collapse in m. 19 (see Figure 2.32).

Figure 2.31: *On the Excenter of a Blindspot*, original triplet motive combined with 8th-note sextuplets, mm. 10-14.

Figure 2.32: *On the Excenter of a Blindspot*, distortion and collapse, mm. 19-20.

Each of the three times the half-muted A1 strikes, a circle/ring image appears on the screen. I use this symbol, the *confusion ring*, to represent the confusion between reality and imagination. I present this image in many different ways throughout the piece. For its first appearance, it mixes with a Lomographic effect photograph of a tree brunch (see Figure 2.33). This flash of images sets the style of the video back about one decade to a time when Lomographic photography was very popular and also brings a sense of nostalgia.
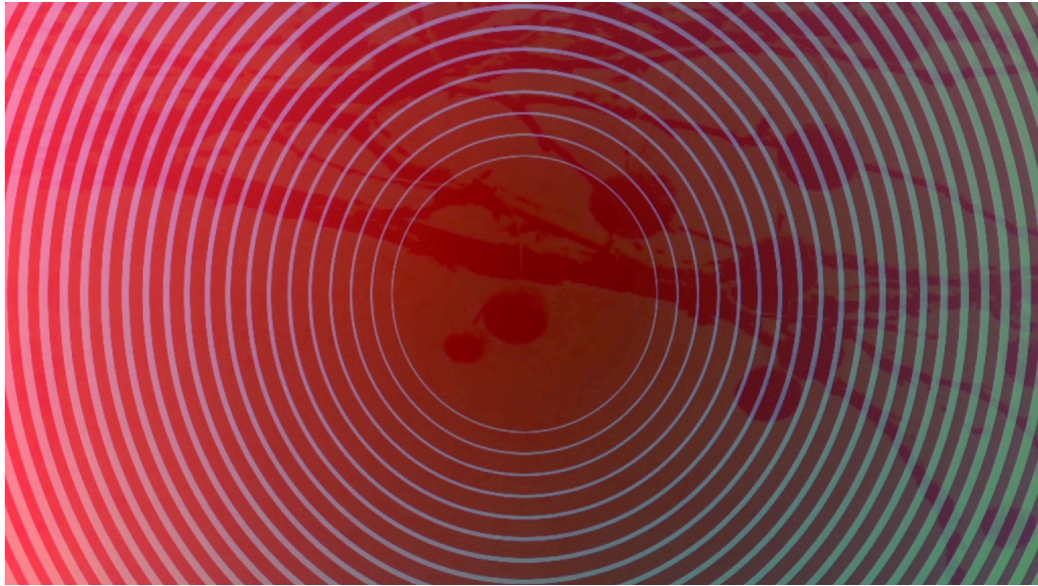
Figure 2.33: *On the Excenter of a Blindspot*, "Ring/Confusion symbol" first appearance.

After the opening scene, the video, which compliments the quarter-note triplet motive, appears via a watery gray image. While the tape picks up the note (A1) for the second time with a *crescendo motive*, the video corresponds with the ring symbol resulting in a seamless interaction with the electronic sound. At the peak of the *crescendo* the original blue circle image finally appears for its full statement, without a superimposed image (see Figure 2.34).
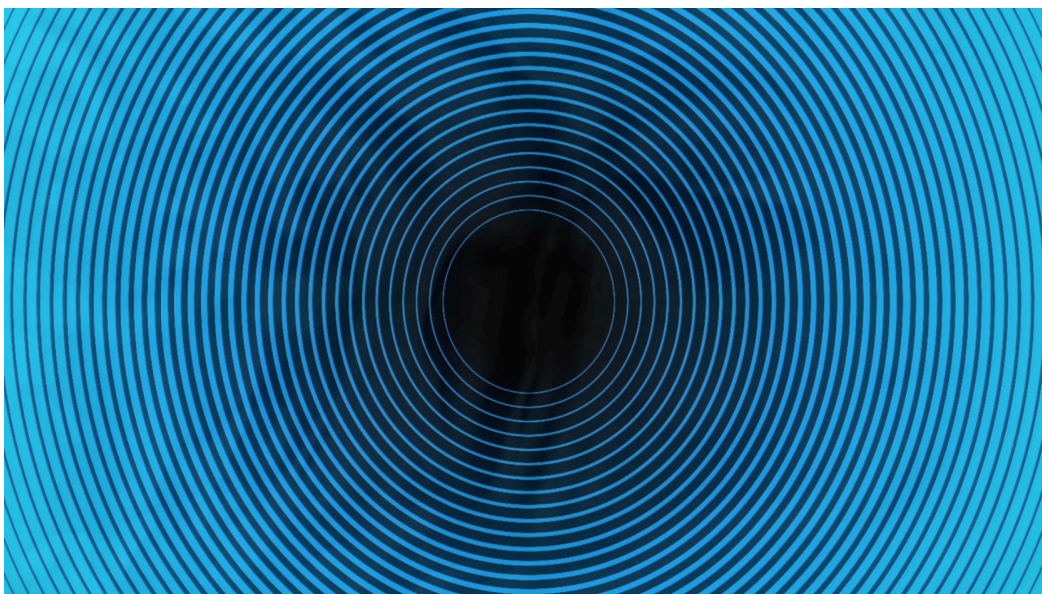
Figure 2.34: *On the Excenter of a Blindspot*, the original "Ring/Confusion symbol".

At this point in the piece, the musical and visual motives simultaneously develop. In m. 11, right before the half-muted A1 strikes for the third time, the ring symbol combines with another tree branch image. The images flash with the audio before the strike of the half-muted A1 completes the statement (see Figure 2.35).

Figure 2.35: *On the Excenter of a Blindspot*, Foreshadowed "Ring/Confusion symbol"

While the tritone motive accelerates with the introduction of the sixteenth-note sextuplets, the dynamic range of the music grows through both the live piano and the tape part. In m. 18, the music becomes progressively more agitated as the notes gradually build up and grow with the tape part distortion. This accumulation passage represents the scene when Alice falls into the rabbit hole. Her world and vision spin as she loses control of her body (see Figure 2.36).

Figure 2.36: *On the Excenter of a Blindspot*, accumulation and distortion passage, mm. 15-18.

During this fast, rising passage in the music, the video corresponds with the sounds produced. In the video, a spinning spiral replaces the original confusion ring image. The spiral spins faster and faster, gradually distorts, and mixes with vibrant colors (see Figure 2.37). Eventually both the audio and video collapse together, leading to the rhythmic B section.

Figure 2.37: *On the Excenter of a Blindspot*, Spinning circle with vibrant colors.

In the B section, the computer introduces the chorus effect through live processing of the piano. This is another example of how electronic music can enhance a piano's timbral world. The live processing of the piano brings in a very active and dramatic de-tuning effect (see Figure 2.32). Since a pianist cannot change timber after a note is played,

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the electronic sounds become the "extended techniques" and "extended timbre" of the "super piano."

In the middle rhythmic section of the piece, the tape part provides dramatic, pulsated, and more percussive effects. This combines with interactive dancing and visual patterns, which overlap with the original "confusion ring" (see Figure 2.38).
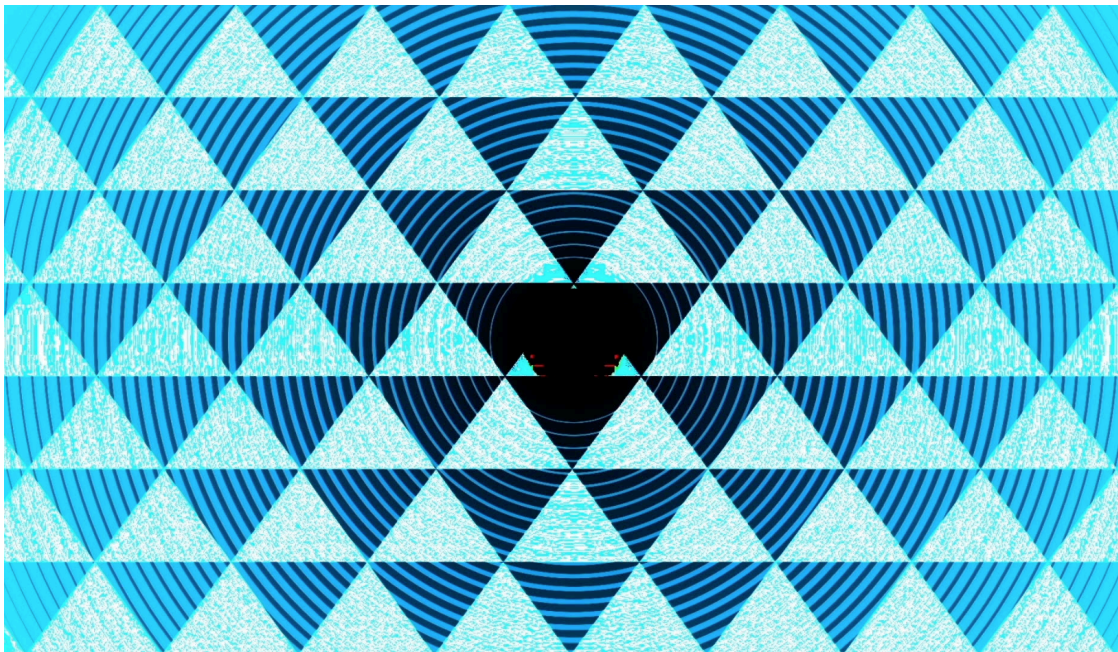
Figure 2.38: *On the Excenter of a Blindspot,* Dancing patterns in the middle rhythmic section.

As one can see from the figures and examples discussed in this section, as with Davidovsky's *Synchronisms No. 6,* computer-generated sounds blended with live amplified piano can build a seamless texture and form a beautiful relationship between the piano and electronics. Both the live musician and the tape part interact to create an interactive tapestry that exceeds what either could do alone. In *On the Excenter of a*

Blindspot, the spirit of *Synchronisms No. 6* can be felt, but I add video to create a deeply connected audio-visual world that provides the audience with a stimulating and exciting concert-going experience. The piano, electronics, and video mix to create a world of hallucination and confusion similar to those experienced in the story *Alice in Wonderland*.

2.6 *In the Rainfall of a Chinese Garden*

In the Rainfall of a Chinese Garden is a six-minute piece for marimba and electronics. Marimba to me is the best instrument to describe rain as wooden blocks themselves come from nature. Also, because of the physical properties of the instrument, the sound of a marimba fades away naturally just like the sound of raindrops fades away as they splash in puddles or beat against a window. But when the rain starts to pour, marimba tremolos provide an entangled captivation just like the drum and dance of heavy rainfall. This piece describes a beautiful scene of a rainy day in a Chinese garden. Raindrops drip down from shining leaves, breaking into thousands of diamonds, and then hang on silken spider webs like crystal strings. What a shimmering and luminescent scene! Nature is truly the best artist. This was my inspiration for this piece.

The formal structure of *In the Rainfall of a Chinese Garden*, AB1B2A', also differs from the standard ternary form of the other pieces in this suite. One can consider this formal structure as an altered ternary form, in which the main B section has two small sections. The A section is dreamy and unpredictable while the B1 section is a fast and rhythmic dancing section, which also serves as an interpolation section before the main contrasting section (B2 section). The A' section starts with new material and then

gradually brings back the main theme. In the end of the A' section, which can be considered a coda, long and new melodic material appears. I bring this new material (mm. 109-117) with a similar mood into the A' section to balance the size of the recapitulation without the need to restate the entire A section (see Figure 2.39).

	A	**B1**	**B2**	**A'**
In the Rainfall of a Chinese Garden	1-38	39-50	51-90	91-120

Figure 2.39: *In the Rainfall of a Chinese Garden*, formal structure.

In this piece, the electronic sound enhances the spatial world of the piece. It creates a surreal spatial environment to compensate for and dramatize the fixed acoustic space in the concert hall. It also enhances the depth of the piece's spatial world. This spatial enhancement provides the audience a vivid acoustic image of a beautiful rainy scene in a garden.

As the piece begins, the marimba plays two seventh-interval gestures to represent the "raindrop theme." In the computer part, I use a heavy reverberant effect and freeze the second notes (F and D) to further create the theme. While the notes freeze, I introduce electronic pads on the same pitches as the dynamic gestures. Within this prolonged gesture, I enhance the marimba sound by adding timbral flexibility and shaping the envelope of the dynamics on a "sustained" note. A marimba can never sustain a single note while also changing the dynamics of the note. Here, the electronics create this effect (see Figure 2.40).

Figure 2.40: *In the Rainfall of a Chinese Garden*, Prolonged raindrop theme.

Throughout the piece, the electronics seem to arise from within the marimba. They also surround and become interwoven with the marimba to create a giant sound phenomenon. The reverb and freeze effects, combined with the electronic sounds, present a mysterious and unpredictable sonic network to the audience. At the same time, in the video, the blur effect matches perfectly with these sounds (see Figure 2.41).
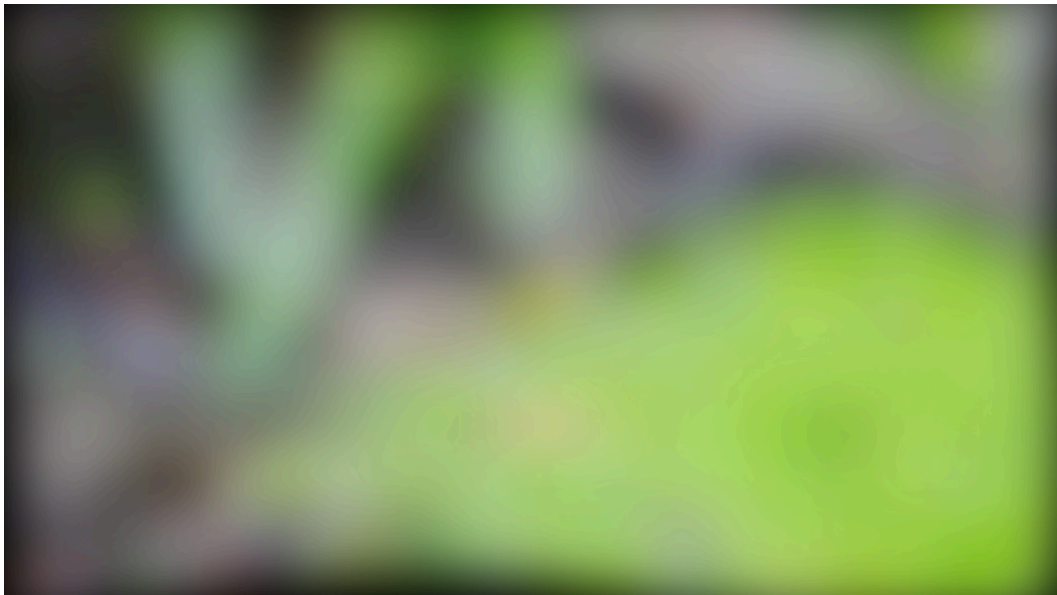
Figure 2.41: *In the Rainfall of a Chinese Garden*, blur effect.

Musically, *In the Rainfall of a Chinese Garden* blends two different groups of sound elements by transferring the sound energy from the marimba to the electronics (or vise versa), building a relationship between them. In this piece, I explore the possibilities of linking the acoustic properties of a live marimba with the immeasurable potential of electronically generated sound. As seen in Figure 2.43, the piece continuously transfers sound energy from one body to another. For instance, in mm. 28-29, the notes or texture of the marimba are continued and emphasized by the electronic part. Also, in m. 31 the marimba picks up sound texture from the electronics (see Figure 2.42).
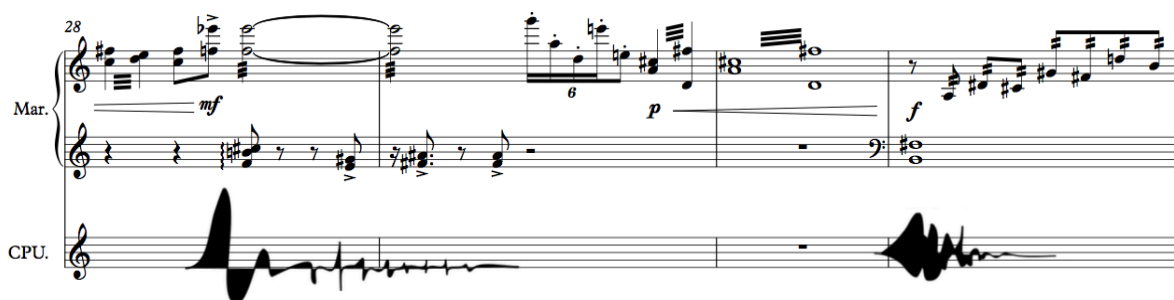
Figure 2.42: *In the Rainfall of a Chinese Garden*, sound energy transfers from one sounding body to another, mm. 28-31.

In the first rhythmic section (B1 section), in addition to reverb, I introduce a "bit crusher" and two delay lines. This approach furthers the special environment of the piece and manipulates the timbre of the instrument. It describes the idea that once the rain starts to pour, the mist rises from the horizon and surrounds the garden and its flowers. The raindrops drip down and immediately bounce up to become thousands of diamonds, which dance through the misty clouds. These electronic effects live-process the marimba on stage

to create a dreamy and shimmery rainy day scene. In the video, raindrops, a pond, and shimmery flowers all dance together to provide visual support of the scene (see Figure 2.43).

Figure 2.43: *In the Rainfall of a Chinese Garden*, Dance of raindrops and flowers.

In the second rhythmic section (B2 section) mm. 51-89, I build a relationship between the organic marimba sound and electronic sounds to create ambiguities and drama, in order tosembellish and connect the piano with the electronic sounds. In this section, I use many different electronic sounds. The sounds are manmade – some are from a sample library and some are pre-generated and processed through the Max/MSP patch – but I manipulate and convert them into something more organic. We can find these sounds in nature, such as water dripping, insects buzzing, and wind blowing. I combine these

electronic sounds with the marimba to create a lively and playful rhythmic section (see Figure 2.44).

Figure 2.44: *In the Rainfall of a Chinese Garden*, playful rhythmic section mm.70-73.

In the A' section, the majority of the motives in the original A section return, but their lengths are substantially shortened. This shortened A' section describes a scene where the rain gradually stops and a rainbow appears near a pond. This image of a rainbow inspired me to introduce new material that prolongs the A' section. The 'rainbow' material exhibits many similar characteristics of other material included in the A section (see Figure 2.45). In this section, I also use a large reverberation effect to create a colorful and shining rainbow scene.

Figure 2.45: *In the Rainfall of a Chinese Garden*, new rainbow material mm.112-114.

In the video, I also introduce new material in the beginning of the A' section. With the introduction of bright and lighter colored images, I imply that the sun comes out. Then, a light turquoise rainbow dances with water drops seen on leaves (see Figure 2.46).
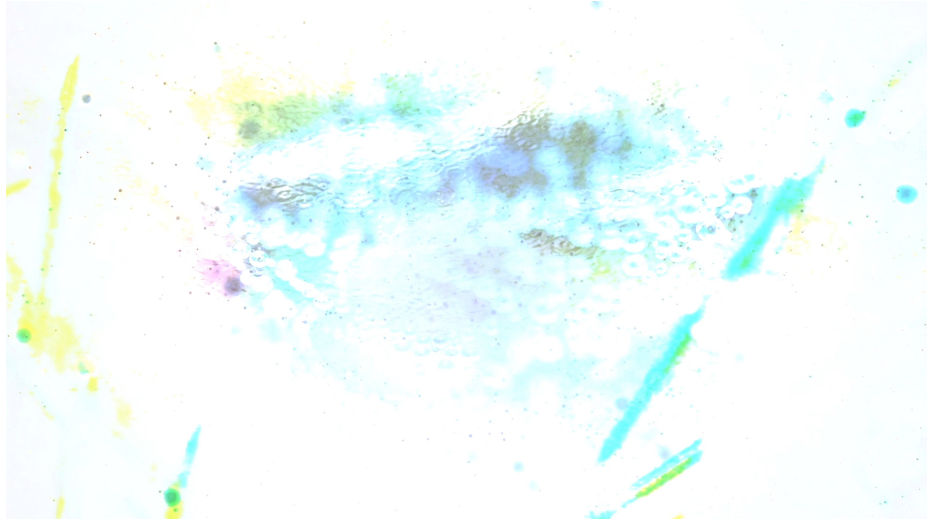
Figure 2.46: *In the Rainfall of a Chinese Garden*, turquoise rainbow.

Throughout the piece, I develop different relationships between the marimba and electroacoustic sounds. Together, they decorate and support, create drama, and collaborate in attacking events creating the scene of a rainy day. The video adds a visual element for the audience to absorb another level of the natural scene. Through the use of these three elements, the audience can imagine the raindrops dripping down from shining leaves, breaking into thousands of diamonds, and then hanging on silken spider webs like crystal strings.

2.7 *On the Rime of a Fading Forest*

On the Rime of a Fading Forest, a seven-minute piece for flute, trombone, and electronics, was commissioned by musicians Shelley and Philip Martinson. Around the summer of 2016, Shelly, Philip and I began our conversations about a new commissioned work for flute and trombone. After discussing it, we decided to include electronic music because it can help blend the big contrasts between the timbres of flute and trombone. Shortly after, we decided the piece would be a good fit for the *Seeing the Sound, Hearing the Dream* series and, subsequently, I produced a video for it. From the program notes that I wrote:

> This piece is about forests. Forests are a part of our everyday life. They cover about thirty percent of our planet. The ecosystems they create play an essential role in supporting life on earth. They give us shelter, protect us as we grow, and clean the air we breathe. They give us water, food, and health. Deforestation, however, is clearing these essential habitats on a massive scale. At the current rate of destruction, the world's rainforests will completely disappear within one hundred years. Without the forests, our planet cannot breathe or absorb its pollutants. Forest destruction will exacerbate global climate change and result in a loss of biodiversity.
>
> Flute and trombone are two instruments infrequently played together as a duet because of the different ranges and distinguished timbre. In this piece, they represent the diversity of life in the world, especially the diversity found in the forests. The sounds of the instruments tangle together, in and out from phrases, to transfer the melody from one to the other. They also overlap with the electronics. The electronic sounds mold the instruments and shift them between imagination and reality, like how a forest can be so real, but the sights, sounds, and smells can make your imagination run wild. Throughout the piece, the flute, trombone, and electronics become increasingly distorted until they collapse. Just like mankind's activities affect nature when left unregulated, the earth will collapse in the future if we cannot control our development. If human beings still exist at that time, all we will have left are pictures of the forests.
>
> I hope this piece will improve environmental awareness about deforestation, which is a global issue affecting every single person on the planet. Sustain

forests. Sustain life.

The formal structure of *On the Rime of a Fading Forest* is similar to that of *In the Rainfall of a Chinese Garden*: AB (B1 and B2) A'. One can consider this formal structure as an altered ternary form, in which the main B section has two small sections. The A section is mysterious and free; it starts from many extended techniques of flute and trombone and gradually brings in normal tones with fast, running passages. The B1 section (the interpolation section) is a fast, rhythmic duet, where the flute and trombone, along with electronic sounds, create more and more conflicts. These eventually collapse and then lead to another rhythmic section (B2: the main middle section). The A' section is a mirror of original A section; the main materials are brought back in reverse order. In the A' section, the fast running passages come back first and then calm down. It naturally leads the music back to the unstable, mysterious character of the very beginning of the piece (see Figure 2.47).

	A	B1	B2	A'
On the Rime of a Fading Forest	1-49	50-60	61-91	92-119

Figure 2.47: *On the Rime of a Fading Forest*, formal structure.

There are two small subsections in the A section labeled 'a' and 'b' (mm. 1-18 and 19-49, respectively). Subsection 'a' is much shorter than 'b', therefore one could also consider section 'a' as an introduction. In subsection 'a' (or the introduction), I use many

extended techniques, such as singing with glissandi, strong lip-pressure, air sounds, singing while playing, bending tones, "smeary" glissandi, and "falling ends" (see, for example, Figure 2.48). These extended techniques represent the diversity of life in the forest. Live flute and trombone combine with the tape part to represent the forest and describe a beautiful nature scene in a well-balanced ecosystem. The video provides a visual reference or background for this forest scene that shows the forest turning and distorting, as if it had its own mind and intended to balance the ecosystem in its own way (see Figure 2.49).

Figure 2.48 *On the Rime of a Fading Forest*, extended techniques.
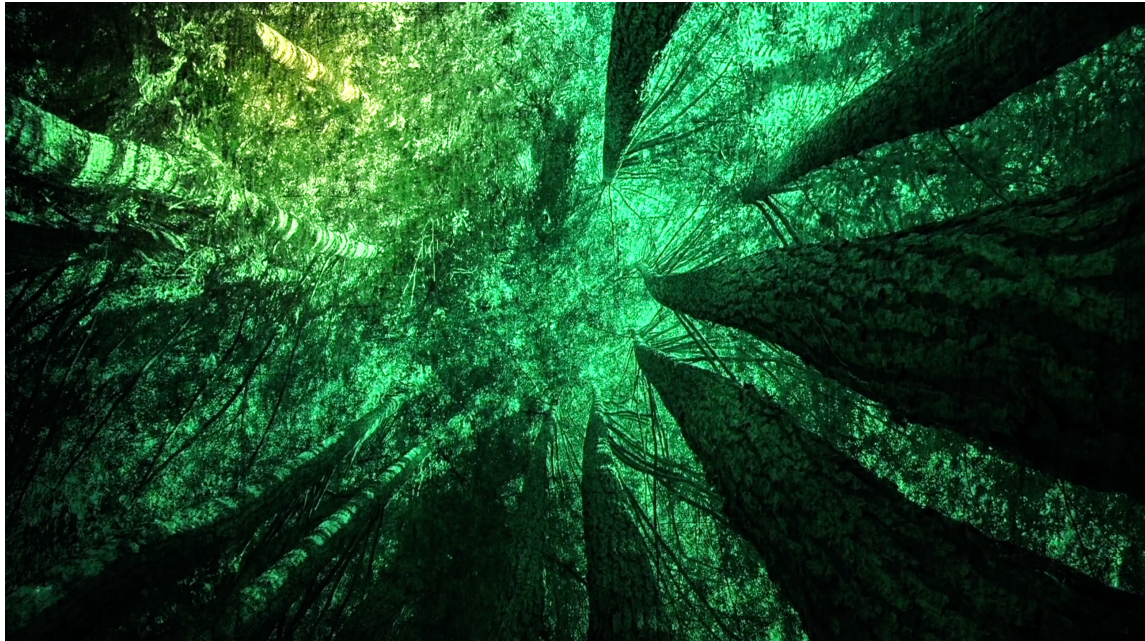
Figure 2.49: *On the Rime of a Fading Forest*, turning forest.

In the second part of the main A section, both the flute and trombone increase in intensity, leaping into aggressive passages in the electronics, which represent humankind's invasion of the forests and destruction of natural ecosystems (see Figure 2.50). At the same time, the video loses its color as soon as the invasion of the forests begins. Noisy and faded twisted lines bleach out the color of the leaves, pollution runs through the veins, and there is no way to stop it (see Figure 2.51).

Figure 2.50: *On the Rime of a Fading Forest*, big arrival moment in tape part, mm. 23-24.
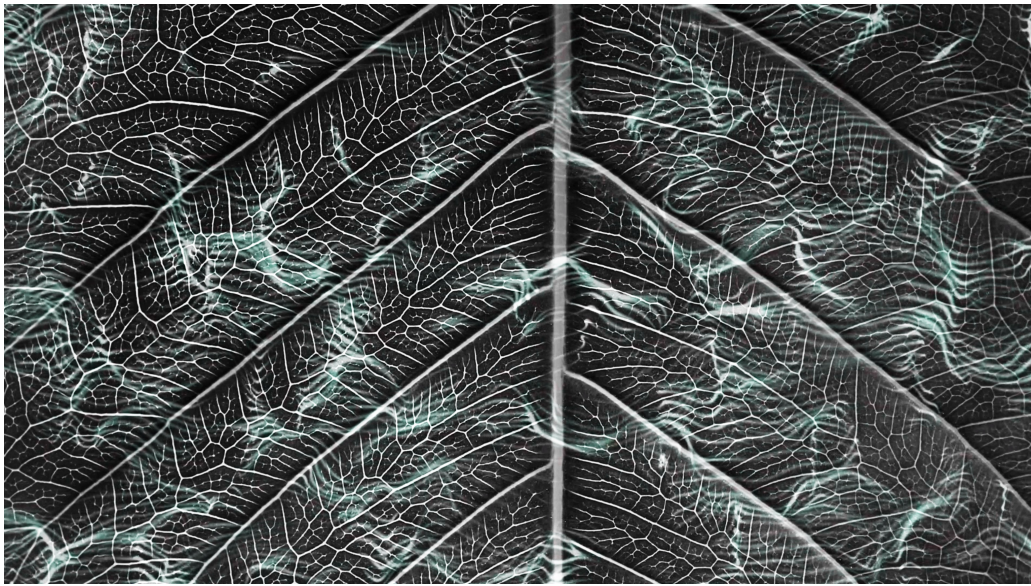
Figure 2.51: *On the Rime of a Fading Forest*, bleached leaf.

In the first rhythmic section (B1), live flute and trombone struggle with the mechanical human encroachment represented in the pulsing tape part. The short melodies,

based on the tritone here, portray the ugliness caused by deforestation. This section is short, only ten measures, and therefore one can also consider it as an interpolation, which functions as a transition between the balanced ecosystem, section A, mm. 1-49, and the industrial, destructive B2 section, mm. 61-91 (see Figure 2.52).

Figure 2.52 *On the Rime of a Fading Forest*, first rhythmic section, mm. 50-51.

The video in this section also features extreme contrasts in both color and pattern. The images continuously change and fight for their own position on the screen (see Figure 2.54). The dramatic flashes of light in the tape part also match the intense beats in mm. 50-51 (see Figure 2.53). I designed the entirety of this section to provide the audience powerful audiovisuals to reinforce the piece's theme.
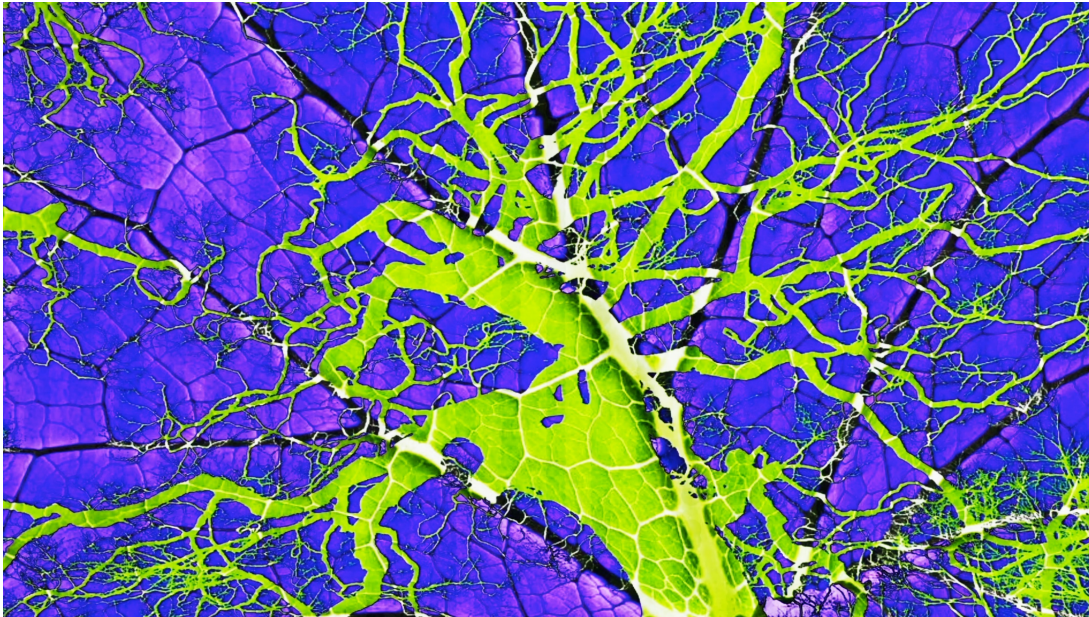
Figure 2.53: *On the Rime of a Fading Forest*, conflicting imagines.

After the battle in the first rhythmic section (B1), I introduce a steady drum-beat pattern in the tape part, which is a departure in style and invokes aspects of popular music. On stage, the performers must play precisely in sync with the tape. This section represents the development of industry, specifically factories. In the video, rigid patterns dance rhythmically, like machines, monotonously and continuously repeating the same movement (see Figure 2.54).
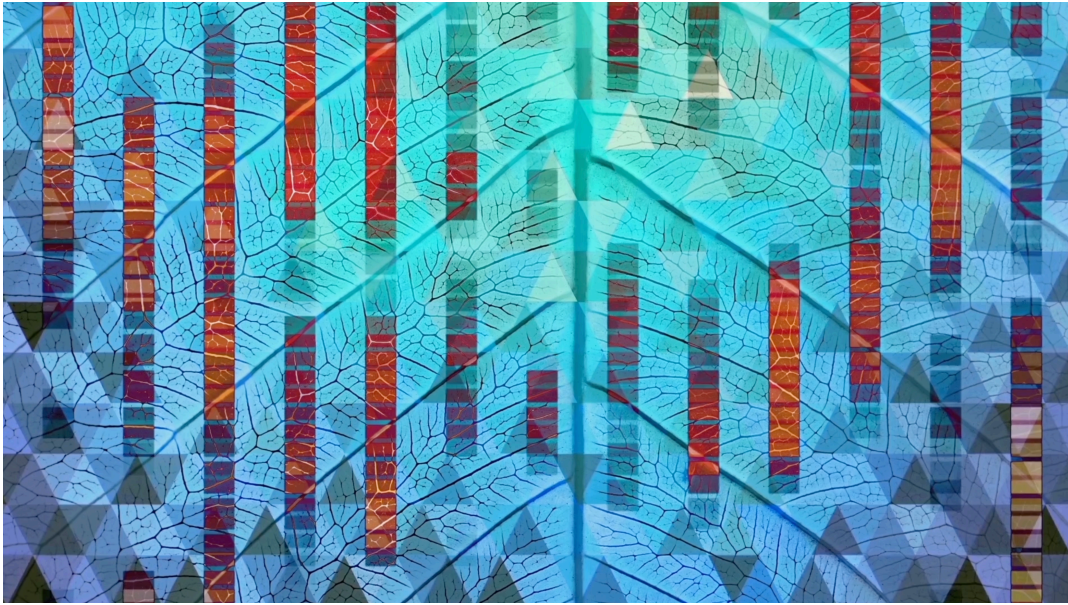
Figure 2.54: *On the Rime of a Fading Forest*, dancing machine.

In the Max/MSP patch, the video and most of the audio files are fixed in time. There is a timeline in the score between the flute and trombone staves and the performers need to use a timer (Mira app on i-Pad) on stage to match the fixed video and audio cues. At the same time, the system generates some audio effects in real time with auto-advancing cues built into the qlist of the patch. These effects automatically change in response to certain cues.

We humans expect ecosystems to fulfill our needs and continue to produce without end even though we really know this cannot happen. In response to the pressure placed on ecosystems by mankind and its demands, the entire ecosystem collapses. Fire, smoke, and dust are everywhere. The forest loses its color. The entire ecosystem fades away. But, on a positive note, life finds a way. Out of the disaster comes a new cycle of life.

2.8 Conclusion

Seeing the Music, Hearing the Dream is not only the center project of my academic work at the University of Texas at Austin, but it also defines who I am as an artist. In this suite, you can find so much of my identity - of what makes me *ME*. Because of the passion and love I have for art, in general, and multimedia art, in particular, I have devoted my artistic heart and life to every note and every word in this dissertation.

Seeing the Music, Hearing the Dream is my insight into the way technology changes the creative processes of music composition and multimedia production. After researching and studying different artists' approaches to multimedia art, such as *The Magic Flute* by Komische Oper Berlin, Quixotic Fusion, Tan Dun's *The Map*, and Laurie Anderson's *Landfall,* I developed my own audiovisual world via multimedia. In this audiovisual world, electronic music enhances the timbre of the live instrument(s), dramatizes the spatial environment, creates contrast and conflict, and furthers the depth of the music. Visual components, such as video, dance, and lighting, interact with the music of each piece in different ways to visually enhance and stimulate the audience's perception and understanding of the pieces. Since I personally created each piece's audio and visual components, there is very close connection between those components. Consequently, the audiovisual experience of each piece is seamless. This can be seen across the entire suite. While there are similarities between pieces, each one has its own unique character. In this way, although I used similar forms of media to support and interact with each other throughout the suite, I created a diverse range of possibilities between the pieces and within

the suite as a whole. It is my hope that this approach will create unique relationships with the audience and provide a distinctive concert-going experience.

The process of composing *Seeing the Music, Hearing the Dream* has revealed several promising future directions and opportunities for me to pursue. By researching and refining how to integrate and link different media to convey a single artistic idea in this project, I learned many new skills, improved my technique, and developed better tools, which will help me deliver new artistic ideas in the future. Through this experience, I believe I have laid the groundwork for much more ideation and creation, which will continue to push my art forward technologically and artistically.

Yuanyuan (Kay) He

Seeing the Music Hearing the Dream
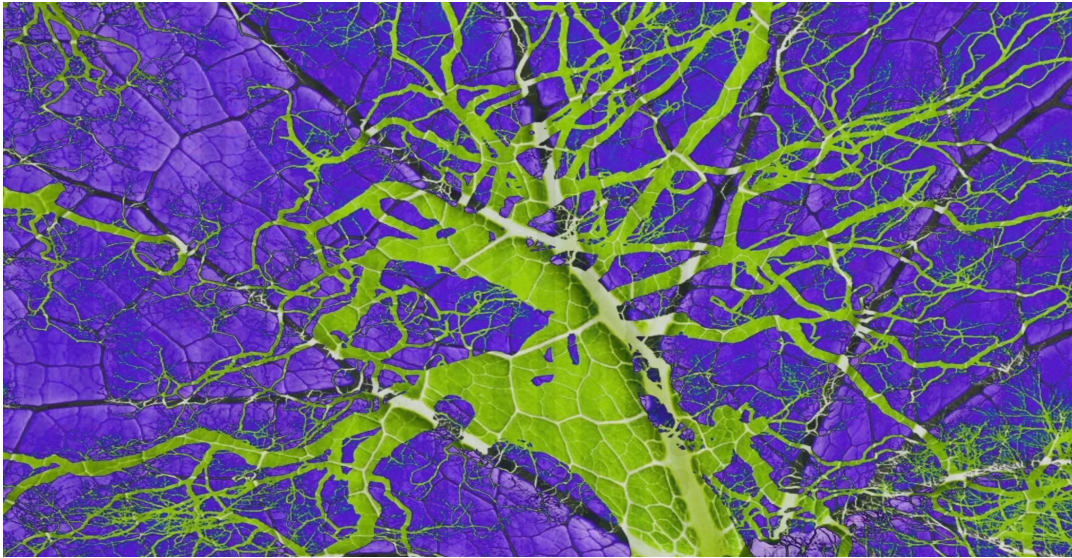
A Multimedia Suite of Six Pieces
for Instrument(s) and Electronics

(2018)

Yuanyuan (Kay) HE
_____

ON THE THRESHOLD OF A DRIZZLY REALITY

Cello and Electronics
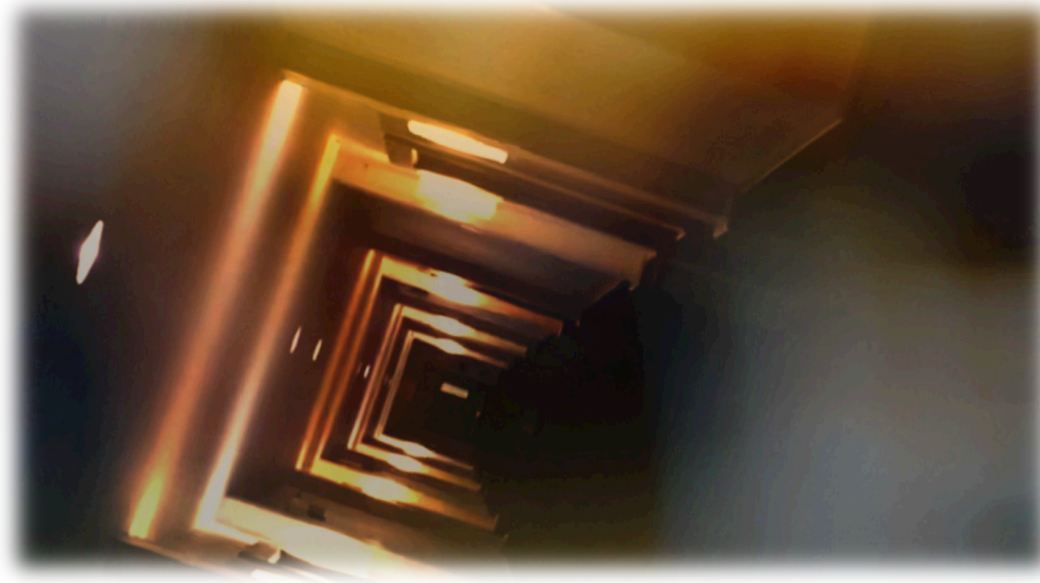
Austin, TX
2013

Performance Notes

S. P.   sul ponticello

S. T.   sul tasto

ord.   Normal

               Change gradually from one position to another

Scratchy   Use excessive bow pressure: produces a noisy and scratchy sound effect

               Bartók pizzicato

               Excessive vibrato
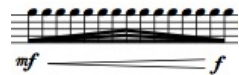
               Feathered beaming indicates gradual unmeasured speeding up and slowing down in particular beat. The number of notes indicated does not represent the number of notes to be played.

               Play the same note by using two different strings, the upper string repeats the same note; the lower string gliss. to a specific note.
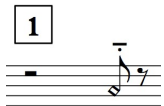
               Numbers in square boxes indicate the number of the sound file to trigger at the point of the note/rest under the boxes. See next page for more technical information.

Program Notes

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On the Threshold of a Drizzly Reality, a nine-minute piece for cello, electronic music, and video, was written for cellist Nora Krakousoglou. The piece attempts to describe a mixed world of both my ideals and the stone-cold realities of my life. I believe that everyone and everything enters my life for a certain reason, and at a certain time. This piece, too, came into my life with a purpose. It is a soul-searching piece for me. It describes the powerful emotions of my mind and imagination and also reveals the various hard aspects of the reality that intrudes on my life all the time—perspective, drowning in illusion or dancing on the threshold of the reality.

The cellist is on the stage alone, which is symbolic of how I individually exist in this world. The electronics, based on pre-recorded sounds of the cello, are the illusion. The processed cello reveals a mysterious world, which sings simultaneously with the live cello. They are tangled with each other and the audience is unable to distinguish what is real and what is the "illusion." In the middle rhythmic section, the repeating notes travel through the stage and surrounding speakers, creating an effect that represents how fantasy and reality seem so interfused sometimes. Reverb is added to the live cello and is used to introduce a spatial-temporal variation of reality, which is mixed with the preprocessed cello sounds in the electronic music.

Technical Requirements

_____

The electronic sounds provide the soloist a great deal of depth in the acoustic field and a various timbral changes between the live cello and the electronics. All sound files are triggered at the points indicated by the numbers in square boxes by the Max/MSP patch.

Equipment
Computer [Mac or PC] with 600 MB free disk space
Max/MSP or Max Runtime (installed on the computer)
Max/MSP patch (provided by composer)

Microphone (cardioid)/Microphone stand/Reverb unit (optional)

Set-up
Computer outputs into mixing console
Stereo output from computer, which should be diffused to an 8-speaker setup when possible.
Microphone for the cello send into stereo reverb unit, stereo aux return.

Mic'd cello should mixed and blended with electronics as much as possible.
The cellist will need a foot-pedal to trigger the sound files. Some performers may need an extra computer operator to assist, who reads the same score as the soloist and cues sound files by pressing the space bar.

On the Threshold of a Drizzly Reality

for cello and electronics

Kay HE (2013)

Yuanyuan (Kay) HE
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On the Fringe of a Whale's Tail

Piano and Electronics
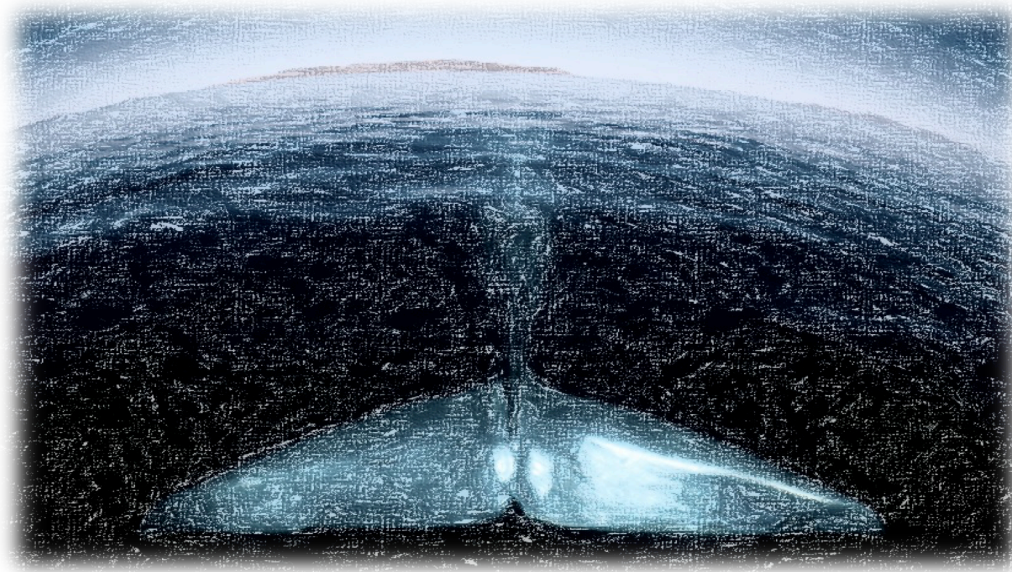
Austin, TX
2014

Program Notes

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On the Fringe of a Whale's Tail, a seven-minute piece for piano and electronics, was commissioned by pianist Josh Straub. The piece attempts to describe an artist's world. It is sentimental, unreal, and full of adventures, creativities, and conflicts. To me, an artist is an explorer with dreams. As artists, it is our responsibility to show the world the powerful emotions of our beautiful minds and imaginations, and also to fight a harsh and uninspiring reality. Imagination is the artist's most powerful tool.

In this piece, the pianist is on the stage alone creating fascinating sounds on the piano. It represents the lonely reality of how an artist individually exists in this world, perhaps like standing on a whale's tail in the middle of the ocean. The electronics, based on pre-recorded sounds of the piano, are the little universe the pianist has created with her imagination. It is deep, dramatic, inspiring, exciting, and colorful, like the ocean.

The processed piano sounds in the electronic part reveal this mysterious world, which sings simultaneously with the live piano. They are tangled with each other. The desired effect is that the audience is unable to distinguish what is real and what is the imagination. It is a world of creativity and endless possibility. The effects added by processing the live piano represent how creative passion evokes inspiration and imagination, which sometimes contrasts with reality.

Technical Requirements

_____

The electronic sounds provide the soloist a great deal of depth in the acoustic field and a various timbral changes between the live piano and the electronics. All sound files are triggered at the points indicated by the numbers in square boxes by the Max/MSP patch.

Equipment
Computer [Mac or PC] with 600 MB free disk space
Max/MSP or Max Runtime (installed on the computer)
Max/MSP patch (provided by composer)

2 microphones (cardioid)/Microphone stands/Reverb unit (optional)

Set-up
Computer outputs into mixing console
Stereo output from computer, which should be diffused to an 8-speaker setup when possible.
Microphones for the piano send into stereo reverb unit, stereo aux return.

Mic'd piano should mixed and blended with electronics as much as possible.
The pianist will need a foot-pedal to trigger the sound files. Some performers may need an extra computer operator to assist, who reads the same score as the soloist and cues sound files by pressing the space bar.

On the Fringe of a Whale's Tail

written for Josh Straub

for piano and electronics

Kay(Yuanyuan) HE

83

4'20"

Yuanyuan (Kay) HE

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On the Pivot of an Abandoned Carousel

Flute and Electronics

Austin, TX
2015.5.2

Program Notes

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       On the Pivot of an Abandoned Carousel, a nine-minute piece for flute, dance, and electronics, was written for flutist Kenzie Slottow. It describes the haunted scene of a carnival that was once a beautiful place full of happiness and joy. Years ago, the calliope, a small simple carnival organ, was a signature of the carnival, representing simple childhood happiness. Here, the flute, which I use to imitate the calliope, becomes increasingly more distorted until it collapses later in the piece. The scene becomes abandoned.

       The live flute and the pre-recorded flute in the electronics overlap so the audience cannot determine what is real and what is not. This mimics our memories, so as to show the exaggerations and delusions that form in our head. At times, music can recall amazing memories of wonderful experiences. At other times, it can seem creepy and haunted. The human brain can interpret things in a multitude of ways, and the music helps portray the mind's illusory power.

Technical Requirements

_____

The electronic sounds provide the soloist a great deal of depth in the acoustic field and a various timbral changes between the live flute and the electronics. All sound files are triggered at the points indicated by the numbers in square boxes by the Max/MSP patch.

Equipment
Computer [Mac or PC] with 600 MB free disk space
Max/MSP or Max Runtime (installed on the computer)
Max/MSP patch (provided by composer)

Wireless microphone and reverb unit (optional)

Set-up
Computer outputs into mixing console
Stereo output from computer, which should be diffused to an 8-speaker setup when possible.
Microphone for the flute send into stereo reverb unit, stereo aux return.

Mic'd flute should mixed and blended with electronics as much as possible.
The flutist needs an extra computer operator to assist, who reads the score and cues sound files by pressing the space bar.

On the Pivot of an Abandoned Carousel

Yuanyuan (Kay) HE

97

Yuanyuan (Kay) HE

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On the Excenter of a Blindspot

Piano and Electronics

Austin, TX
2016.4.12

Program Notes

On the Excenter of a Blindspot, for Piano and electronics, was inspired by the famous children's book Alice in Wonderland by Lewis Carroll. It tells the story of a girl named Alice falling through a rabbit hole into a fantasy world populated by peculiar, anthropomorphic creatures. It seems like a simple fairy tale, but it goes much deeper than that. Carroll describes a struggle with self-identity, which he describes through a series of bizarre events. Feeling lost becomes a recurring theme in the book as Alice regularly expresses uncertainty about who she is after she enters Wonderland.

In my piece, the piano, electronic music, and video all become increasingly more distorted until they collapse. The scene becomes a hallucination. In Alice's story, she discovers the world through uncertainty and self-questioning. Her whole world is based on a hallucinogenic experience. Hallucination is a mental disorder in some traditional conceptions, but hallucination also often reflects the nature of the mind, perception, and our views and knowledge of the world. How do we perceive the world? Is our existence a series of hallucinations? In the following paragraphs, I will talk about how I organized the relationship between the live instrument (piano), the electronic music, and the video to present a world full of hallucinations.

Technical Requirements

The electronic sounds provide the soloist a great deal of depth in the acoustic field and a various timbral changes between the live piano and the electronics.

Equipment
Computer [Mac or PC] with 600 MB free disk space
Max/MSP or Max Runtime (installed on the computer)
Max/MSP patch (provided by composer)

2 microphones (cardioid)/Microphone stands/Reverb unit (optional)

Set-up
Computer outputs into mixing console
Stereo output from computer, which should be diffused to an 8-speaker setup when possible.
Microphones for the piano send into stereo reverb unit, stereo aux return.

Mic'd piano should mixed and blended with electronics as much as possible.
The pianist will need an iPad (with a Mira app installed) as a timer during the performance.

On the Excenter of a Blindspot

for piano, electronic music and video

Yuanyuan (Kay) HE

Yuanyuan (Kay) HE

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In the Rainfall of a Chinese Garden

Marimba and Electronics

Austin, TX
2018.2.6

Program Notes
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     In the Rainfall of a Chinese Garden is a six-minute piece for marimba and electronics. Marimba to me is the best instrument to describe rain as wooden blocks themselves come from nature. Also, because of the mechanical structure of the instrument, the sound of a marimba fades away naturally just like the sound of raindrops fades away as they splash in puddles or beat against a window. But when the rain starts to pour, marimba tremolos provide an entangled captivation just like the drum and dance of heavy rainfall. This piece describes a beautiful scene of a rainy day in a Chinese garden. Raindrops drip down from shining leaves, breaking into thousands of diamonds, and then hang on silken spider webs like crystal strings. What a shimmering and luminescent scene!

     Nature is truly the best artist. I hope this piece shows how crucial it is for us to preserve the works of natural art that surround us and improves environmental awareness about preserving clean water, which is a global issue affecting every single person on the planet. Sustain nature. Sustain life.

Technical Requirements
_____

The electronic sounds provide the soloist a great deal of depth in the acoustic field and a various timbral changes between the live marimba and the electronics. All sound files are triggered at the points indicated by the numbers in square boxes by the Max/MSP patch.

Equipment
Computer [Mac or PC] with 600 MB free disk space
Max/MSP or Max Runtime (installed on the computer)
Max/MSP patch (provided by composer)

2 microphones (cardioid)/Microphone stands/Reverb unit (optional)

Set-up
Computer outputs into mixing console
Stereo output from computer, which should be diffused to an 8-speaker setup when possible.
Microphones for the marimba send into stereo reverb unit, stereo aux return.

Mic'd marimba should mixed and blended with electronics as much as possible.
The percussionist will need a foot-pedal to trigger the sound files. Some performers may need an extra computer operator to assist, who reads the same score as the soloist and cues sound files by pressing the space bar.

written for Evan Bright

In the Rainfall of a Chinese Garden

for marimba and electronics

Yuanyuan (Kay) HE

111

118

Yuanyuan (Kay) HE

_____

On the Rime of a Fading Forest

Flute, Trombone, and Electronics

Austin, TX
2017.8.29

120

Program Notes

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       On the Rime of a Fading Forest, for flute, trombone, and electronics, was commissioned by musicians Shelley and Philip Martinson. Forests are a part of our everyday life. They cover about thirty percent of our planet. The ecosystems they create play an essential role in supporting life on earth. They give us shelter, protect us as we grow, and clean the air we breathe. They give us water, food, and health. Deforestation, however, is clearing these essential habitats on a massive scale. At the current rate of destruction, the world's rainforests will completely disappear within one hundred years. Without the forests, our planet cannot breathe or absorb its pollutants. Forest destruction will exacerbate global climate change and result in a loss of biodiversity.

       Flute and trombone are two instruments infrequently played together as a duet because of the different ranges and distinguished timbre. In this piece, they represent the diversity of life in the world, especially the diversity found in the forests. The sounds of the instruments tangle together, in and out from phrases, to transfer the melody from one to the other. They also overlap with the electronics. The electronic sounds mold the instruments and shift them between imagination and reality, like how a forest can be so real, but the sights, sounds, and smells can make your imagination run wild. Throughout the piece, the flute, trombone, and electronics become increasingly distorted until they collapse. Just like mankind's activities affect nature when left unregulated, the earth will collapse in the future if we cannot control our development. If human beings still exist at that time, all we will have left are pictures of the forests.

       I hope this piece will improve environmental awareness about deforestation, which is a global issue affecting every single person on the planet. Sustain forests. Sustain life.

Technical Requirements

_____

The electronic sounds provide the soloist a great deal of depth in the acoustic field and a various timbral changes between the live flute, live trombone, and the electronics. The sound file is played and the effects are processed by the Max/MSP patch provided by the Composer.

Equipment
Computer [Mac or PC] with 600 MB free disk space
Max/MSP or Max Runtime (installed on the computer)
Max/MSP patch (provided by composer)

2 microphones (cardioid)/Microphone stands/Reverb unit (optional)

Set-up
Computer outputs into mixing console
Stereo output from computer, which should be diffused to an 8-speaker setup when possible.
Microphones for the flute and trombone send into stereo reverb unit, stereo aux return.

Mic'd flute and trombone should mixed and blended with electronics as much as possible.
The performers will need an iPad (with a Mira app installed) as a timer during the performance.

On the Rime of a Fading Forest

for flute, trombone and electronics

Yuanyuan (Kay) HE

Mysterious and Free ♩ = *60*

wind only with singing (gliss.)
with strong lip-pressure

air sound
gradually changing
to real tone

Flute

sfff — *pp* — *ff*

p — *mf*

Time

00:17

strong tonguing,
wind only with
strong lip-pressure

Trombone

sfff — *pp* — *ff*

Tape

pp

4

Fl.

ppp

gradually changing

air sound
gradually changing

sing

port.

ppp — *mf* — *ppp*

mp *sfpp* — *ff*

Time

00:28

Tbn.

sfff — *pp*

pp — *f* — *pp*

Tape

> *pp* — < *mf* > — *pp*

10

Fl.

ppp

p sub.

pp — *sfp*

< *f* — *pp*

Time

00:47

smeary glissandi

Tbn.

sfpp — *mf* — *mp*

Tape

mf

Broad and Unlimited

Appendix

Videos:

1. *On the Threshold of a Drizzly Reality* for cello and electronics
2. *On the Fringe of a Whale's Tail* for piano and electronics
3. *On the Pivot of an Abandoned Carousel* for flute and electronics
4. *On the Excenter of a Blindspot* for piano and electronics
5. *In the Rainfall of a Chinese Garden* for marimba and electronics
6. *On the Rime of a Fading Forest* for flute, trombone, and electronics

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