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An Annotated Bibliography of 45 Select 21st-Century Electroacoustic Pieces for B-Flat Clarinet Suitable for the Undergraduate Clarinetist

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AN ANNOTATED BIBLIOGRAPHY OF 45 SELECT 21ST-CENTURY ELECTROACOUSTIC PIECES FOR B-FLAT CLARINET SUITABLE FOR THE UNDERGRADUATE CLARINETIST

by

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University of Nebraska, 2024

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Electroacoustic literature for the clarinet is bountiful and accessible, though many students do not experience working with this genre until they become a graduate student, if even then. Utilizing a detailed rubric, each of these 45 works in this document are graded according to their accessibility, techniques explored, and overall difficulty to approach to better serve the educator and assist the undergraduate clarinetist in performing this genre of repertoire.

With the accessibility of electronics and electronic equipment coming more readily available to composers and performers at the start of the 21st-century, electroacoustic literature found a sense of deliverance in the fold of contemporary composition. Many electroacoustic compositions found premieres and performances as the COVID-19 pandemic swept the world. Through this isolating event musicians began to search means to express themselves musically, and for many that meant turning to compositions with some element of electronic, pre-recorded, or tape partnership.

The compositions within this document offer an array of compositional styles and composers from the 21st century, including works that interact with the clarinetist or require the aid or an audio assistant. Composers such as Mark Snyder, Judith Shatin, and

Jenni Brandon are featured in the selected compositions, as well as composers who are new to the electroacoustic medium.

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Introduction

The 21st-century B-flat clarinet and electroacoustic compositions selected for this document were primarily based upon their purchase or performance accessibility as well as their range of compositional styles. Initial research of electroacoustic works for B-flat clarinet provided over a thousand or so pieces. The selection of 45 compositions was decided upon after initial research presented an overwhelming database of works suitable for undergraduate, graduate, and professional alike. The Excel file that served as the database for electroacoustic compositions was then dissected to see if most were written following the COVID-19 pandemic, for example, or did most fall under a particular subgenre of electronic type (clarinet and tape, for example, or clarinet and live processing). As I continued my research further, I found I desired to cover both works I knew and some I did not; thus, the final decision was to select compositions based upon their accessibility for an undergraduate student to perform, as well as the selection being written in only the 21st century (2001 to 2023, to be exact). Of those pieces analyzed, the field was narrowed down to composers who readily responded to interest in their compositions being analyzed as well as those whose works that could easily be purchased.

The 45 compositions were discovered utilizing various databases such as the SEAMUS (The Society for Electroacoustic Music in the United States) publication search, the International Clarinet Association's previous ClarinetFest® program books,

works performed or commissioned by the Electroacoustic Barn Dance and Electronic Music Midwest, in addition to general searches of electronic or electroacoustic composers whose sites were browsed through to locate any electronic clarinet compositions. The goal in analyzing the 45 select compositions was to provide a platform and guide for undergraduate students and educators who wish to approach compositions in the electroacoustic genre, particularly for the first time. Though the scope of this project is limited to 45 compositions, the intention is that this rubric can be applied to similar electroacoustic works outside of this document's scope (such as bassoon and electronics, flute and electronics, etc.). Any future scholars who wish to extend this area of research for the B-flat soprano clarinet would be encouraged to seek out these same resources.

The Rise of Electroacoustic Literature

The 21st century has experienced great technological advancements, including cellphones, vehicles, and computers—not to mention the accessibility and breadth of the internet—music is no exception to this growth. With the progression of technology and its evolution therein pressing musicians to evolve, we see it take shape in new genres of literature. Electroacoustic music is a prime example of such growth occurring, the art itself utilizing both technology and traditional, acoustic instruments as we know them to produce a piece in the electronic medium.

The phasing of technology into composition within the past century has become the by-product of the growing accessibility of both musical equipment and as previously mentioned, technology as a facet of our every-day lives. Electroacoustic literature itself is a form of Western art music that involves the composer writing a work in which

technology is used to manipulate timbres of acoustic instruments.[1] Techniques such as this can be done through various means, including applied reverb, pedal delay, looping, audio signal processing, or harmonizing just to name a few.[2] For these reasons, often times electroacoustic performance does not fit into the expectations of traditional, or stereotypical, performance expectations; for example, performers and electronics are often asked to be matched in volume when it comes to the electroacoustic medium. This may come to many as a stark contrast in expectation, as it is often traditional for the "soloist" voice to be the loudest or forefront melodic voice in traditional, classical performance. Throughout this document electronics in an electroacoustic medium will be referred to as a partnership or collaboration for this reason, not accompaniment as some may, at first, believe.

Regarding the setting of electroacoustic performance, many performers utilize spaces that are outside of traditional expectation; this can include venues such as coffee shops, art galleries, classrooms, or stages to name just a few. Even those in the more traditional stage or auditorium venue can vary completely; some with speakers being mounted to stands or walls, some engulfing the audience and/or the performer on stands, some with Bluetooth speakers alone, some with a monitor facing said performer, or even a conglomerate of all. Now, the electronic partnership between acoustic instrument and electronic medium has evolved. As opposed to recordings or sounds that had static, stereo channel capabilities, compositions are now able to have the electronic voices weave and interact candidly with the performing acoustic instrument. Often, the

[1] "Electroacoustic Music: 3 Characteristics of Electroacoustic - 2024," MasterClass, September 15, 2021, https://www.masterclass.com/articles/electroacoustic-guide.
[2] Barry Schrader, "LIVE/ELECTRO-ACOUSTIC MUSIC - A PERSPECTIVE FROM HISTORY AND CALIFORNIA," Live/Electroacoustic Music - A Perspective from History and California, 1991, https://barryschrader.com/live-electro-acoustic-music-a-perspective-from-history-and-california.

atmosphere and setting of the electronic outputs are part of the performance, as the instrumental voice and integration contribute directly to what an audience will experience.

As music has evolved, electronics themselves began to slowly find their way into the performance practice of acoustic instruments. Futurist concepts of the 20th century, particularly those that related to the *Art of Noises* manifesto of the same century, brought about more experimentalism with an acoustic instrument's ability to perform, create, and apply extended techniques. Composers often utilize this extended voicing of acoustic instruments to further enhance the palette of the instrumentalist or composition, sometimes even to match what is happening in the partnered electronic part. Often, this is done so the acoustic instrument's extended techniques can further immerse a listener within the space produced by the partnered electronics, depending on the scope of the work. For clarinet these techniques can be done through a variety of ways though when it comes to electroacoustic literature, it is particularly important to be versed in these possibilities as the genre often utilizes extended techniques in compositions.

Electroacoustic literature is often described as the electronic manipulation of acoustic, electronic, or organic sounds. During the late 19th and early-to-mid 20th century, the electronic technologies capable of these techniques was just making their way into compositional spaces, let alone the acoustic environment.[3] Electronics first emerged with the invention of the magnetic wire recorder, utilized by composers such as George Antheil (1900-1959), Otto Luening (1900-1996), Pierre Schaeffer (1910-1995), and Josef Tal (1910-2008).[4] Significant publications supporting the use and exploration of

[3] Barry Schrader, 1991.
[4] Druhan, Mary Alice., p. 10.

electroacoustic techniques include works by Francesco Balilla Pratella, who published the *Manifesto of Futurist Musicians* in 1910, the precursor to Pratella's other work, the *Technical Manifesto of Futurist Music*, published in 1912. *The Art of Noises* manifesto was published around 1913, which was written in a letter by Luigi Russolo to the aforementioned Pratella.[5] In these texts both Pratella and Russolo reiterate that Futurism's pursuit should have young composers living with "hearts to live and fight, minds to conceive, and brows free of cowardice."[6]

Following the publications of various manifestos, instruments and electronics grew from magnetic wire recorders to inventions such as the Ondes Martenot in 1928, Leon Theremin's self-titled creation the theremin (where human performers control oscillation and amplitude to create precise musical pitches) in 1919-1920, and the audio tape recorder of 1935. These instruments utilized circuits to produce and manipulate sound, paving the way for the electronic music experimentation to follow. The Chamberlin (an electro-mechanical keyboard) came thereafter in 1949-1956, followed by its mass-produced cousin the Mellotron (where performers trigger tape loops of recorded instruments using a piano-style keyboard) in1963 came shortly after.[7]

With the coming of the 1950s the *Office de Radiodiffusion Télévision Française* and the *Groupe de Recherches Musicales* formed with an altogether new outlook on the utilization of tape, forming a style known as *musique concrète*. This style of music composition utilizes recorded sounds as raw material (the concrete sound), modified to

[5] "Electroacoustic Pioneers, Manifestos, Inventions and Premieres." Sound Art - Electronic, Tape, Computer & Electroacoustic Music at Pytheas~Modern, New, Non-Pop Art Music Composers, Ensembles & Resources, 2019. http://www.pytheasmusic.org/electroacoustic_music.html.
[6] Ibid.
[7] "Electroacoustic Pioneers, Manifestos, Inventions and Premieres," 2019.

create a palette the composer can pick from to then form their collage of sound. [8] *Musique concrète*, unlike other musical forms at this time, did not find itself restricted to rules such as serialism; *musique concrète* is instead free in form of harmony, rhythm, meter, and/or melody, though the works did utilize tape recordings that included produced tones and sounds. This style was headed by Pierre Schaeffer in the beginning of the 1940s, a French composer, writer, broadcaster, engineer, and musicologist.[9]

In the mid to late 1950s the concept of *musique concrète* was then contrasted with "pure" *elektronische Musik*, a development from Karlheinz Stockhausen and Herbert Eimert (1897-1972) in Western Germany.[10] This literature was based solely on the use of electronically-produced tones and sounds rather than recorded sounds; today, the distinction blurs such that the term "electronic music" covers both meanings. The products of *musique concrète* and *elektronische Musik* later resulted in the establishment of groups like the Columbia-Princeton Electronic Music Center (CPEMC) in New York City, where tape music, electronic music, and computer music were all explored.[11] These compositional developments, in fact, attracted other composers such as Pierre Henry, Luc Ferrari, Pierre Boulez, Edgard Varèse, Luciano Berio, Henri Pousseur, Milton Babbitt, John Cage, and Iannis Xenakis, all of whom utilized some form of electroacoustic or electronic music in their compositions both during and beyond the mid-20th century.

By the late 1950s and early 1960s, various avant-garde composers began to regularly fuse elements from both schools of electronic performance, i.e. Schaeffer's *musique concrète* concepts and both Stockhausen and Eimert's *elektronische Musik*. The

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[8] Reynolds, Simon. "Tapeheads: The History and Legacy of Musique Concrète | Tidal ..." TIDAL, May 15, 2021. https://tidal.com/magazine/article/musique-concrete/1-78792.
[9] Reynolds, Simon, 2021.
[10] Eimert, Herbert. WHAT IS ELECTRONIC MUSIC?, 1957. http://www.jaimeoliver.pe/courses/ci/pdf/eimert-1957.pdf.
[11] Druhan, Mary Alice., p. 10.

live/electro-acoustic art music of the 1950s, 1960s, 1970s, and 1980s involved exact or relative relationships between prerecorded studio-composed music and live performers, with the prerecorded material presented on magnetic tape. Often, these sounds would undergo varying degrees of manipulation until they sound notably different from the source, either through the electronic means or in distorting the sound of the acoustic instrument itself. The main difference between electronic and instrumental music in the mid-20th century was due to the fact that there were no traditional means in which one could notate these electronically produced scores.[12] Electronic composers were then left to grapple with these complications; in particular, this was the difficulty that came with movements such as *musique concrète*. The earliest forms of electronic music, being *musique concrète* and magnetic tape music, were all based on transforming what we deem as natural sounds—mainly because no other methods existed in the 40s-50's for producing sounds electronically.[13] In 1956, Lejaren Hiller and Leonard Isaacson produce the *Iliac Suite* for string quartet, which was the first complete work with computer-assisted composition.[14] From the late 1960s onward, and particularly in France, the term acousmatic music (*musique acousmatique*) was used in reference to fixed media compositions that utilized both *musique concrète*-based techniques and live sound spatialization.[15]

The increasing desire for composers to control their sounds led to the design of machines specifically created for the production of electronic music.[16] This desire led to

[12] Howe, Hubert S. The Musical Significance of Electronic Music. Accessed March 25, 2024. https://qcpages.qc.cuny.edu/hhowe/articles/significance.html.
[13] Ibid.
[14] "Electroacoustic Pioneers, Manifestos, Inventions and Premieres," 2019.
[15] Reynolds, Simon, 2021.
[16] Ibid.

the invention of the Buchla Music Box by Don Buchla in 1963, the first electronic synthesizer, and the Moog Synthesizer in 1964, invented by Wendy Carlos and Robert Moog.[17] These modular synthesizers and voltage-controlled oscillators now allowed musicians to create new sounds and textures through voltage manipulation and patching. Composers now had the ability to multitrack and overdub, later extrapolated upon by experimental musicians who would cut up and splice these recordings or electronic samples into new, inorganic patterns.[18]

By the late twentieth century, excitement about the new compositional techniques spread across the world, inspiring music colleges and government radio stations to establish sound laboratories to explore tape-music, such as the aforementioned CPEMC. It was at this time that Steve Reich, Terry Riley, and Philip Glass began to create minimalist compositions with manipulated acoustic instruments and tape music. Compositional interest now seemed to veer from the sounds we knew of the real-world soundscape; before, composers seemed particularly drawn to organic sources and the human voice, as the rich overtones created more disorienting effects when subjected to techniques of mutation and restructuring. With synthesizers taking up residence in music centers and compositions, separate but parallel forms of electronic sound-synthesis emerged. Multichannel tape recorders were evolving and improving, this time in conjunction with the multichannel loudspeaker system which could now allow for the spatialization of sound.[19]

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[17] "Electroacoustic Pioneers, Manifestos, Inventions and Premieres," 2019.
[18] Ibid.
[19] Yoder, Rachel M. "PERFORMANCE PRACTICE OF INTERACTIVE MUSIC FOR CLARINET AND COMPUTER WITH AN EXAMINATION OF FIVE WORKS BY AMERICAN COMPOSERS." Dissertation Prepared for the Degree of DOCTOR OF MUSICAL ARTS, December 2010. https://digital.library.unt.edu/ark:/67531/metadc5169/m2/1/high_res_d/dissertation.pdf.

With the coming of the late 60s to 70s, composers in countries such as the United States, Japan, Italy, and Argentina began to find that the performance of tape music alone could advance. Composers moved to combine the world of electronic music with live, acoustic performers, a precursor to the interactive and sampling music of the late 20th and 21st centuries.[20] Genres such as Progressive Rock and Pop were prime examples of the techniques now present in synthesizers and tape. Bands such as The Beatles, Pink Floyd, and Emerson, Lake & Palmer (ELP) found success in using sequenced patterns and textures on synthesizers and other electronic instruments that could present futuristic sounds to their audience. Conversely, electroacoustic literature itself was beginning to appear in movie scores, one such being Wendy Carlos's 1972 soundtrack to *A Clockwork Orange*. Other early examples of the newly "fused" electroacoustic compositions appear at the ONCE Festival of New Music, which ran in Ann Arbor, Michigan, between 1961 and 1966.[21]

Today, the electroacoustic community has created organizations such as the Society for Electro-Acoustic Music in the United States (SEAMUS) and festivals, like the Berlin Atonal in Germany, Electronic Music Midwest Festival (EMM), the Electroacoustic Barn Dance (EABD) in Florida, Olympia Experimental Music Festival in Olympia, Washington, and the International Computer Music Conference.[22] With the advent of MIDI (Musical Instrument Digital Interface) and digital audio sampling, genres like hip-hop and EDM (or electronic dance music) flourished. Each led to the development of computer music software, digital audio workstations (DAWs), and virtual

[20] Yoder, Rachel M., p. 5.
[21] "Electroacoustic Music: 3 Characteristics of Electroacoustic," 2021.
[22] Barry Schrader, 1991.

instruments, democratizing what we now know as music production and composition. Today, electronic music continues to evolve with advancements in digital synthesis, virtual instruments, audio processing, and live performance technologies. Artists and producers use a wide range of electronic tools and software to create innovative and boundary-pushing music across diverse genres and styles, pushing the boundaries of musical expression. Composer and professor Judith Shatin, whose works will be discussed later in the document, describes this important evolution of electroacoustic music:

> The world of music has changed dramatically in the past thirty years. We can make music using computers and synthesizers, and we can make and hear sounds that didn't use to exist! There are two basic ways that computers are used to make music. First, we can use computers to tell synthesizers what and when to play. They tell the synthesizers what to do by sending messages through MIDI (Musical Instrument Digital Interface) … Computers can also be used to generate sound from scratch or to process sounds that the computer has made or that you record into a computer.[23]

Clarinet in the Electroacoustic Medium

With the 1960s to 1980s bringing about an increase in the experimentation with live performance of electronic music, a variety of technologies moved to the forefront of this wave of electroacoustic composition. Tape delay systems, ring modulators, contact microphones, and modules for effects such as tremolo, reverberation, and phasing were all employed together with acoustic instruments during this period. Examples of popular songs that utilize some of these new systems include "Tomorrow Never Knows" by The Beatles (1966) (tape delay and other effects on the vocals and instruments), "Interstellar Overdrive" by Pink Floyd (1967) (extensive use of tape delay and ring modulators on

[23] Druhan, Mary Alice., p. 13-14.

guitar and organ), and "Good Vibrations" by The Beach Boys (1966) (which uses electro-theremin, tape delay, and other effects to create its unique sound).[24]

Throughout the 20th and 21st centuries, the clarinet itself evolved to facilitate both better instrument maintenance and better sound quality. Composers, manufacturers, and performers began to work together to broaden the possibilities for the instrument; this included the addition of synthetic pads and mouthpiece material refinement to hard rubber and/or plastics, both serving to improve the tone quality and intonation of the clarinet itself.[25] Following the second World War, the clarinet was one of the instruments that began to see experimentation with its newly enhanced performance capabilities. Extended techniques began to find their way into the clarinet's solo and accompanied literature; one of the earliest literature examples being Pierre Gabaye's Sonatine from 1943.

As is the case with other instruments, the repertoire for the clarinet has been greatly influenced by composer's who find themselves inspired by a particular musician's playing, after which they usually dedicate a work specifically for that musician.[26] As Adria Sutherland states in her dissertation, "Some of the most highly-regarded and widely-performed clarinet literature is a direct result of friendships forged between the composer and clarinetist."[27] Some clarinet literature dedicated in this manner includes works such as *Gra* for solo clarinet, written by Giacinto Scelsi and dedicated to clarinetist

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[24] Yoder, Rachel M., p. 5.
[25] Harris, Jermaine. "Unraveling the Rich History of the Clarinet." Breve Music Studios, October 20, 2023. https://brevemusicstudios.com/history-of-the-clarinet/#:~:text=Throughout%20the%2020th%20century%20and,better%20maintenance%20and%20sound%20quality.
[26] Sutherland, Adria Leigh. "PARTNERSHIPS AND CREATION: A BRIEF HISTORY OF CLARINETIST-COMPOSER PARTNERSHIPS AND HOW THEY CONTRIBUTED TO CLARINET LITERATURE, AND THE INFLUENCE OF ROBERT SPRING ON CONTEMPORARY COMPOSITIONAL OUTPUT FOR THE CLARINET." D.M.A./Musical Arts Project, May 2018. https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1119&context=musicetds.
[27] Sutherland, Adria Leigh, 2019, p.1.

Giuseppe Romano; *Monólogo III* for solo clarinet, written by Edison Denisov and dedicated to clarinetist Eduard Brunner; and both Luciano Berio's *Sequenza IXa* and Karlheinz Stockhausen's *In Freundschaft,* which were both dedicated to clarinetist Suzanne Stephens.[28] Some extended techniques utilized by the clarinet and composer relationship include multiphonics, flutter-tonguing, microtones, glissandi, growling, circular breathing, key clicks, quarter tones, pitch bending, jet whistle, timbral trills, key percussion, quarter tone trills, harmonics, whisper tones, double or triple tonguing, pitchless trills, slap tongue, breath attacks, vibrato, wind sounds, singing while playing, and modified clarinet.[29] As is the case with the modern clarinet, these techniques can both sound and be produced differently per the instrument's manufacturer and set-up (reed, mouthpiece, ligature, etc. can all play a factor), yet again adding to the compositional possibilities available for the performer and their instrument.[30]

Today, the clarinet is often sought after due to its extreme versatility and uniquely warm, woody tone—one of the original desirables that influenced the application of technology to the instrument. In Phillip Rehfeldt's text *New Directions for the Clarinet* (revised edition 1994), he provides some of the earliest examples of clarinet literature involving electronic applications; this includes William O. Smith's Duo for clarinet and tape (1960), Charles Whittenburg's Study for clarinet and tape (1961), and Morris Knight's *Refractions* for clarinet and tape (1962).[31] Other works cited for clarinet that include an electroacoustic element include Ron Pellegrino's *Phil's Float* (1974) for

[28] Sutherland, Adria Leigh, 2019, p.1.
[29] Lawson, Colin. *The Cambridge Companion to the Clarinet (Cambridge Companions to Music)*. First Ed. Cambridge University Press; First Edition, 1996. P. 163-164.
[30] Hargrove, Victoria A. The Evolution of the Clarinet and Its Effect on Compositions Written for the Instrument, May 2016. https://csuepress.columbusstate.edu/cgi/viewcontent.cgi?article=1235&context=theses_dissertations.
[31] Druhan, Mary Alice., p. 4.

clarinet, tape or synthesizer, and film, as well as Jack Fortner's *De Plus en* Plus (1971) for clarinet, piano, tape, and visuals. Rehfeldt's book serves as an excellent source for clarinetists and composers who wish to learn about the clarinet's performance possibilities in contemporary, late 20th-century repertoire.

Interactive electronic literature, from which the term electroacoustic music derives, was revolutionized and standard by the 1980s. Prior to that time, clarinet and tape literature could sound interactive in the hands of a skilled performer, though the tape was static and predictable. Hardware from the 60s and 70s now transformed to software such as DAWs (digital audio workstations), now allowing for any arbitrarily complex rhythms to have enhanced resolution in parameters such as pitch, timbre, and spatial location.[32] Some of the earliest works that began to incorporate live performance and non-interactive electronics included Morton Subotnick's *Passages of the Beast* (1978) for clarinet and "electronic ghost score" as well as William O. Smith's *Asana* for clarinet and electronics (1985).[33]

By the turn of the 1980s, the availability of personal computers and commercially available software allowed performers and composers to work from "home," without the aid of the institutions specifically offering these technologies.[34] MIDI (or the Musical Instrument Digital Interface) was introduced in August of 1983, named after Max Mathews but created by Miller Puckette.[35] With MIDI, there was now production underway for the first generation of interactive compositions, including works such as Pierre Boulez's *Repons* (1981) for chamber ensemble, six soloists, and live electronics;

[32] Yoder, Rachel M., p. 6.
[33] Ibid, p. 5.
[34] Yoder, Rachel M., p. 6.
[35] "Electroacoustic Pioneers, Manifestos, Inventions and Premieres," 2019.

Robert Rowe's *Hall of Mirrors* for bass clarinet and the 4X real-time system; and Philippe Manoury's *Jupiter* (1987) for flute and live electronics.[36] MAX/MSP (Max Signal Processing) subsequently developed in 1997; this program was newly adapted for composers to synthesize and process digital audio in real-time. This program could additionally run on relatively inexpensive computers, particularly the laptops taking over the digital space.[37]

Around the late 80s, performers such as F. Gerard Errante published a series of articles in the professional journal *ClariNetwork*.[38] This series encompassed a wide variety of musical styles, from contemporary classical to experimental and electronic music. In addition to providing a resource for clarinetists, this series allowed Errante a means to commission new works from emerging and established composers, thereby expanding the clarinet repertoire with fresh, innovative compositions. This project reflected Errante's own commitment and passion in exploring new sonic territories, pushing and revolutionizing the boundaries of clarinet performance. In Errante's own text, he states, "The clarinet's flexibility allows for a wide range of effects including all manner of multiple sonorities, microtones, timbre trills, air sounds, percussive sounds, etc."[39]

Errante's work with clarinet and interdisciplinary arts promoted the integration of clarinet music with art forms such as dance, visual arts, and theater, revolutionizing the instrument's capabilities well into the 80s and 90s. Over the course of Errante's career, he has made significant contributions to the clarinet repertoire through his performances,

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[36] Yoder, Rachel M., p. 7.
[37] Ibid, p. 8.
[38] Druhan, Mary Alice., p. 4-5.
[39] F. Gerard Errante, "Electro-Acoustic Music for the Clarinet, Part I," ClariNetwork Fall (1984): pg. 14, 21.

commissions, and collaborations with composers. Today, the series of articles found in *ClariNetwork* serve as a notable example of Errante's dedication to promoting new music for the clarinet as well as exploring interdisciplinary connections within the arts.[40]

From the 90s to present day, the clarinet's role in electroacoustic literature has undergone significant transformations, reflecting advancements in technology, composition techniques, and artistic collaborations. In the 1990s, electroacoustic works for clarinet often ranged from works with pre-recorded electronics to the integration of live electronic processing with acoustic performance; allowing for more exploration in the clarinet's timbral possibilities and extended techniques. Compositions that premiered during this time include works such as *Funky Dunky* by Michel Roth (1994), *Dream Tracks* by Kaija Saariaho (1996), and *Clarinet Alone* by Jonty Harrison (1997). Today, the clarinet continues to play a prominent role in electroacoustic compositions, with a diverse range of works that combine acoustic and electronic elements seamlessly. Collaborations between clarinetists, composers, and electronic artists have led to innovative performances, interactive installations, and multimedia experiences that push the boundaries of sound art and redefine the possibilities of electroacoustic literature.

[40] F. Gerard Errante, p. 4-5.

CHAPTER 2: EVALUATION FRAMEWORK

Introduction

A concise, strategic approach has yet to be put in place for the introduction of young clarinetists to electroacoustic literature. Unlike other genres of study, most students have their initial experiences in this field either in the later years of their undergraduate degree or in graduate school, where the genre becomes more of a requirement than an exploration.

The literature chosen for this document encompasses a selection of 45 electroacoustic pieces from the 21st century, within years 2001 to 2023 respectively. The scope of this document will include only soprano B-flat clarinet literature, though it should be noted that there are multitudes of electroacoustic works for the remainder of the clarinet family. Works utilizing the other members of the clarinet family—E-flat, A, Basset, Bass, and Contra—will need to await a second survey of this rich literature, which reaches beyond the scope of this particular document to analyze. The selected literature for this document was chosen due to the soprano B-flat clarinet being what most studio-based clarinet students will have readily available to them at an undergraduate level.

This doctoral document isolates the pedagogy involved in selecting pieces and their electronic categories; this includes categorizing these works according to different collegiate performance levels for undergraduate students; grades I through V respectively. Grade ranges for these compositions should be interpreted as I being the most approachable, and V having the highest difficulty to either play technically, as the

clarinetist, or apply with the complexity or demand of the electronics. The topics analyzed within the rubric are the following: range (which will be given in B-flat concert pitch for the clarinet, i.e. E^3-C^7), extended techniques and their inclusion in the composition, electronic partnership (tape, electronics, computer, etc.), availability of the scores (including if the composer offers perusal scores or if individual contact with the composer is necessary to purchase the work), legibility of the score (how difficult it is to understand the given notation of the electronics or electronic events), rhythmic/metric complexity, instrument modifications (insertion of items into the instrument to modify or amplify the sound), and technological availability (meaning there is more than the standard two speaker channels needed for the electronic output).

Assessment Criteria

The categories in the rubric (located in Appendix B) were used to assess each composition and were selected due to their relevance and recurrence in the selected electroacoustic compositions, as well as the prominence they would have for students looking to begin performing electroacoustic pieces for the first time. Each grade can be utilized by students to gauge their own abilities when considering performance repertoire; this is an important note, as some electroacoustic pieces may appear at one difficulty though in actuality be harder or easier due to the style or relevancy of the electronic involvement. Due to these combined factors, Appendix B lists an average score for each of the 45 select 21st century electroacoustic works described in this document. These categories can also serve as a reference for undergraduate clarinetists looking to select pieces for specific electronic styles, ranges, or venues in respect to a grade level appropriate for their abilities. The collection of information in Chapter 3, grading scores

included, aims to serve as a resource and guide for both the studio professor and/or undergraduate clarinet student.

Each category of the rubric takes into consideration various methods and approachable techniques for the clarinet, all of which will equate to a grade that will be administered to each piece. Grades are chosen on a I to V basis such that students can select electroacoustic repertoire that will most likely match their own progressive development of skills and musical understanding. The grades will range on a scale from most approachable (I) through the most difficult (V), with each category of the rubric being assigned its own grade. To reach a concise numeral for each piece, the sum of all categories will be added and averaged to create the final score given to each work in Chapter 3. Categories within the rubric include instrument range, electronic type being utilized, inclusion and difficulty of extended techniques, score legibility, rhythmic and metric complexity, use of instrument modifications, score availability, and the accessibility of the electronics/sound outputs necessary to perform the selected work. Any terminology referenced throughout the works or in the required electronics for said works can be found in Appendix A of the document.

Range

	I	II	III	IV	V
Range	$E^3 – C^6$	$E^3 – G^6$	$E^3 – A^6$	$E^3 – C^7$	$E^3 – C^7$

Figure 1.1

The grades for instrument range all include the lower chalumeau of the clarinet, as this range is often already familiar to undergraduate clarinetists, but the ascending grades advance into the B-flat soprano clarinet's upper altissimo. The ranges referred to throughout the rubric and document will be in context to the full B-flat soprano clarinet

range in the B-flat pitch; this is a D^3 – B-flat^6 in concert pitch or an E^3 – C^7 in B-flat pitch. Grade I selection features melodies within E^3 – C^6, Grade II from E^3 – G^6, Grade III E^3 – A^6, and both Grade IV and Grade V encompass the full range of an E^3 – C^7. Grade V is distinct from the fourth in that the fifth has more involvement in the altissimo register than that of the lower grading level, utilizing melodies that stay in that range and therefore create a higher difficulty level.

Electronics Utilized in the Composition

	I	II	III	IV	V
Electronic "Type" Utilized	Tape only. This method of electronic partnership does not require any outside assistance.	Tape or pre-recorded sound with the addition of a timing component, such as a stopwatch. This method of electronic partnership does not require any outside assistance.	Interactive electronic components, including Max/MSP integration. May require an additional aid to assist in the performance process.	Interactive electronic performance component utilizing pedals or looping software. May require an additional aid to assist in the performance process.	Live Processing / Electronics that additionally involve a microphone or other equivalent amplification. May require an additional aid to assist in the performance process.

Figure 1.2

Electronic categories utilized for the selected compositions refers to the range of electronic components labelled for a specific piece's performance. F. Gerard Errante writes that there is a lack of standardization in, for example, tape-music notation—this is an issue that persists even in the electronic compositions of the 21st century, despite the type of electronics being utilized.[41] Resources exist for reference, of course, but most composers opt for differing names in compositions such as "clarinet and tape," "clarinet and CD," or "clarinet and fixed electronics," which all mean the same thing in our

[41] F. Gerard Errante, "Electro-Acoustic Music for the Clarinet, Part I," ClariNetwork Fall (1984): pg. 14, 21.

current century. Tape came first, as previously discussed in Chapter 1, but the term "tape" or "CD" has stuck with the compositional terminology of today. No matter the pre-recorded electronics—CD, MP3, or tape—the electronics today often arrive to the performer as an audio file, sometimes separated to different tracks for practice purposes, but regardless they remain static and unchanging no matter how many times the track is played. It is for reasons such as this—as well as the lack of readily accessible advice on equipment, set-up, rehearsal, electronic scores, and performance—that many feel these works appear complicated and arduous. At the beginning of the 21st century, there were few clarinetists with familiarity and knowledge in this field of study and, therefore, few to consult for instruction and assistance. Today, both the terminology and literature to encompass more static terms such as "pre-recorded electronics," but the average clarinetist is often left with trepidation when approaching works of eras prior to the 21st century. It is for these aforementioned reasons that Grade I on the rubric will encompass any use of tape, CD, MP3, or pre-recorded electronics. Grade II will utilize tape with the need for a timing or stopwatch component and/or an in-ear metronome. Grade II involves sparse interactive electronic components such as "event" cues or reactive interjections from electronics, though this level does not strictly have interactive elements always occurring within a work. Grade IV encompasses works with a need for pedals and/or looping electronic software and Grade V involves live electronics with an amplification or reverb element as well as the option or need for an electronic assistant.

Extended Techniques

	I	II	III	IV	V
Extended Techniques	Limited use of short-duration bends or glissandi, vibrato, air sounds, reed squeaks, and growling.	Use of larger range bends or glissandi. Inclusion of timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, and growling.	Limited use of multiphonics (implied that fingerings are chosen based upon instrument acoustics), inclusion of bends or glissandi, timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, and growling.	Inclusion of complex or underblown multiphonics (implied that fingerings are chosen based upon instrument acoustics), singing while playing and/or slap tonguing, bends or glissandi, timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, and growling.	Spectral multiphonics, multiphonic trills, singing whilst playing, bends or glissandi, timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, growling, and all other unlisted techniques.

Figure 1.3

Extended techniques are graded by their use throughout the selected works, including their presence and the occurrence during the duration of a piece. Grade I only includes the limited use of bends or glissandi, vibrato, air sounds, reed squeaks, or growling at a short rhythmic duration. Each of the following grades will include these aforementioned techniques as well as those specifically labelled for their specific grade. Grade II progresses to use these techniques at a more regular occurrence; Grade III will include the use of multiphonics as well as the inclusion of timbral trills or quarter tone fingerings. Grade IV will include complex or underblown multiphonics, harmonics, singing while playing, and/or slap tonguing. Grade V will include the use of any remaining extended techniques available for the clarinet, such as spectral multiphonics and/or multiphonic trills.

Legibility

	I	II	III	IV	V
Legibility	Standard score with simple markings for electronic event cues (this can include time-stamps).	Standard score with a secondary line beneath the clarinet part. This secondary line includes the fully notated electronic part either in graphic or written notation.	Score that does not contain a secondary electronic line. The indicated clarinet part or electronic cues contain proportional notation, either in actual timing or in notated duration of rhythms to be played.	Score that does not contain a secondary electronic line. Pedal, patch, or looping events are marked throughout the score to indicate repeated patterns, approximate improvisations, or melodies to occur during indicated sections of score.	Score that does not contain a secondary electronic line. Requires additional resources or performing assistant to cue electronic events via patch, pedal, etc. May include heavy graphic score or improvisation elements throughout.

Figure 1.4

Legibility of scores will refer to the score options available to the performing musician(s). Grade I is reserved for a standard score with simple markings for electronic event cues (this can include timestamps or letters), with no other additions or cues given in the clarinet part. This score should appear like the traditional, standard score clarinetists know, with a solo part and no other cues within. Grade II includes a performance score with a secondary electronic line beneath the clarinet part as well as cues or timing indications. This secondary line includes the fully notated electronic part either in graphic or standard written notation, either in a separate line from the clarinet or in cues placed on the clarinetists part. Grade III does not contain any secondary electronic score though the clarinet part does contain the use of proportional notation throughout; this can be in reference to the timing of each measure (i.e. measure 3 will take 15 seconds to complete despite the written notation appearing as thought it would take less) or in the spacing between each of the written rhythms given in the clarinet score. Grade IV can

include the qualifications for levels two and three as well as pedal, patch, or looping events that are marked throughout the score, indicating repeated patterns, approximate improvisations, or melodies to occur during indicated sections of the score. Grade V includes the prerequisites as well as the need for additional resources or a performing assistant to cue electronic events via patch, pedal, etc. This grade may additionally include graphic score or improvisatory elements throughout.

Rhythmic/Metric Complexity

	I	II	III	IV	V
Rhythmic/Metric Complexity	Notated in a majority of either simple or compound time signatures with limited interplay between both. Rhythmically limited to whole, half, quarter, eighth, and sixteenth note patterns, including triplets, dotted figures, and syncopation. May be homo or hetero-rhythmic.	Alternation of simple and compound time signatures throughout, with common interplay between both. Rhythmically expands beyond the scope of standard whole, half, quarter, eighth, and sixteenth note patterns, including triplets, dotted figures, and syncopation. May be homo or hetero-rhythmic.	Simple, compound, and Non-standard time signatures throughout (particularly those of asymmetric quality), including poly meters. This grade may include unbared melodies, gestures, or cues throughout.	Simple, compound, and Non-standard time signatures throughout (particularly those of asymmetric quality), including polymeters. This grade includes the regular use of unbared melodies, gestures, or cues throughout.	Simple, compound, and Non-standard time signatures throughout (particularly those of asymmetric quality), including poly meters. This grade includes unbared melodies, gestures, or cues throughout. Inclusion of hemiolas and polyrhythms, for example 2:3 or 5:4.

Figure 1.5

Rhythmic and metric complexity first refers to works that are notated in a majority of either simple or compound time signatures, including melodies that have homo or hetero-rhythmic tendencies (Grade I). Rhythmically these works are limited to

whole, half, quarter, eighth, and sixteenth note patterns, including short occurrences of triplets, dotted figures, and syncopation. The Grade II includes the alternation of simple and compound time signatures throughout, with common interplay occurring between both. Rhythmically this grade expands beyond the scope of whole, half, quarter, eighth, and sixteenth note patterns to regularly include triplets, dotted figures, and syncopation, more so than grade one. Grade III includes simple, compound, asymmetric, and poly meters. This grade encompasses the earlier categories as well as interjections of unbared meters, melodies, gestures, or cues throughout. Grade IV includes the previous category distinctions as well as the regular use of unbared melodies, gestures, or cues throughout, more so than the previous. Grade V includes the most complex combination of rhythm and meter, as well as the use of hemiolas and/or polyrhythms, i.e., melodies or harmonies that feature a 2:3 or 5:4 pattern.

Instrument Modifications

	I	II	III	IV	V
Instrument Modifications	Standard Clarinet with no modifications necessary for performance.	Amplification, mouthpiece alone or mouthpiece and barrel alone.	Modified embouchure/trumpet embouchure on clarinet and barrel or clarinet and upper/lower joint.	Insertion of outside, non-musical items inside of clarinet, including aluminum, cans, balls, rubber, mutes, cork, etc.	Modified clarinet, in which the mouthpiece is placed in the lower joint of the instrument. Insertion of electronic pick-ups in the body of the clarinet.

Figure 1.6

The instrument modification category begins with no modifications necessary for performance on the clarinet, just the standard instrument with electronics (Grade I). Grade II refers to the addition of basic amplification of the clarinet as well as mouthpiece

alone or mouthpiece and barrel alone. Grade III includes modified embouchure (or trumpet embouchure) on the clarinet either with barrel and clarinet or clarinet body (upper/lower) joint together. Grade IV's distinction includes the insertion of outside, non-musical items into the body, bell, or mouthpiece of the clarinet, including aluminum foil, soup cans, balls, rubber, mutes, cork, etc. Grade V is reserved for the insertion of electronic pick-ups in the clarinet or works featuring modified clarinet, a technique in which the mouthpiece is placed in the lower joint of the instrument and played with alternate fingerings.

Score Availability

	I	II	III	IV	V
S core Availability	Perusal / Example Scores are provided on the composer's website. Scores and Electronics are readily available at no cost on the composer's website.	Perusal / Example Scores are provided on the composer's website. Scores and Electronics are readily available for purchase and download on either the composer or publisher website.	Must order Perusal / Example Scores from the composer. Scores and Electronics are readily available for purchase and must be mailed from either the composer or publisher website.	Must order Perusal / Example Scores from the composer. Score and Electronics are NOT readily available for purchase on the composer or publisher website. Contact with the composer must be made in order to perform.	Must order Perusal / Example Scores from the composer. Score and Electronics are NOT readily available for purchase on the composer or publisher website. Contact with the composer is difficult and may require outside research to find their contact information.

Figure 1.7

Score availability is considered a distinct feature for contemporary music, as the works are commonly unavailable on sheet music sites, instead published directly by the composer. Often these works require a performer to reach out to composers in order to

purchase or peruse scores, as well as any audio or electronic files. Grade I on the rubric includes the availability of perusal or example scores on the composer's website as well as the option for scores and electronics to be purchased at no cost on said website. Grade II includes the availability of perusal or example scores on the composer's website with electronics and scores being sold either on composer of publisher sites for a fee, each with immediate PDF/audio download capabilities. Grade III requires that perusal or example scores be ordered from the composer or publisher, with purchased scores and electronics being sent to the performer via a form of physical mail. Grade IV requires the aforementioned examples, though scores and electronics are not readily available to purchase via a composer or publisher site; this will require the performer to contact the composer in order to purchase or perform the work. Grade V includes the earlier category restrictions as well as the requirement of outside research in order to find, purchase, or download the composer's piece as well as the composer's contact information.

Electronic Accessibility

	I	II	III	IV	V
Electronic Accessibility	Standard stereo speaker output (2 speakers) and/or non-standard dual or single speaker use (such as phones, interactive Bluetooth speakers, organic sounds, etc.).	Standard stereo speaker output (2 speakers) and/or non-standard dual or single speaker use (such as phones, interactive Bluetooth speakers, organic sounds, etc.). Additionally, stopwatch or other adequate timekeeping device can be used by the performer, in collaboration with the electronics. Physical tape or CD used.	Standard stereo speaker output (2 speakers) and/or non-standard dual or single speaker use (such as phones, interactive Bluetooth speakers, organic sounds, etc.). Additionally, stopwatch or other adequate timekeeping device can be used by the performer, in collaboration with the electronics. This grade can additionally include in-ear metronome or feedback components for the performer. Computer station or laptop utilized for MP3, tape, or CD outputs.	5.1 speaker output. Additionally, stopwatch or other adequate timekeeping device can be used by the performer, in collaboration with the electronics. Computer station or laptop utilized for MP3, tape, or CD outputs. Outside of the 5.1 setup, an additional monitor speaker may be used for the performer, includes the possibility of an in-ear metronome.	Electronic needs expand beyond a 5.1 speaker output. In addition to a speaker monitor or in-ear metronome, Interface or computer station may be needed. This category includes amplification with various microphones on stand or in-instrument, pedals, looping software, etc.

Figure 1.8

Grade I of Electronic accessibility begins with the requirement, or suggestion, for standard stereo speaker output (2 speakers) and/or non-standard dual or single speaker use (such as phones, interactive Bluetooth speakers, organic sounds, etc.). Grade II includes the earlier components with the addition of a stopwatch or other adequate timekeeping device, this category can additionally have a physical tape, CD, .wav, or

MP3 element used. Grade III includes the earlier components as well as the inclusion of an in-ear metronome for the performer. A computer station or laptop may be necessary for the pre-recorded electronic output, as well as a trigger or outside electronic assistant. Grade IV includes the earlier components with the option of a 5.1 speaker setup; an additional monitor speaker may be used for the performer as well as the inclusion of an in-ear metronome or assistant. Grade V has a need for electronics to expand beyond a 5.1 speaker output as well as the need for an interface or computer station. This category includes amplification with various microphones on stand or in-instrument as well the need for pedals, looping software, etc.

CHAPTER 3: ANNOTATED BIBLIOGRAPHY

Introduction

Compositions in the following annotated bibliography cover a range of composers and electronic titles, including subgenres such as clarinet with pre-recorded sound, live electronics, tape, Max/MSP, CD, and live processing. These compositions were analyzed and researched utilizing the rubric, located in Chapter 2 and Appendix B, with summative grades applied and categorized to each. Each composition was assigned a grade number, I through V, per category on the rubric; all category numbers were then added and divided by the number of categories to reach the summarized grade that can be found on the table of each composition. Additional media capabilities have been added to the composition tables for each work; these were incorporated to better itemize any equipment necessary for performing these compositions that was otherwise not noted by the composer.

Composers represented in the following bibliography cover a variety of ages, compositional experiences, and writing styles in addition to meeting the requisite boundary of their works being written in the 21st century, strictly within years 2001 – 2023. It should be noted that all of the composers listed in this document actively encourage conversation with any performer seeking to perform their repertoire. All were kind and sought a means to participate in either the analysis or accrual of their works for said analysis, additionally offering their guidance for any difficulties that could arise in the performance therein. Any compositions that do not notate a commissioner or premiere were left with the notation "N/A," as the information was unknown.

JOSHUA AGUIAR

Belmont

Composer	Joshua Aguiar
Work Title	*Belmont*
Electronics	Clarinet and Fixed Media
Written	2021
Duration	8:00
Grade	III
Range	F_3 – $G\#_6$
Extended Techniques	Underblown multiphonics, pitch bends, vibrato, and slap tongue. Noted that slap tongue elements can be changed to a harsh staccato if the clarinetist is unable to maintain a slap tongue
Premiere	April 2022, Emily Rose at the University of Nebraska-Lincoln
Commissioned By	EMM, Electronic Music Midwest, Festival call for composers, resident festival performer Andrea Cheeseman
Additional Media Capabilities	Amplification and reverb, USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Microphone, Logic, and an 8.1.4 channel sound system though stereo output with audio control device can be used in place, computer (Mac or PC), Max/MSP or Max Runtime, Max/MSP patch (soundfile playback only)
Electronic Score	Does not include electronic score cues beneath the clarinet part, only electronic timing cues given near electronic events
Score: Purchase, Perusal, Contact	Perusal available, free score, though contact necessary

Figure 2.0

Joshua Aguiar is a composer, multi-instrumentalist, and sound designer born in 1991, in Somerville, NJ. Aguiar graduated from Appalachian State University and the University of New Mexico, majoring in both music composition and theory, and graduates with his DMA from the University of Nebraska-Lincoln in Composition, May of 2024.

Though he specializes in Logic, Max/MSP, IanniX, and modular synthesizers, Aguiar's works have been performed by several chamber groups, soloists, and jazz artists

at venues such as the John Donald Robb Composers' Symposium for New Music in Albuquerque, NM. In recent years, Aguiar has become interested in composing for other media outlets such as video games, comics, or movies and spends his time exploring a wide variety of musical styles and forms, including electronic, electro-acoustic, and experimental genres.

Belmont for clarinet and tape was originally conceived for the EMM (Electronic Music Midwest) Festival with the intention of the electronics being performed on an 8.1.4 channel sound system. Provided with this soundscape, the mix features not only surround sound but also provide the audience and performer with a sense of vertical space. If the performer is unable to achieve the desired sound set-up in performance, reverb can be placed on the clarinet (with live input mixing from a microphone/XLR) to help replicate the spatial ambiguity that would come with multiple speakers.

The electronic samples heard in this work were created using live recordings from walks around Lincoln, Nebraska as well as some experimental samples recorded from steaming pots and windshield wipers, among others. The piece has freedom regarding tempo and is designed to allow the performer a degree of flexibility, though the performer should be warned that the provided timestamps in the clarinet part are meant to align with events on the tape. Proportional, ambient measures in the beginning give way to the more rhythmic, metered moments in the latter half of the work. The clarinet itself weaves in and out of the electronic track with the help of spectral composition techniques, heard through the ways Aguiar harmonizes the underblown, dyad multiphonics in the clarinet with the electronic soundscape. The wonder of the piece takes life through sounds that aren't traditionally thought of as musically harmonic, being

in turn woven into a complex musical structure for both audience and performance. A performance key is provided for the clarinetist's reference, which includes multiphonic fingerings and descriptions of specified notation throughout the work. Extended techniques for this work include underblown multiphonics, pitch bends, vibrato, and slap tongue though the slap tongue elements can be changed to a harsh, percussive stop-staccato if the clarinetist is unable to maintain a slap tongue (mixtures of both are additionally welcome).

Cosmic Cogs

Composer	Joshua Aguiar
Work Title	*Cosmic Cogs*
Electronics	Clarinet and Max/MSP
Written	2021
Duration	15:00
Grade	II
Range	$G_3 – E_6$
Extended Techniques	Multiphonics and growls
Premiere	Spring 2021, Emily Rose at the University of New Mexico - Albuquerque
Commissioned By	N/A
Additional Media Capabilities	Video projection for the IanniX Display, stereo speakers up to 8 channel capabilities though preferred 8-channel for immersive performance, USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Duo Max/MSP patches, Computer (Mac or PC), an additional electronic assistant may be necessary if the clarinetist cannot manage the Max patch events, microphone, Logic, Max/MSP or Max Runtime, Max/MSP patch
Electronic Score	Does not include any electronic score cues with the clarinet part
Score: Purchase, Perusal, Contact	Perusal available, free score, though contact necessary

Figure 2.1

Cosmic Cogs is a work for clarinet and Max/MSP with IanniX graphic capabilities. Within the score, Aguiar indicates that the only performance stipulation is that the clarinet score be performed in the direction of a clock, from the upper, left-most quadrant around, down to the right, and to the bottom and up to where the clarinetist began. Note duration and order are variable in the work, meant to be chosen, ignored, or followed at the performer's digression. Each section of the score is separated into 4 quadrants, each sample corresponding to a particular season: Spring, Summer, Fall, and Winter. The clarinetist is asked to move through the respective sections in an improvisatory style with short breaks in between each, allowing for dynamic shifts in the

responding electronic part. The clarinet melody itself is based upon Medieval troubadour melodies originally performed on lute, voice, or recorder. The resulting electronics echo clarinet pitches that morph with bell tones and distortions, breaking and changing in form given the intensity of the clarinetist's sound.

Cosmic Cogs is driven by two separate programs: two Max/MSP Patches and a graphic IanniX score. The first of the two Max/MSP patches controls what set of samples are being played per each section of the clarinetist's score. The second parameter that patch one controls is the on/off switch; this object controls sounds such as the popping and clicks that can be heard in the samples. It is suggested for the clarinetist to add more intense dynamics and volume throughout the score so the electronics can respond with these sounds in kind. The panning for this work supports up to 8 channel-surround, which directly responds to the volume and intensity of the clarinet player's sound; this allows the clarinet and electronics to ping-pong around the performer as they play, surrounded by the speakers. The second Max patch serves to communicate and process information from the IanniX score. This patch turns the movement of the lines and circles visible on the IanniX graphic into musical events, responding to the activity and volume of the clarinet part's input. If the performer wishes, they can use the object next to the play button on the patch to turn off and on the clarinet's control of the score speed, otherwise the score will respond directly to the clarinetist's sound.

The IanniX score is directly controlled by Max/MSP and requires no additional input for the performer; a 3D element was implemented into the design if the performer additionally wishes to experiment with planning the visuals this during performance. Multiphonics and their respective fingerings are provided in the score, with reference

symbols given to each and referred to as such in the performance score. The musical content given in the clarinetist's score is both approachable and open for interpretation in performance; Aguiar even suggests that the clarinetist take artistic freedom with rhythms, dynamics, octaves, and articulations. This work would be an excellent piece for any clarinetist hoping to take a first step into works that utilize a live electronic element and/or patch, as the melodic content itself is quite flexible. Below is an image of the original IanniX graphic and 3D model utilized for the composition, including the circular indicators that will respond with the patch. The art is drawn by author of this document, Emily Rose.

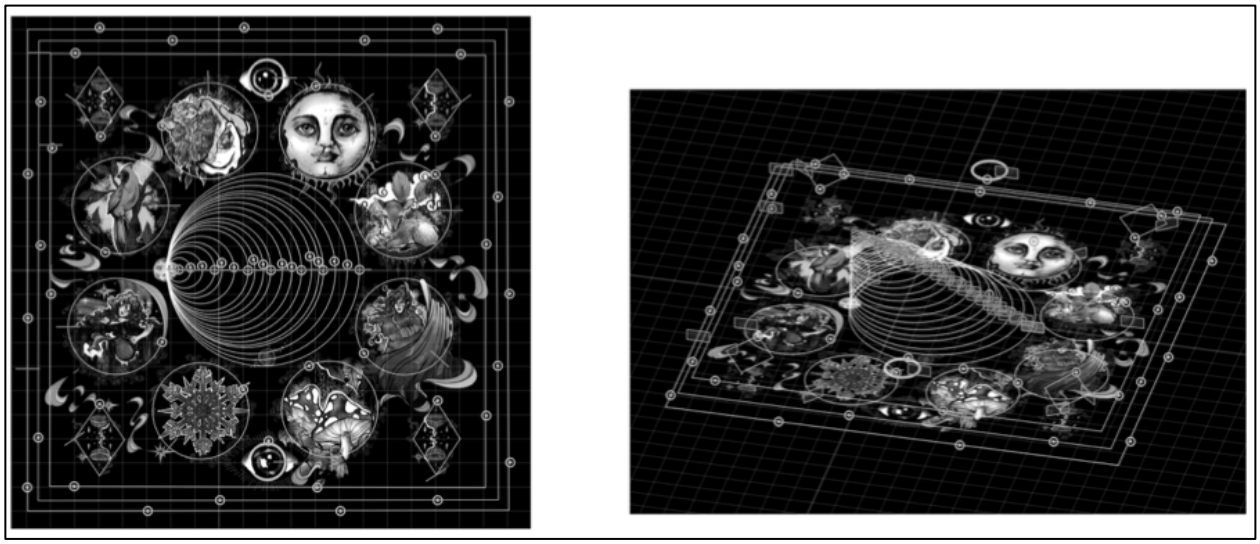

Figure 2.2

LORI ARDOVINO

Nattmara

Composer	Lori Ardovino
Work Title	*Nattmara*
Electronics	Clarinet (or soprano saxophone) and CD
Written	2019
Duration	8:25
Grade	I
Range	$D_4 – F_6$
Extended Techniques	None
Premiered	2019, Lori Ardovino on clarinet, University of New Mexico
Commissioned by	N/A
Additional Media Capabilities	N/A
Equipment Needed/Necessary	Stereo output device, speakers, computer, additional device to run the MP3/CD track
Electronic Score	Does include sparse electronic score cues beneath the clarinet part, no other timings indicated
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal unavailable

Figure 2.3

Lori Ardovino (b. 1960) is a composer, clarinetist, and Artist/Clinician with Conn-Selmer Company and D'Addario Woodwinds. Ardovino currently works as Professor of Music at the University of Montevallo where she serves as the clarinet, saxophone, and woodwind methods instructor, as well as Chair of the Music Department. Ardovino is a graduate of Minnesota State University-Moorhead, Michigan State University, and the Cincinnati Conservatory of Music. *Nattmara* as well as her other works are published through Potenza Music.[42]

Nattmara is a work for clarinet and CD/MP3, though an additional version exists for soprano saxophone. The title of this piece is based in Scandinavian folklore, in which

[42] Ardovino, L. (n.d.). Bio - Music of Lori Ardovino. Music of Lori Ardovino. https://loriardovino.com/about.

a race of sleep-based apparitions named Nattmara terrorize the dreams of their victims. These Mara appear as skinny young women with abnormally pale skin, dressed in a nightgown with long black hair and nails. Like the Banshees, Mara served as omens of death; if one were to leave a dirty doll in a family living room, it was believed that one of the members would soon fall ill and die of tuberculosis. Some stories say that the Mara are restless children, whose souls leave their body at night to haunt the living. Another tale says that if a pregnant woman pulled a horse placenta over her head before giving birth, the child would be delivered safely; if it were a son, however, he would become a werewolf and if a daughter, a Mara. To avoid being haunted by a Nattmara, a man could place his shoes at the front of the bed to deter her.[43]

The clarinet solo in *Nattmara* is meant to represent nature and resemble the musical literature of Vikings and early Scandinavian folk melodies. The whispering and screams incorporated into the electronic part are meant to portray the Nattmara, with the drones and war drums added to enhance the overall effect Scandinavian folklore is meant to have in this work. Given the work is additionally playable for soprano saxophone, the melodic range does not extend into the clarinet's lower chalumeau range—making the work easily approachable to younger clarinetists. Melodies are peppered throughout with grace-like gestures, though the meter and rhythms are again approachable and straight-forward.[44]

[43] Ardovino, L. (n.d.).

[44] Ardovino, Lori. "Lori Ardovino Music - Nattmara." Products - Music of Lori Ardovino. Accessed March 13, 2024. https://loriardovino.com/shop/ols/products/nattmara1.

CORNELIUS BOOTS

Invisible Orthodoxy

Composer	Cornelius Boots
Work Title	*Invisible Orthodoxy*
Electronics	Clarinet and Tape
Written	2012
Duration	15:00
Grade	III/IV
Range	$E_3 – F_6$
Extended Techniques	Harmonics, timbral trills and modified clarinet
Premiered	2013, N/A, International Clarinet Association Composition Contest; 1st Prize Winner
Commissioned by	N/A
Additional Media Capabilities	Additional speakers, auditorium, or stage with a balcony for performance
Equipment Needed/Necessary	Stereo output device, computer, speakers, additional device to run the MP3/CD track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Electronic Score	Does not include electronic score beneath clarinet but does include sparse cues throughout
Score: Purchase, Perusal, Contact	Purchase necessary on publisher site, perusal unavailable

Figure 2.4

Cornelius Boots is a Vandoren artist, woodwind composer-performer, bamboo shakuhachi master, breathing ambassador and educator born in 1974. Active internationally since 1990, Boots's love affair with reeds and bamboo began early at age 9. With an alter-ego as a drummer, Boots brings a percussive, driving spirit to his Western woodwind playing—most notably the bass clarinet. In 1997 he completed the first of three music degrees from the Indiana University's Jacobs School of Music in addition to an audio recording degree. In 1999 he completed a master's in music in jazz

studies and in 2012, a shihan (master) from his shakuhachi teacher, Grandmaster Michael Chikuzen Gould.[45]

Cornelius's new music hymns and anthems express a style of woodwind performance that he self-proclaimed as hermit blues or bamboo gospel, heard still through some of his earlier compositions for bass clarinet. Boots is a relentless pioneer and recovering perfectionist who aims to be a fun-loving, professional woodwind wizard, contributing to the repertoire and evolution of certain woodwinds—first bass clarinet (1994-2015) and now shakuhachi (2001-present).

Though *Invisible Orthodoxy* is a through-composed composition, the piece has various sections that can be separated for practice of the work. Boots explains that performers should practice enough to feel comfortable with the electronic entrances, though the work is not meant to feel as if the performer is following every section exactly as written. The paradox of *Invisible Orthodoxy* is performing the dense, rhythmically rapid material in a calm manner, deceiving the audience into a sense of comfort. He also states that if the performer were to get ahead of the tape in performance, to add more space in between sections II, IV, and V. Boots states that when exiting and re-entering the stage area in movement IV, do not run, rush or hurry to get back into the performance space; there is time built into the tape part for the performer to re-enter the stage (this is even in the event the performer moves to a balcony, which is recommended when possible). The clarinetist is asked, in various parts of the score, to slowly move to several locations to play the *ad lib* statements in the score, slowly returning to the stage during or

[45] Boots, C. (2023, December 12). Compositions. Cornelius Boots – Zen Shakuhachi, the living tradition 地無し尺八 Grandmaster (Dai Shihan) Koden Honyoku 古伝本曲, Composer/Creator Nature Blues/Bamboo Gospel - Bass Shakuhachi, Taimu/wide-bore flutes and Woodwind Nature. https://corneliusboots.com/compositions/.

after the truck sound. It is recommended that the performer have a dress rehearsal in the performance space, rehearsing with the feel of the environment and timing within it to reaffirm the concept of "not hurrying." Movement V suggests that the performer have expressive freedom and nonconformity in timing of the solo, to this Boots says, "…you should actually be feeling the energy field of your heart during this movement; audiences are also sensitive to that, so make yourself vast and humble."[46]

In the score, Boots provides a sample timeline for the soloist performing with the recorded electronics, additionally given below:

Tape Timing Event	Measure	Number and Details
Not playing	Silence	1 play "i. Free Salamander Exhibit"
0:00	Piano innards and cymbal	31 fermata rest "ii. Steam"
0:30	Piano innards and cymbal	32 play
1:46	Last cymbal roll ends	49 held high F ends
1:50 – 2:00	Birds and piano fade	50 enter "iii. Cardboard Destruction"
2:01	Percussion enters	(51 or 52) continue "iii."
3:32	Percussion ends then silence	67 play unaccompanied
4:03	Bird enters	(70 or 71) high notes transition
4:09	Birds	72 "iv. Crazy Bird on Oxford Avenue"
5:20	Birds	83-88 remove lower half of clarinet and wander to various spots in the audience to ad lib side-key derived short rifts
6:55	Garbage truck; more birds	83-88 leisurely return to stage; little or no playing
8:19	Piano innards enters	Pre-89 wait or play
8:29	Piano innards	89 enter "v. Golden Light"
9:29	Harp	105 fermata rest then follow instructions/play
12:33	Final four notes of harp	End already finished or on last measure, or repeat last measure quietly
12:55 – 13:14	Birds final fade out	Be still, hold audience applause until after silence

Performance Key 1.0

[46] Boots, C., 2023.

JENNI BRANDON

Cacophony

Composer	Jenni Brandon
Work Title	*Cacophony*
Electronics	Clarinet and Delay Pedal
Written	2021, revised 2023
Duration	11:50
Grade	III / IV
Range	$E_3 – A_6$
Extended Techniques	Timbral trills, flutter tongue, growls, and smears
Premiered	November 2021, Chris Mothersole
Commissioned by	Chris Mothersole
Additional Media Capabilities	PiezoBarrel wind instrument pickup, though recommendations are given in the key, microphone, computer (Mac or PC), audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs, two speakers outputting to the audience
Equipment Needed/Necessary	1-second digital delay and a 2-3 second reverse delay; originally written using a Joyo D-Seed Dual Channel Digital Delay affect pedal, optional reverb, and octave (8vb) effects
Electronic Score	Does not include electronic score cues, but does include pedal setting indications throughout
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal upon request

Figure 2.5

Jenni Brandon is a composer and conductor born in 1977. She received her undergraduate degree in music composition at West Chester University in Pennsylvania and her master's in music composition from the University of Texas at Austin. Her doctoral degree was completed at the University of Southern California, where she currently serves as an Adjunct Lecturer with the School of Dramatic Arts. Brandon has been commissioned to write music for soloists, chamber ensembles, concertos, opera, and orchestra. Her music appears on over 20 albums and has been awarded the Sorel Medallion, American Prize, Paderewski Cycle, Women Composers Festival of Hartford International Composition Competition, and Bassoon Chamber Music Composition

Competition, among others. As a conductor, Brandon advocates for conducting not only her own works, but also works by living composers. Her compositions are published and distributed by Boosey & Hawkes, Santa Barbara Music Publishing, Graphite Publishing, TrevCo Music Publishing, Imagine Music, J.W. Pepper, and June Emerson.[47]

Cacophony for B-flat clarinet and delay pedal invokes the sounds of many birds singing, using the colors of the clarinet and the effects of the delay pedal. The work was inspired by a large, canopied tree on Brandon's street:

> The birds gather (here)…and create an amazing cacophony of birdsong. *Cacophony* evokes this setting by utilizing the lyrical and rhythmic abilities of the clarinet. Jenni explains that the listener will, "Hear a variety of birdsong, from a single bird singing just before dawn, to the back-and-forth calls of birds using the reverse delay. The digital delay creates a sense of duet and birds trying to out-sing each other. Eventually all the birds arrive in the tree to sing, using the digital delay to create a hazy wall of sound as timbral trills break through the cacophony as individual songs of birds.[48]

Cacophony was commissioned, premiered, and recorded by Chris Mothersole and can be found on his album "Feathers and Fables." Throughout, the clarinet performs intervallic grace notes that are meant to mimic the open calls of birds conversing with one another. Outside of these gestures, the clarinet performs multitudes of timbral trills as well as cadenzas, which are meant to further enhance the bird-like character of the clarinet voice. The six movements of this work are given below, including Brandon's indications for delay settings:

I. A single bird singing just before dawn (no delay)
II. Sparse, open; like two birds calling to each other across a distance (reverse delay)
III. Bird Duet: Competitive birds singing before dawn; like birds flying off in opposite directions, single bird sings again (digital delay)
IV. Hazy, like morning mist, a brightening in the sky (digital delay)
V. Dawn arrives with a cacophony of song (digital delay)
VI. Contemplative (reverse delay, digital delay)

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[47] Brandon, J. (2023, December 14). About Jenni Brandon. Jenni Brandon. https://jennibrandon.com/about/
[48] Brandon, J. (2024, January 29). Cacophony for B-flat clarinet and delay pedal. Jenni Brandon. https://jennibrandon.com/product/cacophony-for-b-flat-clarinet-and-delay-pedal/

Chansons de la Nature pour la Clarinette

Composer	Jenni Brandon
Work Title	*Chansons de la Nature pour la Clarinette*
Electronics	Clarinet and Delay Pedal
Written	Original was written in 2003, revised 2006, the electronic version was premiered in 2021
Duration	9:54
Grade	III
Range	E_3 - $F\#_6$
Extended Techniques	None
Premiered	2020 Woodwind Fest, Original version premiered by Carrie RavenStem
Commissioned by	Carrie RavenStem
Additional Media Capabilities	Microphone*, Logic, stereo output with audio control device, computer (Mac or PC), USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs with two speakers outputting to the audience
Equipment Needed/Necessary	An active PA speaker and a digital delay effect pedal capable of a .55-second delay. The performer may also use a similar digital/analog delay pedal or live audio processing software (ex. Ableton Live) to achieve this effect. A piezoelectric pickup* or an external microphone may be used to capture the clarinet's sound for use of the effect
Electronic Score	Does not include electronic score cues, but does include pedal setting indications throughout
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal upon request

Figure 2.6

This version for clarinet and delay pedal was written in 2021 following the success of Brandon's original *Chansons* for solo clarinet; the original work was titled the same as *Chansons de la Nature pour la Clarinette*, written in 2003 and revised in 2006. Brandon supplies the performer with details for delay pedal settings and intervals for delay within the score key. In this key she additionally lists recommendations for equipment and performance notes, as well as the listed equipment used for the premiere performance. Each of the seven movements of *Chansons de la Nature pour la Clarinette*

have the option to be approached and performed separately, according to the clarinetist's playing comfort and technical ability. Upon first approach, the clarinetist is recommended to work through with a metronome, solidifying the various rhythmic gestures before adding in the pedal effects for performance practice. Throughout, *Chansons de la Nature pour la Clarinette* changes between meters and tempi, offering a different character and mood per movement. *Chansons de la Nature pour la Clarinette* is broken down into the following:

I. Les Oiseaux
II. Le Poisson
III. Le Papillon
IV. Le Lièvre et La Tortue
V. L'Etoile
VI. Dansez!
VII. Le Serpent

Chansons de la Nature pour la Clarinette is a work which is based on the lyrical and pastoral quality in both the French language and the imagery provided in Aesop's fables (specifically Jean de la Fontaine's retelling of them). Brandon explains:

> The movement "Le Lièvre et la Tortue" tells of the slow tortoise beating the fast hare with his patience and determination. Both creatures are represented in this movement, from the plodding of the tortoise to the quick movements of the hare. The other movements also represent a variety of characters and situations from these famous fables. "Le Poisson" darts, "Le Papillon" flutters and floats, "L'étoile" shimmers in the night sky, nature 'dances', and "Le Serpent" is slippery and quick. Each movement is meant to be short, yet still manage to evoke a story 'of nature' for the clarinet.[49]

[49] Brandon, J. (2023a, November 7). Chansons de la Nature pour la Clarinette for solo B-flat clarinet. Jenni Brandon. https://jennibrandon.com/product/chansons-de-la-nature-pour-la-clarinette-for-solo-b-flat-clarinet-sheet-music/

BENJAMIN BROENING

Radiance

Composer	Benjamin Broening
Work Title	*Radiance*
Electronics	Clarinet and Electronics
Written	2009
Duration	10:00
Grade	IV
Range	$E_3 – G_6$
Extended Techniques	None
Premiered	2012, Arthur Campbell, Music from Seamus Vol. 21 album
Commissioned by	Arthur Campbell
Additional Media Capabilities	Microphone should be connected to an USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs, with two speakers outputting to the audience
Equipment Needed/Necessary	Computer, Max/MSP (version 5 or higher), sound system for stereo output, assistant to help in the triggering of soundfiles
Electronic Score	Does not include electronic score cues, but does include numeric event cues throughout
Score: Purchase, Perusal, Contact	Purchase and perusal upon request

Figure 2.7

American contemporary composer Benjamin Broening was born in 1967. Broening is the founder and artistic director of Third Practice, an annual festival of electroacoustic music at the University of Richmond, where he is Professor of Music. Broening holds degrees from the University of Michigan, Cambridge University, Yale University, and Wesleyan University. He studied with leading composers such as William Bolcom, Alexander Goehr, Jacob Druckman, Martin Bresnick, William Albright, Andrew Mead, and Neely Bruce. Broening is additionally a recipient of Guggenheim, Howard, and Fulbright Fellowships, and has additionally received recognition and awards from the American Composers Forum, Virginia Commission for

the Arts, ACS/Andrew Mellon Foundation, the Jerome Foundation, the International Computer Music Association, and the Presser Music Foundation, among others.[50]

Broening notates in the score that *Radiance* has a series of triggerable events that will need to occur throughout the work. While the clarinetist plays, it is suggested that an electronic performing assistant be present to trigger such events and follow along with the clarinetist in the score. When the performer reaches the blocked numeric cues indicated in the score, the assistant will trigger the events by pressing the spacebar on the computer, generating the next sound file. The musical assistant can optionally keep one hand on the space bar and the other on a mixer fader, controlling the overall balance between the clarinet and electronics. It is noted that several of the soundfiles may overlap; one will begin before the preceding one (or before several preceding soundfiles) are finished. Broening stresses that by utilizing an assistant and electronics in this manner, the clarinetist is not tied to a single pre-recorded track with a click, allowing them more freedom and expression.[51] Broening indicates within the score that the provided Max patch does not process any live clarinet sounds, though it is preferable that the clarinetist be amplified with slight reverb to help blend the live clarinet and the prerecorded sounds. In the score, Broening indicates that *Radiance* is based on a poem by A.R. Ammons titled *City Limits,* which can be found below*:*

> When you consider the radiance, that it does not withhold
> itself but pours its abundance without selection into every
> nook and cranny not overhung or hidden; when you consider
>
> that birds' bones make no awful noise against the light but
> lie low in the light as in a high testimony; when you consider

[50] Broening, Benjamin. "Reviews / About." Benjamin Broening, About. Accessed March 13, 2024. https://benjaminbroening.net/about.html.
[51] Broening, Benjamin. "Compositions." Radiance. Accessed March 13, 2024. https://benjaminbroening.net/piece_Ra.html?iframe=true.

the radiance, that it will look into the guiltiest

swervings of the weaving heart and bear itself upon them,
not flinching into disguise or darkening; when you consider
the abundance of such resource as illuminates the glow-blue

bodies and gold-skeined wings of flies swarming the dumped
guts of a natural slaughter or the coil of shit and in no
way winces from its storms of generosity; when you consider

that air or vacuum, snow or shale, squid or wolf, rose or lichen,
each is accepted into as much light as it will take, then
the heart moves roomier, the man stands and looks about, the

leaf does not increase itself above the grass, and the dark
work of the deepest cells is of a tune with May bushes
and fear lit by the breadth of such calmly turns to praise.

Instructions for set-up, download, and running of the Max/MSP file can additionally be found in a package from the composer. These instructions provide keyboard shortcuts for the patch as well as EQ, fader settings, and controls. Broening additionally provides rehearsal tips for the clarinetist and assistant, when utilizing an assistant—if so, the performer can refer to the following text located in the key:

> In rehearsal you will often want to start at a point other than the beginning. To do so, simply click on the soundfile name (the column marked 5) where you want to start. After that, continue triggering soundfiles by pressing the space bar. In some cases, starting later in the piece will sound a little odd. If this happens, it is because an earlier soundfile is probably long and if you were playing through the piece, would be sounding. As you are starting in rehearsal after it would have been triggered, it won't be playing, and things will sound a little different.[52]

[52] Broening, Benjamin, 2024.

Arioso/Doubles

Composer	Benjamin Broening
Work Title	*Arioso/Doubles*
Electronics	Clarinet and Electroacoustic Sound
Written	2002
Duration	8:00
Grade	IV/V
Range	E_3 – $F\#_6$
Extended Techniques	None
Premiered	2006, Arthur Campbell, Third Practice: Commissions and Premieres
Commissioned by	Arthur Campbell, by the Band and Orchestral Division of the Yamaha Corporation of America
Additional Media Capabilities	Microphone should be connected to an USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs, with two speakers outputting to the audience. Some performers may prefer to advance the cues themselves using a footpedal. Use of a footpedal requires additional equipment
Equipment Needed/Necessary	Computer (Mac or PC) with 350 MB free disk space, Max/MSP or Max Runtime, Max/MSP patch (soundfile playback only), microphone, mic stand, and reverb unit
Electronic Score	Does not include electronic score cues, but does include numeric event cues throughout
Score: Purchase, Perusal, Contact	Purchase and perusal upon request

Figure 2.8

Arioso/Doubles is a work for clarinet and stereo soundfiles that are triggered at 55 different event points, indicated in the score. While the clarinetist plays, an audio assistant should follow along with their own copy of the score. When the clarinetist reaches one of the cues indicated in the score, the assistant at the computer presses the space bar which will trigger the next sound file. It is noted that the soundfiles overlap, i.e., one will begin before the preceding one (or several preceding soundfiles) are finished.

The idea for *Arioso/Doubles* is that the performer, not being tied to a single pre-recorded track with a click, can play with freedom and expression while the electronics

can instead be closely connected to the harmonic and timbral output of the soloist. Broening indicates that the audio assistant can optionally keep one hand on the space bar and the other on a mixer fader, which will allow them to control the overall balance between the clarinet and electronics. It is noted in the score and additional key that the Max patch does not process any live clarinet sounds. Broening indicates that it is preferable to mic the clarinetist slightly and apply some slight reverb to help blend the live clarinet and prerecorded sounds together. Much of *Arioso/Doubles* is about a connection between the "electronic" sounds and the live clarinet; thus, this addition of reverb will really help establish the atmosphere of *Arioso/Doubles*.[53]

Broening notes that though there is reverb to be applied, the reverb should be tasteful – the assistant should start with a 1.5-1.7 second hall reverb and adjust to taste. Again, the idea for *Arioso/Doubles* is to promote blend and connection between the live and pre-recorded music. For many of the more successful performances of *Arioso/Doubles,* the clarinetist has practiced with a metronome to establish and ingrain the tempo in the various sections as well as the overall flow. Late in the process, successful performers put the metronome away and then approach the work with a little more musical freedom. Broening indicates that the idea is that the tempi should be close to the indicated markings, but it need not be strictly rhythmically precise. Tempi is additionally important as without accurate tempi, the sound files will not overlap accurately, or at the least not overlap enough. For example, if the performer takes a tempo that is too slow or take too much time between phrases, then the result will be little islands of sound from the electronics with silence or near silence between them. For

[53] Broening, Benjamin. "Compositions." Arioso/Doubles. Accessed March 13, 2024. https://benjaminbroening.net/piece_AD.html?iframe=true.

almost all of the piece, Broening indicates there should be significant overlap of the sound files.

ZOSHA DI CASTRI

Du Haut de l'Orillon

Composer	Zosha Di Castri
Work Title	*Du Haut de l'Orillon*
Electronics	Clarinet and Live Electronics
Written	2007, revised 2008
Duration	9:00
Grade	IV
Range	E_3 – $G\#_6$* (not taking into account the reed squeaks)
Extended Techniques	Multiphonics, singing while playing, vibrato, reed biting, pitch bends, growls, and glissandi
Premiered	November 2008, at the Hamburger Klangwerktage Festival, Hamburg, Germany, by a member of the Internationalen Ensemble Modern Akademie
Commissioned by	N/A
Additional Media Capabilities	Audio assistant to trigger events. Microphone should be connected to an USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs, with two speakers outputting to the audience
Equipment Needed/Necessary	Dual microphones, Computer (Mac or PC), in-ear click-track
Electronic Score	Does include electronic score cues beneath the clarinet part as well as rhythmic cues for electronic event entrances, no additional timings indicated
Score: Purchase, Perusal, Contact	Purchase necessary on publisher site, full perusal also available

Figure 2.9

Composer, pianist, and sound artist Zosha Di Castri was born in 1985 in St. Albert, Alberta, Canada. Castri's music has been performed across Canada, the United States, South America, Asia, and Europe. Castri is additionally a recipient of the 2021 Guggenheim Fellowship and was an inaugural fellow at the Institute for Ideas and Imagination in Paris in 2018-19. She completed her bachelor's of music in piano

performance and composition from McGill University and her doctor of musical arts in composition at Columbia University.[54]

Du Haut de l'Orillon, or specifically *orillon*, is a diminutive of the term *oreille*, referring to the external, protruding part of an object (such as that of an ear). Castri includes this definition as she tells the tale of *Du Haut de l'Orillon'*s conception—*rue de l'Orillon*, specifically, refers to the name of the street on which she lived in Paris whilst writing this piece. Her tiny, Belleville flat had a port-hole window access, which she would often use to view both the chimney tops of Paris as well as the tip of the Eiffel tower. This title of this work, *Du Haut de l'Orillon,* was conceptualized to refer to this bird's-eye view she had in her apartment.

The electronics in *Du Haut de l'Orillon* are made up of pre-recorded sound-files taken from revisions of Castri's previous work, *Airplay* (2006). The basis of *Airplay*'s melodic contour as well as the spatialization patterns of the electronics can be heard here, though *Du Haut*
de l'Orillon considerably alters the original concept to reorganize the form and reinterpret the material.

Du Haut de l'Orillon uses four basic effects on the clarinet: one that sounds lyrical and resonant, one that is more stark, one that employs echoes and granular synthesis resulting in reverberant bird-like sounds, and one that is slightly warped, using ring modulation and delay lines.[55] Castri explains that the mood of *Du Haut de l'Orillon* is meant to feel as if the listener is suspended mid-air, with varying interruptive figures acting as a parenthesis to the hovering atmosphere with rapid accented/staccato

[54] Castri, Zosha Di. "About." Zosha Di Castri - About / Bio, 2024. http://www.zoshadicastri.com/about.
[55] "Canadian Music Centre - Du Haut de l'Orillon." Canadian Music Centre, April 5, 2024. https://cmccanada.org/.

articulations. Accidentals are to apply for the entire measure and for the specified octave only; they do not affect the same note in a different octave.

The clarinetist is meant to synchronize with the electronics utilizing a click track, with the recommendation that an audio-engineer run the patch from a mixing board. Though it may not be clearly marked in the score, Castri indicates in the key that the click track will give one extra "empty" measure for the performer, prior to the start of measure 1. All cues are automatically triggered by the click track at the appropriate time, except for the first one, which is to be triggered by the audio engineer (i.e., what starts the click track itself). Two speakers should be placed on the stage, slightly in front of the performer on both their left and right when facing the stage. Two microphones should be used for the clarinet: one should be placed over the music stand pointing to the instrument at a right angle about ¾ down its length, and the other should be placed just below the bell. It is noted by Castri that these two channels will be mixed into one monosignal in the patch, broadcast through the speakers on either side of the clarinetist. Special care should be taken to avoid any feedback that may result by placing the speaker too close to the soloist's microphone.

ELIZABETH FOSTER COMNINELLIS

White Birds

Composer	Elizabeth Foster Comninellis
Work Title	*White Birds*
Electronics	Clarinet and Fixed Media
Written	2014
Duration	4:11
Grade	I/II
Range	$G\#_3 – C\#_6$
Extended Techniques	Timbral trills, vibrato, and breathy tone
Premiered	2015, New York Electroacoustic Music Festival
Commissioned by	N/A
Additional Media Capabilities	N/A
Equipment Needed/Necessary	Stopwatch or time telling device with capability to display seconds, stereo output device, additional device to run the MP3/CD track, and laptop/computer
Electronic Score	Does not include electronic score cues beneath the clarinet, but includes timings for stopwatch
Score: Purchase, Perusal, Contact	Purchase and/or perusal upon request

Figure 2.10

Elizabeth Foster Comninellis (b. 1986) is a composer, singer, and pianist who now resides in Kuwait with her guitarist husband, Rob Foster. Comninellis completed her doctorate in music composition at the University of Texas at Austin in 2017 and holds a master's degree in music composition from the University of Colorado-Boulder, as well as a bachelor's degree in music composition, with an emphasis in vocal and piano performance, from the University of Missouri-Kansas City Conservatory of Music and Dance. Comninellis studied under acclaimed composers such as Yevgeniy Sharlat, Chen Yi, Zhou Long, Paul Rudy, and Carter Pan.[56] Comninellis primarily writes large chamber

[56] Comninellis, Elizabeth Foster. “Bio: CV.” Elizabeth Foster Comninellis. Accessed March 13, 2024. http://elizabethcom.com/bio.

works, many of which have theatrical and narrative components. She seeks out collaborative projects with other artists from all fields: media, film, dance, and theater.

Comninellis writes that the title of *White Birds* is drawn from a poem by W.B. Yeats of the same name. The poem reads as follows:

> I would that we were, my beloved, white birds on the foam of the sea!
> We tire of the flame of the meteor, before it can fade and flee;
> And the flame of the blue star of twilight, hung low on the rim of the sky,
> Has awakened in our hearts, my beloved, a sadness that may not die.
>
> A weariness comes from those dreamers, dew-dabbled, the lily and rose;
> Ah, dream not of them, my beloved, the flame of the meteor that goes,
> Or the flame of the blue star that lingers hung low in the fall of the dew:
> For I would we were changed to white birds on the wandering foam: I and you!
>
> I am haunted by numberless islands, and many a Danaan shore,
> Where Time would surely forget us, and Sorrow come near us no more;
> Soon far from the rose and the lily, and fret of the flames would we be,
> Were we only white birds, my beloved, buoyed out on the foam of the sea![57]

Within the score, Comninellis recommends that the clarinetist utilize a time-keeping device to better follow the exact events meant to occur in the score. Though the composition does not utilize proportional notation, much of the gestures are meant to sound delicate and nearly improvisatory, with some additionally noted to include vibrato or breathy tone. Additionally, she states that all trills should move from fast, to slow, to non-vibrato.

[57] "Poetry Archive." The White Birds, by W.B. Yeats, April 2002. https://www.poetry-archive.com/y/the_white_birds.html.

ROSE DODD

Foraging Music No. 1

Composer	Rose Dodd
Work Title	*Foraging Music No. 1*
Electronics	Clarinet and Fixed Media
Written	2013/2014
Duration	10:30
Grade	II
Range	$E_3 – E_5$
Extended Techniques	Multiphonics and timbral trills
Premiered	March 2014, Jonathan Sage, Scarborough College, University of Hull
Commissioned by	On The Edge Concert Series
Additional Media Capabilities	Max/MSP or Max Runtime, Max/MSP patch (soundfile playback only)
Equipment Needed/Necessary	Stereo output device, Max/MSP, computer, microphone connected to an USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs with two speakers outputting to the audience
Electronic Score	Does not include electronic score cues beneath the clarinet part, but does include various timings cues throughout
Score: Purchase, Perusal, Contact	Purchase and/or perusal upon request

Figure 2.11

Rose Dodd (b. March 10, 1967) is a composer, editor, and writer based in Amsterdam, Netherlands. Dodd completed her studies at Dartington College of Arts with Frank Denyer, continuing her composition studies at the Royal Conservatory in Den Haag with Diderik Wagenaar. Dodd completed her PhD in 2006 with composer Christopher Fox.[58]

Dodd indicates that the inspiration for *Foraging Music No. 1* came from Japanese shakuhachi player Yoshikazu Iwamoto, who was in residence at Dartington College of Arts during the 1990s. This work utilizes proportional notation throughout, though it is

[58] Dodd, Rose. "About." rosedodd.wordpress.com, June 19, 2020. https://rosedodd.wordpress.com/about/.

noted that there are timing indications given throughout for the clarinetist to follow. Despite the rhythms given, the clarinetist will need to take extra care to elongate phrases to reach the full duration indicated in the stopwatch markings, as well as maintaining rhythms at a length relative to one another (i.e., a quarter note should be treated in relatively the same manner each time it occurs, unless the proportional timings require an extended amount of time be taken between each indication in the score). Fingerings for multiphonics are notated within the score, though fingerings for quarter tones will require reference to an outside source for exact fingerings. Of the 45 select compositions in this document, Dodd's score is one of the only works that is written on a hand-made score, not utilizing any music writing software.

GRACIE FAGAN

TI-DO

Composer	Gracie Fagan
Work Title	*TI-DO*
Electronics	Clarinet and Fixed Media
Written	2021/2022
Duration	5:00
Grade	IV
Range	E_3 — B-flat$_7$
Extended Techniques	Multiphonics, growls, mouthpiece barrel alone (bird call), slap tongue, key clicks, and air hissing
Premiered	Spring 2023, Emily Rose, University of Nebraska-Lincoln
Commissioned by	N/A
Additional Media Capabilities	In-ear click-track for the clarinetist if the clarinetist will be performing the theatrical movements themselves (optional), audio assistant to trigger events/track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo output device, additional device to run the MP3/CD track, costuming, computer, and stage props/platforms
Electronic Score	Does include electronic score cues beneath the clarinet part as well as rhythmic cues for electronic event entrances, no additional timings indicated
Score: Purchase, Perusal, Contact	Purchase and/or perusal upon request

Figure 2.12

Gracie Fagan is a composer, sound designer, and multimedia artist hailing from Omaha, Nebraska. Fagan most recently completed her bachelor of music composition degree from the University of Nebraska–Lincoln and is currently pursuing her master of music degree from the University of Colorado–Boulder, where she teaches composition and music technology. Fagan's compositions have been featured in conferences such as the SHE Festival for Women in Music, Electronic Music Midwest Festival, the

International Women Composer's Festival of Hartford, and the Eugene Difficult New Music Ensemble.[59]

TI-DO examines the relationship between societal pressure and the hive-mind phenomenon associated within the Heaven's Gate Cult initiation tapes. Heaven's Gate was an American new religious movement primarily known for the mass suicides committed by its members in 1997. Heaven's Gate was founded in 1974, led by Bonnie Nettles (1927–1985) and Marshall Applewhite (1931–1997), known within the movement as Ti and Do, respectively. The central belief of the group was that followers could transform themselves into immortal extraterrestrial beings by rejecting their human nature, and in doing so they would ascend to heaven, or what they referred to as "The Evolutionary Level Above Human." With Nettle's death from cancer in 1985, the group's views on ascension were challenged; where they originally believed that they would ascend to heaven while alive aboard a UFO, they later came to believe that the body was merely a "container" or "vehicle" for the soul and that their consciousness would be transferred to new "Next Level bodies" upon death.[60]

Throughout *TI-DO*, the clarinetist (or a representative actor that will take the place of the moving clarinetist) is portrayed as a character battling with accepting and succumbing to Applewhite's ideals. The provided theatric body movements coupled with costuming and sets is meant to add to the audience's sense of the clarinetist (or representative) slowly "ascending" and devolving themselves of their humanity. Costuming for the work would require the chosen performer to wear a black shirt with

[59] Fagan, Gracie. "About." Gracie Fagan_Composer, Multimedia Artist, 2022. https://www.graciefagan.com/about.
[60] Robinson, Wendy Gale. "Heaven's Gate: The End." OUP Academic, December 1, 1997. https://academic.oup.com/jcmc/article/3/3/JCMC334/4584381.

sweatpants, black-and-white Nike athletic shoes, and an armband patch reading "Heaven's Gate Away Team," to be placed on the upper left bicep. The performer slowly moves atop the staggered stage platforms until they are “ascended” on the last page, now devolved of their human form and fully admitted into the cult’s ideals. Throughout, the clarinet melody actively interacts and interjects with the fixed media playback, which features portions of Marshall Applewhite’s *Do's Final Exit* video. The melodic moments throughout *TI-DO* change between that of truly melodic and others of a more improvisatory, chaotic nature—this difference in compositional styles, again, represents the difference between the clarinetist and that of Marshall Applewhite’s spoken ideals.

If the clarinetist is unable or willing to actively participate as the physical actor and performer for *TI-DO,* a representative may be chosen to act out the clarinetists role while the clarinetist stands upstage to perform. Fagan states that it is still desirable for the performer, clarinetist or no, to wear the uniform mentioned above. The desired platform stages are not necessary for performance, but if it is possible to utilize an ascending platform for the performer, it is desired.

GRACIANE FINZI

Romanza a la Muerte de un Ave

Composer	Graciane Finzi
Work Title	*Romanza a la Muerte de un Ave*
Electronics	Clarinet and Fixed Sounds
Written	2002
Duration	11:00
Grade	IV/V
Range	E_3 – $G\#_6$
Extended Techniques	None
Premiered	2002, Sylvie Hue, International Clarinet Congress, Stockholm
Commissioned by	Sylvie Hue
Additional Media Capabilities	Stopwatch or time telling device with capability to display seconds, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo output device, computer, and additional device to run the MP3/CD track
Electronic Score	Does include electronic score cues beneath the clarinet part as well as rhythmic cues for electronic event entrances and additional track timings indicated throughout
Score: Purchase, Perusal, Contact	Purchase necessary on publisher site, perusal available

Figure 2.13

Composer Graciane Finzi was born on July 10, 1945, in Casablanca, Morocco. Finzi studied at the Casablanca Conservatory with Georges Friboulet, where her parents were employed. She entered the Paris Conservatory at ten, where she studied piano with Joseph Benvenuti, and during her studies Finzi developed an interest in composition. Later, she served as music director of the Festival de la Défense from 1975 to 1979 and began teaching at the Paris Conservatory in 1979. Finzi served as vice-president of the International Society for Contemporary Music (SIMC) as well as the Société Nationale, later serving as an official representative to the Association Française d'Action Artistique

(AFAA). Finzi worked as a composer-in-residence with the Lille National Orchestra from 2001 to 2003.[61]

Graciane Finzi's work *Romanza a la Muerte de un Ave,* or "To the Death of a Bird," comes alive upon reading her personal notes for the score, included below:

> Legend has it that there was once a bird that sang only once in all its life, but more melodiously than any other creature on earth. It left its nest and immediately set about looking for a tree with thorny branches and could not rest until it had found it. It was then that it was torn to pieces on the longest, sharpest thorn, all the while singing through the wild branches. The bird was dying yet rose above its death throes with a song that surpassed that of the lark and the nightingale. A supreme song whose price was life itself. The whole world stood still to listen and God smiled in his Heaven. Because the best can only be achieved at the expense of great pain...or at least, that's what the legend tells us.

Romanza a la Muerte de un Ave is a work that requires mailing from a publisher site, as it includes a physical CD for the electronics rather than a downloadable MP3 track. Realization of the electronic track was done so with the assistance of Ricardo Mandolini. Often, *Romanza a la Muerte de un Ave* changes between melodiously smooth lines to that of sharp, interjecting ones. The latter half of *Romanza a la Muerte de un Ave* even utilizes chirp-like patterns in the clarinet melody, as if the bird is singing and losing both hope and energy until the ending quote of Mozart's *Ave Verum Corpus* plays in the track.

[61] Finzi, Graciane. "About." Graciane Finzi - Biographie English version. Accessed March 13, 2024. http://www.graciane-finzi.com/graciane-finzi---biographie-english-version.html.

YVONNE FRECKMANN

Switch

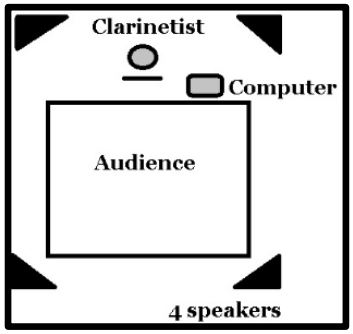
Composer	Yvonne Freckmann
Work Title	*Switch*
Electronics	Clarinet and Max/MSP
Written	2012
Duration	6:33
Grade	III
Range	$E_3 – A_6$
Extended Techniques	None
Premiered	February 15, 2013, Dylan Lloyd and Yvonne Freckmann, University of Louisville Computer Music Concert
Commissioned by	N/A
Additional Media Capabilities	The computer assistant will need Max/MSP, line-in for single mono mic and 4-line outs for surround sound, a small mixer for levels, and four speakers placed in a quadrophonic setup, with the clarinetist in the front center (photo indicated below). The computer musician will follow along with the score and advance the cues using the space bar. The computer musician will also monitor signal and gain levels
Equipment Needed/Necessary	Single microphone, mic stand, computer, 4 speakers, and Max/MSP
Electronic Score	Does not include electronic score cues beneath the clarinet part, though electronic affect cues are indicated throughout
Score: Purchase, Perusal, Contact	Purchase and perusal available through composer

Figure 2.14

Yvonne Freckmann (b. 1988) is a composer, pianist, clarinetist, and sound artist based in Madrid, Spain. Freckmann has earned master's degrees in music composition at the Royal Conservatoire in the Netherlands as a Fulbright Scholar, the University of Louisville as a Bomhard Fellow, and a bachelor's degree in music in piano performance and composition from Trinity University.[62]

[62] Freckmann, Yvonne. "About." Yvonne Freckmann, April 15, 2023. https://yvonnefreckmann.com/bio/.

Switch, for clarinet and live electronics, is an exploration of the clarinetist having a dialogue with itself. The melodies and motives in *Switch* both change direction or speed up/slow down, utilizing live processing and pre-recorded clarinet samples throughout.[63] The juxtaposition of time signatures, rhythmic groupings, and speed all play a factor in personifying *Switch*'s performance personality. The score for *Switch* includes markings for sample playback, delay, reverse pitches, and panning that are indicated within the clarinetist's part. An electronic assistant will be needed to trigger the events throughout *Switch*, as most of the piece utilizes a mixture of traditional and proportional notation. Freckmann includes a visual in the score of *Switch*, which should be followed when setting up for a performance:



[63] Freckmann, Yvonne. "Switch." Yvonne Freckmann, November 8, 2022. https://yvonnefreckmann.com/switch/.

MARTIN FRÖST

Ala Humana

Composer	Martin Fröst
Work Title	Ala Humana (Human Wing)
Electronics	Clarinet and CD/Disc
Written	2008
Duration	6:00
Grade	II/III
Range	$E_3 – A_6$
Extended Techniques	Glissandi, bends, and harmonic tremolos
Premiered	N/A
Commissioned by	ARD International Music Competition
Additional Media Capabilities	Stopwatch or time telling device with capability to display seconds, and/or optional audio assistant to trigger track events as indicated in the score, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo output device, computer, additional device to run the MP3/CD track
Electronic Score	Does include electronic score cues beneath the clarinet part as well as rhythmic cues for electronic event entrances
Score: Purchase, Perusal, Contact	Purchase necessary on publisher site

Figure 2.15

Composer, conductor, and internationally acclaimed clarinetist Martin Fröst hails from Uppsala, Sweden, born December 14, 1970. Fröst is a Sony Classical recording artist, appearing with ensembles including the New York Philharmonic, Concertgebouworkest, London Symphony Orchestra, Gewandhausorchester Leipzig, Los Angeles Philharmonic, Munich Philharmonic, the Elbphilharmonie Orchestra, NHK Symphony Orchestra, Vienna Symphony, Tonhalle-Orchester Zürich and Orchestre de Paris. As a chamber musician, Fröst regularly performs with international artists such as Sol Gabetta, Janine Jansen, Yuja Wang, Leif Ove Andsnes, Roland Pöntinen, Maxim Rysanov and Antoine Tamestit. In May 2014 Fröst was the recipient of the Léonie

Sonning Music Prize, one of the world's highest musical honors, making him the first clarinetist to be given the award. Other recipients of the Léonie Sonning Music Prize include Igor Stravinsky, Miles Davis, Leonard Bernstein, Gidon Kremer, Daniel Barenboim and Sir Simon Rattle.[64]

Fröst and composer Fredrik Hägberg use *Ala Humana* as the basis for the third movement of the work *Dancing with Silent Purpose*, which can be found on Fröst's 2011 album *Dances to a Black Pipe*. *Ala Humana* utilizes both solo clarinet and pre-recorded electronic voices, which act as a duo imitating and trading off melodic and accompanimental figures. Much of *Ala Humana* utilizes a mysterious four-note motive, which is further embellished and transformed by the clarinet through extended techniques such as multiphonics and rapid glissandi. Fröst additionally pays homage to J.S. Bach by including the opening of the Presto from his violin Sonata No. 1 in G Minor; however, in *Ala Humana* Fröst alters the pulse from the Sonata and adds a heavy rhythmic groove in the electronics underneath.

[64] "Martin Fröst." Buffet Crampon, February 8, 2017. https://www.buffet-crampon.com/en/artist/martin-frost/.

ELLIOTT GRABILL

Darl

Composer	Elliott Grabill
Work Title	Darl
Electronics	Clarinet and Live Electronics
Written	2016
Duration	10:00
Grade	III
Range	$F\#_3 – F\#_6$
Extended Techniques	Quarter tones and tremolos
Premiered	July 2, 2016, Hila Zamir, SPLICE Institute at Western Michigan University
Commissioned by	Hila Zamir
Additional Media Capabilities	Stereo or eight-channel output device, utilization of Max/MSP or AudioMulch, computer, microphone should be connected to an USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs
Equipment Needed/Necessary	Audio tech assistant or MIDI controller/pedalboard and patch download
Electronic Score	Does not include electronic score cues beneath the clarinet part, but does include various timing and patch cues throughout
Score: Purchase, Perusal, Contact	Purchase and/or perusal upon request

Figure 2.16

Elliott Grabill is a composer, saxophonist, and educator based in Baltimore, Maryland. Grabill studied composition under Matthew Burtner and Judith Shatin at the University of Virginia, as well as David Cutler at the Brevard Music Center. Grabill holds a bachelor's degree in music, double majoring in mathematics, and holds a master's in music from the Peabody Conservatory. Elliott Grabill's work has been performed by Dark in the Song, the Civitasolis Quintet, Pique Collective, the Washington Men's Camerata, and the Meridian Arts Ensemble. His compositions have been featured at Electroacoustic Barn Dance, the Athens International Film and Video Festival, inner sOUndscapes, the International Computer Music Conference, the SEAMUS Conference,

the New York City Electronic Music Festival, June in Buffalo, highSCORE, the National Student Electronic Music Event, and the Toronto International Electroacoustic Symposium.[65]

Darl takes its name after the character from William Faulkner's novel *As I Lay Dying*. In the text, Darl is a well-spoken, soul-searching character that becomes angrier and more irrational as the novel progresses. Darl's frustration over the way his family copes with his deceased mother leads him on a downward spiral, culminating with his confinement in a state mental institution. Grabill's composition is meant not to mimic the plot line of William Faulkner's text, but instead reflect the many emotions Darl experiences throughout. The high pitched, jarring, accented sections of the clarinet part represent Darl's frustration and insanity, coupled with a transcendental ending built off an electronic looping structure that spectrally shimmers.[66]

Grabill includes fingerings for the various tremolos and quarter tones in the piece, though he notes that the clarinetist does not need to adhere to these fingerings if they know of a better means to achieve the desired effect. *Darl* utilizes live processing of the clarinet's sound, employing tools such as reverb, granulation, ring modulation, aliasing, and delay. In the score, Grabill indicates that *Darl* uses the software AudioMulch, but the provided patches could easily be redone with Max/MSP or Pure Data. *Darl* is written for stereo speaker output, though an audio technician may employ diffusion to enhance the sound when eight channel surround sound is available.

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[65] Grabill, Elliott. "Elliott Grabill - Composer, Songwriter, Teacher." Elliott Grabill - composer | songwriter | teacher, 2024. http://elliottgrabill.com/.
[66] Grabill, Elliott. "Darl - Elliott Grabill." Elliott Grabill - composer | songwriter | teacher. Accessed March 13, 2024. http://elliottgrabill.com/darl.

Regarding the technical components of *Darl,* the piece may be performed in one of two ways. Grabill indicates that an audio tech can control the patch with a MIDI controller, utilizing cues given in the score to indicate when certain effects should be realized. The other means of performance would involve the clarinetist performing with an automated patch. In this scenario, the player would need to keep to a timer to make sure that effects occur exactly when indicated. Grabill indicates the following effect assignments for the use of MIDI controller:

Patch 1	• A knob or slider to fade in reverb • A knob or slider to fade in grunge • A knob or slider to fade in ring modulation
Patch 2	• A knob or slider to adjust the gain of the first four flangers and the first delay • A knob or slider to fade in the second set of delay and flanger subpatches • A knob or slider to fade in all the Subpatch 2 effects
Patch 3	• A knob or slider to fade in reverb • A knob or slider to fade in grunge • A knob or slider to fade in ring modulation
Patch 4	• A knob or slider to fade in all the pitch shifting subpatches to create the chords
Patch 5	• A knob or slider to adjust the gain of Patch 5 • A button to tell Looper A to start and stop recording • A button to tell Looper A to advance to the next track • A button to tell Looper B to start and stop recording • A button to tell Looper B to advance to the next track
Note that the AudioMulch patch consists of two files which are switched in the middle of the piece, at measure 84. This is so if MIDI controller with 11 sliders isn't available, a smaller device can be used.	

Performance Key 1.1

Pluto

Composer	Elliott Grabill
Work Title	Pluto
Electronics	Clarinet and Live Electronics
Written	2015-2017
Duration	35:00, though movements can also be played separately
Grade	IV/V
Range	E_3 – Gb_6
Extended Techniques	Pitch bends
Premiered	Spring 2015, Melissa Lander, Peabody Thursday Noon Concert Series (V. Gravity) August 2016, Michele Jacot at the Toronto International Electroacoustic Symposium (III. Planet Heart) February 2017, Andrew IM, Centre Street Performance Studio in Baltimore (full work)
Commissioned by	N/A
Additional Media Capabilities	Stereo or eight-channel output device, utilization of Max/MSP or AudioMulch, computer, microphone should be connected to an USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs
Equipment Needed/Necessary	Audio tech assistant or MIDI controller/pedalboard, patch
Electronic Score	Does not include electronic score cues beneath the clarinet part, but does include various timing and patch cues throughout
Score: Purchase, Perusal, Contact	Purchase and/or perusal upon request

Figure 2.17

Pluto is a thirty-five-minute work for clarinet and electronics separated into the following five movements:

I. Serenity
II. Cosmic Rant
III. Planet Heart
IV. The Sun's Quiet Heat
V. Gravity

Pluto was written to celebrate NASA's New Horizons mission in which the New Horizons spacecraft flew by the dwarf planet Pluto on July 14, 2015. Grabill notes in the

score that it is desirable to have *Pluto* performed in its entirety, though it is noted that the movements can also be performed as stand-alone works. *Pluto* requires two performers, the clarinetist, and an assistant to realize the live electronics. The electronic assistant will additionally need to follow the score, as varying electronic effects—delay, pitch shift, ring modulation, and aliasing—are marked throughout. The assistant also has the responsibility of recording and looping the clarinetist in real time, ending, and reactivating them as specified in the score. When multiple loops occur at the same time, the assistant mixes the audio to create a proper balance. Effects such as delay and flanging should be controlled utilizing appropriate fade ins and fade outs.[67] All of the desired effects can be accomplished by mapping the patch to a MIDI controller with sliders or knobs (to fade the effects in and out) and buttons (to activate and deactivate loops). If the controller does not have enough sliders, many of the effects are simple enough to be controlled with a mouse on the laptop being utilized for performance. Each movement of *Pluto* comes with a patch to process the clarinet's signal, which was created using the software AudioMulch. It is noted that the patches could be redone in a program such as Max/MSP, Pure Data, or some other signal processing software. Below, Grabill's controller settings are included:

[67] Grabill, Elliott. "Pluto_Elliott Grabill." Elliott Grabill - composer | songwriter | teacher. Accessed March 13, 2024. http://elliottgrabill.com/pluto.

Movement Title	Description	Settings
Serenity	In Serenity, the laptop controller records three loops at times specified in the score. These loops run through a combination of effects, including delay, reverb, and flanging, which can be viewed on the patch diagram.	• A button to start and stop recording loops • A button to stop recording one loop, and advance to recording the next loop • Three buttons to disable each of the three loops • One knob or slider to fade in / out the delay • One knob or slider to fade in / out the flanger
Cosmic Rant	The laptop controller loops in this piece as well, and the looped recordings also pass though effects such as granulation, distortion, and ring modulation. The piece's middle section features the clarinet performing glissandi in the upper register. In this section, the laptop controller activates two pitch shifters to transpose the clarinet down a major third and a major sixth, creating a triad.	• A button to start and stop recording loops • A button to stop recording one loop, and advance to recording the next loop • Eight buttons to enable and disable the loops • One slider to fade in the triad
Planet Heart	The score indicates when to activate and deactivate the loops. The middle of the piece features a section where the laptop performer takes a leading role in the music. The patch creates a cloud of granulated sound using the audio of loop 4 as source material. The controller shifts the pitches of this audio up and down, like a glissando. The controller also shifts the frequency of the ring modulation, also creating a sound resembling a glissando.	• A button to start and stop recording loops • A button to stop recording one loop, and advance to recording the next loop • Four buttons to enable and disable the loops • One knob / slider to fade in the ring modulation • One knob / slider to fade in the randomly granulated sounds • One knob / slider to affect the frequency of the ring modulation • One knob / slider to affect the frequency of the randomly granulated sounds • It is recommended that the frequency changes in the delay be done on the laptop itself

The Sun's Quiet Heat	In *The Sun's Quiet Heat*, the notation is revised, reducing the laptop controller's part to a single line. The diagonals are replaced with crescendos to indicate gradual fade in and out. Like in *Cosmic Rant*, some of the loops become so distorted by the effects that they may no longer sound pitched, or like a clarinet.	• A button to start and stop recording loops • A button to stop recording one loop, and advance to recording the next loop • Seven buttons to enable and disable the loops • One knob / slider to fade in and out randomly granulated sounds, which will be on at the beginning of the piece, and continue in sections E - H • One knob / slider to fade in the ring modulation in sections B - D • One knob / slider to change the frequency of the ring modulation in section B • One knob / slider to fade in the aliased sounds (created by digi-grunge on AudioMulch) in sections B and D • One knob / slider to fade in the flanger in sections B and E
Gravity	In *Gravity* the notation is simplified more, this time simply instructing the controller to fade effects over a certain number of measures. The loops are still written out.	• A button to start and stop recording loops 1-3 • A button to start and stop recording loops 1a and 1b • A button to start and stop recording loops 2a and 2b • Three buttons for each of the loop sets to advanced the loop recording to the next track • One knob / slider to control the volume of subpatch 1 • One knob / slider to control the volume of subpatch 2 • One knob / slider to fade in the delay from subpatch 3 • One knob / slider to fade in aliasing (digi-grunge) from subpatch 3 • One knob / slider to fade in ring modulation from subpatch 3 • One knob / slider to fade in subpatch 4

Performance Key 1.2

KERRY HAGAN

Requiem

Composer	Kerry Hagan
Work Title	*Requiem*
Electronics	Clarinet and Computer
Written	2014
Duration	8:00
Grade	IV
Range	$F_3 – B_6$
Extended Techniques	Multiphonics, timbral trills, and glissandi/fingered glissandi, key clicks
Premiered	2014, Deirde O'Leary, Ireland
Commissioned by	N/A
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Single microphone, mic stand, computer, four output speakers, and Max/MSP
Electronic Score	Does include electronic score cues beneath the clarinet part, including patch/event cues throughout
Score: Purchase, Perusal, Contact	Perusal available, purchase upon request

Figure 2.18

Kerry Hagan is a composer and researcher born in 1974, New Jersey. Hagan holds a bachelor's of science in electrical and computer engineering and a bachelor's in fine arts in music composition and conducting from Carnegie Mellon University. She received her master of arts and PhD in music from the University of California, San Diego; her teachers include Roger Reynolds, Chaya Czernowin, Brian Ferneyhough, Miller Puckette, and F. Richard Moore. Hagan additionally holds dual citizenship with the U.S. and Ireland, and has taught music University of California San Diego, University of California Irvine, and the University of Limerick, Ireland. Currently, Hagan

serves as an Associate Professor at the University of Illinois Urbana-Champaign and President of the International Computer Music Association.[68]

In the attached score key, Hagan writes that though *Requiem* started in Paris, 2004, it has been the most difficult composition for her to finish. *Requiem* lived on a shelf until she picked it up, further developing the composition during her work in San Diego, California. *Requiem* was finally completed in Limerick, Ireland in 2014, and premiered by clarinetist Deirde O'Leary. *Requiem* was originally intended as a tribute to Hagan's father, though the time it took for the composition to grow turned the work into more of a musical exploration of general loss and remembrance, less so the personal tribute to her father that notated Hagan intended it to be.

Hagan writes in the key that though *Requiem* includes specific fingerings and performance techniques, different clarinets and performers will bring a unique and varied sound to the work. *Requiem* includes variances in notation, though Hagan indicates that the passages are intended to act as interruptions or thin echoes of the more conventional notations and taken less literal than initially perceived. The electronic part is meant to both support the clarinet material as accompaniment as well as echo the clarinet.[69]

[68] Hagan, Kerry. Kerry L. Hagan. Accessed March 14, 2024. https://www.kerrylhagan.net/#bio.
[69] Hagan, Kerry. Kerry L. Hagan. Accessed March 14, 2024. https://www.kerrylhagan.net/#requiem.

ANDREW HANNON

Two Lost Loves

Composer	Andrew Hannon
Work Title	*Two Lost Loves*
Electronics	Clarinet and Fixed Audio
Written	2014
Duration	7:00
Grade	II/III
Range	$F\#_3 – G_6$
Extended Techniques	Timbral trills
Premiered	April 2, 2016, Andrea Cheeseman, Appalachian State University
Commissioned by	Jeremy Wohletz
Additional Media Capabilities	Stereo output device, additional device to run the MP3/CD track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Amplification for the clarinet, mic, mic stand, and computer
Electronic Score	Does include electronic score beneath the clarinet part; no timing cues given
Score: Purchase, Perusal, Contact	Perusal and purchase available on site

Figure 2.19

Composer, bassist, and educator Andrew Hannon earned his BM and MM degrees from Southern Illinois University and his DMA in music composition from the University of South Carolina. Hannon's compositions have been performed throughout the United States at the NASA National Conference, Kentucky New Music Festival, Outside the Box Music Festival, International Clarinet Association’s ClarinetFest®, Electroacoustic Barn Dance, and CMS Pacific Northwest Conference. Hannon’s music is often portrayed as an amalgamation of many diverse influences, alternating between

extreme moments of violence and serenity. He currently serves as an Assistant Professor of music composition at Appalachian State University in Boone, NC.[70]

Two Lost Loves was created as a product of volunteer participation. Individuals would leave messages on a Google voice account, and these messages were then used as the source material for the vocal samples heard in the fixed audio track. While the story of the two primary messages in the track is largely unknown, both clearly carry a thread of love, loss, and remorse that can be heard within the track. The result of *Two Lost Loves* is an intimate glimpse into the various contributor's emotional state during the voicemail. Hannon provides this quote within the score, "I found a letter left by a pay phone with no return contact and it read like a horn blown by some sad angel (Aaron Weiss, *Carousels*)."[71]

Hannon notes that the clarinet should be amplified in this work to ensure equal volume output between the instrument and CD track. This factor should be considered for the venue of performance, as it is noted that Hannon desires for the performance atmosphere to sound loud and be "slightly abrasive." Any "x" noteheads within the score denote an alternate fingering that should alter the pitch's timbre and all quarter tones are approximations; they should be performed as variants of the surrounding pitches to create a complex intonation texture. Beneath the notated clarinet score the fixed audio track is noted with both rhythmic sound entrances as well as verbal cues for the sampled voicemail recordings.

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[70] Hannon, Andrew. "Andrew Hannon_Composer." Andrew Hannon_Home. Accessed March 13, 2024. http://andrewhannon.com/index.html.
[71] Hannon, Andrew. "Andrew Hannon_Music/Purchase." Andrew Hannon_Two Lost Loves. Accessed March 13, 2024. http://andrewhannon.com/Two%20Lost%20Loves.html.

Track	CD Contents
1	Performance Track
2	Midi Realization
3	m.1 + click
4	m. 25 + click
5	m. 49 + click
6	m. 67 + click
7	m. 101 + click

Performance Key 1.3

Respire

Composer	Andrew Hannon
Work Title	*Respire*
Electronics	Clarinet and Fixed Audio
Written	2021
Duration	7:30
Grade	II/III
Range	$E_3 – F_6$
Extended Techniques	Timbral trills and breathing sounds
Premiered	October 2, 2022, Jesse Krebs, Truman University
Commissioned by	Jesse Krebs
Additional Media Capabilities	Stereo output device, additional device to run the MP3/CD track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Amplification for clarinetist, mic, mic stand, and computer
Electronic Score	Does include electronic score beneath the clarinet part; no timing cues given
Score: Purchase, Perusal, Contact	Perusal and purchase available on site

Figure 2.20

The main melodic structure of *Respire* is the juxtaposition of the clarinet's legato material against the slowly building articulate gestures to which the work climaxes. Throughout, the syncopation of the melody increases until the clarinet breaks through the static, sonic sounds with a rhythmic, violent melody. Short bursts of this articulate material interject both dynamically and in range of the legato clarinet lines that open the work, hinting at what is to come just a few pages latter. Beneath the notated clarinet score the fixed audio track is noted with both rhythmic sound entrances as well as "breathing" noise cues. Any "x" noteheads within the score denote an alternate fingering that should alter the pitch's timbre, though the specific fingerings are not included in the score key.

Respire's main feature is the inclusion of pulsing inhales and exhales throughout the fixed audio track. Hannon provides the performer with a short definition of the term

in the score key, “Re-spire: to breathe freely or easily again, as after exertion or anxiety.” Within this key Hannon explains that our breathing, both on inhale and exhale, is a fleeting, reflexive requirement of the human condition. As humans we draw awareness to breathing during times of exhaustion or relief, taking for granted the life-sustaining act itself.[72] *Respire* focuses on the act of breathing by utilizing both the sounds of breath, as well as requiring the clarinetist to play without the ability to breathe. The melodic and formal structures within both the electronic and clarinet score mirror the breathing process of inhaling and exhaling through expanding and contracting the melodic material. Together with the fixed audio track, the overall emotive journey of this composition is one of reflections, despair, and hope.

[72] Hannon, Andrew. “Andrew Hannon_Music/Purchase.” Andrew Hannon_Respire. Accessed March 13, 2024. http://andrewhannon.com/respire.html.

HOLLY HARRISON

A Mad Tea-Party

Composer	Holly Harrison
Work Title	*A Mad Tea-Party*
Electronics	Clarinet and Electronics (Ableton Live)
Written	2009, revised 2018
Duration	7:00
Grade	V
Range	E_3 – G_6 (not taking into account reed squeaks)
Extended Techniques	Slap tongue, pitch bend, glissandi, fingered glissandi, honk, fluttertongue, and purposeful squeaks
Premiered	October 28, 2009, Jason Noble, Creative Explosion in the West, University of Western Sydney Playhouse Theatre, NSW
Commissioned by	Jason Noble
Additional Media Capabilities	Noted that the Microphone should be connected to an USB audio interface via XLR, audio interface to laptop via USB, MIDI pedal controller to laptop via USB, and audio interface to PA system via stereo outs
Equipment Needed/Necessary	Microphone, mic stand, laptop installed with a version of *Ableton Live 11,* USB audio interface (i.e., Focusrite), MIDI pedal controller with at least two switches, and PA system or amplifier
Electronic Score	Does include electronic score beneath the clarinet part
Score: Purchase, Perusal, Contact	Purchase necessary on publisher site, perusal unavailable

Figure 2.21

` Holly Harrison is an Australian composer born in 1988, hailing from Western Sydney. Harrison completed a Doctor of Creative Arts at Western Sydney University with Bruce Crossman and John Encarnacao, where she worked for several years as a sessional lecturer in composition and performance. Harrison currently works as the composer in residence at The King's School in Australia, and additionally teaches at the Sydney Conservatorium of Music. Holly Harrison's music is often driven by the

"nonsense" literature of Lewis Carroll, embracing stylistic juxtapositions as well as the visceral energy of rock and whimsical humor.[73]

As the title suggests, *A Mad Tea-Party* is inspired by chapter seven of Lewis Carroll's *Alice's Adventures in Wonderland.* Throughout this work, Harrison explores the dialogue between two different characters, the Mad Hatter, and the Dormouse. The more lively, playful material is representative of the Hatter character while the Dormouse, who continuously falls asleep at the most inconvenient of times, is musically characterized with longer, dreamier lines. Harrison's use of live electronics is meant to highlight the concepts of a dreamscape, with twisted implications that 'we're all mad here.' The warping and fracturing of the clarinet melody is meant to portray the distortion of reality and mental fortitude, though by the middle of the work both the 'Hatter' and 'Dormouse' characters fuse. At the end of Harrison's program notes, she offers the following query, "…The piece could be interpreted as the Dormouse's dream within Alice's overarching dream. Or is it the other way around? Who dreamed who?"[74]

The electronics for *A Mad Tea-Party* are generated in *Ableton Live 11.* In this context, the software is meant to function as an effects rack, where three effects are turned on and off by a MIDI foot controller. Subtle reverb is meant to be used throughout to achieve a smoother blend between both the acoustic and digital sounds. Harrison notes that the performer should not be overly concerned with replicating the exact entries and rhythmic results as indicated by the score. She stresses that importance should be drawn to how the digital effects respond to, and are physically derived from, the acoustic sounds. These electronic effects are intended to enhance and expand the musician's

[73] Harrison, Holly. "Holly Harrison_About." Holly Harrison_Composer, 2024. https://www.hollyharrison.net/.
[74] Harrison, Holly. "A Mad Tea-Party." Holly Harrison_Compositions, 2024. https://www.hollyharrison.net/amadtea-party.

playing, not hinder performance therein. For the indicated channels on the MIDI control panel, Harrison provides the following table for the performer:

Settings		
Channel 1	Reverb- Concert Hall (remains on throughout)	N/A
Channel 2	Echo Sender/Delay: Assigned to foot switch A	This effect functions as a pair of short delays (stereo)
Channel 3	Wah-wah and Twinkly Bitz: Assigned to foot switch B	A digital version of a wah-wah mute. The wah-rate changes via the tilting of the expression pedal. Twinkly Bitz is an input-triggered plug-in, creating sounds akin to electronic windchimes
Channel 4	Grain Delay: Assigned to foot switch C	Audio is cut up into tiny chunks (grains) and each is played back at a slightly different time. The pitch is warped and stretched, sounding lower and higher

Performance Key 1.4

CAROLINA HEREDIA

Vanishing

Composer	Carolina Heredia
Work Title	*Vanishing*
Electronics	Clarinet and Electronics
Written	2018
Duration	6:45
Grade	III
Range	$E_3 – A_6$
Extended Techniques	None
Premiered	2018, Mizzou International Composers Festival, Columbia, MO
Commissioned by	Wesley Warnhoff and Maurita Marx
Additional Media Capabilities	Optional inclusion of contrabass, voice, and video for live performance, though recordings can be utilized in place
Equipment Needed/Necessary	Microphone, projector, computer, video cameras, noted that the Microphone should be connected to an USB audio interface via XLR, audio interface to laptop via USB, and audio interface to PA system via stereo outs
Electronic Score	Does include electronic score cues within the clarinet part as well as instrumental and vocal cues
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal unavailable

Figure 2.22

Carolina Heredia (b. 1981) is a composer and educator hailing from Córdoba, Argentina. Heredia holds a doctorate in music composition and was a research fellow for the Institute of Humanities at the University of Michigan, Ann Arbor. Heredia was additionally a postdoctoral fellow at the University of Missouri and later an Assistant Professor in Music Composition and Associate Director for the Mizzou New Music Initiative before taking the position of Director of Programs for the American Composers Forum.[75]

[75] Heredia, Carolina. “About.” Carolina Heredia - BIO. Accessed March 14, 2024. https://www.carolinaheredia.com/about#biography.

Vanishing was commissioned by clarinetist Wesley Warnhoff and premiered at the Mizzou International Composers Festival in 2018. Heredia explains that *Vanishing* is an oneiric (related to dreams, surrealistic) exploration of the sentiment of nostalgia, though based in three movements the work should be performed continuously. *Vanishing* departs from a cathartic, stream-of-consciousness monologue in the voice (live or recorded) that delivers excerpts taken from Argentinian writer Julio Cortazar's 1963 book *Rayuela* (or Hopscotch). Excerpts throughout *Vanishing* below to the chapter titled "Letter from La Maga to Baby Rocamadour;" in this chapter, a mother (La Maga) explains to her baby the reasons why she neglects him (as the child is at an age in which they cannot read or understand the letter yet). The mother assures the child that he would probably support her in her choices, especially choosing to put herself and her vocational call and lifestyle beyond everything, including him. This story plays into the metaphor Heredia writes in *Vanishing*; at times, emotions can tend to appear different in the surface. Such is the case of nostalgia—beautiful and happy moments, or one's perception of them, or even something that has never even happened but that we desire for it to—are tinted with longing, regret, a kind of beautiful sadness. In the score, Heredia writes that the untranslatable Portuguese/Catalan word *Saudade* best expresses this feeling. As Portuguese writer Manuel de Mole describes that word: "*a pleasure you suffer, an ailment you enjoy."*

For staging, Heredia indicates that the clarinetist should be on the downstage right, lit with a spotlight and leaving the rest of the stage black. The included video, if used, should be projected on the upstage back walls as large as possible, since it will be providing the lighting needed for each section of the piece. If there is a contrabass

performer, they should be located on the upstage center and if there is a voice performer, they should be located on the center stage left. The voice performer should be live video recorded and the live signal will be projected in the upstage back walls as well. The camera should face the voice performer at a diagonal angle, pointing towards the upstage back walls where it can be projected and produce infinite feedback of the image. Once the voice ends its monologue, the vocalist should turn off their live camera, leaving the space for the fixed video to continue until the end.

EDWARD JACOBS

Function of Memory

Composer	Edward Jacobs
Work Title	*Function of Memory*
Electronics	Clarinet and Pre-recorded Sound
Written	2001
Duration	12:00
Grade	V
Range	E_3 – B_7
Extended Techniques	Resonance trills
Premiered	March 3, 2001, Nathan Williams, Fletcher Recital Hall, Greenville, NC
Commissioned by	Nathan Williams
Additional Media Capabilities	Stereo output device, additional device to run the MP3/CD track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Amplification for clarinetist, mic, mic stand, computer, and stopwatch or time telling device with capability to display seconds
Electronic Score	Does include electronic score cues beneath the clarinet part
Score: Purchase, Perusal, Contact	Purchase necessary on publisher site, perusal available

Figure 2.23

Edward Jacobs (b. 1961) is a composer and saxophonist serving as the Robert L. Jones Distinguished Professor of Music at East Carolina University, where his activities have also included the founding and direction of the North Carolina NewMusic Initiative. Jacobs received his bachelor's degree in jazz performance and arranging from the University of Massachusetts, Amherst (1984) and his master of arts degrees in composition and conducting from the University of California, Berkeley (1986). Jacobs later received his doctorate of music arts in 1993, where he studied composition with

Mario Davidovsky, Chou Wen-Chung, Marty Boykan, George Edwards at Columbia University.[76]

Function of Memory begins with a complex cadenza that breaks through the early establishment of sonic texture. Though the work is strictly for tape, Jacobs' use of electronic voices and clarinet mock-ups work well to infuse the listener in a space indistinguishable from that of a live, interactive electronic performance. The electronics within *Function of Memory* imbue various bass clarinet-like gestures as well as percussive sounds, such as cymbals, wind chimes, and warbles like that on the inside of a metallic bowl. The true complexity of *Function of Memory* is the morph of rhythms and overall clarinet range, reaching well into the upper-most tessitura of the B-flat soprano clarinet.

[76] Jacobs, Edward. "Biographical Information." Edward Jacobs, 2024. https://edwardjacobs.org/bio/.

CHARLIE JOHNSON

Frozen Lightning

Composer	Charlie Johnson
Work Title	*Frozen Lightning*
Electronics	Clarinet and Tape
Written	2023
Duration	7:50
Grade	III
Range	E_3 – $F\#_6$
Extended Techniques	Pitch bends, multiphonics, and pushing out of the barrel to lower tones
Premiered	December 2022, Grant Westerman, YouTube recording upload
Commissioned by	Dedicated to Grant Westerman
Additional Media Capabilities	Amplification for clarinetist, mic, mic stand, computer, and stopwatch and/or time telling device with capability to display seconds or optional in-ear click track
Equipment Needed/Necessary	Stereo output device, additional device to run the MP3/CD track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Electronic Score	Does include electronic score cues within the clarinet part
Score: Purchase, Perusal, Contact	Contact necessary for purchase or perusal

Figure 2.24

Charlie Drew Johnson (they/them, b. 2002 in Minneapolis, MN) currently studies at the University of Nebraska-Lincoln, majoring in PreK-12 music education with a focus on euphonium. Their primary teacher is Bo Atlas and outside of university work, Johnson studies composition with composer Benjamin Dean Taylor.

Frozen Lightning was inspired by Johnson's memories of living in Minnesota, particularly the wintery seasons in which they could spot lightning strike during a blizzard. The piece starts with a very dreamy, etheric opening, with the electronic track utilizing sounds of a blizzard recorded from Johnson's backyard. The B section of *Frozen Lightning* represents the energy and wonder that Johnson experienced as a child, bearing

witness to seeing that initial lightning strike in the middle of a blizzard. As the piece continues, Johnson imbues their childhood excitement in wishing to see that secondary lightning strike in the clarinet cadenza. The slight doubt personifies itself in the clarinet's lowered pitch focus, a product of pulling out the barrel and mouthpiece to their max ability. As the performer reaches the post-cadenza section, lightning strikes one more time, propelling the work with a daze until once again the listener is left in that etheric, empty snowscape.

ELYSE KAHLER

Four Miniatures for "Beginner" Clarinet

Composer	Elyse Kahler
Work Title	*Four Miniatures for "Beginner" Clarinet*
Electronics	Clarinet and Live Electronics
Written	2016
Duration	7:00
Grade	II
Range	$E_3 – D_6$
Extended Techniques	Various clarinet modifications (mouthpiece-barrel, mouthpiece-barrel-and upper joint, and mouthpiece-lower joint-bell) and pitch bends
Premiered	November 4, 2016, Texas Tech University, Lubbock, TX
Commissioned by	N/A
Additional Media Capabilities	Amplification for clarinetist, mic, and mic stand
Equipment Needed/Necessary	Stereo output device, computer, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output, and MIDI pedal controller
Electronic Score	Does not include electronic score cues with the clarinet part; cues indicated for pedal throughout
Score: Purchase, Perusal, Contact	Contact necessary for purchase or perusal

Figure 2.25

Elyse Kahler (b. 1988) serves as an Adjunct Assistant Professor at The University of Texas at Arlington. Kahler holds a doctor of musical arts degree from Texas Tech University, a master of arts from the University of North Texas, and a bachelor of music in composition and with All-Level Certification from West Texas A&M University.[77]

Four Miniatures for "Beginner" Clarinet is intended to be a work of a more light-hearted nature, reminiscent of Kahler's time as a beginning clarinet player. Kahler indicates in her program notes that *Four Miniatures for "Beginner" Clarinet* is, unlike

[77] Kahler, Elyse. "About." Elyse Kahler, 2018. https://www.elysekahler.com/about.html.

the name suggests, not intended to be played by a beginning student; instead, Kahler's work follows the path a clarinetist would take while learning the instrument, starting only on the mouthpiece and barrel, adding the upper joint, and then playing on the entire clarinet. The third movement removes the barrel and upper joint of the clarinet and instead has the performer play on only the mouthpiece and lower joint. Kahler explains that this gesture in movement 3 is meant as a whimsical reference to the creativity some of her classmates had when putting the clarinet together. Excerpts throughout *Four Miniatures for "Beginner" Clarinet* draw upon clarinet warmups, changes made with the embouchure of the clarinetist, as well as that initial discovery of what happens when you push different keys and, of course, the inevitable clarinet squeak.

Each movement of *Four Miniatures for "Beginner" Clarinet* is played using different parts or combinations of the clarinet itself. Rehearsal numbers throughout *Four Miniatures for "Beginner" Clarinet* correspond to pedal numbers. The target sign will always appear as a rest with a fermata over it, indicating that the clarinetist should let the electronic sound stop fully before continuing to play.

Movement	Clarinet Modification/Combination	Electronic Notes
Movement I	Play on just the mouthpiece and barrel, which produces an F#	The sound files accompanying the whole notes with a fermata in measures 1-3 are about five seconds long. Hold the whole note for as long as the sound file and stop playing when you hear it cut off. X'd notes indicate a high note of undetermined pitch – a squeak
Movement II	Add the top joint of the clarinet	Middle C below the staff will be out of tune; this is intentional. There is no need to play it in tune
Movement III	Remove the barrel and top joint, place the mouthpiece onto the lower joint and bell. Part of the cork may still be showing; it does not have to be twisted in completely	The notes in this movement are written as if you were playing with the full clarinet and no register key. However, they will not sound at written pitch. The whole notes at pedals 11-15 are similar to the whole notes in Movement I. In m. 10 on the second half note E, hit the B natural/F# key
Movement IV	Entire clarinet as normal	Read as written, no further notes

Performance Key 1.5

EMMA O'HALLORAN

Truth and Beauty

Composer	Emma O'Halloran
Work Title	Truth and Beauty
Electronics	Clarinet and Stereo Playback
Written	2010
Duration	5:30
Grade	II/III
Range	$F\#_3$ - B-$flat_5$
Extended Techniques	Timbral trills, tongue ram, key clicks, air sounds, and unspecified multiphonics (to the performers discretion)
Premiered	N/A
Commissioned by	N/A
Additional Media Capabilities	Stopwatch and/or time telling device with capability to display seconds or optional in-ear click track
Equipment Needed/Necessary	Stereo output device, laptop/computer, additional device to run the MP3/CD track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Electronic Score	Does include electronic score cues atop the clarinet part; includes timing cues for track throughout
Score: Purchase, Perusal, Contact	Purchase available on site, perusal unavailable

Figure 2.26

Emma O'Halloran (b. August 20, 1985) is an Irish composer, producer, and performer whose compositions feely move between acoustic and electronic modes. O'Halloran's works have been performed at the Bang on a Can Summer Music Festival, MATA Festival, and she has collaborated with artists such as Crash Ensemble, PRISM Quartet, and the RTÉ National Symphony Orchestra. She holds a PhD in Music Composition from Princeton University and future projects include works for Friction

Quartet, Kaleidoscope Chamber Orchestra, a saxophone concerto, and a new opera with Naomi Louisa O'Connell.[78]

In undertaking *Truth and Beauty,* O'Halloran writes that this work turned into a project in which she could actively explore the perception of sound. She was fascinated by the environments and sounds around her in everyday life and undertook *Truth and Beauty* with the mindset that she could incorporate this approach into the work itself. The melody of the clarinet in *Truth and Beauty* is written as if it is a guided improvisation, and O'Halloran encourages the performer to later use the notated score as a road map and add in their own melodies and ideas once they feel comfortable. O'Halloran expresses that *Truth and Beauty* is an attempt to blur the lines between what is traditionally called 'music' and sound, creating a soundscape wash in which the audience can truly bask.

O'Halloran writes that the electronics in *Truth and Beauty* should create an environment that allows the performer to rediscover the full sonic potential of their instrument. The clarinetist should approach the work as if each simple breath, note, and finger/note gesture are transformed into powerful musical material. Approaching the work in this way will hopefully allow for beauty and honesty in the expression of the clarinet melodies. Regardless, the clarinetist should keep in mind to blend with the tape as much as possible, so the audience will not be able to tell where the tape stops and the clarinet begins.

[78] O'Halloran, Emma. "Emma O'Halloran." Emma O'Halloran - About. Accessed March 15, 2024. https://www.emma-ohalloran.com/.

JOO WON PARK

Armor +2

Composer	Joo Won Park
Work Title	*Armor +2*
Electronics	Clarinet and Computer
Written	2015
Duration	7:00
Grade	III/IV
Range	$E_3 – A_6$
Extended Techniques	Airy tone
Premiered	September 30, 2015
Commissioned by	N/A
Additional Media Capabilities	Stopwatch and/or time telling device with capability to display seconds as well as an optional in-ear click track; a Macintosh with OS 10.9+ is preferred, but PC should also work; SuperCollider
Equipment Needed/Necessary	Stereo output device, computer, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output, microphone (preferable condenser microphone)
Electronic Score	Electronic cues beneath the clarinet score
Score: Purchase, Perusal, Contact	Download and perusal available on site

Figure 2.27

Joo Won Park (b. 1980) serves as the Assistant Professor of Music Technology at Wayne State University in Detroit, Michigan. Park received his bachelor's of music at the Berklee College of Music and both his master's in music and Ph.D. at the University of Florida. He previously taught at Oberlin Conservatory, Temple University, Rutgers University Camden, and the Community College of Philadelphia. Park is additionally the recipient of the Knight Arts Challenge Detroit (2019) and the Kresge Arts Fellowship

(2020); his music and writings are available on ICMC DVD, Spectrum Press, MIT Press, PARMA, Visceral Media, MCSD, SEAMUS, and No Remixes labels.[79]

Armor +2 is inspired by both classic, compositional synthesis techniques and RPG (role-playing) games. The electronics in this work function as an extension of the clarinet, adding harmony, extending phrases, and rhythmic structure beneath the clarinet that would otherwise be difficult or impossible to achieve by any human accompaniment. Park writes that the computer serves as a role like that of a rare, enchanted item in a role-playing game.[80] Though *Armor +2* was originally written with the intention of being played on both B-flat soprano clarinet and bass clarinet, it is possible to perform the work strictly on B-flat soprano clarinet. Below, Park indicates specific instruction for various states in *Armor +2*:

[79] Park, Joo Won. "Music of Joo Won Park." Joo Won Park - About, October 21, 2023. https://joowonpark.net/.
[80] Park, Joo Won. "Armor+2 – for Clarinet and Computer." Joo Won Park, October 8, 2021. https://joowonpark.net/armor2/.

Performance Instructions
The electronic part should be as loud as the acoustic part. Adjust the gain and/or microphone position accordingly. It should be noted that most of the computer parts are live-processed or algorithmic. The computer part processes the sound of the ensemble in real-time, therefore it is noted that the clarinet should sound slightly different in each performance. It is important to follow the tempo as accurately as possible to be in sync with the computer part, which should be achievable given the work does not fluctuate in tempi. A click track is not necessary, but it may assist the performer to have an in-ear metronome. The performer should be able to operate the computer part as the patch should run automatically after the first measure.
The click track starts at measure 1 without a count off. Place the optional bass clarinet near the performance space for a quick switch at measure 68.
The following boxed words notated in the computer part indicate an addition or variation of the computer part: AM, AM2, and FM add harmonic elements. **Ticks** are short percussive sounds, **Stutter** imitates a short segment of the performer's sound, **Reverb** simulates a room sound, and **Pad** is a long-synthesized tone, which can have a smooth or sharp beginning.
It should be noted that there are extra files located on the download site. If the performer wants to practice the piece by sections, use the files in the *ForPractice* folder. *Armor+2-ClickOnLeft.scd* has the click track on the left channel. If the performer does not want to operate the *SuperCollider* part during the practice, the clarinetist can use the recorded electronics part in *ForTapeVersion* folder instead.

Performance Key 1.6

CHARLES PECK

Dichotomy

Composer	Charles Peck
Work Title	*Dichotomy*
Electronics	Clarinet and Tape
Written	2014
Duration	5:00
Grade	IV/V
Range	E_3 – E-flat$_6$
Extended Techniques	Timbral trills
Premiered	November 16, 2014, Derek Bermel, Herbert F. Johnson Museum in Ithaca, NY
Commissioned by	N/A
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Computer, an optional in-ear click track, and stereo speakers
Electronic Score	Does not include electronic cues beneath or within the clarinet score
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal available

Figure 2.28

Charles Peck (b. 1988) is an American composer who most recently completed his doctoral studies at Cornell University, where he earned the Otto R. Stahl Memorial Award in composition. Peck received his master's in music from the University of Cincinnati College-Conservatory of Music and his bachelor's degree in music industry from Drexel University. Peck was recently awarded fellowships from the Guggenheim Foundation and the American Academy of Arts and Letters. He has additionally received commissions from the Barlow Endowment, the McKnight Foundation, the Orchestra of St. Luke's, Alarm Will Sound, and the Bergamot Quartet.[81]

[81] Peck, Charles. "Biography." Charles Peck, June 17, 2023. http://charlespeckmusic.com/biography/.

Peck describes in the score of *Dichotomy* that the work places the warm and agile character of the clarinet in direct opposition to the unforgiving, repetitive nature of the electronic track. In the beginning stages of *Dichotomy,* the clarinet is limited to a single pitch, establishing a rhythmic and dynamic agility that starkly contrasts that of the static electronic voice. As the work develops, the clarinet then introduces its own internal dichotomy as it begins to break away from the single pitch idea, instead slowly revealing and showcasing the range of the instrument. Meanwhile, the development of the electronics is restricted to primarily timbral effects. Later in the work, the electronics unveil a sub-bass tone, derived from a slowed down click, as well as a continuous high-pitched rhythm, derived from a sped up click; both together provide a full, sustained texture in the electronic voice. It is at this point in *Dichotomy* that the clarinet enhances the gesture with its full range, moving to then contrast it by inhabiting a spontaneous, less constant rhythmic world. As this energy is dissipated and the piece ends, the instruments briefly retreat into the introductory content, all while maintaining their own "dichotomy."[82]

[82] Peck, Charles. "Dichotomy." Charles Peck, July 25, 2023. http://charlespeckmusic.com/portfolio/dichotomy/.

Fade

Composer	Charles Peck
Work Title	*Fade*
Electronics	Clarinet (or oboe) and Tape
Written	2016
Duration	7:00
Grade	III
Range	$D\#_4 – D_6$
Extended Techniques	Multiphonics and vibrato
Premiered	February 8, 2016, Richard Faria, Barnes Hall in Ithaca, NY
Commissioned by	N/A
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Computer, an optional in-ear click track, computer, stereo speakers, and CD/MP3 track
Electronic Score	Does not include electronic cues beneath the clarinet score, but does include text cues atop the melody
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal available

Figure 2.29

Peck writes that *Fade* arose out of a fascination with the voice and its complexities therein. “Everyday speech” is often perceived as a relatively unmusical experience, especially when compared with instrumental performance, though speech also includes the maintenance of rhythm, dynamics, and pitch content. To broach this paradox, Peck began with a text by Wyatt Schroeder which explores the interactions of a son and father just after the death of the mother. In his work, Peck found this compelling prose creates some meaningful opportunities to explore the voice through the outlet of the clarinet.

The opening of *Fade* turns the recitation of Schroeder’s story into a thoroughly musical world. The clarinet exactly mimics the nuances of the voice, highlighting the articulations and melodic content while the tape part provides counterpoint and harmonic

direction. This contrapuntal environment reflects the constantly evolving interactions between the son and father in Schroeder's text. In the next section, where the listener is told of the father's memory of his wife, the clarinet introduces a quiet ballad. Here, the voice switches from speaking to singing to better highlight the communicative aspects of the clarinet melody. The text fades away as the work ends, leaving the clarinet to use multiphonics to communicate the growing tension of the story.

Throughout *Fade* the clarinet and voice are meant to be connected; in the opening section up to rehearsal C, this connection is particularly important. The clarinet should be imitating the speech, including all nuances therein as closely as possible—the notated accents and slurs are meant to highlight many of these nuances, but always cue into the voice for interpretation insight. Peck notes that the balance between the clarinet and tape parts should be relatively equal; the electronics play a prominent role and care should be taken not to be significantly overshadowed by the soloist.[83] Below is the text that Peck applies throughout *Fade:*

> I caught him tapping his finger against the desk with a neurotic pulse, like a clockmaker testing the time. It was hard to ignore him as I fussed with dinner, because he kept saying things like "Thomas was wrong. You don't rage against it. You simply fade." All the while, pounding the chair with his fist and foot.
>
> On most days, his brow's well-worn expression betrayed his emotions, but the two seemed to read off the same hymnal that Sunday. He kept going on – I wasn't even sure if he was addressing me – saying, "There are no wise men or good men just wild men and grave men." Just shaking his head side-to-side like a pendulum.
>
> I knew it was hard for him to stare at a blank page like that. His words had counseled others once; his prose had shot passion into veins and earned a penny to his pocket. But all of that was years away now, years in the rearview mirror. Fame under-stays its welcome, I guess.

[83] Peck, Charles. Fade for Clarinet and Tape - Charles Peck, 2023. http://charlespeckmusic.com/product/fade-for-clarinet-and-tape/.

I slid the plate in front of him and told him to eat before his supper got cold. He just told me it would warm up again in time.

After I cleared his half-digested plate, I reminded him that lovers may come and go, but love remains with our best ambitions. He snorted and waved his hand at me, dismissing me to go clean the dishes. As I turned away, he told me that love didn't exist outside of those we loved.

He was just so sullen, so I acted out the worst parts of the modern novel. I took on the voices of characters until he was laughing, chuckling, smiling. It was good to see his brow relinquish its chokehold over his expression. As the moment settled, he looked down at his feet and said to himself, almost in a whisper, "and death has no dominion."

As I smoothed out the wrinkles in the tablecloth, a knock came to the door, a black-suited body silhouetted through the blinds.

After the service, we walked the grounds – the two of us – in silence. Him, with his country senses, just watching his feet trod on the ground, and me just watching him. Though he would admonish my saying so, his heart was too sensual to watch the lowering. Three. Four. Five feet. Six feet. It's too far for an earnest man to bear. But his expression remained unchanged. He glared at the grass as he had eyed the onions.

He sighed and met my stare for the first time that day. He gritted through his teeth and said that the pastor did no justice to Dylan Thomas.

Fade, fade into the dying of the light
And death has no dominion.[84]

[84] Peck, Charles. Fade for Clarinet and Tape - Charles Peck, 2023. http://charlespeckmusic.com/product/fade-for-clarinet-and-tape/.

MARK W. PHILIPS

Favorable Odds

Composer	Mark W. Philips
Work Title	*Favorable Odds*
Electronics	Clarinet and Electronics
Written	2018
Duration	10:00
Grade	III/IV
Range	F_3 – $F\#_6$
Extended Techniques	Optional glissando
Premiered	May 24, 2018, Andrea Cheeseman, *SOMEWHERE* album, at Jacksonville University Recording Studio
Commissioned by	Dedicated to Andrea Cheeseman
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	The Max patch can be operated either by the performer, with a foot pedal (with various options available) or by another person using the computer's keyboard, Max/MSP, and computer/laptop
Electronic Score	Does include electronic score cues atop the clarinet part in the form of triangular rehearsal marks, as well as approximate timings and rhythmic cues beneath the clarinet rests in the score
Score: Purchase, Perusal, Contact	Perusal and free score download available on site

Figure 2.30

Born in 1952 in Philadelphia, composer Mark W. Phillips holds a bachelor's in music degree from West Virginia University and both a master of music and a doctor of musical arts degree from Indiana University. Phillips is a Distinguished Professor Emeritus of Music at the Ohio University, where he has taught since 1984. From 1982-84 Phillips was a Visiting Instructor of composition at the Indiana University School of Music.[85]

[85] Phillips, Mark W. Mark W. Phillips. Accessed March 15, 2024. http://www.societyofcomposers.org/members/MarkW.Phillips/.

Favorable Odds derives its name from the fact that the overtone structure of the clarinet has only odd harmonics (frequencies that are 1, 3, 5, 7, etc. times the fundamental pitch played by the performer.) Phillips explains that the clarinet shares this characteristic with square waves and triangle waves; these electronic frequencies and sounds have connection to the electronics utilized in *Favorable Odds*. Among the techniques utilized are synthesized triangle and square waves, filtering, granular synthesis, live processing, sampling, and physical modeling. The rhythmic engine in the final section of *Favorable Odds* consists of bass clarinet samples Phillips recorded in his first-ever encounter with the instrument as a "performer," having had no prior experience playing any reed instrument himself.[86]

[86] Phillips, Mark W. “Coolville Music.” favorable_odds. Accessed March 15, 2024. https://coolvillemusic.com/favorable_odds.html.

LEANNA PRIMIANI

GREY

Composer	Leanna Primiani
Work Title	*GREY*
Electronics	Clarinet and Pre-recorded Electronics
Written	2021
Duration	7:30
Grade	III
Range	$F\#_3 – D_6$
Extended Techniques	None
Premiered	July 8, 2023, Ian Tyson, ClarinetFest® 2023 Denver, CO
Commissioned by	Dedicated to Ian Tyson
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo speakers, computer, device/laptop to run MP3/CD track, and CD/MP3 track
Electronic Score	Does include electronic score cues beneath the clarinet part
Score: Purchase, Perusal, Contact	Purchase available through publisher site, perusal unavailable

Figure 2.31

Leanna Primiani (b. 1978) is an award-winning composer and conductor hailing from California. Primiani earned her doctorate in composition from the University of Southern California and has studied with composers and conductors such as Leonard Slatkin, Peter Eotvos, Steven Stucky, Morten Lauridsen, and Howard Shore. Primiani's compositions have been performed by the groups such as the Rochester Philharmonic, Nashville Symphony, ROCO, American Composers Orchestra, Bang On A Can Music Festival at MASS MoCA, Wheeling Symphony, Kalamazoo Symphony, UT Wind Ensemble, Seattle Collaborative Orchestra, Left Coast Chamber Ensemble, and Ensemble Mo (FR). Her works have been featured at conferences such as the Midwest Clinic, Cabrillo Festival, Aspen Music Festival, United Nations 50 for Freedom campaign,

International Clarinet Association ClarinetFest® (Belgium and the USA), National Flute Association, Imani Wind Festival (NYC), Trio 212 in NYC, June In Buffalo, Harvard Women's Choral Festival, Atlanta Chamber Players, Vox Musica, the Commandaria Orchestra Chamber Music Series (CY), and the Hear/Now Festival in LA.[87]

GREY begins with a lyrical, gentle clarinet solo, moving seamlessly through the clarinet's clarion register until the series of louder, syncopated arpeggio-like figures emerge through the texture. The otherwise smooth, sonic texture gives way to an apprehensive, articulate clarinet melody that oscillates through the clarinet's tessitura. Primiani utilizes similar syncopated gestures throughout *GREY,* building and gaining rhythmic intensity until the climax, in which the clarinet filters away and the electronic echo of the clarinet takes over. As the work began, the clarinet and electronics gently fade back into their lyrical, gentle melody.

[87] Primiani, Leanna. "Bio." Leanna Primiani, 2015. https://leannaprimianicomposer.com/.

GRAEME ROSNER

Arbiter

Composer	Graeme Rosner
Work Title	*Arbiter*
Electronics	Clarinet and Electronics
Written	2020
Duration	6:30
Grade	III/IV
Range	E - G#
Extended Techniques	None
Premiered	December 7, 2019, Cassandra Hanson, the University of South Carolina School of Music, New Voices Concert
Commissioned by	Cassandra Hanson
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo speakers, computer, device/laptop to run MP3/CD track, and CD/MP3 track
Electronic Score	Does include electronic score cues beneath the clarinet part, fully realized score and a separated clarinet score is included with purchase
Score: Purchase, Perusal, Contact	Purchase available on site, perusal unavailable

Figure 2.32

Graeme Rosner (b. 1998) is an American composer, multi-instrumentalist, and producer, as well as founder and co-owner of GreenHaus Productions. Graeme graduated from the University of South Carolina in 2020 with a bachelor's of music in composition, a minor in Audio Recording, and a certificate in French horn performance.[88]

Rosner describes that performance of *Arbiter* is best suited for a traditional concert hall that features mounted stereo sound system capabilities. The spatialization and soundscape of *Arbiter* is designed to fill the hall and blend with the overall timbre of the clarinet. If performance in a traditional concert hall is unable to be done, Rosner

[88] Rosner, Graeme. "About." Graeme Rosner, 2024. https://www.graemerosner.com/about.

describes that a portable stereo sound system should be placed behind the performer to allow the sounds to blend more effectively and organically. In the composition file, Rosner includes varying practice tracks for the clarinetists use, including click tracks. The performance MP3 track can be performed both with or without an in-ear click track, and Rosner notes that it is much easier and more cohesive for the performer to use this click track for the opening slow section of *Arbiter*.[89]

Much of *Arbiter* features gestural clarinet lines that flourish above or within the collaborative electronic track, often in the form of a sextuplet gesture. The complexity of *Arbiter* peaks as both the clarinet and electronic textures thicken, around rehearsal markings D and F, respectively. The clarinetist is, again, advised to work from the click track first, then move forward in practice to the click track with electronic backing as they tackle this composition. The rhythmic integrity between the clarinetist as well as the chordal, melodic, and bass electronic voices will be critical in portraying the character of *Arbiter*; often, the clarinet, melody, and bass voice weave a polyrhythmic texture reliant upon consistent rhythmic integrity.

[89] Rosner, Graeme. "Arbiter." Graeme Rosner, 2024. https://www.graemerosner.com/arbiter.

ALEX SHAPIRO

Water Crossing

Composer	Alex Shapiro
Work Title	*Water Crossing*
Electronics	Clarinet (or flugelhorn) and Pre-recorded Audio
Written	2002
Duration	9:40
Grade	II
Range	$E_3 – B_5$
Extended Techniques	None
Premiered	2010, F. Gerard Errante, *Delicate Balance* Album
Commissioned by	F. Gerard Errante
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo speakers, computer, device/laptop to run MP3/CD track, and CD/MP3 track
Electronic Score	Does include electronic score cues beneath the clarinet part
Score: Purchase, Perusal, Contact	Purchase available on site, perusal available

Figure 2.33

Composer Alex Shapiro was born and raised in Manhattan, New York City in 1962. She was a long-time resident of Malibu, California before coming to reside at her current home in Washington State's San Juan Island. Shapiro actively advocates for fellow creators through public speaking, workshops, and published writings. Her volunteerism has involved a diverse scope of leadership, from the boards of national music organizations including the American Music Center, the American Composers Forum Los Angeles Chapter, The MacDowell Colony, and The Society of Composers & Lyricists, to the American Civil Liberties Union of Southern California and University of Washington's Friday Harbor Laboratories marine research center. Shapiro also serves on

the boards of The Aaron Copland Fund for Music and the Music Publishers Association of the United States, on which she represents her company Activist Music LLC.[90]

Water Crossing was a project commissioned by well-known contemporary clarinetist F. Gerard Errante. Errante's work with Shapiro was a product of him hoping to create a CD filled with art music accessible and relaxing to the average listener—an alternative to the usual (and sometimes uninspired) tracks heard in doctor's offices and elevators.[91] Shapiro describes in the key for *Water Crossing* that Errante had once told her a tale of his canoe, which he would keep tied up at the dock by his house on the Virginia coastline. During the tale her imagination took her to images of the canoe waiting there for him, then later a recreation of a beautiful journey with said canoe in still, lake-like waters. In this imaginary voyage, Shapiro explains that she imagined the canoe gradually morphing into a sailboat entering the open ocean, with dolphins dancing ahead of the bow. *Water Crossing* is the product of this imaginative journey, and by the end of the composition the boat rider has returned safely to shore, invigorated and at peace.[92] Shapiro notes in *Water Crossing* that the track should be played at a volume equal to that of the performing clarinetist.

[90] Shapiro, Alex. "Alex Shapiro - Biography." Alex Shapiro, composer: Biographical information, 2000. https://www.alexshapiro.org/ASBio.html.
[91] Shapiro, Alex. "Water Crossing." Alex Shapiro, Composer: Water crossing, 2018. https://www.alexshapiro.org/WaterCrossingpg1.html.
[92] Ibid.

Desert Tide

Composer	Alex Shapiro
Work Title	*Desert Tide*
Electronics	Clarinet (or soprano saxophone) and Pre-recorded Audio
Written	2015
Duration	10:00
Grade	III/IV
Range	A-flat$_3$ – F#$_6$
Extended Techniques	None
Premiered	September 2005, Douglas Masek, Cape Town, South Africa (saxophone) April 28, 2003, Joe Clark, La Porte, Indiana (clarinet)
Commissioned by	Gianluca Campagnolo, with additional thanks to Douglas Masek
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo speakers, computer, device/laptop to run MP3/CD track, as well as an optional in-ear click track or visual stopwatch with seconds display capabilities, and CD/MP3 track
Electronic Score	Does include electronic score cues beneath the clarinet part as well as timing cues throughout; fully realized score and a separated clarinet score is included with purchase
Score: Purchase, Perusal, Contact	Purchase available on site, perusal available

Figure 2.34

In the score, Shapiro indicates that *Desert Tide* is one of the most programmatic pieces she has ever composed, such that the score itself contains "maniacal" little outbursts describing the visions that swept through her mind as she composed. The setting Shapiro sets is the following:

> The desert's arid stillness and the weight of the morning's expanding heat. A sudden rainstorm overtakes the landscape, forming instant pools of water over the cracked earth. The storm passes as quickly as it arrived, and as the birds and reptiles emerge to greet the fleeting moisture the music ends as flowers strain upward against the bluest sky, just for those few passionate moments of their fullest bloom.[93]

[93] Shapiro, Alex. "Desert Tide." Alex Shapiro, Composer: Desert Tide, 2015. https://www.alexshapiro.org/DesertTidepg1.html.

Upon starting the work, Shapiro writes that she'd taken a trip from her home in Malibu to Tucson, Arizona. The Sonora desert she laid witness to was in the full bloom of May, which had been preceded by a series of heavy rainfall, the normally desolate landscape was full of brilliant flowers bursting from tops of inhospitable looking cactuses and scrubs. This trip to the Sonora desert coupled with Shapiro's trips to Sinai, Mongolia's Gobi, and the Mojave's Death Valley, provided Shapiro with a welcome inner clarity to finish *Desert Tide*. Shapiro notes in *Desert Tide* that the track should be played at a volume equal to that of the performing clarinetist.[94]

[94] Shapiro, Alex, 2015.

JUDITH SHATIN

Cherry Blossom and a Wrapped Thing: After Hokusai

Composer	Judith Shatin
Work Title	*Cherry Blossom and a Wrapped Thing: After Hokusai*
Electronics	Amplified Clarinet and Multichannel/Stereo Electronics
Written	2004, revised 2006
Duration	7:52
Grade	II
Range	$E_3 – D_6$
Extended Techniques	Underblown multiphonics and timbral trills
Premiered	October 27, 2004, by clarinetist F. Gerard Errante, TechnoSonics Dome Room of the Rotunda, University of Virginia, Charlottesville, VA
Commissioned by	F. Gerard Errante
Additional Media Capabilities	Either 8-channel audio or stereo playback capabilities, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Amplification, stopwatch, stereo output device, and/or additional device/laptop to run MP3/CD track, and CD/MP3 track
Electronic Score	Does include electronic score cues beneath the clarinet part, as well as approximate timings and rhythmic cues
Score: Purchase, Perusal, Contact	Purchase on website, perusal available

Figure 2.35

American composer Judith Shatin was born on November 21, 1949. Shatin holds degrees from Douglass College, the Juilliard School, and Princeton University, where she was a pupil of composer Milton Babbitt. Currently, she serves as the William R. Kenan, Jr. Professor at the University of Virginia and is credited with founding and directing the Virginia Center for Computer Music. In 2012 Shatin was honored as one of the Library of Virginia's "Virginia Women in History."[95]

[95] Shatin, J. About - Bio, Long. Judith Shatin. https://www.judithshatin.com/about/

Cherry Blossom and a Wrapped Thing: After Hokusai was inspired by a print of the same name, created by Japanese printmaker known as Hokusai (1760–1849). Shatin encountered the painting in Tokyo and was immediately struck by the subtle mystery of both its subject matter and execution. As Judith writes, "The cherry blossom speaks of the beauty and brevity of life; the wrapped thing of its ineffability."[96]

Proportional notation takes up much of the score, though Shatin includes timings throughout the part to indicate how long each gesture should last. The most significant performance challenges in this work, due to the score indications, are the voicings on the provided multiphonics as well as linking the longer musical gestures with electronics at select events. The required extended techniques are clearly explained in the performer key, each having symbols and fingerings clearly listed for the performers reference. Though the work is scored for amplified clarinet and stereo electronics, the latter half of the work has excerpts from Shatin's earlier work *Sea of Reeds*, a piece commissioned by clarinetist F. Gerard Errante. The sound processing and multi-channel audio were designed using RTcmix.[97]

[96] Shatin, J. (2022, October 19). Judith Shatin - Works. Judith Shatin. https://www.judithshatin.com/cherry-blossom-and-a-wrapped-thing/
[97] Shatin, J., 2019.

Penelope's Song

Composer	Judith Shatin
Work Title	*Penelope's Song*
Electronics	Amplified Clarinet and Electronics (additional versions for flute, soprano saxophone, violin, and cello)
Written	2003
Duration	9:00
Grade	III
Range	E_3 - $F\#_6$
Extended Techniques	Multiphonics, growls, and vibrato
Premiered	September 17, 2003, by Laura Wilcox on viola, Musica Viva Festival, Coimbra, Portugal 2005, Marianne Glythfeldt, Clarinet version
Commissioned by	N.A.
Additional Media Capabilities	Video projection is available; music with video can be broadcast in place of the separate mp3 files, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Amplification, stopwatch, stereo output device, and/or additional device/laptop to run MP3/CD track, and CD/MP3 track
Electronic Score	Does include electronic score cues beneath the clarinet part, as well as approximate timings and rhythmic cues
Score: Purchase, Perusal, Contact	Purchase on website, perusal available

Figure 2.36

Penelope's Song was written in tribute to Penelope, a character in Homer's epic *Odyssey* who served as Queen of Ithaca and wife of Odysseus. The tale tells the story of Odysseus and his war both in Troy and against sea-God Poseidon. Penelope is left in waiting while her husband is away, with many suitors attempting to woo her and become king. While Odysseus was away Penelope devised that she would take no suitor until she finished weaving a shroud for her husband's father, Laertes. At night, Penelope would undo her weaves, thus in actuality making no progress in her completion of the shroud.

Penelope's Song gives voice to Penelope's challenges and response to this attention, all while her husband was away at war.[98]

Electronic samples were taken from Jan Russel of Charlottesville, Virginia, a weaver Judith recorded working on her wooden looms. The premiere was written for Laura Wilcox on viola, with the initial performance given at the Musica Viva Festival in Coimbra, Portugal 2004. The American premiere was given by Rozanna Weinberger at the annual TechnoSonics festival that same year at the University of Virginia. Since, versions of this work have been made available for amplified clarinet, flute, soprano saxophone, violin, and cello with electronic playback. Judith worked with long-time collaborator F. Gerard Errante on the clarinet version, soprano sax player Susan Fancher on the soprano sax version, performer Lindsey Goodman on flute and Hasse Borup on the violin version. Artist Kathy Aoki and animator Marco Marquez have since created a compelling companion video that is available to accompany the performance of *Penelope's Song.*[99]

The overall form of the work is in three sections; the third refers to the style and pace of the first yet twists it into shapes at times both lyrical and bursting. The middle section is dreamier, though all the electronics come from processing of the same source soundfiles. The clarinet part stretches and twists upon these with its own threads of melody, in a style slightly differing compared to other versions of this work.

[98] Shatin, J. (2023, September 26). Judith Shatin - Works. Judith Shatin. https://www.judithshatin.com/penelopes-song/.
[99] Shatin, J., 2023.

NINA SHEKHAR

Honk If You Love Me

Composer	Nina Shekhar
Work Title	*Honk If You Love Me*
Electronics	Clarinet, Electronics, and Optional Bharatanatyam Dancer (or Tabla)
Written	2018/2019
Duration	11:00
Grade	V
Range	$E_3 – A_6$
Extended Techniques	Flutter tongue, multiphonics, glissando, and pitch bends
Premiered	January 10 – 11th, 2019, Lou DeMartino, clarinet and Subashini Ganesan, dancer, Portland, Oregon
Commissioned by	Third Angle New Music; Lou DeMartino, clarinet and Subashini Ganesan, dancer
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Ableton Live, computer, stereo sound system, and optional use of pre-recorded track if unable to utilize live electronics
Electronic Score	Does include electronic score cues beneath the clarinet part, as well as approximate timings and rhythmic cues
Score: Purchase, Perusal, Contact	Purchase on website, perusal unavailable

Figure 2.37

Nina Shekhar (b. June 25, 1995) is a composer, multimedia artist, and first-generation Indian American, native of Detroit, Michigan, who now serves on the composition faculty of Mannes School of Music at The New School. Shekhar previously completed her composition graduate studies at the University of Southern California and undergraduate studies at the University of Michigan, earning dual degrees in music composition and chemical engineering. Currently, Shekhar serves as the Composer-in-Residence of The Crossing and Los Angeles Chamber Orchestra's 2023-2024 Sound

Investment Composer and is a PhD candidate in music composition at Princeton University.[100]

Shekhar's work *Honk If You Love Me* broaches the phenomenon of human communication in respect to Shekhar's own experiences in America and India. She describes the cities in India taking traffic-filled soundscapes to an extreme, the barrage of wild, animated, and exuberant car horns blasting from all directions. Songs like "Happy Birthday" play every time a car is put into reverse, sounding almost too melodic and friendly to be recognized as traffic noises elsewhere. In India, these sounds are used differently when driving—rather than honking out of anger, they are used to communicate to other drivers and make each car's presence known, almost as a form of self-expression. Shekhar expresses that in many ways, she feels these drivers are reclaiming technology and using it to communicate in one of the most human and individual acts possible. *Honk If You Love Me* utilizes the electronics to disintegrate some these aforementioned traffic sounds, recontextualizing them into something Shekhar perceives as deeply personal and human.

Honk If You Love Me is scored for clarinet and electronics with the option for an accompanying Bharatanatyam dancer. The electronic material of *Honk If You Love Me* consists of a tape track, click track, and an Ableton Live session for live processing. The live processing results in subtle reverb and delay effects that blend the clarinetists sound with the tape track in certain sections. These live processing effects are already programmed into the Ableton Live session (which also contains the tape and click tracks); using a microphone and correct routing, this will allow the live processing to

[100] Shekhar, Nina. "About | Composer and Multimedia Artist." Composer and Multimedia Artist Nina Shekhar, Biography. Accessed March 15, 2024. https://www.ninashekhar.com/about.

occur at preset times during the piece. It is most preferable for the performer to use this Ableton Live session and realize the live processing effects; however, if it is not possible for the performer to the use Ableton, it is okay for the performer to forgo the live processing and instead only use the tape and click tracks.

Growls and flutter-tongue effects are indicated in various parts within the score of *Honk If You Love Me*. The goal of these effects in the clarinet voice is to produce noisy and dirty timbres, though Shekhar indicates that the performer may interchange between these sung growl and flutter-tongue effects at their discretion (if it is not possible to produce a rough, dirty sound at the indicated pitch range). Multiphonic fingerings are provided in the score though Shekhar indicates that these multiphonics may be substituted with others if the given multiphonic is not playable. When substituting multiphonics, the priority is to find another multiphonic that achieves as dirty and rough of a timbre as possible, rather than focusing on finding another with similar harmonic content. All glissandi in *Honk If You Love Me* are to begin at the note directly preceding the glissando line. Glissandi should most preferably be achieved using lip bend "smears," but one can also use fingered glissandi (or a combination of a fingered glissando and lip bend) as necessary depending on the range of the glissando.[101]

[101] Shekhar, Nina. "Honk If You Love Me." Nina Shekhar. Accessed March 15, 2024. https://www.ninashekhar.com/product/honk-if-you-love-me.

MARK SNYDER

Messy

Composer	Mark Snyder
Work Title	*Messy*
Electronics	Processed Clarinet, Electronics, and Video
Written	2008
Duration	6:38
Grade	I
Range	$E_3 – F_4$
Extended Techniques	None
Premiered	N/A
Commissioned by	Music Teachers National Association and the Mississippi Music Teachers Association
Additional Media Capabilities	Video, projector, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	The Max patch can be operated either by the performer, with a foot pedal (with various options available) or by another person using the computer's keyboard, Max/MSP, speakers, and computer/laptop
Electronic Score	Does not include electronic score cues beneath the clarinet part, only timing events
Score: Purchase, Perusal, Contact	Perusal and free score download available on site

Figure 2.38

Mark Snyder (b. January 21, 1970) is a musician, video artist, writer, engineer, producer, and teacher currently serving as an instructor at Northern Illinois University. Snyder's discography is vast, venturing into discography genres such as world, electroacoustic, pop, rock, classical, and country records. Snyder's students include a Morton Gould Young Composer Award winner, a capstone paper published in the journal Metamorphis, and three students taking second place at the Nashville AES Mix Competition. Snyder earned his doctorate of musical arts from the University of Memphis, his master's of music from Ohio University, and a bachelor of arts from Mary Washington College. In addition to his work as a composer, Mark Snyder is also active in

promoting new music and collaborating with performers to premiere and showcase new, innovative contemporary works.[102]

Messy is a work for clarinet, electronics, and optional video, a sonic work that explores and actively describes the ebb and flow of the clarinet's sonic possibilities. *Messy* begins with the slow build of long, wave-like clarinet tones, later harmonized by additional clarinet sounds and a breathing, responsive static. Throughout *Messy,* the electronic soundscape often mimics that of the instrument, adding a sense of peace and later foreboding as the work climaxes, splits into electronic, computerized sounds, then comes to a close.[103]

[102] Snyder, Mark. "Mark Snyder_Composer, Performer, Multimedia Artist, Teacher." Mark Snyder_About, 2010. https://marksnyder.org/.
[103] Snyder, Mark. "Messy." Mark Snyder. Accessed March 15, 2024. https://marksnyder.org/works/messy.

Harvey

Composer	Mark Snyder
Work Title	*Harvey*
Electronics	Processed Clarinet, Electronics, and Video
Written	2008
Duration	7:18
Grade	I
Range	$E_3 – F_4$
Extended Techniques	None
Premiered	Dedicated to Bryan, Kathy, Stella, and Ruby Harvey
Commissioned by	N/A
Additional Media Capabilities	Video, projector, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	The Max patch can be operated either by the performer, with a foot pedal (with various options available) or by another person using the computer's keyboard, Max/MSP, and computer/laptop
Electronic Score	Does not include electronic score cues beneath the clarinet part, only timing events
Score: Purchase, Perusal, Contact	Perusal and free score download available on site

Figure 2.39

Harvey is a tragic work dedicated to Bryan, Kathy, Stella, and Ruby Harvey who were victims of the 2006 Richmond spree murders in Virginia, committed by Ricky Gray and his nephew, Ray Dandridge. These murders took place from January 1st through January 6th, 2006, leaving seven dead and one injured in the aftermath. The Harvey family, Treva Gray (wife of Ricky Gray), Ashley Baskerville (age 21), Mary Baskerville-Tucker (age 46), and Percyell Tucker (age 55) fell to Gray and Dandridge, Ryan Carey (age 26) survived but not without near-fatal injuries. Both Gray and Dandridge were convicted of capital murder, with Gray sentenced to lethal injection and Dandridge sentenced to life imprisonment. 39-year-old inmate Ricky Gray was pronounced dead at

9:42 p.m. on January 18, 2017, following a lethal injection at the Greensville Correctional Center in Jarratt, VA. [104]

Mark Snyder was particularly close to Bryan Harvey, who was a fellow rock musician working in Richmond, VA at the time. Bryan additionally had close ties with Johnny Hott, John Gottschalk, Stephen McCarthy, and Charles Arthur, other musicians with whom both Snyder and Harvey had close relations. *Harvey* was written out of Snyder's desire to cope with the loss of the Harvey family, bringing acute awareness of the passage of time, duration, and successfully bring the listener into the same sober nostalgia Snyder portrays in *Harvey*. Consideration should be given for any who include the Harvey family's tale during a performance including the designated video; many sounds of children's laughter can be heard throughout and may be triggering to some who read the program note.[105]

[104] "Virginia Executes Man Convicted of Killing Entire Family in 2006." CBS News, January 19, 2017. https://www.cbsnews.com/news/ricky-gray-execution-bryan-kathryn-stella-ruby-harvey-murder-jarratt-virginia/.
[105] Snyder, Mark. "Harvey." Mark Snyder_Compositions. Accessed March 15, 2024. https://marksnyder.org/works/harvey.

Pornography

Composer	Mark Snyder
Work Title	*Pornography*
Electronics	Processed Clarinet, Electronics, and Video
Written	2009
Duration	6:20
Grade	I
Range	$E_3 – A_5$
Extended Techniques	None
Premiered	N/A
Commissioned by	N/A
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	The Max patch can be operated either by the performer, with a foot pedal (with various options available) or by another person using the computer's keyboard, microphone, mic stand, Max/MSP, and computer/laptop
Electronic Score	Does not include electronic score cues beneath the clarinet part, only timing events
Score: Purchase, Perusal, Contact	Perusal and free score download available on site

Figure 2.40

Pornography is a play on the vintage peepshow, which was a presentation of live sex shows/pornographic films which were often viewed through a viewing slot. The original version of these shows was a children's toy in the 17th century, later evolving to a mobile show that could be viewed through a wooden box. The later form of voyeuristic entertainment Snyder satirizes in *Pornography,* specifically the sort often operated by a money box device or paid for at a counter. Often, the performers in these shows (most commonly a woman) would engage in dancing, teasing poses, scandalous outfits, and scenes all the while their faces would be covered, in effort to suppress their identities.

Madonna plays the part of one of these dancers in her music video "Open Your Heart," for reference.[106]

Pornography begins with an overlay of two automized male voices, as if the audience themselves are being admitted to viewing one of these shows. Upon the ending dialogue, "…to disguise the identities of the models," the clarinet steps in and the accompanying video begins. Throughout, the clarinetist seems to respond and interact with the figures in the video, providing a push-and-pull affect in the melody by switching between the clarion and chalumeau registers of the clarinet. The visuals that display alongside *Pornography* showcase dancing, humanoid figures with a high contrast filter, slowly growing more and more psychedelic as the work progresses.[107]

[106] "Peep Show - Dir. Rino Stefano Tagliafierro. A Private Journey into the World of Eroticism." PEEP SHOW - dir. Rino Stefano Tagliafierro, 2016. http://www.peepshowmovie.com/history.html#page=ENG.
[107] Snyder, Mark. "Pornography." Mark Snyder_Compositions. Accessed March 15, 2024. https://marksnyder.org/works/pornography.

BRIAN TOPP

HUAYRA-TATA

Composer	Brian Topp
Work Title	*HUAYRA-TATA*
Electronics	Clarinet and Electronics
Written	2014, rev. 2017
Duration	11:00
Grade	II
Range	F_3 – E-flat$_6$
Extended Techniques	None
Premiered	April 2014, Dave Scott and Brian Topp, Paul Davenport Theatre, University of Western Ontario
Commissioned by	Dave Scott
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	The Max patch can be operated either by the performer, with a foot pedal (with various options available) or by another person using the computer's keyboard, microphone, mic stand, Max/MSP, computer/laptop, and stereo output device
Electronic Score	Does not include electronic score cues beneath the clarinet part, only timing events
Score: Purchase, Perusal, Contact	Purchase and perusal available by contact

Figure 2.41

Brian Topp (b. 1989) is a Metro-Vancouver based Unity & Unreal developer, additionally working as a music technologist, composer, and interactive audio researcher. Topp specializes in developing interactive audio-driven experiences, including multi-disciplinary collaborations, computer music, and musical utilizations of immersive technologies. His research has been funded through the Canadian Broadcasting Corporation (CBC Arts), Mitacs, the Canada Council for the Arts, Creative BC, BC Arts Council, the Banff Centre for Arts and Creativity, SSHRC, and the SOCAN Foundation, and has been presented across North America and Europe, including venues such as VIFF Immersed, SEAMUS, Ma/In, ISEA, NIME, ICMC, NYCEMF, MINT, PXR,

Edinburgh Fringe, and Electric Spring. Currently, Topp is pursuing a doctorate in music composition at the University of British Columbia with Dr. Keith Hamel, including the development of live performance software at the Institute for Computing, Information and Cognitive Systems (ICICS).[108]

HUAYRA-TATA utilizes live electronics that are cued and processed through Max/MSP. The name *HUAYRA-TATA* is derived from an old Bolivian and Peruvian god who is believed to manifest himself in the form of the wind, associated with both hurricane force winds and fertilizing rains. The rehearsal indications throughout the score (numbered zero through seven) refer to event numbers in the electronics which can be triggered through the corresponding numbers on the keyboard of a computer/laptop, or advanced by "1" using the spacebar. The clarinetist in *HUAYRA-TATA* is meant to be recorded and sent to Max/MSP via an audio interface, the acoustic sound is then processed and sent out through stereo loudspeakers. Topp notes that timing in *HUAYRA-TATA* is relatively free, with approximate timings given between various sections of the score.

[108] Topp, Brian. "About." Brian Topp - about. Accessed March 16, 2024. https://www.briantopp.com/about.

JACOB TV (JACOB TER VELDHUIS)

Pale Moon in a very Blue Sky

Composer	Jacob TV (Jacob Ter Veldhuis)
Work Title	*Pale Moon in a very Blue Sky*
Electronics	Clarinet (or soprano saxophone) and Audio Soundscape
Written	2020
Duration	11:08
Grade	III/IV
Range	$B\flat_3 – G_6$
Extended Techniques	Pitch bends and vibrato
Premiered	March 2, 2023, Laura Lentz, Jacob's Triptych, 3 pieces for flute and electronics album
Commissioned by	Dedicated to flutist Laura Lentz
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo output device and additional device to run the MP3/CD track
Electronic Score	Does include electronic score cues beneath the clarinet part
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal available

Figure 2.42

Jacob ter Veldhuis, also known as Jacob TV, is a Dutch avant-garde classical composer born on November 14, 1951, in Westerlee. Veldhuis began his career as a rock musician, later studying composition and electronic music with Luctor Ponse and Willem Frederik Bon at the Groningen Conservatoire.[109]

Pale Moon in a very Blue Sky is a raga for clarinet (as well as alto flute, soprano sax, or c instrument) and audio soundscape, composed in the Spring of 2020 and dedicated to flutist Laura Lentz. In the composer key provided in the score of *Pale Moon in a very Blue Sky,* Veldhuis writes that he witnessed a pale moon in the blue sky of the

[109] Veldhuis, Jacob Ter. “Biography.” Jacob TV, 2024. https://www.jacobtv.net/composer/.

Dutch Mountains (the Utrechtse Heuvelrug)—the sky was pure and unmarred by chemtrails (a product of the nearby Amsterdam Airport being closed due to the corona pandemic). The natural beauty of the sky and moon moved Veldhuis, inspiring him to record a long improvisation in his studio that was latter condensed into a substantial composition. This work sounded like that of an Indian raga, primarily due to the melodic scale and ambient drone Veldhuis added in addition to the sampled Asian instruments used in the track. The Indian bansuri flute was Veldhuis' ideal instrument to play *Pale Moon in a very Blue Sky,* but upon hearing Laura Lentz explore the piece on alto flute, he changed his mind. Sound engineer Marc Webster recorded Laura's performance of *Pale Moon in a very Blue Sky* at his Blue-on-Blue Recording Studio in Rochester NY. The recording was later released on an EP called 'Jacob's Triptych' along with two other flute pieces: *Loudly and Clearly* and *Lipstick*.[110]

Veldhuis notes that there are two versions of *Pale Moon in a very Blue Sky*; version one notably lacks the improvisation section in the work, making the duration around 10:25 while version two includes the improvisation, making the length of performance approximately 11:08. The 8-bar improvisation section from measures 82-89 would be skipped if version 1 is to be performed. In the score, Veldhuis includes the notation of the audio drone, which a tanpura[111] sound, chords, and a low C tuned drum. Veldhuis includes this extra notation to assist the performer in keeping sync with the audio. A practice track is included with *Pale Moon in a very Blue Sky* to assist the

[110] Veldhuis, Jacob Ter. "Pale Moon in a Very Blue Sky." Jacob TV. Accessed March 13, 2024. https://www.jacobtv.net/product/pale-moon-in-a-very-blue-sky-3/.
[111] A tanpura is a stringed instrument that looks like a sitar but has no frets. It supports and sustains the melody of solo instrument or singer by providing a continuous harmonic bourdon aka drone.

clarinetist in learning the work. In the key, Veldhuis notes that very slow vibrato will be indicated with a squiggle and other notations will indicate a short downward glissando.

BETH WIEMANN

Humidity

Composer	Beth Wiemann
Work Title	*Humidity*
Electronics	Clarinet and Pre-recorded Sound
Written	2020
Duration	6:42
Grade	II
Range	$E_3 – D_6$
Extended Techniques	Timbral trills
Premiered	August 2020, SoundCloud online premiere by Beth Wiemann
Commissioned by	N/A
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo output device and/or additional device/laptop to run MP3/CD track
Electronic Score	Does include electronic score cues beneath the clarinet part
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal available

Figure 2.43

Beth Wiemann was born January 1, 1967, and raised in Burlington, Vermont. Wiemann currently teaches composition and clarinet at the University of Maine in Orono, ME, though she studied composition and clarinet at Oberlin College and received her PhD in theory and composition from Princeton University. Additionally, Wiemann serves as the Director of the Clement and Linda McGillicuddy Humanities Center at the University of Maine.[112] Outside of clarinet performance, Wiemann's compositions have won awards from the Opera Vista Chamber Opera Competition, the Orvis Foundation, Copland House, the Colorado New Music Festival, and the American Women Composers Alliance.

[112] Wiemann, Beth. "About." beth wiemann_composer, August 16, 2022. https://bethwiemann.com/about/.

Wiemann's *Humidity* features a lovely, unravelling opening that gives steady rise to chalumeau and clarion melodic gestures. Throughout the work, electronic sounds mimic and interject the established clarinet voice, mixing and morphing alongside the melody like that of a performing chamber partner. The longer melodic gestures that open the work steadily give rise to a mixture of both staccato and legato lines, varying in their ranges on the clarinet until the work ebbs back into the chalumeau and clarion voicings. Fingering recommendations for the timbral trills are given throughout the work; these cues extend into the pre-recorded track score, which can be found beneath the clarinet melody. No timing cues are given throughout the work, though *Humidity* keeps to the same tempo of quarter note equals 120; given the lack of tempo change, there is no need for the performer to wear an in-ear metronome. Despite the quicker tempo, the most complex techniques to accomplish throughout *Humidity* would be the application and evenness of the timbral trills themselves. Like some of Wiedmann's additional works, recordings of the composer performing *Humidity* can be found on her website.

An Anxious Awareness of Danger

Composer	Beth Wiemann
Work Title	*An Anxious Awareness of Danger*
Electronics	Clarinet, Vocoder, and Pre-recorded Sound
Written	2017
Duration	8:00
Grade	II/III
Range	$F_3 – A_6$
Extended Techniques	None
Premiered	September 23, 2017, Beth Wiemann, dedicated to Gabriel Kahane
Commissioned by	N/A
Additional Media Capabilities	Stereo output device and/or additional device/laptop to run MP3/CD track, USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Must utilize a 2-voice polyphonic vocoder with options for octave transpositions. Markings throughout the score are specially given for a microKorg vocoder. Assistant or performer using the vocoder will need a weighted object to place on the vocoder in the latter half of the work
Electronic Score	Does include electronic and vocoder score cues beneath the clarinet part
Score: Purchase, Perusal, Contact	Purchase necessary on site, perusal available

Figure 2.44

An Anxious Awareness of Danger is a work for clarinet, vocoder, and pre-recorded sound. This work is dedicated to artist Gabriel Kahane, whose song "Empire Liquor Mart (9127 S. Figueroa St.)" is quoted and sampled in Wiemann's *An Anxious Awareness of Danger.* Though the composition by Wiemann lacks any verbalized elements, the essence of the two works can be heard in the lyrics of Kahane's work. An excerpt can be found below:

> We got a chill from the cold white sun
> Momma found herself staring
> At the barrel of a gun
>
> That weren't enough, my uncle died too

Shot through the chest back in East St. Louis
So one fine day my grandma lost two
Took me in her arms and said, it's just me and you

Nobody reads from the Book of Job
At the church where me and my grandma go
Nobody sees the trouble, I know
But I know that trouble's gonna find me

Nobody reads from the Book of Job
At the church where me and my grandma go
Nobody sees the trouble, I know
But I know that trouble's gonna find me

It will find me
It will find me
It will find me[113]

Melodically, *An Anxious Awareness of Danger* features large intervallic leaps, shifting the melody between the lower clarion and upper altissimo registers of the clarinet often within the span of a beat. Tempi in the work varies between quarter note equals 120, 100, and 66, with the lowest tempo noted for the performer to interpret freely and without time. *An Anxious Awareness of Danger* notably lacks any extended techniques throughout, opting instead for longer rhythmic structures off-set by syncopations. Wiemann indicates that the vocoder markings in the composition utilize a 2-voice polyphonic vocoder, which should have options for octave transpositions. Markings throughout the score are specially given for a microKorg vocoder, for which the part was originally composed for. *An Anxious Awareness of Danger* was premiered in September 2017, though it was additionally selected for performance consideration in April 2017 by

[113] Kahane, Gabriel. "Empire Liquor Mart (9127 S. Figueroa St.), by Gabriel Kahane." Gabriel Kahane, June 3, 2013. https://gabrielkahane.bandcamp.com/track/empire-liquor-mart-9127-s-figueroa-st.

the Women Composers Festival in Hartford, CT and the Back Cove Festival in Portland, ME of the same year.

No Matter What

Composer	Beth Wiemann
Work Title	*No Matter What*
Electronics	Clarinet and Fixed Media
Written	2013/2014
Duration	7:00
Grade	II/III
Range	F_3 – $F\#_6$
Extended Techniques	None
Premiered	January 31, 2014, at Bates College in Lewiston, Maine
Commissioned by	N/A
Additional Media Capabilities	USB audio interface via XLR, audio interface to laptop/computer via USB, and audio interface to PA system via audio speaker output
Equipment Needed/Necessary	Stereo output device and/or additional device/laptop to run MP3/CD track
Electronic Score	Does not include electronic score beneath the clarinet part, cues located exclusively within the clarinet score when they do occur
Score: Purchase, Perusal, Contact	Purchase necessary on publisher site, perusal available

Figure 2.45

No Matter What is one of Beth Wiemann's earliest, 21st-century compositions for solo clarinet and fixed media. The electronic audio track that plays alongside the clarinetist features varying soundscapes, including metallic percussion undulations, drums sounds, and sonic crinkles. *No Matter What* notably lacks any form of extended techniques, leaving the soundscape to instead mesh and weave in and out of the clarinet and electronic relationship. Often, the melodic contour of *No Matter What* is accentuated by fast moving grace note gestures, either strictly notated rhythmically or in more of a true grace note gesture. Rhythms in this work often fall in a syncopated pattern, no matter the ties or slurs that occur throughout. Melodically, *No Matter What* sticks to a form of gentle phrases, colored by the grace-note gestures mentioned above and accented by the undulating electronic responses.

CHAPTER 4: CONCLUSION

The goal in analyzing the 45 select compositions was to provide a platform and guide for students and educators who wish to approach compositions in the electroacoustic genre for the first time. The composers selected for analysis within these 45 compositions offer an array of compositional categories; a few encompass atmospheric soundscapes, others almost a dance music style of collaboration while some offer works that actively seek a conversation between the clarinet and electronics. The cost of acquiring the compositions analyzed in this document comes to approximately $600, with 19 compositions requiring separate purchase, 5 compositions free to download from the composer or composer's website, 7 offering a perusal score, and 14 requiring separate contact with the composer to purchase or view a perusal score.

For those looking to perform electroacoustic literature for the first time, various difficulties within the genre itself can create a learning curve for the musician. The number of performers, equipment, and coordination for rehearsals and performance space may strike most as too burdensome, or at best intimidating. This document hopes to provide curious clarinetists with a guide to approach different styles of electroacoustic repertoire, as well as aid students and educators in discovering multimedia composers who write this literature for the clarinet. The annotated bibliography in Chapter 3 aims to provide a clarinetist or educator with equipment recommendations, listings of contemporary techniques, grading scales, and advice for the coordination of these performance elements.

For performers who venture into interactive music, many may also find that performing multimedia or electronic repertoire satisfies their curiosity for non-traditional performance techniques. Many who have worked in this genre discuss how the literature broadens their expressive possibilities and allows for varying environments in which they can explore and express their thoughts, beliefs, and opinions. It should be noted, however, that performance of electroacoustic literature is not unlike that of the demands in a solo, chamber, or collaborative performance recital. Many compositions feature equally difficult techniques for the clarinetist to maneuver, with the addition of coordinating or Various works throughout the annotated bibliography note the addition of another performer or an electronic/audio assistant. Notably, these suggestions differ from that of traditional recital expectations in the expectation of equipment needs, rehearsal times, set-up/tear-down of performance spaces, as well as the requirement of said assistant to be versed in the technology utilized in performance. Part of the legibility category in the rubric and annotated bibliography notes how the scores are displayed once purchased from the composer. Some practice should be expected on the part of the performer or assistant when reading electroacoustic literature such as this for the first time, as these scores are often displayed in a different way than that of a traditional performance score. The clarinetist will need to follow along with another line of music, often times the electronic score itself, in addition to any visual stopwatch or patch components. These techniques vary with each piece, though it should be noted that this skill alone often feeds into the trepidation in approaching electroacoustic literature.

Within the past two decades, interfaces and equipment utilized for electronic performance have become far more accessible, allowing composers and performers a

means to acquire adequate gear with less of a barrier. DAWs such as Logic and Max/MSP, for example, now offer student discount rates that cuts the normal purchase of these programs in half. Given the ease of accessibility, the production of electronic works should continue to see rise in popularity. Festivals and conferences have begun to mend following the COVID-19 pandemic, with more and more organizations now offering competitions, committees, and pedagogy summits dedicated to the production, composition, and performance of electroacoustic compositions.

My recommendation for any who are looking to perform electroacoustic clarinet pieces for the first time are those of the static electronic medium, i.e., any of the compositions which utilize fixed media, fixed audio, tape, pre-recorded electronics, CD, or MP3. These works often have overall fewer components to maneuver as well as providing the performer with a constant click-track and audio cues to practice from. Some of the 45 select compositions feature different conglomerates of pre-recorded electronics; it should be noted that all of these compositions included multiple files or tracks that had one file with the performance electronic backing, one with the electronics and metronome clicks, one with electronics and a MIDI clarinet recording, and a last with a performance recording and electronics. Not all of the compositions in this style featured these complete tracks, but most did include at least a pair of the four types listed. One important feature of the pre-recorded medium is that these compositions will always have the same cues at the same times, making them a reliable constant for musicians who desire to practice with a metronome first, then move to working with electronics. Compositions by Lori Ardovino, Rose Dodd, Alex Shapiro, and Beth Wiemann all have

works listed in this document that should be approachable for a student just beginning their electroacoustic performance journey.

Though the live electronic medium offers a vast palette for the clarinetist to pick from, many who have never experienced this literature would consider the difference between live and static audio integration intimidating. Mark Snyder's works are particularly easy to approach whilst being artistically effective for any who will be working with Max/MSP patches for the first time. These compositions involve little from the performer in terms of electronic knowledge and patch maneuvering, as the files come prepared with cases atop the patches—no programming is involved, just a simple download which again, makes these works both intuitive and simple to use.

I hope to continue this path of analysis and research following my academic studies, formulating the works into a website database as well as publishing a video series that clarinetist's can view to assist them in practicing, studying, and setting up works that incorporate an electronic component. Any future scholars who wish to extend this area of research for the B-flat soprano clarinet, or expand into other instruments with electronics, would be encouraged to seek out some of the resources given in this document. Even in analyzing the select 45 compositions, I found an array of compositional styles and composer personalities that I was both familiar and unfamiliar with. Thousands of works exist for the clarinet and electronic medium, most still left unexplored and unperformed in comparison to our traditional, 18th, 19th, and 20th century repertoire.

Electroacoustic literature for clarinet now constitutes an impressively broad span of repertoire, a genre which continually evolves with new developments in technology.

Given the use of technology in our society, it only makes sense that this genre be enjoyed for its impressive synthesis of art, music, and technology.

APPENDIX A: TERMINOLOGY

Ableton – Ableton AG is a German music software company that produces and distributes the production and performance program Ableton Live, as well as a collection of related instruments and sample libraries. Ableton Live is a digital audio workstation developed by Ableton and is currently in its twelfth version. There are three primary editions of the software: Live 12 Standard (the core software for music performance and creation), Live 12 Suite (adds on Max for Live and an expansive selection of instruments, effects, and samples), and Live 12 Intro (an introductory version of Live with track and effect limitations).[114]

AudioMulch – A modular audio software for making music and processing sound. The software can synthesize sound and process live and pre-recorded sound in real-time. AudioMulch has a patcher-style graphical user interface, in which modules called "contraptions" can be connected to route audio and process sounds.[115]

Digital Audio Workstation (DAW) – An electronic device or application software used for recording, editing, and producing audio files. DAWs come in a wide variety of configurations from a single software program on a laptop, to an integrated stand-alone unit, all the way to a highly complex configuration of numerous components controlled by a central computer. Regardless of configuration, modern DAWs have a central interface that allows the user to alter and mix multiple recordings and tracks into a final produced piece.[116]

Homophonic – A texture in which a primary melodic part is supported by one or more additional voices that provide harmony.[117]

Homorhythmic – A texture having a "similarity in the rhythm of all parts" or "very similar rhythm" as would be used in simple hymn or chorale settings.[118]

IanniX – A graphical open-source sequencer, based on Iannis Xenakis works for digital art. IanniX syncs via Open Sound Control (OSC) events.[119]

Logic – A proprietary digital audio workstation (DAW) and MIDI sequencer software application for the macOS platform developed by Apple Inc. Logic Pro provides software instruments, audio effects, and recording facilities for music synthesis.[120]

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[114] "We Make Live, Push, Note and Link - Unique Software and Hardware for Music Creation and Performance. with These Products, Our Community of Users Creates Amazing Things." Ableton. Accessed March 16, 2024. https://www.ableton.com/en/about/.
[115] "What Is AudioMulch?" AudioMulch, March 2010. http://www.audiomulch.com/info/what-is-audiomulch.
[116] "What Is a Daw? Your Guide to Digital Audio Workstations." What is a DAW? Accessed March 16, 2024. https://www.avid.com/resource-center/what-is-a-daw.
[117] Sisman, Elaine. "Summary: Homophony." Sonic Glossary: Homophony. Accessed March 16, 2024. https://ccnmtl.columbia.edu/projects/sonicg/terms/homophony.html.
[118] "Answers with Authority." Oxford Reference, January 1, 1970. https://www.oxfordreference.com/.
[119] "What Is IanniX?" IanniX. Accessed March 16, 2024. https://www.iannix.org/en/whatisiannix/.
[120] "Logic Pro for Mac." Apple. Accessed March 16, 2024. https://www.apple.com/logic-pro/.

Max/MSP – A visual programming language for music and multimedia developed and maintained by San Francisco-based software company Cycling '74. Max/MSP has been used by composers, performers, software designers, researchers, and artists to create recordings, performances, and installations.[121]

MIDI controller – A MIDI controller is any hardware or software that generates and transmits Musical Instrument Digital Interface (MIDI) data to MIDI-enabled devices, typically to trigger sounds and control parameters of an electronic music performance. They most often use a musical keyboard to send data about the pitch of notes to play, although a MIDI controller may trigger lighting and other effects.[122]

Oscillator – An electroacoustic device used to generate signals with specific waveforms.[123]

Patch – A patch contains the instrument, effects, Smart Controls, and routing settings that control the sound of a track. Patches can include one or more channel strip settings and can additionally contain routing information (auxes) and metadata (for Smart Controls and controller mapping). Patches for software instrument tracks include an instrument plug-in as well as effects settings.[124]

PiezoBarrel – PiezoBarrel pickups are designed to be attached to wind and brass instruments to pick up the relatively high-pressure standing wave inside the instrument near the mouthpiece end. A pickup is a type of microphone that is directly attached to the instrument so that it converts the air vibrations in the instrument to electricity at the source. This has the benefit of allowing the instrument to be amplified without feedback or interference from other sounds outside the instrument. Anything that creates a sound from the instrument also affects the air column inside the instrument. For example, a bassoon can be played by sucking on the reed instead of blowing; this sound is faithfully reproduced by the pickup as are percussive effects made with the reed.[125]

Polyrhythmic – The simultaneous use of two or more rhythms that are not readily perceived as deriving from one another or as simple manifestations of the same meter.[126]

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[121] "What Is Max?" Cycling '74. Accessed March 16, 2024. https://cycling74.com/products/max.
[122] Mitchell, Liam. "MIDI: Your Guide to MIDI and MIDI Controllers." Native Instruments Blog, December 14, 2022. https://blog.native-instruments.com/guide-to-midi-and-midi-controllers/.
[123] Truax, Barry. "Oscillator." HANDBOOK FOR ACOUSTIC ECOLOGY, 1999. https://www.sfu.ca/sonic-studio-webdav/handbook/Oscillator.html#:~:text=An%20electroacoustical%20device%20used%20to,ELECTRONIC%20MUSIC%20and%20SOUND%20SYNTHESIS.
[124] "Get Started with Patches in Logic Pro for Mac." Apple Support. Accessed March 16, 2024. https://support.apple.com/guide/logicpro/patches-lgcpac5affb8/mac.
[125] "PIEZOBARREL® Wind Instrument Pickups." PiezoBarrel Wind Instrument Pickups. Accessed March 16, 2024. https://piezobarrel.com/.
[126] "Polyrhythm Definition & Meaning." Merriam-Webster, April 13, 2023. https://www.merriam-webster.com/dictionary/polyrhythm.

Soundscape – An overall auditory environment created by a piece of music. It encompasses all sounds present in a musical composition, including the instruments, vocals, and any ambient noises or field recordings that the music may include.[127]

SuperCollider – An environment and programming language originally released in 1996 by James McCartney for real-time audio synthesis and algorithmic composition. It is a dynamic programming language providing a framework for acoustic research, algorithmic music, interactive programming, and live coding. Originally released under the terms of the GPL-2.0-or-later in 2002, and from version 3.4 under GPL-3.0-or-later, SuperCollider is free and open-source software.[128]

Syncopation – A variety of rhythms played together to make a piece of music, making part or all of a tune or piece of music off-beat or, a disturbance or interruption of the regular flow of rhythm.[129]

Vocoder – An audio effect that lets you impose the dynamics and changing spectral content of one sound (the modulator) onto another (the carrier). The modulator is usually the human voice, speaking or singing, while the carrier is usually a bright synthesizer.[130]

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[127] Music Gateway. "What Is the Definition of Soundscape in Music?" Music Gateway, August 22, 2019. https://www.musicgateway.com/blog/music-theory/what-is-the-definition-of-soundscape-in-music#:~:text=A%20soundscape%20in%20music%20refers,that%20the%20music%20may%20include.

[128] "Index." SuperCollider, 2002. https://supercollider.github.io/.

[129] Levin, Harry. "What Is Syncopation in Music and Why It Matters." ICON Collective Music Production School: LA & Online, May 26, 2023. https://www.iconcollective.edu/what-is-syncopation-in-music.

[130] Gibson, John, and Alicyn Warren. "Indiana University." Vocoder: Introduction to MIDI and Computer Music: Center for Electronic and Computer Music: Jacobs School of Music, 2016. https://cecm.indiana.edu/361/rsn-vocoder.html#:~:text=A%20vocoder%20is%20an%20audio,is%20usually%20a%20bright%20synthesizer.

APPENDIX B: RUBRIC FOR CLASSIFICATION

	I	II	III	IV	V
Range	$E^3 – C^6$	$E^3 – G^6$	$E^3 – A^6$	$E^3 – C^7$	$E^3 – C^7$
Electronic "Type" Utilized	Tape only. This method of electronic partnership does not require any outside assistance.	Tape or pre-recorded sound with the addition of a timing component, such as a stopwatch. This method of electronic partnership does not require any outside assistance.	Interactive electronic components, including Max/MSP integration. May require an additional aid to assist in the performance process.	Interactive electronic performance component utilizing pedals or looping software. May require an additional aid to assist in the performance process.	Live Processing / Electronics that additionally involve a microphone or other equivalent amplification. May require an additional aid to assist in the performance process.
Extended Techniques	Limited use of short-duration bends or glissandi, vibrato, air sounds, reed squeaks, and growling.	Use of larger range bends or glissandi. Inclusion of timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, and growling.	Limited use of multiphonics (implied that fingerings are chosen based upon instrument acoustics), inclusion of bends or glissandi, timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, and growling.	Inclusion of complex or underblown multiphonics (implied that fingerings are chosen based upon instrument acoustics), singing while playing and/or slap tonguing, bends or glissandi, timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, and growling.	Spectral multiphonics, multiphonic trills, singing whilst playing, bends or glissandi, timbral trills or quarter tone fingerings, vibrato, air sounds, reed squeaks, growling, and all other unlisted techniques.

Legibility	Standard score with simple markings for electronic event cues (this can include time-stamps).	Standard score with a secondary line beneath the clarinet part. This secondary line includes the fully notated electronic part either in graphic or written notation.	Score that does not contain a secondary electronic line. The indicated clarinet part or electronic cues contain proportional notation, either in actual timing or in notated duration of rhythms to be played.	Score that does not contain a secondary electronic line. Pedal, patch, or looping events are marked throughout the score to indicate repeated patterns, approximate improvisations, or melodies to occur during indicated sections of score.	Score that does not contain a secondary electronic line. Requires additional resources or performing assistant to cue electronic events via patch, pedal, etc. May include heavy graphic score or improvisation elements throughout.
Rhythmic/Metric Complexity	Notated in a majority of either simple or compound time signatures with limited interplay between both. Rhythmically limited to whole, half, quarter, eighth, and sixteenth note patterns, including triplets, dotted figures, and syncopation. May be homo or hetero-rhythmic.	Alternation of simple and compound time signatures throughout, with common interplay between both. Rhythmically expands beyond the scope of standard whole, half, quarter, eighth, and sixteenth note patterns, including triplets, dotted figures, and syncopation. May be homo or hetero-rhythmic.	Simple, compound, and Non-standard time signatures throughout (particularly those of asymmetric quality), including poly meters. This grade may include unbared melodies, gestures, or cues throughout.	Simple, compound, and Non-standard time signatures throughout (particularly those of asymmetric quality), including polymeters. This grade includes the regular use of unbared melodies, gestures, or cues throughout.	Simple, compound, and Non-standard time signatures throughout (particularly those of asymmetric quality), including poly meters. This grade includes unbared melodies, gestures, or cues throughout. Inclusion of hemiolas and polyrhythms, for example 2:3 or 5:4.

Instrument Modifications	Standard Clarinet with no modifications necessary for performance.	Amplification, mouthpiece alone or mouthpiece and barrel alone.	Modified embouchure/trumpet embouchure on clarinet and barrel or clarinet and upper/lower joint.	Insertion of outside, non-musical items inside of clarinet, including aluminum, cans, balls, rubber, mutes, cork, etc.	Modified clarinet, in which the mouthpiece is placed in the lower joint of the instrument. Insertion of electronic pick-ups in the body of the clarinet.
Score Availability	Perusal / Example Scores are provided on the composer's website. Scores and Electronics are readily available at no cost on the composer's website.	Perusal / Example Scores are provided on the composer's website. Scores and Electronics are readily available for purchase and download on either the composer or publisher website.	Must order Perusal / Example Scores from the composer. Scores and Electronics are readily available for purchase and must be mailed from either the composer or publisher website.	Must order Perusal / Example Scores from the composer. Score and Electronics are NOT readily available for purchase on the composer or publisher website. Contact with the composer must be made in order to perform.	Must order Perusal / Example Scores from the composer. Score and Electronics are NOT readily available for purchase on the composer or publisher website. Contact with the composer is difficult and may require outside research to find their contact information.

Electronic Accessibility	Standard stereo speaker output (2 speakers) and/or non-standard dual or single speaker use (such as phones, interactive Bluetooth speakers, organic sounds, etc.).	Standard stereo speaker output (2 speakers) and/or non-standard dual or single speaker use (such as phones, interactive Bluetooth speakers, organic sounds, etc.). Additionally, stopwatch or other adequate timekeeping device can be used by the performer, in collaboration with the electronics. Physical tape or CD used.	Standard stereo speaker output (2 speakers) and/or non-standard dual or single speaker use (such as phones, interactive Bluetooth speakers, organic sounds, etc.). Additionally, stopwatch or other adequate timekeeping device can be used by the performer, in collaboration with the electronics. This grade can additionally include in-ear metronome or feedback components for the performer. Computer station or laptop utilized for MP3, tape, or CD outputs.	5.1 speaker output. Additionally, stopwatch or other adequate timekeeping device can be used by the performer, in collaboration with the electronics. Computer station or laptop utilized for MP3, tape, or CD outputs. Outside of the 5.1 setup, an additional monitor speaker may be used for the performer, includes the possibility of an in-ear metronome.	Electronic needs expand beyond a 5.1 speaker output. In addition to a speaker monitor or in-ear metronome, Interface or computer station may be needed. This category includes amplification with various microphones on stand or in-instrument, pedals, looping software, etc.

APPENDIX C: COMPOSITION CHART

Composer	Title	Electronics	Duration	Year	Grade
Joshua Aguiar	*Belmont*	Clarinet and Fixed Media	8:00	2021	III
	Cosmic Cogs	Clarinet and Max/MSP	15:00	2021	II
Lori Ardovino	*Nattmara*	Clarinet and CD	8:25	2019	I
Cornelius Boots	*Invisible Orthodoxy*	Clarinet and Tape	15:00	2012	III/IV
Jenni Brandon	*Cacophony*	Clarinet and Delay Pedal	11:50	2021, rev. 2023	III/IV
	Chansons de la Nature pour la Clarinette	Clarinet and Delay Pedal	9:54	2003, revised 2006	III
Benjamin Broening	*Radiance*	Clarinet and Electronics	10:00	2009	IV
	Arioso/Doubles	Clarinet and Electroacoustic Sound	8:00	2002	IV/V
Zosha Di Castri	*Du Haut de l'Orillon*	Clarinet and Live Electronics	9:00	2007, revised 2008	IV
Elizabeth Foster Comninellis	*White Birds*	Clarinet and Fixed Media	4:11	2014	I/II
Rose Dodd	*Foraging Music No. 1*	Clarinet and Fixed Media	10:30	2013/2014	II
Gracie Fagan	*TI-DO*	Clarinet and Fixed Media	5:00	2021/2022	IV
Graciane Finzi	*Romanza a la Muerte de un Ave*	Clarinet and Fixed Sounds	11:00	2002	IV/V
Yvonne Freckmann	*Switch*	Clarinet and Max/MSP	6:33	2012	III
Martin Fröst	*Ala Humana*	Clarinet and CD	6:00	2008	II/III
Elliott Grabill	*Darl*	Clarinet and Live Electronics	10:00	2016	III
	Pluto	Clarinet and Live Electronics	35:00	2015-2017	IV/V

Kerry Hagan	*Requiem*	Clarinet and Computer	8:00	2014	IV
Andrew Hannon	*Respire*	Clarinet and Fixed Audio	7:30	2021	II/III
	Two Lost Loves	Clarinet and Fixed Audio	7:00	2014	II/III
Holly Harrison	*A Mad Tea-Party*	Clarinet and Electronics	7:00	2009, rev. 2018	V
Carolina Heredia	*Vanishing*	Clarinet and Electronics	6:45	2018	III
Edward Jacobs	*Function of Memory*	Clarinet and Pre-recorded Sound	12:00	2001	V
Charlie Johnson	*Frozen Lightning*	Clarinet and Tape	7:50	2023	III
Elyse Kahler	*Four Miniatures for "Beginner" Clarinet*	Clarinet and Live Electronics	7:00	2016	II
Emma O'Halloran	*Truth and Beauty*	Clarinet and Stereo Playback	5:30	2010	II/III
Joo Won Park	*Armor +2*	Clarinet and Computer	7:00	2015	III/IV
Charles Peck	*Dichotomy*	Clarinet and Tape	5:00	2017	IV/V
	Fade	Clarinet and Tape	7:00	2016	III
Mark W. Philips	*Favorable Odds*	Clarinet and Electronics	10:00	2018	III/IV
Leanna Primiani	*GREY*	Clarinet and Pre-recorded Electronics	7:30	2021	III
Graeme Rosner	*Arbiter*	Clarinet and Electronics	6:30	2020	III/IV
Alex Shapiro	*Water Crossing*	Clarinet and Pre-recorded Audio	9:40	2002	II
	Desert Tide	Clarinet and Pre-recorded Audio	10:00	2015	III/IV
Judith Shatin	*Cherry Blossom and a Wrapped Thing: After Hokusai*	Amplified Clarinet and Multichannel/Stereo Electronics	7:52	2004, rev. 2006	II
	Penelope's Song	Amplified Clarinet and Electronics	9:00	2003	III

Nina Shekhar	*Honk If You Love Me*	Clarinet and Electronics	11:00	2018/2019	V
Mark Snyder	*Messy*	Processed Clarinet, Electronics, and Video	6:38	2008	I
	Harvey	Processed Clarinet, Electronics, and Video	7:18	2008	I
	Pornography	Processed Clarinet, Electronics, and Video	6:20	2009	I
Brian Topp	*HUAYRA-TATA*	Clarinet and Electronics	11:00	2014, rev. 2017	II
Jacob TV	*Pale Moon in a very Blue Sky*	Clarinet and Audio Soundscape	11:08	2020	III/IV
Beth Wiemann	*Humidity*	Clarinet and Pre-recorded Sound	6:42	2020	II
	An Anxious Awareness of Danger	Clarinet, Vocoder, and Pre-recorded Sound	8:00	2017	II/III
	No Matter What	Clarinet and Fixed Media	7:00	2013/2014	II/III

BIBLIOGRAPHY

"Answers with Authority." Oxford Reference, January 1, 1970. https://www.oxfordreference.com/.

Ardovino, L. (n.d.). *Bio - Music of Lori Ardovino*. Music of Lori Ardovino. https://loriardovino.com/about.

Ardovino, Lori. "Lori Ardovino Music - Nattmara." Products - Music of Lori Ardovino. Accessed March 13, 2024. https://loriardovino.com/shop/ols/products/nattmara1.

Boots, C. (2023, December 12). *Compositions*. Cornelius Boots – Zen Shakuhachi, the living tradition 地無し尺八 Grandmaster (Dai Shihan) Koden Honyoku 古伝本曲, Composer/Creator Nature Blues/Bamboo Gospel - Bass Shakuhachi, Taimu/wide-bore flutes and Woodwind Nature. https://corneliusboots.com/compositions/.

Brandon, J. (2023, December 14). *About Jenni Brandon*. Jenni Brandon. https://jennibrandon.com/about/.

Brandon, J. (2024, January 29). *Cacophony for B-flat clarinet and delay pedal*. Jenni Brandon. https://jennibrandon.com/product/cacophony-for-b-flat-clarinet-and-delay-pedal/.

Brandon, J. (2023a, November 7). *Chansons de la Nature pour la clarinette for solo B-flat clarinet*. Jenni Brandon. https://jennibrandon.com/product/chansons-de-la-nature-pour-la-clarinette-for-solo-b-flat-clarinet-sheet-music/.

Broening, Benjamin. "Reviews / About." Benjamin Broening, About. Accessed March 13, 2024. https://benjaminbroening.net/about.html.

Broening, Benjamin. "Compositions." Arioso/Doubles. Accessed March 13, 2024. https://benjaminbroening.net/piece_AD.html?iframe=true.

Broening, Benjamin. "Compositions." Radiance. Accessed March 13, 2024. https://benjaminbroening.net/piece_Ra.html?iframe=true.

"Canadian Music Centre - Du Haut de l'Orillon." Canadian Music Centre, April 5, 2024. https://cmccanada.org/.

Castri, Zosha Di. "About." Zosha Di Castri - About / Bio, 2024. http://www.zoshadicastri.com/about.

Comninellis, Elizabeth Foster. "Bio: CV." Elizabeth Foster Comninellis. Accessed March 13, 2024. http://elizabethcom.com/bio.

Dodd, Rose. “About.” rosedodd.wordpress.com, June 19, 2020. https://rosedodd.wordpress.com/about/.

Druhan, Mary Alice. “A Performer’s Guide to Multimedia Compositions for Clarinet and Visuals: A Tutorial Focusing on Works by Joel Chabade, Merrill Ellis, William O. Smith, and Reynold Weidenaar.” LSU Scholarly Repository, May 2003. https://repository.lsu.edu/cgi/viewcontent.cgi?article=1018&context=gradschool_majorpapers.

Eimert, Herbert. WHAT IS ELECTRONIC MUSIC?, 1957. http://www.jaimeoliver.pe/courses/ci/pdf/eimert-1957.pdf.

“Electroacoustic Music: 3 Characteristics of Electroacoustic - 2024.” MasterClass, September 15, 2021. https://www.masterclass.com/articles/electroacoustic-guide.

“Electroacoustic Pioneers, Manifestos, Inventions and Premieres.” Sound Art - Electronic, Tape, Computer & Electroacoustic Music at Pytheas ~ Modern, New, Non-Pop Art Music Composers, Ensembles & Resources, 2019. http://www.pytheasmusic.org/electroacoustic_music.html.

Errante, F. Gerard, “Electro-Acoustic Music for the Clarinet, Part I,” ClariNetwork, Fall 1984

Fagan, Gracie. “About.” Gracie Fagan_Composer, Multimedia Artist, 2022. https://www.graciefagan.com/about.

Finzi, Graciane. “About.” Graciane Finzi - Biographie English version. Accessed March 13, 2024. http://www.graciane-finzi.com/graciane-finzi---biographie-english-version.html.

Freckmann, Yvonne. “About.” Yvonne Freckmann, April 15, 2023. https://yvonnefreckmann.com/bio/.

Freckmann, Yvonne. “Switch.” Yvonne Freckmann, November 8, 2022. https://yvonnefreckmann.com/switch/.

“Get Started with Patches in Logic Pro for Mac.” Apple Support. Accessed March 16, 2024. https://support.apple.com/guide/logicpro/patches-lgcpac5affb8/mac.

Gibson, John, and Alicyn Warren. “Indiana University.” Vocoder: Introduction to MIDI and Computer Music: Center for Electronic and Computer Music: Jacobs School of Music, 2016. https://cecm.indiana.edu/361/rsn-vocoder.html#:~:text=A%20vocoder%20is%20an%20audio,is%20usually%20a%20bright%20synthesizer.

Grabill, Elliott. “Darl - Elliott Grabill.” Elliott Grabill - composer | songwriter | teacher. Accessed March 13, 2024. http://elliottgrabill.com/darl.

Grabill, Elliott. “Elliott Grabill - Composer, Songwriter, Teacher.” Elliott Grabill - composer | songwriter | teacher, 2024. http://elliottgrabill.com/.

Grabill, Elliott. “Pluto_Elliott Grabill.” Elliott Grabill - composer | songwriter | teacher. Accessed March 13, 2024. http://elliottgrabill.com/pluto.

Hannon, Andrew. “Andrew Hannon_Composer.” Andrew Hannon_Home. Accessed March 13, 2024. http://andrewhannon.com/index.html.

Hannon, Andrew. “Andrew Hannon_Music/Purchase.” Andrew Hannon_Respire. Accessed March 13, 2024. http://andrewhannon.com/respire.html.

Hannon, Andrew. “Andrew Hannon_Music/Purchase.” Andrew Hannon_Two Lost Loves. Accessed March 13, 2024. http://andrewhannon.com/Two%20Lost%20Loves.html.

Hargrove, Victoria A. The Evolution of the Clarinet and Its Effect on Compositions Written for the Instrument, May 2016. https://csuepress.columbusstate.edu/cgi/viewcontent.cgi?article=1235&context=theses_dissertations.

Harris, Jermaine. “Unraveling the Rich History of the Clarinet.” Breve Music Studios, October 20, 2023. https://brevemusicstudios.com/history-of-the-clarinet/#:~:text=Throughout%20the%2020th%20century%20and,better%20maintenance%20and%20sound%20quality.

Harrison, Holly. “A Mad Tea-Party.” Holly Harrison_Compositions, 2024. https://www.hollyharrison.net/amadtea-party.

Harrison, Holly. “Holly Harrison_About.” Holly Harrison_Composer, 2024. https://www.hollyharrison.net/.

Hagan, Kerry. Kerry L. Hagan. Accessed March 14, 2024. https://www.kerrylhagan.net/#bio.

Heredia, Carolina. “About.” Carolina Heredia - BIO. Accessed March 14, 2024. https://www.carolinaheredia.com/about#biography.

Howe, Hubert S. The Musical Significance of Electronic Music. Accessed March 25, 2024. https://qcpages.qc.cuny.edu/hhowe/articles/significance.html.

“Index.” SuperCollider, 2002. https://supercollider.github.io/.

Jacobs, Edward. “Biographical Information.” Edward Jacobs, 2024. https://edwardjacobs.org/bio/.

Kahane, Gabriel. “Empire Liquor Mart (9127 S. Figueroa St.), by Gabriel Kahane.” Gabriel Kahane, June 3, 2013. https://gabrielkahane.bandcamp.com/track/empire-liquor-mart-9127-s-figueroa-st.

Kahler, Elyse. “About.” Elyse Kahler, 2018. https://www.elysekahler.com/about.html.

Lawson, Colin. *The Cambridge Companion to the Clarinet (Cambridge Companions to Music)*. First Ed. Cambridge University Press; First Edition, 1996.

Levin, Harry. “What Is Syncopation in Music and Why It Matters.” ICON Collective Music Production School: LA & Online, May 26, 2023. https://www.iconcollective.edu/what-is-syncopation-in-music.

“Logic Pro for Mac.” Apple. Accessed March 16, 2024. https://www.apple.com/logic-pro/.

“Martin Fröst.” Buffet Crampon, February 8, 2017. https://www.buffet-crampon.com/en/artist/martin-frost/.

Mitchell, Liam. “MIDI: Your Guide to MIDI and MIDI Controllers.” Native Instruments Blog, December 14, 2022. https://blog.native-instruments.com/guide-to-midi-and-midi-controllers/.

Music Gateway. “What Is the Definition of Soundscape in Music?” Music Gateway, August 22, 2019. https://www.musicgateway.com/blog/music-theory/what-is-the-definition-of-soundscape-in-music#:~:text=A%20soundscape%20in%20music%20refers,that%20the%20music%20may%20include.

O’Halloran, Emma. “Emma O’Halloran.” Emma O’Halloran - About. Accessed March 15, 2024. https://www.emma-ohalloran.com/.

Park, Joo Won. “Armor+2 – for Clarinet and Computer.” Joo Won Park, October 8, 2021. https://joowonpark.net/armor2/.

Park, Joo Won. “Music of Joo Won Park.” Joo Won Park - About, October 21, 2023. https://joowonpark.net/.

Peck, Charles. “Biography.” Charles Peck, June 17, 2023. http://charlespeckmusic.com/biography/.

Peck, Charles. Fade for Clarinet and Tape - Charles Peck, 2023. http://charlespeckmusic.com/product/fade-for-clarinet-and-tape/.

"Peep Show - Dir. Rino Stefano Tagliafierro. A Private Journey into the World of Eroticism." PEEP SHOW - dir. Rino Stefano Tagliafierro, 2016. http://www.peepshowmovie.com/history.html#page=ENG.

Phillips, Mark W. "Coolville Music." favorable_odds. Accessed March 15, 2024. https://coolvillemusic.com/favorable_odds.html.

Phillips, Mark W. Mark W. Phillips. Accessed March 15, 2024. http://www.societyofcomposers.org/members/MarkW.Phillips/.

"PIEZOBARREL® Wind Instrument Pickups." PiezoBarrel Wind Instrument Pickups. Accessed March 16, 2024. https://piezobarrel.com/.

"Poetry Archive." The White Birds, by W.B. Yeats, April 2002. https://www.poetry-archive.com/y/the_white_birds.html.

"Polyrhythm Definition & Meaning." Merriam-Webster, April 13, 2023. https://www.merriam-webster.com/dictionary/polyrhythm.

Primiani, Leanna. "Bio." Leanna Primiani, 2015. https://leannaprimianicomposer.com/.

Reynolds, Simon. "Tapeheads: The History and Legacy of Musique Concrète | Tidal ..." TIDAL, May 15, 2021. https://tidal.com/magazine/article/musique-concrete/1-78792.

Robinson, Wendy Gale. "Heaven's Gate: The End." OUP Academic, December 1, 1997. https://academic.oup.com/jcmc/article/3/3/JCMC334/4584381.

Rosner, Graeme. "About." Graeme Rosner, 2024. https://www.graemerosner.com/about.

Rosner, Graeme. "Arbiter." Graeme Rosner, 2024. https://www.graemerosner.com/arbiter.

Schrader, Barry. "LIVE/ELECTRO-ACOUSTIC MUSIC - A PERSPECTIVE FROM HISTORY AND CALIFORNIA." Live/Electroacoustic Music - A Perspective from History and California, 1991. https://barryschrader.com/live-electro-acoustic-music-a-perspective-from-history-and-california.

Shapiro, Alex. "Alex Shapiro - Biography." Alex Shapiro, composer: Biographical information, 2000. https://www.alexshapiro.org/ASBio.html.

Shapiro, Alex. "Desert Tide." Alex Shapiro, Composer: Desert Tide, 2015. https://www.alexshapiro.org/DesertTidepg1.html.

Shapiro, Alex. "Water Crossing." Alex Shapiro, Composer: Water crossing, 2018. https://www.alexshapiro.org/WaterCrossingpg1.html.

Shatin, J. *About - Bio, Long*. Judith Shatin. https://www.judithshatin.com/about/.

Shatin, J. (2022, October 19). *Judith Shatin - Works*. Judith Shatin. https://www.judithshatin.com/cherry-blossom-and-a-wrapped-thing/.

Shatin, J. (2023, September 26). *Judith Shatin - Works*. Judith Shatin. https://www.judithshatin.com/penelopes-song/.

Shekhar, Nina. "About | Composer and Multimedia Artist." Composer and Multimedia Artist Nina Shekhar, Biography. Accessed March 15, 2024. https://www.ninashekhar.com/about.

Shekhar, Nina. "Honk If You Love Me." Nina Shekhar. Accessed March 15, 2024. https://www.ninashekhar.com/product/honk-if-you-love-me.

Sisman, Elaine. "Summary: Homophony." Sonic Glossary: Homophony. Accessed March 16, 2024. https://ccnmtl.columbia.edu/projects/sonicg/terms/homophony.html.

Snyder, Mark. "Harvey." Mark Snyder_Compositions. Accessed March 15, 2024. https://marksnyder.org/works/harvey.

Snyder, Mark. "Mark Snyder_Composer, Performer, Multimedia Artist, Teacher." Mark Snyder_About, 2010. https://marksnyder.org/.

Snyder, Mark. "Messy." Mark Snyder. Accessed March 15, 2024. https://marksnyder.org/works/messy.

Snyder, Mark. "Pornography." Mark Snyder_Compositions. Accessed March 15, 2024. https://marksnyder.org/works/pornography.

Sutherland, Adria Leigh. "PARTNERSHIPS AND CREATION: A BRIEF HISTORY OF CLARINETIST-COMPOSER PARTNERSHIPS AND HOW THEY CONTRIBUTED TO CLARINET LITERATURE, AND THE INFLUENCE OF ROBERT SPRING ON CONTEMPORARY COMPOSITIONAL OUTPUT FOR THE CLARINET." D.M.A./Musical Arts Project, May 2018. https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1119&context=music_etds.

Topp, Brian. "About." Brian Topp - about. Accessed March 16, 2024. https://www.briantopp.com/about.

Truax, Barry. "Oscillator." HANDBOOK FOR ACOUSTIC ECOLOGY, 1999. https://www.sfu.ca/sonic-studio-webdav/handbook/Oscillator.html#:~:text=An%20electroacoustical%20device%20used%20to,ELECTRONIC%20MUSIC%20and%20SOUND%20SYNTHESIS.

"Virginia Executes Man Convicted of Killing Entire Family in 2006." CBS News, January 19, 2017. https://www.cbsnews.com/news/ricky-gray-execution-bryan-kathryn-stella-ruby-harvey-murder-jarratt-virginia/.

"We Make Live, Push, Note and Link - Unique Software and Hardware for Music Creation and Performance. with These Products, Our Community of Users Creates Amazing Things." Ableton. Accessed March 16, 2024. https://www.ableton.com/en/about/.

"What Is AudioMulch?" AudioMulch, March 2010. http://www.audiomulch.com/info/what-is-audiomulch.

"What Is a Daw? Your Guide to Digital Audio Workstations." What is a DAW? Accessed March 16, 2024. https://www.avid.com/resource-center/what-is-a-daw.

"What Is IanniX?" IanniX. Accessed March 16, 2024. https://www.iannix.org/en/whatisiannix/.

"What Is Max?" Cycling '74. Accessed March 16, 2024. https://cycling74.com/products/max.

Wiemann, Beth. "About." beth wiemann_composer, August 16, 2022. https://bethwiemann.com/about/.

Yoder, Rachel M. "PERFORMANCE PRACTICE OF INTERACTIVE MUSIC FOR CLARINET AND COMPUTER WITH AN EXAMINATION OF FIVE WORKS BY AMERICAN COMPOSERS." Dissertation Prepared for the Degree of DOCTOR OF MUSICAL ARTS, December 2010. https://digital.library.unt.edu/ark:/67531/metadc33219/m1/74/