Current Trends in Electroacoustic Music for Wind Ensemble

John Wayne Freeman

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Current Trends in Electroacoustic Music for Wind Ensemble

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CURRENT TRENDS IN ELECTROACOUSTIC MUSIC FOR WIND ENSEMBLE

by

John Wayne Freeman

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Submitted in Partial Fulfillment of the
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ABSTRACT


The advancements of technology since the 1950s and particularly in the twenty-first century have opened many opportunities for electronics being used in current music performance. This progression has expanded the range of sounds available to composers while becoming more flexible in their use and simplifying their technical demands.

Recent works by Mason Bates – Rusty Air in Carolina, Christopher Stark – Augenblick, and Steven Bryant – Ecstatic Waters have continued the development of electroacoustic techniques and are making use of new opportunities for application. These composers’ works stand out as examples that are embracing the collaborative possibilities available from current technology, while fully utilizing the enhanced sound palette available.

The purpose of this study was to investigate the integration of technology into compositions for the wind band and identifies current challenges in electroacoustic wind ensemble music. Three contemporary works are examined for their technical demands and how electronic sounds have been integrated into the works. Recommendations on future developments and advances for composers and performers in this field are provided.
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Chapter 1

Introduction

Technology has become an ever-increasing aspect of our contemporary society. The advancement of the microchip in computers has advanced them from laboratory equipment available to a select few to a component of everyday equipment used by the masses. The trend of increased accessibility of computer hardware and software has also influenced contemporary music. The purpose of this study was to investigate the integration of technology into compositions for the wind band.

Over the last sixty years, there have been a myriad of approaches to including electronic elements within the live performance genre. Many composers established several key concepts of organizing, producing, and performing electronically produced audio. Recent advances in access to increased computer power and portability leading into the twenty-first century have further opened the possibilities and accessibility of electronic musical elements to a larger population of composers and performers.

The processing power and portability of personal computers has developed to the degree where interactive options between electronic and live elements do not require equipment that is difficult to obtain or operate by the general musician. This flexibility has lead to recent explorations by several composers in combining electronics with the wind band medium. Recent works by Mason Bates, Christopher Stark, and Steven Bryant have continued the development of electroacoustic techniques and are making use of new opportunities for application. These composers’ works stand out as examples that are embracing the collaborative possibilities available from current technology, while fully utilizing the enhanced sound palette available.
The Purpose for Technology in Composition

One of the initial questions for composers is why electronics are being included in many of their works. An early explorer in using new technology sounds was Edgard Varèse: “Our new liberating medium—the electronic—is not meant to replace the old musical instruments which composers, including myself, will continue to use. Electronics is an additive, not a destructive factor in the art and science of music.”¹ In his early works, Varèse made use of extended techniques for acoustic instruments. Percussion became an early favorite instrument family used by Varèse to expand the sound palette. Ionisation, written in 1931, was the first percussion ensemble work that provided him with a large selection of sounds. About these techniques, Varèse stated:

I read Helmholtz’ experiments with sirens in his Théorie physiologique de la musique. Later, I made some modest experiments on my own and found that I could obtain beautiful parabolic and hyperbolic curves of sound . . . In Poème Électronique, in 1958, I got the same effect, but produced this time entirely by electronic means.²

During the 1950s, Varèse began looking at new instruments and started making use of early electronic techniques, such as electronically generated sounds and the addition of a tape part to a performance ensemble.

I began listening to the sounds around me from all directions and imagined how such sounds, and in just such complexity, could be transmuted into music . . . I began to imagine the invention of new devices that would make spatial music possible—in other words—, I dreamed of—as I used to put it—the liberation of sound, making available to composers all the new sounds of our time.³

---


As new technologies became available, Varèse embraced the possibilities. Newly created electronic sounds and recorded sound samples that were processed in the studio environment were incorporated into many of his works. Varèse was an early explorer in using stereo sound in his work, *Déserts*.

The interest and concepts that Varèse exhibited in the first half of the twentieth century continue to be present in contemporary composers today. The desire to obtain an expanded sound vocabulary has been an ongoing quest of composers throughout the history of music and technology developments of computers are now allowing for new areas of exploration. One such composer is Mason Bates, who includes electronics in his compositions for both rhythmic and imaginative purposes. Bates comes from split backgrounds having classical music training and being an active performer as a DJ in nightclubs. According to Bates,

> These two worlds play an important part in his compositions as is evident in the musical crossover that he embraces. The world of electronica - contemporary dance music - offers so many intricate beats to a composer. These are often far more complex than a casual listener might imagine, since electronica spans the gamut from downtempo to high-octane drum n bass.

Many of Bates’s works make use of an electronica groove concept, which is prevalent in club music and serves as an interesting crossover from his commercial music side into his classical compositions. The other facet of technology common in the music of Bates is the use of sound sampling techniques. He explains:

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4 Mason Bates, e-mail message to the author, October 8, 2009.

5 Ibid.
In addition to these rhythmic possibilities, electronics offer a composer the ability to incorporate any sound into his musical landscape. Suddenly one can travel to the deep South (using, for ex, field recordings of buzzing insects) or Antarctica (recordings of glaciers melting).6

Another current composer using electroacoustic techniques is Steven Bryant, who expresses some of the same ideas about the Use of electronics. “I love the expanded sound palette made available by the inclusion of electronic sounds, and was able to create some sounds that I couldn't otherwise do with the traditional wind ensemble.”7

Christopher Stark is also one of the younger voices active in the electroacoustic field. About these influences of electroacoustic music, Stark states:

I believe that the laptop is the folk instrument of my generation (I was born in 1980). I did not grow up with, like many composers of today, a classical music-oriented background. My background was in pop music and electric guitar. Writing pop songs and recording them was my first really exciting experience with music.8

The prevalence of computers in the home has grown dramatically during the last two decades; now the creation of musical sounds or content apart from a dedicated studio is a much simpler task. Electronic audio editing and creation techniques are now a common skill set for the younger generations who grew up with a computer as a part of their daily life. Stark notes that his “obsession with recording (which anybody with a computer can do now) taught me how to use a computer musically, so these electronic sounds were in my ‘mind's ear’ from a very early age.”9 This desire for an interaction

6 Ibid.

7 Steven Bryant, e-mail message to the author, November 25, 2009.

8 Christopher Stark, e-mail message to the author, October 19, 2009.

9 Ibid.
with the computer as a musical instrument, rather than a tool, is pushing towards the creation of a control interface that is flexible and has the ability to be spontaneous.

The goal of having a flexible use of the computer during performance has been a part of Stark’s exploration of electroacoustic music composition.

I was especially taken by the interactive music component. I had a hard time reconciling the 'cold' and 'inhuman' aspect of electronic sounds, and found a 'warmer' outlet in interactive music. If the performer dictated the electronics, and the technology could be flexible, each performance could be different. I felt I could really say something musically because of this, and also I felt that the music could still have an emotional core.\(^\text{10}\)

This desire to maintain the humanity of electronic sounds while joining with the acoustic ensemble, and not overtaking it, is part of the challenge. Regarding this challenge, Bryant comments:

one challenge with this sort of integration is keeping the electronics from dominating the texture. It's easy to generate a lot of complex sound with a single electronic sound source or piece of software. The wind band already produces a huge variety of timbres and frequencies, so finding sounds that augmented these existing sounds, instead of burying or being buried by them, was an ongoing task.\(^\text{11}\)

The composer is faced with the task of working out the orchestration challenges of incorporating this new element to be part of the musical experience and not just a separate component to the ensemble. In addition to the challenges in orchestration, composers must also generate the electronic material, which requires knowledge of working with electronic sounds.

\(^{10}\) Ibid.

\(^{11}\) Steven Bryant, e-mail message to the author, November 25, 2009.
The technology many of these younger composers grew up with provided a basic introduction into electroacoustics, and they have continued developing necessary skills to generate successful electronic elements. The combination of electronics and acoustics has been a cited challenge by the composers. Bryant discusses his experiences with electronics and composing with the wind ensemble:

I've worked with synths, sequencers, computers, etc. for as long as I've been composing - since high school. I feel equally at home with electronic sound manipulation as I do with composing for acoustic instruments. I've written several ‘study’ pieces over the years leading up to this . . . Even so, it was difficult, especially at the beginning, because I had to figure out how to actually compose the work in a slightly different way than I normally approach either genre on its own.12 Stark shares some similar experience with electronics.

I, like many people today, feel very competent using a computer, much more so than writing for acoustic instruments. How much time do people spend on their computers everyday? A lot. So working with electronics is a very comfortable place for me.13

Large amounts of time around computers early in his life provided Stark with a comfortable base while learning to integrate electronic and acoustic elements. However, Stark explains some of the problems inherent in the synthesis:

The process of writing electronic music is different to acoustic music. Acoustic music is a thesis. An acoustic score is a thesis of ideas, no sound on the page has been physically realized by the composer, only imagined in his head. Electronic music is not a thesis. The sounds have been worked on in a studio, and physically realized by the composer. This presents a challenge when writing interactive music because half of the score is real and half is hypothetical. Because of this, I work back and forth in the studio, never doing both at the same time. I theorize about acoustic sounds that might be interesting, and then experiment with ideas in the studio, one continuously informs the other until I have a completed work. In order to do this, you have to be able to listen to what the computer is telling you,

12 Ibid.

13 Christopher Stark, e-mail message to the author, October 19, 2009.
and respond. You cannot go into a studio with a concrete theoretical concept and achieve it. You have to experiment, hypothesize acoustic ideas, try to achieve them, and then tailor your acoustic ideas to what you actually are able to achieve in the studio. This creates the most unified pieces. Too many electronic pieces attempt to achieve a utopia of theoretical acoustic thought, and simply are unable to.\textsuperscript{14}

Composers’ perspectives in how they approach electroacoustic music are insightful into the challenges of writing electronic parts for the wind ensemble. The creation process requires new skills so that composers can approach electroacoustic sounds as a basic part of their skills, rather than a separate element.

\textit{Performing Electroacoustic Music}

The challenges of the performance of electronic music have been met with varying technological approaches among Bates, Bryant, and Stark. The compositions analyzed in this document are designed for performance with three different speaker setups and the computers have three different software requirements. Following the creation of these works by the composers there are several challenges that fall upon the ensemble to integrate electronics into their performance. The acquisition of the necessary sound equipment to make this possible is the first requirement. Second, having a dedicated performer for the electronics, who is knowledgeable, is equally important to making the pieces work, as the complexity increases.

The first fifty years of the inclusion of electronics with the wind ensemble has seen fairly low-level technology requirements. However, as the tools have become more accessible, the level of knowledge required has increased dramatically. The three most

\textsuperscript{14} Ibid.
recent works explored in this study were composed since 2008, and make use of many of the current opportunities in computer media. Each work features the use of electronics for live interaction with acoustic elements of the ensemble, and each work requires an electronics performer, not a technology technician. Stark describes the skill set of the electronic performer as needing to understand that “the laptop and the speakers are instruments, and you need an expert to ‘perform’ with them up to the level of the acoustic instrumentalists on stage. It is done haphazardly too often, by mediocre sound technicians, who do not understand the music.”

\[15\] Ibid.
Chapter 2

Electroacoustic Forerunners

Arguably, the genesis of electroacoustic works can be found in the electronic works of Edgard Varèse. Many of his concepts and techniques became the foundation of electroacoustic compositional practices for the remainder of the twentieth century.

Edgar Varèse, born in 1883 and died in 1965, was an innovative French-born composer who spent the greater part of his career in the United States. Varèse's music features an emphasis on timbre and rhythm that he described as organized sound.

Varèse spent most of his childhood in the town of Villars in Burgandy and in Turin, Italy before moving to Paris in 1903. He studied at the Schola Cantorum and afterwards attended the Paris Conservatoire where he studied composition with Charles Widor. In 1907, Varèse moved to Berlin where he became met the composers Erik Satie, Richard Strauss, Claude Debussy, and Ferruccio Busoni.

Varèse moved to the United States in 1915 and became an American citizen in 1927. In the 1930s, he composed *Ionisation*, a work comprised only of percussion instruments. After this decade, Varèse did not put out any new compositions until 1954 with the performance of *Déserts*. Varèse returned to Europe in 1957 to work on the *Poème électronique* at the Philips laboratories in Eindhoven. This composition, for tape alone, was designed to fill Le Corbusier's pavilion for the Philips firm at the Brussels Exposition Universelle of 1958.
'Déserts’ (1954)

The first work to include electronics was *Déserts* by Edgard Varèse in 1954. The work makes use of tape and a chamber wind ensemble. Varèse describes the piece:

For me “deserts” is a highly evocative word. It suggests space, solitude, detachment. To me it means not only deserts of sand, sea, mountains and snow, of outer space, of deserted city streets, not only those stripped aspects of nature that suggests bareness and aloofness but also the remote inner space of the mind no telescope can reach, a world of mystery and essential loneliness.¹

*Implementation of Electronics in ‘Déserts’*

Varèse recorded most of his sounds himself using an Ampex model 401A tape recorder and an Altec omnidirectional microphone. In January 1954, he was invited to the Groupe de Musique Concrète, Club d’Essai at a French Radio studio in Paris to complete the original version of *Déserts*. The first performance was in December 1954, and the orchestra utilized two loudspeakers placed on each side of the orchestra. The performance was also the first live stereo broadcast by two radio stations so that a listener at home with two radios tuned to France-Inter and to Chaine National could also experience the split tape effects. Varèse described the tape part for the premiere performance:

The Interpolations of organized sound are based on what one might call “raw” sounds (friction, percussion, whistling, “swishing,” or sonorities of lashing, crushing, breath) which - thanks to electronics - have been filtered, transposed, transmuted, combined and composed so as to adapt them to the pre-established

plan of the work. Combined with the electronic sounds, as elements of structure and stability, there occur some brief citations of the instrumental section.\(^2\)

In 1961, he created the definitive version of *Déserts* at the Columbia-Princeton Electronic Music Center with the technical assistance of Bülent Arel and Max Matthews. This revised version remains the staple in concert performances.

The parallel sound tracks can be heard in static left-right presentation on an LP recording of the work on Composers Recordings, Inc. However, on a recording of the work that was released on Columbia Records, the producers and the Columbia engineers were able to add considerable stereophonic interest by actively panning both of the tracks during the performance of the work.\(^3\)

Varèse used a basic control system for the performance of the electronic tracks. The initial performances consisted of two mono systems located on each side of the ensemble, which allowed for early stereo effects, though it did raise the difficulty of making sure both machines were in sync with each other. Varèse used the tape parts separate from the live performers, with one group flowing into the other and leaving the performers the option of excluding the tape part entirely. Pierre Boulez used this option in his commercial recordings of *Déserts*.

In a modern performance, the tape part is usually transferred to a compact disc or equivalent device with the two mono tracks in a stereo format. This allows for easy use of the electronics, allowing an audio engineer (or even an ensemble member) the ability


to trigger the tracks at the appropriate time. As the tape and live performers are always in opposition, there is no demand of aligning the tape performance with live musicians, with the exception of the start and end of each interpolation. The only technical demand is a loudspeaker system capable of creating a proper sound volume to balance with the winds and a simple playback device.

The rehearsal demands are also very simple, as a third of the work is on tape and only the remaining two thirds requires rehearsal time with live musicians. The integration of the electronics requires a few moments of logistical coordination and a sound level check, but after these simple steps, this early tape and winds piece is accessible for performance.

The use of aforementioned playback technique has been the primary vehicle for technology in performances during the twentieth century. The typical playback device used has been updated as technology advanced, and later moved into concurrent performance with the ensemble rather than the interpolations used by Varèse.

'Ascension' (1988)

James Mobberley’s work, Ascension, incorporates technology with an updated tape concept. He uses an electronic track presented on a compact disc that is aligned with the live performers of the wind ensemble. Mobberley, born in 1954, is on the composition faculty of the Conservatory of Music and Dance at the University of Missouri-Kansas City. He grew up in central Pennsylvania before moving to North Carolina. Mobberley earned a bachelor's degree in guitar from the University of North Carolina at Chapel Hill, where he also became interested in composition and continued at
Chapel Hill for his master’s degree. He continued his studies with Donald Erb and Eugene O'Brien at the Cleveland Institute of Music and earned a doctorate in 1982.

In addition to teaching composition at UMKC, Mobberley also directs the Conservatory's Music Production and Computer Technology Center. His awards include a Guggenheim Fellowship in 1992 and the 1990 Rome Prize fellowship and the 2001 Van Cliburn Composers Invitational. Mobberley has written for a wide range of ensembles including music that combines electronics and computer elements with live performance.

*Implementation of Electronics in ‘Ascension’*

*Ascension* uses a pre-recorded, electronic soundtrack that is played along with the ensemble. The work uses a compact disc with a single track designed for continuous play. The first measure is electronics and the majority of the ensemble enters in the second measure. One of the primary challenges is coordinating entrances during the performance and conducting rehearsals with no built in rehearsal markers for the compact disc. Identifying likely rehearsal points and corresponding time codes on the compact disc track would facilitate the rehearsal preparation for the electronic part, allowing for a more efficient flow to the rehearsal process. The technical equipment for the performance of the electronic part consists of a stereo amplification system capable of balancing with the volume of the ensemble, a compact disc player, and an audio engineer to facilitate audio controls during the performance.

The primary challenge of this work is to align the performing musicians with the electronic pre-recorded material. As there is no ability to adjust the timing of the compact disc track once it begins, it requires the conductor to manage the
synchronization of the two elements. This requires a setup of the audio elements so that the ensemble and conductor are capable of hearing the recorded portion at all times. This determines where the main speakers are positioned and if monitors would be useful. The technical requirements can be simplified, however, by placing the main speakers so that the group can also use them for reference. The use of separate monitors for playback tracking would lead to an increase in equipment demands. Monitors would require a playback system capable of sustaining additional outputs and, ideally, its own volume control either on the monitor or adjusted by the audio engineer at a mixing board. With the wide range of dynamics contained in both the pre-recorded material and the ensemble music, a performance would likely require active adjustments of volume levels in the monitors to avoid unintended sound disruptions during the performance.

The synchronization element poses a significant challenge because the pre-recorded material contains large impact points aligned with key moments in the live ensemble. The variety of complex rhythmic patterns used during these points increases the chance of improper alignment. The composer has notated the rhythmic structure of the pre-recorded part into the score serving as a useful reference for the conductor, but the ability of the conductor to deliver an unwavering tempo, over long periods of time and dynamic ranges, is of utmost importance. A further restriction to flexibility is the tempo structure itself. There is a limited range of tempos with only two different metronome markings present and the transitions between the tempi are lead by the pre-recorded material exclusively. This work makes use of newer technologies that demonstrates how the inclusion of electronics with live performers has become easier
towards the end of the century. It also shows the challenges of coordinating pre-composed electronics with a live ensemble.

‘Chamber Symphony’ (1992)

John Adams introduced an electronic instrument into his *Chamber Symphony* in 1992. His work for a chamber ensemble was modeled after Schoenberg’s *Chamber Symphony No. 1, Opus 9* (1906) with a few instrumentation changes, including the addition of an electronic keyboard. The keyboard served as a means for the electronics to be used in performance in real time with a member of the ensemble controlling the technology.

John Adams, born in 1947 in Massachusetts, is one of the leading modern American composers. Adams grew up in Vermont and New Hampshire in homes where his father played clarinet and his mother sang. Adams composed his first piece as a child and received a performance of a string piece by a community orchestra when he was thirteen. Adams also played the clarinet in his high school marching band as well as in the Greater Boston Youth Symphony. He attended Harvard University where he studied with Leon Kirchner, a disciple of Schoenberg, graduating with bachelor's and master's degree in 1971. Other notable composition teachers have included Harold Shapero, Roger Sessions, and David Del Tredici.

In 1972, Adams moved to the San Francisco area and eventually got a job teaching at the San Francisco Conservatory for ten years. At the conservatory he led the contemporary music ensemble, taught new music, composition, orchestration, analysis
and opera. During the seventies he became interested in the music of John Cage and Richard Wagner as well as minimalist composers Steve Reich and Philip Glass.

In 1978 Adams and conductor Edo de Waart started the San Francisco Symphony’s “New and Unusual” series, featuring new works by American and European composers, and later became composer-in-residence. To due his growing quantity of commissions, Adams was able to stop working at the San Francisco Conservatory in 1982 and devote himself to composing full time.

His awards include the Grawemeyer Award (1995), Composer of the Year from Musical America (1997), Pulitzer Prize in Music (2003) and he was elected to the American Academy and Institute of Arts and Letters in 1997.

Implementation of Electronics in ‘Chamber Symphony’

Adams stated that “I originally set out to write a children's piece, and my intentions were to sample the voices of children and work them into a fabric of acoustic and electronic instruments.” Adams did not use any recorded sounds in this work but instead used a keyboard sampler and the sounds that are included with the instrument. The original version was written for the Yamaha synthesizer listed below, though a second option has also become available. The technological requirements for Chamber Symphony are presented in Table 1.

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Table 1. *Chamber Symphony* Technology Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Korweil K2000 v3 or K2500 (either with minimum 4Mb RAM) – Main sound</td>
</tr>
<tr>
<td>source</td>
</tr>
<tr>
<td>1 Stereo Keyboard Combination Amplifier – Powered speaker system for</td>
</tr>
<tr>
<td>Kurzweil</td>
</tr>
<tr>
<td>1 One-Tier Keyboard Stand</td>
</tr>
<tr>
<td>1 Roland EV5 (or compatible) – Expression footpedal for volume control</td>
</tr>
<tr>
<td>2 15 foot audio cables (1/4 inch mono connectors) – Connect Kurzweil to</td>
</tr>
<tr>
<td>amplifier</td>
</tr>
<tr>
<td>or</td>
</tr>
<tr>
<td>1 Yamaha SY77 or SY99 – Main sound source</td>
</tr>
<tr>
<td>1 Stereo Keyboard Combination Amplifier – Powered speaker system for</td>
</tr>
<tr>
<td>Yamaha</td>
</tr>
<tr>
<td>1 One-Tier Keyboard Stand</td>
</tr>
<tr>
<td>1 Yamaha FC7 or FC9 – Expression footpedal for volume control</td>
</tr>
<tr>
<td>2 15 foot audio cables (1/4 inch mono connectors) – Connect Yamaha to</td>
</tr>
<tr>
<td>amplifier</td>
</tr>
</tbody>
</table>

The Synthesizer performer should be amplified utilizing the stereo keyboard combination amplifiers above.\(^5\)

The use of the keyboard is a fairly simple addition to the ensemble, as it only requires the keyboard and a sound system for amplification. The placement of the equipment can be set within the ensemble and the performer is capable of controlling all the necessary elements of performance. According to Adams, the overall combination amplifier sound should seem acoustic with respect to the overall acoustic sound.\(^6\)

The choice of two instrument models allows for more flexibility in acquiring the proper instrument. This highlights one of the challenges of using technology within the ensemble – most technology has a fast development that results in a short life span. The


\(^6\) Ibid.
long-term life of the music is tied to the technology included, and depends on it surviving or having successors that are capable of handling the earlier technology requirements. Adams maintains information that is available through his website on current options, though both of the current keyboard listed are not available as new equipment purchases.

‘Lost in the Funhouse’ (1994)

Another forerunner that incorporates electronics Lost in the Playhouse (1994) by Jeffrey Hass. Hass uses an approach similar to Mobberley’s Ascension with additional developments that aid in its performance. Hass describes that his approach for the electronics “was intended to play an equal, not dominant, role in the ensemble. It serves as a force to expand the timbral and rhythmic pallet of the band, while being no more important than the brass, woodwinds or percussion sections.”

Jeffrey Hass is currently Professor of Composition at Indiana University, Bloomington, where he serves as the Director of the Center for Electronic and Computer Music.

Hass was born in New York in 1953 and studied piano and theory starting at the age of four at the Stecher and Horowitz School of Music. He completed his undergraduate studies at Vassar College and then earned a Master’s degree in composition from Rutgers University. At Indiana University, Hass studied with Frederick Fox, Donald Erb, and Bernhard Heiden and received a doctorate in 1989.

Several awards have been received by Hass, including the 1994 National Band Association competition and the 1995 Walter Beeler Memorial Award for *Lost in the Funhouse*. His *Symphony for Orchestra with Electronics* was selected as winner of the 2006 ASCAP/Rudolph Nissim award.

Hass has also been named as one of the first four Fellows of the new Indiana University Institute for Digital Arts and Humanities to work on new interfaces for interactions between dance and music.

*Implementation of Electronics in ‘Lost in the Funhouse’*

The electronics used by Hass are similar in requirements to Mobberley’s *Ascension*. The music comes with a compact disc that contains two electronic tracks that are used in the first and third movements of the work. The first track begins the work with live musicians entering in the fifth measure. This opening track is used during the entire first movement and is a continuous running element. The second section of this electronic portion serves as a rhythmic background and the entire movement has the same metronome marking which allows for an easier coordination task than in Mobberley’s work. The second movement makes no use of the electronic tape part. The third movement utilizes the second track on the compact disc. Hass states, “In movement 3, the disc entrance is designed to overlap the flute and trumpet triplets, to allow for inevitable variations in starting the tape. Once the disc begins (beginning of movement 1, m. 51 & movement 3), absolute tempos must be maintained.”\(^8\) The second entrance

\(^8\) Ibid.
occurs during a rhythmic triplet figure by the ensemble that fades away and the tape portion continues alone for six measures. This allows for the conductor to realign the acoustic music if necessary by adjusting the low voice entrance in measure 59. At that point, the tempo should be consistent through the end of the work. A helpful addition in the rehearsal process by Hass is the noting of time codes for the compact disc in respective measures of the score. This printed information allows for an efficient coordination of the electronic tape part and the ensemble during the rehearsal sequence.

Hass notes the following speaker arrangement: “It is recommended that loudspeakers be set up towards the rear left and right side of the band. It may be helpful for the conductor to have a monitor speaker as well.”9 The rear placement of the main speakers facilitates the ensemble hearing the electronic tape part and a monitor for the conductor provides additional reinforcement during loud sections. As seen before in Mobberley’s Ascension, the need for a technical performer and a playback system that can have additional outputs to handle the monitor, in addition to the primary speakers, may be necessary for performance.

Forerunners Summary

Incorporating electronic sounds into the wind performance medium is based upon the concepts first adopted by Varèse in 1954. Varèse avoided the issue of synchronization with the performers by placing the electronics in interpolations. Mobberley and Hass capitalized on digital technology by placing their electronics component onto compact disc and creating real time alignment with the ensemble. Both

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9 Ibid.
tried various means of assisting in the alignment between the electronics and the performers with varying success. Adams was able to overcome this synchronization challenge by using a single electronic instrument, as a typical keyboard instrument with the use of a larger sound palette.

These works from the second half of the twentieth century made use of the latest technology available to them. Technological advancements since that time have continued, and composers of the twenty-first-century have begun making use of new developments available to them.

**Significant Composers and Works**

Three works written at the beginning of the twenty-first century feature new approaches to the use of electronics within the electroacoustic field. The technology has advanced to the point that personal computers are capable of replicating electronic sound concepts that once required large studios, and therefore had to be realized prior to the performance. This new ability to have real-time flexible electronics incorporated into the ensemble has been embraced by many current composers.

Works by Mason Bates, Steven Bryant, and Christopher Stark demonstrate the various avenues that are opening to live performance and how they are being used in the wind band. Composers made use of flexible live-time elements and began to show some of the potential concepts that are waiting to be fully realized. This new element of electroacoustic performance is reaching a point of inclusion in the ensemble as a regular component and not just a curious addition.

*Mason Bates – Composer*

Mason Bates is an innovative composer who maintains a dual existence as a classically trained composer and an active club DJ in San Francisco. Mason, born in 1977, was raised in Virginia, where he began his music studies in piano and composition. He then continued his formal studies in New York City at the Columbia-Juilliard program.

Mason earned degrees in music composition and English literature while studying with John Corigliano. Additionally, he has had further composition studies with David Del Tredici and Samuel Adler while at Juilliard. Mason received the Rome Prize from the American Academy in Rome in 2004, an American Academy in Berlin Prize for 2005 and a 2008 Guggenheim Fellowship in the Creative Arts.

Following his time in New York City, Mason Bates moved to San Francisco and has become established in these two worlds of music. His works have served as a bridge between the styles of classical music and electronica. Many of his compositions have included electronic drumpad and laptop and he has had works performed with many of the leading orchestras in the United States. Mason has received commissions from the San Francisco Symphony, The National Symphony, and the Los Angeles Philharmonic, and beginning in the fall of 2010, he will be a composer-in-residence for the Chicago Symphony Orchestra.

In San Francisco, Mason has studied with Edmund Campion at the University of California, Berkeley and also founded Berkeley’s Center For New Music and Audio
Technologies (CNMAT). He maintains an active career as an electronic performer, often performing in his classical works, while continuing his DJ role in many performances spaces throughout the San Francisco Bay area.¹

‘Rusty Air in Carolina’ (2006/08)

Mason Bates used his early experiences growing up in the South and summers spent at the Brevard Music Center as a reference for this work. He describes some of these ideas as:

Not only did the thick buzzing of cicadas and katydids always accompany the concerts there, but sometimes it was the music itself: on more than one occasion, I remember sitting on the porch of 100-year old Nan Burt and listening to the sounds of summer while she told stories from her long life.

The work uses electronics to bring the white noise of the Southern summer into the concert hall, pairing these sounds with fluorescent orchestra textures that float gently by.²

Implementation of Electronics in ‘Rusty Air in Carolina’

Bates brings a modern technique to his inclusion of electronics in the live performance medium. He uses recent developments in electronic audio and is an example of a composer beginning to break away from the fixed tape concept of electronic sounds. Mobberley and Hass used electronics that were primarily a contemporary updating of the electronic tape techniques began by Varèse in the 1950s. The transition to the compact disc medium allowed for more accurate reproduction of the sounds


² Mason Bates, Rusty Air in Carolina (Unpublished, 2009), Preface.
intended by the composer and has a wider range of dynamic possibilities. However, they all have the limitation of rigid tempo requirements during performance. The conductor and ensemble are required to be the accompanists of the tape and have limited opportunities for tempo flexibility and restricting chances for some elements of spontaneous music creation.

Composers in the last few years have been able to make use of new technological improvements that allow for more power, portability, and flexibility in how electronics are integrated into the performance medium. In his work *Rusty Air in Carolina*, Bates expands on the audio control devices of his predecessors and begins to use some techniques that are advancing the direction of this medium.

There are initial similarities in the setup between Hass and Bates. The speaker use is very similar to the layout recommended by Hass, but a laptop and audio interface is substituted for the prior compact disc player. In *Rusty air in Carolina*, Bates describes the setup:

The piece requires simply two stereo speakers, placed on the left and right sides of the stage, a few onstage monitors, and any kind of laptop. A monitor placed near the conductor, as well as a few additional monitors placed within the orchestra, will help the performers stay in precise tempo with the electronic part.³

The addition of a laptop computer allows for a more inclusive control of the electronics and placing the electronic performer within the performing ensemble. Such control is then assigned to an assistant conductor or a designated person in the ensemble.

An assistant conductor or percussionist triggers the sounds on an electronic drumpad (included with rental of materials), following the instructions in the electronic part in the score. No expertise is required from the “electronic

³ Ibid.
performer,” since the part only involves hitting numbered pads that correspond to rehearsal numbers.\(^4\)

With this change in using the electronics, the electronic performer functions more as an additional instrumentalist and not just an external force that is controlled by a sound engineer removed from the ensemble. Bates places the electronic performer within the percussion section as this matches up with his writing style for the electronic parts. According to Bates, “because the electronic part is primarily ambient . . . a click track is not needed. A live, more performative version of the electronic part can be realized when the composer is present.”\(^5\)

Bates continues with a similar approach to alignment between the electronics and winds, as seen in the works of Mobberley and Hass. While the control for these parts are located within the ensemble, the conductor and other performers rely on audio cues from the main speakers and additional monitors to coordinate these elements. Bates provides detailed instructions within the score, see Figure 1, regarding the equipment needs and their location. “2 high-quality stereo speakers (large enough for decent bass response) – placed on left & right sides of stage, either upstage (preferred) or downstage – under no circumstances should these house speakers be ‘flown’ (suspended high above the stage).”\(^6\)

\(^4\) Ibid.
\(^5\) Ibid.
\(^6\) Ibid.
Bates attempts to make the technical requirements as simple as possible. Many times his works are performed with him in attendance, as the electronics performer, but he also works to make it so that it is not a requirement for the pieces to be performed. To facilitate this, he has included a variety of instructions to assist in the technological logistics:

It is important for the electronic part to be projected in stereo . . . If the speakers are placed upstage, be sure they are mounted high on stands. A high placement (on stands, not “flown”) projects the sound over the orchestra into the house . . . With this placement, you may need to boost higher frequencies so the electronic part has enough “presence” in the house.7

The location of the speakers is a critical decision as the electronics relationship to the ensemble sound is highly influenced by their location. Bates comments, “make sure the

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7 Ibid.
speakers are as close to the orchestra as possible (a tight placement gives a more integrated mix)."\textsuperscript{8}

Many of the compositions by Bates have involved him as the electronics performer but he also includes the means that allows a work to be performed by an ensemble without him being part of it. This requires a reduction in how responsive the electronics are, as the audio becomes a predetermined electronics track and not a live mixing performance as when performed by Bates. Table 2 presents the electronic samples used in \textit{Rusty Air in Carolina}.

\begin{table}[h]
\centering
\begin{tabular}{l l}
\hline
Measure & \textit{Rusty Air in Carolina} Electronic Samples \\
\hline
1-65 & Insect samples (katydids, crickets, cicadas) \\
69-88 & Electronic shakers groove with processed Katydid \\
89-95 & Separated elements with addition of Bass Drum \\
96-107 & Expanded electronic groove \\
108-122 & Change to syncopated groove \\
124-132 & Return of first groove \\
133-144 & Variation of syncopated groove \\
145-157 & Variation of syncopated groove \\
172-200 & Return of first groove \\
230-251 & Pre-dawn rustle, bird calls, cicadas \\
253-262 & Cicadas, crickets \\
263-272 & Fragments of first groove \\
275-276 & Processed katydids \\
\hline
\end{tabular}
\caption{\textit{Rusty Air in Carolina} Electronic Samples}
\end{table}

\textit{Formal Analysis}

\textit{Rusty Air in Carolina} was originally written for orchestra and shortly thereafter transcribed for wind ensemble by the composer. Table 3 lists the instrumentation.

\textsuperscript{8} Ibid.
Table 3. *Rusty Air in Carolina* Instrumentation

<table>
<thead>
<tr>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Flutes (All doubling on Piccolo)</td>
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<tr>
<td>2 Oboes (2\textsuperscript{nd} doubling English Horn)</td>
</tr>
<tr>
<td>2 Bassoons</td>
</tr>
<tr>
<td>Contrabassoon</td>
</tr>
<tr>
<td>Eb Clarinet</td>
</tr>
<tr>
<td>4 Bb Clarinets</td>
</tr>
<tr>
<td>Bass Clarinet</td>
</tr>
<tr>
<td>Soprano Saxophone</td>
</tr>
<tr>
<td>Alto Saxophone</td>
</tr>
<tr>
<td>2 Tenor Saxophones</td>
</tr>
<tr>
<td>Baritone Saxophone</td>
</tr>
<tr>
<td>4 Horns in F</td>
</tr>
<tr>
<td>3 C Trumpets (mutes: straight, harmon, solotone)</td>
</tr>
<tr>
<td>2 Tenor Trombones (mutes: Straight, harmon)</td>
</tr>
<tr>
<td>Bass Trombone</td>
</tr>
<tr>
<td>Tuba</td>
</tr>
<tr>
<td>Electronica</td>
</tr>
<tr>
<td>Percussion (3 players)</td>
</tr>
<tr>
<td>I: marimba, hi hat, splash, bowed crotale</td>
</tr>
<tr>
<td>II: vibraphone, tam tams (low, medium &amp; high)</td>
</tr>
<tr>
<td>III: sus. Cymbals (very high, medium, low), glock, bass drum, xylophone, timpani, log drum</td>
</tr>
<tr>
<td>Harp (optional but preferred)</td>
</tr>
<tr>
<td>Piano</td>
</tr>
<tr>
<td>Double Bass\textsuperscript{9}</td>
</tr>
</tbody>
</table>

I. Nan's Porch

Bates describes the work:

*Nan's Porch* begins at dusk, while the katydids make their chatter. Three orchestral clouds — each inhabiting a different harmony, register, and orchestration — hover in the heavy air, and they ultimately begin to meld together when the cicadas start their singing.\textsuperscript{10}

\textsuperscript{9} Ibid.

\textsuperscript{10} Ibid.
The piece opens with an electronic sample of katydids that continues through the opening section. The electronic sample later adds crickets and cicadas; these three components are the entire electronic elements for the first movement. The opening measure presents a four-note motive in the piano and harp that continually reappear throughout the work. It is set in two pairs of intervals with a G-sharp and D-sharp followed by a C-sharp and A-sharp. The insect sound is mimicked by flutter-tonguing motives in the flutes and muted trumpets that are on the pitch level of E with a mixture of major and minor tonalities. This is set against the clarinets and saxophones sustained harmonies centered on G-sharp minor with the lower saxophones sliding between the chord tones.

The low brass enters with another element in measure 20 presenting a chordal sequence that begins in C and will return throughout the work. The swelling character of this line is joined by the electronic tracks and continues at various pitch levels through the remainder of the movement.

A rhythmic underlying pattern is established at measure 32 with a repetitive sixteenth-note pattern that is six beats in length and is used until measure 46. At this point, the swelling ideas of the insects and low brass is adopted in all the parts and continues being the predominate texture through the end of the first movement.

A transition begins in measure 64 as the percussion and low reeds begin sketching the bluesy groove and the horns, xylophone, and second clarinet present the pitch material that will be the primary components of the second movement.
II. Katydid Country

About *Katydid Country* Bates stated:

The climax of this movement sends us into *Katydid Country*, when the ambience of the first movement evolves into a bluesy, rhythmic tune. The clicks of the katydids become a beat track over which the orchestra, in a smaller, more chamber setting, riffs on a simple tune inspired by old-time blues. It is said that katydids are loudest at midnight, and as the work reaches its central point, the rhythmic katydid music at last finds its melody.\(^{11}\)

This movement is a bluesy concept centered on E that has various ostinato figures in the ensemble; the electronics switch to an electronic generated sound. Measure 89 begins a section where the electronics and winds function in a call and response style that expands in orchestration during this phrase. At measure 108, the melodic ideas are fragmented and presented in a disjointed manner with varying meters and this jagged groove continues until measure 123 where a solo horn sustains a high E and the group returns to the prior bluesy groove. This lasts for eight measures before falling apart into its component parts. The phrase moves up to a pitch center on A and maintains the 4/4 meter while shifting around the beat emphasis. At measure 145, the bluesy groove returns and then is joined by sustained chords in measure 150. These chords start in the horns and are joined by the trombones and tenor saxophones as they build to the peak in measure 157 where the final bits of the bluesy groove ends.

This chord fades away over the next eight measures and returns to the character of the opening with fluttering flutes and horns in measure 165. This interlude develops into a soaring melody beginning in measure 173 that is accompanied by elements of the bluesy groove. This final subsection eventually fades away as the movement concludes.

\(^{11}\) Ibid.
III. Southern Midnight

Movement three is a tranquil section that portrays the evening time while not using electronic sounds. Bates describes this movement:

Soaring over the last breaths of the blues tune, this long-lined melody moves us into *Southern Midnight*. The three distinct textures from the opening return, but now each is brought to life by a phrase of the melody. At the close of this lyrical section, we hover in that strange space between night and day, when only the singing of the first bird alerts us to the approaching dawn.\(^{12}\)

The soprano saxophone becomes the lead voice during the first phrase of this short movement that has elements of the opening movement returning. The flutes and trumpets return to their fluttering calls that move into the trilling cloud of the upper woodwinds starting in measure 205. The low-brass sustained chordal line enters at measure 209 and is mixed with the meandering tenor saxophone figure.

The horns present the third phrase with a flowing melody. This is also the only place in the work where there is written key signature, for D major. This use for a total of twenty measures is a unique element of this work.

IV. Locusts Singing in the Heat of Dawn

Movement four leads from the preceding evening into beginning of dawn and including various samples and electronic sounds. Bates describes this movement:

But it is a hot, Southern dawn, both sparkling and heavy, with the air made rusty again by the buzzing cicadas (popularly called locusts). The bluesy tune begins to

\(^{12}\) Ibid.
creep back into the middle register, while above and below figuration buzzes about in different tonalities.\textsuperscript{13}

The final movement begins with birdcalls and early morning rustling in the electronic samples against a sustained octave that swells into a chord. The bird part is initially marked “bird calling for the sunrise” and leads to the chord appearance in measure 238. This concept is repeated twice more on varying pitch centers before returning to E at measure 252.

The horns bring back the cicadas figure accompanied in the electronics by their sampled calls and joined by muted trumpets and the sliding low saxophone figure. Measure 258 is the return of the opening brass sustained chordal line. The piano and harp chimes in with the opening four note motive in a “quasi solo” passage.

The electronic part begins to sketch out the groove part of the second movement at measure 263 that leads to a return of bluesy groove concept three bars later and carries the piece through to its ending as the work concludes with processed katydid samples fading out into silence.

\textsuperscript{13} Ibid.
Chapter 4


*Christopher Stark – Composer*

Christopher Stark is versatile composer who works in a contemporary classical style and is also involved with the inclusion of electronics. He is currently a music composition student in the doctoral program at Cornell University and includes Steven Stucky and Roberto Sierra as his current teachers.

Christopher was born in Montana in 1980, and received his bachelor’s degree in composition and technology from the University of Montana which included studies with David Maslanka. He continued his studies at the Cincinnati Conservatory of Music where he earned a Master of Music degree. Stark’s studies have also included time at the Freie Universität Berlin during the summer of 2008 and he has worked with noted composers: Samuel Adler, Michael Fiday, Mara Helmuth, Joel Hoffman, Charles Nichols, and Wolfram Wagner.

Stark’s music has been performed at a wide range of ensembles throughout the United States and Europe. He was the winner of the 2007 Cincinnati Conservatory Orchestral Composition Competition for his electric trombone concerto, *Drowning & Shoegazing*, which he premiered with the CCM Concert Orchestra in January of 2008.

Stark has received commissions from the Cornell University Wind Ensemble, English conductor Timothy Reynish and the Montana Music Educators conference.¹

*‘Augenblick’* (2008)

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Christopher Stark approaches the inclusion of electronics into performance art with two concepts. First, he uses pre-recorded audio and live manipulations of those sounds that are coordinated with the live performance. Stark secondly, uses a new approach of incorporating live recording of the ensemble by the manipulation of that captured sound replaying it during the performance. Stark describes his approach to the work:

_Augenblick_, for wind ensemble, tape and real-time signal processing, is a study on the idea of the “instant.” I have always liked the German word for instant (or moment), Augenblick, which literally translates to, “the glimpse of an eye.” The piece originated in the summer of 2008 while I was studying music composition and the German language in Berlin, Germany.

_Augenblick_ moves through different concepts of the “instant” as it unfolds. The opening derives from two dually developing types of music—ambient and brutal—and instantaneously shifts between the two sound worlds. The middle section of the work uses the idea of a captured “instant” by recording short segments of the ensemble in real-time. In this section, the short recorded segments immediately begin playing in reverse after they are sampled. This creates a musical flow that moves both forward and backward simultaneously in a sort of quasi-canon. The piece concludes with the idea of the “instant” as repetition, both in the electronics and the ensemble.  

**Implementation of Electronics in ‘Augenblick’**

The technology setup functions for the performance of the pre-recorded samples and the recording and playback of the captured ensemble sound. The hardware necessary is presented in Table 4.

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2 Christopher Stark, _Augenblick_ (New York: Christopher Stark Publishing, 2008), Preface.
Table 4. *Augenblick* Technology Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laptop with Max/MSP 5 Runtime Software Installed</td>
</tr>
<tr>
<td>Firewire or USB2 Audio Interface with 1 Input (phantom powered)³ &amp; 4 Outputs</td>
</tr>
<tr>
<td>Mixing Board with 4 Inputs &amp; 4 Outputs</td>
</tr>
<tr>
<td>4 Powered Speakers (with enough power to match the volume level of the live</td>
</tr>
<tr>
<td>wind ensemble)</td>
</tr>
<tr>
<td>1 Large Diaphragm Condenser Microphone⁴ with a tall “recording height”</td>
</tr>
<tr>
<td>microphone stand</td>
</tr>
<tr>
<td>4 Short ¼” Patch Cables (balanced if possible)</td>
</tr>
<tr>
<td>1 Long XLR Microphone Cable</td>
</tr>
<tr>
<td>4 Long ¼” Speaker Cables (balanced if possible)</td>
</tr>
<tr>
<td>1 Firewire or USB2 Cable to run Audio Interface into Computer⁵</td>
</tr>
</tbody>
</table>

Stark provides a diagram in the score, see Figure 2, detailing the placement of the hardware setup. This serves as a starting point for determining the best location for the equipment.

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³ A power current that runs through audio cables to power condenser microphones.

⁴ Requires an external power source for an internal electrostatic plate that has high sensitivity to sound waves.

Figure 2. *Augenblick* Electronic Setup

The microphone setup must be placed so that the software can capture an accurate representation of the ensemble. The recommended use of a condenser microphone will get a quality sound though one will need to spend time working out the best placement to
capture the complete ensemble. As the live recording does not overlap with the playback, feedback is not a concern, so the microphone’s relative placement to the speakers does not need to be factored into this decision.

One of the most intriguing elements of the playback system is the use of four speakers to achieve a surround-sound effect during the electronic sections of the performance. The placement of the speakers and the proper levels through the mixing board will facilitate how effective this will be realized. An equal placement of the speakers around the audience, establishing the volume adjustments on the mixer so that an equality of sound is achieved, is critical to these electronics sections.

The computer interface needs only to be a device that has one input and four outputs. With the use of a condenser microphone, the interface does need to provide phantom power for the microphone to work.

The software used for this piece is Max/MSP version 5. It is published by the software company Cycling ’74 who described its history:

Max was first developed for the Macintosh in the mid-1980s at IRCAM by Miller Puckette. In 1989, IRCAM started work on a real-time synthesizer card for the NeXT computer produced by Ariel called the IRCAM Signal Processing Workstation (ISPW). Puckette ported Max to the NeXT and ISPW and added a set of objects to do audio on the card. Max combined with the audio was known as Max/FTS and was widely used at IRCAM and about 30 other centers and individual studios around the world. Max was first released commercially by

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6 Condenser microphones use a highly sensitive diaphragm that requires the use of phantom power.

7 Computer hardware that allows for the input and output of audio signals. Most units are connected by a Firewire or USB2 connection and primarily handle the conversion from the audio equipment’s analog signal into digital for input and vice versa for the sound output.
Opcode Systems, Inc. in 1990. Since 1999 it has been published and supported by Cycling ‘74.\(^8\)

There is a free download version that is completely functional for 30 days. The software is available for Macintosh (OS X 10.4.11 or later) or Windows (XP or Vista OS) computers.

The directions for the technology performer are organized in a very simple manner: Numbers 0-9 in the score are cues for triggering the samples and electronic events. The numbers correlate to the keys on a computer keyboard. SB = Space Bar. When depressed, the space bar acts as a “kill switch” for any audio being produced from the computer.\(^9\) These control all the recorded samples that are cued at various parts in the score with the appropriate number.

One of the most interesting uses of technology in Augenblick is the live recording and processing sections. The control mechanism for this during the performance is marked in the as ‘R’. Stark explains:

When the R key is depressed on the keyboard, any incoming audio from the condenser microphone will be recorded for the duration it is depressed and held. When R is released it will stop recording and immediately begin playing the recorded audio backwards. In the score the down-arrow and the up-arrows indicate the points where R should be depressed, held and released.\(^{10}\)

Stark uses nine pre-recorded sound samples and live recordings of the performing ensemble. They are described as follows:

\(^8\) “History and Background,” Cycling ‘74, <http://cycling74.com/support/faq_max4/#1> (14 March 2010).

\(^9\) Stark, Augenblick, Preface.

\(^{10}\) Ibid.
1 - Pre-recorded sample of audience applause is used to open the piece as the conductor enters the stage.

![Sample 1](image1)

Figure 3. Sample 1

2 - Pre-recorded sample of audience applause, increasing in intensity, until reaching a state of pseudo-white noise continues the opening build effect as the conductor approaches the podium.

![Sample 2](image2)

Figure 4. Sample 2

3 – Pseudo-white noise section of sample 1.aiff filtered through a bank of resonance filters\(^{11}\) (set with a wide Q) matching the pitch content of the ensemble at measure 41.

\(^{11}\) A filter technique that amplifies certain frequencies.
4 – Same as sample 41 except the Q width is tightened on the resonance filters, and the pitch content matches the ensemble’s at measure 58.

5 – Same as sample 58 except the Q width is further tightened on the resonance filters, and the pitch content matches the ensemble’s at measure 73.
6 – Six pre-recorded wind ensemble samples, taken from the pitch material in the brass at measures 131-133, are randomly looped, two at a time, in each of the four speakers.

7 – Sample 131.aiff passed though a ‘glitch’ effect, which rapidly turns the four speakers on and off at a steady 32\textsuperscript{nd} note pulse.
8 – Same as sample 2.aiff, but with a different envelope.

![159.aiff](image)

Figure 10. Sample 8

9 – Pre-recorded sample of the breath noises from measures 162-165, filtered through a bank of resonance filters (set with a tight Q) matching the pitch content of the ensemble at measure 159.

![162.aiff](image)

Figure 11. Sample 9

The first five samples are constructed from the opening audience applause. At the premiere performance this was captured live and this is the source for the material used in the work now. These sounds are used during the opening section of this work where the white noise concept of the samples corresponds well with the textural writing in the ensemble parts.
Samples six and seven are interesting as they make full use of the four speaker setup. The layering of the chords by the electronics in sample six over the ensemble chords push through to the end of this major section. Sample seven takes the preceding material and quickly stutters it through all four speakers. This effect is a retrospective chatter that is then accompanied by the brass chords that build and expand in instrumentation to the penultimate statement. For the final chord resolution, sample eight brings back the opening sound effect that dissolves into a breathy ensemble air sound and is overlaid by sample nine and reinforces the ensemble parts. The final sample is used to fade out the preceding sample over the sustained breath sound of the ensemble.

Formal Analysis

The instrumentation for Augenblick uses common wind ensemble forces and is listed in Table 5.

Table 5. Augenblick Instrumentation

<table>
<thead>
<tr>
<th>Instrument</th>
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</thead>
<tbody>
<tr>
<td>Piccolo</td>
</tr>
<tr>
<td>3 Flutes</td>
</tr>
<tr>
<td>2 Oboes</td>
</tr>
<tr>
<td>English Horn</td>
</tr>
<tr>
<td>Eb Clarinet</td>
</tr>
<tr>
<td>3 Bb Clarinets</td>
</tr>
<tr>
<td>Bb Bass Clarinet</td>
</tr>
<tr>
<td>2 Bassoons</td>
</tr>
<tr>
<td>2 Eb Alto Saxophones</td>
</tr>
<tr>
<td>Bb Tenor Saxophone</td>
</tr>
<tr>
<td>Eb Baritone Saxophone</td>
</tr>
<tr>
<td>4 Bb Trumpets</td>
</tr>
<tr>
<td>4 F Horns</td>
</tr>
<tr>
<td>2 Trombones</td>
</tr>
<tr>
<td>Bass Trombone</td>
</tr>
</tbody>
</table>
Euphonium
Tuba
Double Bass
Timpani
Percussion (5 players)
  I: Marimba, Ratchet, Low Floor Tom, Small Triangle, Large Triangle (from Percussion IV), China Cymbal (from Percussion V), Crash Cymbals
  II: Bass Drum, Snare Drum, (from Percussion IV), Small Suspended Cymbal, Large Suspended Cymbal
  III: Whip, Crotales, Vibraphone, Bongos, Wood Block
  IV: Small Suspended Cymbal, Large Suspended Cymbal, China Cymbal, Chimes (from Percussion V), Sizzle Cymbal
  V: Large Tam-tam, Sizzle Cymbal, Crash Cymbals, Xylophone (from Percussion II), Bass Drum

Augenblick comprises three main sections. In the score, Stark states, “the opening derives from two dually developing types of music – ambient and brutal – and instantaneously shifts between the two sound worlds.”

The first section begins with the entrance of the conductor to the stage and the electronic manipulation of the audience applause sample. This opening part serves as an effective transition into the performance and a subtle introduction into the electronic component of the work. Following the white noise buildup of the opening measure, the ensemble begins the first idea of “ambient” music that is initially constructed of a single C concert that is colored by the woodwind timbres. The alternating color shifts created by the varying entrances and departures of instruments provide an interesting timbral contrast. This is expanded by the addition of the A below in measure 10 and is followed by the first appearance of a triad in measure 15 with the inclusion of E-flat.

\[^{12}\text{Stark, Augenblick, Preface.}\]

\[^{13}\text{Ibid.}\]
The first moving figures of triplet sixteenths in the tenor saxophone against sixteenths in the marimba for the duration of six beats before fading into the sustained harmony of the A and C are introduced. A key feature of this work is contrasting elements as many rhythmic figures are set against each other. Later the work includes cluster harmonies. The rhythmic energy is echoed by tremolo figures that move between the various woodwind parts.

Beginning in measure 21 through 24, a C-sharp is introduced that momentarily establishes an A major chord before fading out of the texture. The following phrase is a change as additional pitches are introduced and creates a chord implying A natural minor without the third. This pitch structure is then taken up by the alto saxophone in measure 26 as a scale pattern with triplet sixteenths. Measure 28 includes a change in the chord structure, while using A, C, D, F, and G that also becomes a scalar passage in the clarinets. The clarinets first have a rhythmic figure of quintuplet sixteenths that are then restated as thirty-second notes. The F and G leave the sustained harmonies in measure 31 and add an E-flat that is also adapted into the moving triplet eights passage with the stopped horns echoing each other by one note. Beginning in measure 27, there is a bass pedal that begins with an E-flat that over the next seven measures moves to D-flat, C-flat and then resolving to F matching with the textural change that begins in measure 33.

The phrase beginning at measure 33 is a return to the sustained textures made up of F and A. This is followed by the addition of D-flat, A-flat, G, and E-flat in the next three measures. The F and A are always present during this phrase as the remaining chordal textures move through varying dissonances and a scalar figure reappears in measure 40. The euphonium has triplet eights outlining a D-flat augmented triad with
emphasis on the repeated F and A. The bass clarinet is moving in sixteenths with an expanded range pattern of A-flat, F, A, and D-flat.

This is interrupted by a ff brass chord marked with the expression of “Brutal” and comprised of a chromatic cluster with a bass of C, omitting the E and A while the electronics return with a white noise sound derived from the measure one material filtered to match this pitch level.

This leads to a subsection that is primarily comprised of “ambient” textures against various scalar passages. The bass clarinet has triplet sixteenths of F, G-flat, and B-flat that is echoed in sustained tones. The next measure reintroduces the solitary C from measure two moved an octave higher and with overlapping rhythmic cells in multiple instruments that also expands to include the A and E-flat. These opposing elements continue through measure 46, while underneath is an ascending brass pyramid consists of E, G-flat, B-flat, and E over two octaves. These pitches become the material for various scalar passages beginning in measure 48. By measure 50, the scale drops the upper E and briefly adds a D to the bottom of the figure. The bottom note becomes a D-flat in measure 51 and centers on the pitch level of E-flat. The pitch material reduces in measure 54 to become rhythmic alterations of D-flat and B-flat. In the next measure, the flutes layer scalar passages using the prior E-flat minor material with the addition of D after six beats. The bass voices move to alternating and overlapping figures of C-flat and G-flat that are again interrupted by a “More Brutal!” cluster chord at measure 58.

The cluster chord is similar to the prior statement with the exclusion of the same E and A, plus the electronics are overlaid with the same white noise concept. The chord is slightly revoiced to create a more compact range with a bass drum attack to start and a
tam-tam crescendo roll during the measure. This chord leads to a sustained chordal passage in the brass in C minor with the appearance of a seventh and ninth in measures 60 and 61. On top of this, the woodwinds quickly build an ascending chromatic pyramid of varying three and four note passages using the same pitch material from the brass chord. This phrase builds to a ff that has its release punctuated by a whip and snare drum rim shot followed by a short silence.

This continues with sustained lines and a scalar figure centered on E-flat with F-sharp and G in its construction while the double bass and piano add a G major chord in harmonics. Measure 65 is a transition through B-flat minor leading to a pitch level of F in measure 66 with elements of major and minor tonality. Another shift in pitch level happens in measure 70 as elements of D major are set against D diminished with varying sustained textures and alternating scalar figures.

This fades away to a few sustained lines that are ended by a “More Brutal Still!!” tutti cluster chord in measure 73. This full ensemble chord has a bass of D and still excludes the E and A while overlaying another white noise section from the electronics. The brass then repeat their chord twice more with a dynamic shape of pp to ff before the next phrase starts with the woodwinds overlaying ascending scalar figures in varying rhythmic patterns and building a C minor chord that adds extensions through the eleventh. Over this background the brass present various groupings of contrasting rhythm and pitch collections. The trumpets and horns use the pitches of B, D-flat, G-flat, and A-flat and the low brass and timpani use the pitches of D, F, G-flat, and A-flat. The rhythmic construction is varied between the instrument sections with the only synchronization of all three elements being beat four of measure 76. The entrances
primarily begin with the trumpets and move through the horns to the low brass, with the horns serving as the transition element as they are paired with the upper or lower brass and a few times being independent. This phrase builds to an abrupt silence in measure 80, and a tam-tam roll leads back into varying chord statements alternating among the various elements of the ensemble. Measure 82 uses a pitch collection of C, D-flat, D, and E-flat while measure 83 moves to F, G-flat, G, and A-flat. This leads to an ascending dissonance in 84 and 85 of B-flat against B moving from the lowest end of double bass and tuba throughout the ensemble to the flute and piccolo.

This first section of the piece concludes with an ascending chromatic passage in the woodwinds that begins with the low reeds and over six measures surges their way through the flutes and piccolo. Underneath this ascending lines are the low brass in octaves set against the trumpets and horns also in octaves with a slow two voice counterpoint that leads to the pitch level of E-flat for the next major section.

About the middle section, Stark explains:

The middle section of the work uses the idea of a captured “instant” by recording short segments of the ensemble in real-time. In this section, the short recorded segments immediately begin playing in reverse after they are sampled. This creates a musical flow that moves both forward and backward simultaneously in a sort of quasi-canon.\textsuperscript{14}

The section starting at measure 93 begins to make use of the electronics for live time recording. The overlaying of material that is live from the ensemble contrasts with the recording of the ensemble presented in a retrograde fashion making for some of the most interesting technology use in the piece and also its most challenging aspect. This section continues in the same tempo but it is important that the tempo of the passage that

\textsuperscript{14} Ibid.
is being recorded stays constant for the playback portion so that the percussion
downbeats align properly. When this works correctly, the recorded ring of the crotales
and chimes in the retrograde playback lead directly into the “forward” statement of the
“live” crotales.

The phrase begins with four chimes from the percussion of E-flat and G. The
ensemble returns at measure 97 and over the next four measures builds a four-note pitch
collection that adds one note per measure. This collection is comprised of E-flat, D, F,
and C presented in that order while the percussion continues with downbeat E-flats. The
winds have a one beat rhythmic cell that is shaped with either a slight crescendo or
diminuendo. A gradual overlapping of the rhythmic patterns introduced each measure
starting with quintuplet sixteenths and followed by sixteenths, triplet sixteenths and
triplet eighths. These layered pulsations end with a sustained chord by four muted
trumpet parts. At the end of measure 102, the electronics performer releases the R key
and the software begins playing back the preceding six bars.

The percussion changes their repeated pitch to G-flat and the ensemble uses three
pitches in this phrase of G-flat, D-flat, and B in a similar manner to the preceding phrase.
The repeated rhythmic cell follows the same dynamic concept though the cell
constructions are different during this phrase. The first pattern is septuplet sixteenths,
followed by eighth notes and then triplet quarters. The eighth-note cells are continuous
and have a contrasting and alternating dynamic pattern of \(mf\) and \(p\) between the voices.
The combined pitch material of the ensemble and the recorded ensemble is illustrated in
Table 6.
Table 6. *Augenblick* Live Recording M. 97-102

<table>
<thead>
<tr>
<th>Measure</th>
<th>Ensemble</th>
<th>Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>Gb</td>
<td>C, Db, Eb, F</td>
</tr>
<tr>
<td>104</td>
<td>Gb</td>
<td>C, Db, Eb, F</td>
</tr>
<tr>
<td>105</td>
<td>Gb, Db</td>
<td>Db, Eb, F</td>
</tr>
<tr>
<td>106</td>
<td>Gb, Db, B</td>
<td>Db, Eb</td>
</tr>
<tr>
<td>107</td>
<td>Gb, Db, B</td>
<td>Eb</td>
</tr>
</tbody>
</table>

In measure 108, the percussion changes to D-flat and the electronics begin recording a new phrase. The concept is the same though a meter change to 3/4 causes the rhythmic partners to shift though they still maintain a two beat relationship. The pitch material for this phrase is B-flat, A-flat, and G with the percussion playing D-flat. The rhythmic patterns for the phrase starting in measure 97 follows: quintuplet sixteenths, sixteenths, triplet sixteenths, and triplet eighths. The end of this phrase results in a sustained chord by the horn section that uses G, A-flat, and C-flat while the percussion continue the D-flat.

The next phrase begins with the playback of the recorded section, and the percussion section returns to E-flat with the addition of an A in measure 114. The ensemble begins a much quicker contrast and battle of rhythms while making use of an expanded pitch collection. The rhythms in measure 115 starts with triplet sixteenths, quintuplet sixteenths, normal sixteenths, and triplet eighths with the same dynamic shaping that has been used in this section. The pitches have more contrast as individual instruments change pitches with each rhythmic cell repetition from a collection of C, D, E-flat, F, G-flat, A, and B. The next measure adds B-flat to the set and then A-flat in measure 117 along with the rhythm cell of septuplet sixteenths.
Beginning in measure 119 the brass return with cluster chords and the recording is short sequences focused on capturing the brass section. The woodwind rhythmic cells thin in texture from the prior phrase rhythmically and harmonically. The woodwinds begin with triplet sixteenths and the pitches D and B-flat in two voices. Two measures later septuplet sixteenths return and the pitch collection adds C and E-flat while measure 122 adds G and quintuplet sixteenths. The final additions to this section is in measure 125 where sixteenths appear and F is added while these groupings continue through measure 133.

The brass cluster at measure 119 uses the same pitches from the earlier “Brutal” chords with the E and A still being omitted. This chord is then played back by the electronics continuing with the retrograde manipulation of the audio. The next brass pyramid in measure 123 is limited to the pitches of C, D-flat, D, and E-flat stated over three octaves. This idea is repeated in measure 125 transposed down with a collection of F, G-flat, G, and A-flat and then further reduced down to B-flat and B in measures 127 and 128. The brass presents a descending sustained pyramid with a pitch order of F, E-flat, D, C, B-flat, G, and E-flat concluding this major section. The electronics return to
the prerecorded clip numbered six that is derived from brass material in measures 131-133 and is randomly looped through all four speakers using two at a time. The ensemble ends in measure 133 and the electronics continue with a wash of sounds during the first fermata. A growing roll from the cymbals and snare drum lead to the next electronic sample cued labeled seven. The sample takes the prior audio clip and sends it through the four speakers while quickly turning them on and off at a thirty-second note pulse.

The final section is described by Stark, “The piece concludes with the idea of the ‘instant’ as repetition, both in the electronics and the ensemble.” This “glitchy” electronic pattern continues through to the peak of the penultimate chordal progression in measure 159. After the third fermata, the low brass begins a simple chord progression of C minor in second inversion, B-flat major in second inversion resolving to E-flat major at a soft dynamic level. This sequence is stated eight more times with the B-flat changing to root position and additional brass joining on each statement before the woodwinds enter on the final two statements. The last three repetitions quickly increase the dynamic level to $mf$ and then to $ff$ as the full ensemble is utilized. The electronics at measure 158 trigger sample eight and overlay the opening white-noise sound from the beginning. The final resolution at measure 162 is quite contrasting as the ensemble is instructed to “finger written pitch while blowing air through instrument” while the electronics supplement this with a prerecorded sample of this effect. The work concludes with a final electronic cue that fades out the audio.

*Augenblick* is a dynamic work that makes use of a variety of new electronic techniques while integrating them into a quality acoustic partnership. This piece serves

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15 Ibid.
as an example of some of the live interaction possibilities that have become available to the performing wind ensemble.
Chapter 5

Steven Bryant, *Ecstatic Waters* (2008)

*Steven Bryant – Composer*

Steven Bryant compositions cover a far range of styles with works for wind ensemble, orchestra, electronic and electroacoustic ensembles. Steven was born in Little Rock, AR in 1972, and received a bachelor’s degree in composition from Ouachita University. After completing his studies, including work with W. Francis McBeth, Steve also studied composition with Cindy McTee from the University of North Texas.

Steven moved to New York City where he was a student at the Juilliard School and studied composition with John Corigliano. While at Juilliard, Steven became involved with fellow composers Eric Whitacre, Jonathan Newman, and Jim Bonney who formed the composer collective BCM International. This diverse collection of composers have created many significant works that are enriching the repertoire.

Bryant’s music has received performances by a variety of performing groups throughout North America, Europe and East Asia. His works have received various awards including two National Band Association’s William D. Revelli Composition Awards for *Radiant Joy* in 2007 and in 2008 for *Suite Dreams*.

A variety of organizations have commissioned works from Bryant, including Indiana University, the United States Air Force Band of Mid-America, and Indiana University of Pennsylvania. Consortia organized by institutions including the University of Texas at Austin, Bowling Green State University, and the Japanese Wind Ensemble Conductors Conference have also sponsored many of his works.
Steven currently lives in Durham, NC, and his 2010 projects include an expansion of his *Concerto for Wind Ensemble* and a Cello Concerto with Orchestral Winds.¹

*Ecstatic Waters* (2008)

This work uses some similar electronic ideas to Christopher Stark’s work though on a larger scale. This piece makes extensive use of pre-recorded sound samples and some live processing effects of real-time sound. Bryant describes many of the underlying concepts of the piece:

Ecstatic Waters is music of dialectical tension – a juxtaposition of contradictory or opposing musical and extra-musical elements and an attempt to resolve them. The five connected movements hint at a narrative that touches upon naiveté, divination, fanaticism, post-human possibilities, anarchy, order, and the Jungian collective unconscious. Or, as I have described it more colloquially: W.B. Yeats meets Ray Kurzweil in the Matrix.

The overall title, as well as "Ceremony of Innocence" and "Spiritus Mundi" are taken from poetry of Yeats ("News for the Delphic Oracle," and "The Second Coming"), and his personal, idiosyncratic mythology and symbolism of spiraling chaos and looming apocalypse figured prominently in the genesis of the work. Yet in a nod to the piece's structural reality - as a hybrid of electronics and living players - Ecstatic Waters also references the confrontation of unruly humanity with the order of the machine, as well as the potential of a post-human synthesis, in ways inspired by Kurzweil.²

Implementation of Electronics in *Ecstatic Waters*

Bryant’s thought on the logistics is that “The technical setup for *Ecstatic Waters* was designed from the beginning to be as simple, robust, reliable, and un-frustrating as

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² Steven Bryant, *Ecstatic Waters* (Gorilla Salad Productions, 2008), Preface.
This fundamental concept has driven many of the technological needs in this piece, and with good results. The desire for a simple technology makes use of many redundancies though an ensemble with access to sufficient technology resources can make some adjustments and still see success. The personal needs for Ecstatic Waters are listed as:

IN PERFORMANCE: you will need one person to trigger the cues on the computer (i.e. press the keys), one person to sit next to him/her, following the score. A third person monitoring the sound levels at the mixer is nice, but not absolutely required. All will be seated in the audience, at the soundboard (preferably in the center of the hall).

This number of people adds many safeguards to performing the electronics correctly though a single person with the proper experience can also cover it. The space available for equipment placement is critical to the smooth operation of this element, as the computer keyboard, score, and volume control need to be easily accessible.

The integration of the electronic sounds with the acoustic sounds from the ensemble is a critical facet of the successful performance of this work. As the composer says:

SOUND MIX: The electronic and acoustic sounds must mesh seamlessly throughout the work. Do whatever is necessary with the speaker placement for your particular hall to achieve this mix. The speakers should NOT be very far from the band (i.e. don’t use a house PA system with speakers far above, or far to the left and right of, the stage).

The placement of speakers in front of the ensemble allows for the fewest logistical challenges of potential feedback from the soloist microphone and less travel distance for

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3 Ibid.
4 Ibid.
5 Ibid.
all the sound cables. The challenge is working to set a balance that creates the integrated sound though also the ensemble will not be able to hear much of the electronic tracks during the performance.

The other option for speaker placement is similar to what was described earlier in Bates composition *Rusty Air in Carolina*. The rear placement of the speakers addresses the challenges of the forward placement setup though brings its own tradeoffs. The speakers need to be placed on stands in order for the sound to come through to the audience with the proper clarity. With speakers behind the clarinet solo microphone, one has to be careful to avoid the potential of the system having feedback and also longer cable runs are necessary to connect all the components.

With either setup it is advantageous to find the simplest means of managing the cable runs between the mixing station, the clarinet, the conductor monitor, and the speakers. A simple aid is using a cable snake with at least four lines to manage the long run between the stage and the mixing station. Being able to run all the cables on stage to a central point and then running the snake from there to the mixing location in the hall is a time-saver for setup.

The final component of the speaker setup is the inclusion of the subwoofer. The placement of this item for sound purpose has more flexibility, as the low frequency output can be treated as being omnidirectional. A location that is convenient for the logistical needs will be the best decider of where to place the subwoofer though it can also be helpful to place in close to the ensemble’s bass voices.
“ONSTAGE MONITORS: OPTIONAL: 1 for conductor, and perhaps 1 for the band (this is up to the conductor’s discretion).”\textsuperscript{6} The desire of using monitors should primarily only matter if the ensemble has placed the speakers in the front of the group. The benefit of the ensemble hearing the groove pattern sections will allow for more comfort and success in coordinating the two elements but increases the amount of equipment required for the performance. This setup also works the easiest if you are using a mixer that has a dedicated monitor output otherwise you will have to utilize a separate main output that duplicates the left and right stereo outputs.

“IN-EAR MONITOR (typically wireless) for the conductor. This is fed a separate, mono channel (from the LAPTOP AUDIO INTERFACE). This is a click-track, and must NOT be audible in the main speakers or normal monitors, ONLY in the IN-EAR.”\textsuperscript{7} This device involves a bit more setup and access to equipment not as common in band programs. The wireless monitor system typically consists of a base transmitter unit that is connected to the outputs of the computer or mixer system. This unit transmits the information to a receiver pack that is worn by the conductor and is connected to an earpiece that plays back the signal. Many have a range of 300 feet, which should be sufficient for most performance venues.

CLICK TRACK: The conductor will wear a single earpiece with click tracks for each of the cues beginning 2-3 bars before the actual entrance of electronic sound. These clicks are notated in the score in the electronics staff. These will only be audible to the conductor, NOT to the band or the audience (if they are, something’s wrong!).\textsuperscript{8}

\textsuperscript{6} Ibid.
\textsuperscript{7} Ibid.
\textsuperscript{8} Ibid.
The click track is only present during sections where the electronics are being used and includes a short lead in to facilitate the coordination of tempo between the ensemble and the electronic tracks. The in-ear monitor signal contains just a click track and rehearsal number markings to aid in tracking the electronics part but this signal does not contain the actual electronic soundtrack. If the conductor wants to hear the electronic soundtrack, it would need to come from the main speakers being setup to double as a monitor or the use of the separate floor monitor by the conductor. The other consideration is that if the main speakers are positioned to allow the conductor to hear the electronic soundtrack then it is possible to perform the work without the use of the in-ear monitor system. This allows for lower equipment requirements and reduces the potential for technological problems, but comes at the expense of the click track helping to align the two elements.

“Mic for solo clarinet (sitting in section) this should be very directional to block out surrounding instruments, and placed as close to the barrel of the clarinet as is comfortable for the player.”\textsuperscript{9} The placement and setup of the solo microphone is crucial to its success. The best choice of microphone is a dynamic microphone\textsuperscript{10} that has a cardioid pickup pattern\textsuperscript{11} as this will lessen the area susceptible to feedback when an appropriate level of gain and positioning is utilized. The live audio is being used only to

\textsuperscript{9} Ibid.

\textsuperscript{10} Dynamic microphones capture a lower sound quality than a condenser but does not require external power.

\textsuperscript{11} A microphone pattern that primarily emphasizes sound from the front of the microphone.
generate the reverb effect, so capturing a studio quality sound is not a critical need. The microphone should be positioned to allow for an acceptable sound from the clarinet while angling the null point to reduce the possibility of feeding back into the audio system. If using a cardioid pattern microphone, angle the microphone so the rear is pointing towards the speakers. Finding the correct location will involve some experimentation as the player’s location relative to the loudspeakers will be a critical factor but the soloist does not need to be moved from their normal placement in the ensemble.

“MIXER (4 channels is sufficient) Mics into the mixer. Send 1 line-level output (direct feed from the Clarinet mic) from the mixer to the Laptop’s audio interface.”¹² Mixer can be omitted but trade off in software control during performance.

“LAPTOP/DESKTOP COMPUTER Software: Ableton Live 7 or later (the demo version will work fine - you do NOT need to purchase this). The required FX plug-ins are included with the package provided with the parts, along with detailed instructions.”¹³

*Ableton Live* is a music production and performance software program that is designed for simple and flexible use in a live performance setting. The program is popular among electronic musicians and DJs as it uses a simple interface that will fit on a typical laptop screen and has the ability to manipulate recorded samples with traditional digital processing effects and also tempo warping. The simple ease of use is a key feature in *Live*’s inclusion in *Ecstatic Waters* as the performer only needs to push indicated keys at the proper time and the performance file from the composer handles the electronic soundtrack performance. Each major electronics section has a number assigned to it that

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¹³ Ibid.
when pressed begins the click track lead in for the in-ear monitor system and proceeds into playing back the actual audio files. Bryant also includes rehearsal cue spots in longer electronic sections to aid during the rehearsal and performance while the audio is also capable of being stopped, at any point, by pressing the spacebar.

The Live file for Ecstatic Waters is linked to the set tempos for the specific section and once loaded into the program and verifying that the outputs are configured properly, the performance is ready to begin. The only modifications necessary are to configure the software outputs to match with the hardware. One optional adjustment that has aided in performances with the speakers behind the ensemble is to add a short delay to the main speakers so that the click track aligns with what the conductor hears. A delay in the range of 30 milliseconds is enough to compensate for the sound delay between the speakers and conductor.

Bryant also recommends that you “have a second computer running the same software as a backup in performance.”\textsuperscript{14} This brings up the point that much of our current technology is more susceptible to having performance glitches. The safest option is to follow his advice and have as much duplication as is feasible. Most complications from the computer deal with software issues so the best preparation is not to make changes to a working system during the rehearsal sequence and have a working backup of the computer software. In general, the least comfortable the performer is with technology, the more prudent it is to have multiple redundancies in the system.

The computer connects to the speakers through an audio interface. Ecstatic Waters requires one input channel and four outputs from the interface and must be

\textsuperscript{14} Ibid.
compatible with Ableton Live. Bryant details the connections as: “IN: 1 line-level send from MIXER above . . . ; OUT: 4 channels: 3-channel mix (L, R, sub) to amplifier . . . ; 4th channel to IN-EAR monitor.”15 The number of connections creates a potential for issues so it is helpful to begin with a checklist or chart sketching the wiring diagram. This facilitates having an accurate equipment list, especially for any needed cords or adapters, and reduces the potential for confusion while connecting the various lines together.

The electronics are used for six main sections. Bryant has packaged them in the Live set as various cues that align with the markings in the score. Many of these sections are also divided into smaller phrases with their own keyboard shortcuts to assist in the rehearsal process. Table 8 presents the major electronic divisions and the subdivisions.

Table 8. Ecstatic Waters Samples

<table>
<thead>
<tr>
<th>Cue 1 – Mvt. II starting at measure 204</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>204-206</td>
<td>Click track intro</td>
</tr>
<tr>
<td>207-212</td>
<td>Oscillations (Stereo)</td>
</tr>
<tr>
<td>213-232</td>
<td>Trombone clusters (Stereo)</td>
</tr>
<tr>
<td>233-243</td>
<td>Glissandos (Stereo)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cue 2 – Mvt. 2/3 starting at measure 255</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>255-256</td>
<td>Click track intro</td>
</tr>
<tr>
<td>257-258</td>
<td>Stereo downbeats with clusters(Stereo)</td>
</tr>
<tr>
<td>259-266</td>
<td>Continuation of above moving to beat (Stereo)</td>
</tr>
<tr>
<td>267-272</td>
<td>Beat pulse with brass calls (Stereo &amp; Subwoofer)</td>
</tr>
<tr>
<td>273-281</td>
<td>Clusters; 16th note pattern (Stereo &amp; Sub)</td>
</tr>
<tr>
<td>282-283</td>
<td>Fade out of 16th note pattern (Stereo &amp; Sub)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cue 3 – Mvt. 3 starting at measure 302</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>302-303</td>
<td>Click track intro</td>
</tr>
<tr>
<td>304-314</td>
<td>16th note pattern (Stereo)</td>
</tr>
</tbody>
</table>

15 Ibid.
315-318  Tone effect fade out (Stereo)

Cue 4 – Mvt. 3 starting at measure 332
332-333  Click track intro
334-342  16<sup>th</sup> note pattern (Stereo)
343-352  16<sup>th</sup> note pattern with descending pitches (Stereo)
353-362  Continue pattern with high pitch material (Stereo & Sub)
363-370  Continue pattern with bass line (Stereo & Sub)
371-377  Continue pattern with high frequency and bass line (Stereo & Sub)
378-389  Continue prior material (Stereo & Sub)
390-394  Clusters and glissando effects (Stereo & Sub)

Clarinet processing starting at measure 394

Cue 5 – Mvt. IV starting at measure 438
438-441  Click track intro
442-447  Quirky, quasi-funky “groove” begins (Stereo)
448-453  Continues (Stereo)
454-461  Continues (Stereo)
462-470  Continues with bass line (Stereo & Sub)
471-479  Groove continues until fade out (Stereo & Sub)

Cue 6 – Mvt. 5 starting at measure 491
Chord (Stereo)
Cue 7 – Mvt. 5 starting at measure 494
Chord (Stereo)
Cue 8 – Mvt. 5 starting at measure 497
Chord (Stereo)
Cue 9 – Mvt. 5 starting at measure 508
Chord (Stereo)
Cue 10 – Mvt. 5 starting at measure 513
Chord (Stereo)
Cue 11 – Mvt. 5 starting at measure 517
Chord (Stereo)

Formal Analysis

Bryant uses a large wind ensemble for Ecstatic Waters. The instrumental forces are detailed in Table 9.
Table 9. *Ecstatic Waters* Instrumentation

<table>
<thead>
<tr>
<th>Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Flutes – 4\textsuperscript{th} doubles piccolo</td>
</tr>
<tr>
<td>2 Oboes</td>
</tr>
<tr>
<td>2 Bassoons</td>
</tr>
<tr>
<td>4 Clarinets</td>
</tr>
<tr>
<td>2 Bass Clarinets</td>
</tr>
<tr>
<td>2 Alto Saxophones</td>
</tr>
<tr>
<td>Tenor Saxophone</td>
</tr>
<tr>
<td>Baritone Saxophone</td>
</tr>
<tr>
<td>4 Bb Trumpets</td>
</tr>
<tr>
<td>4 Horns</td>
</tr>
<tr>
<td>3 Trombones</td>
</tr>
<tr>
<td>1 Bass Trombone</td>
</tr>
<tr>
<td>2 Euphoniums</td>
</tr>
<tr>
<td>2 Tubas</td>
</tr>
<tr>
<td>Contrabass</td>
</tr>
<tr>
<td>Celesta</td>
</tr>
<tr>
<td>Timpani</td>
</tr>
<tr>
<td>Percussion</td>
</tr>
<tr>
<td>Crotales (bow) (Mvt. I)</td>
</tr>
<tr>
<td>Glockenspiel, Marimba, Suspended Cymbal</td>
</tr>
<tr>
<td>Vibraphone, Thundersheet</td>
</tr>
<tr>
<td>I - Crystal Glasses 1 (C, Bb, G, F, D), Tubular Chimes, Triangle, Mahler Hammer, Suspended Cymbal, Tom-tom, Tambourine, Vibes (Mvt. 4)</td>
</tr>
<tr>
<td>II - Crystal Glasses 2 (Bb, A, F), Tam-tam, China Cymbal, Tom-tom, Tam-tam</td>
</tr>
<tr>
<td>III - Crystal Glasses 3 (A, G#, G, F, Ab), Bass Drum, China Cymbal, Tam-tam, Marimba (Mvt. 4)</td>
</tr>
<tr>
<td>Bass Drum (Mvt. II)</td>
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<tr>
<td>Electronics\textsuperscript{16}</td>
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*Movement I. ‘Ceremony of Innocence’*

About the work, Bryant states:

The first movement, *Ceremony of Innocence*, begins as a pure expression of exuberant joy in unapologetic Bb Major in the Celesta and Vibraphone. The movement grows in momentum, becoming perhaps too exuberant - the initial simplicity evolves into a full-throated brashness bordering on dangerous

\textsuperscript{16} Ibid.
arrogance and naiveté, though it retreats from the brink and ends by returning to the opening innocence.\textsuperscript{17}

\textit{Ecstatic Waters} begins with celesta and crystal glasses in a B-flat major tonality that is the primary key center for this movement. This introduction continues for the first twenty-one measures with this quasi solo. Measure twenty-two starts a section marked \textit{brightly}, with the celesta and vibraphone playing a syncopated line lead by the vibraphone while maintaining the B-flat pitch center and primarily using chords consisting of I and V. The winds first enter at measure fifty-two with an extended clarinet line moving down a three octave sequence that is joined by the saxophones.

Measure sixty-three is the first key center move to E-flat major where a trilling idea on E-flat is presented against muted trumpet eighth notes that maintain the B-flat pitch level. These elements continue until measure seventy-nine where B-flat major returns in the celesta and vibraphone.

A transition section leads to a restatement of the earlier clarinet descending line by the horns at a \textit{ff} dynamic and marked “Aggressive and celebratory.” This is also the end of the syncopated vibraphone part, which is replaced by a continuous sixteenth note pattern along in conjunction with the celesta. The next phrase adds the trombones on the descending line and moves through simple progressions consisting of I, IV, and V. In measure 102, the horns introduce an ascending line that is set against the low brass descending line with the trumpets and euphoniums adding a fanfare version. The descending line becomes the primary material by measure 113 as the entire ensemble

\textsuperscript{17} Ibid.
layers this idea and a stepwise version begins to take over at measure 118 at the pitch level of E-flat major.

The climax of the first movement begins building at measure 130 as the stepwise descending line is set against the earlier horn line from measure 103 with the pitch level moving down to A-flat major. The peak is reached in measure 138 with the descending line ending on A-flat and E-flat against the ascending lines B-flat and D.

The oboe and percussion signal the return to B-flat major in the next measure as the celesta and vibraphone bring back their syncopated line starting in measure 142. A solo flute line follows this introduction material and leads to harmonic mute effects in the trumpets that foreshadow the next movement. The movement dissolves to a final chord of hummed fifths on B-flat with a single glass crystal sounding B-flat that continues into the second movement.

Movement II. ‘Augurs’

About the second movement, Bryant states:

In Mvt. II, Augurs, the unsustainable nature of the previous Ceremony becomes apparent, as the relentless tonic of Bb in the crystal water glasses slowly diffuses into a microtonal cluster, aided and abetted by the trumpets. Chorale--like fragments appear, foretelling the wrathful self-righteousness of Mvt. III. The movement grows inexorably, spiraling wider and wider, like Yeat's [sic] gyre, until “the center cannot hold,” and it erupts with supreme force into The Generous Wrath of Simple Men.\(^{18}\)

The second movement contains the first introduction of electronics in this piece and makes use of many extended techniques by the ensemble. The first and third trumpet begin with harmonic mutes closed and proceed to open them as the third part bends the

\(^{18}\) Ibid.
pitch in a slow glissando down a quarter tone and then the trumpets return the mute to a closed sound. In this opening phrase, the crystal glasses sustain chromatic clusters that build to a cluster of B-flat, B three quarters flat, A, and G-sharp. The next statement adds the second trumpet sliding to a quarter tone sharp B as the section continues the closed to open to closed mute concept. The third statement by the trumpets consists of the pitches C, B quarter-tone sharp, and B-flat. The final sequence has no glissando but adds stopped horns for a combined cluster of A-flat, A, and B-flat that pushes into the first aleatoric section at measure 187.

The next section introduces a non-synchronized humming by most of the ensemble that is fluctuating between B-flat and A. The clarinets begin with a four bar sequence of quarter-tone pitch bends before joining the humming line. Slow glissando lines, by trombones in pairs with harmon mutes, are set against an ascending scale pattern in the bassoons and bass clarinets.

The humming part ends at measure 206 as a quick line in the saxophones and clarinets returns to aleatoric concepts until measure 233. The trombones begin a muted oscillating line between B-flat and A that is joined by the first entrance of the electronic part that is mimicking these fluctuations. The electronic echo of the trombones continues until measure 243 as it moves through various dissonant lines and finally dissolves into descending glissandos.

In measure 238, an ascending bass line in the tuba and bassoons enters and is joined by a descending counterpoint in the horns and euphoniums. These lines arrive on a G minor chord at measure 249 that fades away to the trombone oscillation between B-
flat and A-flat while the saxophones introduce quick scalar lines that, after four measures, become an improvisatory cell.

The second electronics cue begins at measure 257 with a pulsating downbeat chord. For the rest of the second and third movement, the electronics serve as various rhythm grooves augmented with additional sound effects and bass line reinforcement. The final section of the second movement starts as various aleatoric ideas are layered and build to the final climax cluster chord at measure 273 that serves as the beginning of the third movement.

**Movement III. ‘The Generous Wrath of Simple Men’**

In regards to the third movement, Bryant states:

Mvt. III is deceptive, musically contradicting what one might expect of its title. While it erupts at the outset with overwhelming wrath, it quickly collapses into a relentless rhythm of simmering 16th notes. Lyric lines and pyramids unfold around this, interrupted briefly by the forceful anger of a chorale, almost as if trying to drown out and deny anything but its own existence. A moment of delicate lucidity arrives amidst this back-and-forth struggle, but the chorale ultimately dominates, subsuming everything, spiraling out of control, and exploding.19

Following the climactic chord that begins the third movement, the percussion and electronics set up a driving sixteenth note rhythmic pulse. The percussion parts are ff muted tom-toms with a dry sound, bass drum, thundersheet, and china cymbals or “something trashy and loud, with a fast decay, such as a metal trash can lid, etc.”20 This

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19 Ibid.

20 Ibid., 31.
percussion line exists for four measures before dropping out and leaving the electronic pattern to continue by itself.

The flutes enter at measure 282 with a staccato *ppp* sixteenth-note repetition, centered on E with occasional additions of F and D, which is shared among the four parts. An ascending *pp* clarinet and bassoon line using major seconds and minor sevenths is layered over the flutes. This passage is joined by a solo oboe in measure 294, which continues this line constructed of similar intervals, initially centered on G-flat major and eventually moving to A-flat major for the next section beginning at measure 304.

The horns and first euphonium take over the main line, and now its overall shape is a descending path from the minor seventh interval with descending seconds and sevenths in both directions. This phrase concludes with a cluster of A, B-flat, and C-flat in accented eighth notes.

Measure 315 brings back the trumpets with repeated sixteenthts, like the earlier flutes, now on the level of B-flat. The clarinets restate their ascending motive, which is taken up by most of the woodwinds in various rhythmic variations leading to measure 334. The flutes return to the sixteenth-note line but it is now constructed of various scale patterns at the pitch level of F major. The trombones and horns handle the thematic material before transitioning to the upper woodwinds in measure 343. The trombones return to the glissando line as clusters layer and build to measure 353. Dissonant muted trumpets and the electronic track lead to a return of the crashing percussion as the pitch level changes to A-flat.

The horns and trombones take over the theme against an electronic and bass drum groove pattern. This two-voice counterpoint moves through G-flat and F with the
trumpets, saxophones, and bassoons joining after measure 371. The motive of ascending minor sevenths and descending seconds is taken over by the full ensemble at measure 378 and set against a bass line counterpoint. This sequence builds to the climax at measure 390 on a G-flat chord that releases to a two-measure fall and fluttering scream followed by the electronics to close out the third movement.

Movement IV. The Loving Machinery of Justice

About the work, Bryant states:

The Loving Machinery of Justice brings machine-like clarity and judgment. Subtle, internal gyrations between atonality and tonality underpin the dialogue between lyric melody (solo Clarinet and Oboe) and mechanized accompaniment (Bassoons). An emphatic resolution in Ab minor concludes the movement.21

The fourth movement begins out of the fading echo of the electronics crash and opens with a solo clarinet that is amplified and processed with a delay effect. This clarinet sound “will leave ‘trails’ of sound softly shimmering and bubbling behind the clarinet solo.”22 The first section of the fourth movement uses a thematic construction based on seconds and major sevenths with free rubato until measure 410.

The next section is marked “Mechanical” and continues the clarinet solo with an eight note accompaniment of bassoons and bass clarinets on the pitch level of A-flat major. The bass clarinets act as an echo against the bassoon duo that in earlier versions of the work made use of amplified bassoons with a strict sixteenth note delay. The phrase continues with the second clarinet echoing the solo clarinet.

21 Ibid., Preface.

22 Ibid., 52.
The pitch level moves to C major at measure 425 and the oboe joins with an inverted thematic statement while marimba provides a sixteenth note pulse. Sustained swells by muted trumpets and trombones enter in measure 431 at a new pitch level of A-flat major. The solo oboe and clarinet begin to synchronize their rhythms, and by measure 433 are moving together. As the oboe concludes, the first flute joins the solo clarinets in octaves and is echoed again by the second clarinet until the section fades away and the electronics return in measure 442.

A walking string bass line accompanies the electronic funky groove underneath the solo clarinet. These lines are joined at measure 448 by more mechanical sounds in the electronics and lower voices that reinforce the rhythmic line. At measure 454, the flute and oboe are added to the clarinet in octaves as the muted trumpets and trombones return with their swelling figures. These lines drop out at measure 460, and the electronics reduce to a click that leads to the dramatic return of the full ensemble two bars later. This syncopated motive is enhanced with the electronic track adding a bass line an octave below the ensemble while the mechanical groove continues between these tutti chords. This climactic section finishes with fading statements of A-flat in the low voices under the mechanical groove of the electronics as the fourth movement ends with a single sustained clarinet.
Movement V. ‘Spiritus Mundi (epilogue)’

About the final movement, Bryant states:

. . . floating seamlessly into the epilogue, *Spiritus Mundi*. Reprising music from Mvt. I, this short meditative movement reconciles and releases the earlier excesses.\(^{23}\)

The final movement begins with the solo clarinet revisiting the thematic material that started the fourth movement. This short retrospective leads to chords by the flutes as the piece moves to C major. The chord progressions return to I and V movements similar to the first movement though with various extensions. When the low brass joins the chords in measure 491, they are enhanced with ethereal chords from the electronics. The oboe and clarinet join in a final pairing accompanied by clarinet chords. A solo flute with electronic chord accompaniment handles the final melodic line and tails into harmon muted trumpets and trombones carrying the G major chord to a final statement by the band humming a full triad and the last electronic chord.

\(^{23}\) Ibid.
Chapter 6

Summary

The advancements of technology since the 1950s and particularly in the twenty-first century have opened many opportunities for electronics being used in current wind ensemble performance. This progression has expanded the range of sounds available to composers while becoming more flexible in their use of electronics while simplifying their technical demands.

The composers in this document have all made use of this expanded sound palette while exploring the various options of combining the electronic sounds with the live performers. The starting point for this genre is the early work of Varèse, which exhibits many of the fundamental concepts that have been adopted in other composers’ works.

The movement from Varèse’s early use of mono tape presented in stereo fashion to the later progression of using compact disc has simplified the performance requirements. These works were dependent on the electronic composition occurring in advance of the performance and resulted in a fixed component that the live performers joined for the performance.

The recent advances in the personal computer, particularly its power and portability, have created an additional opportunity for the use of electronics. The works by current composers have been able to use the flexibility offered by these developments, such as live recording and processing, while exploring new ways of integrating the electronic audio into the live performance.

Bates, Stark, and Bryant have all used the ability to easily and flexibly initiate the electronics to have greater control and precision in coordination between the electronics
and the performing musicians. There has also been the use of sounds manipulated in live time and not being restricted to creating the electronics in advance of the performance. This development is one of the most exciting components in the continued use of electronics with acoustic music. The additional options, in having real time interaction between the elements, are providing many new avenues for performance. As further work continues within this field, there is a wide range of possibilities for composers and performers to expand this evolving area of electroacoustic music.

Recommendations

The expansion and continued development of electroacoustic music is dependent on efforts by the composers and performers. Both parties need to be current on the trends and options as the computer software and hardware companies as well as audio manufacturers develop them.

Several of the composers have cited the need to approach the composition process for electroacoustic music in a new fashion. There is an increased need to define how the electronics fit into the acoustic elements in terms of orchestration and use of additional types of sounds. The composers are creating most of the electronics sounds and this requires having the skills to be fluent in electronic media creation and use. Bates, Stark, and Bryant each are using a different method for controlling the performance aspect of their music and this wide range of approaches is expected during this early development phase, though that presents a variety of challenges. Bryant shares that “a major hurdle is
that there are still a small number of composers who feel comfortable with both media/soundworlds.”

The next major demand is for availability of an electronic performer. Besides the composers creating these works, they are often needed to be involved in the performance. Stark mentions, “the composer is usually present at most performances to ensure their success, which is a downside to using electronics.” This current state is an inhibitor to having performances if the performance is always dependent on the composer being present to operate the electronic element.

The electronic performer needs to have the basic electronic equipment and access to the appropriate sound playback system. Bryant addresses this need:

The other hurdle would be infrastructure - if every hall had a reliable sound system that wasn't just the normal PA speakers, and dedicated staff who understand not only sound reinforcement, but the technological side of audio interfaces and software, then I believe more directors and ‘classically-trained’ conductors and ensembles would take up the challenge.

An ensemble interested in performing the works by Bates, Stark, and Bryant would need to have access to four speakers, one subwoofer, a variety of microphones, a monitor system, sufficient audio, and speaker cables and other accessories which can be a stretch for many performance halls or ensembles. Though given what is possible in the technological world currently, these demands would be anticipated to expand in their requirements.

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1 Bryant, Email Nov. 25, 2009.
3 Bryant, Email Nov. 25, 2009.
The electronic performer would also need to develop the proficiency to handle the variety of electronic performance demands. This includes being able to follow the score while managing the technical performance with regards to the control of the electronic sounds initiation and balance. With many of these works, the balance of the electronic part with the ensemble falls to the electronic performer as the conductor has limited ability to monitor and modify these balances during a performance. Stark echoes these thoughts, “I think people who want to perform these pieces need to understand the technology like they understand the instruments they are conducting or playing. And after that, they must find people who can perform the electronic part accurately.”

These works often have the electronic performer placed in the performance hall so they can monitor the balance. This placement also puts them physically outside the performance ensemble so their communication means are fairly limited with the other performers and conductor. Traditional conducting cues are not as successful when dealing with a critical performer who is located behind the conductor. This leads to the electronics performer having to be extremely dependable and independent or a conductor having to make modifications to their standard technique.

This electroacoustic field places many demands on the ensemble and performers that are anticipated to increase in quantity as new works are added to the repertoire. Stark explains, “audiences seem to be very excited by electronic pieces because they can connect with the technological aspect. That said, they are much less forgiving of any

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mishaps in the electronics.”\textsuperscript{5} The electronics provide many new options to composers but create increasing challenges for the ensemble that will need to be addressed as this field continues to develop in the future.

\textsuperscript{5} Ibid.
Bibliography


Griffiths, Paul. *Groves Music Online*. Varese


Appendix A

Selected Wind Works with Electronics


Bryant, Steven. *Ecstatic Waters*. Austin, TX: Gorilla Salad Productions, 2008. (wind band and electronics)


Jenkins, Joseph Wilcox. *Symphony #5*. (Wind band with synth)


Miller, Thomas. *The Hunchback of Notre Dame*. (wind ensemble, electronic track and film projection)

Miller, Thomas. *Metropolis*. (4 movements) (wind ensemble, electronic track and film projection)


Nilsson, Bo. *Quartets*. New York: Peters, (SATB voice, wind ensemble of different quartets, percussion and tape)


Appendix B

Program Notes

*Ascension* (1988)

*Ascension* was composed for Gary Hill and the UMKC Conservatory Wind Ensemble. It is dedicated to my college roommate Kenneth Wayne Hill, who was killed in action in the Persian Gulf in April, 1988, shortly before I was scheduled to begin this work. It is also lovingly dedicated to his family and to our mutual friends. Kenneth’s volatile, hilarious, energetic, and complex personality formed the basis of my musical ideas, while my own emotional reactions to the news of his death and to the heroic and poignant events surrounding the last day of his life, which were released by the U.S. Marines only very slowly and ultimately in incomplete form, shaped the work’s structure.

Kenneth’s life was often marked by tremendous obstacles, but my lasting memory of him is one of a spirit impossible to keep down. I imagine his life and his death as one grand ascension.¹

Chamber Symphony (1992)

I had another one of those strange interludes that often lead to a new piece. This one involved a brief moment of what Melville called "the shock of recognition": I was sitting in my studio, studying the score to Schoenberg's Chamber Symphony, and as I was doing so I became aware that my seven year old son Sam was in the adjacent room watching cartoons (good cartoons, old ones from the '50's). The hyperactive, insistently aggressive and acrobatic scores for the cartoons mixed in my head with the Schoenberg music, itself hyperactive, acrobatic and not a little aggressive, and I realized suddenly how much these two traditions had in common.

But the Schoenberg symphony provided a key to unlock that door, and it did so by suggesting a format in which the weight and mass of a symphonic work could be married to the transparency and mobility of a chamber work. The tradition of American cartoon music--and I freely acknowledge that I am only one of a host of people scrambling to jump on that particular bandwagon--also suggested a further model for a music that was at once flamboyantly virtuosic and polyphonic. There were several other models from earlier in the century, most of which I come to know as a performer, which also served as suggestive: Milhaud's La Creation du Monde, Stravinsky's Octet and L'Histoire du Soldat, and Hindemith's marvelous Kleine Kammermusik, a little known masterpiece for woodwind quintet that predates Ren and Stimpy by nearly sixty years.²

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Lost in the Funhouse (1994)

Lost in the Funhouse (1994) was completed with a commission from Indiana University celebrating the school's 175th anniversary and is dedicated to Professor Ray Cramer and the I.U. Symphonic Band. The title comes from a collection of short stories by John Barth, where the funhouse provided a metaphor for life. Growing up along the New York-New Jersey shore, I experienced some of the great literal funhouses dotting the beaches' many amusement parks, and Lost in the Funhouse is full of extramusical allusions to these remembered thrills: the first movement suggests the attraction's entrance, complete with pounding heartbeats and sudden slides down trick steps manipulated by some unseen hand; and the second, a series of variations on a chorale, distorts musical statements much like “funny mirrors” do reflections. Listeners can recall their own funhouse experiences in the last movement. Lost in the Funhouse received first prize in the 1994 National Band Association/Revelli Composition Competition and also garnered the 1995 Walter Beeler Memorial Award.

I. CHEAP TRILLS: While gathering the musical materials for the first movement, I had a conversation with a composer friend who admitted an unnatural dislike for Mozart’s cadential trills. Perversely perhaps, I was inspired to go a step beyond Mozart and base entire melodies on this common musical figure. Cheap Trills, therefore, revolves around an alternation between oscillating whole- and half-steps (not unlike the uneven steps of a funhouse).

II. UPON REFLECTION features introductory solos from the oboe and piccolo followed by a chorale, which proceeds through several rhythmic and harmonic variations before returning to and extending the original statement.

III. LOST IN THE FUNHOUSE: The final movement develops the close-knit figures of Cheap Trills into expanding wedges and open harmonies. There is a high-energy exchange between the musicians and the electronic tape, particularly showcasing the percussion.

The electronic portion of this multi-movement piece, which was realized at the Indiana University Center for Electronic and Computer Music, plays an equal, not dominant, role in the ensemble; it expands the timbral and rhythmic palette of the band without eclipsing the brass, woodwind or percussion sections. All in all, the true funhouse for me turns out to be the modern computer music studio, where, in the midst of remarkable technology, almost anything acoustically possible can—and sometime does—happen.³

Rusty Air in Carolina (2006/08)

To begin with: I'm a Virginian. Perhaps to anyone in the Carolinas, the task of conjuring up the rich summer noise of the South and pairing it with orchestral textures should be a job for an authentic Carolinian. But the memories are so vivid from that summer in Brevard, South Carolina — where I spent several months at the music festival there as a teenager — that some sort of hommage seemed necessary, so state pride will have to take a back seat.

Not only did the thick buzzing of cicadas and katydids always accompany the concerts there, but sometimes it was the music itself: on more than one occasion, I remember sitting on the porch of 100-year old Nan Burt and listening to the sounds of summer while she told stories from her long life. This venerable lady was introduced to me by the assistant conductor at the festival, Robert Moody — who, a mere ten years older than me, would become a dear friend and collaborator. When Bob took the helm at The Winston-Salem Symphony recently and asked if I might write a new piece for him, perhaps his own return to the Carolinas inspired Rusty Air. A year later, when Jerry Junkin heard the work, he organized a consortium of Carolina wind ensembles to commission a transcription.

The work uses electronics to bring the white noise of the Southern summer into the concert hall, pairing these sounds with fluorescent orchestra textures that float gently by. "Nan's Porch" begins at dusk, while the katydids make their chatter. Three orchestral clouds — each inhabiting a different harmony, register, and orchestration — hover in the heavy air, and they ultimately begin to meld together when the cicadas start their singing.

The climax of this movement sends us into Katydid Country, when the ambience of the first movement evolves into a bluesy, rhythmic tune. The clicks of the katydids become a beat track over which the orchestra, in a smaller, more chamber setting, riffs on a simple tune inspired by old-time blues. It is said that katydids are loudest at midnight, and as the work reaches its central point, the rhythmic katydid music at last finds its melody.

Soaring over the last breaths of the blues tune, this long-lined melody moves us into Southern Midnight. The three distinct textures from the opening return, but now each is brought to life by a phrase of the melody. At the close of this lyrical section, we hover in that strange space between night and day, when only the singing of the first bird alerts us to the approaching dawn. But it is a hot, Southern dawn, both sparkling and heavy, with the air made rusty again by the buzzing cicadas (popularly called locusts). The bluesy tune begins to creep back into the middle register, while above and below figuration buzzes about in different tonalities.4

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4 Bates, Rusty Air in Carolina, Preface.
Augenblick (2008)

Augenblick, for wind ensemble, tape and real-time signal processing, is a study on the idea of the ‘instant.’ I have always liked the German word for instant (or moment), Augenblick, which literally translates to, “the glimpse of an eye.” The piece originated in the summer of 2008 while I was studying music composition and the German language in Berlin, Germany.

Augenblick moves through different concepts of the ‘instant’ as it unfolds. The opening derives from two dually developing types of music—ambient and brutal—and instantaneously shifts between the two sound worlds. The middle section of the work uses the idea of a captured ‘instant’ by recording short segments of the ensemble in real-time. In this section, the short recorded segments immediately begin playing in reverse after they are sampled. This creates a musical flow that moves both forward and backward simultaneously in a sort of quasi-canon. The piece concludes with the idea of the ‘instant’ as repetition, both in the electronics and the ensemble.  

5 Stark, Augenblick, Preface.
Ecstatic Waters (2008)

Ecstatic Waters is music of dialectical tension – a juxtaposition of contradictory or opposing musical and extra-musical elements and an attempt to resolve them. The five connected movements hint at a narrative that touches upon naïveté, divination, fanaticism, post-human possibilities, anarchy, order, and the Jungian collective unconscious. Or: W.B. Yeats meets Ray Kurzweil in The Matrix.

The overall title, as well as Ceremony of Innocence and Spiritus Mundi are taken from poetry of Yeats, whose idiosyncratic personal mythology and symbolism of spiraling chaos and looming apocalypse figured prominently in the genesis of the work. Yet in a nod to the piece’s structural reality – as a hybrid of electronics and living players – Ecstatic Waters also references the confrontation of unruly humanity with the order of the machine, as well as the potential of a post-human synthesis, inspired by futurist thinkers such as Kurzweil.

The first movement, Ceremony of Innocence, begins as a pure expression of exuberant joy in unapologetic Bb Major in the Celesta and Vibraphone. The movement grows in momentum, becoming perhaps too exuberant - the initial simplicity evolves into a full-throated brashness bordering on dangerous arrogance and naïveté, though it retreats from the brink and ends by returning to the opening innocence.

In Mvt. II, Augurs, the unsustainable nature of the previous Ceremony becomes apparent, as the relentless tonic of Bb in the crystal water glasses slowly diffuses into a microtonal cluster, aided and abetted by the trumpets. Chorale--like fragments appear, foretelling the wrathful self-righteousness of Mvt. III. The movement grows inexorably, spiraling wider and wider, like Yeat’s [sic] gyre, until “the center cannot hold,” and it erupts with supreme force into The Generous Wrath of Simple Men.

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The Loving Machinery of Justice brings machine-like clarity and judgment. Subtle, internal gyrations between atonality and tonality underpin the dialogue between lyric melody (solo Clarinet and Oboe) and mechanized accompaniment (Bassoons). An emphatic resolution in Ab minor concludes the movement, floating seamlessly into the epilogue, Spiritus Mundi. Reprising music from Mvt. I, this short meditative movement reconciles and releases the earlier excesses.
Ecstatic Waters was commissioned by a consortium of American universities and high schools, administered by Bruce Moss at Bowling Green State University.\textsuperscript{6}

\textsuperscript{6} Bryant, Ecstatic Waters, Preface.