TWO ANALYSES AND AN ANNOTATED LIST OF WORKS FOR SOLO TROMBONE

WITH ELECTROACOUSTIC ACCOMPANIMENT FOR USE IN THE COLLEGIATE

STUDIO

by

THOMAS BURNS COX

(Under the Direction of David Zerkel)

ABSTRACT

The purpose of this document is to help trombonists familiarize themselves with the genre of solo trombone music with pre-recorded electroacoustic accompaniment. A survey was taken of trombone instructors in the United States and Canada, asking participants to identify pieces they would recommend for use in a collegiate studio. Two lesser-known pieces not identified in the survey, *Changes: Open Style* (1965) by Larry Austin and *I Was Like Wow* (2004) by Jacob Ter Veldhuis, were chosen to be featured and analyzed in detail in Chapters 2 and 3— the Austin, composed in 1965, represents the older style of electroacoustic music, while the Ter Veldhuis, composed in 2006, is representative of the style in use today. These pieces are included with those that were identified in the survey in Chapter 4, an annotated list of works for trombone and electroacoustic music. In this list, information is provided in order to assist a trombonist who may want to choose a work to study, such as the range, mutes, and extended techniques required to play each work, as well as some information about musical style.

INDEX WORDS: Trombone, Trombone literature, Electroacoustic music, Computer music, Avant-garde, Music analysis, Larry Austin, Jacob Ter Veldhuis, Guide

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Dedication

This document is dedicated to my son, Nathan Christopher Cox, born on December 14, 2010.

the late Gerald Welker, Harry Price, Ken McGuire, Pam Gordon, Mike Dunn, Robert Carter, Don

Hall, the late Judy Latz, and Jack Miller.

Finally, I am compelled to thank my friend Phillip Bloomer for programming Scott

Wyatt's *Three for One* for tuba and tape on his 2009 Master's recital, introducing me to the world

of instrumental solos with electroacoustic accompaniment and providing the initial inspiration

for the topic of this document.

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Chapter 1

Introduction

Electronic music began its development around of the turn of the twentieth century, when

Thaddues Cahill designed an electronic instrument known as the Telharmonium. Controlled by a

keyboard, this enormous instrument made use of "tone wheels" that created sounds using

additive synthesis of sine waves. The Telharmonium's primary form of sound transmission was

through telephone lines—businesses or wealthy individuals would subscribe to the "concert

series" and receive the signal, which they could amplify onsite through use of a primitive

loudspeaker.[1]

The Telharmonium was intended to be able to replicate the sounds of acoustic

instruments, in a manner akin to that of various organ stops.[2] Other electronic instruments with

unique, haunting sounds, such as the Theremin and ondes Martenot, began to appear in the late

1920s. The Theremin, whose pitch and volume was controlled by the proximity of the player's

hands to a pair of antennae, was particularly adept at sounding glissandi. The ondes Martenot

could be played with or without glissandi, as it could be controlled either with a keyboard or a

metal ring sliding along a wire.[3]

Until World War II, electronic music consisted primarily of live performances on

instruments such as those previously mentioned. A few musicians, such as Pierre Schaeffer, had

been experimenting with techniques such as recording everyday sounds and manipulating their

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[1] Peter Manning, *Electronic and Computer Music* (New York: Oxford University Press, 2004), 3-4.

[2] Thom Holmes, *Electronic and Experimental Music* (New York: Routledge, 2002), 44-52.

[3] Holmes, 52-69.

speed and other characteristics through the use of turntables and disc recordings. The composer

could change a sound by altering its speed, cutting off a portion of its duration (such as the

attack, sustain, or decay), or making it repeat.[4] A few well-known composers, such as Darius

Milhaud and Paul Hindemith, also experimented in this genre; Hindemith only went as far as

experimenting with imitation of acoustic instrument sounds, but Milhaud composed a work for

mezzo-soprano, two actors, orchestra, and tape called *La Rivière endormie*.[5] The German

company AEG introduced a machine to make and play back recordings on a magnetic tape in

1935,[6] and in the 1940s, magnetic tape recording technology became readily available to

musicians worldwide. Composers who had been using discs shifted their attention to magnetic

tape, as it was much easier on which to record, erase, and otherwise manipulate sound. Soon, the

first pieces of music using magnetic tape began to appear, often only existing as tape recordings

to be played back in a concert hall.[7]

From the beginning, two factions dominated the prerecorded electronic music world: the

German *elektronische Musik* and the French *Musique concrète*. The school of *elektronische*

Musik was established in 1951 with the foundation of the Cologne Electronic Music Studio.[8]

These composers used sounds that were generated and manipulated by purely electronic means.[9]

The first musical compositions in this style were completed by Robert Beyer and Herbert Eimert

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[4] Barry Schrader, *Introduction to Electro-Acoustic Music* (Englewood Cliffs, NJ: Prentice Hall, 1982), 9-15.

[5] Manning, 11, 37.

[6] Manning, 13.

[7] Holmes, 77-79.

[8] Herbert A. Deutsch, *Synthesis* (Port Washington, NY: Alfred, 1976), 26.

[9] Holmes, 100-104.

in 1953.[10] In France, *Musique concrète* was the accepted style, consisting of sounds taken from acoustic sources and manipulated electronically. The sounds could come from musical instruments or from ordinary nonmusical objects and everyday actions.[11] In both cases, the sounds would often be manipulated by using techniques such as altering the speed of their playback or cutting and splicing.

In other places, such as the United States, electronic composers soon began combining the techniques of *Musique concrète* and *elektronische Musik*, producing composite works of electronic and acoustically-derived sounds.[12] The first American electronic music was created at Columbia University. The institution had purchased a tape recorder in 1951 for the purpose of recording concerts; however, Vladimir Ussachevsky and Otto Luening began using it to experiment with electronic composition. The first concert of this music was held in October 1952 at the Museum of Modern Art in New York.[13]

Soon, music for live acoustic performers combined with taped electronic music was introduced. One of the first pieces of this kind, under development from 1950-1954, was Edgard Varese's *Deserts* for winds, percussion, and electronic tape. However, in *Deserts*, the ensemble and electronic parts are completely independent of each other—they never play at the same

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[10] Otto Luening, "Origins," in *The Development and Practice of Electronic Music,* ed. Jon H. Appleton and Ronald C. Perera (Englewood Cliffs, NJ: Prentice-Hall, 1975) 14.

[11] Holmes, 90-91

[12] Holmes, 105-112.

[13] Deutsch, 27.

time.[14] Other works, such as Schaeffer and Henry's opera *Voile d'Orphée*, appeared around the

same time; these works often featured simultaneous live and taped music.[15]

In his document entitled *A Catalog of Works for Trombone and Electroacoustic Music*,

Douglas Farwell identifies the earliest work for trombone and electroacoustic music as Philip

Corner's *Big Trombone*[16] for bass trombone and tape, composed in 1963. The second work

mentioned by Farwell (the first written for tenor trombone) is *Changes: Open Style* (1965),[17]

which will be analyzed in the present study. The third such work mentioned in Farwell's

dissertation is Jacob Druckman's *Animus I* for tenor trombone and tape (1966/67), which still

remains a vital part of the repertoire.[18]

Music continues to be composed for trombone and electroacoustic accompaniment to this

day. Michael Davis's *Mission Red* (1994)[19] and Mark Phillips's *T-Rex* (1996)[20] are popular

works; even more recent additions to the repertoire include compositions such as Richard

Zarou's *The Smell of Wet Dogs After a Summertime Rain* (2005)[21] and Jacob Ter Veldhuis's *I Was

Like Wow* (2006).[22] More recent works, such as the Davis and Ter Veldhuis, differ greatly in

style from the earlier compositions of Austin and Druckman. These earlier works in the genre

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[14] Holmes, 132.

[15] Holmes, 95.

[16] Published by the composer, 1963.

[17] Published by the composer (Composer/Performer Edition), 1970. Available from the composer. Contact
information available at <http://cemi.music.unt.edu/larry_austin/>.

[18] Douglas George Farwell, "A Catalog of Works for Trombone and Electroacoustic Music*"* (DMA diss., University
of Illinois at Urbana-Champaign, 1998), 17-18. *Animus I* was cited 18 times in the survey taken for the present
work, second-most of any piece; see Appendix I.

[19] New York: Hip-Bone Music, 1994.

[20] Austin, TX: International Trombone Association Manuscript Press, 1996.

[21] Published by the composer, 2005. Available at <http://www.richardzarou.com>.

[22] Published by the composer (Boombox Music), 2006. Available at <http://www.jacobtv.net>.

tend to be very abstract, lacking in identifiable melodies, harmonies, or rhythms and based more

on effects and ambience. The later compositions, however, often borrow characteristics such as

rhythm, melody, and style from music such as jazz, funk, or hip-hop.[23]

Related Literature

Only a small amount of literature exists dealing specifically with music for trombone

and electronics; no existing works attempt to identify specific pieces based on criteria such as

quality or common use. Douglas Farwell's dissertation, *A Catalog of Works for Trombone and*

Electroacoustic Music[24] is the only full-length work devoted specifically to this medium. As its

title suggests, this work mainly serves as an indexed list of all such pieces the author could find,

including pieces composed through the year 1995. Suggestions for choosing and performing this

music are included in the appendices. Also, Thomas Everett's *ITA Journal* article "The Tenor/

Bass Trombone and Bass Trombone Literature with Pre-Recorded Tape" advocates for the

teaching and playing of electronic trombone music and gives some suggestions for preparing and

performing it.[25] Additionally, William Shannon's thesis consists of a an originally-composed

piece called *Aria* for trombone and tape, combined with its analysis.[26]

Far more has been written about avant-garde trombone music in general, often relating

tangentially to the topic of trombone music with electronics. A number of theses and

dissertations catalog performance problems or extended techniques used in avant-garde solo

trombone music. The definitive work in this genre is Stuart Dempster's book *The Modern*

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[23] See chapters 2, 3, and 5 for closer analysis of these characteristics.

[24] Farwell.

[25] Thomas Everett, "The Tenor/Bass Trombone and Bass Trombone Literature with Pre-Recorded Tape," *ITA Journal* 3 (1975), 10-11.

[26] William R. Shannon, "Aria for Trombone and Tape: Composition and Analysis," MA thesis, California State University, Hayward, 1987.

Trombone: A Definition of Its Idioms.[27] In this work, Dempster presents an exhaustive list, with

explanations and recordings, of the kinds of extended techniques required to play the avant-garde

music that helped him achieve great notoriety in the brass community. Other works include John

Bingham's dissertation *The Innovative Uses of the Trombone in Selected Compositions of Vinko

Globokar*,[28] Stan Pethel's dissertation *Contemporary Composition for the Trombone: A Survey of

Selected Works*,[29] and Per Brevig's dissertation *Avant-Garde Techniques in Solo Trombone

Music: Problems of Notation and Execution*,[30] as well as Bill Watrous and Alan Raph's

book *Trombonisms*.[31] Additionally, several other theses and dissertations deal specifically with

the production of multiphonics,[32] a frequently-used extended technique in avant-garde trombone

music. One example is Michael Davidson's dissertation, *An Annotated Database of 102 Selected

Published Works for Trombone Requiring Multiphonics*; Davidson references electronic pieces

including Druckman's *Animus I* and Larry Austin's *Changes: Open Style*.[33]

     Some work has also been completed regarding music for other brass instruments with

electroacoustic accompaniment. In his dissertation, Christopher L. Krummel provides an

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[27] Stuart Dempster, *The Modern Trombone: A Definition of Its Idioms* (Berkeley, CA: University of California Press, 1979).

[28] John Bingham, "The Innovative Uses of the Trombone in Selected Compositions of Vinko Globokar," DMA diss., University of Illinois at Urbana-Champaign, 1984.

[29] Stanley Robert Pethel, "Contemporary Composition for the Trombone: A Survey of Selected Works," DMA diss., University of Kentucky, 1981.

[30] Per A. Brevig, "Avant-Garde Techniques in Solo Trombone Music: Problems in Notation and Execution," Ph.D. diss., The Juilliard School, 1971.

[31] Bill Watrous and Alan Raph, *Trombonisms,* (New York: Carl Fischer, 1983).

[32] The simultaneous sounding of two or more pitches; see Definitions of Terms.

[33] Michael McKenney Davidson, "An Annotated Database of 102 Selected Published Works for Trombone Requiring Multiphonics," DMA diss., University of Cincinnati College-Conservatory of Music, 2005.

annotated bibliography of selected published works for trumpet and electroacoustic music.[34]

Craig Parker covers contemporary literature for trumpet alone as well as trumpet with tape.[35]

Randall Faust's dissertation consists of three original pieces for horn with electronic music with

an explanation of techniques.[36] Neal Corwell covers music for euphonium and tape (Corwell is

also a significant composer in this genre).[37] Kevin Jenkins, in his dissertation, analyzes seven

compositions for tuba with electroacoustic music,[38] and David King, in his thesis, provides an

annotated bibliography of such music for tuba.[39] The list in the present document is not intended

as an exhaustive annotated bibliography such as these; it will be more selective but also more

descriptive of each work.

      In addition to the works mentioned above that include analyses, some other research has

been conducted focusing on analysis of electronic music or analysis of avant-garde music

including music with an electroacoustic component. For example, John Coe's dissertation, *A*

Study of Five Selected Contemporary Compositions for Brass, includes an analysis of *Animus*

[34] Christopher Krummel, "Trumpet and Electro-Acoustic Music: An Annotated Bibliography of Selected Published Works," DMA diss., University of Illinios at Urbana-Champaign, 1997.

[35] Craig Burwell Parker, "A Survey and Analysis of Contemporary Solo Literature for Unaccompanied Trumpet and Trumpet with Tape," MA thesis, University of California, Los Angeles, 1976.

[36] Randall Edward Faust, "A Comprehensive Performance Project in Horn Literature, with an Essay Consisting of Three Original Concertpieces for Horn and Electronic Media, an Explanation of Techniques Used, and a Listing of Relevant Literature," DMA diss., University of Iowa, 1980.

[37] Neal Lynn Corwell, "Original Compositions for Solo Euphonium with Tape," DMA diss., University of Maryland College Park, 1997.

[38] Kevin Joseph Jenkins, "A Study of Seven Compositions for Tuba and Electronic Sound Source," DMA diss., Arizona State University, 1995.

[39] David Marshall King, "An Annotated Bibliography of Music for Tuba and Electronic Tape," MM thesis, Bowling Green State University, 1989.

I for trombone and tape by Jacob Druckman.[40] Cindy Cox also provides an analysis of her own

work *Hysteria* for trombone and tape in an essay published in *Organised Sound*.[41]

　　　　A few other music researchers have created methods for analysis of electroacoustic

music. William Moylan's dissertation, *An Analytical System for Electronic Music* is one

example. Moylan's method focuses on identifying the salient structural aspects of a piece—

whether the organization of the piece hinges on timbre, texture, melody, or another aspect of

music—and graphing these elements over the course of a major section or of the entire piece.[42]

Other systems have been developed and used by Judith Lochhead [43] and David Cope.[44] Cope's

method focuses on elements readily identifiable by listeners inexperienced in electronic music.

Lochhead's method, which she used in her analysis of Barbara Kolb's piece *Millefoglie* for

chamber ensemble and electronic tape, focuses on identifying key elements of structure (timbre

and texture in the case of the Kolb piece), labeling various sections and occurrences of those

elements, and creating graphs and charts of them. A few researchers have also attempted,

through analysis, to create notation systems for electroacoustic music. Brian Fennelly's

dissertation, *A Descriptive Notation for Electronic Music*, proposes a system that would be

[40] John W. Coe, "A Study of Five Selected Contemporary Compositions for Brass," DM diss., Indiana University, 1971.

[41] Cindy Cox, "Wounds Like Flowers Opening: A Discussion of *Hysteria* for Trombone and Four-Channel Tape," *Organised Sound* 8, no. 1 (2003), 85-87.

[42] William David Moylan, "An Analytical System for Electronic Music," DA diss., Ball State University, 1983.

[43] Judith Lochhead, "Texture and Timbre in Barbara Kolb's *Millefoglie* for Chamber Orchestra and Computer Generated Tape," in *Engaging Music: Essays in Music Analysis,* ed. Deborah Stein (Oxford, UK: Oxford University Press, 2005), 253-272.

[44] David Cope, "The Mechanics of Listening to Electronic Music," *Music Educators Journal* 64, no. 2 (1977), 47-51.

consistent and descriptive, but not very useful to show performers what is occurring in real time.[45]

Further, some general works on both trombone and electronic music are relevant to the present investigation. Trevor Herbert's book *The Trombone* contains some commentary on the present state of the instrument's use, including music with electronics and other avant-garde works.[46] Gordon Mumma's essay in the book *The Development and Practice of Electronic Music* sheds some light on the early history of electroacoustic music with live instruments.[47] Simon Emmerson's essay "Combining the Acoustic and the Digital: Music for Instruments and Computers or Prerecorded Sound" covers more philosophical aspects of music that combines live acoustic and electronic elements.[48] Elliott Schwartz, in *Electronic Music: A Listener's Guide*, devotes an entire chapter to music with live and fixed electronic components, comprehensively covering the psychological as well as physical aspects of this type of music through use of many specific examples.[49] *In Understanding the Art of Sound Organization*, Leigh Landy addresses the place of "mixed music" (music for live acoustic instruments and electronic playback together) between the extremes of "traditional concert practices" and "sound-based music."[50] Barry Schrader, in the text *Introduction to Electro-Acoustic*

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[45] Brian Leo Fennelly, "A Descriptive Notation for Electronic Music," Ph.D. diss., Yale University, 1968.

[46] Trevor Herbert, *The Trombone* (London: Yale University Press, 2006).

[47] Gordon Mumma, "Live-Electronic Music," in *The Development and Practice of Electronic Music,* ed. Jon H. Appleton and Ronald C. Perera (Englewood Cliffs, NJ: Prentice-Hall, 1975), 286-335.

[48] Simon Emmerson, "Combining the Acoustic and the Digital: Music for Instruments and Computers or Prerecorded Sound," in *The Oxford Handbook of Computer Music,* ed. Roger T. Dean (Oxford, UK: Oxford University Press, 2009), 167-188.

[49] Elliott S. Schwartz, *Electronic Music: A Listener's Guide* (New York: Praeger, 1973), 102-128.

[50] Leigh Landy, *Understanding the Art of Sound Organization* (Cambridge, MA: The MIT Press, 2007), 154-155.

Music, provides descriptions of a list of live/electronic works, including Varese's *Deserts* and Druckman's *Animus II*, for soprano, two percussionists, and tape.[51]

Others have made contributions such as annotated bibliographies of electroacoustic music for trombone and other brass instruments, analyses of electroacoustic music for brass instruments, and systems of analysis for electroacoustic music in general. This work, however, will be unique for two reasons. First, it will include an annotated list of only certain compositions for trombone and electroacoustic music selected based on a survey of the trombone instructors who have taught, performed, and heard them, and the list will include more information than the average annotated bibliography—information designed to assist a musician unfamiliar with this type of music who may wish to choose a work to perform or assign. Also, it will focus solely on analysis of electroacoustic music with trombone, and attempt to draw some conclusions regarding the development of the style in this genre of music over time.

Need for the Study

Music for trombone with electroacoustic accompaniment, and avant-garde music in general, is underrepresented in the collegiate training of most trombone students. This may be a self-perpetuating tendency—many trombone instructors have not had much experience with the music themselves, and thus tend not to encourage students to play this music. For example, out of 66 respondents to the survey conducted for this project,[52] 37 indicated that they had not used music for trombone and electronics in their own teaching. When a student shows interest in electroacoustic music, the instructor is likely to oblige, but the same pieces are often assigned,

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[51] Barry Schrader, *Introduction to Electro-Acoustic Music* (Englewood Cliffs, NJ: Prentice-Hall, 1982), 160-176.

[52] See p. 13 for a description of this survey. See Appendix for results of survey.

such as Druckman's *Animus I* for tenor trombone and tape[53] and Ross's *Prelude, Fugue, and Big Apple* for bass trombone and tape.[54]

Music for trombone and electronics is very different in sound and effect from the recital repertoire for trombone with piano or other acoustic instruments. For example, music with electroacoustic accompaniment is much more likely to call for extended techniques than music with other forms of accompaniment.[55] The change-of-pace that this music offers can prove to be entertaining, and the extended techniques present unique challenges for advanced trombone students. It is for these reasons that this intriguing form of sonic art is a crucial part of an experienced trombonist's repertoire, and therefore needs to be taught at the collegiate level.

This study will attempt to help the trombonist or trombone instructor become familiar with the repertoire of electroacoustic music featuring a live solo trombone, including specific pieces that have been used by trombonists who are very familiar with the genre and assign or perform these works often. In this way, the goal of this project is to encourage more trombonists to take up the study and performance of avant-garde music with electroacoustic components.

Methodology

For Chapters 2 and 3 of this document, two works are analyzed in detail: Larry Austin's *Changes: Open Style* and Jacob Ter Veldhuis's *I Was Like Wow.* These works were chosen to provide representatives of the older, more abstract style of electroacoustic music (Austin) and the newer style often influenced by elements taken from popular music (Ter Veldhuis). The Austin was chosen because of its position as the first (according to Farwell) piece composed for tenor

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[53] Jacob Druckman, *Animus I* (New York: Boosey and Hawkes, 1967), originally published by MCA Music.

[54] Walter Ross, *Prelude, Fugue, and Big Apple* (New York: Boosey and Hawkes, 1977).

[55] See Definitions of Terms section for explanations of these techniques.

trombone and tape. The Ter Veldhuis was chosen in particular because it is a newer work that was not mentioned in the responses to my survey (see p. 13), but has been gaining popularity and, as will be shown in Chapter 2, is a piece that could be used in a collegiate teaching studio. *Changes: Open Style* and *I Was Like Wow* were analyzed using a model influenced by the methods of John Coe, David Cope, and Judith Lochhead;[56] a section of Performance Considerations follows the theoretical analysis of each piece.

Coe's method is comprehensive and thorough; his analysis of *Animus I* is organized by musical elements, with separate sections devoted to descriptions of the form, texture, pitch materials, timbre, dynamics, rhythm, range, endurance, technical problems, notation, and ensemble performance problems in the piece. The analyses presented in this study draw somewhat from those of Coe in that all of these elements were considered in order to determine which aspects of the Austin and Ter Veldhuis pieces were the most salient; however, these analyses do not spend time on the elements that were not deemed important to the musical and formal processes of each piece.

Despite its relative simplicity, Cope's method warrants inclusion here because the target audience of this paper consists partially of trombonists or trombone instructors who may wish to begin looking at solos with electroacoustic accompaniment but have little background. He instructs students to use the criteria of Direction (flow or increase of tension), Climax (the result of direction—the section that is the highest, loudest, fastest, or otherwise most intense), Mood (a noticeable regularity of an idea such that a constant "feel" can be ascertained), Drama (suspense, a surprising turn or "shock"), and Style (a consistent approach to the syntax of music grammar)

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[56] See pages 7-8.

to evaluate an electronic piece upon first listening (each criterion is given a score from 1 to 5, with 5 being the highest or most prominent).[57] These are characteristics that are easily identifiable even for those with virtually no experience in the medium of electroacoustic music, and they encourage the listener to listen closely and think critically about the music. Ratings based on those criteria are included at the beginning of each analysis.

The use of charts indexed by time is key in making Lochhead's analysis easy to interpret, and thus influences the decision to incorporate her method here.   Texture and timbre, the elements she uses to describe formal processes in her analysis, also prove to be vital to an analytical understanding of both the Austin and Ter Veldhuis pieces. Several aspects of Lochhead's analytical method have been borrowed and customized for use with the works analyzed in the present document. These include the taxonomy of various textures and timbres heard, assigning labels to those sounds, and using those labels to make quick-reference charts to plot the formal development of the music.

A set of ratings based on Cope's model is shown at the beginning of Chapters 2 and 3 for the piece to be discussed, followed by a prose analysis influenced by Lochhead and Coe. Subsequent to this theoretical and structural analysis is a section on performance considerations; this section is written for a target audience of trombonists or trombone instructors who may perform the piece or assign it to a student. Recommendations are made and explanations given as to the appropriate type of performer and setting for each piece.

In order to decide on the pieces to include in Chapter 4, a survey was designed and sent to trombonists across the United States and Canada to determine which works they had used.

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[57] Cope, 48.

Using the College Music Society's *Directory of Music Faculties in Colleges and Universities*[58] and the websites of the college and university music departments contained therein, a list was constructed of college and university trombone and low brass instructors to whom a survey was sent via e-mail. Prospective survey participants were identified as all non-adjunct instructors/ professors who are identified as instructors or professors of "trombone" or "low brass," plus other trombonists who are suggested by those people as ideal participants particularly knowledgeable about the literature in question. The survey contains four questions:

1. Have you used music for trombone and electroacoustic accompaniment in your teaching studio? If so, what pieces have you used?

2. Have you personally performed music for trombone and electroacoustic accompaniment? If so, have you played any that you would recommend for use in a collegiate teaching studio?

3. Have you heard others perform music for trombone and electroacoustic accompaniment? If so, have you heard any that you would recommend for use in a collegiate teaching studio?

4. Can you recommend any other people who would be well-suited to answer this survey of whom I may not be aware?

This survey was sent via e-mail to all potential participants, and a reminder sent approximately one week later to those who had not yet responded. From the 66 responses, a spreadsheet was constructed listing all pieces named and the number of participants who mentioned each piece. An annotated list was constructed using these pieces. This list includes

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[58] College Music Society, *Directory of Music Faculties in Colleges and Universities, U.S. and Canada* (College Music Society, 2009).

information such as date of composition, publisher, type of notation used in score, accompaniment type, method of synchronization with the accompaniment, range/tessitura, and extended techniques required for performance. The full results of the survey are also included as an appendix at the end of the document.

Delimitations

This study focuses on works of music for trombone solo with pre-recorded electroacoustic accompaniment that have been published and recorded or performed in recital by trombonists or trombone students. This study does not include music for multiple instruments, instruments other than trombone, trombone with multiple accompaniment sources, or music that utilizes live sound processing, nor does it attempt to cover all music ever composed for trombone with electroacoustic accompaniment.

Organization of the Study

The document is divided into seven chapters with one appendix:

I. Introduction

II. Analysis of Austin: *Changes: Open Style*

III. Analaysis of Ter Veldhuis: *I Was Like Wow*

IV. Annotated list of works recommended in survey

V. Conclusions and recommendations for further study

Appendix Full results of survey

Range Designations

When a specific pitch, rather than pitch class, is indicated (such as when providing information on the range of a certain musical work), octaves are identified as follows:
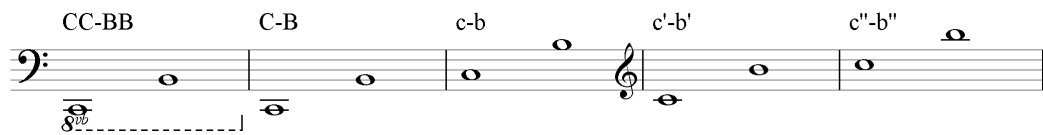
Definitions of Terms

The following terms are used throughout the document:

bucket mute: a mellow-sounding mute consisting traditionally of a bucket filled with batting that clips onto the outside of the bell; some newer versions fit inside the bell.

circular breathing: a technique used to play continuously while breathing; involves inhaling through the nose while expelling reserved air from the mouth.

cup mute: a mute resembling a straight mute, but with a large cup attached to the end facing the bell; produces a sound that is more mellow than that of a straight mute..

extended technique: any technique of producing sound or influencing the sound produced on the trombone that is different from the normal method of tone production (i.e. buzzing the lips through the mouthpiece and fully constructed instrument, articulating the pitch with the tongue, manipulating the slide with the right hand and the F- and/or other attachments with the left thumb and fingers, and using ordinary mutes, such as straight and cup mutes, in the bell of the instrument).

flutter tongue: a method of influencing the trombone sound by performing an unvoiced alveolar trill (rolling the tongue on the roof of the mouth) while playing.

Harmon mute: the brand name by which the "wah-wah" mute is most commonly known; this is a

hollow bulbous aluminum mute with solid cork strip blocking all air from exiting the bell

directly. Includes a removable stem; when the stem is inserted, a "wah-wah" effect may

be obtained by stopping (opening and closing) with the hand.

microtones: pitches whose pitches lie in between those of the 12-tone equally-tempered scale.

multiphonics: production of two pitches through the trombone simultaneously; one pitch is

played, while the other is sung.

pixie mute: a small straight mute that fits high in the bell, often used in conjunction with a

plunger.

play BB on tenor trombone: the act of playing this pitch on a standard tenor trombone with

F-attachment is an extended technique; the F-attachment slide must be extended far

enough (possible on some instruments) to produce an E-attachment, or, if this is not

possible, the pitch must be lowered with the embouchure.

play with F-attachment slide removed: remove tuning slide from F-attachment; when not using

the attachment, the trombone plays normally, but with trigger depressed, air escapes from

open F-attachment tubing creating a muting effect and different slide positions must be

learned.

plunger: the rubber end of a toilet plunger used as a mute, held in place with the left hand while

playing; can be opened and closed over the bell to produce a "wah-wah" effect.

rip across partials: produce a portamento effect by moving from one pitch to another across

multiple partials without articulating; usually involves a large leap.

straight mute: a standard orchestral mute; hollow, cone-shaped, made of metal or fiber, and with

corks that allow some air to exit the bell directly.

traditional notation: notation as used in most music of the common-practice period with a 5-line

staff, G, C, or F clef, and measured notation.

valve trill: rapidly press and release F-attachment trigger to create a trill.

vowel change: create different timbres by changing the shape of the oral cavity and throat while

playing.

Chapter 2

Analysis of *Changes: Open Style* by Larry Austin

Direction: 1.5; Climax: 2; Mood: 4; Drama: 1.5; Style: 4.5

Larry Austin was born in Duncan, Oklahoma, in 1930. He studied at the University of

North Texas, Mills College, and the University of California-Berkeley before serving on the

faculties of the University of California-Davis (1958-1972), the University of South Florida

(1972-1978) and the University of North Texas (1978-1996). Austin has been a composer-in-

residence on both sides of the Atlantic, and he has composed many acoustic works (including a

realization of Charles Ives's unfinished *Universe Symphony*) as well as more than eighty pieces

of electroacoustic or computer music. Austin currently resides in Denton, Texas[59].

Austin composed *Changes: Open Style* in 1964-1965 in the electronic music studio at the

American Academy in Rome and at the San Francisco Tape Music Center. According to Douglas

Farwell's annotated bibliography of works for trombone and electroacoustic music, *Changes* was

the first work to be composed for solo tenor trombone and tape.[60] The piece was commissioned

and premiered by trombonist/composer Dary John Mizelle. Stuart Dempster performed it for the

first time in California in a concert of avant-garde trombone music on June 24, 1966, at the San

Francisco Tape Music Center. A recording of that concert was broadcast on KPFA radio on

August 11, 1966.

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[59] Larry Austin, "Larry Austin's Home Page," University of North Texas, http://cemi.music.unt.edu/larry_austin/index.htm (accessed April 14, 2011).

[60] Farwell, 17-18

According to the composer, the title *Changes: Open Style* refers to the chord changes employed in jazz and the "open" style in which jazz players improvise. Austin did not intend any other programmatic aspect[61]. The idea of jazz improvisation is reflected throughout the piece—it often exhibits an improvisatory feel, and several of the recurring motives (such as the fast note group and repeated note motives) resemble phrases in a jazz style.[62] Timbre and texture are important features of *Changes* (such as the features brought out in Lochhead's analysis cited in Chapter 1), in that its sections each have a characteristic timbre or texture, and that these can generally be heard to change at each break between sections. However, discrete, repeating timbre-texture types are not readily identifiable across the piece; instead, recurrences of similar motives and sounds serve to unite the work. A listing of recurring motives or musical ideas that are heard in *Changes* may be found in Table 2.1.

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[61] Larry Austin, e-mail message to author, July 4, 2010.

[62] The rhythms are very free and unmetered, but the fast note groups and repeated note motives resemble phrases that may be improvised by jazz musicians—perhaps in the manner of "free jazz," which is not the most mainstream of jazz styles, but was itself derived from more more conventional ones.
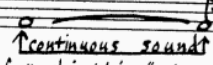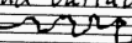
Table 2.1: Recurring motives in *Changes: Open Style*

Motive	Description	Part	Initial Entrance
Inhale	Trombonist makes whistling sound by inhaling air from trombone through slightly pursed lips.	Trombone	0'01"
Trombone cluster	Cluster chords consisting of trombone sounds.	Tape	0'04"
Bang	A metallic banging sound.	Trombone, Tape	0'05"
Kiss	Trombonist makes kissing noise through trombone.	Trombone, Tape	0'15"
Fast note group	A group of different notes played in rapid succession.	Trombone, Tape	0'32"
Fade out	A note decrescendos and fades out to a buzz or stream of air.	Trombone	0'38"
Slow note group	A group of notes played slowly.	Trombone	0'40"
Foghorn	A very low-pitched sound, perhaps a trombone sound slowed down on the tape. May or may not be a continuous pitch.	Trombone, Tape	0'46"
Multiphonic	An isolated note with traditional played/sung multiphonics or "split tone."	Trombone	0'46"/1'03"
e-Cymbal	A sound on the tape resembling a suspended cymbal roll.	Trombone, Tape	0'49"
Rip	A rip across partials usually accompanied by a change in dynamic.	Trombone	0'58"
Interference	Sounds resembling radio interference or static.	Trombone, Tape	1'00"
Mouthpiece slap	A slapping or banging sound created by hitting the trombone mouthpiece with the open palm.	Trombone, Tape	1'01"
Repeated note	A note is rearticulated multiple times in quick succession.	Trombone	1'27"
Fade in	A note begins with a buzz or stream of air, and fades into an actual sounding note.	Trombone	1'41"

Another important characteristic of *Changes* is the non-traditional notation used in the score. Austin provides a page of instructions for interpreting this unique notation system, including execution of the many extended techniques required. This page is reproduced as Figure 2.1.

The left and right speakers (A+B) of the magnetic tape are synchronize[d] exactly with the trombone notation both by graphic representation of the tape sounds as they occur and by centimetric guide lines Each centimeter of visual space from left to right represents on[e] second of time, there being 20 seconds per system, 3 systems per page and a total of 9 pages or 9 minutes.

Note durations:

a. ○ = sustained note

b. ♪ = short, detached note

c. Durational gradations are obtained by the use of the conventional tie; e.g. ○———○ (continuous sound)

d. ⊙ or ⊙ = blowing a stream of "whistling" air through the trombone

e. ♪ or ♪ = drawing air from the trombone through relaxed, moist and slightly pursed lips, creating — through practice — a single, extremely high and variable pitch represented graphically as, e.g.,

f. ♪ = "smacking" or "kissing" the mouthpiece to produce popping effect.

g. ⊙⊙ or ⊙⊙ = "buzzing" into mouthpiece   h. □ or □ = hummed tone

i. ◇ = difference and/or split tone   j. ♪ = flutter or breaking tone

k. Groups of notes are phrased together but are not necessarily rhythmically conjunct.

Pitch determination:

a. ○ = "white" note or "natural" pitch, C.

b. ♭ = "black" note or "sharped" pitch, C♯. (raised 1 semitone)

c. ○ = pitch raised ¼ tone, C↑♯   d. ♪ ○ = pitch lowered ¼ tone, C↓

e. ♪ = unspecified pitch

Figure 2.1: Page of instructions included with *Changes: Open Style*

Changes can be divided into seven major sections, with each division marked by a clear change in style accompanied by a short silence or sudden shift in timbre. Table 2.2 shows the

locations of these sections in the music.[63] As each new section begins, it is accompanied by a

feeling of a fresh musical start, not unlike the feeling that a listener may find at the beginning of

a new chorus within an improvised jazz solo. Sections may be distinguished from each other by

differences in level of rhythmic activity, direction, relationship between trombone and tape, and

other factors.

Table 2.2: Major divisions in *Changes: Open Style*

Section	Start Time	Duration
I	0'00"	1'00"
II	1'00"	1'10"
III	2'10"	1'20"
IV	3'30"	1'30"
V	5'00"	1'50"
VI	6'50"	1'00"
VII	7'50"	1'10"

Section I

Section I is dominated by the tape, and it includes the introduction of almost every

recurring motive heard in the piece. The beginning is one of two passages in the piece in which

traditional trombone sounds, unaltered in pitch or timbre, are used on the tape. These trombone

sounds are used to form closely-harmonized chords (the "trombone cluster" motive; its first

appearance is shown in Figure 2.2) juxtaposed with sustained, electronic "space-age" sounds for

the first half (approximately 30 seconds) of Section I. A metallic "bang" sound is also heard

early in this section. Later in Section I, the trombone sounds are no longer heard on the tape

part; only "e-cymbal" and a more resonant pitched electronic sound occur.

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[63] Time indexing here follows the composer's indications of time in the score. Each system is marked off in seconds, with twenty seconds per system and one minute per page.
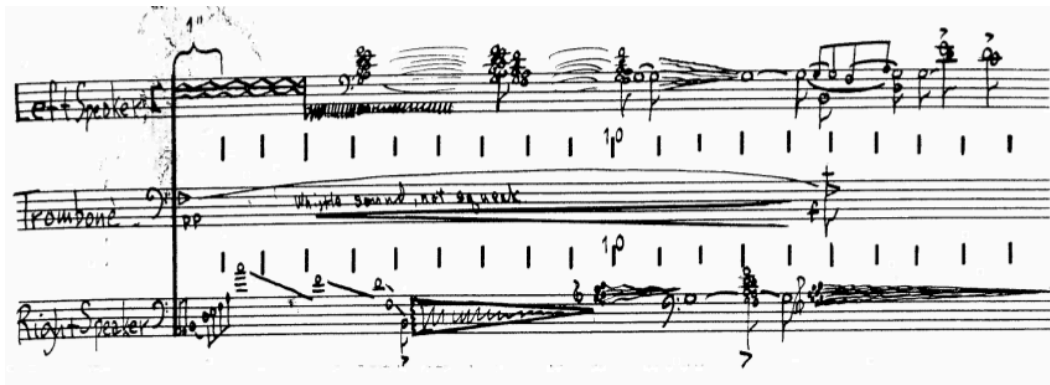
Figure 2.2: 0'00" thru 0'20", trombone cluster at 0'04" in Left Speaker; trombonist inhales through the instrument

The trombone, especially in the first half of the section, plays a secondary role. The trombonist introduces the "inhale" motive immediately at the beginning of the piece, producing a whistling sound by drawing air in through the instrument for the first 15 seconds, as shown in Figure 2.2, followed by the "kiss" motive. Next, at about 0'32", the trombonist plays a "fast note group," marking the first traditional trombone sounds heard in the piece (see Figure 2.3). Other more traditional trombone sounds continue to occur throughout the second half of Section I, accompanied by the "e-Cymbal" and a few other electronic sounds. The trombone motives introduced here include a slow note group, a multiphonic glissando from E (played)/c' (sung) to D-half sharp/B-half sharp), and a downward rip (with a crescendo from piano to fortissimo) from d" to B at 0'58"-0'59"; this rip serves as an emphatic punctuation mark ending Section I.

Figure 2.3: 0'20" thru 0'40", fast note group in trombone part at 0'32"

The general activity level in Section I may seem sparse, but it is in keeping with the average activity level throughout the piece. The tape is more active toward the beginning of the section before the trombone becomes part of the foreground; the trombone becomes more active in the second half, but the combined texture is still thinner due to the much-reduced activity in the tape part.

Section II

Section II, slightly longer than Section I, is characterized by a reliance on the trombonist for almost all primary sound material. The atmosphere in this section is quite different—the sounds heard on the tape are different from those in Section I, and this is immediately felt with the shift in timbre of the sound at the beginning of the section. The tape provides most of the background (or secondary) sounds in this section. One notable exception to this occurs near the beginning of the section, at 1'01". The trombone has not yet played at this point, the only sounds having been electronic hums, when the tape introduces the "mouthpiece slap" motive. This is shown in the score as part of Figure 2.4. Being an acoustically-derived sound, this motive is normally associated with the trombone; however, a recorded version appears here on the tape.

The trombone then takes over the primary material, with a multiphonic AA (played)/B (sung) at approximately 1'03", also shown in Figure 2.4. Most of the trombone material in this section consists of traditional trombone sounds—several fast note groups and repeated notes, a rip, and a slow note group. A few other traditional sounds do exist, including a note that fades out to air towards the beginning of the section followed immediately by two vocalizations through the instrument, a "fade in" just over halfway through the section, and a glissando that fades out at the very end of the section.
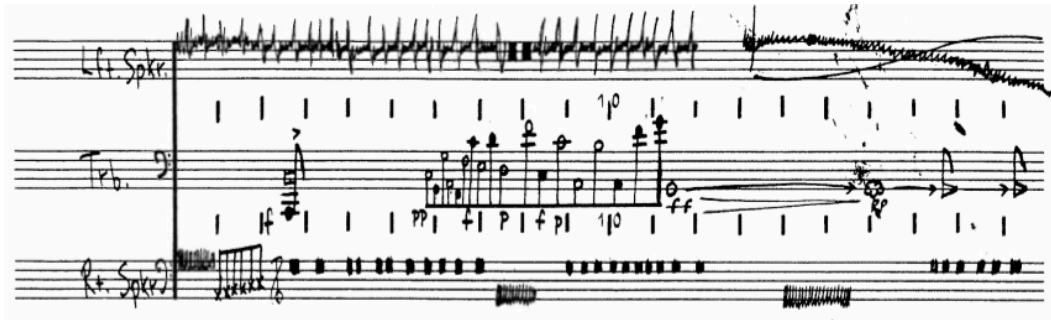
Figure 2.4: 1'00" thru 1'20", mouthpiece slaps in Right Speaker at 1'01", multiphonic in Trombone at 1'03"

In contrast, a large majority of the sounds heard on the tape part in Section II are of electronic origin—mostly secondary sounds such as hums, buzzes, and creaks. A few acoustically-generated sounds appear in the tape, including some manipulated trombone sounds close to 1'30" as well as the "kiss" motive and mouthpiece buzzing between 1'50" and 2'00", as shown in Figure 2.5.
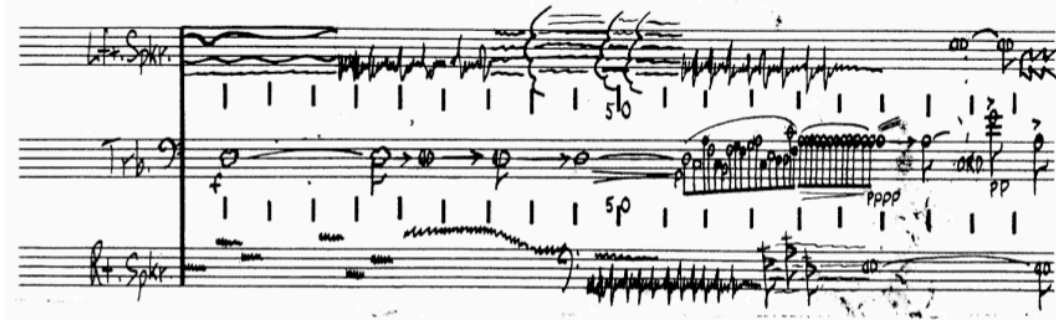
Figure 2.5: 1'40" thru 2'00", mouthpiece kiss and buzzing sounds in Right Speaker at 1'53"

The level of rhythmic and textural activity in Section II is greater than that in Section I, thanks mainly to the greater involvement of the trombone in the middle part of the section. Although the tape is relegated to a secondary role in this section, it makes a significant contribution to the texture and rhythmic activity as its timbres shift and alternate between the left and right speakers.

Section III

The transition to Section III is marked by a break in the sound around 2'10" as a trombone glissando fades out to air and then silence. The section begins with a solo trombone fast note group, but the rest of it is characterized by both voices together involved an emphatic struggle for dominance, from which the tape emerges as victor.

As a machine, the tape inherently has an advantage in this power struggle. The sounds it uses throughout Section III are manipulations of actual trombone sounds. The tape overwhelms the trombone around 2'22" with a barrage of trombone clusters (similar to the more subdued trombone clusters in the introduction to Section I), shown in Figure 2.6—a feat that no live trombonist could match. The rest of the section is much more subdued with longer-held pitches in both parts, but the tape is still capable of producing an infinitely wider variety of articulations,

timbres, dynamics, and sudden register shifts than the trombone. The tape also once again uses

the "mouthpiece slap" motive beginning around 2'53"; these sounds are unaltered. Around

3'02", the tape brings in the "kiss" motive, except the sounds are slowed to approximately half

speed—something that, again, would be impossible for a live trombonist.

Figure 2.6: 2'20" thru 2'40", Tape overwhelms Trombone; "extreme 'nanny-goat' vibrato" in
Trombone part

The trombone starts Section III with the previously-mentioned fast note group, but its

part throughout is characterized mainly by slow note groups and held tones. Some of these held

tones are marked with "extreme 'nanny-goat' vibrato" (also appearing in Figure 2.6) and some

are repeated, but all have some sort of change in dynamic level. The trombone makes an overall

crescendo through Section III, attempting to overcome the tape. An accented forte fast note

group around 2'57" marks a last ditch effort. From here, the trombone remains silent (while the

tape plays the half-speed "kisses") until a very loud "split tone" at about 3'11" (perhaps in

frustration) ends the section concurrently with a short, loud "honk" sound in the tape.

Section III is still more active than sections I and II, owing to the barrage of acoustic

trombone sounds in both parts. The motives heard in this section include fast note groups in both

parts (the tape playing multiple groups simultaneously); slow note groups, multiphonics, and a rip in the trombone part; and the "kiss" and "mouthpiece slap" motives in the tape part. The first half of this section is the more active part; from there, the trombone shifts to held notes and finally silence, while the tape moves to more sustained sounds and then a thinner texture to go with the "mouthpiece slap" and "kiss" sounds. This decrease in activity level foreshadows a more extended general decrescendo to come.

Section IV

Section IV functions as if it were the trombonist's epilogue to the "struggle" that occurs in Section III. After a short silence, a multiphonic A-sharp (played)/d' (sung),[64] referenced in Figure 2.7, ushers in this trombone-dominated passage. This section consists of a "monologue" by the trombone accompanied mainly by background sounds in the tape.

Figure 2.7: 3'20" thru 3'40", "difference tone" in Trombone part marks beginning of Section IV

The trombone part in Section IV retains its high level of activity from Section III, playing a number of fast note groups (one of which includes a multiphonic C-half sharp [played]/g-sharp [sung]) and repeated notes towards the beginning and end of the section. The first third of

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[64] The composer indicates for a difference tone of f to sound; this is possible with very good intonation on the A-sharp and d'. To the more tonally-minded, B-flat would make more sense than A-sharp; however, the system of notation employed in this piece does not permit flats as accidentals—only sharps, half-sharps, and half-flats.

Section IV consists of the aforementioned multiphonic to begin the section, three fast note groups, a repeated note, three rips, and a multiphonic glissando. The texture becomes thinner in the middle third of the section, with the trombonist blowing air through the instrument for approximately ten seconds, then resting about seven seconds before playing two loud, sustained low-register multiphonics. The texture and activity level increase again in the final third of Section IV, with the trombone playing four more fast note groups, a rip, and a repeated note in the final twenty-four seconds of the section. Some of these more active moments are seen below in Figure 2.8.
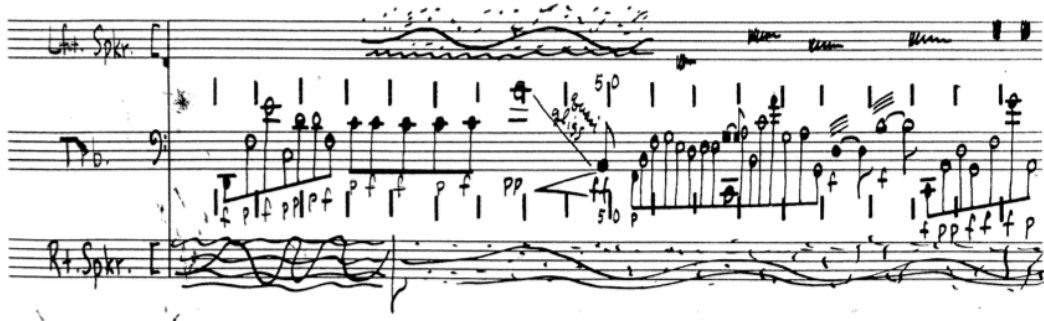
Figure 2.8: 4'40" thru 5'00", fast note groups in the Trombone accompanied by various background sounds in the Tape

The tape part is never silent through Section IV, but neither is it a part of the primary action. Most of the sounds used in this section seem to be acoustic in origin—some may be manipulations of the "kiss" motive, some may originate from striking the trombone bell with a mallet, and some are of unknown source.[65] Sustained sounds are used in addition to shorter

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[65] In electronic correspondence dated September 30, 2010, the composer stated that he did not recall the distinction between acoustic and electronic sounds used in the piece.

ones. Near the end of the section, the acoustic sounds drop out in favor of electronic radio

interference for the duration, foreshadowing some of the sounds to be heard in Section V.

In Section IV, the general level of energy is significantly less intense than that of Section

III despite the continued activity of the trombone part; this is due essentially to the lack of

engagement in the primary musical material by the tape. Even as the trombonist blows air

through the instrument from 4'10" to 4'20", the tape part is no more interesting; it consists only

of a quiet sustained hum.

Section V

The alternation between sections dominated by the trombone and those dominated by the

tape continues in Section V, which consists primarily of percussive effects in the tape as well as

the trombone. Section V is the longest section of the piece; however, the trombone part is quite

sparse and includes few traditional sounds. The tape part is not extremely active, but still

manages to easily dominate the action in this section.

The trombone part in Section V is chiefly made up of rests and a few extended

techniques. After a "kiss," "inhale," and "fade in," the trombonist plays a solitary pianissimo c"

about thirty-five seconds into the section. Then, approximately seventeen seconds later, the

trombone bell is struck once with a felt mallet; this is counted as an example of the "bang"

motive often heard on the tape. Sixteen seconds later, the trombonist is instructed to rattle the

wooden end of the mallet inside the bell for two consecutive "rolls." This is counted as an

example of the "e-Cymbal" sound heard on the tape. Next, the trombonist covers the bell tightly

with a plunger and plays as high as possible. After a few more plunger effects, the trombonist

ends Section V by emphatically putting the plunger down on a table, creating another percussive

banging sound; all of these felt mallet and plunger techniques are included in Figure 2.9.

The tape begins Section V after a short pause with more electronic radio interference (or

perhaps metal detector) sounds, albeit slightly more subdued than the similar sounds at the end of

Section IV. These sounds soon change, however, to more acoustically-derived ones. Banging

sounds are heard continuously between 5'26" and 5'48"; it is in response to these bangs that the

trombone makes its own banging sound by striking the bell with a mallet. Next, these sounds

change to a more "e-Cymbal"-like timbre with some slowed-down "kiss" sounds as well as

bowed-cymbal-like sounds; the trombone's roll with the wooden end of the mallet inside the bell

occurs during this section, again in imitation of the tape sounds. The tape is not overwhelmingly

active through Section V, but it keeps the listener's attention through its use of a wide variety of

different sounds and timbres.

Section V is both the longest section and perhaps the least lively. The level of activity in

the tape part is not exceptionally high, but its timbral variety keeps it interesting enough to stay

in the foreground; the trombone, on the other hand, hardly ever emerges from the background,

either resting or employing a few various special effects for almost the entire section.

Figure 2.9: 5'50" thru 7'00", trombonist uses felt mallet and plunger for extended techniques

Section VI

Section VI, like Section I, is only about one minute in length. Alternation between trombone and tape continues, as the trombone provides the principal foreground material in this section. The tape, while its material is secondary in the texture, is still important; its rising glissando, lasting more than thirty seconds, gives this section a sense of direction.

The trombone is quite active throughout section VI; its part consists of about half fast note groups (most of which are played consecutively from 7'23" to 7'40") as well as an example of the "repeated note" motive that gradually rises in pitch from A-half flat to A-sharp over the course of about six seconds; these events are shown in Figure 2.10. Also included are two slow note groups and a "fade out" at the end of the section. The long chain of fast note groups serves as the climax of the section, and perhaps the entire piece, for the trombone. It is preceded by the gradually-rising repeated notes, which crescendo to fortissimo, and the beginning of the long glissando in the tape part. The trombone dynamic remains fortissimo for the duration of the fast note groups, dropping to piano to mark the beginning of a slow note group that fades out to end Section VI.

Figure 2.10: 7'20" thru 7'40", repeated note in Trombone slowly ascends from A to A-sharp, then Trombone plays consecutive fast note groups; slow ascent in tape is passed from Right Speaker to Left Speaker

The principal feature of the tape part in Section VI is the aforementioned long, ascending glissando that dominates the tape for about forty-six seconds. The glissando begins at about 6'55" with a sound similar to an airplane engine (notated as a whole note GGG); the other sounds soon drop out, and this sound rises in pitch over about twenty-five seconds before any other sounds are heard. After this, the glissando is interrupted momentarily a few times by electronic humming sounds, switches from the right speaker to the left and back, and eventually ends on a notated c''' as the trombone is fading out. This glissando is always secondary musical material, but it serves an important purpose, helping to give Section VI a sense of suspense and musical direction.

Section VI has the greatest sense of motion of any of the sections in the piece. The section has its climax at 7'23" with the fortissimo fast note groups in the trombone, but the tape continues its ascent, seeming to indicate that a higher musical peak is forthcoming. The trombone, though, drops to piano and begins to fade out before the ascent is complete; Figure 2.11 includes the conclusion of Section VI.
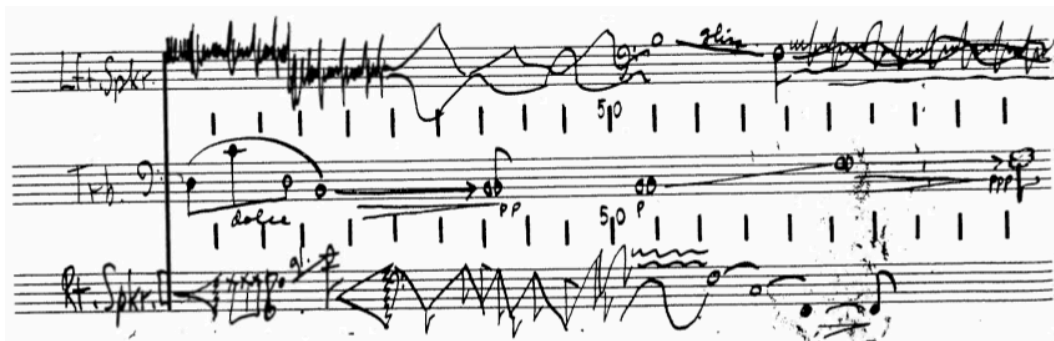
Figure 2.11: 7'40" thru 8'00", slow ascent in Tape reaches its goal and Trombone plays its last traditional sound at 7'43"; section VI ends at 7'50"

Section VII

Section VII is made up of the final 1'10" of the piece. In this section, dominated mostly by the tape, the energy level dwindles toward the piece's closing. A mixture of acoustic and electronic sounds are heard on the tape, including a version of the glissando motif from Section VI. However, the trombone part is quite sparse and consists of only a few extended techniques.

The tape sets the tone for Section VII, starting off the section around 7'50" with a juxtaposition of AM radio noise and electronically-manipulated trombone glissando sounds. These sounds are similar in that both slide freely up and down in pitch. Alternation between these two sounds (mainly the electronic noise with trombone sound interjections) serves as the primary musical material in this section and continues until the last few seconds of the piece. At 8'54", the right speaker plays a short series of mouthpiece slaps, which are then heard in the left speaker a few seconds later (8'55" in the score, but actually closer to 8'58" and not overlapping with the set in the right speaker as indicated). These mouthpiece slaps, echoed in the trombone part, are used as curt punctuation marks to end the piece.

The trombone part in Section VII does not use any traditional trombone sounds; in fact, the sounds it does make all seem to be in imitation of the tape sounds in this section. About fifteen seconds after the beginning of Section VII, the trombonist removes the mouthpiece from the instrument and buzzes directly into the leadpipe. This buzzing indication is shown in Figure 2.12. No exact pitches are indicated, only a line that curves up and down seemingly at random for about fifteen seconds. The next twenty seconds involve the same type of sound, but with more specific instructions as to approximate pitch and dynamics. Despite the fact that the

trombone could very easily make a sound similar to the electronically-influenced trombone glissandi heard in this section, the buzzing sound made instead seems to be an attempt by the trombonist to imitate the AM radio static heard on the tape around the same time. Beginning at 8'40", the trombone part is silent until the very end of the piece; during this time, the trombonist re-inserts the mouthpiece into the instrument. To end the piece, the trombonist then imitates the slapping sounds heard on the tape. The mouthpiece of the trombone is slapped while the slide is allowed to extend outward, ending the piece with the slide actually coming off of the instrument. This is accomplished through use of the trombonist's feet holding the outer slide crook in place on the floor while the rest of the horn is elevated off of the outer slide, resulting in a progressive lowering in pitch of the mouthpiece slapping sound.
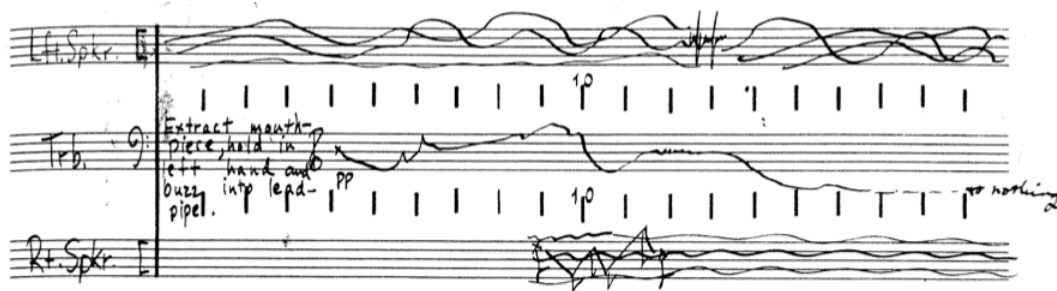
Figure 2.12: 8'00" thru 8'20", trombonist removes mouthpiece and buzzes into leadpipe

Section VII has as little sense of progress toward a goal as any other section in the piece. The random AM noise combined with similarly random trombone glissandi have no real direction or urgency; they simply induce a slow ebbing away of the intensity left over from the previous section. The piece is then brought to an end, as seen in Figure 2.13, with the short

punctuation of the three separate sets of mouthpiece slaps in the right speaker, left speaker, and trombone.
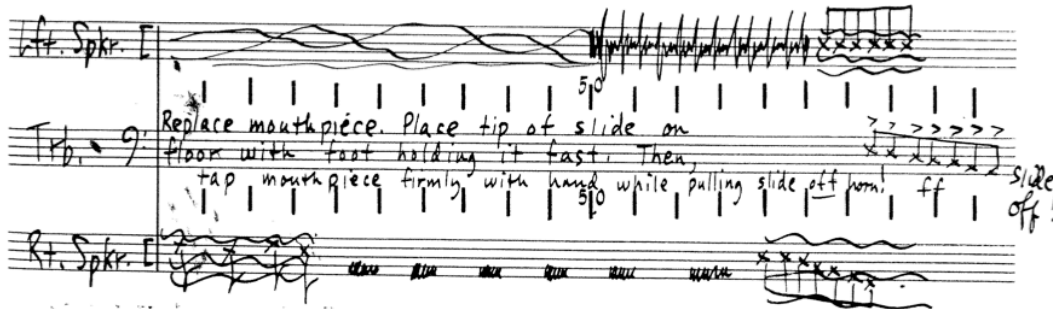
Figure 2.13: 8'40" thru 9'00", the piece ends with mouthpiece slaps in both speakers as well as the Trombone

Conclusions

Changes: Open Style is very much in an "open" style and form, as indicated before by the composer. Since the rhythmic action and texture are at their highest and thickest levels toward the middle of the piece, an argument could be made for a type of arch form. However, despite the fact that Section IV is in the middle, Section III actually has the greatest amount of activity. Given the absence of any other fitting large-scale form, the piece may be said to be through-composed and divided into the sections that have been described. Each of these seven sections contrasts with its adjacent sections in that the types of sounds used (in the trombone and tape parts) tend to be different in adjoining sections and that the roles tend to reverse themselves—primary musical material is traded between the trombone and tape in each new section. However, the sections are tied together with motives that occur often in most or all of them, especially the fast and slow note groups, rips, radio noise, and other sounds mentioned in Figure 2.1.

As mentioned previously, *Changes* contains some characteristics of the jazz idea from which its title is derived, despite the fact that a listener probably would not immediately think of jazz as the style by which this piece was inspired. For example, the "fast note group" motive and the "repeated note" motive both resemble figures that often occur in improvised jazz solos. Also, jazz soloists and rhythm sections tend to listen to each other and often play in imitation of one another. This occurs often in the Austin piece. Examples of imitation of the trombone in the tape part include the shower of trombone "fast note groups" in the tape during Section III, the "kiss" motives in the tape and trombone, and mouthpiece buzzing sounds. Many of the special effects in the trombone part are in imitation of the non-trombone sounds on the tape, such as the "bang" of the felt mallet on the trombone bell, the "cymbal roll" of the wooden end of the mallet on the trombone bell, the random buzzing into the trombone leadpipe in imitation of AM radio noise, and the mouthpiece slapping that ends the piece. The fact that the trombone and tape take turns playing the primary musical material is also reminiscent of jazz players taking solos in turn.

While *Changes: Open Style* does share some characteristics with jazz music, it is still unmistakably an avant-garde piece reminiscent of its era. *Changes* shares many features in common with its contemporaries, pieces such as Jacob Druckman's *Animus I* for trombone and tape. These features include a highly abstract style with no recognizable melodies or regular rhythms, some sounds taken from the solo instrument and manipulated for the tape part, and the theme of man versus machine. Similar to the Druckman piece, the machine (tape) is shown to be capable of overwhelming the human player, and like *Animus I, Changes* ends with the trombonist given a chance for redemption and peace made between the adversaries.

Pedagogical Considerations

Changes: Open Style is quite difficult and requires even a skilled trombonist to learn a few new techniques and notational symbols specifically for the piece. Austin uses the traditional lines and spaces of the bass clef staff, but eschews the traditional method of indicating accidentals. Instead, white noteheads indicate natural pitches, black noteheads indicate sharped pitches, and the top or bottom half of the notehead filled in indicates a half-sharp or half-flat, respectively (see Figure 2.1 for the composer's complete set of instructions). Other original symbols include cloud-shaped noteheads indicating blowing air through the trombone, split white noteheads indicating a buzz without creating an airtight seal on the mouthpiece, and triangle noteheads indicating the "whistle" of air drawn in through the trombone.

The "whistle" or "inhale" technique in itself is one that will not be familiar to many trombonists. In his instructions, Austin describes it as "drawing air <u>from</u> the trombone through relaxed, moist, and slightly pursed lips, creating—through practice—a single, extremely high and variable pitch. . ." (see Figure 2.2). Overblowing to create a "split tone" is another technique specific to the piece; it first appears at 3'21" (the first sound indicated in the trombone part in Figure 2.7) where the trombonist overblows a G to create a simultaneously-heard c. Nearer to the end of the piece (Shown in Figure 2.9), the soloist is instructed to, with plunger tightly covering the bell at 6'21", "Play as high as possible. Use pinched embouchure and air pressure from puffed cheeks." The composer intends a very thin and muffled sound, one that is usually not desirable. At 8'04", Austin adds the directive "Extract mouthpiece, hold in left hand and buzz into leadpipe" followed by a sketch of the approximate pitches to be played (Figure 2.12). The pitches are not exact, but the notation switches to treble clef here; the implication is that the

40

extreme high register is to be used. This is yet another technique that most trombonists will not have practiced often.

In addition to the extensive use of extended techniques, the "fast note group" motive often used in the piece also contributes to its difficulty level. This is due to several factors associated with the motive. First, whenever this motive appears, it must be executed with a certain amount of speed to fit within the required amount of time. Also, it always includes many leaps that are large and disjunct in addition to being awkward, generally encompassing leaps to and from quarter-tones. Finally, the aforementioned notation itself (with black notes indicating sharps and half-black notes indicating quarter tones) can be difficult to decipher in real time without sufficient practice.

Because of the consistent challenge of the fast note groups occurring throughout *Changes,* as well as the myriad extended techniques used, the level of difficulty stays consistently high for most of the piece. A soloist wishing to perform this work must have very good technical ability, skill at multiphonics, and the ability to execute the numerous extended techniques that have been mentioned previously. These requirements make the piece prohibitively difficult for almost any undergraduate trombonist. If it is used in a studio, it should be reserved for an advanced graduate student who has an interest in electronic works from this era, perhaps on a lecture recital or a program dedicated to electronic music.   However, its overall low level of direction and drama might not sufficiently hold the attention of an audience expecting traditional music for trombone and piano.

Chapter 3

Analysis of *I Was Like Wow* by Jacob Ter Veldhuis

Direction: 3; Climax: 4.5; Mood: 4; Drama: 2.5; Style: 4.5

I Was Like Wow was composed by Jacob Ter Veldhuis in 2006 for the Dutch trombonist Jörgen van Rijen,[66] who premiered the piece on October 5 of that year. The piece is part of the composer's Boombox series, which consists of pieces for a solo instrument with the recorded part played back on a large boom box or "ghettoblaster."

Jacob Ter Veldhuis describes himself as an "Avant pop" composer. His music often combines traditional classical instruments with electronic sound sources to create rhythms and harmonies taken from various popular styles (mostly rhythm-oriented styles such as funk, hip-hop, and jazz). Most of Ter Veldhuis's Boombox pieces feature human speech from well-known sources including television infomercials, President George W. Bush, and Billie Holiday. The composer samples and edits the original speech, adds synthesized instruments such as drums and bass to create a certain rhythmic (or sustained) feel, and composes a part for a solo instrument or group to give that rhythm a melodic voice (as in *Body of Your Dreams*) or becomes part of the backdrop for the speech itself (as in *Believer*).[67]

I Was Like Wow, a piece for trombone and boombox, contains a mix of sustained and more rhythmic textures; the more rhythmically active sections create a feel of early hip-hop or funk. The audio in the electroacoustic part for *I Was Like Wow* is mostly taken from interviews with Sam Ross and Tyson Johnson, two United States Army veterans who fought in Iraq in 2003.

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[66] Principal trombonist of the Royal Concertgebouw Orchestra

[67] Jacob Ter Veldhuis, "JacobTV," Boombox Music, http://www.jacobtv.net, (accessed April 14, 2011).

The interviews were aired on Dutch television as part of the documentary *Tegenlicht: Purple Hearts* by Roel van Broekhoven. Additional sounds are used from a live performance of Muddy Waters's song "Hoochie Coochie Man" and electronically-generated sounds such as bass and drums.

Harmonically and melodically, *I Was Like Wow* can be described as centric around A; this feature, however, does not prove to be important from an analytical perspective within the piece. Instead, texture and timbre are the salient characteristics that define all formal processes in the piece. In Barbara Kolb's *Millefoglie,* Judith Lochhead categorizes the acoustic and electronic sounds heard, mainly by timbre*,* and she defines the form of the piece on the basis of timbres and textures created by combinations of those sounds. Because the same characteristics are also very important in this piece, some of the analysis techniques and charts used in this chapter will bear a certain similarity to those used by Lochhead.[68] The sounds heard in *I Was Like Wow*, both live and on tape, can be classified into a number of types that recur throughout the piece. These sounds combine to create several kinds of texture and timbre that outline the work's formal construction. Below is a glossary of terms that shall be used for the sounds heard in the piece for the duration of this chapter:

Live trombone sounds

flutter: Flutter tongue used by the trombonist (the composer's indication is "growl").

glissando (gliss.): Glissando played on the trombone.

lyrical trombone: Trombone plays rhythms shorter than half notes, but in a legato or lyrical

style. Sometimes marked "funeral style" or "dolce" in score.

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[68] Judith Lochhead, "Texture and Timbre in Barbara Kolb's *Millefoglie* for Chamber Orchestra and Computer Generated Tape," in *Engaging Music: Essays in Music Analysis* ed. Deborah Stein (New York: Oxford University Press, 2005): 253-72.

multiphonic: Multiphonics used by the trombonist.

mute: Trombone played with a Harmon mute and some hand stopping.

rhythmic trombone: Trombone plays rhythms shorter than quarter notes in a punchy, accented,

> or rhythmic style.

sustained trombone: Trombone plays long, sustained pitches.

Recorded or electronic sounds

e-ambient: An electronic sound often used in the background. Its timbre is not always exactly

> the same, but it is always a quiet, sustained, string- or organlike sound that is "felt" more

> than "heard."

e-bass: An electronic sound that resembles an electric bass.

e-bowed: An electronic sound that resembles a bowed vibraphone or such instrument with the

> motor engaged.

e-drums: A set of electronic sounds resembling a drumset.

e-gliss: A sound resembling a loud trombone glissando.

e-heartbeat: A low-pitched oscillating sound that evokes the image of a human heartbeat.

e-pipes: An electronic sound resembling some type of pipe instrument, such as pan pipes or a

> type of flute.

e-vibes: An electronic sound resembling a vibraphone played with soft mallets.

m-voice: Electronically-manipulated recordings of the human voice that sound like a plaintive

> moan (often taken from the Muddy Waters performance).

r-voice: Recordings of the human voice (usually a few syllables repeated) that are manipulated

> in such a way as to be rhythmic in nature. The words "jump and shout" are often used.

s-voice: Recordings of the human voice in which the character of the speech is unaltered, but

short phrases are repeated or spliced so that there are no complete sentences. Often

placed on the beat to create a rhythmic feel.

t-echo: Sounds on the recording that "echo" the trombone part, usually in more rhythmic

passages.

u-voice: Unaltered recordings of the human voice in which complete sentences are often heard.

No feeling of rhythm, as the natural rhythm of the speech is retained.

w-voice: Electronically-manipulated recordings of the human voice that sound like a loud wail.

Often heard using the words "oh yeah!"

On the basis of timbres and textures created through combination of these sounds, *I Was*

Like Wow can be divided into four major sections, as shown in Table 3.1.

Table 3.1: Major divisions in *I Was Like Wow*

Section	Measures	Start Time	Length
I	1-25	0'08"	1'38"
II	26-105	1'46"	5'24"
III	106-127	7'10"	1'21"
IV	128-166	8'33"	2'07"

Section I

Section I principally serves as an introduction to the piece. Almost all elements of the

rhythmic, timbral, and textural palettes used until the end of Section II and into Section III are

introduced here in the first ninety-eight seconds of music. The first nine measures feature *u-*

voice against a background of sustained trombone sounds (with multiphonics and flutter tongue)

and other ambient effects, as shown in Figure 3.1. Measures 10 thru 13, which make up Figure

3.2, highlight *r-voice* and rhythmic trombone sounds in a steady pattern. Measure 14 includes

the initial entrance of *m-voice* as well as the first appearance of the trombone glissando effect;

this passage is shown in Figure 3.3. Measures 19 thru 21, highlighted in Figure 3.4, utilize *s-*

voice and more rhythmic trombone (in a less regular pattern) to create a sense of uneasiness.

Measure 22 brings *w-voice* into play alongside more trombone glissandi, leading to measures 23

thru 25, which use *u-voice* to prepare for the transition to section II along with more steady

rhythmic activity and *r-voice* similar to measures 10 thru 13.

Figure 3.1: Trombone and *u-voice* parts in measures 2-3[69]

Figure 3.2: Trombone and *r-voice* parts in measures 10-13

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[69] Speech rhythms in *u-voice* and *s-voice* sections are approximate. When the trombone part contains multiphonics, round noteheads indicate played pitches while square noteheads indicate sung pitches. For the sake of simplicity, only trombone and voice parts are indicated in all musical examples.

Figure 3.3: Trombone and *m-voice* parts in measures 14-16

Figure 3.4: Trombone and *s-voice* in measures 20-21

Section II

Section II is the most lengthy of the four; it also comprises the main body of the piece.

This section is characterized by relative rhythmic calm. Neither *e-drums* nor *e-bass,* both of

which are rhythmically important in more active parts of the piece, makes an appearance in this

entire section. The principal effects used, other than vocal and trombone sounds, are *e-ambient*

and *e-bowed,* which are always sustained and simply serve as a backdrop for the primary and

other secondary sounds.[70] The trombone part has a fundamentally sustained character as well

throughout this section, sometimes using the *sustained* trombone sound and other times *lyrical*

trombone. Whole notes, half notes, and dotted quarter notes are the most common rhythmic

values. *Lyrical* trombone sounds occur often in the form of melodic fragments played in a legato

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[70] Use of the terms "primary" and "secondary" refers to each sound's relative importance within the texture, similar to Lochhead's use of these same terms.

style. *Rhythmic* trombone sounds do exist on a few occasions (such as in measures 39 and 40), but these are used purely as a momentary contrasting effect. The vocal sounds used in this section mainly consist of *u-voice,* as seen in Figure 3.5. The section includes some *w-voice* and *m-voice* as well (both of which are also sustained sounds), but none of the percussive *r-voice*.

Voice

now   I said a lot of things that   were meant   to be my last   words   and uh

dolcissimo

Trombone

pp

they turned out not   to   be   but uh

Figure 3.5: Trombone and *u-voice* in Section II, measures 26-29

Section III

Despite the fact that Section III is the shortest of the four major parts of the piece, its gradual rhythmic crescendo renders it quite important to the overall form. Measure 106 (with an eighth note pickup in the trombone) marks the beginning of the section. *U-voice* continues as if nothing had changed, and in fact, the *rhythmic* motive in the trombone (along with *t-echo*) does resemble an isolated motive that had occurred in measure 39 without really disrupting the texture of Section II. However, the entrance of *e-drums* with the trombone for the first time since measure 25 confirms a fundamental shift and the start of a new formal division. The characteristic features of Section III consist of a gradual buildup in rhythmic activity (including

persistent use of *rhythmic* trombone and other percussive sounds in the accompaniment) and a strong sense of direction towards the piece's impending climax. Even the moderate amount of rhythmic motion from measure 106 to 119 stands in contrast to the sustained quality of Section II. In measure 120, the activity level suddenly increases again; this rhythmic crescendo continues through measure 124. Part of this crescendo, measures 120 thru 123, is shown in Figure 3.6. A *poco a poco crescendo* is also marked in the trombone part beginning in measure 121. The rhythmic and dynamic crescendos reach their highest point at the end of measure 124, after which dramatic *w-voice* and trombone glissandi take over for two measures followed by *r-voice* with *rhythmic* trombone punctuation for one measure, which sets the stage for Section IV and the piece's climax.

Figure 3.6: Rhythmic crescendo in trombone and "u-voice" in Section III, measures 120-123

Section IV

After the long building process that comprises Section III, Section IV begins at measure 128 with the climax of the piece, shown in Figure 3.7. Section IV consists of a climactic passage of sustained energy lasting until about measure 154 (Figure 3.8 shows another high-energy segment), followed by a slow decrescendo in both dynamics and intensity until the end of the piece.
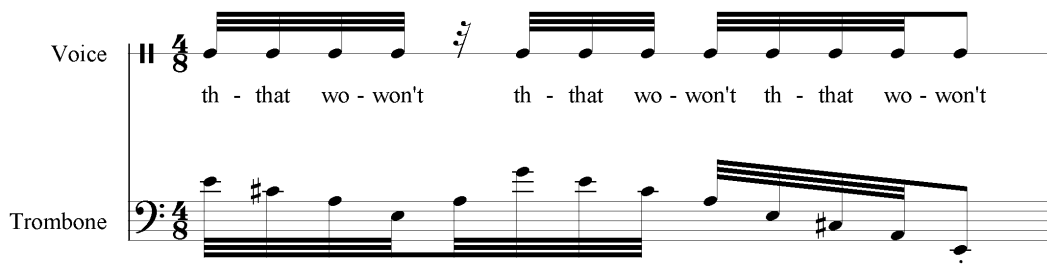
Figure 3.7: Beginning of Section IV, measure 128 ("wild" section)

Figure 3.8: Measures 135-137, in Section IV's "wild" section

The climactic passage is typified by the fastest rhythmic activity found anywhere in the

piece (the beginning of the passage is marked *wild & crazy, staccato*), its highest dynamic level

(none is marked, but a loud dynamic is implied by the previous buildup and by the volume of the

accompaniment at this point), and the most extensive and repetitive use of *r-voice,* which is

inherently the most energetic form of recorded vocals used in the piece. A contrasting but still

high-intensity passage begins at measure 142, and another one seems to begin at measure 152;

however, two measures later, a radical shift in style indicates the start of the gradual diminuendo

that ends the piece. *M-voice* makes a sudden entrance, the trombone shifts from *rhythmic* to

lyrical with glissandi, and *e-drums* exits (only to make a few isolated hits from here to the end)

in favor of more sustained sounds like *e-ambient*. From here until the end of the piece, sustained

sounds are the rule, as in Section II; however, a sense of uneasiness is retained throughout the

diminuendo because of the lack of *u-voice* and persistence of *m-voice* and *s-voice,* glissandi and

dynamic fluctuations in the trombone until measure 160, and occasional *e-glisses* and *e-drums*

hits. An unstable-feeling resolution is finally reached with the exit of all vocal sounds in

measure 163, leaving the trombone (which changes to *sustained* around measure 160) holding a

d'' with a diminuendo to pianissimo accompanied by *e-ambient* to the end of the piece. Figure

3.9 shows the last phrase spoken by the human voice, in measures 161-162.
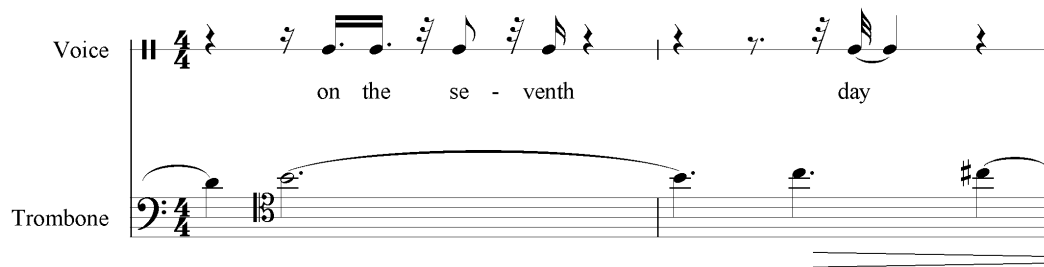
Figure 3.9: Measures 161-162, gradual diminuendo

Smaller Formal Divisions

Within the four major sections of *I Was Like Wow,* quite a few minor divisions serve to

split the piece into smaller formal units. Table 3.2 shows those smaller divisions, with the major

sections indicated by changes in the background color of the measure numbers. The principal

criterion used to identify these divisions is *timbre-texture type* (abbreviated T-T type)*,* a term

explained in great detail in Lochhead's essay. The system I have created for T-T type

identification in the Ter Veldhuis is based on three basic types, themselves divided into subtypes;

the T-T type of each section is indicated in Table 3.2. T-T type A is the type used to identify most

of the *u*-voice passages that advance the storyline of the piece. This type is relatively calm—it

features *sustained* and *lyrical* trombone sounds, usually quiet and in the secondary layer (with

occasional *rhythmic* sounds for contrast), along with sustained electronic sounds (*e-ambient* is almost always present with T-T type A). Type B identifies the more rhythmically active sections, with *rhythmic* trombone and the inclusion of more rhythmic sounds such as *r-voice* and *e-drums*. Type C consists of the short outbursts of trombone glissandi accompanied by *m-voice* or *w-voice*. The composer also uses this for brief moments of dramatic contrast; its most extended appearance near the end brings out the uneasiness of the piece's coming conclusion.

Within the three basic T-T types, smaller distinctions are indicated with superscripts. Type A^1 indicates a type A texture used with *u-voice,* while type A^2 indicates a different vocal sound like *m-voice* or *w-voice*. Type B textures are generally the opposite; B^2 uses *u-voice* or *s-voice,* while B^1 indicates *r-voice* with other rhythmic sounds. The T-T type B^3 designation is used for the extremely active section beginning at the climax. Within T-T type C, the superscript numbers represent the kind of glissandi heard in the trombone part as well as the vocal sound type. For T-T types A and B, lower-case letters are often used after the superscript numbers to further differentiate the various composite sounds heard. These often indicate various sound combinations used or different kinds of rhythmic patterns; for example, when a new rhythmic pattern begins in measure 142, B^{3a} becomes B^{3b} despite the fact that the instrumentation does not change. Further, in *u-voice* sections, a small parenthetical *x* or *y* distinguishes between the two speakers heard.

Table 3.2: Minor divisions of *I Was Like Wow* and their characteristics

Measures	Time	T-T Type	Primary Sounds	Secondary Sounds
1-9	0'08"	$A^{1a(x)}$	u-voice	sustained trombone (with flutter and multiphonics), e-drums, e-bass, e-heartbeat, e-bowed, e-pipes
10-13	0'48"	B^1	r-voice, rhythmic trombone	t-echo, e-drums, e-ambient
14-18	0'58"	C^1	m-voice, trombone gliss. (with flutter)	e-drums, e-ambient
19-21	1'18"	$B^{2a(x)}$	s-voice, rhythmic trombone	t-echo, e-drums, e-bass, e-ambient
22	1'29"	C^2	w-voice, trombone gliss.	e-drums, e-bass
23-24	1'33"	$B^{2a(y)}$	u-voice, r-voice	rhythmic trombone, r-voice, t-echo, e-drums
25	1'42"	B^1	r-voice, rhythmic trombone	e-drums, t-echo
26-31	1'46"	$A^{1b(y)}$	u-voice	sustained trombone, e-ambient
32	2'22"	C^2	w-voice, trombone gliss.	t-echo
33-56	2'26"	$A^{1c(y)}$	u-voice, sustained trombone, lyrical trombone, occasional rhythmic trombone	t-echo, e-ambient
57-60	4'07"	A^{2a}	m-voice, lyrical trombone (with flutter and multiphonics)	e-ambient
61-71	4'27"	$A^{1c(y)}$	u-voice	lyrical trombone (with mute and glissando), e-vibes, t-echo, e-bowed, e-ambient
72-75	5'07"	A^{2b}	m-voice, lyrical trombone (with mute)	e-ambient
76-82	5'29"	$A^{1b(y)}$	u-voice	sustained trombone (muted & open), e-bowed, e-ambient
83-90	6'03"	A^{2b}	m-voice, lyrical trombone (with glissando and "drunken vibrato"	e-ambient
91-105	6'35"	$A^{1c(y)}$	u-voice	sustained trombone, e-ambient
106-108	7'10"	$B^{2a(y)}$	u-voice, rhythmic trombone	t-echo, e-drums, e-bass
109-111	7'17"	B^1	w-voice, r-voice	rhythmic trombone, t-echo, e-drums, e-bass
112-119	7'27"	$B^{2a(y)}$	u-voice, rhythmic trombone, r-voice	t-echo, e-drums, e-ambient
120-124	7'58"	$B^{2b(y)}$	u-voice, rhythmic trombone	e-drums, e-ambient
125-126	8'22"	C^1	w-voice, trombone gliss.	t-echo, e-ambient
127	8'31"	B^1	r-voice, rhythmic trombone	e-drums
128-141	8'33"	B^{3a}	r-voice, rhythmic trombone	e-drums
142-151	9'06"	B^{3b}	r-voice, rhythmic trombone	e-drums
152-153	9'30"	B^{3c}	r-voice, rhythmic trombone	e-drums
154-159	9'35"	C^3	m-voice, lyrical trombone (with glissando)	e-ambient, e-bowed, e-drums
160-166	9'53"	A^{2c}	s-voice	sustained trombone, e-gliss, e-ambient, e-drums

This T-T type analysis further confirms the division of the piece into the four major

sections outlined earlier. Section I (measures 1-25), as mentioned before, introduces several T-T

types to be heard later in the piece. Section II (measures 26-105) is dominated by type A timbres

and textures, which are the more sustained sounds that were earlier found to characterize this

section. Section III (measures 106-127) consists almost exclusively of the more rhythmic B^1 and

B^2 sounds, indicating a rhythmic crescendo into the climax. Finally, Section IV (measures

128-166) begins with the intense activity of type B^3 followed by a return thru type C to the

sustained sound of type A.

Upon further inspection of the minor divisions of *I Was Like Wow,* a repeating pattern is

found to occur throughout the main body of the piece. From the beginning of Section II through

Section III, smaller divisions using *u-voice* alternate with those using one of the altered voice

types (*m-voice* or *w-voice*). Each *u-voice* section consists of one of the soldiers speaking about a

particular topic, evoking a certain image to advance the "program" or "plot" of the piece. Only

one true exception to this rule of alternation exists in Section III: the *u-voice* division in measures

112-119 is immediately followed by another in measures 120-124. This break occurs when the

rhythm abruptly becomes more active and the speaker switches topics. A similar situation seems

to exist between measures 91-105 and 106-108 when Section II gives way to Section III;

however, the break is only a timbral/textural one, as the speaker continues with the same idea

despite the shift in musical style of the secondary sounds.

Conclusions

The alternating structure of the piece is similar to that of a Baroque-style fugue; sections

of *u-voice* are analogous to entries of the fugue subject, and sections using various types of

altered voice sounds (*m-voice, w-voice,* etc.) are analogous to episodes (the composer refers to

these sections as "interludes" in his notes). The lack of imitation between equal voices is an

obvious obstacle to hearing the piece as a fugue; the term is used here solely to describe the structure of the piece, not its compositional style. As mentioned previously, each of the "entry" sections utilizes an excerpt from an interview with one of the soldiers, presenting to the listener an image of the war in Iraq from the soldier's point of view. "Episode" sections provide more musical direction, contrast, and emotional reinforcement of the scenarios described in the "entry" sections.

The idea of fugue structure may be extrapolated to extend from the beginning of the piece through Section III, with a few considerations. The piece begins with a *u-voice* passage, which may be called an "exposition" of *u-voice* as the fugue subject. The next four minor divisions all use different types of altered voice sounds; however, this may be heard as one extended episode "exposing" all of the different types of sounds that will be heard in various "episode" or "interlude" sections throughout the piece. Strict alternation then begins at measure 23.

Another variation in traditional fugue structure occurs at the end of the main body of the piece. Section III generally continues the pattern of alternation through its building of intensity toward the climax of the piece (save the one exception described previously). In a traditional fugue, a final decisive subject entry in the home key serves as the climax. Ter Veldhuis breaks with that structure and creates the opposite effect in *I Was Like Wow;* the climactic section is an "episode" that lasts the entirety of Section IV and consists of material previously unheard in the piece. This section is the most heavily influenced by hip-hop rhythms as well as the most rhythmically active, and serves as an effective climax followed by a gradual diminuendo to the end of the piece.

A further interesting observation to be made about *I Was Like Wow* is the way in which the different types of trombone sounds interact with the vocal sounds heard at the time. In general, the trombone tends to compliment the qualities heard in the voice; *u-voice* is most often heard with *sustained* or *lyrical* trombone sounds, *rhythmic* trombone is usually accompanied by *r-voice,* and trombone glissandi usually accentuate the plaintive qualities of *m-voice* and *w-voice.* Among few exceptions to this rule is the aforementioned *rhythmic* trombone interjection that occurs in measures 39 and 40, in the middle of the long passage of sustained sounds such as *u-voice, sustained* trombone, and *lyrical* trombone. This characteristic mutual imitation or complimenting between the trombone and vocal sounds further serves to unite the piece stylistically and motivically.

Much like in Barbara Kolb's *Millefoglie,* the piece analyzed in Judith Lochhead's essay cited previously, timbre and texture play a defining role in determining formal processes in *I Was Like Wow.* All three of the basic Timbre-Texture types used in the piece are exposed in Section I; these T-T types alternate and repeat throughout the piece with a few variations, the largest of which occurs at the climax. The piece then settles down and ends with an uneasy-feeling T-T type A, in much the same manner as its beginning. Throughout the piece, the three basic T-T types serve to provide both unity and variety in varying degrees. Type C almost always makes sudden, surprising appearances—providing local variety, but large-scale unity. Types A and B, however, serve mainly to tie the piece together through repetition and variation, culminating in the climax at measure 128 and then gradually receding to the end of the piece.

Pedagogical Considerations

I Was Like Wow is a challenging piece, but it is not prohibitively difficult for an experienced trombonist. The performer does not have to learn any extended techniques or notational oddities specific to this piece; the only passage of difficult extended techniques is at the beginning, when low-register multiphonics occur in conjunction with flutter tongue (see Figure 3.1). After this initial passage in measures 2 thru 8, the level of difficulty lessens a great deal, at least in terms of technique, for the duration of Sections I and II—these sections, as stated earlier, consist mostly of sustained pitches and smooth, conjunct melodic motives.

In section III, as the overall activity in the piece increases, the trombone part gradually becomes more technically formidable. As seen in Figure 3.7, the "rhythmic crescendo" includes an increase in the amount of rhythmic activity as well as an increase in syncopation and disjunct motion. The first half of Section IV, which is the most rhythmically intense passage in the piece, is also probably the most difficult from a technical perspective. The beginning of this section may not be syncopated, but consists of rapid articulation up and down the overtone series, as shown in Figure 3.8. Later in the section, however, more syncopation (as shown in Figure 3.9) is introduced; the heavily syncopated portions of this passage, such as Figure 3.9, are probably the most difficult measures in the piece. This section requires a combination of flexibility, consistency and control in all registers, a sense of time and rhythmic integrity, a good ear for the disjunct intervals, and clean articulation. A trombonist who has these abilities in sufficient quantity to execute Section IV (in addition to the endurance to sustain the pitches up to d'' at the end and the ability to play the multiphonic/flutter effects at the beginning) should have little trouble learning the piece from a technical perspective.

Technical ability, however, is not the only quality required to present a successful performance of *I Was Like Wow;* also quite important are impeccable time and attention to proper style. As rhythmic integrity is important throughout all sections, a solid sense of time and placement of all parts of the beat is essential. The tempo ♩=48 is indicated at the beginning of the piece and does not change. Even though the majority of Section II consists of *u-voice* speech rhythms in the tape, the listener must always perceive a sense of steady time from the trombonist. It is crucial for the soloist to use whatever method necessary (mental subdivision or otherwise) to eschew the natural inclination to gradually accelerate at slow tempi such as this. Style is another important consideration especially due to the hip-hop nature of the piece. Loud, rhythmic, and staccato passages (such as those with *r-voice*) must be deliberate, punchy, short, and very confident; accent markings in these sections must also be carefully observed. Glissandi and other like effects in loud sections should also be accentuated. In contrast, sustained and legato passages (such as virtually all of Section II) should be played with a character of sweet and nonchalant smoothness while retaining strict time.

I Was Like Wow is not as difficult as some other works for trombone and electronics, but considerable technical skill and musical instincts are required to create a successful rendition of the piece. In a trombone studio at an American university, a graduate or very advanced undergraduate student should be able to fulfill these requirements and perform the piece at a satisfactory level. Performed by a trombonist of sufficient ability, *I Was Like Wow* could easily serve as an entertaining, yet moving departure from the standard recital combination of trombone and piano.

Chapter 4

Annotated List of Works Recommended by Survey Participants[71]

The following chapter consists of an annotated list including all available pieces recommended by participants in the survey mentioned in Chapter 1, as well as the pieces analyzed in Chapters 2 and 3. The purpose of the annotations is to inform trombonists and trombone instructors who are considering playing or assigning a piece of electronic music about various pieces that are being used and recommended by others, including characteristics of these pieces that may inform the decision-making process.

Works for solo trombone and electroacoustic music may exhibit a wide range of attributes. This includes different types of notation in both the solo part and the score indicating the electronic part. The solo part may use traditional notation, or it may use a different system that a performer would need to learn in order to play the piece. The accompaniment may likewise be indicated with traditional notation, shapes and symbols, prose, or not at all. Some works use only traditional trombone techniques, are completely tonal, and have an accompaniment that keeps a consistent tempo. Others use many extended techniques, have no recognizable melodies, and seem to be unmeasured. Knowing which aspects of the piece will pose a challenge to the performer can also be useful; this is included in each entry under "performance challenges."

Below is an example showing the type and format of the information to be presented about each piece, followed by the complete list of pieces.

_____

[71] Also includes pieces studied in Chapters 2 and 3, which were not mentioned in the survey.

Composer   Title
Instrument   Year
Publisher   Format (accompaniment)
Playing time
Dedication/commission, if known/applicable
Premiere, if known
Recordings, if applicable
Program, if applicable
Notation type (solo part)
Notation type (score/accompaniment)
Instructions for performance/interpretation of notation, if applicable
Stage directions, if applicable
Compositional Style
Types of sounds used in accompaniment
Range
Mutes, if applicable
Extended techniques, if applicable
Performance challenges

Composer: Alvarez, Javier   Title: Mambo Vinko
Instrument: Tenor trombone   Year: 1993 (rev. 2002)
Publisher: Composer   Format: ADAT, CD, DAT, or ProTools
Playing time: 17'50"
Dedication/commission: Composed for Vinko Globokar on a commission from the Groupe de
        Récherches Musicales in Paris
Premiere: Vinko Globokar at Radio France, May 1993
Recording: David Manson on *Beast*
Program: Inspired by a late-night hitchhiking trip with a Mexican log truck driver who loved
        Mambo music
Notation (solo): Traditional notation
Notation (score/acc.): Mainly traditional notation for cues, usually unpitched percussion
        notation.
Instructions: Instructions for setup and amplification of trombone
Style: A mix of abstract music (including sounds of a truck engine and air brakes) and Mambo
        feel, intended to paint a picture of the composer's hitchhiking experience
Sounds: Some actual truck sounds, some sounds sampled from Perez Prado and his orchestra, an
        interview with Perez Prado, and other electronic sounds.
Range: C to c'' (optional e-flat'')
Mutes: Plunger
Extended techniques: Plunger (open, closed, and half), flutter tongue, glissando with microtones

Performance challenges: Syncopation, Mambo rhythms and style, sometimes difficult to synchronize with tape, endurance, low range at beginning may be difficult for some tenor trombonists

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Composer: Austin, Larry

Title: Changes: Open Style

Instrument: Tenor trombone

Year: 1965

Publisher: Composer-Performer Edition

Format: Reel tape

Playing Time: 9'00"

Dedication/Commission: Commissioned by Dary John Mizelle

Notation (solo): Uses the bass (occasionally treble) staff. No exact rhythms. Open noteheads indicate naturals, black noteheads indicate sharps, and half-filled noteheads indicate quarter-tones. Other symbols used for various extended techniques. Score marked off in seconds—20 seconds on each line, 60 seconds on each page.

Notation (score/acc.): One staff above and one staff below indicate left and right speakers. Same notation as trombone part for traditional pitched sounds, but these are few. Shapes and lines in the approximate place on the staff indicate other sounds.

Instructions: A page of instructions is provided detailing the notation system, extended techniques used, and how to set the stage.

Style: Abstract, avant-garde style. Not very dramatic or energetic. Through-composed, sectional form. Recurring motives consist of similar sounds, and fast and slow groups of notes in the trombone part (sometimes trombone sounds in the tape). Alternation of dominance between trombone and tape. Trombone sometimes approximates or imitates sounds heard on the tape.

Sounds: Some trombone sounds used in addition to electronically-generated sounds. Traditional trombone sounds are heard a few times, also "kissing" the mouthpiece and other extended techniques used in the piece are heard on the tape, sometimes manipulated.

Range: AA to d'' (or as high as possible)

Mutes: Plunger

Extended techniques: Blow air through instrument, make high-pitched sound by drawing air in through instrument, "kiss" mouthpiece, "buzzing" into mouthpiece, multiphonics, overblow to produce "split" tone, flutter tongue, plunger, buzz directly into leadpipe, strike bell of instrument with felt mallet, produce "popping" sound by striking mouthpiece with hand while extending slide all the way off the instrument. Play BB on tenor trombone.

Performance challenges: Large number of extended techniques required, some very difficult. A few techniques may make some players wary of damaging the instrument (striking bell with felt mallet and wooden end of mallet, slapping mouthpiece while holding outer slide with feet and lifting the rest of the instrument off). Fast series of awkward leaps including microtones and one BB.

Composer: Burtner, Matthew   Title: AES/AER
Instrument: Tenor trombone   Year: 2005
Publisher: Composer   Format: Compact Disc
Playing Time: 11'00"
Dedication/Commission: For Haim Avitsur
Program: Title means "Brass/Atmosphere." "The piece explores the material aspects of the
        trombone through physical preparations of the instrument and virtual augmentation of
        certain characteristics of the instrumentation."
Notation (solo): Traditional notation with some limited use of indeterminacy.
Notation (score/acc.): Graphic representation of recorded part with occasional prose descriptions.
Instructions: Directions for covering bell in the first section of the piece, along with pictures.
Style: Intense and abstract at the beginning; ethereal, contemplative feel starting at
        approximately 2'00".
Sounds: Mostly computer sounds used, probably fractals.
Range: E to e'', possibly higher or lower in indeterminate sections
Mutes: Sheets of foil, Harmon mute
Extended techniques: Cover bell with tinfoil, produce muted effect by playing into a suspended
        sheet of tinfoil, glissando, rip across partials, multiphonics, Harmon mute with hand
        stopping.
Performance challenges: Use of extreme high range, sometimes difficult to synchronize with
        tape, play into and out of suspended tinfoil sheet, play motive gradually higher or lower
        to reach a certain pitch level (indicated as "slow gliss of figure up," etc), some use of
        indeterminacy.

Composer: Corwell, Neal   Title: Distant Images
Instrument: Tenor trombone   Year: 1992
Publisher: Nicolai Music   Format: Cassette tape
Playing Time: 8'56"
Dedication/Commission: For Ray Chaney
Premeire: Premiered by Ray Chaney on April 7, 1992 at Shepherd College, Shepherdstown, WV
Recordings: Recorded by the composer on *Distant Images.*
Program: From notes provided: "Although the composer did have a specific program in mind
        when the work was conceived, he recommends the listener use his/her own imagination
        to conjure up their own 'distant images.'"
Notation (solo): Traditional notation throughout. The few non-traditional symbols used are
        explained.
Notation (score/acc.): No score of accompaniment is provided. Occasional cues in solo part.
Instructions: Explanation of symbols used, materials needed
Style: Opening slow cadenza-like section, second section with some motion and rhythmic drive.
        Pulsating drones dominate the general feel of the accompaniment. Angular and
        chromatic lines, but not completely atonal. Drones serve as a pitch center; this changes

from B-flat to A and back to B-flat. Rhythmic motion in faster section comes almost
  exclusively from the solo part.
Sounds: According to the composer, sounds derived almost exclusively from composer's voice
  and a hammer striking metallic objects. Piano sound also used. Other sounds created
  include thunder, pulsating background drone, percussion, and others.
Range: Range: D to c''
Mutes: Straight mute, plunger, Harmon mute
Extended techniques: Glissando, a quasi-glissando technique involving articulation with
  imprecise pitch due to articulation of intermediate pitches while slide is moving between
  the first and last pitch, plunger opening and closing gradually.
Performance challenges: Quasi-glissando technique, syncopated accents in lines of running
  sixteenth notes

Composer: Davis, Michael   Title: Blackhawk
Instrument: Bass trombone   Year: 1995
Publisher: Hip-Bone Music   Format: Compact Disc
Playing Time: 8'
Notation (solo): Traditional notation in solo part
Notation (score/acc.): No score provided
Style: Upbeat 1990s pop. Trombone plays melody with electronic rhythm section.
Sounds: Synthesized drums, piano, and other background instruments
Range: GG to f'
Performance challenges: Legato eighth notes at a very fast tempo in the low register, usually not
  in stepwise motion.

Composer: Davis, Michael   Title: Mission Red
Instrument: Tenor trombone   Year: 1994
Publisher: Hip-Bone Music   Format: Compact Disc
Playing Time: 7'
Dedication/Commission: Commissioned by John Marcellus
Recordings: Recorded by John Marcellus on *Songs, Dances, and Incantations: American Music
  for Trombone*
Notation (solo): Traditional notation
Notation (score/acc.): No score provided
Style: Upbeat pop style, some sections in a more smooth-jazz style.
Sounds: Synthesized drums and keyboards
Range: F to b'
Performance challenges: Fast tempo, improvised solo section for 40 measures.

Composer: Diemente, Edward   Title: Hosanna II
Instrument: Bass trombone   Year: 1972

Publisher: Seesaw Music   Format: Reel tape

Playing Time: 7'55"

Dedication/Commission: Dedicated to Tom Everett

Notation (solo): Some sections use traditional notation without time signature or barlines, but indeterminate rests also occur, as well as notes played in indeterminate meter and rhythm.

Notation (score/acc.): No score provided.

Instructions: Includes instructions for indeterminate notation and playback of the tape, and for trombonist and tape recordist to signal each other at certain moments.

Style: Abstract and typical of its era in terms of sound palette. More active and rhythmic than other early works, and more melodic with a few recognizable melodic motives.

Sounds: Electronically manipulated sounds taken from a variety of sources, such as trombone and the human voice, as well as electronic sounds typical of the era

Range: BB-flat to g-sharp'

Mutes: Light, metal photographic lampshade 10.5" diameter, mounted on a stand.

Extended techniques: Flutter tongue.

Performance challenges: Indeterminacy including playing notes as fast as possible, high range may be a problem for some bass trombonists.

Composer: Diemente, Edward   Title: Things Heard

Instrument: Bass trombone   Year: 1980

Publisher: Composer   Format: Reel tape

Playing Time: 5'30"

Dedication/Commission: Commissioned by the American Music Center for Thomas Everett and dedicated to Thomas Everett.

Program: Inspired by a paragraph in *Wallace Stevens: Life as Poetry* by Samuel French Morse.

Notation (solo): Traditional notation throughout, but with no meter signature or barlines.

Notation (score/acc.): Traditional notation on 2 staves below the solo part.

Instructions: Instructions for style and interpretation of accidentals, as well as instructions for the tape recordist are included.

Style: Abstract, pointillistic but not always extremely active. Percussive effects often heard from the tape, such as short, accented piano chords (sometimes just isolated attacks), and sometimes the tape imitates the sound of the trombone. In general the tape compliments the trombone part well. Many isolated melodic gestures.

Sounds: Mainly acoustic sound material used. Sounds are from a variety of sources, such as piano.

Range: BB-flat to b-flat'

Mutes: Plunger, straight mute.

Extended techniques: Plunger open, closed, and half.

Performance challenges: Range/endurance could be an issue for some bass trombonists.

Composer: Druckman, Jacob | Title: Animus I
Instrument: Tenor trombone | Year: 1967
Publisher: Boosey and Hawkes | Format: Reel tape, now available on CD
Playing Time: 13'
Dedication/Commission: Composed for Davis Shuman
Premeire: Premiered by Andre Smith
Recordings: Recorded by Andre Smith on *Electronic Music III*
Program: Narrative of man vs. machine. Machine gradually overpowers man, but they end in a tenuous truce.
Notation (solo): Notation system based on traditional notation is used. The first section is written in traditional notation with a metronome marking of 72. After this initial passage, time is marked off in seconds. Traditional noteheads continue to be used, but duration is approximate and indicated by the length of the beam for longer notes; eighth notes represent notes that are short, but do not have a specific duration. Symbols introduced on the instruction page are used to represent extended techniques.
Notation (score/acc.): Traditional notation is used for the first entrance of the tape part, in which there is counterpoint between the trombone and tape. Afterwards, the score for the tape part uses shapes that give a general representation of the timbre, pitch, and volume of sounds heard. If the sound has a definite pitch, it is usually indicated in the proper position on the staff.
Instructions: An instruction page is provided, which thoroughly explains the extended techniques to be used and how they are notated. A stage diagram is also provided, with locations for the loudspeakers and the performer.
Stage directions: Performer is instructed to stand and sit to play at various times, and to leave the stage at one point.
Style: Abstract. There are a few recurring motives in the trombone and tape parts, but they never recur in the same way twice. No recognizable melodies, rhythms, or tonal centers. Many wide, disjunct leaps occur. Some of the sounds in the accompaniment are taken from actual trombone sounds, but the majority of the sounds heard on the tape are not identifiable.
Sounds: The first tape passage uses trombone sounds played by Davis Shuman. They begin as normal, when the trombone and tape parts play in counterpoint, but some of them are played faster. The second tape entrance also begins with recognizable trombone sounds, but from here onward, the sounds are a mixture of electronic and heavily manipulated acoustic.
Range: GG to d2
Mutes: Straight mute, cup mute, plunger, Harmon mute
Extended techniques: Multiphonics, flutter tongue, inhaled tongue-slap, exhaled tongue-slap, quick mute changes, plunger open/closed/half, hand stopping with Harmon mute
Performance challenges: Difficult multiphonics–sung pitches often dissonant with, in unison with, and below played pitches. Plunger techniques used in conjunction with flutter tongue and multiphonics.

Composer: Eakin, Charles G.   Title: Improvisation (Capriccio) for Trombone and Tape
Instrument: Tenor trombone   Year: 1974
Publisher: International Trombone Association Press   Format: Reel tape
Playing Time: 9'00"
Dedication/Commission: Commissioned by William Richardson
Premeire: Premeired by William Richardson at the University of Colorado, 1974
Recordings: Recorded by William Richardson on "Richardson on Record"
Notation (solo): Traditional notation, some limited use of indeterminacy
Notation (score/acc.): Mainly traditional notation, sometimes unmetered, and sometimes
        graphics used to represent unpitched/unmetered sounds
Instructions: Instructions provided for tempo, how to begin the piece and play with the tape, use
        of the F-attachment, and the ad-lib sections.
Style: Abstract, but not excessively dissonant. Recurring melodic motive [014] usually presented
        as descending major third followed by descending diminished seventh (major sixth).
        Some antiphonal tradeoff between trombone and tape, and some imitation.
Sounds: Tape part consists of some "mutated" trombone sounds and some sounds produced on a
        Moog synthesizer.
Range: FF-sharp to e-flat" (c'''?)
Mutes: "Wa-wa" (Harmon) mute
Extended techniques: Glissando, flutter tongue, Harmon mute with hand stopping, play with
        F-attachment slide removed, play BB on tenor trombone, vocalized "scream" through the
        trombone
Performance challenges: Rapid tonguing, some indeterminacy, sometimes must accelerate or
        ritard with the tape, range up to e-flat" (although only once), BB and FF-sharp difficult to
        play on tenor trombone

Composer: Erb, Donald   Title: ...and then, toward the end...
Instrument: Tenor trombone   Year: 1971
Publisher: Merion Music   Format: Reel tape
Playing Time: 8'30"
Dedication/Commission: Commissioned by and dedicated to Stuart Dempster
Recordings: Recorded by Stuart Dempster on *Drawing Down the Moon*
Notation (solo): Mainly traditional notation is used with some indeterminacy and nontraditional
        symbols. Extensive indeterminacy used in trombone cadenza.
Notation (score/acc.): Traditional notation is mostly used where possible. Traditional
        mensuration is retained. Nontraditional symbols used when necessary to represent
        sounds on tape.
Instructions: Symbols are explained in the margins on the page on which they first appear.
Style: Abstract. Some motives recur, such as long glissandi with breath accents in the middle,
        random shorter glissandi, multiphonics in close harmony, and fast groups of notes
        (sometimes in the extreme high register). No tonal centricity or significant harmonies are
        apparent. Considerable use of imitation between the trombone and tape parts.

Sounds: Tape part consists of electronically manipulated trombone sounds. They are usually not recognizable, often sounding like insect noises.

Range: Range: BB-flat to b-flat2 (or as high as possible)

Mutes: Harmon mute (no stem), plunger

Extended techniques: Multiphonics, vowel change, mouthpiece buzzing, glissando, valve trill, circular breathing, free improvisation.

Performance challenges: Very fast tonguing, difficult to synchronize indeterminate passages with tape (although perfect synchronization usually not necessary), difficult multiphonics in close harmony with one or both voices moving, circular breathing, extremely high range in a few passages, "subtle vowel changes" during multiphonics, instruction to "imitate tape sound," cadenza with optional free improvisation

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Composer: Garcia, Orlando Jacinto   Title: nubes nocturnas
Instrument: Tenor trombone   Year: 2004
Publisher: Composer   Format: CD
Playing Time: 8'56"

Dedication/Commission: for Mark Hetzler and James Fulkerson

Notation (solo): Traditional staff and notation, but unmeasured.

Notation (score/acc.): Same as solo part—traditional staff, but unmeasured notation.

Instructions: Timing indicated in the score, instructions for performance at the end of the score

Stage directions: Some stage directions—player moves between three locations on stage during the piece and often raises, lowers, or moves bell of instrument from left to right; lighting is to basically follow player around stage.

Style: Ethereal, contemplative. Focuses on timbre, consists solely of long held tones. Recorded part slowly shifts between harmonies and timbres, with no breaks in sound.

Sounds: Processed trombone samples that are designed to provide timbral counterpoint with the live trombone part

Range: c-f

Mutes: Straight mute (*"con sord."*)

Extended techniques: Multiphonics, flutter tongue

Performance challenges: The trombone part consists of held notes, mostly multiphonics, so the precise execution of the multiphonics is essential. Must keep time in order to know when to move to the next pitch.

Composer: Hamilton, Bruce   Title: Wintermute
Instrument: Tenor trombone   Year: 1995
Publisher: Composer   Format: Compact Disc
Playing Time: 9'25"

Dedication/Commission: Commissioned by Andrew Glendening and Morehead State University

Recordings: Recorded by Andrew Glendening on *Pathways*

Notation (solo): Traditional with one unmeasured improvised section (measure 123)

Notation (score/acc.): Percussion-stave rhythmic notation with some indication of rising and
     falling pitch
Instructions: Equipment recommendations are provided
Style: Abstract, avant-garde jazz feel. Sometimes centricity is established, but high degree of
     chromaticism and wide leaps preclude true tonality.
Sounds: Synthesized instruments. Mainly a wide variety of rhythm instruments, often for just a
     few notes apiece. Cymbal sounds are common, as are distorted bass-type sounds.
Range: C-sharp to f-sharp''
Mutes: Plunger, Harmon mute
Extended techniques: Flutter tongue, free improvisation with plunger, hand stopping with
     Harmon mute
Performance challenges: A number of very wide leaps, including leaps to very high notes. An
     extreme amount of syncopation in the trombone part as well as the accompaniment,
     including alternating groups of 3, 4, and 5 notes. Free improvisation with plunger.

Composer: Kallstrom, Michael   Title: Giovanni's Fantasy
Instrument: Tenor trombone   Year: 1999
Publisher: Composer   Format: Compact disc
Playing Time: 14'00''
Premeire: Doug Farwell
Program: Not programmatic, based on themes from opera music by Mozart.
Notation (solo): Traditional notation throughout. Occasional brief unmetered sections.
Notation (score/acc.): Traditional notation on two staves. Solo part provided as well as score
     with solo and accompaniment.
Instructions: No special instructions.
Style: Lyrical and somewhat tonal. Percussive and energetic in fast movements; free and
     expressive in the slow movement.
Sounds: Many synthesized sounds, mainly percussive effects as well as some string sounds.
Range: F-sharp to b-flat'
Extended techniques: Glissando
Performance challenges: Some use of syncopation, mixed meter, and large leaps.

Composer: Kleinsasser, William   Title: Projected Resonance
Instrument: Tenor trombone   Year: 1990, rev. 1997, 2000, 2004
Publisher: Composer   Format: Tape, now MAX/MSP
Playing Time: 12'20''
Dedication/Commission: Composed for Andrew Glendening
Recordings: Recorded by Andrew Glendening on *Pathways*
Program: Not programmatic; based on a single sonority, set in three large sections that each
     develop a specific type of relationship between trombone and tape.
Notation (solo): Traditional notation throughout

Notation (score/acc.): Traditional notation, with the caveat that it is a rough indication and should not be followed exactly. Sometimes the notation goes away in favor of a prose description (i.e. "rising chord sequence")

Instructions: Instructions given at appropriate time in the score

Style: Atonal, but with lyrical qualities. The piece has a definite sense of direction through the three sections and is not overly abstract or dissonant. The trombone and tape parts function as equal partners.

Sounds: Trombone sounds used, supplemented by FM sounds.

Range: E-flat to d''

Extended techniques: Glissando, multiphonics

Performance challenges: Difficult to synchronize if using tape version; MAX/MSP version gives cues indicated in score to make synchronization easier. Large, non-tonal leaps. Some heavily syncopated rhythms. Fairly high range, piece ends on *fortississimo* d2 held for approximately 6 seconds. Multiphonics, sung pitch is often in unison with played pitch.

Composer: Mobberley, James   Title: Beams!

Instrument: Tenor trombone   Year: 1986

Publisher: Modern Editions   Format: Compact disc

Playing Time: 8'31"

Dedication/Commission: Composed for John Leisenring

Recordings: Recorded by John Leisenring on *Music from SEAMUS vol. 8* and *Americans in Rome*

Program: Not programmatic; part of a series of works (*Pluralities*) for solo instruments and tape in which the tape only uses sounds from the solo instrument.

Notation (solo): Standard notation used with some indeterminacy, such as notes getting faster or slower, notes played as fast as possible, random slide movement. Some extended techniques are just indicated with prose (e.g. "breathe into tubing")

Notation (score/acc.): Electronic part indicated on two staves, notation similar to solo part.

Instructions: Performance notes provided to explain markings in the score and the notation used for indeterminate events.

Style: Abstract, atonal. Accompaniment is often dry and short. The piece is metered throughout, but sometimes indeterminate rhythms are not in time. Some elements of jazz style. A lot of energy and intensity in the piece.

Sounds: All sounds used are trombone sounds played by John Leisenring. Many could be considered extended techniques, such as mouthpiece buzzing, breathing sounds, or striking part of the instrument. Sounds are heavily manipulated to produce certain pitches and timbres.

Range: BB to e'' (or as high as possible)

Mutes: Plunger

Extended techniques: Glissando, flutter tongue, plunger, vocalization through the instrument, blowing air through the instrument, mouthpiece buzzing, pull out F slide, free improvisation.

Performance challenges: Wide range, fast articulation, heavy use of chromaticism, 11 measures of free atonal improvisation, indeterminacy, synchronizing passages (sometimes in unison) with the tape that involve heavy syncopation or indeterminacy.

Composer: O'Grady, Douglas   Title: Moe's Bit o'Blues
Instrument: Tenor trombone   Year: 2008
Publisher: Composer   Format: Compact Disc
Playing Time: 10'
Dedication/Commission: Commissioned by Maureen Horgan
Premeire: Premiered by Maureen Horgan
Notation (solo): Traditional notation, includes jazz-style improvisation
Notation (score/acc.): Cues on a grand staff using traditional notation
Style: Techno-blues style. 3 movements. First movement is a slow blues, second movement starts slow and shifts to a fast, compound-meter "sleigh ride," third movement is slow with extended section of improvisation.
Sounds: Electronically generated sounds of various kinds.
Range: F to c"
Performance challenges: Extended improvisation in third movement; optional solo written by Wycliffe Gordon is in progress. Some fast articulation and syncopation in second movement.

Composer: Osborne, William   Title: Music for the End of Time
Instrument: Tenor trombone   Year: 1998
Publisher: Polymnia Press
Format: Digital Video Disc (DVD-A 5.1 Surround), Compact Disc for practice
Playing Time: 52'
Dedication/Commission: For Abbie Conant
Premeire: Premiered by Abbie Conant at McGill University in March 1998
Recordings: Recorded by Abbie Conant on the DVD *Music for the End of Time*
Program: Based on excerpts from the book of Revelation.
Notation (solo): Traditional notation throughout.
Notation (score/acc.): Cues on 1-2 staves using traditional notation.
Instructions: Instructions for interpretation of indications for vibrato, trills, multiphonics, and playing with F-attachment tuning slide removed. Also includes instructions for setting up the required sound system.
Stage directions: Indication for moving bell from left to right and right to left in one instance
Style: Atonal, has many sections with different characteristics—ethereal, sustained and lyrical, percussive, dramatic, visceral.
Sounds: Wide range of electronic sounds used.
Range: C-sharp to e-flat"
Mutes: Harmon mute, cup mute

Extended techniques: Glissando, flutter tongue, multiphonics, playing without F-attachment slide, F-attachment trill, hand-stopping with Harmon mute

Performance challenges: Extremely long; endurance is an issue. Wide range, large chromatic leaps, extensive use of syncopation, difficult to synchronize exactly with tape.

Composer: Phillips, Mark   Title: T.Rex

Instrument: Tenor trombone   Year: 1996

Publisher: International Trombone Association Press   Format: Compact Disc

Playing Time: 15'

Dedication/Commission: Commissioned with funds from the Ohio University Research Committee, additional support from the Ohio Arts Council, and with special thanks of Andrew Glendening, Kevin James, Roger Oyster, and Tom Plsek.

Recordings: Recorded by John Marcellus on *Songs, Dances, and Incantaions: American Music for Trombone* and Andrew Glendening on *Pathways: New Music for Trombone*

Program: No program; the composer indicates that the "T" could stand for "Tyrannosaurus" or "Trombone."

Notation (solo): Mainly traditional notation with some standard indications for limited indeterminacy (beams that get farther apart or closer together, black noteheads with no stems).

Notation (score/acc.): No score provided for movements I and III; these movements are basically unmetered. A study score is provided for movement II with the trombone part and the accompaniment indicated on two staves. A partial score is provided for movement IV with bass cues.

Instructions: Instructions are provided with suggestions for practice and synchronizing with the tape, and explanations for the improvised sections in movements III and IV.

Style: Movements I and III are mostly unmetered. Movement I is like a cadenza with sustained, dronelike background sounds and accelerando/rallentando passages in the solo. Movement III has more sustained sounds with timbre changes (hand waving over the end of a Harmon mute) in addition to a few faster lines. An improvisation section near the end of the movement suggests any isolated events that fade in and out. The other movements have more drive and regular rhythmic activity; movement II is in a moderately slow funk style, and movement IV is in a funky Latin style.

Sounds: All sounds in the accompaniment are actual trombone sounds, played by John Marcellus, Andrew Glendening, Kevin James, Roger Oyster, Tom Plsek, and the composer. Some sounds are not traditional trombone sounds, and many of the sounds have been altered.

Range: F to e-flat''

Mutes: Cup mute, Harmon mute (or pixie mute with plunger), any other mutes of the player's choice for improvised sections

Extended techniques: Glissando, fall, scoop, hand-stopping with Harmon mute, plunger technique (optional), any other techniques of the player's choice for improvised sections (suggestions include air sounds, partially disassembled instrument sounds, and others)

Performance challenges: Range up to e-flat2, some indeterminacy, sections that are in free time but still must end in synchronization with the tape, three sections of free improvisation.

Composer: Risher, Tim
Title: RPMusic: Concoctions and Variations for Solo Bass Trombone and Tape
Instrument: Bass Trombone   Year: 1985
Publisher: PP Music   Format: Tape
Playing Time: 10'
Dedication/Commission: For Dudley Hinote
Program: No program; "Exploits the low notes obtainable on a bass trombone."
Notation (solo): Traditional notation, except in cadenza. Thick black lines indicate note duration for longer held notes in cadenza. X's indicate indeterminate pitches.
Notation (score/acc.): Tape part indicated on between 0 and 2 staves generally with traditional notation. A few exceptions occur for repeated patterns, in which the first few iterations are written out followed by an arrow.
Style: Explores consonant and dissonant sonorities as well as quasi-minimalist rhythmic ostinati and fractal patterns. Bass trombone part is at times melodious, but often plays a more harmonic or rhythmic role in the texture.
Sounds: Some trombone sounds used, such as in the opening chord. Electronic sounds realized on the Interactive Music Synthesizer at Florida State University.
Range: CC-sharp to B' (or higher in indeterminate section)
Mutes: Straight mute
Extended techniques: Multiphonics
Performance challenges: Must sustain a "long" CC-sharp an undetermined amount of time. Some large, non-tonal leaps. Fast section after second cadenza can be difficult to synchronize with tape; the tape part has a fast sixteenth-note ostinato pattern which later changes, but downbeats are not accented. Must synchronize with sudden tempo change from m.m. 140 to 100.

Composer: Ross, Walter   Title: Prelude, Fugue, and Big Apple
Instrument: Bass trombone   Year: 1973
Publisher: Boosey and Hawkes   Format: Reel tape
Playing Time: 11'18"
Recordings: Recorded by Per Brevig on *Trombone Concerto/Prelude, Fugue, and Big Apple*
Program: Old idea of prelude and fugue form combined with a dance called the Big Apple
Notation (solo): Mainly traditional notation, but often without barlines. A few nontraditional indications are used for instructions such as "as fast as possible" and slide vibrato.
Notation (score/acc.): Tape part indicated above the solo part using shapes and lines to indicate the sounds heard; traditional notation is not used.
Instructions: Instructions included for nontraditional symbols used in the solo part and for the temporal length of each musical system.

Style: The trombone begins the prelude in declamatory style. The tape enters later, and the two
      exchange atonal barbs. The fugue is also atonal and does exhibit some imitation; the tape
      begins quietly with the subject answered by the trombone, building to a climax in the
      middle of the movement. The Big Apple is an upbeat dance led by an ostinato in the tape
      with interjections and improvisatory melodic statements by the trombone. Periodically,
      time stops and the tape has a solo interlude.

Sounds: Sounds appear to be electronic in origin.

Range: AA to b-flat'

Mutes: Harmon mute, bucket mute

Extended techniques: Glissando, slide vibrato, hand stopping with Harmon mute, blow air and
      move slide without sounding.

Performance challenges: A few quick mute changes, must coordinate with tape in some places
      where notation of tape part is somewhat difficult to follow.

Composer: Schindler, Allan   Title: Eternal Winter
Instrument: Tenor trombone   Year: 1986
Publisher: Semar   Format: Tape
Playing Time: 14'
Dedication/Commission: For John Marcellus
Recordings: John Marcellus on *Songs, Dances, and Incantations* and Paul Hunt on *New Music
      Festival: Virtuosi*

Notation (solo): Traditional notation, but no time signature or barlines, some indeterminacy.

Notation (score/acc.): Mostly traditional notation on 2-4 staves, but other symbols tracing
      approximate shape of accompaniment are used when traditional notation does not suffice.

Instructions: Instructions for the few nontraditional indications used, and instructions for
      playback of the tape part.

Style: Abstract but jazzy. Sections alternate between slow, ethereal, ballad-like and energetic,
      exciting. Plenty of activity and interest throughout.

Sounds: Some trombone sounds (occasionally unaltered), some recorded vocalization, many
      synthesized percussion sounds.

Range: GG to e'' (or as high as possible)

Mutes: Straight mute, cup mute, hat or plunger

Extended techniques: Microtones, glissando, flutter tongue, play into suspended hat or plunger,
      multiphonics, rips, rips to or from indeterminate pitches, lip trill.

Performance challenges: Very wide range, difficult to synchronize with tape, very wide leaps in
      fast passages, difficult multiphonics.

Composer: Ter Veldhuis, Jacob   Title: I Was Like Wow
Instrument: Tenor trombone   Year: 2006
Publisher: Boombox Music   Format: Compact Disc
Playing Time: 10'30"

Dedication/Commission: for Jörgen van Rijen

Premeire: 5 October 2006 by Jörgen van Rijen at the Ontmoetingscentrum te Schiermoonikoog

Recordings: Recorded by Jörgen van Rijen on *I Was Like Wow*

Program: Images of the war in Iraq, audio consists mainly of excerpts from interviews with American war veterans.

Notation (solo): Traditional notation

Notation (score/acc.): Traditional notation using approximate pitches and rhythms for words spoken in the soundtrack. Does not represent all sounds on the CD, and does not exist in some places.

Instructions: Includes text of the spoken words used on the CD and instructions for type of playback equipment and volume levels.

Style: Influenced by popular music such as hip-hop. Some sections sound free and arhythmic and some use regular rhythmic patterns, but every rhythm in the piece is strictly measured. Some recognizable melodic motives are present, but no extended melodies. The more active sections emphasize rhythm over melody.

Sounds: Mostly spoken word taken from interviews with two American soldiers who served in Iraq in 2003. Some material also taken from a live performance of Muddy Waters's "Hoochie Coochie Man." Some of the sounds are manipulated (mainly slowed down), but most are presented in their original form.

Range: E-d"

Mutes: None indicated, but van Rijen uses a Harmon mute on the recording in passages indicated by text "closing wah" and "waving wah"in score.

Extended techniques: Multiphonics, flutter tongue, "quasi gliss."

Performance challenges: Multiphonics in the low register combined with flutter tongue, measures 2-8. Fast tonguing   and wide leaps from measures 128-156. Extended sustained high register playing at the very end (measures 161-165). Tempo must remain absolutely steady throughout—at 48 beats per minute, many players will tend to rush.

Composer: Vine, Carl   Title: Love Song
Instrument: Tenor trombone   Year: 1986
Publisher: Chester Music   Format: Compact Disc
Playing Time: 6'40"

Dedication/Commission: Dedicated to and commissioned by Simone de Haan with assistance from the Music Board of the Australia Council.

Notation (solo): Traditional notation

Notation (score/acc.): Traditional notation on 3-5 staves

Style: Tonal, sentimental and lyrical feeling. Not very chromatic or syncopated. Layered rhythms in accompaniment create a feeling of freedom.

Sounds: Synthesizer, including organ- and bell-like sounds

Range: e-flat to d"

Performance challenges: Endurance; the piece spends a lot of time in the upper register and ends with sustained d2s, some accented. Layered opposing rhythms in accompaniment can

make it difficult to keep one's place, especially when the metric pulse changes, but the actual rhythms in the accompaniment do not.

Composer: Zarou, Richard   Title: The Smell of Wet Dogs After a Summertime Rain

Instrument: Bass trombone   Year: 2005

Publisher: Gold Branch Music   Format: Compact disc

Playing Time: 4'19"

Dedication/Commission: Commissioned by Aaron Misenheimer

Premeire: Premiered by Aaron Misenheimer at Florida State University, 21 February 2006

Notation (solo): Traditional notation

Style: Hip hop/Techno/Funk (all of these are specified in published part)

Sounds: Synthesized bass, drums, electronic keyboard, and other sounds

Range: EE to e'

Performance challenges: Articulating sixteenth notes in this register can be a challenge. A few wide skips.

Chapter 5

Conclusions and Recommendations for Further Study

Through research undertaken for the present study, twenty-five works for trombone and electroacoustic music were discovered through the recommendations of survey participants, and two others were chosen for in-depth study in Chapters 2 and 3. Of the twenty-seven total works, twenty-six were included in the study and one was unavailable. These twenty-six pieces are distributed quite evenly throughout the time period between 1965 and 2008, and they include examples of many different styles of music ranging from 1960s avant-garde to 1990s pop. This does not include approximately twenty works that were suggested, but not included because they fall outside the scope of the project—they are not originally for trombone, are intended to be performed with a self-prepared tape, or rely upon live electronic effects.

Conclusions

After examining all twenty-seven of these pieces listed in Chapter 4, especially the Austin and Ter Veldhuis pieces analyzed in detail in Chapters 2 and 3, one may perceive a gradual shift in musical style over the time period covered. Works composed in the earlier part of this time period tend to have a more abstract, sometimes dissonant sound that may seem alien even to experienced musicians who are not familiar with the genre, while those composed more recently are more often (but not exclusively) influenced by popular music, and they usually have a more familiar sound. New technology that has emerged over the years seems to be partially, but not completely, responsible for this shift in style.

The earlier works, such as those by Austin, Druckman, and Erb, tend to be abstract. Their accompaniment tracks are composed of a mixture of sounds of acoustic and electronic origins, but even the acoustic sounds used are often manipulated electronically and no longer resemble those made by the original source, nor those made by any other acoustic instrument. These pieces have an electronic, synthesized sound reminiscent of the era in which they were composed. Works from this era often sound quite different from traditional art music; they even tend to sound quite different from one another, owing to the fact that each composer used his or her own unique methods of electronically manipulating and creating the sounds used.

Many later works, such as those by Michael Davis, Jacob Ter Veldhuis, and Douglas O'Grady, have been influenced heavily by popular music. Davis, himself a trombonist, has composed *Mission Red* for tenor trombone and tape as well as *Blackhawk* for bass trombone and tape. Composed in the 1990s, both of these pieces utilize a consistent, fast tempo and a lively pop style typical of the era from which they hail. They generally use 8-measure phrases and melodic styles reminiscent of jazz with straight eighth notes. O'Grady's piece included in the present study, *Moe's Bit o' Blues,* is also influenced considerably by jazz. The three movements consist of a free, impromptu-sounding blues, a blues in 12/8 time, and a mostly-improvised ballad. The accompaniment, however, is composed of synthesized sounds not generally heard in jazz or blues music; this gives the piece a somewhat "techno" feel; the listener is never allowed to forget that the piece was composed using computers and synthesizers. Jacob Ter Veldhuis's *I Was Like Wow,* however, does use sounds more familiar to the hip-hop style of which it is reminiscent—synthesized bass, drums and other sounds are common in the piece.

While many of these newer works are influenced by various styles of popular music, that is not the case for all of the more recent compositions in the present study. Another direction in which some contemporary composers of electronic music have ventured is toward the more ethereal and experimental, focusing on individual timbres, consonances and dissonances, or other musical relationships. Composed in 2004, *Nubes Nocturnas* by Orlando Jacinto Garcia is one such piece. Sustained and contemplative, the piece consists solely of gradual changes in harmony and slight changes in timbre. The trombone and tape parts are composed of long-held open harmonies, generally perfect fifths (multiphonics in the trombone part). The trombonist performs some of these open and some muted, points the instrument in different directions, and slowly moves between three positions on the stage. *AES/AER,* composed in 2005 by Matthew Burtner, is another (although less extreme) example. This piece explores two types of material essential to playing the trombone: metal and air. The initial section has a brassy character, and the trombonist even is instructed to cover the bell of the instrument in foil. The accompaniment in the latter part of the piece has an ethereal feel, although the trombone is somewhat more active. The piece is atonal, but has a listenable quality.

Trends in compositional style in music for trombone and electronics, then, can be said to have moved in two separate directions—styles that resemble popular music, and those that focus on basic elements of sound and tone production. Several possible reasons may be proposed for the gradual change in the mainstream styles of these electronic works. As stated previously, one reason may have been the advent of more advanced sound production (and replication) technology. Taking the pieces from Chapters 2 and 3 as examples again, Ter Veldhuis often used computer-synthesized reproductions of acoustic instruments such as drums and bass, as well as

other sounds such as *e-ambient* and *e-pipes* that may not reproduce the sound of a specific instrument, but have timbres that could plausibly be produced by an acoustic source. When Austin composed *Changes: Open Style,* however, the technology to synthesize sounds similar to acoustic instruments such as drums and bass did not yet exist; Austin had access to equipment that could create sound waves of various pitches and shapes such as sine waves and sawtooth waves, but could not produce sounds with complex overtones such as are possible with more modern synthesizer and computer equipment.

Advancements in modern technology also have allowed composers such as Garcia to create lush, resonant sonorities with excellent playback quality. Had a composer of Austin's generation attempted to experiment with such subtle differences in timbre and sonority, the effect would not have been perceived by the listener due to the lack of technology to manipulate the sounds with the fine degree of control required, or to reproduce the manipulated sound with high enough fidelity.

Another proposed explanation for the trends in electronic compositional style over the last forty-five years is a shift in the type of composers working in the medium. In the 1960s, composers such as Jacob Druckman and Larry Austin were among the pioneers in the area of electronic music, especially that involving a live acoustic solo instrument. These composers were probably exploring the capabilities of live-electronic music—testing the limits of the new medium, as well as the limits of their audience. "Man versus Machine" was a common theme in this era (Druckman's *Animus I* is an example of this); the "Machine" was represented by the electronic accompaniment part, and it often showed how easily it could annihilate the soloist ("Man") with its unstoppable might.

In the modern era, the limits and effectiveness of the solo-with-electronics medium have long been proven and accepted. Composers still perform experiments using the genre, but these experiments tend to concern the elements of the music itself—such as how Garcia experiments with timbre and harmony, and how Burtner experiments with focusing on the concrete materials used to make sound. Other composers such as Davis, Ter Veldhuis, and O'Grady use the tools of modern electronic composition, far more advanced than in 1965, to realize their vision of inserting classical instruments such as the trombone into an electronically-driven popular (or to use Ter Veldhuis's term, "Avant-pop") setting. These composers are not exactly "pioneers" or "experimenters" in the same sense as the others mentioned here, but their music is still different and fresh-sounding due to the unique combinations of sound and rhythmic possibilities created with the help of recent technology.

Since the early 1960s, many composers have created musical works for solo trombone with electroacoustic accompaniment in a number of different styles, and using various different techniques. For a variety of reasons, the mainstream compositional style in this genre has shifted over the course of this time period; most early compositions were experimental and abstract, while more recent works generally fall into one of two categories—those influenced by popular music, and those focusing on a specific element of the music itself. Twenty-seven works of music for trombone and electronics have been mentioned and described in some detail in the present study, and these works represent a broad distribution of the available compositions in terms of the period in which they were composed, their compositional styles, as well as level of difficulty. For any trombonist interested in learning a piece of music with electronic accompaniment, there likely exists a good musical match among the repertoire in this genre. It is

the goal of this study to help a trombonist inexperienced in this type of music to find that match in terms of his or her musical interests, the needs of the potential recital or concert program, and the difficulty level appropriate for the player.

Recommendations for Further Study

This document presents a thorough analysis of two works for trombone and electroacoustic music, as well as an annotated list including twenty-five other such works with brief descriptions. It does not, however, represent an exhaustive study of the genre. Further research in the field of music for solo trombone with electronics may be conducted as follows:

- A project similar to the present study, but including an annotated list of works for solo trombone that include live electronic effects.

- A project similar to the present study, but including an annotated list of works for trombone in chamber music ensembles including electronic music.

- A project similar to the present study, but including an annotated list of works for trombone and self-prepared tape (works that may also be played by a live trombone ensemble).

- An online version of a similar annotated list, which would include audio clips from each piece. This would give a person the ability to hear the music and become more familiar with its style.

- A recording project including some of the works in the genre that have never been recorded.

- A more in-depth study of the evolution of compositional style in the genre.

- Biographical sketches of trombonists who have made substantial contributions to the genre, including those who have performed, commissioned, or composed music including electronics.

Music including an electroaoustic component makes up a significant portion of the repertoire of avant-garde works for trombone. However, many trombonists are unfamiliar with the genre entirely or are only familiar with a few such compositions. The present document could not hope to address every question a trombonist would have regarding this type of music, but it provides a starting point for someone looking learn about compositions in the genre that have been recommended by musicians most familiar with them.

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> With Tony Arnold et al. Bridge 9271A-D, 1998. 4 Compact Discs.

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> Boyd, Kenneth Grant, John Hunt, Richard Killmer, Bill Dobbins, Ronald Gardiner, and

> Ramon Ricker. Albany Records TROY583, 2000. Compact disc.

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> 1988. LP.

Rijen, Jörgen van. *I Was Like Wow.* With Paolo Giacometti, Marcel Beekman, Jan Willem de

> Vriend, Frits Damrow, and Combattimento Consort Amsterdam. Channel Classics CCD

> SA 26909, 2008. Compact disc.

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> Turnabout TV 34177, 1967. LP.

Appendix

Full Results of Survey

Questions listed are as follows:

1. Have you used music for trombone and electroacoustic accompaniment in your teaching
   studio? If so, what pieces have you used?

2. Have you personally performed music for trombone and electroacoustic accompaniment? If
   so, have you played any that you would recommend for use in a collegiate teaching
   studio?

3. Have you heard others perform music for trombone and electroacoustic accompaniment? If
   so, have you heard any that you would recommend for use in a collegiate teaching
   studio?

Respondent #	Question 1	Question 2	Question 3
1	Druckman: Animus I, Ross: Prelude, Fugue, and Big Apple	Druckman: Animus I, Ross: Prelude, Fugue, and Big Apple	None
2	None	Phillips: T.Rex, Zarou: The Smell of Wet Dogs After a Summertime Rain, O'Grady: Moe's Bit o'Blues	None
3	Vine: Love Song, Davis: Mission Red, Davis: Blackhawk, Phillips: T.Rex, Kallstrom: Giovanni's Fantasy	Druckman: Animus I, Kallstrom: Giovanni's Fantasy, Davis: Mission Red, Davis: Blackhawk	Davis: Mission Red, Davis: Blackhawk, Phillips: T.Rex
4	None	None	None
5	None	Davis: Mission Red	None
6	None	Phillips: T.Rex	None
7	None	None	None
8	Davis: Mission Red, Phillips: T.Rex	Alvarez: Mambo Vinko, Garcia: nubes nocturnas, Burtner: AES/AER	None
9	Phillips: T.Rex, Ross: Prelude, Fugue, and Big Apple	None	Phillips: T.Rex, Ross: Prelude, Fugue, and Big Apple
10	None	None	None
11	None	None	None

Respondent #	Question 1	Question 2	Question 3
12	Phillips: T.Rex	Phillips: T.Rex, Ross: Prelude, Fugue, and Big Apple	None
13	Ross: Prelude, Fugue, and Big Apple, Eakin: Capriccio, Druckman: Animus I	Ross: Prelude, Fugue, and Big Apple, Eakin: Capriccio	Mobberly: Beams!, Phillips: T.Rex, Davis: Mission Red, Schindler: Eternal Winter
14	None	None	None
15	None	None	None
16	Zarou: The Smell of Wet Dogs After a Summertime Rain	Zarou: The Smell of Wet Dogs After a Summertime Rain	Davis: Mission Red, Phillips: T.Rex
17	None	Diemente: Hosanna II	Phillips: T.Rex
18	None	Ross: Prelude, Fugue, and Big Apple	None
19	Davis: Mission Red, Risher: RPMusic, Phillips: T.Rex, Ross: Prelude, Fugue, and Big Apple	Davis: Mission Red, Druckman: Animus I	None
20	None	Erb: ...and then, towards the end..., Eakin: Capriccio	Eakin: Capriccio
21	Phillips: T.Rex	None	Druckman: Animus I, Erb: ...and then, towards the end..., Corwell: Distant Images
22	Davis: Mission Red	None	None
23	Druckman: Animus I, Mobberly: Beams!	Druckman: Animus I, Mobberly: Beams!, Bain: Degrees of Accuracy (unavail.)	None
24	None	None	None
25	Davis: Mission Red	Davis: Mission Red, Phillips: T.Rex	None
26	None	None	None
27	None	None	None
28	Druckman: Animus I	Druckman: Animus I	None
29	None	None	None
30	None	None	None
31	Davis: Mission Red, Mobberly: Beams!, Phillips: T.Rex	Davis: Mission Red, Mobberly: Beams!	Zarou: The Smell of Wet Dogs After a Summertime Rain
32	None	None	None
33	None	None	None
34	None	None	None
35	None	Ross: Prelude, Fugue, and Big Apple, Druckman: Animus I	Phillips: T.Rex
36	None	Ross: Prelude, Fugue, and Big Apple, Diemente: Things Heard	"Too many to mention"
37	None	None	None
38	None	None	None
39	None	Davis: Mission Red	Phillips: T.Rex
40	None	None	None
41	None	None	None
42	None	None	Hamilton: Wintermute
43	None	Druckman: Animus I	None

Respondent #	Question 1	Question 2	Question 3
44	Druckman: Animus I, Ross: Prelude, Fugue, and Big Apple	Druckman: Animus I	None
45	None	None	Davis: Mission Red, Phillips: T.Rex, Ross: Prelude, Fugue, and Big Apple
46	None	None	None
47	Druckman: Animus I, Phillips: T.Rex	Druckman: Animus I, Phillips: T.Rex, Mobberly: Beams!	None
48	None	None	None
49	None	None	None
50	None	None	None
51	None	None	Phillips: T.Rex
52	Phillips: T.Rex	Druckman: Animus I	Phillips: T.Rex, Druckman: Animus I
53	None	None	None
54	None	None	None
55	Druckman: Animus I, Ross: Prelude, Fugue, and Big Apple	Druckman: Animus I, Ross: Prelude, Fugue, and Big Apple	None
56	None	None	None
57	None	Davis: Mission Red, Phillips: T.Rex	None
58	None	None	Druckman: Animus I
59	Davis: Mission Red, Phillips: T.Rex	Phillips: T.Rex	None
60	None	None	None
61	None	None	Osborne: Music for the End of Time
62	Druckman: Animus I, Ross: Prelude, Fugue, and Big Apple	None	None
63	None	Davis: Mission Red	None
64	Mobberly: Beams!, Ross: Prelude, Fugue, and Big Apple	Druckman: Animus I	Phillips: T.Rex
65	Phillips: T.Rex, Ross: Prelude, Fugue, and Big Apple, Davis: Mission Red, Mobberly: Beams!	None	None
66	None	Hamilton: Wintermute, Phillips: T.Rex, Kleinsasser: Projected Resonance, Druckman: Animus I	None

Composer	Title	# Respondents
Phillips, Mark	T.Rex	25
Druckman, Jacob	Animus I	18
Ross, Walter	Prelude, Fugue, and Big Apple	16
Davis, Michael	Mission Red	15
Mobberley, James	Beams!	6
Zarou, Richard	The Smell of Wet Dogs After a Summertime Rain	3
Eakin, Charles	Capriccio	2
Erb, Donald	...and then, toward the end...	2
Hamilton, Bruce	Wintermute	2
Alvarez, Javier	Mambo Vinko	1
Burtner, Matthew	AES/AER	1
Corwell, Neal	Distant Images	1
Davis, Michael	Blackhawk	1
Diemente, Edward	Hosanna II	1
Diemente, Edward	Things Heard	1
Garcia, Orlando Jacinto	nubes nocturnas	1
Kallstrom, Michael	Giovanni's Fantasy	1
Kleinsasser, William	Projected Resonance	1
O'Grady, Douglas	Moe's Bit o'Blues	1
Osborne, William	Music for the End of Time	1
Risher, Tim	RP Music	1
Schindler, Allan	Eternal Winter	1
Vine, Carl	Love Song	1