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I, Amy K. Cherry,

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Student Signature: Amy K. Cherry

This work and its defense approved by:

Committee Chair: Alan Siebert

Timothy Northcut

Dr. Elizabeth Wing

Approval of the electronic document:

I have reviewed the Thesis/Dissertation in its final electronic format and certify that it is an accurate copy of the document reviewed and approved by the committee.

Committee Chair signature: Alan Siebert

# **Extended Techniques in Trumpet Performance and Pedagogy**

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by

Amy K. Cherry

B.M., University of Illinois, 1993

M.M., University of Cincinnati, 1995

Committee Chair: Alan Siebert

## ABSTRACT

The impetus for this study was the question of whether extended techniques are actually being taught in college trumpet studio settings as standard skills necessary on the instrument. The specific purposes of this document included: 1) catalogue the extended techniques available to today's trumpet performer, 2) reflect on their current use and address the question of how and when students are introduced to extended techniques, 3) contribute pedagogical exercises and suggestions to aid trumpeters in the study of some of the more challenging techniques, and 4) conclude with a Guided Approach to the literature detailing suggestions for the study of the twenty pieces referenced in this document.

A survey was conducted of the current pedagogical status of extended techniques at the collegiate level. The online survey, which included questions regarding how and when students are introduced to extended techniques in their study of the trumpet, was completed by 166 college and university trumpet studio teachers from the United States and Canada. Examination of the results offers a unique view of the attention currently being given to extended techniques in college trumpet studios; they provide insight into specific teaching materials and performance repertoire being used by studio teachers today.

Within each chapter pedagogical exercises assist in the study of certain techniques. The exercises are written as an introduction to many of these techniques, offering opportunities to experiment with the more challenging techniques before encountering them in the literature. Two specific techniques, multiphonics and flutter

tonguing, are covered in greater detail with a larger collection of exercises. Pedagogical suggestions offered by the survey respondents are also included.

Finally, the Guided Approach to the literature was compiled. Twenty pieces were selected and arranged in an order that provides a progressive approach to extended techniques. Each piece is catalogued through an individual profile which provides practical information regarding the piece: date, publication information, length, range, style of notation used, equipment requirements, who the piece was commissioned by or written for, a listing of all extended techniques employed, a listing of existing recordings, and a commentary concerning its particular challenges and benefits of study. The goal is to provide a resource for those who might not be familiar with the repertoire and help them choose appropriate literature for their students' level of experience with these techniques.

There exists a need for additional pedagogical materials that can be used to introduce extended techniques to students of the trumpet. The document is designed to aid the serious student of the trumpet in meeting all the expectations of the repertoire.

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## Introduction

The expectations placed on today's trumpeters are many and diverse. As the role of the instrument has changed over centuries, the skills required for serious performance of this instrument have accumulated. From signals to clarino playing, from fanfares to jazz, modern trumpeters are expected to master a variety of styles and techniques, none perhaps as challenging as the extended techniques common in the 20<sup>th</sup> century.

Extended techniques, effects, and extra-musical sounds outside of the traditional technical demands of playing the instrument have become a standard component of trumpet performance. Found with frequency in the solo literature written during the 1960s and 1970s and often considered stereotypical of that avant-garde period, these techniques are now a necessary part of the training of today's trumpet students. But how much attention is currently given to this aspect of trumpet study? It is my belief that there exists a disparity in the teaching of these techniques across the collegiate level; whether this is more related to a teacher's lack of familiarity with the techniques or the level of a student's capabilities is worth exploring. All trumpet teachers should be equipped with a thoughtful approach to the introduction and study of these often challenging techniques.

The impetus for this study was the question of whether extended techniques are actually being taught in college trumpet studio settings as standard skills necessary on the instrument. The specific purposes of this document included: 1) catalogue the extended techniques available to today's trumpet performer, 2) reflect on their current use and address the question of how and when students are introduced to extended techniques, 3) contribute pedagogical exercises and suggestions to aid trumpeters in the study of some of the more challenging techniques, and 4) conclude with a Guided Approach to the

literature (Appendix D) detailing suggestions for the study of the twenty pieces referenced in this document. For those who may not be familiar with these selected works, all techniques, combinations, and other challenges are considered in individual documents prepared for each piece.

To assist with the second goal (to reflect on the current use of extended techniques and address the question of how and when students are introduced to these techniques), a survey was conducted of the current pedagogical status of extended techniques at the collegiate level. The online survey, which included questions regarding how and when students are introduced to extended techniques in their study of the trumpet, was completed by 166 college and university trumpet studio teachers from the United States and Canada. Examination of the results offers a unique view of the attention currently being given to extended techniques in college trumpet studios; they provide insight into specific teaching materials and performance repertoire being used by studio teachers today and were used to shape certain individual chapters of this document. The results of the survey are incorporated into each chapter as is relevant and presented in full in Chapter VIII. Finally, a glimpse of which techniques may now be considered standard is provided along with a view of new sounds being explored by the performers of the future.

Although materials designed specifically for the pedagogical study of these trumpet techniques are limited, as the results of the survey suggest,<sup>1</sup> I have found thorough and helpful resources concerning extended techniques in the literature for other brass instruments. Stuart Dempster's *The Modern Trombone: A Definition of Its Idioms*<sup>2</sup> and Douglas Hill's *Extended Techniques for the Horn: A Practical Handbook for Students, Performers and Composers*<sup>3</sup> served as inspirations for my document: a collection of pedagogical offerings that will help the trumpet student's exploration of extended techniques.

Each chapter in this document is devoted to an in-depth study of one extended technique or an appropriate grouping of techniques. This chapter format provides the student interested in studying extended techniques with a means to concentrate on one technique at a time before having to combine several in performance as is frequently expected in contemporary trumpet literature. Each chapter includes the following:

1. Explanation of Technique(s)
2. Clarification of Notation
3. Examples from the Literature (20 selected compositions)
4. Challenges to the Performer
5. Exercises for Study

Many extended techniques are addressed in the course of this document. Two specific techniques - multiphonics and flutter tonguing (which are frequent problems for

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<sup>1</sup> Amy Cherry, *Extended Techniques in Trumpet Performance and Pedagogy*, online survey, September 2008-March 2009. Of suggestions offered by survey respondents, most recommended the use of published solo materials rather than pedagogical methods. Three published works addressing contemporary music and extended techniques were referenced only slightly: Robert Nagel's *Trumpet Studies in Contemporary Music*, Anthony Plog's *Sixteen Contemporary Etudes* and Alfred Blatter/Paul Zohn's *Contemporary Trumpet Studies*. Nagel was referenced by six respondents; Plog by three; Blatter/Zohn by four. I also was made aware of an upcoming publication on the topic of Extended Techniques for Trumpet by Edward Carroll.

<sup>2</sup>Stuart Dempster, *The Modern Trombone: A Definition of its Idioms* (Athens, Ohio: Accura Music, Inc., 1994).

<sup>3</sup> Douglas Hill, *Extended Techniques for the Horn: A Practical Handbook for Students, Performers and Composers* (Miami, Florida: Warner Bros. Publications, 1983). One respondent to the survey listed this resource as something he referred to in his study of extended techniques.

students of the instrument and have provided personal challenges for me) - receive additional attention. Multiphonics on the trumpet can be a challenge for the performer who, because of gender, faces difficulty achieving the vocal range expectations of many multiphonic passages. Flutter tonguing causes a frustrating experience for those who, like me, are unable to roll their “Rs.” Both of these challenges have been researched and pedagogical suggestions related to them have been solicited from the online survey. These findings are offered in Chapters II and III.

Twenty pieces were chosen from the trumpet repertoire which I believe provide a progressive and thorough exposure to extended techniques. The pieces were selected to provide examples of many of the techniques explored in the survey. No composer has more than one piece on the list and efforts were made to include recent compositions in addition to literature standards. The majority of the pieces had been selected prior to completion of the survey. The results of the survey, however, did affect the list: respondents’ repeated comments indicating an interest in trumpet and electronics led to the inclusion of a more recent composition for trumpet and tape,<sup>4</sup> and the number of literature suggestions involving pieces with flutter tonguing as the only extended technique helped to influence the choice for the first piece on the list.<sup>5</sup>

Musical examples from the twenty pieces are included throughout this document. In each chapter, under the heading “Examples from the Literature,” listings of all the pieces which involve the technique being addressed are given chronologically; the musical excerpts are then presented according to progressive difficulty, from least difficult to most difficult. Each of the twenty pieces is catalogued through individual

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<sup>4</sup> Tae Hong Park, “*tl*,” 2001.

<sup>5</sup> Fisher Tull, *Eight Profiles for Solo Trumpet* (New York: Boosey and Hawkes, 1980). *Eight Profiles* was presented first because of its unique interchanging of valve tremolo and flutter tongue techniques.

profiles found in the Guided Approach, located in Appendix D. These documents provide practical information regarding the piece: date, publication information, length, range, style of notation used, equipment requirements, who the piece was commissioned by or written for, a listing of all extended techniques employed, a listing of existing recordings, and a commentary concerning its particular challenges and benefits of study. The goal is to provide a resource for those who might not be familiar with the repertoire and help them choose appropriate literature for their students' level of experience with these techniques.

In conclusion, it is my belief that there exists a need for additional pedagogical materials that can be used to introduce extended techniques to students of the trumpet. The survey results provide insight into current practices being employed. The document itself is designed to aid the serious student of the trumpet in meeting all the expectations of the repertoire.

## Chapter I

### Overview of Extended techniques

Extended techniques are defined as ways of playing a traditional instrument that produce new and often unexpected sounds. In his book, *Extended Techniques for the Horn: A Practical Handbook for Students, Performers and Composers*, Douglas Hill states that extended techniques can be considered “additional vocabulary for the instrument to be used when an idea cannot be better expressed in any other way.”<sup>1</sup> In the world of trumpet playing, extended techniques can range from the more common examples of flutter tonguing, half-valve techniques, and glissandos to more advanced skills such as the production of multiphonics. As music has changed and new aural experiences are sought by composers and performers alike, extended techniques can now be considered standard fare for today’s trumpet players.

The existence of extended techniques dates back to music performed by distant relatives of our modern instruments. Stuart Dempster, in his book *The Modern Trombone*, writes, “I studied the Australian aboriginal didjeridu, a hollowed-out tree trunk that functions much like a trombone.... It turns out that much of what I thought was new is a two-thousand-year-old tradition! As far as can be determined, the aboriginals have been using many of these ‘new’ sounds for centuries.”<sup>2</sup>

The evolution of extended techniques in the art music world reaches back over hundreds of years and echoes the progression of classical music. Contemporary tongued

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<sup>1</sup> Douglas Hill, *Extended Techniques for the Horn: A Practical Handbook for Students, Performers and Composers* (Miami, Florida: Warner Bros. Publication, 1983), p. 7.

<sup>2</sup> Stuart Dempster, *The Modern Trombone: A Definition of its Idioms* (Athens, Ohio: Accura Music, Inc., 1994), p. 1.

techniques in particular exhibit a noticeable relationship to techniques of earlier periods. Edward Tarr writes in his book, *The Trumpet*, that one style of articulation used by Baroque trumpeters grouped notes by twos and called for unequal tonguing.<sup>3</sup> He includes the text of an old poem: “If you want your piping to be here to stay, learn well your diridiride.” There are similarities between this style of articulation and what is known in contemporary music as doodle tonguing.<sup>4</sup> Doodle tonguing is a multiple tonguing technique which involves the syllables doo-dle-doo-dle in rapid repetition. In addition to its speed and smoothness, doodle tonguing lends itself perfectly to music played with a swing feel. These two tongued techniques have both an unequal quality in their rhythm and rounded consonants used in their production. As one survey respondent summarized when referring to Baroque tonguing techniques: “From these, and others, you can glean that extended techniques are not merely ‘contemporary’ but many have been around and taught for centuries.”<sup>5</sup>

An early appearance of one specific technique, the production of multiphonics or double-stops, was in Carl Maria von Weber’s *Concertino, Op. 45* (1815), in which he wrote for sung and played pitches for the horn. Other brass instrumentalists were also accessing these new methods of performing only slightly later. In his book *Pioneers in Brass*, Glenn Bridges credits Simone Mantia, euphoniumist, as having the ability to play

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<sup>3</sup> Edward Tarr, *The Trumpet*, English ed. (Portland, Oregon: Amadeus Press, 1988), pp. 91-92. “Unequal tonguing was the principal method of articulation on all wind instruments, woodwind and brass, since the late Renaissance.” Suggested articulation listed by Tarr includes “lera lera la ti ri ti ri.”

<sup>4</sup> Bob McChesney, *Doodle Studies and Etudes: A complete course of study using doodle tonguing for the slide trombone* (n.p.: Copyright Bob McChesney 1992, revised 2002), Introduction page. “Because it is a multiple tongue technique, doodle tonguing allows the player to articulate much faster than is possible with the single tongue. The technique also produces much smoother articulations than can be achieved with the standard multiple techniques of double and triple tonguing.”

<sup>5</sup> Amy Cherry, *Extended Techniques in Trumpet Performance and Pedagogy*, online survey, September 2008-March 2009. From survey respondent Henry Meredith – in reference to additional techniques I did not list he mentions trillos and gruppos and writes, “look at my doctoral thesis on Fantini – ‘From these, and others, you can glean that extended techniques are not merely ‘contemporary’ but many have been around and taught for centuries.’”

these double stops in the middle of the 19<sup>th</sup> century.<sup>6</sup> Another reference to Glenn Bridges, which comes from Dempster's *The Modern Trombone*, identifies cornet players, and particularly Jean Baptiste Arban,<sup>7</sup> among those who were performing multiphonics in the mid-1800s.

In the twentieth century, jazz and the expectations it demanded of trumpeters led to further growth and development of extended playing styles. Shakes, rips, growls, glissandi, and lip trills were among the new sounds created by jazz trumpeters beginning in the 1920s. Many of these sounds were adopted by serious composers and performers and led to the continued progress of extended techniques throughout the century. When following the development of avant-garde music in the 1960s and 1970s, it is worth noting the change in sound and concept of the extended techniques being put to use. Why, with the influence of jazz found earlier in the century, did composers begin to write such precisely notated works focusing on rhythmic challenges, intervallic pyrotechnics, novel muting effects, and extreme range requirements? Lukas Foss, writing in 1963, comments on this avant-garde movement.

I began by observing that the performance movement directly followed the discovery of electronic music. Paradoxically, it is the advent of electronic music which sparked the performance renaissance. Electronic music showed up the limitations of live performance, the limitations of tone production, the restrictiveness of a rhythm bound to meter and bar line, notation tied to a system of counting. Electronic music introduced untried possibilities, and in so doing presented a challenge, shocked live music out of its inertia, kindled in musicians the desire to prove that live music "can do it too."<sup>8</sup>

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<sup>6</sup> Glenn Bridges, *Pioneers in Brass* (Detroit: Sherwood Publications, 1965), p. 97.

<sup>7</sup> Dempster, *The Modern Trombone*, p. 5. In referencing the early use of the voice to produce harmony, Dempster quotes Glenn Bridges, in a letter dated 12 August 1974: "There were many who were good at it. Gardelle Simons was a master at this besides Pryor, Mantia, etc. I heard Mantia do the stunt on euphonium back in the 1920s. Even old Innes did this when he came to this country in 1880. I would say it goes 'way back: I have little doubt but what it was done in England in the early 1800s. Many early cornet players did the stunt very early. In fact it is a well-known fact that ARBAN did all of these well-known stunts."

<sup>8</sup> Lukas Foss, "The Changing Composer-Performer Relationship: A Monologue and a Dialogue," *Perspectives of New Music* 1/2 (Spring 1963), 47.



P. Bradley Ulrich, in “An Annotated Bibliography of Unaccompanied Trumpet Solos Published in America,”<sup>9</sup> catalogued pieces involving extended techniques which come from the era to which Foss makes reference. Ulrich denoted three separate periods of compositional practice which demonstrate how the types and number of extended techniques being used progressed over time. He has labeled 1963-1969 as “the conservative period,” 1970-1977 “the experimental period,” and 1978-1988 “the radical period.”<sup>10</sup> The techniques of the radical period built on those that came before, introducing fewer new techniques than those that had been added in the experimental period. The significant increase in difficulty which accompanied the radical period, however, was caused by the sheer number of techniques in the pieces and their combined use.

Although the literature examples from the avant-garde period of the 1960s - 1980s consist mostly of solo, unaccompanied trumpet pieces, sound exploration through the use of extended techniques is certainly not limited to the solo repertoire. There are many instances in band literature in which unusual ways of playing standard instruments are introduced to students as young as high school age. Examples such as *Tam O'Shanter Overture* by Malcom Arnold/Paynter<sup>11</sup> involve flutter tonguing and David Holsinger's

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<sup>9</sup>Paul Bradley Ulrich, “An Annotated Bibliography of Unaccompanied Trumpet Solos Published In America” (D.M.A. Dissertation, University of Illinois, 1989).

<sup>10</sup> From the conservative period only a few pieces are listed and two of them contain the majority of the techniques referenced as in use during this time. One piece, *Salvos* by Richard Moryl, contains all of the following: flutter tonguing, microtones, improvisation, glissandos, vibrato variances, multiphonics, tongue clicks, and half-valving. The experimental period sees the largest growth in new techniques with the introduction of removing slides from instrument, hand muting, whistle tones, alternate fingerings, growls, quarter tone trills, and tongue pops. The number of composers using these techniques has also increased significantly. The radical period sees the addition of valve clicks, different stage locations, foot tapping, fall-offs, doodle tonguing and flap tonguing.

<sup>11</sup> Malcolm Arnold, *Tam O'Shanter Overture*; arr. John P. Paynter (n.p.: Carl Fisher, 1955).

*On Ancient Hymns and Festal Dances* uses pitch bends and half-valve techniques.<sup>12</sup> In *Voodoo* by Daniel Bukvich,<sup>13</sup> the players are required to make use of half-valve tones and play without valve slides. The most common example of an extended technique in the band repertoire may be the horse whinny written at the end of Leroy Anderson's *Sleigh Ride*.<sup>14</sup> In all of these pieces, the young students are introduced to new compositional techniques that can pave the way for an interest in exploring the sonic possibilities of the entire instrument. I was challenged by expectations to read new and unfamiliar notations, produce microtones, and perform extreme dynamic changes in chamber music repertoire during undergraduate work at the University of Illinois long before it was a topic of lesson study.

The results of the survey conducted in connection with this project reveal that some trumpet professors teach these techniques in studio settings without a connection to specific solo literature. They teach the techniques to enable their students to perform the music they are challenged to play in ensemble settings. A perusal of the most recent 2008 International Trumpet Guild's conference report,<sup>15</sup> as well as conference reports from the past decade, indicates that a large percentage of the pieces involving extended techniques showcased at these conferences were written for chamber ensembles. One specific

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<sup>12</sup> David R. Holsinger, *On Ancient Hymns and Festal Dances* (n.p.:TRN Music Publisher, 1987).

<sup>13</sup> Daniel Bukvich, *Voodoo* (Kansas City, MO: Wingert-Jones Music, 1984). "*Voodoo* was a commission for the Idaho All-State Band in 1984. The piece was written specifically for the setting it would be premiered in, a gymnasium. Mel Shelton, a professor of conducting and composition at Boise State University, conducted it and was instrumental in pulling off the first successful performance of the piece. The educational purpose of the piece was to challenge the performers to listen to each other. To accomplish this, it occurred to me to turn the lights off. The piece is supposed to be performed from memory, without a conductor. It is as much a theatrical event as a piece of music, calling for the use of flashlights, arm waving, chanting, singing, blowing into brass mutes, surrounding the audience, and playing on parts of wind instruments, such as mouthpieces, trombone slides, and trumpets with tuning slides removed."

<sup>14</sup> Leroy Anderson, *Sleigh Ride* (Van Nuys, CA: Alfred Publishing, 1948).

<sup>15</sup> International Trumpet Guild [Website], "2008 Conference Report" (1 November 2008), Site address: <http://www.trumpetguild.org>

question in my survey was designed to determine if there was a relationship between the existence of a contemporary music ensemble at a school and the teaching of extended techniques in that school's trumpet studio. Such a relationship does exist and appeared to be one of the most important factors in the teaching of extended techniques.

The growth and advancement of extended techniques are often promoted by collaboration between individual performers and composers. In the brass world perhaps no one has done as much for the establishment of new repertoire for his instrument than trombonist Stuart Dempster.<sup>16</sup> The trumpet community must credit Gerard Schwarz for inspiring composers to experiment with new sounds.<sup>17</sup> Edwin Harkins encouraged Robert Erickson to write *Kryl*,<sup>18</sup> which has become one of the staples of the contemporary trumpet repertoire. Thomas Stevens and others have had their unique capabilities on the instrument catered to and challenged by contemporary composers.<sup>19</sup> Most recently, performers such as Håkan Hardenberger are exploring the sonic possibilities of even the most challenging extended techniques and involving a new camp of composers as their allies.<sup>20</sup> It is this new collection of performers interested in the current challenges to trumpet players, and aware of the capabilities of the instrument to live in many musical worlds,

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<sup>16</sup> Dempster has commissioned *General Speech*, by Robert Erickson, *Sequenza V* by Luciano Berio, and *Theater Piece for Trombone Player*, by Pauline Oliveros, as well as many other compositions.

<sup>17</sup> *Salvos*, by Richard Moryl, and *Polyphony*, by Charles Whittenberg were both written for Schwarz

<sup>18</sup> Robert Erickson, *Kryl* (San Diego: Erickson Music, 1980).

<sup>19</sup> Luciano Berio wrote *Sequenza X* for Thomas Stevens.

<sup>20</sup> Hardenberger has established a productive collaboration with Heinz Karl Gruber, who has written *Exposed Throat* (for unaccompanied trumpet), *Aerial* (trumpet concerto), and *Busking* (for trumpet, banjo, accordion and strings) specifically for him.

that is taking the lead in developing the new trumpet literature of the 21<sup>st</sup> century.<sup>21</sup>

A list of all possible extended techniques is one that will never be finalized; music is an ever changing art form, and musicians are irrepressibly creative. The list I have created below is meant to provide a snapshot of where the exploration currently stands. It is compiled from personal experience, extensive research, and includes some suggestions from survey respondents.

From this broad list, I have chosen to focus on techniques that I believe are most commonly used in literature available to and accessible by collegiate-level trumpet students and their teachers. Certain techniques, such as pedal tones, have become a standard part of pedagogical practice and do not require further exploration here. Others, such as circular breathing, have not yet been widely embraced or seen frequently in the repertoire.

I have grouped the techniques addressed into categories based on the physical means used to create the sound. Of the techniques chosen, I focus with greater depth on the issues of flutter tonguing and multiphonics. As mentioned previously, these two techniques pose a unique problem for me as a player and also received targeted attention in the survey conducted.

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<sup>21</sup> Two specific examples of this can be seen: 1) From correspondences regarding performances at the Festival of New Trumpet Music, composer Laura Andel and performer Nate Wooley confirm that the performances have involved collaboration on the spot and improvisation using extended techniques which are not notated. 2) From an email from the composer regarding Rex Richardson's performance of Dana Wilson's Concerto at the 2008 International Trumpet Guild Conference, "I should mention, though, that there are no multiphonics notated in the concerto. There is an improvised cadenza in the concerto and Rex Richardson apparently used many multiphonics in the cadenza of that performance. (They certainly can sound like a natural extension of the notated portion.)"

## **Listing of all extended techniques by physical means of production**

### Vocal Techniques

- multiphonics\*
- glottal fry\*
- growling\*

### Tongue Techniques

- flutter tonguing\*
- doodle tonguing\*
- tongue slaps\*
- tongue stops\*
- pointillistic effects
- k tonguing
- jazz articulations
- baroque articulations (trillos)
- multiple tonguing with split octave

### Valve Techniques

- half-valving\*
- alternate fingerings\*
- valve tremolo (timbral trill)\*
- horse whinny

### Lip Techniques

- vibratos\*
- shakes\*
- lip trills\*
- microtones\*
- pedal tones
- extended upper range
- fall offs
- whisper tones
- ghosted tones
- buzzing sounds
- flapping of lips into mouthpiece
- whistling into the instrument

### Slide Techniques

- removing slides\*
- half step glissandi through slide usage\*

\* indicates a technique explored further in the document

### Additional Techniques

#### Percussive Effects

- footstomping or playing additional percussion instruments\*
- valve clicks

#### Mute Techniques

- degrees of positioning and manipulation\*
- hand muting\*
- plunger/wah-wah muting techniques\*

#### Electronic Manipulations

- simple reverb
- modification – tape looping
- processing manipulation

#### Means of Extension/Spatial Modification

- playing into the piano\*
- change in bell direction
- playing into effects box
- frequency modulation by inserting bell into bucket of water

#### Air Effects

- circular breathing
- extreme dynamic changes
- fast air through instrument through reversed mouthpiece
- blowing into the instrument without buzzing

#### Notation

- reading multiple staves\*
- chance music/improvisation
- realizing music from a shape or picture

\* indicates a technique explored further in the document

## Additional Notes

Specific pitches and octaves referred to in the text use designations set forth in *The New Harvard Dictionary of Music*.<sup>22</sup> Middle C is designated as c'.

### Example 1.1 Pitch Designations

A musical staff with a bass clef on the left and a treble clef in the middle. The staff contains seven whole notes. Below the staff, the following pitch designations are listed: C1, C, c, c', c'', c''', and c'''. Above the staff, the notes are labeled with '8vb' (two notes) and '8va' (two notes).

Pitch Designation	Octave Label
C1	8vb
C	8vb
c	
c'	
c''	
c'''	8va
c''''	8va

<sup>22</sup> Don Randel, "Pitch Names," *The New Harvard Dictionary of Music* (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1986), p. 640.

## Chapter II Multiphonics/Vocalizations

### Multiphonics

#### Explanation of the Technique

The *Grove Dictionary of Music* defines multiphonics as “sounds generated by a normally monophonic instrument in which two or more pitches can be heard simultaneously. The term is customarily used to describe chordal sounds played on a woodwind or brass instrument.”<sup>1</sup> Although there is a variety of means used to accomplish this technique, multiphonics, when achieved on brass instruments, are typically created by singing and playing the instrument at the same time. Modern documents, of both research and pedagogical natures, sometimes use two different definitions when referring to the production of multiphonics; the first of singing and playing, and the second of humming and playing. Humming implies the creation of a vocal sound with the lips closed (which is in itself a vocalization technique on the instrument); for the purposes of this document, only singing and playing simultaneously will be considered.

Multiphonics were used with interest by avant-garde composers of trumpet music in the mid-twentieth century, although the existence of the technique dates back to the previous century. The earliest notated example in the brass repertoire dates to 1815 when Carl Maria von Weber called for the playing of horn chords in the cadenza of his *Horn Concertino, Op. 45*. As mentioned in Chapter I, artists such as Gardelle Simons, Arthur Pryor, and Simone Mantia, as well as the great cornetist Arban, used this technique to

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<sup>1</sup> Murray Campbell, Grove Music Online [Website], “Multiphonics” (12 September 2008), Site address: <http://www.oxfordmusiconline.com.wncln.org>



provide an innovative and novel sound during a time when virtuosity was admired in instrumental performers in the 19<sup>th</sup> century.<sup>2</sup>

As is the case in Weber's *Concertino*, some composers write multiphonic passages where the aim is not only the production of two pitches but also the creation of additional resultant tones. These pitches are not produced by the performer but are the result of the two sounded notes resonating together.<sup>3</sup> Other composers seem less concerned with the possibility of resultant tones and more interested in the production of dissonant sounds or sound effects. Dick Griffin states in "Multiphonics on the Trombone," that "if a player plays any note and sings an octave above it, you can get an effect almost like Wes Montgomery did on the guitar."<sup>4</sup>

The creation of the resultant tones (also identified as difference/summation tones) is determined by the two primary pitches and their intervallic relationship and relies on the physical properties of the harmonic series. When the two primary pitches come from the same harmonic series the mathematical result is simple to calculate:

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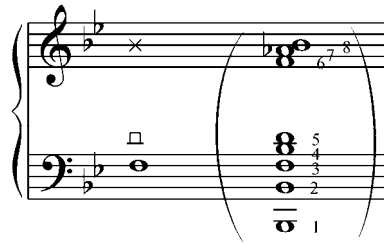
<sup>2</sup> Stuart Dempster, *The Modern Trombone: A Definition of its Idioms* (Athens, Ohio: Accura Music, Inc., 1994), p. 5. In referencing the early use of the voice to produce harmony, Dempster quotes Glenn Bridges, in a letter dated 12 August 1974: "There were many who were good at it. Gardelle Simons was a master at this besides Pryor, Mantia, etc. I heard Mantia do the stunt on Euphonium back in the 1920's. Even old Innes did this when he came to this country in 1880. I would say it goes 'way back. I have little doubt but what it was done in England in the early 1800s. Many early cornet players did the stunt very early. In fact it is a well-known fact that ARBAN did all of these well-known stunts."

<sup>3</sup> Campbell, Grove Music Online [Website], the "technique for generating multiphonics relies on the player singing one note while playing another on the instrument. Additional sum and difference tones are created by mixing of the two tones in the sound generator of the instrument. This is the basis of the technique of horn chord playing, which has been known and practised since the 18<sup>th</sup> century."

<sup>4</sup> Dick Griffin, "Multiphonics on the Trombone," in *Top Brass, Interviews and Master Classes with Jazz's Leading Brass Players*, ed. Bob Bernotas (New York: Bopism Music Publishing, 2002), p. 251.

The resulting multiphonic can be calculated as the sum of the relationship between the tone played and the tone sung. When playing the F and simultaneously singing a D above, the multiphonic will be B flat. The F is the third partial and the D is the fifth partial, so with the simple arrhythmic [sic.] of equation  $3+5 = 8$ , the B flat which is the eighth partial can be predicted. An occasional fourth note is then the subtraction of the two generating tones. In this case,  $5-3 = 2$  would be the second partial, or the low B flat.<sup>5</sup>

Example 2.1 Resultant tone generated by the production of multiphonics



Another explanation of the creation of summation/difference tones is provided by

Alfred Blatter in his book *Instrumentation and Orchestration*.

When intervals such as perfect fifths or minor sevenths are produced between the sung and played pitches, and the performer, as much as possible, attempts to match their vocal timbre to the instrument's timbre, recognizable chords and triads are produced. Various inversions of major and minor chords can be played. When other intervals are produced, rather curious sonorities appear. All of these are the result of summation and difference tones.... Given a tone of 600 Hertz (vibrations per second) and another of 650 Hertz, the summation tone will be 1250 Hz ( $600 + 650 = 1250$ ) and the difference tone, or resultant, will be 50 Hz ( $650-600 = 50$ ).<sup>6</sup>

Six pieces from the list of twenty in the Guided Approach involve multiphonics.

The study of the different uses of this technique provides a glimpse of its evolution. The earliest composition to use multiphonics in the Guided Approach is *Salvos* by Richard Moryl written in 1969. This piece requires the sung and played pitches to be performed at the interval of a half step (in the pedal register no less). The desired result is the creation

<sup>5</sup> Tiscali, internet provider for the Netherlands [Website], "What is Multiphonics?" (27 May, 2008), Site address: <http://home.tiscal.nl/multiphonics>

<sup>6</sup> Alfred Blatter, *Instrumentation and Orchestration*, 2<sup>nd</sup> ed. (New York: Schirmer Books, 1997), pp. 140 and 86.

of an “ugly”<sup>7</sup> sound. The interval chosen by Moryl insures this result due to the instability of the half step interval.<sup>8</sup> In this piece, singing and playing at the same time are treated as an event, or an effect, with little relevance to the harmonic development of the piece.

Conversely, the two most recent pieces involving multiphonics referenced in the Guided Approach, *Three Etudes* (2000) by Rex Richardson and *Exposed Throat* (2001) by HK Gruber, use the technique in a harmonically integrated manner. Both Richardson and Gruber frequently use primary notes separated by intervals of fifths and sixths; these intervals allow for greater possibilities with resultant tones and function as strong harmonic elements of these pieces.

Stuart Dempster writes in his book, *The Modern Trombone*, that the voice is the most important secondary pitch source for players of the trombone and “multiphonics have become, during the second half of the twentieth century, one of the most popular, successful, easily learned, and best organized of all the new techniques.”<sup>9</sup> Trumpet players’ interest in this technique is evident: the continued inclusion of multiphonics in serious solo literature from compositions such as Robert Erickson’s *Kryl* in 1984 to the pieces by Richardson and Gruber in the 21<sup>st</sup> century suggest its musical relevance; the use of multiphonics at events focused on studying and promoting new music points to its future;<sup>10</sup>

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<sup>7</sup> Richard Moryl, *Salvos* (n.p.: Joshua Corporation, 1969).

<sup>8</sup> <http://home.tiscali.ni/multiphonics>, when “the interval between the notes is too small, the interference results in a rhythmic beating which breaks up the tone and pitch.”

<sup>9</sup> Dempster, *The Modern Trombone*, p. 5.

<sup>10</sup> see Appendix F for details on FONT and Chosen Vale, two ongoing musical events focused on new trumpet music.

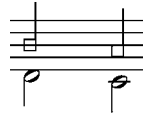
and its presence in the jazz world as played by trumpeters like Matt Shulman<sup>11</sup> highlight its appeal to performers of various musical styles.

### Clarification of Notation

A range of notation systems exists for the representation of multiphonics. In most cases, composers retain a standard notational system for the pitch being played on the instrument. It is in the notation of the sung pitches that a wide range can be seen. Some of the more frequent means of notating the sung pitches include:

1. Square note-heads

Example 2.2 Square note-heads



2. White circle/note-head with a dot in the center (this is problematic in reading if the pitch notated is placed on a staff line)

Example 2.3 Note-head with a dot in the center



3. Diamond-shaped note-heads

Example 2.4 Diamond-shaped note-heads



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<sup>11</sup> All about Jazz [Website], “Matt Shulman” (15 February, 2009), Site address: <http://www.allaboutjazz.com/php/article.php?id=27304>, “Skilled at multiphonics — playing one note while simultaneously singing another — Shulman is able to expand the range of the trumpet beyond its normal capacity.”

4. Designation of stems up for one sound and stems down for the second (this is especially challenging if the parts cross over one another)

5. Use of two separate staves

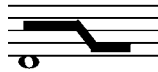
6. Use of smaller note-heads for the resultant tones created by the multiphonics

Example 2.5 Smaller note-heads indicating resultant tones



7. Use of a thick black line in the general area of the staff where the pitch is to be sung (for cases involving a general pitch range of singing as opposed to a specific pitch).

Example 2.6 General range indication for sung pitch



In more recent compositions, two trends with regard to multiphonics notation are evident: 1) the use of two separate staves - one for the played pitches and one for the voice<sup>12</sup> (to aid the performer in recognizing the different parts, an “x” is used in place of the note-head for the pitch to be sung) - and 2) the call for improvisatory sections where performers are encouraged to employ multiphonics in a free manner. This typically results in no written notation but rather the expectation that multiphonic events will occur.<sup>13</sup>

<sup>12</sup> HK Gruber, *Exposed Throat* (New York: Boosey and Hawkes, 2001) uses this system.

<sup>13</sup> From correspondences regarding performances at the Festival of New Trumpet Music, composer Laura Andel and performer Nate Wooley confirm that the performances have involved collaboration on the spot and improvisation using extended techniques which are not notated.

## Examples from the Literature

Of the twenty pieces selected for study in this document, six include multiphonics:

Richard Moryl, *Salvos* (1969)  
Morgan Powell, *Alone* (1974)  
Frank Ticheli, *The First Voice* (1982)  
Robert Erickson, *Kryl* (1984)  
Rex Richardson, *Three Etudes* (2000)  
HK Gruber, *Exposed Throat* (2001)

The listing above is done in chronological order. In this and subsequent chapters, however, the musical examples from the literature are presented in order of least difficult to most difficult, much like the Guided Approach.

In the piece *Alone*<sup>14</sup> by Morgan Powell, the sung note takes over from a played pitch and the notation changes at that moment from a traditional note head to an “x.”

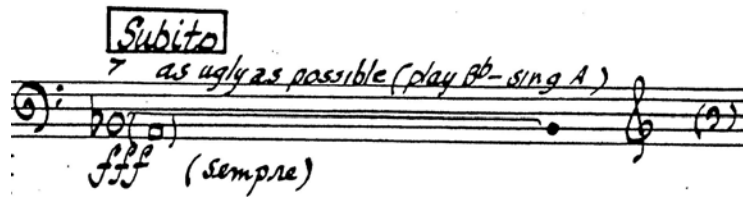
Example 2.7 Morgan Powell, *Alone*, page 3, 5<sup>th</sup> stave

The image shows a musical staff with a treble clef. The tempo is marked as quarter note = 40, and the mood is 'Dolce'. The music begins with a dynamic marking of *mf* and a triplet of notes. The dynamics change to *mp* later in the piece. A 'Rall. sempre' (Ritardando) marking is present. A note with an asterisk (\*) above it indicates a sung note. A legend box below the staff explains: '\* = sing(F#) while playing indicated pitches'. The staff ends with a double bar line and repeat dots.

This example from Moryl, referenced earlier, instructs the player to create an ugly sound, a natural result of using multiphonics at the interval of a half step. The register of this passage makes it impossible for most women trumpeters to perform without some adjustment to the primary pitches.

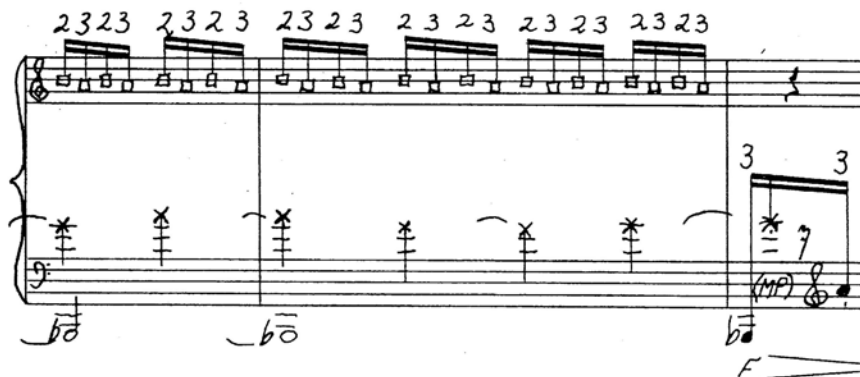
<sup>14</sup> Morgan Powell, *Alone* (Nashville, Tennessee: Brass Music, Ltd., 1974).

Example 2.8 Richard Moryl, *Salvos*, page 2, stave 4



This example from Robert Erickson's *Kryl*<sup>15</sup> demonstrates the largest distance between the played and sung pitches from pieces in the Guided Approach. Erickson notates a played B-flat1 to be played in the pedal register and has the player sing alternating between the g' and a' 2 ½ octaves higher.

Example 2.9 Robert Erickson, *Kryl*, page 7, stave 3



In the Gruber composition, *Exposed Throat*,<sup>16</sup> two staves are presented. The lower staff is played on the trumpet and the upper staff provides the pitch to be sung. The intended resultant tone is also notated on the upper staff with an "x."

<sup>15</sup> Robert Erickson, *Kryl* (San Diego: Erickson Music, 1980).

<sup>16</sup> HK Gruber, *Exposed Throat* (New York: Boosey and Hawkes, 2001).

Example 2.10 HK Gruber, *Exposed Throat*, page 2, rehearsal number 6

(-DE)

**6** Slower (c.♩ = ♩ quasi lentamente ♩ = c.101+–106+) **Tempo I** (♩ = ♩, ♩ = c. 76+–80+) **pochissimo allarg.**

† The VI-DEs are inserted as an intermediate step for student performance. The ideal is to perform the work in its entirety. The VI-DEs may also be employed when the piece is performed as an encore.

Frank Ticheli, in *The First Voice*,<sup>17</sup> separates the parts by using two staves with the indication on the lower staff to “Hum.” The unison of the beginning primary notes expands to a fourth by the end of this phrase; however, Ticheli makes no mention of the creation of resultant tones. Complicating the passage is the instruction for mute manipulation to take place at the same time.

Example 2.11 Frank Ticheli, *The First Voice*, page 1, stave 3

Rex Richardson, in his *Three Etudes*,<sup>18</sup> writes both the played and sung pitch using traditional notation and provides the desired resultant tone as a darkened note head. An asterisk at the bottom of the page explains that the lower pitches are to be played and the

<sup>17</sup> Frank Ticheli, *The First Voice* (Portland, ME: Manduca Music Publications, 1987).

<sup>18</sup> Rex Richardson, *Three Etudes*© (currently unpublished, the piece will be included in an upcoming publication by Carl Fischer).



higher to be sung. This example, containing primary pitches separated by intervals from a third to an octave, illustrates the complex harmonic possibilities of resultant tones.

Example 2.12 Rex Richardson, *Three Etudes*, 2<sup>nd</sup> movement, 10<sup>th</sup> stave, end of movement



### Challenges to the Performer

Six issues have been identified as challenging to the performance of multiphonics: some are specific to the trumpet; others may cause difficulties for players of any wind instrument. They are:

- 1) unfamiliar notation,
- 2) importance of aural skills,
- 3) limited dynamic range,
- 4) resistance of the instrument ,
- 5) relationship/placement of the primary notes, and
- 6) the problems for varying vocal ranges.

1) The unfamiliar notation: As mentioned previously in this chapter, the issue of reading the various notational systems in place for multiphonics provides the first, sometimes significant, challenge. The simplest example to read from the Guided Approach is Gruber's *Exposed Throat*; until more composers adopt a standard method of notation such as this use of two staves, the player will have to adjust to a variety of realizations. (The example from Richardson's *Three Etudes* is challenging in that the two primary notes and the resultant tone are all notated closely together on the same staff and with little visual difference. Memorization of a passage such as this would be helpful.)

2) The importance of aural skills: Well-developed ear training is necessary for a student attempting multiphonics. The performance of two notes at once is unnatural for most trumpet players who are accustomed to monophonic lines; the ability to hear specific intervals and resultant tones demands that the player has already achieved a sufficient mastery of ear training. The practice of multiphonics is extremely beneficial to the further development of aural skills.

3) The limited dynamic range: The dynamic range available for these passages is slightly limited. The played note will always be more audible than the sung pitch because of the nature and bell-front construction of the trumpet. The best opportunity for resultant tones comes from a proper balance in volume and a good blend in tone color. Dick Griffin writes “I learned to blow hard, sing loud, and play soft. If you play loud and sing soft, you get a vague kind of sound - it’s not as clear and the overtones won’t ring.”<sup>19</sup> The volume of the played notes may need to be adjusted downward. Some more recent performers in the jazz world have begun experimenting with electronic amplification of the voice part to make these sounds audible in concert settings.<sup>20</sup>

4) The resistance of the instrument: The task of singing and playing at the same time is more easily accomplished on lower brass instruments but, with diligent practice, may be achieved on the trumpet. This more difficult nature of multiphonics on a trumpet is due to the higher resistance of the instrument. This resistance challenges the performer

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<sup>19</sup> Griffin, “Multiphonics on the Trombone,” p. 251.

<sup>20</sup>All about Jazz [Website], “Matt Shulman.” Portions of an interview with Shulman include, “A trombone player friend of mine showed me the (multiphonic) technique, and although not many trumpet players have developed it, I took to it pretty much right away. I use it as a means for delineating harmony within the structure of a song, as opposed to merely as a sound effect. In this way I can play three-note 'chords' and counterpoint on the trumpet, functioning in my trio kind of like a pianist or guitar player does, or even like a solo violinist does -- I grew up listening to my father play a lot of the Bach solo violin repertoire, so that approach is always somewhere in my sound. The electronics entered organically when I started using a stage monitor to amplify the multiphonics in live performance, then eventually added some reverb and delay for ambiance, and a loop pedal for layering.”

when attempting to play with the breathy quality needed to allow voice and lip produced sounds to exist in the same chamber at the same time.<sup>21</sup> The larger mouthpieces and lower fundamentals found on low brass instruments are helpful for the performance of multiphonics,<sup>22</sup> but their continued use in trumpet composition and the existence of artists who employ them<sup>23</sup> demonstrate that it can be achieved.

5) The relationship/placement of the primary notes: Many composers write the pitch to be sung higher than the pitch to be played. Based on readings and survey responses this appears to be the most successful arrangement. I have found that attempts to sing below the played pitch are extremely challenging, in part because of the resistance required by the embouchure to produce the higher note. All of the composers writing for multiphonics in the Guided Approach have placed the sung notes above the played pitches except for Moryl. Gruber, Richardson, and Powell employ intervals stretching from thirds to octaves in their examples; Ticheli spreads from a unison to a fourth, and Erickson calls for a pedal B-flat<sup>1</sup> to be played while the voice alters between g' and a'. Moryl writes a B-flat to be played and instructs the performer to sing the note A one half step lower. Additional challenges result from the use of multiphonics in the pedal register as seen in Erickson and Moryl. Typically a breathy tone and relaxed embouchure are necessary to initially achieve the multiphonic; the element of control needed to focus on a pedal tone pitch complicates this. Erickson's example is not as affected by this challenge

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<sup>21</sup> Dempster, *The Modern Trombone*, p. 6.

<sup>22</sup> Milton Stevens, "Vocalization – An Introduction to Avant-Garde Trombone Techniques," *The Instrumentalist* (February 1974), 44. "the technique, although being used most extensively on the trombone, is just as effective on a French horn or trumpet and sensational on a tuba (probably because of the lower fundamentals and the amount of amplification of the voice through the enormous length of its tubing.)"

<sup>23</sup> Håkan Hardenberger, Matt Shulman, Rex Richardson.

because of the wide interval between his primary pitches, but Moryl has placed difficult expectations for control of the multiphonics in his composition.

6) The problems for varying vocal ranges: Stuart Dempster in his book, *The Modern Trombone*, suggests that composers take into account the vocal ranges of the performers when writing multiphonic passages.<sup>24</sup> The awareness of vocal range placement by composers might help explain the common use of multiphonics in the pedal register of the trumpet in pieces written in the mid to late part of the last century.<sup>25</sup> Composers were likely anticipating that the trumpeter would be a male. Further, some pieces from the twentieth century were written as collaborations between a composer and a specific performer requesting the use of extended techniques; that performer was also more likely a male. That leaves the female population with an interesting issue to resolve: if they are unable to sing the pitches in the register written for, how can they perform the piece in a manner that reflects the intentions of the composer? Depending upon the passage, many authors such as Dempster and Douglas Hill have suggested performing the sung pitches up an octave. This should alleviate the problem only when unison is involved; in such a situation there should be no change to the interval established or any resultant tones which may be heard. In most cases, however, moving the vocal part up an octave will cause an inversion to the interval. This can best be remedied by swapping the pitches between the sung and played parts. Although this will maintain the original interval, it still may not alter the passage enough to solve the problem of vocal range restrictions for everyone.

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<sup>24</sup> Dempster, *The Modern Trombone*, p. 8.

<sup>25</sup> Robert Erickson, *Kryl* and Richard Moryl, *Salvos*.

Dempster suggests a specific range he would like to see composers use for writing multiphonics: c in the bass clef to the g in the middle of the treble clef. Although this range may force compromises on the part of both genders, the widest population is most likely to achieve it. He also states, “Perhaps it would be best to compose “ossia” parts so that performers of either sex could use double stops the way the composer intended.”<sup>26</sup>

The two most recent compositions from the Guided Approach, Richardson’s *Three Etudes* and Gruber’s *Exposed Throat*, both employ vocal ranges in a similar manner,<sup>27</sup> perhaps better reflecting the pool of qualified performers today.

### **Exercises for Study**

As the survey results indicate, there is a variety of ways to begin study of the production of multiphonics. The following suggestions are things that I found helpful as I experimented with this extended technique for the first time. Certain comments from respondents have also been referenced.

Some performers recommend experimenting with multiphonics on the mouthpiece first; I found that any attempts to sing and play the same pitch on the mouthpiece were unsuccessful for me. Further efforts on the mouthpiece at producing intervals resulted in both pitches moving towards one another. The best success came when I added the instrument. The resistance of the trumpet, coupled with choosing a

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<sup>26</sup> Dempster, *The Modern Trombone*, p. 8.

<sup>27</sup> Richardson and Gruber write for the alto vocal range; Richardson c'-b', Gruber d'-g'- this will most likely call for the use of falsetto by males.

played note which involved a valve combination, (helping to lock in the pitch more readily),<sup>28</sup> led to my first successful attempts.

I first achieved a multiphonic at the interval of a fifth in the lower register of the instrument. I also found it necessary to establish the sung pitch first (very loudly) and add the played pitch a fifth below.

Before starting practice of multiphonics, it is recommended that one begin with vocalizing and flapping the lips, much like singers do to warm up. I would start by imitating a siren with my voice; first covering a narrow range in the middle of the voice and then expanding outward. Also helpful (for impending trumpet playing) during this type of exercise is the addition of lip flapping in a very loose manner. As a second exercise, use moving scale patterns of do-re-mi-fa-sol-fa-mi-re-do to allow the voice to focus on centered pitches after the glissando work of the siren exercise. Sing these scale patterns, eventually ascending and descending by half steps, to expand the vocal range.

### Exercise #1: Goal – to establish the multiphonic

Use this exercise to produce the desired interval with the trumpet alone, before attempting to produce the two tones at once. Double bars are indicated between each measure as rest may be needed in the early stages of experimentation. The pitches shown below reflect where I first had success; a variety of ranges should be attempted.

Example 2.13 Establishing the multiphonic

<sup>28</sup> Douglas Hill, *Extended Techniques for the Horn: A Practical Handbook for Students, Performers and Composers* (Miami, Florida: Warner Bros. Publications, 1983), p. 70. My reading of Hill's comments about using "the most secure fingering for the played note," led to thoughts about experimentation with intervals other than those on the open trumpet, which proved successful.

### Exercise #2: Goal – to work on scalar movement

Once the interval is established and the student is able to begin both notes simultaneously, work should commence on the movement of one of the voices. I had the most success by maintaining a steady played note in the lower register and altering the sung note in a scalar manner. The intervals in the first two measures will be the easiest to achieve; as the intervals expand to the seventh and beyond control will become more difficult.

#### Example 2.14 Scalar movement during multiphonics

### Exercise #3: Goal – to smooth out the movement of the voice and expand its range

After perfecting measured scalar patterns, the student can experiment with expanding the distance between the played and sung notes. The following is a suggested exercise in which the voice is treated like a siren reaching for higher pitches. Students should choose whichever starting notes work best for them.

#### Example 2.15 Voice expansion during multiphonics





Example 2.18 Blues chord progression during multiphonics

The image shows two staves of musical notation in 4/4 time, key of D major. The top staff is labeled 'Sing' and contains a melodic line with a slur over the first four measures and a comma after the fourth measure. The bottom staff is labeled 'Play' and contains a bass line with a slur over the first four measures and a comma after the fourth measure. The notation includes various chords and intervals typical of a blues progression.

**Exercise #7: Goal – to master the starting and stopping of the sung pitch for better control**

The last exercise focuses on gaining better control during multiphonic production. Students may choose any interval and range they are comfortable with or challenged by.

Example 2.19 Starting and stopping the sung pitch during multiphonics

The image shows two staves of musical notation in 4/4 time, key of D major. The top staff is labeled 'Sing' and contains a melodic line with a slur over the first two measures and a comma after the second measure. The bottom staff is labeled 'Play' and contains a bass line with a slur over the first two measures and a comma after the second measure. The notation includes various chords and intervals typical of a blues progression.

During the study of multiphonic performance, a comment regarding the unexplored potential of the female voice (and an advantage female players may have through their vocal range) was identified. Stuart Dempster addresses the plight of women performers attempting to sing some of the multiphonic passages written for trombone and suggests an experiment.

One use of double stops that should be noted is the use of played-sung major and minor thirds in the high register. The special feature of these intervals is the production of low-register resultant or combination tones. It is unfortunate that these thirds must be played quite high to have the low tones brought up into the audible range, because high double stopping is fatiguing. It tires the throat and creates an unpleasant back pressure, so it is not advisable to continue for a long time. Women, however, may find this a great deal easier than men, and there is, to my belief, a whole world of double stops, including these close intervals, available to women players that warrants extensive investigation.<sup>29</sup>

Although this comment is directed to the high range of the trombone, the concept can still be explored in the middle and high range of the trumpet.

From my personal repeated practice in the higher range of the trumpet, the challenge of these smaller intervals becomes one of maintaining the security of the played pitch. The closer the harmonics are together, the more likely the buzzed pitch might slip over to the pitch being sung.

### **Survey Results Specific to Multiphonics**

A question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Multiphonics” 34% (48 people) of the participants answered yes, 66% (95 people) answered no. Of the techniques polled in this survey, multiphonics is the one respondents have the least use for, whether in their own performance or in their teaching.

In the section of the survey designed to gauge respondents’ opinions concerning the use of extended techniques, the following questions were asked:

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<sup>29</sup> Dempster, *The Modern Trombone*, p. 8.

Table 2.1 Level of Study Appropriate for the Teaching of Multiphonics

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Multiphonics	6% (6)	16% (17)	48% (51)	25% (27)	6% (6)

Table 2.2 Perceived Usefulness of Multiphonics

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Multiphonics	4% (6)	1% (2)	38% (51)	43% (58)	15% (21)

Table 2.3 Perceived Difficulty of Multiphonics

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Multiphonics	39% (54)	31% (43)	17% (23)	2% (3)	11% (15)

These numerical results, as well as certain responses to the pedagogical questions at the end of the survey, indicate that most respondents believe the performance of multiphonics to be a very difficult skill; they were ranked as “extremely difficult” at a rate more than twice that of any other technique. Multiphonics are also regarded as “not useful” by almost half of the respondents and one quarter of respondents believe they should be reserved for graduate study.

## **Suggestions from Survey Respondents**

In the final section of the survey, specific pedagogical questions were posed relating to two extended techniques, one of which was multiphonics. Respondents were asked “Do you have a beginning exercise you use to introduce multiphonics to your students?” Only 14.3% answered yes (22 individuals); 85.7% replied no. The follow-up to that question asked participants to explain their exercise. Twenty-six respondents offered ideas, eight of whom had teaching responsibilities only in classical trumpet, one in only jazz trumpet, and thirteen in both areas. The small number of pedagogical suggestions contributed further reflects the respondents’ lack of interest in this technique.

The majority of the respondents providing suggestions stated that their approach to learning multiphonics began by defining an interval with which to first attempt it. Seven of those suggested beginning by singing and playing in unison. Reasons for this approach focused on the belief that attempting to hear two pitches simultaneously is too difficult for the trumpet student who is used to monophony. Five of the respondents suggested starting by playing a low note and singing a fifth above. Additional comments included suggestions to start from unison and move up and down scales.

References were made to the low register of the trumpet as being the most appropriate register to use when learning this technique. Only one respondent identified the B-flat trumpet as the instrument of choice with which to begin experimentation. One strong statement was written in support of learning multiphonics:

I use multiphonics as a tool for center of pitch and correct usage of air. I usually have them try multiphonics on whatever piece they are working on from Trump-it to Haydn. Or even scale studies. Most of my students have no problem with this technique and feel it helps them.<sup>30</sup>

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<sup>30</sup> Survey respondent #10, Dr. Cara Pollard.

Although this respondent uses multiphonics in the service of developing other skills rather than the study of a certain piece of literature, improved trumpet playing is the end result.

A second question was asked, “Do you have suggestions for students (male or female) dealing with multiphonics when the sung pitch lies outside the vocal range of the performer?” One-hundred-fifty-two people responded with 17.1% (26) answering yes and 82.9% (126) answering no. The percentage of yes responses was slightly greater here than in the previous question concerning introductory exercises for multiphonics. A follow up question was posed as respondents to asked to please explain their suggestions; a variety of comments were made with three trends recognizable. 1) The majority of respondents (11) suggested altering the sung pitch by moving it an octave<sup>31</sup> when it would not affect the desired resultant tone (as in a unison), 2) two respondents suggested making the effort to improve the voice by singing melodic studies or taking voice lessons, and 3) three respondents commented that pieces with this challenge should be avoided. The responses in favor of voice development were unexpected but appreciated. I, too, believe vocal study to be beneficial to the development of musicianship and it can have unanticipated positive impacts on trumpet playing, which will be explained further in Chapter III.

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<sup>31</sup> It was common for respondents to suggest the use of the falsetto register for men when the pitch is too high. One respondent also suggested the use of a guttural growl if the note to be sung is too low.

## Vocalizations

### Explanation of the Technique

In addition to the extended technique of multiphonics, 20<sup>th</sup> century composers began to explore other uses for the voice in instrumental composition. Many of the sounds described here are not necessarily restricted to the trumpet and have been used by composers writing for a variety of instruments.

Using the instrument as a megaphone: This technique works with any brass instrument.

Sealing the lips on the mouthpiece as one would do for normal playing leads to a good sound source.<sup>32</sup>

Growling: This technique, often seen in jazz and sometimes used as a substitute for flutter tonguing, is placed here amongst vocalizations because of the sound source. David Hickman writes:

Growling utilizes the player's vocal cords rather than the tongue to produce a raspy, grinding sound. It takes practice to develop this technique because the vocal cords are not normally engaged when playing.<sup>33</sup>

Coming from the back of the throat, this gritty sound is most successfully produced in the lower registers of the trumpet and at louder dynamic levels.

Screaming: This use of the voice performing sounds outside the traditional realm of singing is shocking the first time most players experiment with the technique. It can be used to create unique effects. Dempster states that "screaming in the high register while

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<sup>32</sup> Dempster, *The Modern Trombone*, p. 5.

<sup>33</sup> Hickman, *Trumpet Pedagogy: A Compendium of Modern Teaching Techniques* (Chandler, AZ: Hickman Music Editions, 2006), p. 148.

playing in the low range can mimic the sound of electronic music by sounding almost like the ring-modulator effect.”<sup>34</sup>

Noise: Sounds such as breathing, whispering, talking and grunting have all been incorporated in trumpet literature of the past century. Paul Smoker, in his dissertation, references noise and unlimited sonority by quoting a 1913 treatise by Luigi Russolo as stating that the Italian composers known as the futurists were interested in “whistles, hisses, explosions, crashes, roars, screeches, buzzes, and percussive and vocal noises.”<sup>35</sup>

Glottal fry, ingressive: This non-pitched vocalization is described by Edwin Harkin in his article concerning Robert Erickson’s *Kryl* as “the lowest inhaled vocal sound one can produce.”<sup>36</sup>

Among the vocalizations listed above, screaming, breathing, and the glottal fry, ingressive are all used by composer Robert Erickson in *Kryl*; screaming is used by Stanley Friedman in *Solus*.<sup>37</sup>

### **Clarification of Notation**

In many cases, when very detailed procedures are required for performance, the best notation has simply been “do as directed.” The specific example from Friedman’s *Solus* demonstrates that many of these desired sounds are best described on an individual

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<sup>34</sup> Dempster, *The Modern Trombone*, p. 8.

<sup>35</sup> Paul Alva Smoker, “A Comprehensive Performance Project in Trumpet Literature with a Survey of some recently developed trumpet techniques and effects appearing in contemporary music” (D.M.A. thesis, University of Iowa, 1974), p. 23.

<sup>36</sup> Edwin Harkins, “Aspects of *Kryl* – A Trumpet Piece,” *Journal of the International Trumpet Guild* 5 (October 1980), 26.

<sup>37</sup> Another vocal example which could be placed in this category comes from a different piece by Robert Erickson: *Ricercare a 5*, where the composer indicates for the players to “bellow in imitation of cows.” This technique was more recently put to use by trumpeter Judith Saxton in her trumpet ensemble composition, *Tribute for Maleah*.

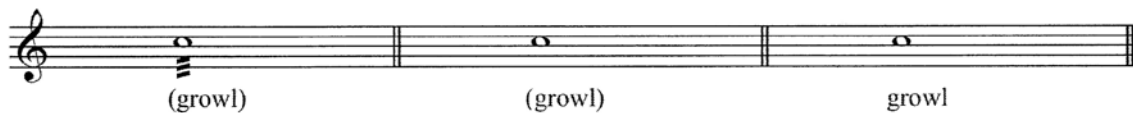
basis. Robert Erickson, in *Kryl*, has such a wide variety of vocal sounds that he provides the following chart to help the performer.

Example 2.20 Robert Erickson's chart for *Kryl*<sup>38</sup>

"Technique" Label	Vocal Notation	Range	Vocal Quality	Air Direction	Voice/Trumpet Interface
voice alone			"open" (falsetto for males)	exhale	through trumpet
voice/trumpet alternating			"open"	exhale	by-pass trumpet
voice/trumpet simultaneously			"tense"	exhale	through trumpet
glottal fry, ingressive			as low as possible	"open" → "tense"	inhale
scream	SCR X	high	"tense"	exhale	by-pass trumpet
loud breath		-	"open"	inhale	by-pass trumpet

The notation for growling, seen more frequently than some of the other sounds discussed here, can be shown the following ways.<sup>39</sup>

Example 2.21 Notation for growl technique



In "Let's Standardize Trombone Notation," Per Brevig writes about the two suggested symbols for vocalized sounds in the repertoire of his instrument. He suggests that vocal sounds should be indicated by a circle with a dot in the center, meaning these

<sup>38</sup> Erickson, *Kryl*. p. v.

<sup>39</sup> Hickman, *Trumpet Pedagogy*, p. 148. Hickman provides these three common notations.



itches are to be produced with the lips on the mouthpiece, generally while playing. He then suggests an open circle to notate vocal sounds produced with the lips away from the mouthpiece.<sup>40</sup> Erickson uses an open circle with an “x” inside for the notation of the glottal fry, ingressive in *Kryl*.

Example 2.22 Robert Erickson’s notation for Glottal Fry technique



In most cases, the variety of vocal sounds imagined by composers requires additional information for proper performance. Erickson’s creation of a chart for his composition *Kryl* is a good first step in clarifying within the context of each piece.

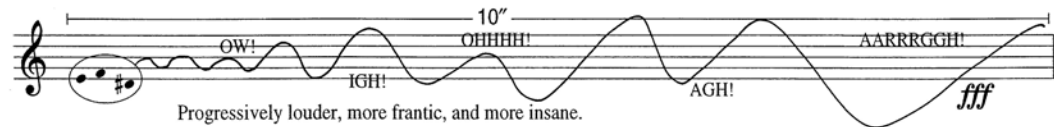
### Examples from the Literature

Stanley Friedman, *Solus* (1975)

Robert Erickson, *Kryl* (1984)

This passage from Stanley Friedman’s *Solus* calls for screams to be inserted into an expanding fingered glissando figure over the course of 10 seconds.

Example 2.23 Stanley Friedman, *Solus*, 3<sup>rd</sup> movement, 2<sup>nd</sup> page, 7<sup>th</sup> stave



<sup>40</sup> Per Brevig, “Let’s Standardize Trombone Notation” *Music Journal*, July 1974, p. 18.

This short example from Erickson's *Kryl* highlights the use of the glottal fry, ingressive. Erickson pits this technique (the lowest possible inhaled sound one can make) in the bottom staff against the constantly moving valve rhythms in the top staff.

Example 2.24 Robert Erickson, *Kryl*, page 9, rehearsal letter P

The image shows a musical score for a rehearsal letter 'P'. It consists of two staves. The top staff is a treble clef with a complex, rhythmic melody of eighth and sixteenth notes. The bottom staff is a bass clef with a single note, a half note, marked with a circled 'X' and the text 'GLOTTAL FRY, INGRESSIVE' and 'fp' below it. A rehearsal mark 'P' is in a box at the beginning of the top staff.

### Challenge to the Performer

The initial challenge to the performer may be to overcome years of practice of attempting perfection at the expense of spontaneity. The practical challenge is mainly one that requires imagination. A few vocal techniques which have been mentioned, however, do present specific hurdles.

Growling: As mentioned before, use of the growl technique requires practice as it involves the vocal cords, which are not normally engaged in playing. This technique can be taxing when required for long periods of time; it is also challenging in the upper registers. I have found pedal range examples, where the oral cavity is rather open, to be a challenge and extended growling at very soft dynamics is also a skill that requires practice to sustain. If the growl is being used by those who cannot roll their Rs to replace the skill of flutter tonguing, then an additional issue appears: the immediacy with which

the growling technique responds is a good deal slower than that of flutter tonguing because of the distance between the throat and the mouthpiece.

Screaming: The performance of a piece like *Kryl*, involving quickly juxtaposed played notes with screams, can take time to master. The ability to activate the vocal cords so quickly is quite challenging and the hasty return to embouchure formation after the brief yell also takes practice.

### Survey Results Specific to Vocalizations

The following information was gathered from the survey results:

A question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Vocalizations” 32% (46 people) of the participants answered yes, 68% (98 people) answered no. From these results it can be determined that from the list of techniques polled, vocalizations are ranked next to last in respondents’ pedagogical use.

In the section of the survey designed to gauge respondents’ opinions concerning the use of extended techniques, the following questions were asked:

Table 2.4 Level of Study Appropriate for the Teaching of Vocalizations

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Vocalizations	11% (12)	14% (15)	43% (45)	27% (28)	5% (5)

Table 2.5 Perceived Usefulness of Vocalizations

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Vocalizations	4% (5)	2% (3)	37% (50)	40% (55)	18% (24)

Table 2.6 Perceived Difficulty of Vocalizations

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Vocalizations	15% (20)	25% (34)	29% (39)	18% (24)	13% (18)

According to these survey results, most respondents believe the following three things about vocalizations: 1) they are not important to the study of trumpet, 2) they are of moderate difficulty to produce, and 3) they are most appropriately introduced to students at the junior/senior level of undergraduate study. In addition to these statistics, a few respondents wrote of their hesitance to teach vocalizations at all. They believe promoting the use of the throat in techniques such as growling to be detrimental to students.

## Chapter III Tongue Techniques

Tongue techniques have been an intensely studied element of trumpet playing for hundreds of years.<sup>1</sup> Regarding extended techniques, the tongue has become a heavily exploited source of expression from flutter tonguing to tongue slaps to jazz articulations. The sole tonguing technique addressed on the survey was flutter tonguing, as the initial intent was to focus this chapter on the challenge of flutter tonguing for players who could not roll their Rs. The results of the survey demonstrated the respondents' wider interest in and use of tongued techniques. There were a variety of answers for the question, "Are there additional extended techniques that you utilize that are not included in the previous question?" Respondents provided the following techniques:

- doodle tonguing,
- tongue stops/slaps,
- pointillistic effects,
- K tonguing,
- jazz articulations,
- baroque articulations (trillos and gruppos – throat articulations), and
- multiple tonguing with split octave.

In this document, four techniques are discussed: flutter tonguing, doodle tonguing, tongue stops/slaps, and tongued tremolo. The first two, flutter tonguing and doodle tonguing, receive the greatest attention.

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<sup>1</sup>Edward Tarr, *The Trumpet* (Portland, Oregon: Amadeus Press, 1988 english edition (1984 german), p. 91-93. Tarr references two books which address trumpet articulations: Fantini's, *Modo per imparare a sonare di tromba*, 1638, and Bendinelli's *Tutta l'arte della Trombetta*, 1614.

## Flutter Tonguing

### Explanation of the Technique

Flutter tonguing is the most commonly used extended technique addressed in this document and is one of the oldest and most accepted extended techniques. It has been associated with jazz since that music was born<sup>2</sup> and is seen in classical music around the turn of the twentieth century.<sup>3</sup>

The production of flutter tonguing involves the rapid movement of the tip of the tongue in the same manner as the physical production of rolled Rs used in many languages. In his dissertation on extended techniques in trumpet performance written in 1974, Paul Smoker writes:

There are two ways to produce the flutter tongue, and both involve the use of the moving air stream to produce a vibration of (1) the tip of the tongue (the most common procedure) or (2) the uvula. One author suggests that other ways to produce the flutter tongue are a soft double-tonguing attack (duh, guh) or a variant of legato tonguing, but these are generally unsatisfactory unless they are done extremely rapidly and with control.<sup>4</sup>

Concerning Smoker's first method of producing the flutter tongue, the tip of the tongue must be relaxed in order to perform this motion. It is this relaxation,

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<sup>2</sup> Stuart Dempster, *The Modern Trombone: A Definition of its Idioms* (Athens, Ohio: Accura Music, Inc., 1994), p. 39.

<sup>3</sup> Grove Dictionary of Music, [Website] states that flutter tonguing was introduced by Richard Strauss and Gustav Mahler.

<sup>4</sup> Paul A. Smoker, "A Comprehensive Performance Project In Trumpet Literature With A Survey Of Some Recently Developed Trumpet Techniques And Effects Appearing In Contemporary Music" (D.M.A. Thesis, University of Iowa, 1974), p. 38.

if achieved successfully, which is the rationale that leads to the use of flutter tonguing in aiding other elements of trumpet playing.<sup>5</sup>

David Hickman praises the efficiency of flutter tonguing and its helpfulness in addressing other tonguing challenges.

Trumpeters capable of tip-tonguing may find flutter tonguing to be an excellent guide to their most efficient and fast tongue stroke. If done with the front of the tongue and without struggle, flutter tonguing provides a guide for where the tongue should touch when single-tonguing because its incredible speed is based on the body's most efficient and natural tongue stroke. By alternating flutter tongue and single-tongue phrases, the performer can match the actions of the single-tongue to that of the flutter tongue, ensuring that the motion and release point of the tongue are at their best.<sup>6</sup>

### Clarification of Notation

The traditional notation for flutter tonguing involves three slashes placed either through the stem of the note or below the staff under the head of the note.

Example 3.1 Flutter tonguing notation





Notation used to convey the continuation of a flutter tongued passage ranges from written text to a wavy line over the staff for the duration of desired use.

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<sup>5</sup> David Hickman, *Trumpet Pedagogy: A Compendium of Modern Teaching Techniques* (Chandler, AZ: Hickman Music Editions, 2006), p. 111. “The author believes that flutter tonguing, if possible, while slurring ascending scales and arpeggios is an effective exercise in reducing tongue and throat tension because the entire tongue must remain somewhat relaxed when fluttering.”

<sup>6</sup> Hickman, *Trumpet Pedagogy*, p. 138

Example 3.2 Kurt Stone, notation for continuation of flutter tonguing<sup>7</sup>

flutter tongue: *fl. t.*  or *f. t.* 

Additional terminology may be printed in the score as well, including: fl., flz., flut., frullato, frulato.<sup>8</sup>

Graphic notation is needed when flutter tonguing is combined with other musical elements such as accelerando. Per Brevig indicates this type of symbol for the gradual beginning of flutter tonguing:<sup>9</sup>

Example 3.3 Per Brevig, notation for the gradual start of flutter tonguing



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<sup>7</sup> Kurt Stone, *Music Notation in the Twentieth Century* (New York: W.W. Norton and Co., 1980), p. 25.

<sup>8</sup> Hickman, *Trumpet Pedagogy*, p. 148.

<sup>9</sup> Per Brevig, "Let's Standardize Trombone Notation," *Music Journal* (July 1974), pp. 18-21.



## Examples from the Literature

Eighteen of the twenty pieces used in the Guided Approach have examples of flutter tonguing, demonstrating its common use.

Richard Moryl, *Salvos* (1969)  
Charles Whittenberg, *Polyphony* (1970)  
Steven Winick, *Equinoctial Points* (1970)  
Frank Campo, *Times, Op. 39* (1971)  
Donald Erb, *Diversion for Two* (1972)  
André Jolivet, *Heptade* (1972)  
William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)  
Morgan Powell, *Alone* (1974)  
Stanley Friedman, *Solus* (1975)  
Hans Werner Henze, *Sonatina* (1976)  
Robert Erickson, *Kryl* (1977)  
Fisher Tull, *Eight Profiles* (1978)  
Frank Ticheli, *The First Voice* (1982)  
Luciano Berio, *Sequenza X* (1984)  
HK Gruber, *Exposed Throat* (2001)  
Tae Hong Park, *t1* (2001)  
Dana Wilson, *Masks* (2003)

Fisher Tull provides an introductory use of flutter tonguing in this example from *Eight Profiles for Solo Trumpet*. Students may perform the passage with either the valve tremolo indicated or flutter tonguing.

Example 3.4 Fisher Tull, *Eight Profiles*, VI to D.O., 2<sup>nd</sup> movement, measure 45-48

The image shows a musical score for a trumpet part, specifically measures 45-48 from the second movement of Fisher Tull's *Eight Profiles*. The notation is on a single staff in treble clef with a key signature of one sharp (F#). The first measure contains a quarter note G4, a quarter note A4, and a dotted quarter note B4. Above the first two notes is the instruction "opt. flutter" with a fingering diagram  $(\frac{1}{2} - \frac{1}{2})$  and a  $\frac{3}{8}$  time signature. The second measure contains a quarter note C5, a quarter note D5, and a dotted quarter note E5. Above the first two notes is the instruction "opt. flutter" with a fingering diagram  $(1 - \frac{1}{3})$ . Both measures are marked with a dynamic of *fp* (fortissimo piano) and feature a valve tremolo symbol (a vertical line with a wavy top) under the notes. The piece is in 3/8 time.

In this example from William Kraft's *Encounters III*, flutter tonguing is combined with a trill, then changed to a continuous air flutter which decrescendos in a morendo passage. Despite the accessible register, this type of dynamic alteration while flutter tonguing can prove challenging.<sup>10</sup>

Example 3.5 William Kraft, *Encounters III*, 1st movement, 1<sup>st</sup> page, 5<sup>th</sup> stave



This example from André Jolivet's *Heptade* illustrates the combination of flutter tonguing and glissando techniques.

Example 3.6 André Jolivet, *Heptade*, 7<sup>th</sup> movement, # 77

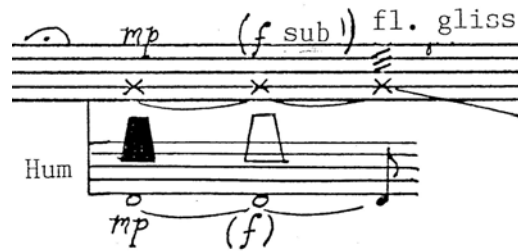


The most complex example of flutter tonguing combined with additional techniques occurs in Frank Ticheli's *The First Voice*. The performer is required to sing while playing a half-valved pitch; a flutter tongue is added to the half-valved note, followed by a descending glissando. The addition of the flutter tonguing presents a unique challenge to the performance of this passage because “the addition of flutter tonguing to the hummed

<sup>10</sup> Smoker, “A Comprehensive Performance Project In Trumpet Literature” p. 125. Smoker offers a hint for the performance of this effect: “decrease mouthpiece pressure and open lip aperture to extent that no tone is produced.”

multiphonic in Ticheli's, *The First Voice*, will affect the way the trumpet player hears his own humming."<sup>11</sup>

Example 3.7 Frank Ticheli, *The First Voice*, 1<sup>st</sup> page, 4<sup>th</sup> stave



### Challenges to the Performer

The question of a trumpet player's physical limitations concerning the ability to produce flutter tonguing generates two varying opinions: 1) the rolling of Rs is a genetic impossibility for certain people and 2) the technique can be produced by all. The first opinion is supported by David Hickman in his book *Trumpet Pedagogy*.

Just as not all people can "roll their R's," not all people can flutter tongue. The reason for this may be strictly genetic or may be the result of a short frenulum as discussed earlier in this chapter. If flutter tonguing is not possible, growling should be substituted.<sup>12</sup>

A similar acknowledgement is made by Gardner Read in *Contemporary Instrumental Techniques*.

It has been pointed out that the ability of wind players to flutter tongue is more hereditary than acquired, owing to the physical incapacity of some performers to trill the tongue. When flutter tonguing is required of such players, they usually substitute a throat "growl," though prolonged use of this device is rather tiring to the throat muscles.<sup>13</sup>

<sup>11</sup> Attilio N. Tribuzi, "Extended Trumpet Performance Techniques" (Master of Arts Thesis, California State University, Hayward, 1992), p. 74.

<sup>12</sup> Hickman, *Trumpet Pedagogy*, p. 148.

<sup>13</sup> Gardner Read, *Contemporary Instrumental Techniques*. (New York: Schirmer Books, 1976), p. 136.

Both Hickman's and Read's statements are opposed by those who do not accept the genetic argument. Some of the respondents to the survey stated that the ability to roll Rs could be learned; in one case a respondent noted that he, personally, had overcome the challenge.<sup>14</sup> My work with a speech pathologist<sup>15</sup> and the responses to questions on the survey indicate to me that the ability to roll Rs is a learned motor skill. Its absence from the English language is perhaps what has caused so many to struggle with this skill; if it is not heard in speech, it may not be developed.

For those who are currently capable of rolling their Rs, challenges to the expert performance of flutter tonguing still exist, especially when it is combined with additional musical requirements. In the following three circumstances, the combination of flutter tonguing with the additional musical element compounds the difficulty.

1. Soft dynamic levels: Flutter tonguing suffers at softer dynamic levels because of the decreased air pressure which is necessary to sustain the rolled tongue motion.<sup>16</sup>
2. Extreme registers: The use of flutter tonguing in extreme registers can also be problematic.<sup>17</sup> In higher registers the tongue position and stability needed to produce the pitch diminish the ability of the tongue to oscillate and create the flutter; in the pedal register the oral cavity becomes so large and the air pressure so reduced that sustaining the flutter tongue becomes difficult.
3. Seamless shifts into and out of flutter tonguing: Many composers have become interested in the accelerating effect produced by moving through various tongued techniques such as single, double, doodle, and flutter.

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<sup>14</sup> Survey respondent # 100.

<sup>15</sup> Linda Bowers, speech language pathologist in the Department of Communication Sciences and Disorders at Western Carolina University, has worked with me repeatedly on the rolling of Rs.

<sup>16</sup> Smoker, "A Comprehensive Performance Project In Trumpet Literature" "Control of the flutter tongue seems to be most difficult at soft dynamic levels, when the pressure of the airstream against the fluttering tongue-tip is significantly decreased (the vibration of the tongue-tip will tend to cease). Experimentation with tongue position, as well as conscientious drill, may be helpful in the acquisition of facility with this technique. (Some players use the method of vibrating the uvula to produce the flutter at softer dynamics)," p. 120.

<sup>17</sup> Douglas Hill, *Extended Techniques for the Horn: A Practical Handbook for Students, Performers and Composers* (Miami, Florida: Warner Bros. Publications, 1983), p. 31. "Some players have trouble in the extreme upper registers, and at very soft dynamics in the mid and low ranges."

Gardner Read addresses these “flutter tonguing variants” in his book *Contemporary Instrumental Techniques*, writing:

The highly favored technique of flutter tonguing appears in several new guises in vanguard scores. One is to request a gradual and measured shift from normal tonguing to fluttering, or the reverse - though both procedures are easier in theory than in actual practice.<sup>18</sup>

### **Exercises and Suggestions for Study**

These exercises are written to be used by students who are currently unable to roll their Rs as they work to develop this ability. They may be performed with either the flutter tonguing or growling technique. The exercises will encourage the former action while also improving the latter which will be needed until such time as the rolled Rs are achieved.

#### **Exercise Group #1: Goal – to prepare the tongue**

Before attempting flutter tonguing on the trumpet, work should be done to loosen up the tongue.

Vocal warm-ups: As part of a series of voice lessons I took during my graduate studies at CCM,<sup>19</sup> I was encouraged to warm-up my voice while trying to free up the back of the tongue. I have found that doing this exercise prior to the use of growling/fluttering has aided in the relaxation of the tongue and allowed me to be more successful. The exercise calls for singing “AH” with the mouth as open as possible and the chin held down. With the front of the tongue anchored behind the bottom teeth, change the sung vowel back and forth between “AH” and “EE.” The goal is to diminish any jaw movement that may be caused by the movement of the tongue and release the back of the tongue so that I might better growl.

Tongue loosening exercises: Many survey respondents suggested working on the rolled R sound away from the trumpet, as the instrument only provides additional resistance. Exercises appropriate for this type of practice include movements of the tongue such as curling, turning upside down, and folding.

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<sup>18</sup> Read, *Contemporary Instrumental Techniques*, p. 135.

<sup>19</sup> College-Conservatory of Music, University of Cincinnati

Speech exercises: Through my work with a speech pathologist, my reading and the comments made by survey respondents, various speech examples have been identified that may aid in the tongue’s ability to learn this task.

- Alternate between “T” and “D” to try and activate the roll.
- Raise the sides of the mouth and anchor them as if saying “run.”
- Pronounce the word “hur” with an accented r. Try to lengthen the “r” bit by bit but letting the tongue relax into the “r” sound.<sup>20</sup>
- Add a “D” to the beginning of the rolled r sound.
- Pronounce the Spanish word “pero” to encourage the tongue to flap.

### **Exercise Group #2: Goal – to develop the instant response of the flutter tongue or growl**

Exercises presented here are designed to quicken the response of flutter tonguing or growling and to help the flutter/growl in all ranges of the instrument. One of the biggest frustrations with the use of growling is the lagging response time before the growl begins which is caused by the greater distance between the throat and the lips. In exercise 3.8 seen below, students will shorten the length of the growled/fluttered note and develop the speed with which it will speak.

Example 3.8 Exercise to develop quick flutter tonguing response

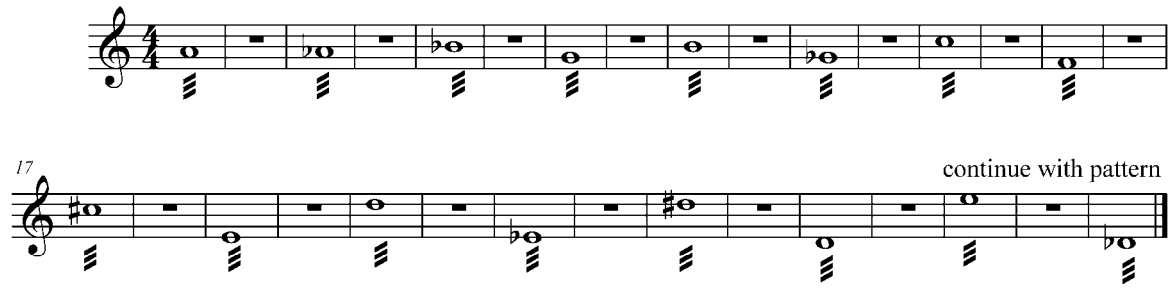


Another challenge for students forced to substitute the growl for the flutter tongue is the difficulty of achieving the growl at extremes of range and dynamics. As mentioned in Challenges to the Performer earlier in this chapter, extreme high and low notes present challenges because of the alterations to the oral cavity; dynamic extremes, specifically pianissimo, make it difficult to sustain a growl because of the low air pressure. Exercise 3.10 below is adapted from Richard Shuebruk’s *Tongued Techniques*<sup>21</sup> and intended to help with the registral extremes. It may also be adapted to include dynamic markings specific to an individual’s needs.

<sup>20</sup> Survey respondent Alan Matheson.

<sup>21</sup> Richard Shuebruk, *The Complete Shuebruk Tongue Trainers for Trumpet* (New York: Carl Fischer, 1923).

Example 3.9 Exercise for flutter tonguing at extremes of range



**Exercise Group #3: Goal – practical applications**

This stage of study should involve the modification of existing exercises or creation of new exercises tailored for the flutter tonguing as it may be encountered in the repertoire. David Hickman provides examples of modifications he has made to Arban's<sup>22</sup> single tonguing exercises in his book.<sup>23</sup> An excerpt is provided below.

Example 3.10 David Hickman's exercise adapted from Arban



Additional modifications could be made to any standard trumpet exercises such as scales in thirds, arpeggios, Herbert L. Clarke *Technical Studies*,<sup>24</sup> or etudes.

These final two exercises are designed to address tonguing variants, or the progression through accelerating tonguing styles. I have presented the exercises in D major but the student may transpose to any desired key or range.

<sup>22</sup> Jean Baptiste Arban, *Complete Conservatory Method for Trumpet*, 1982 edition, annotated by Claude Gordon, ed. Edwin Franko Goldman and Walter Smith, (New York: Carl Fischer, 1982).

<sup>23</sup> Hickman, *Trumpet Pedagogy*, p. 138-139.

<sup>24</sup> Herbert L. Clarke, *Technical Studies for the Cornet* (New York: Carl Fischer, 1934).

### Example 3.11 Exercise for acceleration through tonguing styles



### Example 3.12 Exercise to develop sustained flutter tonguing

Play section 3 times

1x = single tongue

2x = double tongue

3x = flutter tongue (retain the rhythmic value of the quarter note for each pitch in the first two measures and perform the notated rhythm of the final measure with flutter tonguing added. Flutter and slur through the moving sixteenth notes in the last measure)



### Survey Results Specific to Flutter Tonguing

The following information was gathered from the survey results.

A question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Flutter tonguing” 95% (151 people) of the participants answered yes, 5% (8 people) answered no. According to these survey results the overwhelming majority of respondents have taught flutter tonguing; on the continuum of most used to least used techniques, it is ranked as the third most commonly taught.

In the section of the survey designed to gauge respondents’ opinions concerning the use of extended techniques, the following questions were asked:



Table 3.1 Level of Study Appropriate for the Teaching of Flutter Tonguing

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Flutter tonguing	88% (109)	7% (9)	5% (6)	0%	0%

Table 3.2 Perceived Usefulness of Flutter Tonguing

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Flutter tonguing	48% (68)	34% (48)	17% (24)	0%	2% (3)

Table 3.3 Perceived Difficulty of Flutter Tonguing

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Flutter tonguing	1% (1)	6% (8)	50% (70)	41% (58)	3% (4)

Most respondents believe that flutter tonguing should be taught at the earliest stage of study - in high school - and consider flutter tonguing to be only somewhat or not difficult.

### **Suggestions from Survey Respondents**

In the final section of the survey, specific pedagogical questions were asked relating to two extended techniques, one of which was flutter tonguing. Respondents were asked “For students who are unable to roll their ‘Rs,’ do you have

suggestions/exercises to help them develop the ability to flutter tongue?” One-hundred-fifty-four people responded to this question: 39% answered yes (60 individuals) and 61% replied no. Participants were asked to explain their exercise. Sixty-six respondents offered ideas. A complete listing of responses can be found in Appendix C.

A variety of helpful responses were given, some demonstrating the frustration that this technique can cause to those referenced in the initial question. Opinions regarding the genetic deficiency argument were split evenly with three respondents commenting that they believed most students could learn to flutter tongue and three stating the genetics could not be overcome. From the list of helpful ideas, four common thoughts emerge.

1. The use of the growl was the most frequent suggestion. One respondent specifically stated he had encouraged his students to growl and then move that tongue motion forward in order to achieve a true flutter tonguing style. (This approach has been the only successful effort for me.)
2. Listening to a language that involves the rolling of “Rs” was advised by multiple respondents.
3. Practicing the flutter away from the instrument and slowly adding the elements of resistance (mouthpiece, leadpipe, trumpet) was also a common suggestion.
4. Pressing the tongue against the roof of the mouth and forcing the air to escape was also mentioned.

A second question was asked, “For students who are unable to roll their ‘Rs,’ do you have suggestions to help them replicate flutter tonguing?” One-hundred-forty-four people responded with 64.6% (93) answering yes and 35.4% (51) answering no. A

follow-up question was asked and respondents explained their suggestions. Many respondents referred to the previous question with the answer “see above.”

A variety of comments were made with two trends recognizable. 1) The majority of respondents suggested replicating the flutter tongued sound through the use of growling. This was anticipated as this suggestion is seen in trumpet method books,<sup>25</sup> and is the technique I have had to employ throughout my career. 2) A number of respondents suggested employing the valve tremolo technique with alternate fingerings to replicate the oscillating sound produced by flutter tonguing.

## **Doodle Tonguing**

### **Explanation of the Technique**

The greater part of this chapter is focused on flutter tonguing, as almost all of the twenty chosen selections involve the very popular technique. It is appropriate to discuss a second technique, however, one that is primarily associated with jazz music but present in art music as well: doodle tonguing.

In the introduction to his book, *Doodle Studies and Etudes*, Bob McChesney writes, “Doodle tonguing is a multiple tongue technique used to facilitate smooth, fast legato playing on the slide trombone.”<sup>26</sup> As mentioned in Chapter I, similarities exist between older tonguing techniques used by trumpeters and doodle tonguing.<sup>27</sup> In his article detailing Luciano Berio’s *Sequenza X*, Jonathan Impett notes an early existence

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<sup>25</sup> Hickman, *Trumpet Pedagogy*, p. 148.

<sup>26</sup> Bob McChesney, *Doodle Studies and Etudes: A complete course of study using doodle tonguing for the slide trombone*. Copyright Bob McChesney 1992, revised 2002.

<sup>27</sup> Edward Tarr writes in his book, *The Trumpet*, that one style of articulation used by Baroque trumpeters grouped notes by twos and called for unequal tonguing.<sup>27</sup> He includes the text of an old poem: “If you want your piping to be here to stay, learn well your diridiride.” There are similarities between this style of articulation and what is known in contemporary music as doodle tonguing.

and reasoning for doodle tonguing as applied to the flute, and continues by explaining how Berio came to use the technique for trumpet.

...between these extremes lies the soft double articulation known as ‘doodle’ tonguing. In fact, it has a venerable history: flute methods in the eighteenth century proposed d-dl as an alternative for English speakers who found the Italian t-r too challenging. It finds its way into *Sequenza X* via a different route: the articulation used by jazz trumpet players had been demonstrated to Berio by Clark Terry, once a soloist in Duke Ellington’s band. The doodle tongue is the technique that gives such definition to the invention of players such as Clifford Brown; it works most fluently in the context of closely woven lines rather than wide leaps.<sup>28</sup>

In *The Modern Trombone*, Stuart Dempster cites a different history for the technique, writing that its origins can be traced to the jazz trombonist Carl Fontana who is credited with “creating a technique called doodle tonguing, which he called a ‘self-defense against saxophone players.’”<sup>29</sup>

Jazz trumpeters such as Clark Terry, Clifford Brown, and Randy Brecker<sup>30</sup> have made frequent use of doodle tonguing. While the technique is primarily seen in jazz circles and used less often in art music, it has been called for in three of the pieces in the Guided Approach: *Solus*, by Stanley Friedman; *Encounters III*, by William Kraft; and *Sequenza X*, by Luciano Berio. Four respondents to the survey, when asked the question, “Are there additional extended techniques that you utilize that are not included in the previous question?” listed doodle tonguing in their answers.

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<sup>28</sup>Jonathan Impett, “Shadow Boxing: Sequenza X for Trumpet and Piano Resonance” *Berio’s Sequenzas: Essays on Performance, Composition and Analysis* ed. Janet K. Halfyard, (Hampshire, England: Ashgate Pub., 2007), p. 87.

<sup>29</sup> Dempster, *The Modern Trombone*, p. 16. Fontana is also cited as the founder of doodle tonguing by another source: Ken Hanlon, tnc recordings [Website], “The Great Fontana: Carl Charles Fontana” (10 January 2009), Site address: [http://www.tncmusic.net/article\\_info.php?articles\\_id=4](http://www.tncmusic.net/article_info.php?articles_id=4)

<sup>30</sup> Randy Brecker, discussed his use of doodle tonguing and referenced Terry and Brown in comments from a masterclass given at Western Carolina University Trumpet Festival. January, 2008.

The technique consists of using the syllables doo-dle, da-dle or dee-dle to create a light sounding articulation. Bob McChesney writes in the introduction to his book that the method uses “da,” “ul,” and “la” to replace the standard “ta and ka” or “duh and guh.”

His thorough explanation of the technique states:

There are four basic components that make up the doodle tongue technique. The components are represented by the syllables da, ul, la and ah....The first syllable, da, is the same soft tongue articulation that is used for standard legato playing on the trombone....The second component of the technique is represented by the syllable ul. The syllable ul is the distinguishing syllable of the doodle tongue technique and its proper execution is of utmost importance. The articulation of this component is achieved with a quick paddle-like movement of the tongue to the roof of the mouth while the airstream is already in progress. Make the front portion of the tongue broadly contact the roof of the mouth, just behind the upper front teeth (directly above the position the tongue is in when sustaining da). Do not move the jaw or the lips. Do not make a hard da or ga sound. The airstream does not stop and then pass forward over the tip of the tongue as it does with da, but is momentarily deflected directly at the sides of the upper teeth. The action of the tongue will cause a “bump” in the airstream and produce the articulation.<sup>31</sup>

McChesney summarizes the benefits of doodle tonguing by reiterating its speed, its smoothness (it is a legato and more sustained sound than a traditional tu-ku multiple tongue technique), and its advantageous use in music with a swing feel.<sup>32</sup>

### **Clarification of Notation**

The study of the trumpet repertoire reveals that a standardized notation for doodle tonguing does not exist. In general, the use of multiple tonguing styles is often implied and reliant upon the skills of each performer; individuals may choose to apply doodle tonguing in much the same manner. The three examples of doodle tonguing in the pieces from the Guided Approach are each notated differently.

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<sup>31</sup> McChesney, *Doodle Studies and Etudes*, introduction page.

<sup>32</sup> Ibid.

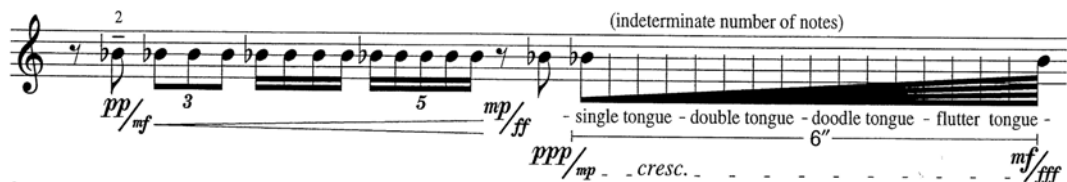
Stanley Friedman, in the fourth movement of *Solus*, simply writes the word “doodletonguing” in the midst of a passage that accelerates from single, to double, to doodle, to flutter tonguing over the span of six seconds. Luciano Berio includes the notation “DL” in the performance instructions to his composition *Sequenza X*, which he clarifies as doodle tonguing. Throughout the piece itself, this notation is printed above the passage to be doodle tongued and is followed by a line extending to the right for the duration of the doodle tonguing. (See example 3.14 below from *Sequenza X*.) The third example comes from William Kraft in his piece *Encounters III*. In the third movement of this piece, Kraft writes “1.Quasi Gillespie” below the trumpet line and footnotes his explanation with, “softly tongued 8ths in the style of Dizzy Gillespie.”<sup>33</sup>

### Examples from the Literature

William Kraft, *Encounters III* (1973)  
 Stanley Friedman, *Solus* (1975)  
 Luciano Berio, *Sequenza X* (1984)

In *Solus*, the tour de force of extended techniques, Stanley Friedman writes a challenging acceleration of tongue speed from single tongue through double, doodle, and into flutter.

Example 3.13 Stanley Friedman, *Solus*, 4<sup>th</sup> movement, 1<sup>st</sup> page, 9<sup>th</sup> stave



<sup>33</sup> William Kraft, *Encounters III: Duel for Trumpet and Percussion* (Los Angeles, CA: Avant Music, 1973).

In Berio's *Sequenza X*, the performer must master rapid changes back and forth between doodle tonguing and flutter tonguing.

Example 3.14 Luciano Berio, *Sequenza X*, 1<sup>st</sup> page, 9<sup>th</sup> stave



The text statement “quasi Gillespie” provided by Kraft in *Encounters III* indicates the composer's desire for the doodle tongue techniques.

Example 3.15 William Kraft, *Encounters III*, “quasi Gillespie” 3rd movement, p. 14, 2<sup>nd</sup> stave



Of these three composers, Kraft is the most unique in his use of doodle tonguing. He writes for the technique in a manner similar to its employment in jazz settings: a melodic line which takes advantage of the swing feel that doodle tonguing can produce. Friedman has chosen to contrast the unique rhythmic aspect of doodle tonguing with other multiple tonguing styles by writing a passage that is played on one unchanging pitch. Berio

occupies the middle ground, employing doodle tonguing on both sustained pitches and melodic lines.

### Challenges to the Performer

Doodle tonguing presents the same challenges common to any traditional multiple tonguing technique: reaching the desired speed and maintaining control of the tongue. A light and legato sound is the goal; it can become difficult to maintain the speed without allowing the articulation to get too harsh.

As is true with most of the techniques included in this study, it is the combination of doodle tonguing with challenging expectations that can cause difficulty for the performer. In the case of Friedman's *Solus*, the challenge is to achieve a seamless transition from double tonguing, through doodle tonguing, and into flutter tonguing.

Berio combines doodle tonguing with a few brief occurrences of hand muting.<sup>34</sup> Additionally, he writes for doodle tonguing to be used in all ranges of the instrument as well as all dynamic levels. Some of the more challenging moments involving this technique may be found when large dynamic changes occur.

Example 3.16 Luciano Berio, *Sequenza X*, 6<sup>th</sup> page, 8<sup>th</sup> stave



### Exercises for Study

Many of the exercises provided in the flutter tonguing section earlier in this chapter may also be used for the study of doodle tonguing. Students should revisit them and apply the pedagogical suggestions included below.

<sup>34</sup> Luciano Berio, *Sequenza X*. (Milan: Universal Edition, 1984).



### Suggestions

- “Start on one note to learn doodle tonguing – don’t think about it too much, it should just work its way into your playing.”<sup>35</sup>
- “Practice by saying da-dle, dee-dle, di-dle, do-dle, doo-dle four times in a row.”<sup>36</sup>
- “Practice the patterns in Arbans with doodle tonguing – five minutes a day at first – avoid letting the muscles of the neck and tongue become overtired.”<sup>37</sup>

One thought about the use of doodle tonguing in jazz playing comes from Bob McChesney. “While some players would use the basic doodle patterns exclusively, regardless of the music, significantly better clarity is obtained when the doodle patterns are altered to fit each musical situation.”<sup>38</sup> He comments on the need to break out of a standard, repeated pattern of doo-dle, doo-dle, dood-le or da-dla, da-dle, da-dle and exploit the inherent differences between the various vowel voicings as they relate to the musical line at hand.

### **Additional Tongued Techniques**

The following techniques of tongue slaps/stops and tongue tremolo are mentioned briefly here because of their presence in the pieces of the Guided Approach and their listing by respondents to the survey. Only information regarding the explanation of the technique, the notation clarification, and examples from the literature are provided.

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<sup>35</sup> Randy Brecker, discussed his use of doodle tonguing in a masterclass given at Western Carolina University Trumpet Festival. January, 2008.

<sup>36</sup> Conrad Herwig, “An Introduction to Doodle Tonguing,” From *Top Brass: Interviews and Masterclasses with Jazz’s Leading Brass Players*. Ed. Bob Bernotas. (New York: BopTism Music Publishing, 2003), p. 254.

<sup>37</sup> Ibid.

<sup>38</sup> McChesney, *Doodle Studies and Etudes*, introduction page.

## Tongue slaps/Stops/Flap tonguing

This technique (which has been called tongue slap, tongue stop, and flap tongue) is accomplished by allowing the tongue to come between the teeth into the mouthpiece. It is similar to a slap or stop tongue technique on a saxophone but with less control. Three references to this sound in the brass world are mentioned here for further explanation.

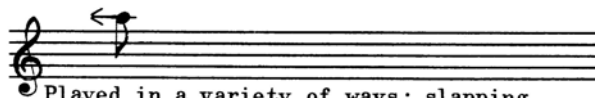
1. In *Extended Techniques for Horn*, Douglas Hill writes of a split tongue attack, which he describes as a “very short, loud, sudden indiscriminate pitch.”<sup>39</sup> He instructs the performer to:

purse lips together in a tight aperture (like a consonant “p”) and force out what little air is between the tongue and the aperture approximating the double consonant “pt.”<sup>40</sup>

2. Stuart Dempster in *The Modern Trombone*, refers to a slap tongue<sup>41</sup> technique which he writes is similar to flutter but much louder and more blatant. Again in this realization, the tongue moves through the teeth.
3. From the trumpet literature, Alfred Blatter and Paul Zonn list a “smacking sound,” in their notation guide at the beginning of *Contemporary Trumpet Studies*.<sup>42</sup> The entry includes the following:

Example 3.17 Blatter/Zonn slap tongue notation

### SMACKING SOUND\*



Played in a variety of ways: slapping tongue against mpce. cup, accented 'D' syllable spoken thru instrument before playing written note; etc.

<sup>39</sup> Hill, *Extended Techniques for Horn*, p. 33.

<sup>40</sup> Ibid.

<sup>41</sup> Dempster, *The Modern Trombone*, p. 38.

<sup>42</sup> Alfred Blatter and Paul Zonn, *Contemporary Trumpet Studies* Ed. David Hickman (Denver, Colorado: Tromba Publications, 1976), p. 5.

The notation most commonly used for this type of tonguing technique is an “x” in place of the traditional note-head. The composer will need to provide additional text for clarity.

Three pieces from the Guided Approach make use of these extended tonguing techniques.

- Richard Moryl, *Salvos* – stop tongue
- Frank Ticheli, *The First Voice* – flap tonguing
- Tae Hong Park, *t1* – stop tongue.

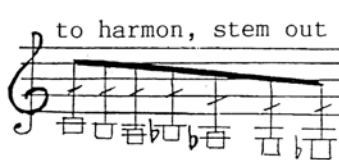
This example from Moryl’s *Salvos* indicates stop tongue with an “x” in place of the traditional note-head.

Example 3.18 Richard Moryl, *Salvos*, 3<sup>rd</sup> page, 5<sup>th</sup> stave



This example comes from the introductory comments to Ticheli’s *The First Voice* and explains the production of the flap-tongue technique.

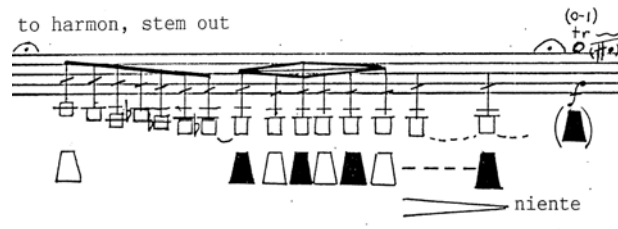
Example 3.19 Frank Ticheli, *The First Voice*, performance notes



Flap-tongue: Blow air in instrument while thrusting tongue vigorously forward into mouthpiece. This should create a vacuum affect. Use the fingering of the pitch notated while performing two to three “flap-tongue” repetitions for each note. A MUTE CHANGE FROM HARMON WITH STEM TO HARMON WITHOUT STEM IS TO TAKE PLACE WHILE THIS AFFECT IS BEING DONE.

This moment early in *The First Voice* combines the flap-tongue technique with mute manipulation.

Example 3.20 Frank Ticheli, *The First Voice*, 1<sup>st</sup> page, 5<sup>th</sup> stave



### Tongued Tremolo

The tongued tremolo technique involves “playing the same note, repeated at will, and articulating using the tongue.”<sup>43</sup> One mention of the technique in scholarly documents comes from Attilio Tribuzi, who explains tongued tremolo as soft, rapidly repeated tonguing of an indicated pitch.<sup>44</sup> The notation for this technique uses text in combination with the symbol for flutter tonguing and is seen in Example 3.21 below.

The sole example of tongue tremolo from the Guided Approach is found in Charles Whittenberg’s *Polyphony*. Whittenberg employs tongued tremolo in the context of melodic lines as well as sustained, isolated pitches. He also requires the technique to be used at varying dynamic levels. His notation seen in the example from the score below uses the traditional fluttertonguing symbol with a text addition of “tongued trem.”<sup>45</sup>

<sup>43</sup> James Ackley, University of South Carolina. [Website] “Extended Trumpet Technique Terms and Definitions.” 2008. Site address: <http://www.trumpet.music.sc.edu/>

<sup>44</sup> Attilio Tribuzi, “Extended Trumpet Performance Techniques.” (Master of Arts Thesis, California State University, Hayward, 1992), p. 51

<sup>45</sup> Charles Whittenberg, *Polyphony for Solo C Trumpet*. (New York: McGinnis and Marx Music Publishers, 1970).

Example 3.21 Charles Whittenberg, *Polyphony*, measure 15

The musical score for measure 15 of Charles Whittenberg's *Polyphony* is written for a flute. The tempo is marked as quarter note = 48. The piece is in 3/8 time. The measure begins with a piano (*pp*) dynamic and a *flut.* marking. The first two notes are beamed together. The third note is marked *ppp*. The fourth note is marked *f* and has a *tongued trem.* marking above it. The fifth note is marked *mp*. The sixth note is marked *mf* and has a *3* (triple) marking above it. The seventh note is marked *f*. The eighth note is marked *ff*. The final two notes are beamed together, with the first of this pair marked *ff* and the second marked *mf*. A *flut.* marking is placed above the final note.

## Chapter IV Valve Techniques

### Explanation of the Technique

Many of the extended techniques attainable on the trumpet are due to the possibilities provided by valve manipulation. As musical experimentation developed greatly in the twentieth century, so did the valve techniques used in those experiments. This chapter will concentrate on the following specific techniques:

1. Half-valve techniques:
  - a. for individual notes in melodic context
  - b. half-valve glissando
2. Jazz effects
3. Valve tremolos
4. Valve glissandi
5. Valve rhythms

### Half-Valve techniques

Half-valved notes are notes performed with one or more valves in mid-stroke position. The word “half” is misleading as frequently only a slight depression of the valve(s) may be needed; each player must determine the best valve placement for this technique. Half-depressing one or more of the valves on a trumpet will cause the player to rely more on the embouchure and ear and less on the physical construction of the instrument. In *Musical Instruments*, Murray Campbell explains the reaction of the instrument when half-valve techniques are used by writing: “the ambiguous tube length will respond to the pitch imposed by the player’s lips.”<sup>1</sup>

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<sup>1</sup> Campbell, Murray and Clive Greated and Arnold Meyers, *Musical Instruments: History, Technology, and Performance of Instruments of Western Music* (New York: Oxford University Press, 2004), p. 205.

The unique tone color and pitch ambiguity provided by half-valved notes are of interest to composers for all valved brass instruments. Douglas Hill writes of the effects of using the half-valve technique on the horn.

Partially engaging one, some, or all of the valves causes two results: 1) the color of the sound becomes choked off or constricted with less resonance and 2) the stability of the harmonic notch becomes non-existent, which allows for a smooth slide across various pitches.<sup>2</sup>

The performance of half-valved passages can be challenging, depending on the range in which the half-valved pitch is written and the musical material surrounding the use of the technique. Two issues to consider when preparing half-valved passages are described below.

1) Frank Panico and Rev. George Wiskirchen, in *A Manual for the Stage or Dance Band Trumpet Player*, write “To ensure greater success the player should always use two or three valves if possible. If only one valve is needed it is better to use a false fingering incorporating additional valves: having only one valve depressed is difficult to control and the note can be easily missed.”<sup>3</sup>

2) In *Extended Techniques for the Horn*, Douglas Hill states that the half-valve technique as applied to a definite pitch causes a feeble quality and difficulty achieving rapid flexibility with exact pitches. Engaging more valves causes a more choked quality of sound.<sup>4</sup>

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<sup>2</sup> Douglas Hill, *Extended Techniques for the Horn: A Practical Handbook for Students, Performers and Composers* (Miami, Florida: Warner Bros. Publications, 1983), p. 51.

<sup>3</sup> Frank Panico and Rev. George Wiskirchen, *A Manual for the Stage or Dance Band Trumpet Player* (Boston, Massachusetts: Berklee Press Publications, 1964), p. 66.

<sup>4</sup> Hill, *Extended Techniques for the Horn*, p. 51.

## Half-Valve Glissandos

Trumpeters traditionally have two types of valved glissandi available to them. One involves all sounding harmonics between the starting and ending notes, and is referred to as a lipped glissando; it is performed through the use of traditional valve manipulation. The second type denotes the creation of a continuous smear between two pitches. It is this type that requires the use of the half-valve technique. Half-valve glissandi can be played both ascending and descending and require greater effort on the part of the player with regard to embouchure control and air support.<sup>5</sup>

One of the most challenging examples requiring the half-valve technique is a slow glissando, covering a wide pitch range over a lengthy period of time. This technique is difficult because of the natural breaks in the sound that correspond to the pitches of the overtone series. One can move the valves up and down, slowly and slightly to get through the breaks.<sup>6</sup>

Many of the pieces in the Guided Approach make use of half-valve techniques, both on individual notes and glissandi. The range of styles seen in these pieces as well as the span of their compositional dates demonstrate the lasting interest composers have had in this particular extended technique.

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<sup>5</sup> Paul Alva Smoker, "A Comprehensive Performance Project in Trumpet Literature with a Survey of Some Recently Developed Trumpet Techniques and Effects Appearing in Contemporary Music" (D.M.A. thesis, University of Iowa, 1974), p. 84. "The glissando is produced by combined depression of valves approximately half-way and a closing or opening movement of the lips to raise or lower the pitch. Because of additional resistance created with valves half-way, the force of the air required to produce the glissando is greater than that needed to sound normal tones."

<sup>6</sup> Ibid.



### Jazz effects

Valve techniques, particularly half-valve techniques, are commonly used in jazz. The “doit” and the “smear” make use of half-valving. The “fall” involves falling off the note while moving the valves in a random manner, similar to the valved glissandi. These glissando techniques and others are thought by some to be earlier contributions of jazz musicians.<sup>7</sup>

### Valve tremolo (timbral trill)

The valve tremolo is another technique used with great frequency in the trumpet repertoire. Seen in *Thirty Six Transcendental Etudes* by Theo Charlier,<sup>8</sup> written circa 1905, this technique calls for “rapidly alternating of the normal and harmonic fingering of the notated, unchanging pitch.”<sup>9</sup> Valve tremolos are possible on a wide range of pitches, but are used more frequently in the upper register of the trumpet due to the greater number of fingering combinations available in that range.

### Valved Glissandi

Two types of valve glissandi that use traditional valve movement are identified in the trumpet repertoire. The first, generally referred to as a valved glissando, is described by Alfred Blatter in *Instrumentation and Orchestration* as “slurring from the starting note to the ending note in a very sloppy manner while moving the valves rapidly and at random.”<sup>10</sup> The second, known as a fingered valve glissando, is usually written out with

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<sup>7</sup> Smoker, *A Comprehensive Performance Project in Trumpet Literature*, p. 84.

<sup>8</sup> Theo Charlier, *Thirty Six Transcendental Etudes* (Paris: Alphonse Leduc, 1946) Etude #17, p. 30.

<sup>9</sup> Gardner Read, *Contemporary Instrumental Techniques* (New York: Schirmer Books, 1976) p. 138 “Other names for this include – enharmonic trill, color trill, unison tremolo, key vibrato, bariolage (from string technique).”

<sup>10</sup> Blatter, *Instrumentation and Orchestration*, p. 136.

all notes indicated. Two of the examples from the Guided Approach include fingered glissandi.<sup>11</sup>

### Valve Rhythms

Valve movement can generate musical sound independent of the creation of pitches. One interesting example of this is in Robert Erickson's *Kryl*. He uses valve rhythms (sounds described as thuds or clanks) as a means of "rhythmic propulsion"<sup>12</sup> that do not hinder the production of other pitched sounds on the instrument. Experimentation with this technique has shown that, although no played pitch is being channeled through the instrument, any notes sung through the horn while valve rhythms are being performed can be slightly affected by the changing length of the instrument.

### **Clarification of Notation**

There have been numerous notation symbols created to indicate the use of the half-valve technique. These include 1) the words "half-valve" written into the score with the note-heads appearing normally (Example 4.1), 2) a half-valve notation where circles are used to indicate individual valves – a circle with the top half colored in denotes half-valved, an open circle denotes an open valve, a completely colored circle denotes a closed valve<sup>13</sup> (Example 4.2), 3) diamond-shaped note-heads combined with the written instruction "1/2 V." This instruction and symbolism typically indicate the composer's wish for a definite pitch to be played where the symbol resides on the staff. This notation

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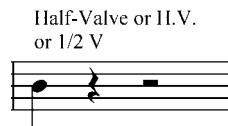
<sup>11</sup> Richard Moryl, *Salvos* (Joshua Corporation, 1969) and Dana Wilson, *Masks* (USA: Boosey and Hawkes, 2003).

<sup>12</sup> Edwin Harkins, "Aspects of *Kryl* – A Trumpet Piece," *Journal of the International Trumpet Guild* 5 (October 1980), 27.

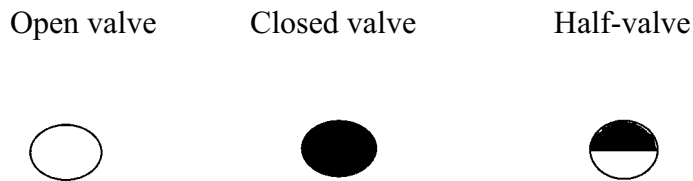
<sup>13</sup> Kurt Stone, *Music Notation in the Twentieth Century: A Practical Guidebook* (New York: W.W. Norton and Co., 1980) p. 198.

also works well for half-valved glissandi, and 4) the marking with an “x” as the note-head, any note to be performed with a half-valve. The “x” implies that the desired pitch is indefinite. This last example is the most common notation used in the pieces found in the Guided Approach.

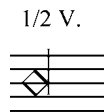
Example 4.1 Half-valve notation employing text



Example 4.2 Half-valve notation employing fingering chart circles



Example 4.3 Half-valve notation indicating a definite pitch



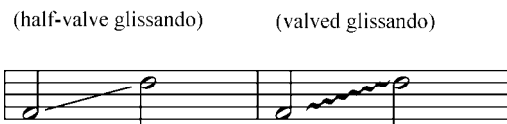
Example 4.4 Half-valve notation indicating an indefinite pitch



When notating glissandi, regardless of half-valve applications, diagonal lines connecting the beginning and ending notes are employed. Straight lines are used for

smooth glissandi, often implying a half-valve technique, and wavy or jagged lines are used when a valved glissando is requested.

#### Example 4.5 Half-valve glissandi notation



A third type of glissando, the contour glissando, is seen less frequently. Alfred Blatter provides an example of the analog notation required by this style of glissando.

#### Example 4.6 Alfred Blatter, notation for analog valve glissando<sup>14</sup>



Valve tremolos employ a wider range of notations. Gardner Read writes, “Valve tremolo notation can be *tr*° used for enharmonic trills though many composers favor writing out the series of repeated pitches and alternating an N (for normal fingering) and a ° over the note-heads.”

<sup>14</sup> Blatter, *Instrumentation and Orchestration*. 2<sup>d</sup> ed. (New York: Schirmer Books, 1997), p. 136.

Example 4.7 Valve tremolo notation suggested by Gardner Read<sup>15</sup>



Other authors and composers endorse the more frequent notation used for valve tremolo.

Example 4.8 Standard valve tremolo notation



### Examples from the Literature

The following pieces from the Guided Approach contain examples of the valve techniques described in this chapter:

#### Half-valve techniques

- Richard Moryl, *Salvos* (1969)
- Charles Whittenberg, *Polyphony* (1970)
- Frank Campo, *Times, Op. 39* (1971)
- Donald Erb, *Diversion for Two* (1972)
- William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)
- Morgan Powell, *Alone* (1974)
- Stanley Friedman, *Solus* (1975)
- Robert Erickson, *Kryl* (1977)
- Frank Ticheli, *The First Voice* (1982)
- Rex Richardson, *Three Etudes* (2000)
- HK Gruber, *Exposed Throat* (2001)
- Tae Hong Park, *t1* (2001)
- Dana Wilson, *Masks* (2003)

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<sup>15</sup> Read, *Contemporary Instrumental Techniques*, p. 140. The N denotes the normal fingering used and the circle denotes the enharmonic needed to perform the trill. In this case the fingerings would be open alternated with 2<sup>nd</sup> and 3<sup>rd</sup> valves.

### Valve Tremolo techniques

Richard Moryl, *Salvos* (1969)  
Charles Whittenberg, *Polyphony* (1970)  
Steven Winick, *Equinoctial Points* (1970)  
Frank Campo, *Times, Op. 39* (1971)  
Andre Jolivet, *Heptade* (1972)  
William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)  
Morgan Powell, *Alone* (1974)  
Stanley Friedman, *Solus* (1975)  
Robert Erickson, *Kryl* (1977)  
Frank Ticheli, *The First Voice* (1982)  
Luciano Berio, *Sequenza X* (1984)  
Rex Richardson, *Three Etudes* (2000)

### Valve Glissando

Richard Moryl, *Salvos* (1969)  
Donald Erb, *Diversion for Two* (1972)  
Andre Jolivet, *Heptade* (1972)  
William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)  
Morgan Powell, *Alone* (1974)  
Stanley Friedman, *Solus* (1975)  
Frank Ticheli, *The First Voice* (1982)  
HK Gruber, *Exposed Throat* (2001)  
Dana Wilson, *Masks* (2003)

### Valve Rhythms

Robert Erickson, *Kryl* (1977)

### Half-Valve tongued

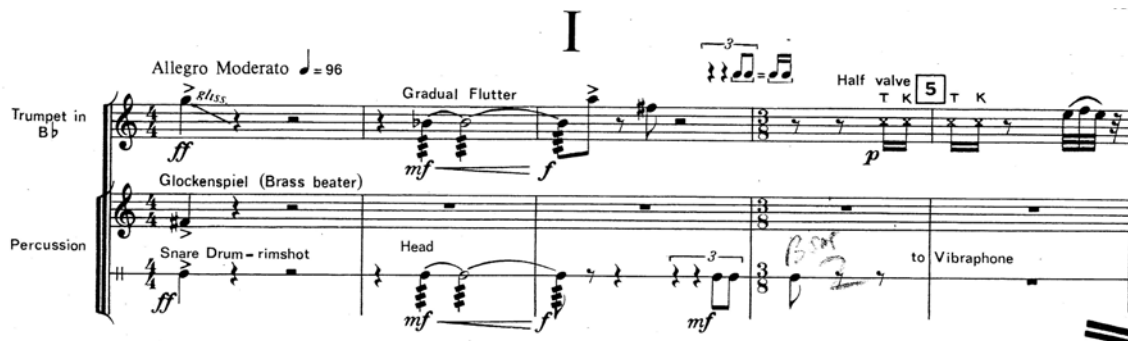
The effect heard in this example from Richardson's *Three Etudes* sounds similar to passages employing slide removal in Friedman's *Solus*. The dynamic markings written indicate the echo effect which will result when the half-valve technique is added to the traditionally played note.

Example 4.9 Rex Richardson, *Three Etudes*, 2<sup>nd</sup> movement, 5th stave



In this example, two instances of half-valve technique can be seen. Donald Erb writes for a glissando at the start of *Diversion for Two* and notates a straight line, indicating a smooth descent, necessitating the half-valve glissando. In measure 4 he uses “x” shaped note-heads and text to indicate half-valved pitches that are also double-tongued. This five-measure segment serves as an excellent example of how composers frequently combine many extended techniques.

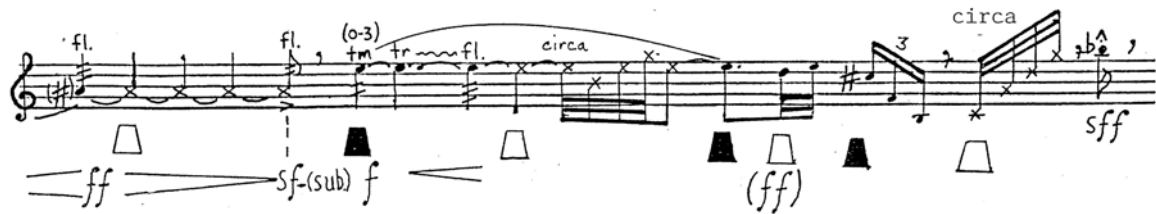
Example 4.10 Donald Erb, *Diversion for Two*, 1st movement, beginning



The valve techniques employed in example 4.11 are varied. Frank Ticheli writes for valve tremolo early in the example and towards the end he employs half-valve techniques in a melodic context. The “circa”<sup>16</sup> placed above the moving half-valved pitches indicate approximate pitches.

<sup>16</sup> Attilio N. Tribuzi, “Extended Trumpet Performance Techniques” (Master of Arts Thesis, California State University, Hayward, 1992), p. 30. “The half-valved notes are to be played with all three valves at half position, but the ‘circa’ markings indicate that the pitches are approximate and the trumpet player is to play according to contour of the notes.”

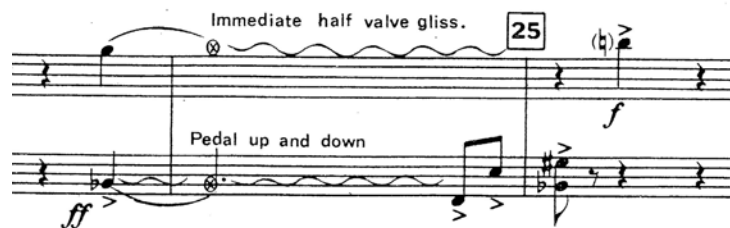
Example 4.11 Frank Ticheli, *The First Voice*, 1<sup>st</sup> movement, 1<sup>st</sup> page, 6<sup>th</sup> stave



### Valve Glissando

This example of a half-valve glissando from Erb's *Diversion for Two* uses the technique in a higher register and demonstrates Erb's similar writing style for the trumpet and the vibraphone at this point in the composition.

Example 4.12 Donald Erb, *Diversion for Two*, 2<sup>nd</sup> movement, measure 23



This two-octave half-valve glissando in *Masks* stretches across two measures of music, challenging the player to perform a seamless slide. Avoiding the harmonic breaks on the instrument presents a high level of difficulty.

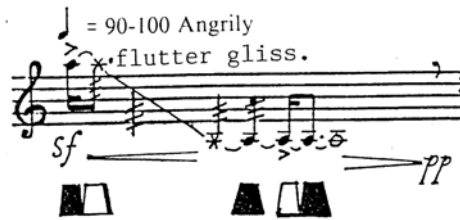
Example 4.13 Dana Wilson, *Masks*, 3<sup>rd</sup> movement, last four measures





The notation used here by Ticheli indicates a smooth half-valve glissando descending across two octaves. The addition of the flutter tonguing, as well as the mute manipulation, makes this an extremely challenging moment in the piece.

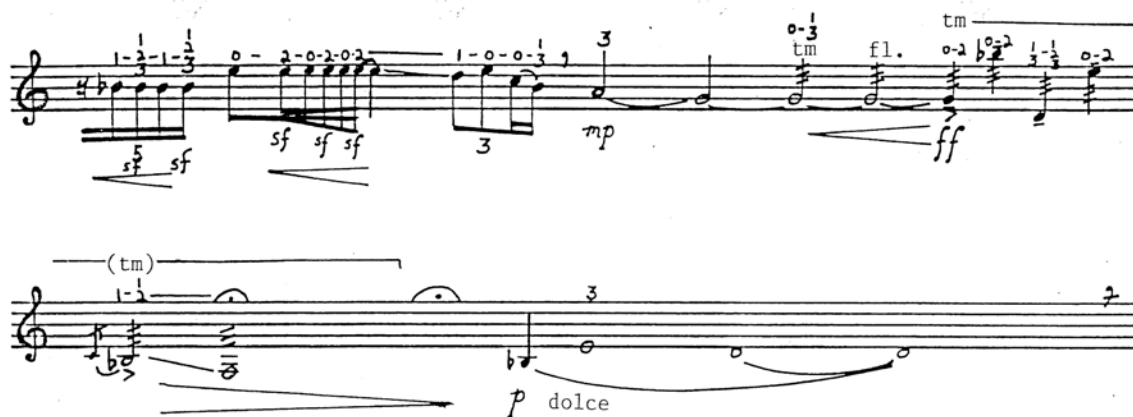
Example 4.14 Frank Ticheli, *The First Voice*, 1<sup>st</sup> movement, 2<sup>nd</sup> page, first stave



### Valve Tremolo

Valve tremolo is shown here in alternation with the technique of flutter tongue. Ticheli notates valve tremolo with “tm.”

Example 4.15 Frank Ticheli, *The First Voice*, 1<sup>st</sup> movement, 3<sup>rd</sup> page, 3<sup>rd</sup> and 4<sup>th</sup> staves



## Valve Rhythm

The square open note-heads on the top staff of this example are used by Robert Erickson to denote valve rhythms. The lower staff presents the alternation between sung and played pitches while the valve rhythms are ongoing. This challenging example uses many techniques in combination.

Example 4.16 Robert Erickson, *Kryl*, page 4, 3 measures before rehearsal J

The image shows a musical score for a trumpet part. The top staff is a treble clef staff with a key signature of one flat (Bb). It contains a sequence of square open note-heads, which are used to denote valve rhythms. The bottom staff is a bass clef staff with a key signature of one flat (Bb). It contains a melodic line with dynamic markings (MF+, F, F) and articulation marks (1, 2, and slurs). The score is divided into three measures by vertical bar lines.

## **Challenges to the Performer**

The challenges facing the trumpeter performing extended valve techniques are divided into the three categories listed below. Because half-valve techniques require the instrument to be used in a nontraditional manner, forcing it to override the physical principles on which it is constructed, the player must have an excellent aural concept of the desired pitch and sound.

Lip Flexibility: In order to contend with the pitch ambiguity resulting from half-valved pitches, the player should have good lip flexibility. The use of the embouchure becomes especially important in the case of notated half-valved oscillations.<sup>17</sup> Lip flexibility must

<sup>17</sup> Hill, *Extended Techniques for the Horn*, p. 52 “half-valve oscillation” – an arbitrary wobbling about a given pitch with the constricted quality of half-valve. To perform this technique: attack the initial pitch and

receive attention in order for the player to successfully center and manipulate these half-valved pitches.

Alternate fingering knowledge/finger control: Knowledge of alternate fingerings when performing extended techniques on the trumpet cannot be overvalued; having this knowledge readily available in tremolo passages will allow greater ease. Finger speed and control also present difficulties for performers. Certain unfriendly fingering combinations may require practice to reach the intended tempo. The issue of finger control when performing difficult half-valved passages may also need attention; trying to overcome years of muscle memory by asking the fingers to stop mid-valve strike requires practice.

Glissando: The slow half-valve glissando (being able to perform the glissando without any breaks from the overtone series) presents a special challenge. Determining which valves need to be partially depressed and finding an arrangement that works best will require time and will vary from instrument to instrument.

### **Exercises for Study**

The majority of the valved techniques discussed in this chapter are regarded by most trumpeters as common place, causing little difficulty to achieve (as the survey results reveal). The exception is the half-valve technique, used in both the performance of definite pitches and glissandi. For that reason, the exercises in this chapter focus solely on half-valve techniques.

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bend around that pitch by use of the aperture and tongue while engaging an effective half-valved combination. This can sound like a whine or a cry and can be used for comic effects.

The goal in the performance of many half-valved passages is to create as seamless a sound as possible. Unfortunately, the player is constrained by the naturally occurring breaks in the harmonic series. Valve combinations which add more tubing to the instrument are the best options for smoothing over these breaks. This first exercise is written for the student who has not experimented with half-valve techniques.

**Exercise #1: Goal - to study the tendencies of your individual instrument**

Play the following pitches with their traditional trumpet fingering first. Slowly raise the fingers to half position while maintaining the initial pitch. Observe the changes in timbre and pitch and avoid the temptation to lip notes by keeping the air stream focused. Slowly return to the fully depressed valve position, attempting to create a seamless shift in the color of the note. In notes beginning with multiple valves depressed, experiment with different rates of movement for all of the valves involved.

A good starting point and a few pitches have been provided below; the student should expand this exercise into all registers of the trumpet.

Example 4.17 Beginning half-valve exercise



**Exercise #2: Goal - to perform expanding intervals with the half-valve technique and create a slow wailing sound**

Focus on intervals of thirds to begin with, practicing ascending and descending with as seamless a sound as possible. The following intervals are suggested as starting points but students may transpose to different registers as needed.

Example 4.18 Expanding interval half-valve exercise

Play all notes half-valved - experiment with the alternate fingerings

**Exercise #3: Goal - to smooth out the breaks which occur in the harmonic series**

This exercise employs descending phrases, as it is always easier to bend a pitch downward; students should reverse the direction and attempt the ascending series after this first step has been perfected.

Example 4.19 Descending half-valve glissando exercise

Perform all notes half-valve

**Exercise #4: Goal - to practice articulation while employing half-valve techniques**

This exercise is helpful for passages in the trumpet repertoire that are written for definite pitch half-valved notes, such as Ticheli’s *The First Voice* and Erb’s *Diversion for Two*. Begin this tongued exercise by performing the passage with traditional valve techniques. Repeat with half-valves on all notes (alternate fingerings will be needed to avoid any open pitches – choose alternate fingerings with as many valves depressed as possible for greater control).

### Example 4.20 Half-valve articulation exercise

Perform all notes half-valve; alternate fingerings are provided for open notes, students may experiment with alternate fingerings for other pitches as well.

The exercise is written in 4/4 time and consists of three staves of music. The first staff contains four measures of music with notes and fingerings: 1/3, 2/3, 1/3, 2/3. The second staff contains four measures with notes and fingerings: 3, 3. The third staff contains four measures with notes and fingerings: 1/3, 1/3.

### Exercise #5: Goal - to practice a contoured glissando using half-valve techniques

Choose any starting pitch and perform a glissando that alternates directions and covers wide distances. Employ fingering adjustments that have been identified as helpful in earlier exercises to smooth out the break in the harmonic series.

### Example 4.21 Contour Glissando exercise

The exercise is written in 4/4 time and consists of a single staff of music. It features a glissando line connecting notes across four measures, illustrating a contour glissando.

### Survey Results Specific to Valve Techniques

The following information was gathered from the survey results:

The question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Half-Valve/Glissando” 97% (148 people) of the participants answered yes, 3% (5 people) answered no. Under the

category of “Tremolos/alternate fingerings” 93% (143 people) responded yes and 7% (10 people) responded no. On the continuum of most-used to least-used techniques, half-valve/glissando tied for first place as the technique most taught by respondents.

In the section of the survey designed to gauge respondents’ opinions concerning the use of extended techniques, the following questions were asked:

Table 4.1 Level of Study Appropriate for the Teaching of Valve Techniques

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Half-Valve/ Glissando	85% (103)	8% (10)	6% (7)	1% (1)	none
Tremolo/ Alternate Fingerings	65% (78)	24% (29)	11% (13)	none	none

Table 4.2 Perceived Usefulness of Valve Techniques

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Half-Valve/ Glissando	48% (68)	29% (41)	18% (25)	4% (5)	2% (3)
Tremolo/ Alternate Fingerings	45% (63)	28% (39)	23% (32)	1% (2)	4% (5)

Table 4.3 Perceived Difficulty of Valve Techniques

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Half-Valve/ Glissando	none	1% (1)	29% (40)	70% (97)	none
Tremolo/ Alternate Fingerings	none	1% (1)	20% (27)	77% (106)	3% (4)

According to survey results, almost all respondents find both the techniques of half-valve/ glissando and tremolo/alternate fingerings to be useful to some degree. Also of interest is the data concerning the difficulty of these techniques: both half-valve and lip trills/shakes are believed to be not very difficult. Most likely due to the relative ease of these techniques, it is no surprise that the majority of respondents believe they should be introduced at the high school level.



## Chapter V Lip Techniques

### Explanation of the Technique

#### Lip trills

Lip trills are trills performed between two notes using the same fingering. They are primarily used in the upper registers of the trumpet range where the partials of the harmonic series are closer together, specifically starting between e" and f-sharp", as this is the lowest occurrence of a major second achievable within the same harmonic series. As many have stated before, the name lip trill is inaccurate, as it is the air and, more importantly, the tongue that truly enables the alternation of pitch.

#### Shakes

Whereas a lip trill involves the alternation of the pitch by the air and tongue in a controlled manner, the shake must employ more physical means by involving the player's hand. This active ornament combines the refined technique of a standard lip trill with the shaking of the horn forwards and backwards on the formed embouchure. The movement of the trumpet combined with the action of the trill causes the shake.

#### Microtonal variations

Microtonal variations are deviations from the indicated pitch which are smaller than a half-step. The most common of these intervals, quarter tones, are found in a few of the works in the Guided Approach, and represent only a small portion of the microtonal indications written by composers. A request for variations smaller than quarter tones may

be indicated by phrases instructing the player to bend the pitch or “raise and lower pitch at will.”<sup>1</sup> Microtones can be achieved through the use of alternate fingerings and/or valve slide manipulation, but in this chapter only those microtones realized through lip bending are addressed.

Today’s brass players often use microtonal variations in their warm-up routines. James Thompson’s *The Buzzing Book*,<sup>2</sup> James Stamp’s *Warm-Ups and Studies*,<sup>3</sup> and others advocate the use of lip bends and pedal tones to encourage the centering of pitch. Because of the common study of lipped techniques such as lip trills and pedal tones (which is evident from the survey results<sup>4</sup>), the appearance of microtones in trumpet repertoire is relatively easy to manage. Difficulty becomes a factor when microtones are approached by leap or when the passage involving microtones is written in a register where the partials of the harmonic series are closer together.

Stuart Dempster describes the most eloquent example of microtones in the trombone literature as seen in *General Speech* by Robert Erickson.<sup>5</sup> Although Erickson is responsible for one of the masterpieces in the trumpet repertoire involving extended techniques (*Kryl*), he has not yet written a piece exploiting the intricacies of speech for trumpet. There is a work for trumpet, however, that has similar intentions as *General Speech*. Frank Ticheli’s *The First Voice* begins with program notes that state:

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<sup>1</sup> William Kraft, *Encounters III: D.L.A. duel for trumpet and percussion* (Los Angeles, CA: Avant Music, 1973), p. 5.

<sup>2</sup> James Thompson, *The Buzzing Book: Complete Method* (Switzerland: Editions BIM, 2001).

<sup>3</sup> James Stamp, *Warm-Ups and Studies*, 2<sup>nd</sup> ed. (Switzerland: Editions BIM, 1982).

<sup>4</sup>Survey responses to question #9, “Have you ever taught the following extended techniques to a student?” confirm that 97% of teachers have taught lip trills/shakes and 92% have taught pedal tones. Responses to question #10 asking, “What methods/solo literature involving extended techniques have you used with your students?” reveal both the Thompson and Stamp books as highly valued teaching materials for lipped techniques.

<sup>5</sup> Robert Erickson, *General Speech for Solo Trombone* (New York: Okra Music Corp., 1976). Dempster writes that *General Speech*, which was written for him, “intended to represent the microtonal fluidity of speech notation within traditional framework” p. 27.

“In the first movement, extended mute techniques, multiphonics, subtle timbral transformations and disjunct linear writing are utilized to reflect speech.”<sup>6</sup> The first note of the piece sets this goal: the player is instructed to begin on an open g' lipped down to an f <sup>3</sup>/<sub>4</sub> sharp.

Microtonal playing has held a strong interest for certain players. Don Ellis, known for using microtones in his jazz solos, requested and received a quarter-tone trumpet from the Holton Company in the 1960s.<sup>7</sup> The instrument was a B-flat trumpet modified with a fourth valve capable of lowering any valve combination a quarter-step. In 1975, Ellis published *Quartertunes: a Text with Musical Examples, Exercises, and Etudes*.<sup>8</sup>

### Vibrato

Vibrato will be mentioned here only because it relies on the same undulation of pitch used by the previously addressed microtones. Methods of creating vibrato on the trumpet utilize 1) the lip (involving the same physical means as microtones: the tongue, the jaw, and the lips), 2) the hand, or 3) the air in the pulsing of the tone. Vibrato is a natural element of trumpet playing and only appears as an extended technique when composers begin to enforce strict parameters on its realization. In the Guided Approach, only two instances of specific instructions regarding vibrato occur. Hans Werner Henze calls for quarter tone vibrato in his *Sonatina*<sup>9</sup> and Morgan Powell uses a graphic notation

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<sup>6</sup> Frank Ticheli, *The First Voice* (Portland, ME: Manduca Music Publications, 1987).

<sup>7</sup> David Hickman, *Trumpet Pedagogy: A Compendium of Modern Teaching Techniques* (Chandler, AZ: Hickman Music Editions, 2006), p. 333.

<sup>8</sup> Don Ellis, *Quartertunes: a Text with Musical Examples, Exercises, and Etudes* (Long Island, NY: Harold Branch Publishing, Inc. 1975).

<sup>9</sup> Henze, *Sonatina* (New York: Schott Music International, 1976).

of the wavering he desires in *Alone*.<sup>10</sup> The type of graphic notation employed by Powell is also referenced in *Contemporary Trumpet Studies*<sup>11</sup> by Alfred Blatter and Paul Zonn using the following:

Example 5.1 Blatter/Zonn vibrato variances notation

**VIBRATO**

a) variation of width      b) variation of speed      c) width specification      d) no vibrato

### Clarification of Notation

The notation used to indicate a lip trill or shake has evolved little over time. Traditional notation for lip trills and shakes are illustrated below.

Example 5.2 Lip Trill notation







Example 5.3 Shake notation

<sup>10</sup> Powell, *Alone* (Nashville, Tennessee: Brass Music, Ltd., 1974).

<sup>11</sup> Blatter and Zonn, *Contemporary Trumpet Studies* (Denver, Colorado: Tromba Publications, 1976), p.2.

Microtones have presented greater challenges for composers to notate and trumpeters to read with ease. The following chart deals only with examples of lip generated microtonal variations which can be found in the twenty pieces from the Guided Approach.

Table 5.1 Notation of Microtones

Notation	Explanation	Piece Using Technique
	Quarter tone vibrato	Henze, <i>Sonatina</i>
	Raise and lower pitch at will: up quarter tone/down quarter tone	Kraft, <i>Encounters III</i>
	Play an open g' lipped down to f' 3/4-sharp	Ticheli, <i>The First Voice</i>
	Bend down	Erb, <i>Diversion for Two</i>
	“The vertical arrows above or below the notes indicate the direction, but not the degree, of microtonal deviation from the usual tuning system.” <sup>12</sup>	Erickson, <i>Kryl</i>
	(no key or explanation given other than notation)	Jolivet, <i>Heptade</i>

<sup>12</sup> Erickson, *Kryl*, introduction and notation explanation.

## Examples from the Literature

The following pieces from the Guided Approach make use of lip techniques:

### Lip Trills/Shakes

Richard Moryl, *Salvos* (1969)

André Jolivet, *Heptade* (1972)

Donald Erb, *Diversion for Two* (1972)

William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)

Stanley Friedman, *Solus* (1975)

Luciano Berio, *Sequenza X* (1984)

HK Gruber, *Exposed Throat* (2001)

### Microtones

Donald Erb, *Diversion for Two* (1972)

André Jolivet, *Heptade* (1972)

William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)

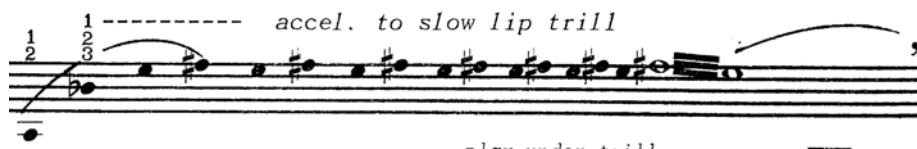
Hans Werner Henze, *Sonatina* (1976)

Robert Erickson, *Kryl* (1977)

Frank Ticheli, *The First Voice* (1982)

This example from *Encounters III* illustrates an accelerating lip trill and the notation employed by William Kraft.

Example 5.4 William Kraft, *Encounters III*, 1<sup>st</sup> movement, 2<sup>nd</sup> page, 4<sup>th</sup> stave



This excerpt from *Salvos* by Richard Moryl highlights an isolated slow shake with the composer's request to reach for a significantly higher pitch.

Example 5.5 Richard Moryl, *Salvos*, 5<sup>th</sup> page, 4<sup>th</sup> stave

Handwritten annotations: "Tarry-reach for note", "slow shake", "Subito", "Ped", "Splat!".  
 Dynamics:  $f$  <  $ff$  >  $f > pp$  <  $f$  >

HK Gruber writes a very complex and quickly moving musical line, with the shake-trill embedded in the melody, requiring a great deal of flexibility and facility from the soloist.

Example 5.6 HK Gruber, *Exposed Throat*, 8<sup>th</sup> page, one measure before 26

Performance markings: "shake", "shake-tr.", "26", "3", "6:4", "ff sfz", "pp sub.", "sfz", "pp", "(-DE<sup>1</sup>)".

William Kraft writes for the use of quarter tones in this accessible passage from *Encounters III*. The range of the notated pitch lends itself well to lip bending.

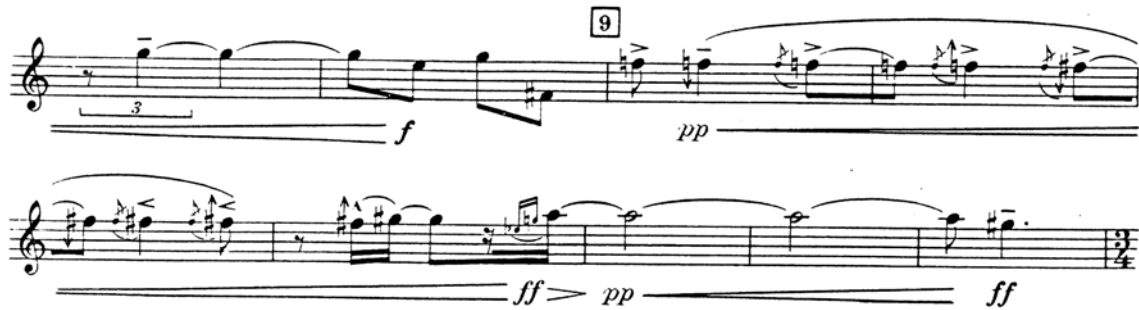
Example 5.7 William Kraft, *Encounters III*, 1<sup>st</sup> movement, 2<sup>nd</sup> page, 6<sup>th</sup> stave

Performance instructions: "Continue as long as possible with original breath.", "raise and lower pitch at will", "mp 1/4 tone", "down 1/4 tone", "etc.".

This example from André Jolivet illustrates the use of microtones at higher ranges, such as the f' and f-sharp". Performing microtones in this register is more challenging because of the closeness of the intervals of the harmonic series on the trumpet. (The notation used

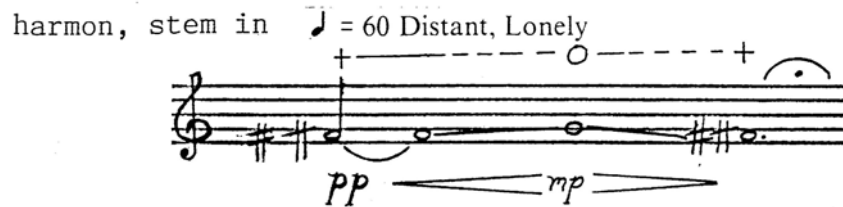
by Jolivet is somewhat difficult to see. Beginning in the second measure of 9, he uses up and down arrows extending from the accidentals.)

Example 5.8 André Jolivet, *Heptade*, 1<sup>st</sup> movement, 2<sup>nd</sup> page, two measures before 9



This example from Ticheli's *The First Voice*, was referenced earlier and requires the performer to begin the piece on an altered, uncentered pitch.

Ex. 5.9 Frank Ticheli, *The First Voice*, 1st page, very beginning of piece



Erickson writes a complex passage of microtonal variation made slightly easier by the scalar motion involved.



Example 5.10 Robert Erickson, *Kryl*, 1<sup>st</sup> page, 3<sup>rd</sup> staff, two measures before rehearsal B



### Challenges to the Performer

Lipped techniques on the trumpet can present three distinct challenges.

- 1) The performance of lipped techniques can be a challenge for students who have struggled with undesirable embouchure movement. Maintaining a fixed jaw position is essential when practicing lip trills and shakes; jaw movement will hinder the development of this skill.
- 2) Microtonal passages performed through the use of the lip (rather than the valve slide or alternate fingerings) will likely never be performed consistently because of the challenge of replicating such a minute frequency alteration. In “Trumpet Techniques in the Performance of Microtones,” Zach Browning writes

The use of the embouchure to ‘lip’ the pitch to the desired microtone results in inconsistent realizations of the designated interval and unavoidable timbral inflections. Furthermore, the performance of microtones at a moderate to fast tempo is virtually impossible using the embouchure technique.<sup>13</sup>

- 3) The upper register of the trumpet presents difficulties when performing microtones, because the proximity of the partials in this range restricts the distance that the lip bend can cover. In *The Modern Trombone*, Stuart Dempster states, “All easily microtoned instruments are bass clef instruments because of the greater distance between half

<sup>13</sup> Zach Browning, “Trumpet Techniques in the Performance of Microtones,” *International Trumpet Guild Newsletter* 5, no. 2 (1979), p. 6.

steps.”<sup>14</sup> Due to this physical reality, some of the more challenging examples of microtonal variation in the trumpet repertoire occur when the passage involves microtones near or above the top of the staff.<sup>15</sup>

### **Exercises for Study**

Lip flexibility is one of the most commonly addressed aspects of trumpet playing in method books. Survey responses indicate that lip trills and shakes are skills that are considered very useful and are introduced at early stages; ninety-seven percent of respondents have taught them. Due to the familiarity of these techniques, exercises concerning lip trills and shakes are not provided here; the focus of this section is microtones.

Microtonal variation through the practice of lip bending and pedal tones has become a standard part of trumpet warm-ups and maintenance exercises for many students. Despite its frequent use in that area, little writing of lip-produced microtones is currently occurring in the repertoire for trumpet. The most recent composition employing microtones generated by the lips in the Guided Approach comes from 1982 (Ticheli’s, *The First Voice*). Contemporary composers are writing for pitch deviations created by other means: alternate fingerings, half-valve techniques, and slide glissandi. The exercises provided below address the minute pitch alterations attainable with lipped techniques: they are inspired by music from the Guided Approach.<sup>16</sup>

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<sup>14</sup> Stuart Dempster, *The Modern Trombone: A Definition of its Idioms* (Athens, Ohio: Accura Music, Inc., 1994), p. 24.

<sup>15</sup> Donald Erb, *Diversion for Two* and Andre Jolivet, *Heptade* provide two examples of microtonal use in this particular range.

<sup>16</sup> All exercises are written using microtonal notation available through the music software program Finale 2009.

**Exercise #1: Goal - to prepare for microtonal variations by controlling pitch bends**

With a tuner, begin by bending pitches up and down by a half step. Choose notes from all registers of the instrument, concentrating on the top of the staff where the challenge is greater. Recognize that it is always easier to bend pitches down than up and spend time accordingly. Once the half-step movement is controlled, begin bending quarter tones in both directions. Smaller intervals such as eighth tones, although rarely called for in the repertoire, can be attempted at a more advanced level.

**Exercise #2: Goal - to begin on an affected pitch**

Inspired by Ticheli's *The First Voice*, this exercise begins on a pitch affected by a microtonal variation. Students should play the closest traditional pitch on the trumpet first, sing the microtone they wish to achieve, and perform the notated pitch on the trumpet.

Example 5.11 Exercise to begin sound on a microtonal pitch



**Exercise #3: Goal - to perform a microtone approached from a leap**

Perform the exercises provided below one measure at a time. It is suggested that the student sing the interval first.

Example 5.12 Exercise to perform microtones in the context of a leap



**Exercise #4: Goal - to practice microtones in the upper register of the trumpet**

Example 5.13 Exercise for microtonal playing in the upper register



**Survey Results Specific to Lipped Techniques:**

The following information was gathered from the survey results:

A question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Lip Trills/Shakes” 97% (153 people) of the participants answered yes, 3% (5 people) answered no. In response to the category titled “Microtones” 35% (49 people) of the participants answered yes, 65% (92 people) answered no. Respondents have placed lip trills/shakes second on the continuum of most frequently taught techniques.

In the section of the survey designed to gauge respondents’ opinions concerning the use of extended techniques, the following questions were asked:

Table 5.2 Level of Study Appropriate for the Teaching of Lip Techniques

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Lip Trills/ Shakes	75% (92)	20% (24)	6% (7)	1% (1)	0% (0)
Microtones	7% (7)	16% (17)	33% (35)	34% (36)	11% (12)

Table 5.3 Perceived Usefulness of Lip Techniques

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Lip Trills/ Shakes	69% (99)	22% (32)	6% (9)	1% (1)	1% (2)
Microtones	7% (10)	12% (16)	34% (47)	33% (45)	14% (19)

Table 5.4 Perceived Difficulty of Lip Techniques

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Lip Trills/ Shakes	3% (4)	19% (27)	64% (90)	13% (18)	1% (1)
Microtones	20% (26)	23% (31)	32% (42)	6% (8)	19% (25)

According to survey results, lip trills and shakes are considered standard techniques in trumpet performance and should be introduced at an early stage of study. The majority of respondents (97%) teaches lip trills and finds them to be useful, while somewhat difficult to perform.

The opposite is seen for microtones: only 35% of survey participants teach this technique and slightly more than half of respondents (53%) view microtones as useful to varying degrees. Microtones are believed to be much more difficult to perform than lip trills and shakes and most respondents would wait to teach them until late undergraduate or early graduate studies.

## Chapter VI

### Slide Techniques

With the introduction of valves to the trumpet in 1815,<sup>1</sup> the possibilities for extended techniques on the instrument grew considerably. Valves - and the slides attending them - provide numerous possibilities for exploration. The use of the slides to access various microtones is one type of experimentation employed by composers of the twentieth century. A second type, which calls for removing the slides completely to create a type of “prepared trumpet,”<sup>2</sup> has also led to unique sounds and challenges.

#### Explanation of the Technique

##### Slide Glissandi

In his dissertation, Paul Smoker references one of the means used by trumpeters to achieve microtones, a procedure that involves the lengthening of the first and third valve slides.<sup>3</sup> Writing in 1974, he documents the technique of slide glissandi, which was relatively new to the trumpet world, and cites early examples from the repertoire using this technique.<sup>4</sup>

To perform a slide glissando, alternate fingerings are required which provide access to specified slides and then the shortening or extension of those tuning triggers

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<sup>1</sup> Edward Tarr, *The Trumpet* (Portland, Oregon: Amadeus Press, 1988), p. 156.

<sup>2</sup> Edwin Harkins, “Aspects of *Kryl* – A Trumpet Piece” *Journal of the International Trumpet Guild* 5 (October 1980), 22-28. “The predominant and intriguing feature of this type of ‘prepared trumpet’ is the effortless hoquet between two timbral systems, two intonational systems and two sound directions.” p. 25.

<sup>3</sup>Paul Alva Smoker, “A Comprehensive Performance Project In Trumpet Literature With A Survey Of Some Recently Developed Trumpet Techniques And Effects Appearing In Contemporary Music” (D.M.A. Thesis, University of Iowa, 1974), p. 129.

<sup>4</sup>Smoker, “A Comprehensive Performance Project In Trumpet Literature.” Smoker references pieces involving quarter tones, “The six compositions in which the use of quarter tones is indicated are: Continuum for a Number of Instruments, by Larry Austin; ... un inter segnato, by Domenico Guaccero; Musik fur renaissance-instrumente, by Mauricio Kagel; Encounters III, by William Kraft; Blind Men, by Roger Reynolds; and Eonta, by Iannis Xenakis,” p. 130.

enables the instrument to slide through a pitch. The length of the slide being used strictly limits the amount of pitch change. Composers have used this technique in a variety of musical contexts. Some have written for the glissandi to be used in a scalar manner;<sup>5</sup> others have written passages that exploit the glissandi more as a sound effect, or smear;<sup>6</sup> still others have written for the technique to be used in a melodic context.<sup>7</sup>

### Removal of Slides

Playing the trumpet absent one or more of its slides is a technique that was first explored in the 1970s. Two compositions from the Guided Approach explore the non-melodic sounds that result when removing portions of the instrument. *Diversion for Two*, written by Donald Erb in 1972, instructs the trumpeter to pull out the second valve slide without depressing the valve in measure 33 of the third movement, causing a “pop.”<sup>8</sup> *Encounters III Duel for Trumpet and Percussion*, written by William Kraft in 1973, requires the trumpeter to “remove tuning slide and blow through mouthpiece and lead pipe.”<sup>9</sup>

Although both of these examples show the composers’ interest in noises created by the absence of the slide, they do not exhibit the melodic possibilities this change to the instrument could have. That is first seen in 1975 with the composition *Solus*, by Stanley

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<sup>5</sup> Attilio N. Tribuzi, “Extended Trumpet Performance Techniques” (Master of Arts Thesis, California State University, Hayward, 1992), p. 33, “Microtones in *Kryl* are in a scalar context usually heard as embellishments.”

<sup>6</sup> Stanley Friedman, *Solus* (Switzerland: The Brass Press, 1975).

<sup>7</sup> HK Gruber, *Exposed Throat* (New York: Boosey and Hawkes, 2001).

<sup>8</sup> Donald Erb, *Diversion for Two* (Bryn Mawr, PA: Merion Music, 1972).

<sup>9</sup> William Kraft, *Encounters III: Duel for Trumpet and Percussion* (Los Angeles, CA: Avant Music, 1973).

Friedman.<sup>10</sup> The entire fourth movement of *Solus* is written to be played without the second valve slide.

Three other pieces from the Guided Approach make use of this technique of slide removal: *The First Voice*, written by Frank Ticheli in 1982, *Kryl*, written by Robert Erickson in 1977, and *Exposed Throat*, written by HK Gruber in 2001. Of these three, *Kryl* has become a benchmark for the exploration of extended techniques on the trumpet, and this use of slide removal plays an integral part in the composition. Edwin Harkins, in “Aspects of *Kryl* – A Trumpet Piece,” explains in great detail the quality of sound and performing challenges caused by removing slides from the instrument.

When comparing the slideless sound with the normal trumpet sound, the former is a muted-trumpet type of timbre, is less focused, especially in the lower register, has less loudness potential, has more flexibility of intonation (each slot of the deformed overtone series is characterized by a wider than usual “lippable” range, causing considerable difficulty in attacking certain notes) and exits from a different part of the instrument, which may even be aimed in a different direction.<sup>11</sup>

Likely the biggest inconsistency in performing this technique is the fact that all instruments are unique and will produce these slideless notes with varying intonation tendencies and differing degrees of success. William Denton makes the point that removing slides will cause quite different sounds from each trumpet. He gives recommended fingerings for his trumpet but states that performers should experiment with valve combinations that produce the correct pitch on their own instruments. “When

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<sup>10</sup> From “Performance Notes” to *Go Blow Your Own – Contemporary Music for Trumpet*, the author (unknown) writes: “HK Gruber extensively consulted the virtuoso trumpet player Håkan Hardenberger whilst writing this piece and has used and notated these effects very simply. 1) Deconstruction is evident right from the beginning. Take out the first valve slide and lay it on your stand, for easy access later. Finger the 4<sup>th</sup> note (B flat) 1 and 3, and the air will pass through the open 1<sup>st</sup> valve, producing the same pitch but with a strange, other-wordly sound (Stanley Friedman pioneered this effect in his *Solus* of 1975).”

<sup>11</sup> Harkins, “Aspects of *Kryl* – A Trumpet Piece,” p. 25.



a workable fingering is found, the pitch will still need adjusting, either by ‘lipping’ or by extending the third valve slide (providing the note in question uses the third valve).”<sup>12</sup>

Observations of the works included in the Guided Approach suggest certain commonalities shared by successful uses of this technique.

1. Notes requiring the slideless valve should be located in the staff and above it.

Very few composers are making use of this technique in the lower registers of the trumpet because of the challenge of centering the pitch.

2. Once a slide is removed, a valve combination involving that valve and at least one other will be the most secure alternate fingering. From the examples of *Kryl*, *Exposed Throat*, and *Solus*: any slide that is removed and any note played that involves said slide should also have an alternate fingering adding another slide to help stabilize the pitch.

3. Changes in dynamics and the echo effect caused by the slideless sound are easily exploited and musically effective.

4. The removal of only one valve slide at a time provides the desired contrast and is more successful than removing multiple slides at a time.

## **Clarification of Notation**

### Slide Glissandi

The most common notation for the slide glissando is the use of an arrow placed between the beginning and ending notes of the slide. The contour of the arrow will follow the contour of the glissando desired. In order for a note to be eligible for a slide glissando

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<sup>12</sup> William L. Denton, “Extended Trumpet Techniques: A Method for their Exploration and Mastery” (D.M.A. thesis, University of South Carolina, 2006), p. 58.

it must involve the first or third valve, either through true or alternate fingerings. The following example from Friedman's *Solus* exhibits clear notation for slide glissandi using the third-valve slide.

Example 6.1 Stanley Friedman, *Solus*, 4<sup>th</sup> movement, 4<sup>th</sup> stave



An additional notation for third-valve slide movement is for intonation purposes only and not to be used to create a glissando effect. The following example demonstrates the notation used to indicate slide extension which will aid in the adjustment of intonation.

Example 6.2 Notation for third slide extension for intonation purposes

3→ = 3rd slide extended

### Removal of Slides

Slide removal is typically notated with written text printed at the appropriate moment in the score. The resulting need for alternate fingerings can require those fingerings to be printed directly above the note every time that specific timbre is called for. Two examples are seen below.

Example 6.3 Stanley Friedman, *Solus*, 4<sup>th</sup> movement, 3<sup>rd</sup> stave

Musical notation for Example 6.3, showing a trumpet part. The notation includes dynamics such as *f*, *p/f*, *f*, *p/f*, *f*, *p/f*, and *ff*. Fingerings are indicated by numbers 1, 2, and 3 above notes. A tremolo (trem.) is marked above a note. The piece is in a key with one flat (B-flat).

In cases where the alternate fingerings may apply to multiple notes in a passage, HK Gruber extends the lines to the right of the valve numbers to indicate the exact length of time the fingerings are to be employed.

Example 6.4 HK Gruber, *Exposed Throat*, p. 2, 2<sup>nd</sup> measure of 3

Musical notation for Example 6.4, showing a trumpet part. The notation includes dynamics such as *p sub.*, *ff*, *pp*, and *mf sub.*. Fingerings are indicated by numbers 1, 2, and 3 above notes. The word "ord." (ordine) is written above notes. The piece is in a key with one sharp (F#).

### Examples from the Literature

The following pieces from the Guided Approach make use of slide glissandi:

- William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)
- Stanley Friedman, *Solus* (1975)
- Robert Erickson, *Kryl* (1977)
- HK Gruber, *Exposed Throat* (2001)
- Tae Hong Park, *t1* (2001)

In *Encounters III*, William Kraft writes for the use of the slide as an extension of the instrument into a range it cannot access by traditional means. Both the tuning-slide

and third-valve slides are to be extended to make this pitch possible. Although not technically a glissando, this is an example of the developing interest in slide capabilities.

In this example from *Solus*, Friedman writes “gradually draw out third slide.” This instruction, combined with the pitch chosen, allows for significant microtone exploration and permits a seamless transition from the original e' to the half step lower, e-flat'.

Example 6.5 Stanley Friedman, *Solus*, 2<sup>nd</sup> movement, second and third lines

Friedman also uses the third slide in quicker gestures later in his piece. In this series of half step resolutions the technique creates a fast glissando, or smear effect.

Example 6.6 Stanley Friedman, *Solus*, 2<sup>nd</sup> movement, 3<sup>rd</sup> stave

In this passage near the end of *Kryl*, Erickson calls for a glissando performed with the third-valve slide in the realization of a melodic passage.

Example 6.7 Robert Erickson, *Kryl*, 10<sup>th</sup> page, after rehearsal S

In *t1* by Park, one of the two most recent compositions, effects are explained in the following table found in the introduction.

Table 6.1 Tae Hong Park, *t1*, Notation Table

**Special signs:**

	These notes should (in section A) should be played using blowing/breathing techniques. Refer to tape part with trumpet included.
	These rectangles are parts that stress synchronization to tape's trumpet part.
b-	micro-tones (flatted)
	Gradual/continuous micro-tonal shifts. These can be made by placing your hand into the bell or slowly lengthening 1 <sup>st</sup> (A/Ab, Bb/A, etc. ...) or 3 <sup>rd</sup> (A/Ab, E/Eb, etc. ...) slides.
( 2 / 3 )	Numbers encapsulated by parentheses suggest false fingerings.
	Diamond shaped note-heads refer to tape-part's rhythmic values content.
+ , o	Cup mute on (+) and off(o) respectively.

Visible in this example from Park's *t1* are the notations used for microtones. In the third and fourth measures of rehearsal B, the third valve slide is to be extended, lowering the a-flat' to the g'.

Example 6.8 Tae Hong Park, *t1*, 1<sup>st</sup> page, measure 11

The musical score consists of three staves. The first staff starts at measure 11 and includes a box labeled 'B' with the instruction '(cup mute) espressivo'. It features a glissando marking and dynamic markings from *ppp* to *pp*. The second staff starts at measure 16 and includes dynamic markings from *ppp* to *mp*, with a 'slowly open mute' instruction and a box labeled 'C'. The third staff starts at measure 23 and includes a dynamic marking of *mf*.

The following pieces in the Guided Approach involve the removal of slides:

- Donald Erb, *Diversion for Two* (1972)
- William Kraft, *Encounters III* (1973)
- Stanley Friedman, *Solus* (1975)
- Robert Erickson, *Kryl* (1977)
- Frank Ticheli, *The First Voice* (1982)
- HK Gruber, *Exposed Throat* (2001)

In this excerpt from the very beginning of his piece, Gruber provides detailed fingerings above the notes affected by the slide removal. He also indicates the return to the traditional sound of the trumpet with the notation “ord.” The first fingering provided includes a footnote which explains “Fingerings are suggestions only and will vary between players, between makes of trumpet, and on whether the player is fresh or tired.” Later in this example, Gruber provides instructions for the third-valve slide which address the intonation issues resulting from the pulled slide.

Example 6.9 HK Gruber, *Exposed Throat*, 1<sup>st</sup> page, very beginning

In this example from the fourth movement of *Solus*, Friedman demonstrates the unique dynamic effect that results when the second-valve slide of the trumpet is removed.<sup>13</sup>

Example 6.10 Stanley Friedman, *Solus*, 4<sup>th</sup> movement, 2<sup>nd</sup> page, 2<sup>nd</sup> stave

<sup>13</sup> Stanley Friedman, *Solus*, performance instructions. “Dynamics for all false tones are expressed as double-dynamics. The upper dynamic indicates the sounding volume while the lower dynamic indicates the blowing power required to produce the proper intensity.”

In this example from Frank Ticheli's, *The First Voice*, a fingered tremolo is called for with the second valve slide removed.

Example 6.11 Frank Ticheli, *The First Voice*, 1<sup>st</sup> movement, 3<sup>rd</sup> page, 1<sup>st</sup> and 2<sup>nd</sup> staves

The image shows two staves of musical notation. The first staff begins with a tremolo (tm) marked with a  $\frac{1}{3}-1$  fingering. It features dynamic markings of *fff*, *sf*, *sf*, and *sf-p*. Performance instructions include "(2)", " $\frac{1}{3}$ ", " $\frac{1}{3}$ ", and "(b)→". The second staff starts with a *f* dynamic and a  $\frac{1}{3}-1$  fingering, followed by a *ritard* section with a "3 seconds" duration indicated by a dashed line. The dynamics then change to *mp*, *sf*, and *mf*.

In Robert Erickson's *Kryl*, the removal of the first-valve slide and the alternate fingerings chosen by the composer create the need for virtually all fingerings to be provided.

Example 6.12 Robert Erickson, *Kryl*, 3<sup>rd</sup> page, rehearsal letter H

The image shows three staves of musical notation. The top staff has a dynamic marking of *pp* and a performance instruction: "REMOVE 1st VALVE SLIDE AND B←". The middle staff begins with a rehearsal mark "H" and a tempo marking "♩ = c. 320 (♩ = ♩ ALWAYS)". It contains extensive fingering numbers (e.g., 1 2 3 2, 3 2 3 2 3, 3 2 3 2 3 2) and dynamic markings of *MF-*, *p*, *F*, *F*, and *MP*. The bottom staff continues with more fingering (e.g., 2 3 2 2, 2 3 2 3 3, 3) and dynamic markings of *F-*, *F+*, *MP*, and *FF*. A "LOUD BREATH" instruction is placed above the staff, and a "SCA" marking is at the end.



## **Challenges to the Performer**

The challenges created by these new slide techniques can be grouped into three categories.

### **1. The need for detailed knowledge of intonation and equipment tendencies**

Working on passages involving slide removal requires dedicating time to learning a new set of intonation tendencies. It is not possible to state with certainty what the resulting tones may be when specific slides are removed. Every player, trumpet, and mouthpiece will contribute to a different result. Players must experiment with a variety of valve combinations to determine the most reliable result for their instrument(s).

### **2. The need for knowledge of and comfort with alternate fingerings**

As is evident in a piece such as *Kryl*, knowledge of alternate fingerings is essential for the performance of trumpet literature involving extended techniques. Edwin Harkins' article on *Kryl* offers detailed suggestions for the performance of this specific piece as well as observations on the challenges of these types of works. He states that the thorough knowledge of fingering systems is often lacking – “many alternate fingerings will be needed and it is rare that someone would have these memorized.”<sup>14</sup> Included with the exercises at the end of this chapter is a complete table for alternate fingerings.

### **3. The challenge of the sound coming out in the opposite direction**

In passages where the removal of the first slide is required the sound “is directed out the hole left by the missing slide, rather than the usual bell.”<sup>15</sup> Harkins suggests using “some sort of reflector behind you”<sup>16</sup> to help with projection.

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<sup>14</sup> Harkins, “Aspects of *Kryl*,” p. 25.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

A second issue caused by the directional nature of this type of playing is the resulting dynamic variances. Harkins writes that “it will do no good to attempt to force the sound to obtain a balance between the two outputs.”<sup>17</sup> Stanley Friedman goes into further detail and provides a double set of dynamics for the performer: for notes played on the slideless trumpet he notates both the dynamic he requests and what will actually be needed from the performer to achieve said dynamic level.<sup>18</sup> Making oneself familiar with the dynamic variances caused by the prepared trumpet will aid in the performance of pieces like *Kryl* and *Solus*.

## **Exercises for Study**

### Slide Glissando exercises

Because intonation tendencies and the use of alternate fingerings provide the biggest challenges in developing slide technique, these should receive the greatest attention. When developing the slide glissandi, the student must invest time with a tuning device to determine the correct length of slide extension needed.

### **Exercise #1: Goal - to become familiar with slide glissandi**

Slide glissando/smear possibilities chart: the following chart details the achievable slide glissandi through manipulation of the third-valve slide only. Pitches greatly affected by intonation challenges have been noted. Students should work through the individual glissandi to determine additional tendencies for their instrument. The most effective range for this technique is in or below the staff, as seen in Friedman’s *Solus*.

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<sup>17</sup> Harkins, “Aspects of *Kryl*,” p. 25.

<sup>18</sup> Friedman, *Solus* performance instructions

# Example 6.13 Slide Glissando Possibilities chart

Slide Glissandi achievable with the third valve slide

5 C# is too sharp to permit a full gliss to C 3

9 1 2 3 1 3 3

13 1 2 3 1 3 2 3 3

17 1 3 2 3 3 1 3

21 2 or 1 1 too sharp to be effective 1 or 3 3 too flat 3  
3 2 2 3

25 2 or 1 1 2  
3 2 3

the partials in this register are too close together for this to be effective

## Exercise #2: Goal - to practice a measured descending slide glissando

As in Friedman's *Solus*, this tongued exercise explores microtonal slide movement. Students should practice the following with a tuner: over the course of six articulated notes lower the pitch by a half step through the use of the first or third slide.

### Example 6.14 Exercise for descending slide glissando

The image shows two staves of musical notation in 6/8 time. The first staff begins with a treble clef and a key signature of one flat (B-flat). It contains six measures of music. Above the staff, there are markings: "(slide 3 - - - - -)" above the first measure, "1/3" above the second measure, and "(slide 3 - - - - -)" above the sixth measure. The second staff begins with a treble clef and a key signature of one sharp (F-sharp). It contains six measures of music. Above the staff, there are markings: "1/2/3" above the first measure, "(slide 3 - - - - -)" above the second measure, "1" above the fourth measure, and "(slide 1 - - - - -)" above the sixth measure. A measure rest is indicated by a "7" above the first measure of the second staff.

## Exercise #3: Goal - to practice slide glissando with pitch ascending

Edwin Harkins writes with great detail about the glissandi employed by Erickson in *Kryl*. He includes the following statement on ascending glissandi:

Since the normal slide position on a trumpet is 'in' or closed, composers frequently think that via a slide, only a descending glissando can be managed. In fact, ascending slide glissandi, from pitch one up to pitch two, are possible by simply thinking of pitch one as a pitch that is a half-step flat. To accomplish this finger pitch two, the fingering must include either the first or third valve and thus may be an alternate fingering. Fully extend the appropriate slide. This produces a pitch one which is actually a half-step flat pitch two. Pull the slide in, thus producing a glissando up to the 'real' pitch two. Note that low B-flat and B-natural are the only two pitches which are available as pitch one's in this context.<sup>19</sup>

<sup>19</sup> Harkins, "Aspects of *Kryl*," p. 24.

### Example 6.15 Exercise for ascending slide glissando

3--- indicates third slide extended,  
it is to be pulled in during the glissando

### Slide Removal exercises

The wise approach to a challenge such as playing with slides removed is focused practice with, and exploration of, the newly created instrument. It is necessary to work with a tuning device and is suggested that the passages be played first with all slides then very slowly with the slides removed. Tempo can be increased with time and familiarity.

### **Exercise #1: Goal - to understand the affects of slide removal**

The students' first task should be to create a chart of their own, specific to whichever trumpet(s) will be used in slideless performance, with resulting pitches and intonation tendencies at least for 1<sup>st</sup> and 2<sup>nd</sup> slides removed. The following chart provides an example.

Example 6.16 Slideless trumpet overtone and pitch tendencies<sup>20</sup>

FIRST VALVE SLIDE REMOVED

The chart displays four rows of musical notation, each representing a different valve position: 1, 1-2, 1-3, and 1-2-3. Each row contains a sequence of notes on a staff, with arrows pointing up or down below the notes to indicate the direction of the slide. The notes are primarily in the middle and upper registers of the instrument.

The chart above reflects the primary use of middle and upper register notes for this particular technique. Attilio Tribuzi also states that “itches other than those listed are also possible to produce.”<sup>21</sup>

When beginning work on this technique, it is suggested that only pitches in or above the staff be attempted. The success in this pitch range is borne out through the specific literature examples found in the Guided Approach.

**Exercise #2: Goal – to explore the possibilities of the slideless trumpet**

Lip Bending Exercise: With the first-valve slide removed, play each of the following pitches, slowly bending them 20 cents sharp and 20 cents flat with great control.

Example 6.17 Exercise for lip bending pitches affected by slide removal

1	1	1 or 1
3	2	2 2
	3	3

The musical notation consists of three measures on a staff. The first measure has a note with a slur above it. The second measure has a note with a slur above it. The third measure has a note with a slur above it. The notes are positioned on the staff to correspond to the valve positions listed in the table above.

<sup>20</sup> Attilio N. Tribuzi, “Extended Trumpet Performance Techniques” (Master of Arts Thesis, California State University, Hayward, 1992). p. 39.

<sup>21</sup> Tribuzi, “Extended Trumpet Performance Techniques,” p. 40.

Note the difference in ease of performance and general feel of the note when the last example (d") is played with the 1-2-3 valve combination versus the 1-2 valve combination. The degree to which the pitch can be bent will vary with the amount of tubing involved in the production of the note. This should be taken into consideration when choosing alternate fingerings.

**Exercise #3: Goal - to practice alternate fingerings in technical passages**

The following exercise, adapted from the second study of Herbert L. Clarke's *Technical Studies*,<sup>22</sup> trains the student to move quickly through alternate fingering passages as well as experiment with the use of the third-valve slide for the altering of pitch.

With the first-valve slide removed, play through both Clarke studies below using the indicated fingerings.

Remove first-valve slide.  
Practice slurred and tongued.

Example 6.18 G major Clarke technical study adapted

The image shows two staves of musical notation in G major (one sharp) and common time. The first staff contains four measures of eighth-note patterns. The second staff contains four measures of eighth-note patterns, ending with a whole note G. Fingerings are indicated by numbers 0, 1, 2, 3 above the notes.

Staff 1 fingerings: 0 3 1 0 3 1 0 3 1 0 1 1 0 3 1 0

Staff 2 fingerings: 3 1 0 3 2 0 3 2 0 1 3 1 3 0 1 3 0

<sup>22</sup> Herbert L. Clarke, *Technical Studies for the Cornet* (New York: C. Fischer, 1934).

Example 6.19 G minor Clarke technical study adapted

0 3 1 3--- 0 3 1 3--- 0 3 1 3--- 0 1 2 3 1 3--- 0 3 1 0

3 1 3--- 0 3 2 0 3 2 0 1 3--- 3 0 3 0 1 3--- 3 0

Example 6.20 Alternate fingering chart

11 1 2 3 1 2 3 1 2 3 1 2 0 1 2 3 1 2 3 1 2 3 1 2 3

19 0 2 3 1 2 3 1 1 3 2 2 3 0 1 2 3 1 2 3 1 3

25 2 2 3 1 2 3 0 1 2 3 2 3 1 1 2 3 1 2 3 1 0 2 3 1 2 3 2 1 3

31 0 1 2 3 2 1 3 1 2 3 1 0 1 3 2 2 3

35 0 1 2 3 1 3 2 2 3 1 2 3



## **Chapter VII Additional Techniques**

Addressed in this final chapter are additional extended techniques that do not easily fit under other chapter headings. The four areas to be covered here are:

Percussive Effects  
Means of Extension (causing a sympathetic vibration)  
Mutes  
Electronic Manipulation and Effect Use

In the survey, respondents were asked “Are there additional extended techniques that you utilize that are not included in the previous question?” All four of these areas listed above were referenced by survey respondents and therefore warrant inclusion.

### **Percussive Effects**

#### **Explanation of the Technique**

A discussion of extended techniques must include the new and interesting sounds generated by means other than the traditional playing of the trumpet. Percussive effects encompass sounds of a non-pitched nature and are typically created by the striking of some portion of the instrument. The most commonly employed are 1) sounds resulting from the percussive use of the tongue and other parts of the body, 2) sounds performed through the trumpet without the involvement of pitches, and 3) sounds generated by breathing/blowing.

The performers’ body is an easily exploited source of sounds, as there are sounds produced by the manipulation of the tongue (tongue stops/slaps), the teeth (clicking teeth, smacking), the lips (kissing), the fingernails (used on the bell), and the feet (stomping).

Additional sounds can be created through the unconventional use of the instrument. Playing with the mouthpiece reversed in the leadpipe, loosening the valves to create valve clicks, or buzzing directly into the lead pipe of the instrument are examples of recent sound exploration.

A complete list of breathing/blowing sounds would be too difficult to generate, as they are only limited by the performers' and composers' imaginations. Pieces from the Guided Approach suggest the variety of these sounds, including one example of hissing through the trumpet<sup>1</sup> and one example of foot stomping.<sup>2</sup>

### **Clarification of Notation**






Table 7.1 deals only with examples of these techniques that are found in the twenty pieces from the Guided Approach.

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<sup>1</sup> Donald Erb, *Diversion for Two*, (Bryn Mawr, PA: Merion Music, 1972).

<sup>2</sup> HK Gruber, *Exposed Throat*, (New York: Boosey and Hawkes, 2001).

Table 7.1 Notation of Percussive Effects

Technique Name	Notation	Explanation	Piece using technique
Foot stomping	 presented on single line separate staff	Player is to stomp to provide rhythmic voice in addition to the melodic trumpet voice	<i>Exposed Throat</i>
Kiss	 arrow on left side pointing to the right	Player is to create kissing sound into the mouthpiece	<i>t1</i>
Clicking sounds	Text box used to describe the effect	“clicking behind teeth into mouthpiece (very busy) ca 5-7”	<i>Salvos</i>
Splat	Text used to explain	Make splat sound by quick open of plunger mute with rapid crescendo in the pedal register	<i>Salvos</i>
Hissing		“hiss through reversed mouthpiece on instrument” – written with a “T” articulation	<i>Diversion for Two</i>
Smacking		“make smacking sound into trumpet”	<i>Diversion for Two</i>
Popping		“Pull out 2nd-valve slide without depressing valve”	<i>Diversion for Two</i>
Air flutter	Traditional notation with text provided for explanation	“continue air flutter” after the pitched flutter dies away from the decrescendo, continue with the air	<i>Encounters III</i>
Pointillistic writing	Dots scattered randomly on the staff	“Rapid random staccato – stop and start at will”	<i>Encounters III</i>
Pointillistic writing	Dots scattered within a box on the staff	“Remove tuning slide and blow through mouthpiece and lead pipe.” A second time is notated “Blow air...tongue.”	<i>Encounters III</i>

## Examples from the Literature

The following pieces from the Guided Approach make use of percussive effects:

Richard Moryl, *Salvos* (1969)

Donald Erb, *Diversion for Two* (1972)

William Kraft, *Encounters III Duel for Trumpet and Percussion* (1973)

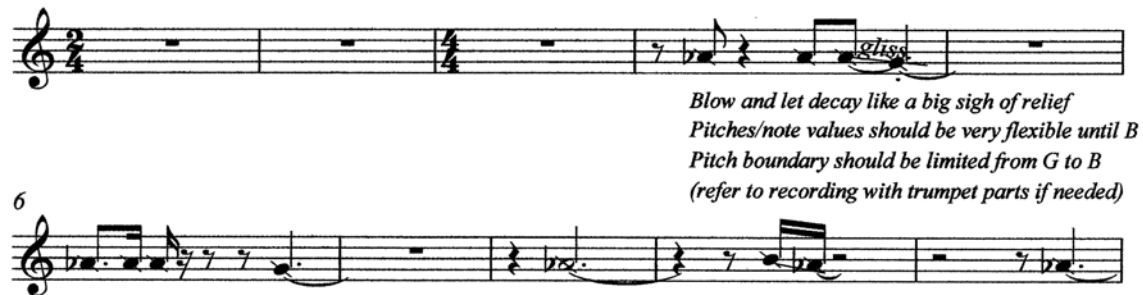
Robert Erickson, *Kryl* (1977)

HK Gruber, *Exposed Throat* (2001)

Tae Hong Park, *t1* (2001)

The most common percussive effects seen in the pieces identified above fall into the category of breathing/blowing effects. This example from Tae Hong Park's *t1*, a composition for trumpet and tape, shows the composer's writing for a sigh-like effect.

Ex. 7.1 Tae Hong Park, *t1*, beginning of piece



The image shows two staves of musical notation in treble clef. The first staff starts with a 2/4 time signature, followed by a 4/4 time signature. It contains several measures of rests, followed by a note with a 'gliss' marking. The second staff starts with a measure number '6' and contains a complex sequence of notes and rests, including a 'gliss' marking. To the right of the first staff, there is a block of text providing performance instructions.

*Blow and let decay like a big sigh of relief*  
*Pitches/note values should be very flexible until B*  
*Pitch boundary should be limited from G to B*  
*(refer to recording with trumpet parts if needed)*

The rapid insertion of a loud breath in the middle of a complex passage performed with the first-valve slide removed is seen in this example from *Kryl*. Robert Erickson's introduction to the piece explains the symbol as "a relative-pitched 'loud-breath' or slightly voiced inhalation."<sup>3</sup>

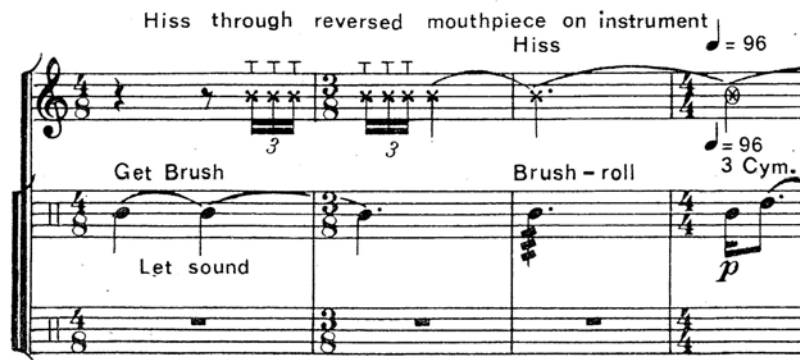
<sup>3</sup> Robert Erickson, *Kryl*. (San Diego: Erickson Music, 1980).

Example 7.2 Robert Erickson, *Kryl*, 3<sup>rd</sup> page, 2<sup>nd</sup> line of rehearsal H



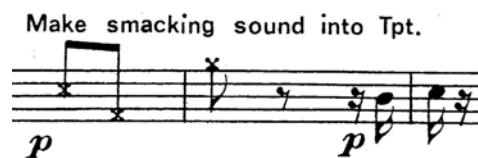
This section of Donald Erb's *Diversion for Two* instructs the player to remove the mouthpiece and place it in a reversed position at the leadpipe. The player is to hiss through the mouthpiece while performing articulation.

Example 7.3 Donald Erb, *Diversion for Two*, 1<sup>st</sup> movement, 2<sup>nd</sup> page, measure 46



Also from *Diversion for Two*, this example requires the player to perform smacking noises with the tongue and lips into the trumpet.

Example 7.4 Donald Erb, *Diversion for Two*, 1<sup>st</sup> movement, 3<sup>rd</sup> page, measure 52



This section, near the end of HK Gruber's *Exposed Throat*, adds foot stomping notated on a separate staff. The composer makes suggestions to aid in the performance of this effect.<sup>4</sup>

Example 7.5 HK Gruber, *Exposed Throat*, 9<sup>th</sup> page, 2 measures before rehearsal 31

The image shows a musical score for two staves. The top staff is for the piano accompaniment, and the bottom staff is for foot stomping. The piano part starts with a dynamic of *p* and includes markings for *pp*, *ff*, *mf*, and *pp*. The foot stomping part is marked with 'x' notes and includes dynamics of *>mf* and *p*. A rehearsal mark '31' is enclosed in a box. Above the foot stomping staff, there are instructions: '(-DE<sup>2</sup>) (2.3)', 'footsteps alternated left-right, or reversed (3.2.3)', and '(3.2.3)'. The piano part has a 'sub.' marking under the first note.

This 'text only' example from *Salvos*, by Richard Moryl, requires five to seven seconds of a clicking sound to be performed into the mouthpiece.

Example 7.6 Richard Moryl, *Salvos*, 3<sup>rd</sup> page, 1<sup>st</sup> stave

*ff* clicking behind teeth into mouthpiece (very busy) ca 5-7"

### Challenges to the Performer

Two minor challenges relating to the performance of percussive effects on the trumpet exist. The first is simply that of overcoming inhibitions regarding experimentation with the instrument and its parts. The player must be willing to seek out

<sup>4</sup> Gruber, "It might be advisable to use an appropriate sounding-board for the footsteps after fig 27, or to stand on a sounding board for the whole piece." p. 1.

new and unusual sounds and forsake the pursuit of perfection which often accompanies the traditional canon of trumpet repertoire. The second challenge is caused by the need to incorporate these creative and free spirited sounds into a performance with timed expectations. Music is an art based on the organization of sounds in time and the constrictions of meter and time can make the performance of these techniques difficult. Some composers have sidestepped this challenge by writing for these techniques as occurrences within a proportional rhythmic passage. Others, especially those writing for these techniques in chamber music settings, must expect their music to be performed as written.<sup>5</sup> Especially in the case of live performances to be given with tape accompaniment (such as *t1* by Tae Hong Park),<sup>6</sup> there are constraints with regard to the time allowed to perform these techniques.

### **Survey Results Specific to Percussive Effects**

The following information was gathered from the survey results:

A question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Percussive Effects” 33% (46 people) of the participants answered yes, 67% (95 people) answered no. These responses place percussive effects third-from-the-bottom on the continuum of most used to least used techniques.

In the section of the survey designed to gauge respondents’ opinions concerning the use of extended techniques, the following questions were asked:

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<sup>5</sup> Donald Erb, *Diversion for Two*, and William Kraft, *Encounters for Trumpet and Percussion* are two examples of chamber music for trumpet and percussion.

<sup>6</sup> Tae Hong Park, “*t1*,” 2001.

Table 7.2 Level of Study Appropriate for the Teaching of Percussive Effects

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Percussive Effects	19% (20)	25% (26)	36% (38)	12% (13)	8% (9)

Table 7.3 Perceived Usefulness of Percussive Effects

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Percussive Effects	2% (3)	4% (6)	42% (58)	36% (49)	16% (22)

Table 7.4 Perceived Difficulty of Percussive Effects

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Percussive Effects	none	2% (3)	22% (30)	54% (73)	22% (30)

According to the survey results, the majority of respondents believe percussive effects should be introduced by the end of a student's undergraduate studies and more than half of respondents believe percussive effects not to be difficult. Taking into account the large number of respondents answering "no opinion" regarding these techniques, it is not surprising that they are taught by only one-third of respondents.




## Means of Extension

### Explanation of the Technique

“Means of extension” refers to the creation of sympathetic vibrations achieved by playing at or into another object; that object then resonates in response to the soundwaves created by the trumpet. The most common example of this technique found in the trumpet repertoire involves the interaction of trumpet and piano. When a trumpet is played into the piano and the strings are affected by the depressing of the sustaining and/or damper pedal(s), sympathetic vibrations will occur. A similar effect can also be achieved with the pianist silently depressing the right hand keys and continuing to hold them down.<sup>7</sup> These reverberations, even though soft, can be quite effective. Other examples of means of extension include playing the trumpet at the head of a drum, and playing into a waste basket or bucket of water.<sup>8</sup>

### Clarification of Notation

In compositions involving means of extension, written notation is needed to explain the desired technique. This notation will vary depending on whether the technique applies to one individual note or to an entire passage.

In *Chamber Music VII*, Robert Suderburg uses the symbol “\*” at points marking the beginning of passages incorporating sympathetic vibrations. The “\*” at the start of the first movement is footnoted with “Trumpet faces directly into piano [  ], bell directed

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<sup>7</sup> Stephen Jones, review of Robert Suderburg, *Chamber Music VII* (Bryn Mawr, PA: Theodore Presser, 1984) in the *International Trumpet Guild Journal*, September 1985, 52-53.

<sup>8</sup> Amy Cherry, *Extended Techniques in Trumpet Performance and Pedagogy*. Two references to pieces using wastebaskets or buckets of water were made in survey responses. One respondent referenced Samuel Pellman’s *Trump-it* which calls for the player to play into a metal wastebasket. Another survey respondent answered “Frequency modulation by inserting the trumpet bell into a bucket of water.”

downwards into strings and sounding-board.” To mark the end of the use of this technique, Suderburg writes in the score “Face aud. norm” at measure 57 of the first movement. In Suderburg’s use of this technique, once a passage employing piano resonance has begun, all written notes are affected until further instructions are given. In both movements where this technique is used, these passages are quite lengthy.<sup>9</sup>

In Luciano Berio’s *Sequenza X*, the use of the technique is very different. He writes for individual notes to be played into the piano and provides detailed instructions, including the angle at which the trumpet player should aim into the piano body. Each occurrence of the piano resonance is notated in the trumpet part with a downward arrow placed directly above the individual note to be played into the piano.

Example 7.7 Luciano Berio, *Sequenza X*, notation for note to be played into piano



### Examples from the Literature

From the twenty pieces in the Guided Approach, only two make use of the means of extension technique.

Luciano Berio, *Sequenza X* (1984)

Robert Suderburg, *Chamber Music VII: Ceremonies for Trumpet and Piano* (1984)

This example from Berio’s *Sequenza X* demonstrates the speed with which the player is expected to alternate between playing into and away from the piano. The downward arrows seen throughout this excerpt indicate individual pitches played into the piano.

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<sup>9</sup> Robert Suderburg, *Chamber Music VII: Ceremonies for Trumpet and Piano*. (Bryn Mawr, Pennsylvania: Theodore Presser Company, 1984). The two occurrences of the means of extension techniques are 28 and 15 measures respectively.

Example 7.8 Luciano Berio, *Sequenza X*, 6<sup>th</sup> page, 6<sup>th</sup> and 7<sup>th</sup> staves

Robert Suderburg provides two staves for the opening of *Chamber Music VII*: one for C trumpet and a second for E-flat trumpet. In his dissertation dealing with Suderburg’s music and the *Chamber Music* pieces specifically, Michael Miles writes: “...Dr. Suderburg discovered that the brighter timbre, sharper attacks, and potential for softer dynamics of the E-flat trumpet blended better with the sonorities of the piano.... In *Chamber Music VII*, Suderburg exploits a higher tessitura than is found in most twentieth-century trumpet works, yet the use of the E-flat trumpet mitigates the trumpeter’s strain in producing the upper register.”<sup>10</sup>

The following excerpt from Suderburg’s *Chamber Music VII* provides detailed instructions regarding how to best exploit the reverberation created by the piano resonance. Text placed in the boxes above the top staff explains when to begin each trumpet statement.

<sup>10</sup> Michael Miles, “An Interpretive and Stylistic Analysis of the Chamber Music VII and Chamber Music VIII for trumpet and Piano by Robert Suderburg” (D.M.A. thesis, Univeristy of Kentucky, 1992), p. 10.

Example 7.9 Robert Suderburg, *Chamber Music VII*, 2<sup>nd</sup> movement, beginning

The image shows a musical score for two instruments: Trumpet (Ctpt.) and Euphonium (Euplt.). The title is "CALLS AND ECHOES". The tempo is marked as  $\text{♩} = c.72$  and  $\text{♩} = c.72$ . The score includes various performance instructions: "face into piano", "lip only", "poco", "long", "ritard", and "poco ritard". There are also handwritten annotations in boxes: "begin before reverb fades" and "begin in midst of reverb". The score is in 4/4 time and features a mix of dynamics including *f*, *p*, *sfz*, and *pp*.

### Challenges to the Performer

As is evident in the survey data reported in Table 7.7 below, the performance of musical passages which involve means of extension is not difficult. The addition of this spatial modulation may require exploration, but is not a new performance technique that needs to be learned by the trumpet player. It will be necessary to experiment with the physical relationship of the trumpet bell to the piano, as every performance space and piano will be different. Stephen Jones, in his previously mentioned review, suggests the best standing position for the trumpeter is at the foot of the piano so as not to block the audience from the piano resonance.<sup>11</sup>

In Berio's *Sequenza X*, the challenge for the trumpeter is the constant movement needed to achieve the distinct effects desired by the composer. The certainty of exact replication by the piano resonance provides formidable risk should the trumpeter miss or fail to center any of the pitches played into the piano. Berio himself has commented on this risk.

<sup>11</sup> Jones, review of Robert Suderburg, *Chamber Music VII*, in *ITG Journal*, 52-53.

Transformation and the overcoming of idiomatic aspects of instruments are often intrinsic to my earlier *Sequenzas*. In *Sequenza X*, however, for trumpet in C and piano resonance, there are neither transformations nor ‘cosmetics.’ The trumpet is used in a way that is natural and direct. Perhaps it is exactly this ‘nudity’ which makes *Sequenza X* the most ambitious of all the *Sequenzas*.<sup>12</sup>

### Survey Results Specific to Means of Extension

The following information was gathered from the survey results:

A question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Means of Extension” 45% (66 people) of the participants answered yes, 55% (80 people) answered no. With limited trumpet repertoire involving this technique, it was surprising that nearly half of respondents had taught means of extension; it ranked seventh most used technique out of thirteen.

In the section of the survey designed to gauge respondents’ opinions concerning the use of extended techniques, the following questions were asked:

Table 7.5 Level of Study Appropriate for the Teaching of Means of Extension

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Means of Extension	12% (13)	21% (23)	42% (45)	21% (23)	4% (4)

<sup>12</sup> Jonathan Impett, “Shadow Boxing: Sequenza X for Trumpet and Piano Resonance.” *Berio’s Sequenzas: Essays on Performance, Composition and Analysis*, ed. Janet K. Halfyard, (Ashgate Publishing Limited, Hampshire, England, 2007), p. 83.

Table 7.6 Perceived Usefulness of Means of Extension

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Means of Extension	3% (4)	6% (8)	45% (61)	34% (46)	13% (18)

Table 7.7 Perceived Difficulty of Means of Extension

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Means of Extension	2% (2)	2% (3)	14% (18)	68% (89)	15% (19)

Similar to the responses for the percussive effects techniques, respondents also believe the means of extension technique to be only somewhat useful and most appropriately introduced in the junior and senior years of undergraduate study. More than two-thirds of respondents believe means of extension is not difficult to perform.

## Mutes

### Explanation of the Technique

The mute has been an accessory of trumpet performance since the 17<sup>th</sup> century.<sup>13</sup> The evolution of muting techniques has led to these three results: 1) the challenge of pitch alteration caused by the mute has lessened but not disappeared in that time, 2) the variety

<sup>13</sup> David Hickman. *Trumpet Pedagogy: A Compendium of Modern Teaching Techniques*. (Chandler, AZ: Hickman Music Editions, 2006), p. 357. “Earliest mutes date to the 17<sup>th</sup> century. They were hollow mutes, made of wood, inserted into bell of natural trumpet far enough to decrease the volume of sound significantly. Trumpet could now blend with softer instruments (oboe, flute, violin) however, the pitch would rise a whole tone because mute was in the bell and reduced the effective length of the trumpet.”

of mutes and their materials has increased dramatically and, 3) the traditional act of inserting a mute into the bell exists alongside the less exploited use of the hand over the bell, a variation of the technique of hand-stopping.

Hand-stopping is typically associated with horn playing (the notation that has come to be accepted as the universal sign for stopped/closed (+) was created by Richard Wagner).<sup>14</sup> Hand-stopping on the trumpet has limited use because of the construction of the instrument. The forward-facing bell causes the inability to use hand-stopping in the performance of chromatic pitches; in trumpet literature today the hand over the bell muting technique is used only as a means of changing the timbre.

In *Trumpet Pedagogy*, David Hickman presents information on the two types of hand-stopping used today. The first type follows this procedure:

1. The rim of the bell is placed in the crease of the left palm.
2. The thumb is held vertically against the bead of the bell.
3. The fingers are folded inward and lie flat against the bell.<sup>15</sup>

Use of this method will have little adverse impact on tuning but will cause a darkening of the sound.

The second procedure involves:

1. The fingers of the left hand are placed in the bell with the lower palm touching the rim.
2. The fingers are kept together and drawn inward so that the tips touch the opposite side of the bell.
3. Written pitches must be transposed up one-half tone.<sup>16</sup>

The use of this style leads to severe flattening of the pitch (which necessitates transposition) and a more pronounced muffling of the tone.

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<sup>14</sup> Gardner Read, *Music Notation: A Manual of Modern Practice, 2<sup>nd</sup> edition*, (Boston: Crescendo Publishers, 1969), p. 359.

<sup>15</sup> Hickman, *Trumpet Pedagogy*, p. 357.

<sup>16</sup> Ibid.

In the early twentieth century, individuals from the world of jazz were very important in the development of muted sounds. In *Early Jazz: Its Roots and Musical Development*, Gunther Schuller writes about the evolution of big band jazz and the role that Duke Ellington's ensemble played.

Bubber Miley was largely responsible for the initial steps through his introduction of a rougher sound into the band. Ellington himself is quite clear about Bubber's influence: "Bubber used to growl all night long, playing gutbucket on his horn. That was when we decided to forget all about the sweet music." Miley heard King Oliver in Chicago and Johnny Dunn in New York and began to use the growl and the plunger. He in turn helped teach the same techniques to the band's trombonists – Charlie Irvis and his replacement in late 1926, Joe "Tricky Sam" Nanton – who were also influenced by a now forgotten St. Louis trombonist, Jonas Walker, reputed to be the first to apply New Orleans "freak" sounds to his instrument. It was Miley and Nanton who developed the band's famous "jungle" effects through their use of the growl and plunger."<sup>17</sup>

### Defining the mute nucleus

The term "mute nucleus" has been used to refer to the core of important mutes every trumpeter should own. Art Brownlow, writing in 1979, included in the nucleus the following mutes: straight, cup, harmon, solo-tone, plunger, whisper, hat.<sup>18</sup> A more contemporary listing might also include a cloth bag, bucket or velvet-tone mute, piccolo trumpet mute and others deemed necessary by today's trumpet performer.

The most common mute, used from high school bands to contemporary experimental compositions, is the straight mute. The loudest and brightest member of the mute nucleus, it serves a trumpeter well in creating a number of effects. Many of the pieces in the

Guided Approach involve this mute. When writing for extended technique exploitation,

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<sup>17</sup> Gunther Schuller, *Early Jazz: Its Roots and Musical Development* (New York: Oxford University Press, 1968), p. 326.

<sup>18</sup> Art Brownlow, "The Mute in Contemporary Trumpet Performance," *Brass Anthology: Articles from The Instrumentalist* (May 1979): p. 556.



however, the plunger mute is favored (followed closely by the harmon). The ability of the plunger mute to replicate vocal techniques as well as its freedom from insertion into the instrument make it a favorite choice of many composers referenced in the Guided Approach.

One additional means of muting that has been used by composers is spatial modulation. This technique relies on distance and direction playing a vital role in the performance of the written passage. Playing from off-stage to achieve distance effects<sup>19</sup> is quite common, as is the requirement for the trumpeter to aim in specific directions. When asked to name additional extended techniques not listed on the survey conducted as part of this project, six respondents listed ‘spatial modulation.’

### **Clarification of Notation**

Mute use and mute manipulations have traditionally been indicated by the presence of and interaction between two main symbols:

o = open  
+ = closed

Mute manipulations common to contemporary music include the use of:

- degrees of muted sound
- gradual changes
- unmeasured rapid changes
- rhythmic changes

Some composers choose pictorial notation if the use of a written word (sordino, dämpfer, etc.) is not effective. An example of this is found in Frank Ticheli’s *The First Voice*, when black colored mute visuals are used to denote closed mute use and clear white

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<sup>19</sup> Hickman, *Trumpet Pedagogy*. The use of the term “lontano” is sometimes seen in musical scores when this sound is called for.

visuals imply open mute use. Pictorial notation is also referenced by Brownlow and Dlugoszewski as a means of distinguishing between varieties of mutes.<sup>20</sup>

Pictures are especially helpful when the passage involves not just the presence of a mute but actions to be performed with that mute. An indication is needed to clarify how open or closed the mute should be in the bell; a second indication is needed to define how abruptly the shift from one state to the next should occur. Kurt Stone, in *Music Notation in the Twentieth Century*, provides notation suggestions for all of these situations. He recommends the following:<sup>21</sup>

Example 7.10 Kurt Stone, mute notations

+ = muted (closed)  
 ⊕ = half closed  
 ○ = open  
 + → ○ and ○ → + = gradual changes from one mute  
 position to another  
 ○|+ and +|○ = sudden changes

Two additional notations appear related to muting: grid notation and rhythmic muting. Stone suggests grid notation is appropriate when “more subtle mute manipulations are desired.”<sup>22</sup>

Example 7.11 Kurt Stone, notation for subtle mute changes



<sup>20</sup>Brownlow, “The Mute in Contemporary Trumpet Performance.” Brownlow references uses of pictorial notation where a straight mute looks like a strange rectangle, cup mute looks like ice cream cone on side. The composer Lucia Dlugoszewski uses seven different shaped icons to denote specific mute types in *Space is a Diamond*. The mute icons are colored in the score: green indicates “mute in,” red equal “mute out.”

<sup>21</sup> Kurt Stone, *Music Notation in the 20<sup>th</sup> Century*, (New York: W.W. Norton and Co., 1980), p. 201.

<sup>22</sup> Stone, *Music Notation in the 20<sup>th</sup> Century*, p. 201.

With notation such as this, performers have a tool to interpret the complexities of the composer's intentions.

Rhythmic muting occurs when a composer uses the muted sounds as the primary element in the performance of a rhythmic passage. The played passage on the trumpet is often less involved than the muted passage. Mute symbols (using graphic notation, or o and +) combined with small notes are typically placed above the staff for precisely specified rhythmic movements of the mute.<sup>23</sup>

Example 7.12 Kurt Stone, rhythmic muting



### Examples from the Literature

- Richard Moryl, *Salvos* (1969)
- Steven Winick, *Equinoctial Points* (1970)
- Charles Whittenberg, *Polyphony* (1970)
- Frank Campo, *Times, Op. 39* (1971)
- Donald Erb, *Diversion for Two* (1972)
- Morgan Powell, *Alone* (1974)
- Hans Werner Henze, *Sonatina* (1976)
- Frank Ticheli, *The First Voice* (1982)
- Luciano Berio, *Sequenza X* (1984)
- Rex Richardson, *Three Etudes* (2000)
- HK Gruber, *Exposed Throat* (2001)
- Tae Hong Park, *t1* (2001)
- Dana Wilson, *Masks* (2003)

<sup>23</sup> Stone, *Music Notation in the 20<sup>th</sup> Century*, p. 201.

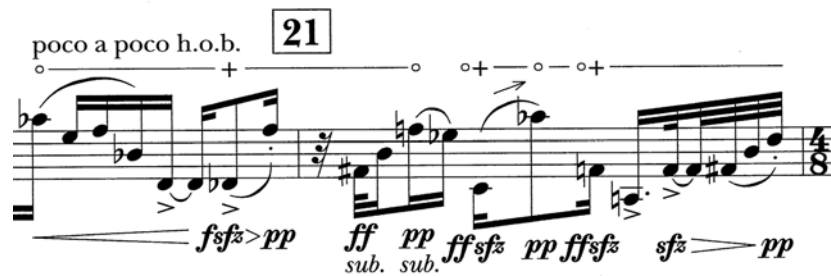
This example from Winick's *Equinoctial Points* illustrates a simple use of gradual movement from an open to closed mute position.

Example 7.13 Steven Winick, *Equinoctial Points*, 2<sup>nd</sup> page, 2<sup>nd</sup> stave



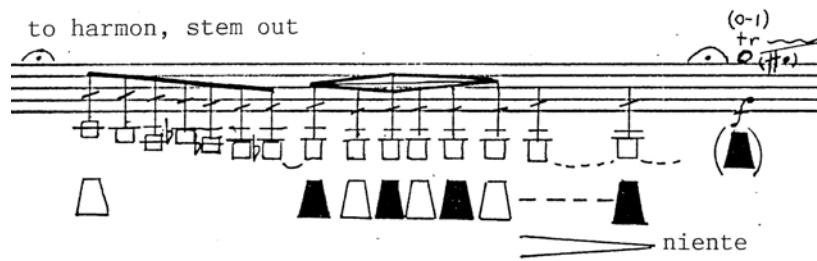
In example 7.14 from *Exposed Throat*, Gruber takes an already difficult technical passage and adds the complication of a hand over bell (h.o.b.) manipulation.

Example 7.14 HK Gruber, *Exposed Throat*, 7<sup>th</sup> page, one measure before rehearsal 21



In *The First Voice*, Ticheli uses pictorial notation to indicate the opening and closing of the mute position. The shaded mute indicates that the mute should be in the bell but not attached; the clear mute indicates mute out, but held in hand near bell.

Example 7.15 Frank Ticheli, *The First Voice*, 1<sup>st</sup> page, 5<sup>th</sup> stave



This example from the third movement of *Masks* by Dana Wilson, shows the use of the plunger mute in the performance of a short glissando.

Example 7.16 Dana Wilson, *Masks*, 3<sup>rd</sup> movement, measure 72



This fast paced section from Richardson's *Three Etudes* demonstrates the accenting effects a plunger mute can have when its use is aligned with important melodic elements. The repeated pitch of f-sharp' is played with a closed plunger while the more important moving pitches are to be played open.

Example 7.17 Rex Richardson, *Three Etudes*, 3<sup>rd</sup> movement, 3<sup>rd</sup> page, 6<sup>th</sup> stave



## Challenges to the Performer

Playing with mutes can present a variety of challenges. Three specific questions should be considered when preparing a passage involving mute use:

1. How does the mute affect ranges?
2. How does the mute affect intonation?
3. How does the mute affect the physical act of playing the instrument?

Beyond these questions, there are decisions to be made with regard to the mute chosen for a passage. Composers will often be very specific, but when the choice is left to the performers, they must ask: does the material and construction of the mute chosen provide a tone color which properly reflects what the composer has written?

### How does the mute affect ranges?

Inserting a mute into the bell of a trumpet will cause limitations and change the blowing characteristics. The traditional problem area for many mutes is the lower register. The straight mute restricts the lower register more than the upper register.<sup>24</sup> It is also difficult to focus the intonation of a harmon mute in that same register. In *Instrumentation and Orchestration*, Alfred Blatter even goes so far as to suggest that composers “be a little more conservative when writing passages to be played muted.”<sup>25</sup>

### How does the mute affect intonation?

Early examples of stopped trumpet caused the trumpet to go sharp when the mute or hand was placed in the bell. In contemporary use, many mutes- especially those that

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<sup>24</sup> Brownlow, “The Mute in Contemporary Trumpet Performance,” p. 556.

<sup>25</sup> Blatter, *Instrumentation and Orchestration*, p. 145.

create more resistance-may cause the performer to play sharp;<sup>26</sup> items placed in front of the bell (plunger, felt bag) will cause the pitch to go flat. These changes to intonation are due to the shortening and lengthening of the instrument with the various mutes. Using a plunger mute in specific registers will also affect the intonation. Herb Robertson writes “When you go in upper register with closed plunger, horn will get sharp – if you’re up there and you have to open suddenly, you’ll have quarter-tone differences and you won’t be able to center the sound.”<sup>27</sup>

#### How does the mute affect the physical act of playing the instrument?

The strain placed on the hands and wrists while playing some muted passages can be intense. In the case of plunger muting, or passages involving the rapid and extended writing for the mute to be held just outside the bell, the weight of the instrument may need to be supported with the right hand. Efforts must be taken to keep the trumpet stable on the embouchure.

#### **Suggestions for Successful Mute Use**

Work with a tuner is necessary to develop an understanding of the intonation tendencies of the different mutes. It is imperative to have a musical concept and tone color in mind before working on specific passages. All mutes will require work to seamlessly incorporate into a player’s arsenal of extended techniques; the plunger stands

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<sup>26</sup> Brownlow, “The Mute in Contemporary Trumpet Performance,” p. 556. “a lot of resistance in harmon and solo-tone, these are hard-blowing, which generally causes performer to play sharp.” Whisper mute is the same: “Because of the resistance, a player will have to fight hard to keep from playing sharp.”

<sup>27</sup> Herb Robertson, “Masterclass: Mastering the Plunger,” *Windplayer*. (Northridge, CA: Windplayer Publications, 55, January 1997), p. 40.

out, however, because of the range of expression it brings to the music and the difficulty in controlling the results. For students unfamiliar with plunger muting techniques, listening will be most helpful. In preparing to work on plunger techniques, which so often replicate the voice, Baron suggests “practice screaming, laughing, hollering with the voice, then do it on the horn.”<sup>28</sup> Further suggestions for developing plunger techniques come from Herb Robertson.

-use a large bore horn

-put a little coin (nickel) into the screw end and tilt the nickel just outside of the hole, so when the air comes out of the hole, it hits the nickel and adds a metallic kind of buzz.

-practice the three basic plunger positions:

1. closed position – slight opening for the subtle Wa-wa – when you close the plunger all the way on the bell, it holds the air – causes intonation problems – you have to let the air escape so drill a hole in the nipple end of plunger – to test play chromatic scale all the way up – you can make the hole bigger.
2. half-open position
3. left hand holds the plunger, which actually comes off the horn, resulting in a real big ‘wow’ effect.<sup>29</sup>

One further suggestion relevant to overall mute use could be made: using mutes in the practice of other extended techniques. My experiments with creating multiphonics for the first time were helped greatly by practicing with a cup mute. This experiment added resistance and altered the timbre of the instrument, causing it to sound more like the human voice.

### **Survey Results Specific to Mute Manipulation**

The following information was gathered from the survey results:

A question was posed, “Have you ever taught the following extended techniques to a student?” In response to the category titled “Mute Manipulation” 66% (98 people) of

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<sup>28</sup> Art Baron, “An Introduction to the Plunger,” from *Top Brass: Interviews and Master Classes with Jazz’s Leading Brass Players*. (New York: Bop Music Publishing, 2002), p.231.

<sup>29</sup> Herb Robertson, “Masterclass: Mastering the Plunger,” p. 40.



the participants answered yes, 34% (51 people) answered no. Respondents placed mute manipulations sixth out of thirteen with regard to how frequently they were taught.

In the section of the survey designed to gauge respondents' opinions concerning the use of extended techniques, the following questions were asked:

Table 7.8 Level of Study Appropriate for the Teaching of Mute Manipulations

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Fr./So.	Under-graduate Jr./Sr.	Masters	Doctoral
Mute Manipulation	27% (31)	40% (45)	27% (30)	5% (6)	1% (1)

Table 7.9 Perceived Usefulness of Mute Manipulations

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Mute Manipulation	22% (30)	24% (33)	41% (56)	7% (9)	7% (10)

Table 7.10 Perceived Difficulty of Mute Manipulations

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Mute Manipulation	none	7% (9)	50% (68)	33% (44)	10% (14)

According to survey results, the majority of respondents concur that mute manipulations are somewhat difficult to perform, are regarded as useful to the student and should be

introduced by the end of one's undergraduate studies. A higher percentage of respondents (22%) prefer to introduce mute manipulations at the high school age.

## **Trumpet and Electronics**

### **Explanation of the Technique**

Electronic manipulation of the trumpet sound was not included in the list of extended techniques in the survey because of its extraneous relationship to the act of producing sound on the trumpet. Four individuals referred to the use of electronics in response to the question asking to identify additional techniques. A small number of respondents also listed pieces using electronics as examples of works they studied and programmed on their recitals in response to survey questions.<sup>30</sup> This brief section covering trumpet and electronic music (although not anticipated) is included to reflect a current use of extended techniques in trumpet pedagogy and performance.

Electronic manipulation involving a brass instrument often centers on timbre alteration; the trumpeter is called upon to create unique sound effects, often employing extended techniques in the process. Half-valve pitches, microtones, and mute manipulations create distinctive sounds which lend themselves well to electronic processing.

An explanation of electronic music is well beyond the purpose of this document; however, clarity is needed concerning the possible uses of electronics with trumpet. The following formats were referenced by survey respondents:

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<sup>30</sup> Question #6: "What methods/solo literature involving extended techniques have you used in your own study?" Question #7: "Do you program solos using extended techniques on your own recitals and, if so, which solos?"

- prerecorded tape,
- digital delay, and
- MIDI processing.

Prerecorded tape: This early production of electronic music is the most accessible to students without experience in the use of electronics. Synchronization with the tape may take time to perfect, but the skill set needed for these pieces is restricted to the playing of the trumpet. Dexter Morrill's *Studies for Trumpet and Tape* (1975)<sup>31</sup> and *TARR* (1984),<sup>32</sup> a piece for four trumpets and tape commissioned by the Edward Tarr Brass Ensemble, are early examples of the use of the trumpet in electronic music. Morrill's *Studies* was referenced by one survey respondent as a work used in his own study and with his students.

Digital delay: This process allows the player to hear a recorded repetition of the music just performed, which can be used to add musical texture to the monophonic trumpet line. Any sound the trumpeter can create live may be used; percussive techniques are especially effective in this style of writing. Charles Eakin's *Trumpet Capriccio*,<sup>33</sup> a piece for trumpet and digital delay, was referenced by one survey respondent. The composer describes the evolution of the piece below.

*Trumpet Capriccio* is one of a series of pieces that were written for each instrument of the orchestra. They are all constructed from the same series of notes and have attempted to exploit contemporary techniques of the instrument and use these to bring about new dimensions of expression. Some instruments were easier to deal with in matters of new techniques: multiphonics for woodwinds, and manipulating and strumming inside the piano were relatively untapped resources when their respective capriccios were composed. The trumpet, however, presented a challenge in that jazz performers for many years had explored ways to alter their sounds through ½ valve techniques, mutes of all kinds, and even

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<sup>31</sup> Dexter Morrill, *Studies for Trumpet and Tape* (Hamilton, NY: Chenango Valley Music Press, 1975).

<sup>32</sup> Dexter Morrill, *TARR* (Hamilton, NY: Chenango Valley Music Press, 1982).

<sup>33</sup> Charles Eakin, *Trumpet Capriccio* (BMI, 1990).

humming while playing, to name a few. It was hard to find contemporary performance techniques for trumpet that would be novel to the listener. When I heard reverberation employed successfully by a student in a piece for flute, I became interested in its possibilities for trumpet as well.<sup>34</sup>

MIDI processing: With the creation of MIDI in 1983, communication between electronic musical devices was possible, and the many uses for MIDI developed since its birth are impressive. This technology enables a performer to play with accompaniment, to play with a recording which has had the solo voice processed out, and to have musical material manipulated by computer as the piece is taking place. The possibilities for these manipulations are great which can lead to complex performance requirements. It is necessary to have a controller that can manage the MIDI data and commands. That controller can take many forms, from a human being needed to run complicated programs, to a footcontroller<sup>35</sup> providing the performer organization over the acoustic and electronic instruments at the same time. Jeff Kaiser, composer and trumpeter, comments on the use of foot pedals to control his processed sounds during performance.

As a trumpet player, a small advantage (over woodwinds and trombones) for operating the processing equipment is that you have one hand free and like the other instrumentalists, if seated, the use of both feet. So, in my desire to keep choice and some control over the decision making of the audio processing, and a desire to play the software as an instrument, I decided to go a route I was familiar with, that is, to use pedals and buttons, a setup that would be solid, reliable, and simple to use.<sup>36</sup>

Many pieces involving electronics may also use a combination of the three formats discussed above.

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<sup>34</sup> Charles Eakin, liner notes to Britton Theurer's CD *Fantasia*, New York: Capstone Records, 1991.

<sup>35</sup> MIDI Manufacturers Association [Website], "About MIDI" (13 March 2009), "A MIDI footcontroller is a pedalboard-style device with rows of footswitches that control banks of presets, MIDI program change commands and send MIDI note numbers (some also do MIDI merges)," Site address: <http://www.midi.org/aboutmidi>

<sup>36</sup> Jeff Kaiser, "How I lost 150 lbs. thanks to Max/MSP! Back to my Routes: Freely Improvising with Max/MSP." Paper presented at the Spark Festival of Electronic Music and Art, University of Minnesota, Minneapolis, MN 2007.

## Examples from the Literature



*t1*, Tae Hong Park, (2001)

*t1* is the only selection from the Guided Approach to involve electronics. The trumpet part is accompanied by a prerecorded track with sounds generated solely by the trumpet. This accompaniment track provides rhythmic elements through the use of tongue stops and palm slaps; it also loops phrases that function harmonically (originally performed on trumpet and recorded) to support the music played by the live soloist.

This example from *t1* explains the composer's notation concerning the synchronization of the trumpet and tape part.

Ex. 7.18 Tae Hong Park, *t1*, instruction chart

### Special signs:

	These notes should (in section A) should be played using blowing/breathing techniques. Refer to tape part with trumpet included.
	These rectangles are parts that stress synchronization to tape's trumpet part.

This example demonstrates the desired synchronization in context.

Ex. 7.19 Tae Hong Park, *t1*, 3<sup>rd</sup> page, measure 95



## Suggestions from Survey Respondents

Survey participants were asked to list repertoire they had studied and/or performed that involved extended techniques. A list of thirteen individual techniques or groupings of techniques (not including electronics) was provided from which the respondents were to choose. Four respondents took the opportunity to insert the additional category of electronic music and suggest appropriate literature. The pieces mentioned were:

Charles Eakin, *Trumpet Capriccio* (1990), trumpet and digital delay  
Ramon Zupko, *Fluxus VII*, trumpet and prerecorded sound  
Dexter Morrill, *Studies for Trumpet and Tape* (1975), trumpet and prerecorded sound  
Gary Smart, *Fat Noon*, trumpet and two radios  
William Pardus, *Suite for Trumpet and MIDI*  
Charles Bestor, *Concerto Piccolo* (2004), trumpet and electronics  
Henri Lazarof, *Concertazioni for Solo Trumpet, Six instruments and Tape*  
Stockhausen, *Aries* (1977), trumpet and tape

The fact that these respondents took the time to comment on an area that was unsolicited indicates a strong familiarity with and interest in this type of music. It could suggest that these respondents may specialize in this type of music and have greater knowledge of the repertoire for trumpet and electronics than the majority of those surveyed. It is also of note that at least one respondent referenced a work listed above which was written by a composer colleague at his institution,<sup>37</sup> signaling that like-minded individuals working in the same location may be behind the creation of these works.

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<sup>37</sup> Britton Theurer referenced the piece *Fluxus VII* written by Ramon Zupko at East Carolina University, a school that has a contemporary ensemble.

## **Chapter VIII**

### **Survey Analysis**

#### **Survey Development and Study Methodology**

As part of the exploration of extended techniques, I believed it was necessary to examine the use of these techniques in private study; I was curious to see if my experiences with extended techniques paralleled those of other students. I conducted a survey to determine if, how, and when these techniques were being taught in college- and university-level studios throughout the United States and Canada. It was speculated that the survey would reveal connections between teachers' experiences with extended techniques and their mentoring of the techniques with their students.

The original survey was intended to gather information in three areas: the respondents' personal experience with these techniques; their pedagogical approach to the techniques; and suggestions they might have regarding two specific techniques (flutter tonguing and multiphonics) which were of special interest in this project.

As preparation for the project, the original survey was sent via email to five individuals for a pilot test. The responses and comments from them helped shape the final version of the survey. After the pilot test, I clearly divided the survey into the three parts referenced above and formatted the questions to allow for more detailed responses concerning individual extended techniques as opposed to treating them as a collective whole. Additional questions further exploring the techniques of flutter tonguing and multiphonics were added to the final section and what proved to be one of the most revealing questions (Do you have a contemporary music ensemble at your school?) was added to the survey. Certain groupings of techniques were slightly altered; the title of

“Jazz Effects” was removed and renamed as lip trills/shakes; multiphonics and vocalizations were split into two categories and reading multiple staves was added to the list. Additionally, small changes in wording were made for clarification between potential respondents’ personal performance of extended techniques and their teaching of the techniques.

Part One, entitled “Your Experience with Extended Techniques,” was created to establish the respondents’ previous use of these techniques. In addition to determining if the respondents ever used these techniques in study or performance, it was helpful to learn if respondents had any additional suggestions of techniques which had not been included in the survey listing. In this section, questions were posed in the following areas: respondents’ formal training with extended techniques; educational level of study when they were first introduced to each technique; methods and solos used in their own study and performance. The questions regarding methods and solo materials were designed in an open-ended format to allow respondents to share literature suggestions and to facilitate a search for trends in literature use.

In Part Two, “Current Teaching Trends of Extended Techniques,” questions were posed with respect to opinions respondents had regarding the difficulty and usefulness of each technique. Respondents were also polled regarding when they believed each technique should be introduced to students. It was expected that the opportunity for live performance of these techniques would be a motivator for their instruction; therefore the question, “Is there a contemporary music ensemble at your school performing pieces that use extended techniques?” was included. Additionally, it was supposed that these techniques might only be taught to the more advanced, inquisitive students; a question



was designed to determine if the techniques are taught to all students or only those who approach the teachers with an interest. It was anticipated that these might be two of the most revealing questions in the survey.

In Part Three, “Pedagogical Suggestions,” participants were offered the opportunity to share pedagogical suggestions regarding two individual techniques: multiphonics and flutter tonguing. In “yes” or “no” formats, participants were asked whether they used specific pedagogical approaches to these two techniques. Those who answered yes were then asked to share their suggestions through open-ended questions. The goal was the identification of common approaches to the teaching of these sometimes challenging skills.

Contact with potential respondents was made by a postcard mailing sent to 1134 teachers on September 23, 2008. The mailing list was provided by the College Music Society.<sup>1</sup> Four postcards were returned marked “retired” or “no longer works here.” It appeared that a significant number of these postcards never reached their intended targets due to incorrect contact information, changes in personnel, and the lack of a reliable mail system for adjunct professors. This mailing yielded only 66 responses to the online survey.

It was suggested that soliciting participation by email might yield a higher response rate; therefore, email addresses for as many individuals as possible from the initial list were gathered. From the list of 1134 teachers, a total of 757 email addresses were located. The same difficulties in obtaining available email addresses were encountered: some teachers, especially adjuncts, did not have email addresses assigned to

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<sup>1</sup> College Music Society, *Directory of Music Faculties in Colleges and Universities, U.S. and Canada* (Binghamton, NY: College Music Society, 2008).

them on school websites, and certain universities used automatic response systems in order to limit access to faculty email addresses.

After accumulating the email addresses, a second solicitation was made on January 18 and 19, 2009. Of the 757 emails sent, 75 were returned with a message of “address unavailable.” Despite this setback, the email effort brought the responses to 110. A third and final solicitation was made, also by email, on February 4, 2009 which led to the final response of 166.

Following the proposed close date of the online survey - February 20, 2009 - a random phone sample was conducted and 25 people were solicited to complete the survey over the phone. Those targeted for the phone sampling were chosen through a random number generator.<sup>2</sup>

Attempts to reach these twenty-five individuals by phone resulted in the following: two were no longer teaching, one was on sabbatical, two were unavailable due to the lack of an answering service, and six were adjunct professors who had no phone assigned to them. Thirteen messages were left for those who did have direct lines and one respondent was reached on the initial call and willingly completed the survey. The difficulties concerning faulty information for these twenty-five individuals echoed the difficulties of contacting the larger group as a whole; these challenges likely relate to the low overall response rate for the survey. After a second attempt at phone contact, three more surveys were completed, bringing the total of this phone sampling to four. The demographics of this group of four are similar to the larger group and the responses between the two collections bear no substantial differences.

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<sup>2</sup> [www.randomizer.com](http://www.randomizer.com)

## Part One: Your Experience with Extended Techniques

The survey's initial questions were focused on the respondents' demographics.

Question #1: "In what areas do you have teaching responsibilities?" A slight majority of the 158 respondents to this question (59.5%; n=94) taught only "classical" trumpet. A small number (3.8%; n= 6) taught only "jazz" trumpet. About a third (35.4%; n=56) taught in both areas. Respondents also indicated that they had other responsibilities; 27.3% (n=43) had additional teaching responsibilities in diverse areas such as Music Theory, Ensemble Conducting, and Music Appreciation among others. For the purpose of this analysis only trumpet responsibilities were considered.

Question #2: "How many years have you been teaching at the collegiate level?" Two-fifths of respondents (41.5%) had fifteen or more years of experience. The second largest group represented had been teaching 6-10 years (23.9%). This high percentage of responses coming from the most experienced group is noteworthy and proved of interest when delving into the teaching of specific techniques, as will be seen later in this chapter.

Table 8.1 Years of teaching at the collegiate level

How many years have you been teaching at the collegiate level?	% of respondents	# of respondents
1-5 years	16.4	26
6-10 years	23.9	38
11-15 years	18.2	29
more than 15 years	41.5	66

Question #3: "Have you ever performed any literature that makes use of the following extended techniques?" Respondents were asked to choose yes or no for each of the thirteen techniques listed. One-hundred-and-fifty-eight people responded to this

question; the results of respondents' personal experience with extended techniques are shown in Table 8.2.

The results reveal that the following techniques are more commonly used by the vast majority of respondents: lip trills/shakes, tremolos/alternate fingerings, half-valve techniques/glissandos, and flutter tonguing. Also heavily used were the techniques of mute manipulations and pedal tones, with 87% and 83% respectively using these techniques in performance. Conversely, it is evident that vocalizations, microtones, reading multiple staves, and means of extension are only used by approximately half of the respondents. The technique used the least was clearly multiphonics with only 35% of respondents stating they have performed pieces involving this technique.

Table 8.2 Performance of specific extended techniques

Technique	Yes (%)	No (%)
Multiphonics	35%	65%
Vocalizations	54%	46%
Flutter tonguing	98%	2%
Half-Valve Techniques/ Glissandos	99%	1%
Lip Trills/Shakes	99%	1%
Tremolos/ Alternate Fingerings	98%	2%
Mute Manipulations	87%	13%
Means of Extension	52%	48%
Microtones	48%	52%
Removing Slides	59%	41%
Pedal Tones	83%	17%
Percussive Effects	59%	41%
Reading Multiple Staves	51%	49%

(Note: all percentages have been rounded by the software program used for the survey in this and subsequent tables.)

Question #4: “Are there additional extended techniques that you utilize that aren’t included in the previous question?” Slightly more than half responded with half of those providing further details. Repeated mention of “trumpet with electronic manipulation” led to the inclusion of relevant information in the document and impacted the choice of literature for the Guided Approach. The listing of “doodle tonguing” by multiple respondents also led to its inclusion in Chapter Three: Tongued Techniques. The record of additional techniques suggested may be found in Appendix C.

Question #5a: “Did you receive any formal training regarding extended techniques?” As part of the original objective for conducting the survey, it was necessary to determine if the respondents had received any training in extended techniques. Responses indicated that 56.2% of 160 respondents had received formal training from a private teacher; 43.8% had not. These numbers are surprising given that six of the techniques in the previous question had been performed by 83% or more of the respondents. It was expected that almost all participants would have received training in at least one of these techniques; 56.2% was unexpected, but might reflect a more focused definition of extended techniques on the part of the respondents. Such a low percentage could be more important as a marker of which specific techniques were never introduced through training; in the responses to the previous question regarding whether respondents had ever performed the techniques, the less standard techniques of multiphonics, vocalizations, means of extension, microtones, removing slides, and reading multiple staves had been performed by fewer than 54% of the respondents and percussive effects and removing slides by less than 59%.

A second part of the question regarding formal training was posed to determine at what point in the respondents' studies they had been introduced to each extended technique. A matrix question, listing the thirteen different techniques, was constructed and respondents were asked to choose the stage of their education during which they were introduced to that specific technique. The results are displayed in Table 8.3.

Table 8.3 Stage of Studies When Respondents Were Introduced to Extended Techniques

Question #5b. At what stage of your studies were you introduced to the following extended techniques?

Technique	High School	Under-graduate	Masters	Doctoral	Professional	Never
Multiphonics	8%	26%	10%	3%	2%	51%
Vocalizations	7%	30%	18%	4%	4%	37%
Flutter tonguing	69%	24%	1%	1%	2%	3%
Half-Valve Techniques/ Glissandos	67%	25%	4%	0%	1%	3%
Lip Trills/Shakes	61%	29%	5%	2%	0%	3%
Tremolos/ Alternate Fingerings	48%	41%	6%	1%	0%	4%
Mute Manipulations	21%	42%	17%	3%	5%	12%
Means of Extension	7%	28%	18%	11%	4%	31%
Microtones	5%	35%	15%	5%	8%	32%
Removing Slides	5%	29%	23%	10%	8%	25%
Pedal Tones	36%	34%	19%	4%	4%	4%
Percussive Effects	12%	34%	15%	1%	4%	33%
Reading Multiple Staves	8%	31%	9%	8%	3%	40%

A relationship is apparent between the techniques that were used most frequently in question #3 and their early introduction. Flutter tonguing, half-valve/glissandos, lip trills/shakes, and tremolos/alternate fingerings all were introduced at the earliest stage for these professors themselves. Also of interest is the fact that 51% of the respondents never received training in multiphonics, which relates to the low percentage of performance (35%) of this technique reported in question #3. This correspondence between lack of training and absence from use also applies to microtones, percussive effects and reading multiple staves.

Question #6: “What methods/solo literature involving extended techniques have you used in your own study?” Suggestions were solicited from respondents regarding each of the thirteen technique categories. A complete listing of responses for question #6 is provided in Tables 8.23-8.44. The results of this open-ended question were difficult to analyze. The survey was set up in a manner that allowed respondents to opt out of individual questions yet still continue with the survey. Many participants chose to answer only portions of this question, creating very little opportunity for analysis beyond the gathering of suggestions. In some cases, respondents listed materials they themselves used involving extended techniques by completing all the fields of the question, including which technique was asked for, the composer, and the selection title. In other cases, respondents only listed a composer or a title with no reference to individual techniques employed. It may have been expected that the techniques called for in the suggested materials would be understood. It was possible, however, to determine some of the more frequently studied methods and solos.

Multiphonics

Gruber, *Exposed Throat*

Vocalizations

Friedman, *Solus*

Flutter tonguing

Hubeau, *Sonata*

Bozza, *Caprice*

Lip trills/shakes

Hummel, *Trumpet Concerto*

Friedman, *Solus*

Mute manipulation

Wilson, *Masks*

Takemitsu, *Paths*

Means of extension

Suderburg, *Chamber Music VII*

Removing slides

Friedman, *Solus*

Gruber, *Exposed Throat*

Reading multiple staves

Henderson, *Variation Movements*

Solos involving multiple techniques

Berio, *Sequenza X*

Erickson, *Kryl*

Kraft, *Encounters III*

Jazz tunes

Methods involving multiple techniques

Nagel, *Contemporary Studies*

Method focusing on lip flexibility

Colin, *Advanced Lip Flexibilities*

Method focusing on pedal tones

Stamp, *Daily Warm Ups and Studies*



Question #7: “Do you program solos using extended techniques on your own recitals and, if so, which solos?” Responses to this question were similarly difficult to analyze due to many respondents’ choosing to offer suggestions for only certain techniques or not answer at all. Eighteen people wrote the response “see above” in reference to the previous question concerning methods and solos as study materials. Although difficulties arose with analysis, one conclusion that can be drawn from these answers is that 15 of the 20 pieces on the Guided Approach list were mentioned at least once.<sup>3</sup> A complete listing of responses to question #7 is provided in Tables 8.45-8.61.

## **Part Two: Current Teaching Trends of Extended Techniques**

In the second section of the survey respondents’ opinions concerning extended techniques were solicited.

Question #8: “Would you consider extended techniques to be a necessary element of a trumpet student’s studies?” The responses, from a total of 157 individuals, were 73.2% (116) yes, 17.8% (27) no, with 8.9% (14) providing their reasons. This third option was designed to gather further information and the comments made by the fourteen people who chose to respond are listed in Appendix C. It appears from these data that an overwhelming majority of the respondents find extended techniques as a whole to be important.

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<sup>3</sup>Berio, *Sequenza*; Campo, *Times Op. 39*; Erb, *Diversion for Two*; Erickson, *Kryl*; Friedman, *Solus*; Henderson, *Variation Movements*; Henze, *Sonatine*; Jolivet, *Heptade*; Kraft, *Encounters III*; Park, *t1*; Suderburg, *Chamber Music VII*; Ticheli, *The First Voice*; Tull, *Eight Profiles*; Whittenberg, *Polyphony*; Wilson, *Masks*

Question #9: “Have you ever taught the following extended techniques to a student?” Not all participants answered each of the thirteen categories. The responses to this question are documented in Table 8.4 below.

Table 8.4 The Teaching of Extended techniques

Question #9. Have you ever taught the following extended techniques to a student?

Technique	Yes	No
Multiphonics	34%	66%
Vocalizations	32%	68%
Flutter tonguing	96%	4%
Half-Valve Techniques/ Glissandos	97%	3%
Lip Trills/Shakes	97%	3%
Tremolos/ Alternate Fingerings	93%	7%
Mute Manipulations	66%	34%
Means of Extension	45%	55%
Microtones	35%	65%
Removing Slides	43%	57%
Pedal Tones	92%	8%
Percussive Effects	33%	67%
Reading Multiple Staves	26%	74%

These results reflect the higher percentages of use for certain techniques seen in response to earlier questions. It can be determined from this question that flutter tonguing, half-valve techniques/glissandos, lip trills/shakes, tremolos/alternate fingerings, and pedal tones may be considered core techniques being taught and used in almost all college studios. Additionally, five of the techniques (multiphonics, vocalizations, microtones, percussive effects, and reading multiple staves) could be considered less important, as they are taught by approximately one-third of college professors.

Question #10: “What methods/solo literature involving extended techniques have you used with your students?” This question and the following one were asked to determine the pedagogical materials currently used in the teaching of extended techniques. The responses are found in Tables 8.62 (which deal with suggested methods) and 8.63 (which catalogs suggested solo literature).

Question #11: “Please list, in your opinion, the most appropriate first solo to introduce each of these techniques to your students.” As was seen previously, due to the open-ended question format, many respondents chose not to answer. The information gained from those who did respond was helpful in identifying three practices: 1) a number of these professors appear to use performance material (solos) as primary study material when dealing with certain techniques,<sup>4</sup> 2) nine of these professors referred to exercises they themselves had created to help address the pedagogical study of a specific technique, and 3) based on the data collected, there appears to be little difference between the repertoire used by professors in their own performance and the pieces they teach to their students. A complete listing of the pieces referenced by survey respondents, cataloged by individual technique, is provided in Tables 8.64 - 8.78.

Respondents were next asked opinion-based questions regarding the use of extended techniques. Question #12: “At what level do you believe the following extended techniques should first be taught?” The responses are illustrated in Table 8.5 below.

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<sup>4</sup> The survey answers to questions #10 and #11 reveal a heavy reliance on solo materials with only a small number of traditional method books used.

Table 8.5 The Teaching of Extended Techniques

Question #12. At what level do you believe the following extended techniques should first be taught?

Technique	High School	Under-graduate Freshman/Sophomore	Under-graduate Junior/Senior	Masters	Doctoral
Multiphonics	6%	16%	48%	25%	6%
Vocalizations	12%	14%	43%	26%	5%
Flutter tonguing	89%	7%	4%	0%	0%
Half-Valve Techniques/Glissandos	85%	8%	6%	1%	0%
Lip Trills/Shakes	75%	20%	6%	0%	0%
Tremolos/Alternate Fingerings	65%	24%	11%	0%	0%
Mute Manipulations	27%	40%	27%	5%	1%
Means of Extension	12%	21%	42%	21%	4%
Microtones	7%	16%	33%	34%	11%
Removing Slides	10%	20%	42%	21%	6%
Pedal Tones	67%	28%	4%	1%	0%
Percussive Effects	19%	25%	36%	12%	8%
Reading Multiple Staves	7%	15%	29%	36%	14%

Again, the core techniques (flutter tonguing, half-valve/glissando, lip trills/shakes, tremolos/alternate fingerings, and pedal tones) stand out, with large numbers of respondents believing they should be introduced in high school. Of additional interest is the higher percentage of respondents choosing the third category (Undergraduate: Junior/Senior) as the most appropriate level to introduce many of the other techniques.

The responses concerning multiphonics seem the most intriguing. Although the dispersion of responses across the categories prohibits any one of the choices from standing out, it is interesting that the high school level and the doctoral level both received the same percentage of respondents (6%) as the most appropriate level of introduction for this technique.

Respondents were asked two additional opinion-based questions related to the original list of thirteen techniques. Question #13: “Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.” Question #14: “Rate the following extended techniques according to how difficult you believe they are for students to perform.” The results are displayed in Table 8.6 and 8.7.

Table 8.6 Rating of Extended Techniques According to Usefulness to Trumpet Students

Question #13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students.

Technique	Extremely useful	Very useful	Somewhat useful	Not useful	No opinion
Multiphonics	4%	1%	38%	43%	15%
Vocalizations	4%	1%	37%	41%	17%
Flutter tonguing	48%	33%	16%	0%	2%
Half-Valve Techniques/ Glissandos	48%	29%	18%	4%	2%
Lip Trills/Shakes	69%	22%	6%	1%	1%
Tremolos/ Alternate Fingerings	45%	28%	23%	1%	4%
Mute Manipulations	22%	24%	41%	7%	7%
Means of Extension	3%	6%	45%	34%	13%
Microtones	7%	12%	34%	33%	14%
Removing Slides	5%	4%	45%	35%	12%
Pedal Tones	68%	19%	8%	1%	4%
Percussive Effects	2%	4%	42%	36%	16%
Reading Multiple Staves	4%	15%	37%	26%	18%

Some similar trends with regard to the more common techniques continue to be apparent.

The five techniques with the highest rating of usefulness are: flutter tonguing, half-valve techniques/glissandos, lip trills/shakes, tremolos/alternate fingerings, and pedal tones.

This is the same core seen in the responses to the question regarding whether these techniques were taught. Also worth noting is that multiphonics is considered the least useful technique.

Table 8.7 Rating of Extended Techniques According to Difficulty Level for Students

Question #14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Technique	Extremely difficult	Very difficult	Somewhat difficult	Not difficult	No opinion
Multiphonics	40%	31%	17%	2%	10%
Vocalizations	15%	25%	29%	18%	13%
Flutter tonguing	1%	5%	50%	41%	3%
Half-Valve Techniques/ Glissandos	0%	1%	29%	70%	0%
Lip Trills/Shakes	3%	19%	64%	13%	1%
Tremolos/ Alternate Fingerings	0%	1%	20%	77%	3%
Mute Manipulations	0%	7%	50%	33%	10%
Means of Extension	2%	2%	14%	68%	15%
Microtones	20%	23%	32%	6%	19%
Removing Slides	0%	5%	21%	61%	13%
Pedal Tones	1%	17%	69%	12%	1%
Percussive Effects	0%	2%	22%	54%	22%
Reading Multiple Staves	17%	25%	27%	6%	25%

Respondents recorded their beliefs on the difficulties of individual techniques in a pattern similar to the previous question. Again multiphonics stands out, this time as the most difficult technique listed. The majority of the respondents placed the five core techniques<sup>5</sup> as either somewhat or not difficult. Of particular interest to me are the responses concerning flutter tonguing: the majority of respondents (91%) do not find it to be very difficult. This bears a relationship to the answers received in the third section of the survey dealing with specific pedagogical approaches to flutter tonguing: most of those

<sup>5</sup> Flutter tonguing, half-valve techniques/glissandos, lip trills/shakes, tremolos/alternate fingerings, and pedal tones

who responded had never encountered students who could not roll their Rs, which is the primary cause for difficulty with this technique.

Respondents' actual usage of extended techniques in the studio setting was queried next. Question #15: "Do you cover these techniques only with students who approach you with an interest, or do all students study these techniques with you?" Only 35.3% of the 156 respondents replied that they taught these techniques to all students. It was acknowledged by 64.7% that they only cover these techniques with interested students. Responses to this question reveal a large discrepancy between these data and the responses regarding the necessity of the techniques. (Seventy-three% answered yes to the earlier question, "Would you consider extended techniques to be a necessary element of a trumpet student's studies?" with 17.8% responding no.)

Respondents were asked an additional question to determine if there might be a relationship between the opportunities provided at the college/university and the professor's teaching of extended techniques. Question #16: "Is there a contemporary music ensemble at your school performing pieces that require extended techniques?" Approximately one-third (32.1% of 156) of respondents answered yes, 67.9% answered no. This question was one of the strongest indicators of whether the techniques were being taught.

### **Part Three: Pedagogical Suggestions**

The remaining eight questions in the survey solicited pedagogical suggestions regarding two specific techniques, multiphonics and flutter tonguing.

Question #17: "Do you have a beginning exercise that you introduce to your students as they are learning multiphonics?" Only 14.3% (22 people) of the one hundred-



and-fifty-four respondents answered yes to this question. Question #18: “If yes, please explain.” The twenty-two people who responded positively to the previous question provided explanations. A wide variety of suggestions were made with two noticeable trends: 1) seven respondents (26.9%) commented that they had students play and sing the same note to begin this experimentation and 2) the lower range of the trumpet, centering on c’, was more commonly suggested as the range in which to first attempt multiphonics. The complete responses are provided in Appendix C.

The issue of voice range constraints affecting the performance of multiphonics was addressed in the next set of questions. Question #19: “Do you have suggestions for students (male or female) dealing with multiphonics when the sung pitch lies outside the vocal range of the performer?” As seen in the previous question, a large majority of respondents (82.9%) replied no. Question #20: “If yes, please explain.” The twenty-six respondents who answered yes to question #19 went on to explain their approach to this vocal range problem. The trends in suggestions follow two lines: 1) have the performer switch the octave of the sung part to a range more manageable, and 2) learn to use the voice in a manner that will allow the performance of the passage (for men this means using falsetto). The complete results are listed in Appendix C.

In the next pair of questions, respondents were asked about pedagogical suggestions for the technique of flutter tonguing. Question #21: “For students who are unable to roll their Rs, do you have suggestions/exercises to help them develop the ability to flutter tongue?” One-hundred-fifty-four people responded, with slightly more than a third (39%) answering yes, and close to two-thirds (61%) answering no. Question #22: “If yes, please explain.” Sixty-six people addressed this extension of the previous

question by providing an explanation. The results here ranged from helpful suggestions to impassioned statements that this unfortunate genetic deficiency cannot be overcome. Many respondents suggested a replication of the technique by using a growl.

In the final pair of targeted pedagogical questions, respondents were queried further about the technique of flutter tonguing. Question #23: “For students who are unable to roll their ‘Rs’, do you have suggestions/exercises for them to help them replicate flutter tonguing?” Almost two-thirds (64.6%) of the one-hundred-and-forty-four total respondents answered yes with one-third (34.5%) replying no. In the connected query (Question #24: “If yes, please explain.”), the majority of the respondents suggested the technique of growling and many of them replied “see above” in reference to their prior explanation. The complete results for both of the flutter tonguing questions may be found in Appendix C and are incorporated into Chapter III.

Question #25: “Do you believe that the study of extended techniques improves a player’s overall performing ability?” Respondents were provided with yes/no options and an open-ended space to clarify and/or provide examples. One-hundred-and-fifty-six people responded to the yes/no portion of the question with 86.5% (135) selecting yes and 13.5% (21) selecting no. One-hundred-and-twelve people went on to clarify their answer. Respondents’ statements in this final question of the survey were very valuable; it is impossible to summarize these comments because of their breadth and the specific personal insight they provide. The collected responses are included in Appendix C.

## Comparative Analysis

One goal of the survey was to determine if there were noticeable differences in the teaching of extended techniques between those instructors with differing demographics. In this section, an analysis of the teaching of extended techniques is presented from the perspective of four demographic indicators:

1. Areas of teaching responsibility,
2. Years of teaching experience,
3. Formal training, and
4. The presence of a contemporary music ensemble at the teacher’s school.

#1. Regarding the categories of teaching responsibilities, it was supposed that individuals with jazz teaching duties might address the techniques in a different manner from those teaching only classical trumpet. When asked whether extended techniques are taught to all students or only those who approach them with an interest, it would appear that those teaching jazz only are more likely to spend time covering these techniques; the other two categories of classical only and classical/jazz share similar response rates.

Table 8.8 Teaching Responsibilities Compared to Teaching of Techniques

Teaching Responsibilities	All Students	Only Those Who Approach Teacher With an Interest	Total
Classical (only)	31 (34.4%)	59 (65.5%)	90
Jazz (only)	3 (50%)	3 (50%)	6
Both classical and jazz	19 (35.1%)	35 (64.8%)	54

A cross analysis of teaching responsibilities and opinion questions (regarding usefulness of techniques, difficulty of techniques, and level of introduction of techniques) revealed no notable differences between the respondents with varying teaching responsibilities. Interesting trends were found, however, when respondents were asked if they taught individual extended techniques: a divide can be seen between those

respondents teaching only classical trumpet and those who have at least partial responsibility for the area of jazz. The extended techniques are divided between the two areas in the following manner: classical only respondents have higher rates of teaching flutter tonguing, mute manipulations, means of extension, removal of slides, pedal tones, and multiple staves; jazz only and classical/jazz respondents rank higher for vocalizations, half-valve/glissando, and lip trill/shake techniques. Those techniques for which there were no discernible patterns were percussive effects, tremolo/alternate fingerings, and microtones.

In response to the question regarding which level of education they believed to be the most appropriate for the introduction of each of these techniques, it was found that those teaching jazz introduced a handful of techniques sooner than their classical-only colleagues: half-valve/glissandos, lip trills/shakes, pedal tones and multiphonics all were placed (by those who taught jazz) in the high school category by a higher percentage.<sup>6</sup>

#2. Analyzing the data from the perspective of respondents' years of teaching was also helpful in gaining an overall picture of the current pedagogical status of extended techniques. A cross analysis was completed by looking at years of teaching experience and the opinion question which polled whether respondents believed extended techniques were a necessary part of a trumpet student's studies.

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<sup>6</sup> multiphonics – 3% higher, half-valve/glissando – 9% higher, lip trills/shakes – 13% higher, and pedal tones – 10% higher.

Table 8.9 Years of Teaching Experience and Opinions of Necessity

How many years have you been teaching at the collegiate level?	Do you consider extended techniques a necessary part of studies? - YES	Do you consider extended techniques a necessary part of studies? - NO	Total
1-5 years	18 (75%)	6 (25%)	24
6-10 years	32 (84.2%)	6 (15.8%)	38
11-15 years	19 (70.3%)	8 (29.7%)	27
more than 15 years	45 (71.4%)	18 (28.5%)	63
Total	114 (75%)	38 (25%)	152

The findings reflect a consistent ratio of yes to no responses in all categories except those teaching for 6-10 years. This group had 84% of respondents stating the necessity of teaching extended techniques, as opposed to an average of 72% from the other demographics.

A further analysis involves the question of whether these techniques are taught to all students, or only those who approach their teachers with an interest.

Table 8.10 Years of Teaching Experience and Teaching of Techniques

How many years have you been teaching at the collegiate level?	All Students	Only Those Who Approach Teacher With an Interest	Total
1-5 years	6 (25%)	18 (75%)	24
6-10 years	18 (50%)	18 (50%)	36
11-15 years	7 (25%)	21 (75%)	28
more than 15 years	22 (34.9%)	41 (65.1%)	63
Total	53 (35%)	98 (65%)	151

Of interest here is the percentage seen in the 6-10 year demographic. The 50% “all students” response in this question is significantly higher than the other categories. This

statistic combined with the previous question's results indicates a greater involvement with extended techniques by the members of this group.

Analysis was done to determine if years of teaching experience was related to the teaching of the individual techniques. Interestingly, the group with the most experience (more than 15 years) taught some of these techniques in notably higher percentages: multiphonics, vocalizations, means of extension, removal of slides and percussive effects.

Table 8.11 Multiphonics

Years of Teaching Experience	YES – teaches Multiphonics	NO – does not teach Multiphonics	Total
1-5	5 (25%)	15 (75%)	20
6-10	12 (32.4%)	25 (67.5%)	37
11-15	5 (20.8%)	19 (79.1%)	24
More than 15	24 (42%)	33 (57.8%)	57
Total	46	92	138

Table 8.12 Vocalizations

Years of Teaching Experience	YES – teaches Vocalizations	NO – does not teach Vocalizations	Total
1-5	6 (30%)	14 (70%)	20
6-10	9 (23.6%)	29 (76.3%)	38
11-15	5 (20.8%)	19 (79.1%)	24
More than 15	25 (43.8%)	32 (56%)	57
Total	45	94	139

Table 8.13 Means of Extension

Years of Teaching Experience	YES – teaches means of Extension	NO – does not teach Means of Extension	Total
1-5	7 (33.3%)	14 (66.6%)	21
6-10	13 (34.2%)	25 (65.7%)	38
11-15	11 (42.3%)	15 (57.6%)	26
More than 15	33 (57%)	24 (42%)	57
Total	64	78	142

Table 8.14 Removal of Slides

Years of Teaching Experience	YES – teaches Removal of Slides	NO – does not teach Removal of Slides	Total
1-5	7 (33.3%)	14 (66.6%)	21
6-10	16 (42.1%)	22 (57.8%)	38
11-15	7 (28%)	18 (72%)	25
More than 15	30 (51.7%)	28 (48.2%)	58
Total	60	82	142

Table 8.15 Percussive Effects

Years of Teaching Experience	YES – teaches Percussive Effects	NO – does not teach Percussive Effects	Total
1-5	6 (27.2%)	16 (72.7%)	22
6-10	9 (24.3%)	28 (75.6%)	37
11-15	8 (32%)	17 (68%)	25
More than 15	23 (41.8%)	32 (58.1%)	55
Total	46	93	139

The higher rate of teaching seen consistently from this demographic is considerable and might suggest that these five techniques (multiphonics, vocalizations, means of extension, removal of slides and percussive effects) were more commonly used when these respondents were themselves students. Three pieces from the Guided Approach written during the time this group of respondents would have been in college are Berio's *Sequenza X* (1984), Suderburg's *Chamber Music VII* (1984), and Ticheli's *The First Voice* (1982). These five techniques referenced above can be found collectively in these three compositions from the 1980s.

#3. The third demographic indicator considered in the survey analysis was whether the respondents had received any formal training concerning extended techniques. I anticipated at the beginning of this project that the answer to this question, more than others, might reveal distinct differences in the teaching of extended techniques.

Responses reveal that 56.2% of 160 respondents had received formal training from a private teacher; 43.8% had not.

A cross analysis of this demographic with the question of whether respondents believed extended techniques were a necessary element of a trumpet students studies is illustrated in Table 8.16.

Table 8.16 Relationship Between Training and Attitude Towards Instruction

	Do you consider extended techniques a necessary part of studies? - YES	Do you consider extended techniques a necessary part of studies? - NO	Total
Formal Training	70 (81.3%)	16 (18.6%)	86
No Formal Training	46 (66.6%)	23 (33.3%)	69
Total	116	39	155

These numbers reflect a very interesting finding, with 15% more of the respondents who received training believing in their necessity. A further example of the importance of previous training is seen when respondents were asked if they teach these techniques to all students or only those who approach them with an interest.

Table 8.17 Relationship Between Training and Instruction

Did you receive formal training in extended techniques?	All Students	Only Those Who Approach Teacher With an Interest	Total
YES	36 (41.8%)	50 (58.1%)	86
NO	17 (25.3%)	50 (74.6%)	67
Total	53	100	153

Again, a large contrast (total difference of 16%) is seen in the teaching of these techniques between those who received formal training and those who did not.



Further analysis of the formal training demographic was done to look for trends in the current teaching of extended techniques. Cross referencing the results of the formal training inquiry with the question concerning respondents' teaching of these techniques revealed that those with previous training taught every one of the techniques at a higher percentage than their colleagues who had not received training. The biggest gap with regard to the teaching of one of these techniques is seen upon examining the results for percussive effects.

Table 8.18 Relationship Between Training and the Teaching of Percussive Effects

Did you receive formal training in extended techniques?	teaches Percussive Effects	Does not teach Percussive Effects	Total
YES	35 (42.6%)	47 (57.3%)	82
NO	10 (17.2%)	48 (82.7%)	58
Total	45	95	140

It appears from the 25% difference (42% vs. 17%) between respondents that previous training in this area may play a substantial role in subsequent mentoring.

#4. The last demographic examined was done so based on the belief that the need for performance of these techniques may be one of the greatest motivators for their study: "Is there a contemporary music ensemble at your school performing pieces that use extended techniques?" Responses are displayed in Table 8.19.

Table 8.19 Existence of a Contemporary Ensemble

	YES	NO	Total
Do you have a Contemporary Ensemble at your school?	50 (32.1%)	106 (67.9%)	156

When cross analyzing these responses with broad opinion-based and behavioral questions from the survey, the results did not prove noteworthy. Analysis of the individual techniques and whether they were being taught, however, revealed some very interesting trends. In all of the thirteen categories, there were marked differences in that respondents whose school had a contemporary ensemble were teaching these techniques with higher percentages. Three representative examples are displayed in Tables 8.20, 8.21, and 8.22.

Table 8.20 Presence of Contemporary Ensemble and Incidence of Teaching of Multiphonics

Do you have a Contemporary Ensemble at your school?	Teaching Multiphonics	Not Teaching Multiphonics	Total
YES	23 (50%)	23 (50%)	46
NO	23 (25.2%)	68 (74.7%)	91
Total	46	91	137

Table 8.21 Presence of Contemporary Ensemble and Incidence of Teaching of Means of Extension

Do you have a Contemporary Ensemble at your school?	Teaching Means of Extension	Not Teaching Means of Extension	Total
YES	29 (61.7%)	18 (38.2%)	47
NO	34 (36.1%)	60 (63.8%)	94
Total	63	78	141

Table 8.22 Presence of Contemporary Ensemble and Incidence of Teaching of Percussive Effects

Do you have a Contemporary Ensemble at your school?	Teaching Percussive Effects	Not Teaching Percussive Effects	Total
YES	23 (51.1%)	22 (48.8%)	45
NO	22 (23.6%)	71 (76.3%)	93
Total	45	93	138

The responses regarding the teaching of these and other individual techniques support the notion that the presence of a contemporary ensemble (providing the opportunity to put these skills to use) is one of the most important factors relative to their instruction.

The last segment of the analysis was related to how extended techniques are being taught by looking specifically at musical materials used by respondents. One goal of the survey was to look for suggestions of method books dealing with extended techniques (which it was believed were lacking in existence) and solo literature involving the thirteen referenced techniques. Because of the nature of these open-ended questions, the results were difficult to analyze with certainty; the unsystematic responses provided make it impossible to state with clarity exactly which materials are being used by instructors for

individual techniques. It is possible, however, to look at the suggestions provided and recognize trends within the literature itself.

In the first question regarding the use of method and solo materials, respondents were asked which methods/solos they used in their own study. The intent was to gather materials used specifically for study purposes as respondents were then asked which pieces they programmed on recitals. It is assumed that the majority of the respondents answered the first question with great detail not knowing that the following question would take a different angle. Many respondents chose not to add anything when the following question asked about the programming of pieces; some responded “see above.”

Those who answered the first question were prompted to identify a specific technique and then provide a composer and selection that made use of that technique. Space was allotted for respondents to list up to ten different techniques/composers/titles. Many respondents chose to complete only part of the information fields, sometimes providing only a composer or a title, or choosing one piece of music which involved a number of different techniques. For this reason, it is impossible to determine with certainty which materials are used for the study of individual techniques. (Certain method books such as James Stamp’s *Daily Warm-Ups and Studies*<sup>7</sup> and Charles Colin’s *Advanced Lip Flexibilities*<sup>8</sup> are assumed to be related to the areas of pedal tones and lip trills respectively, as those are the primary techniques addressed.)

The following tables contain all of the responses to the question concerning methods/solo literature used in the respondents’ own study. An attempt has been made to reflect the work of the respondents who took the time to list individual techniques and

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<sup>7</sup> James Stamp, *Warm-Ups and Studies*. 2<sup>nd</sup> ed. Switzerland: Editions BIM, 1982.

<sup>8</sup> Charles Colin, *Advanced Lip Flexibilities*, New York: Chas. Colin Publications, 1980.

specific pieces. Items are grouped by technique and listed by composer/title/number of respondents who mentioned their use of the composition.

**What methods/solo literature involving extended techniques have you used in your own study?**

Table 8.23 Methods/Solo Literature Used in Respondent’s Own Study Involving Reading Multiple Staves

Composer	Title	Number of Respondents
Campo	<i>Times, Op. 39</i>	1
Gruber	<i>Exposed Throat</i>	2
Henderson	<i>Variation Movements</i>	16
Schwartz	<i>Music for Napoleon and Beethoven</i>	1
Turek	<i>Upland for Trumpet and Electronic Sounds</i>	1

Table 8.24 Methods/Solo Literature/Orchestral Literature Used in Respondent’s Own Study Involving Pedal Tones

Composer	Title	Number of Respondents
Arban	<i>Complete Conservatory Method</i>	2
Bizet	<i>Carmen</i>	1
Campo	<i>Times, Op. 39</i>	1
Caruso	<i>Musical Calisthenics for Brass</i>	1
Cichowicz	<i>Flow Studies</i>	1
Friedman	<i>Solus</i>	2
Frink	<i>Fluxus</i>	1
Husa	<i>Concerto for Trumpet</i>	1
Stamp	<i>Warm-Ups and Studies</i>	16
Strauss	<i>Ein Heldenleben</i>	1
Thompson	<i>Buzzing Basics</i>	3

Table 8.25 Methods/Solo Literature Used in Respondent's Own Study Involving Mute Manipulations

Composer	Title	Number of Respondents
Berio	<i>Sequenza X</i>	1
Bernstein	<i>Rondo for Lify</i>	2
Grey	no title given (plunger)	1
Henze	<i>Sonatina</i>	1
Hoffman	<i>4 Miniatures</i>	1
Kraft	<i>Encounters III</i>	1
Persichetti	<i>Parable</i>	2
Powell	<i>Alone</i>	2
	Quintet pieces	1
Shadwell	<i>Theme and Variation</i>	1
Sheppard	<i>Windloops</i>	3
Stevens	<i>Sonata</i>	3
Takemitsu	<i>Paths</i>	3
Tull	<i>Segments (Trumpet ensemble)</i>	1
Turek	<i>Upland for Trumpet and Electronics</i>	1
Wilson	<i>Masks</i>	3
Winnick	<i>Equinoctial Points</i>	1
Wolking	Trp/Trb duet	1

Table 8.26 Methods/Solo Literature Used in Respondent's Own Study Involving Glissando

Composer	Title	Number of Respondents
Adler	<i>Canto I</i>	1
Clarke	<i>Technical Studies</i>	1
Delenué	<i>Concertino</i>	1
Ellis	<i>8771W</i>	1
Gershwin	<i>Rhapsody in Blue</i>	1
Husa	<i>Concerto</i>	1
Irons	<i>Grand Canyon</i>	1
Persichetti	<i>Parable</i>	1
Ravel	<i>Habanera</i>	2
Schinn	<i>Five Bagatelles</i>	1
Shapiro	<i>Sonata</i>	1
Shchedrin	<i>A la Albéniz</i>	1
Tull	<i>Concerto #2</i>	1
Wilson	<i>Masks</i>	1

Table 8.27 Methods/Solo Literature Used in Respondent's Own Study Involving Removing Slides

Composer	Title	Number of Respondents
Barret	<i>Trilogy</i> (trpt octet)	1
Bittinsky	<i>Awake You Sleepers</i>	1
Friedman	<i>Solus</i>	11
Gruber	<i>Exposed Throat</i>	2
McLaughlin	<i>Duet for Two Incomplete Trumpets</i>	1

Table 8.28 Methods/Solo Literature Used in Respondent's Own Study Involving Means of Extension

Composer	Title	Number of Respondents
Berio	<i>Sequenza X</i>	2
Gavrilov	<i>Diptyque</i>	1
Giusti	<i>The Day that lasted 36 nights</i> (unpublished)	1
McDowall	<i>Night Trumpeter</i>	1
Plog	<i>Three Miniatures</i>	2
Suderburg	<i>Chamber Music VII</i>	9

Table 8.29 Methods/Solo Literature/Orchestral Literature Used in Respondent's Own Study Involving Flutter Tonguing

Composer	Title	Number of Respondents
Bitsch	none given	5
Berio	<i>Sequenza X</i>	1
Bozza	<i>Caprice</i>	4
Bozza	<i>Rustiques</i>	2
Delenue	<i>Caprice</i>	1
Friedman	<i>Solus</i>	1
Henderson	<i>Variation Movements</i>	2
Henze	<i>Sonatina</i>	2
Horowitz	<i>Concerto 3<sup>rd</sup> movement</i>	1
Hubeau	<i>Sonata</i>	4
Jolivet	<i>Concertino</i>	1
Peaslee	<i>Nightsongs</i>	2
Persichetti	<i>Parable</i>	1
Powell	<i>Alone</i>	1
Sampson	<i>Notes from Far Away Places</i>	1
Shchedrin	<i>A la Albéniz</i>	2
Strauss	<i>Don Quixote</i>	1
Tull	<i>Solo Profiles</i>	1

Table 8.30 Methods/Solo Literature Used in Respondent's Own Study Involving Lip Trills/Shakes

Composer	Title	Number of Respondents
Arban	<i>Complete Conservatory Method</i>	4
Bozza	<i>Rustiques</i>	3
Chunn	<i>Warm Up book</i>	1
Clarke	<i>Technical Studies</i>	1
	French solos	2
Friedman	<i>Solus</i>	2
Hummel	<i>Concerto</i>	4
Schlossberg	<i>Daily Drills</i>	1
Vizzutti	<i>Technical Studies, Book 1</i>	1



Table 8.31 Methods/Solo Literature Used in Respondent's Own Study Involving Microtones

Composer	Title	Number of Respondents
Dean Drummond	none given	1
Don Ellis	recordings	1
	Eastern music	1
Friedman	<i>Solus</i>	1
Husa	<i>Concerto with band</i>	1
Powell	<i>Alone</i>	2
Saunders	<i>Sevens</i>	1
Scelsi	<i>Quattro Pezzi</i>	1
Shinn	<i>Five Bagatelles</i>	1
Stevens	<i>Quarter Tone studies</i>	1
Ticheli	<i>The First Voice</i>	1

Table 8.32 Methods/Solo Literature Used in Respondent's Own Study Involving Half-Valve

Composer	Title	Number of Respondents
Anderson	<i>Sleigh Ride</i>	2
Dlugoszewski	<i>Space is a Diamond</i>	1
Friedman	<i>Solus</i>	1
Henze	<i>Sonatina</i>	1
Powell	<i>Alone</i>	1
Sampson	<i>Notes from Far Away Places</i>	1
Shchedrin	<i>A la Albéniz</i>	1
Whittenberg	<i>Polyphony</i>	1

Table 8.33 Methods/Solo Literature Used in Respondent's Own Study Involving Alternate Fingerings

Composer	Title	Number of Respondents
Clarke	<i>Technical Studies</i>	2
Friedman	<i>Solus</i>	1
Jolivet	<i>Concertino</i>	1
Kraft	<i>Encounters III</i>	1
Lowell	<i>Embouchure Builder</i>	1
Peaslee	<i>Nightsongs</i>	1
Powell	<i>Alone</i>	2
Shinn	<i>Five Bagatelles</i>	1
Tann	<i>Look little low heavens</i>	1

Table 8.34 Methods/Solo Literature Used in Respondent's Own Study Involving Multiphonics

Composer	Title	Number of Respondents
Gruber	<i>Exposed Throat</i>	2
Powell	<i>Alone</i>	3
Powell	<i>Beatitudes foRay</i>	1
Ticheli	<i>The First Voice</i>	1

Table 8.35 Methods/Solo Literature Used in Respondent's Own Study Involving Tremolos

Composer	Title	Number of Respondents
Andrix	<i>Miniatures for Solo Trumpet</i>	1
Charlier	<i>Transcendental Etude #2</i>	3

Table 8.36 Methods/Solo Literature Used in Respondent's Own Study Involving Note Bending

Composer	Title	Number of Respondents
Ellington	various works	1
Frink	<i>Flexus</i>	2
Thompson	<i>The Buzzing Book</i>	1

Table 8.37 Methods/Solo Literature Used in Respondent's Own Study Involving Vocalizations

Composer	Title	Number of Respondents
Erickson	<i>Kryl</i>	1
Friedman	<i>Solus</i>	3
May	<i>Lippestuck</i>	1

Table 8.38 Methods/Solo Literature Used in Respondent's Own Study Involving Blowing Air Without Playing

Composer	Title	Number of Respondents
Klinger	<i>Rainstorm</i>	1

Table 8.39 Methods/Solo Literature Used in Respondent's Own Study Involving Improvisation

Composer	Title	Number of Respondents
Zupko	None given	1

Table 8.40 Methods/Solo Literature Used in Respondent's Own Study With Tape

Composer	Title	Number of Respondents
Eakin	<i>Trumpet Capriccio</i>	1
Morrill	<i>Studies for Trumpet and Computer</i>	1
Theurer	<i>Ryoko</i>	1
Zupko	<i>Fluxus</i>	1

Table 8.41 Methods/Solo Literature Used in Respondent's Own Study Involving Transcriptions

Performer	Number of Respondents
Clifford Brown	1
Lester Bowie	1
Freddie Hubbard	1
Oscar Peterson/Clark Terry	1
Leo Smith	1
Kenny Wheeler	1

Table 8.42 Methods/Solo Literature Used in Respondent's Own Study – Pieces Listed for Multiple Reasons

Composer	Title	Number of Respondents
Adler	<i>Canto I</i>	1
Berio	<i>Sequenza X</i>	4
Davies	<i>Sonata</i>	1
Erb	<i>Diversion for Two</i>	3
Erickson	<i>Kryl</i>	6
Ernst	<i>Exit</i>	1
Friedman	<i>Solus</i>	10
Huber	<i>Death in Venice</i>	1
Husa	<i>Concerto for Trumpet and Wind Orchestra</i>	1
Husa	<i>Landscapes for brass quintet</i>	1
Jones	<i>Evocation</i>	1
Kasprzy	<i>11<sup>th</sup> Hour</i>	1
Kraft	<i>Encounters III</i>	4
PDQ Bach	none given	1
Peaslee	<i>Nightsongs</i>	1
Sanders	<i>Stigmata</i>	1
Stockhausen	<i>Thursday from Licht</i>	1
Ticheli	<i>The First Voice</i>	1
Wolpe	<i>Solo Piece</i>	1

Table 8.43 Methods/Solo Literature Used in Respondent's Own Study Involving Jazz Tunes

Title	Number of Respondents
various jazz tunes	10

Table 8.44 Methods Used in Respondent's Own Study

Composer	Title	Number of Respondents
Blatter/Zonn	<i>Contemporary Trumpet Studies</i>	3
Colin	<i>Advanced Lip Flexibilities</i>	6
Friedman	<i>Six Studies</i>	1
Friedman	<i>Symmetrical Studies</i>	1
Gordon	no title given	3
Hill	<i>Collected Thoughts</i>	1
Irons	<i>27 Groups of Exercises</i>	2
Kase	<i>21<sup>st</sup> Century Techniques</i>	1
Maggio	<i>System for Brass</i>	1
Nagel	<i>Contemporary Studies</i>	6
Plog	<i>Contemporary Duets</i>	1
Plog	<i>16 Contemporary Etudes</i>	4
Stevens	<i>Contemporary Trumpet Studies</i>	2
Thibaud	<i>Book One</i>	1
Vizzutti	<i>Technical Studies Book 1</i>	1

Analysis of these responses indicates specific pieces that have become standard repertoire for the exploration of one or more extended techniques. Robert Henderson's *Variation Movements* has become the piece used to study multiple staves. Robert Suderburg's *Chamber Music VII* is the most common piece studied which involves means of extension. Stanley Friedman's *Solus* makes use of removing slides and a number of other techniques, warranting high responses. From the listings of method books, two

publications received greater mention than others: Charles Colin's *Advanced Lip Flexibilities* was referenced by six respondents and Robert Nagel's *Contemporary Trumpet Studies* was one of only a few methods specific to extended techniques which were referenced.

In response to the next question regarding which solos respondents programmed on their own recitals, many people chose not to answer or stated "see above" in reference to the previous question. Information that was provided is displayed in the following tables.

**Which solos do you program on your own recitals?**

Table 8.45 Solos Programmed by Respondents Involving Reading Multiple Staves

Composer	Title	Number of Respondents
Henderson	<i>Variation Movements 1967</i>	4
Morrill	<i>Studies for trumpet and computer</i>	2
Stockhausen	<i>Aries</i>	1

Table 8.46 Solos Programmed by Respondents Involving Pedal Tones

Composer	Title	Number of Respondents
Bach	<i>Cello Suites</i>	1
Campo	<i>Times, Op. 39</i>	2
Constant	<i>Alleluias for trumpet and organ</i>	1
Erickson	<i>Kryl</i>	1
Friedman	<i>Solus</i>	1
Rabe	<i>Shazam</i>	1

Table 8.47 Solos Programmed by Respondents Involving Mute Manipulations

Composer	Title	Number of Respondents
Beckwith	<i>Sonatina in two movements</i>	1
Bernstein	<i>Rondo for Lify</i>	1
Campo	<i>Times, Op. 39</i>	2
Chasalow	<i>Out of Joint</i>	1
Healy	<i>The Battle</i>	1
Henze	<i>Sonatina</i>	3
Smart	<i>Yokai</i>	1
Stevens	<i>Sonata</i>	1
Ticheli	<i>The First Voice</i>	1

Table 8.48 Solos Programmed by Respondents Involving Glissandi

Composer	Title	Number of Respondents
Davies	<i>Sonata</i>	1
Gilbert	<i>Epigrams</i>	1
Persichetti	<i>Parable</i>	1
Ravel	<i>Habanera</i>	2
Rouse	<i>The Avatar</i>	1

Table 8.49 Solos Programmed by Respondents Involving Removing Slides

Composer	Title	Number of Respondents
Erickson	<i>Kryl</i>	1
Friedman	<i>Solus</i>	2
Kraft	<i>Encounters III</i>	1

Table 8.50 Solos Programmed by Respondents Involving Means of Extension

Composer	Title	Number of Respondents
La Barbera	<i>Drover's Lament</i>	1
McDowall	<i>Night Trumpeter</i>	1
Rudy	<i>"and every island and mountain were moved from their place"</i>	1
Suderburg	<i>Chamber Music VII</i>	8

Table 8.51 Solos Programmed by Respondents Involving Flutter Tonguing

Composer	Title	Number of Respondents
Bozza	<i>Caprice</i>	1
Bozza	<i>Rustiques</i>	2
Henderson	<i>Variation Movements 1967</i>	1
Henze	<i>Sonatina</i>	3
Hubeau	<i>Sonata</i>	1
Jolivet	<i>Concerto No. 2</i>	1
Peaslee	<i>Nightsongs</i>	4
Persichetti	<i>Parable</i>	1
Speck	<i>Shadow Walk</i>	1
Ticheli	<i>The First Voice</i>	1
Tull	<i>Solo Profiles</i>	1
Villette	<i>Concertino</i>	1

Table 8.52 Solos Programmed by Respondents Involving Lip Trills/Shakes

Composer	Title	Number of Respondents
James	<i>Carnival of Venice</i>	1

Table 8.53 Solos Programmed by Respondents Involving Microtones

Composer	Title	Number of Respondents
Erickson	<i>Kryl</i>	1
Friedman	<i>Solus</i>	1
Jolivet	<i>Arioso Barocco</i>	1



Table 8.54 Solos Programmed by Respondents Involving Half-Valve

Composer	Title	Number of Respondents
Hamlin	<i>Seven Trumpets of the Apocalypse</i>	1
Henze	<i>Sonatina</i>	1
Wilson	<i>I Remember</i>	1

Table 8.55 Solos Programmed by Respondents Involving Alternate Fingerings

Composer	Title	Number of Respondents
Hakim	<i>Sonata for Trumpet and Organ</i>	1
Peaslee	<i>Nightsongs</i>	3

Table 8.56 Solos Programmed by Respondents Involving Multiphonics

Composer	Title	Number of Respondents
Erickson	<i>Kryl</i>	1

Table 8.57 Solos Programmed by Respondents Involving Vocalizations

Composer	Title	Number of Respondents
May	<i>Lippestuck</i>	1

Table 8.58 Solos Programmed by Respondents Involving Improvisation

	Number of Respondents
Improvisation	5

Table 8.59 Solos Programmed by Respondents Involving Electronics

Composer	Title	Number of Respondents
Eakin	<i>Trumpet Capriccio</i>	1
Pardus	<i>Suite for Trumpet and MIDI</i>	1
Smart	<i>Fat Noon</i>	2
Zupko	<i>Fluxus</i>	1

Table 8.60 Solos Programmed by Respondents Involving Percussive Effects

Composer	Title	Number of Respondents
Smart	<i>The Trumpeter Swan</i>	1

Table 8.61 Solos Programmed by Respondents With No Reference to Specific Techniques Given

Composer	Title	Number of Respondents
Adler	<i>Canto I</i>	1
Berio	<i>Sequenza X</i>	3
Bestor	<i>Concerto Piccolo</i>	2
Bozza	<i>Graphismes</i>	1
Davies	<i>Sonata</i>	2
Dlugoszewski	<i>Space is a Diamond</i>	1
Durant	<i>Choragus Revisited</i>	1
Erb	<i>Diversion for Two</i>	2
Erickson	<i>Kryl</i>	4
Ernst	<i>Exit</i>	1
Friedman	<i>Solus</i>	9
Gruber	<i>Exposed Throat</i>	1
Huber	<i>Death in Venice</i>	1
Hummel	<i>Concerto</i>	1
Husa	<i>Concerto for Trumpet and Wind Orchestra</i>	1
Husa	<i>Landscapes for Brass Quintet</i>	1
Jolivet	<i>Heptade</i>	2
Jones	<i>Evocation</i>	1
Kasprzy	<i>11<sup>th</sup> Hour</i>	1

Kraft	<i>Encounters III</i>	3
Koplow	<i>Angel's Trumpet</i>	1
Lazarof	<i>Concertazioni for Solo trumpet, six instruments and tape</i>	1
Lewis	<i>Monophony VII</i>	1
Mobberley	<i>Icarus Wept</i>	1
Olsen	<i>Immoderate Acts for Trumpet and Percussion</i>	1
Park	<i>t1</i>	1
PDQ Bach	none given	1
Peaslee	<i>Nightsongs</i>	1
Persichetti	<i>Parable</i>	1
Pinkham	<i>The Other Voice of the Trumpet</i>	1
Plog	<i>Animal Ditties</i>	1
Sampson	<i>Notes from Far Away Places</i>	1
Sanders	<i>Stigmata</i>	1
Satterwhite	<i>Sorrow is Almost Violet</i>	1
Scelsi	<i>Quattro Pezzi</i>	1
Shadwell	<i>Theme and Variations</i>	1
Stockhausen	<i>Aries</i>	1
Stockhausen	<i>Thursday from Licht</i>	1
Takemitsu	<i>Paths</i>	2
Ticheli	<i>The First Voice</i>	1
Whittenberg	<i>Polyphony</i>	1
Wilson	<i>Masks</i>	1
Wilson	<i>I Remember</i>	1
Wolpe	<i>Solo Piece</i>	1

The results are similar here, with *Solus*, *Chamber Music VII* and *Variation Movements* receiving the same types of responses as in the previous question. Also of note are Robert Erickson's, *Kryl*, Richard Peaslee's *Nightsongs*, and Hans Werner Henze's *Sonatina*.

In the second section of the survey dealing with the respondents' current use of extended techniques in pedagogy, respondents were asked "What methods/solo literature do you use with your students?" Again, many people referred back to the two previous lists, but some did identify specific materials they believed to be appropriate for teaching

these techniques. The majority of respondents listed only titles or composers and not techniques; their responses are provided in Table 8.62, divided into a compilation of methods materials and solo literature without reference to individual techniques.

### What methods/solo literature do you use with your students?

Table 8.62 Methods Used with Students

Composer	Title	Number of Respondents
Arban	<i>Complete Method</i>	10
Charlier	<i>36 Transcendental Etudes</i>	4
Chunn	<i>Warm-Up/Daily Drills</i>	2
Cichowicz	<i>Flow Studies</i>	1
Clarke	<i>Technical Studies</i>	5
Claude Gordon		1
Colin	<i>Advanced Lip Flexibilities</i>	6
Hickman	<i>15 Advanced Embouchure Studies</i>	1
Individual resources written by respondents		9
Irons	<i>27 Groups of Exercises</i>	2
Lynch	<i>The Altissimo Trumpet</i>	1
Nagel	<i>Contemporary Studies</i>	4
Plog	<i>16 Contemporary Etudes</i>	1
Plog	<i>Contemporary Duets</i>	1
Raph	<i>Dance Band Reading</i>	1
Sachs	<i>Fundamentals</i>	1
Sandoval	no title given	1
Schlossberg	<i>Daily Drills</i>	1
Stamp	<i>Daily Warm-Ups and Studies</i>	20
Stevens	<i>Contemporary Trumpet Studies</i>	1
Stevens	<i>Contemporary Interval Studies</i>	1
Thompson	<i>Buzzing Basics</i>	3
Vizzutti	<i>Technical Studies Book 1</i>	3

In response to this question concerning methods only, two books stand out: Jean Baptiste Arban's *Complete Conservatory Method* and James Stamp's *Warm-Ups and Studies* with

10 and 20 responses, respectively. Of interest is the fact that 9 respondents specified the development of their own materials to assist their students with these techniques.

The following table contains solo literature suggestions provided by respondents. In some cases only a title or composer were given.

Table 8.63 Solo Literature Used With Students

Composer	Title	Number of Respondents
Anderson	<i>Sleigh Ride</i>	2
Berio	<i>Sequenza X</i>	3
Bozza	<i>Caprice</i>	2
Bozza	<i>Rustiques</i>	2
Bitsch	None given	1
	Brass Band Literature	1
Campo	<i>Times, Op. 39</i>	1
Charlier	<i>Transcendental Etude #17</i>	1
Davis	<i>So What</i>	1
Dunker	<i>Prelude</i>	1
Eakin	<i>Trumpet Capriccio</i>	1
Ellington	various solos	1
Erickson	<i>Kryl</i>	3
Friedman	<i>Four Etudes</i>	1
Friedman	<i>Solus</i>	5
Gabaye	<i>Boutade</i>	1
Gershwin	<i>American in Paris</i>	1
Gruber	<i>Exposed Throat</i>	1
Haydn	<i>Concerto</i>	2
Hubeau	<i>Sonata</i>	3
Hummel	<i>Concerto</i>	3
Karlins	<i>Graphic Mobile</i>	1
Kraft	<i>Encounters III</i>	1
McLaughlin	<i>Duet for Two Incomplete Trumpets</i>	1
Nelhybel	<i>Golden Concerto</i>	1
Peaslee	<i>Night Songs</i>	2
Pellman	<i>Trump-it</i>	1
Persichetti	<i>Parable</i>	2
Plog	<i>Miniatures</i>	1
Powell	<i>Alone</i>	2
Ravel	<i>Habanera</i>	1

Satterwhite	any solo	1
Scelsi	<i>Quattro Pezzi</i>	1
Shadwell	<i>Theme and Variations</i>	1
Shchedrin	<i>A la Albéniz</i>	1
Speck	<i>Shadow Walk</i>	1
Stevens	<i>Sonata</i>	3
Sudenburg	<i>Chamber Music VII</i>	3
Takemitsu	<i>Paths</i>	1
Tull	<i>Solo Profiles</i>	1
Wilson	<i>Masks</i>	1
Zupko	<i>Fluxus VII</i>	1

This listing shows that many of the same pieces studied by the teachers (*Solus*, *Chamber Music VII*, Hubeau’s *Sonata*, *Kryl*, and *Sequenza X*) are being used with their students.

In the final question, respondents were asked for literature suggestions regarding the most appropriate first solo for each of the thirteen techniques. The continuing issue of some respondents providing either a title or composer with no connection to the technique being addressed in the piece affected these results. The data are displayed in the following tables and presented first by techniques category and finally as a composite list of pieces mentioned.

**First appropriate solo listed by individual technique**

Table 8.64 First Appropriate Solo Involving Multiphonics

Composer	Title
Erickson	<i>Kryl</i>
Gruber	<i>Exposed Throat</i>
Husa	<i>Landscapes for Brass Quintet</i>
Ticheli	<i>The First Voice</i>
Shulman, Matt	transcriptions of CD’s

Table 8.65 First Appropriate Solo Involving Vocalizations

Composer	Title
Ellington	various tunes
Erickson	<i>Kryl</i>
Friedman	<i>Solus</i>
Powell	<i>Beatitudes foRay</i>

Table 8.66 First Appropriate Solo Involving Flutter Tonguing

Composer	Title
Berio	<i>Sequenza X</i>
Bozza	<i>Caprice</i>
Bozza	<i>Rustiques</i>
Erb	<i>Diversion for Two</i>
Friedman	<i>Solus</i>
Gershwin	<i>American in Paris</i>
Henderson	<i>Variation Movements</i>
Hubeau	<i>Sonata</i>
Nagel	none given
Persichetti	<i>Parable</i>
Tull	<i>Solo Profiles</i>

Table 8.67 First Appropriate Solo Involving Half-Valve/Glissando

Composer	Title
Anderson	<i>Sleigh Ride</i>
Armstrong	
Bernstein	
Big Band charts	
Friedman	<i>Solus</i>
Gershwin/Dokshitzer	<i>Rhapsody in Blue</i>
Jazz solos	
Lillya	<i>Trumpet Technique book</i>
Persichetti	<i>Parable</i>
Satterwhite	any compositions
Whittenberg	<i>Polyphony</i>

Table 8.68 First Appropriate Solo Involving Lip Trill/Shakes

Composer	Title
Armstrong	
Arban	<i>Complete Conservatory Method</i>
Clark	
Cornet solos	
Count Basie	
Friedman	<i>Solus</i>
Gregson	<i>Concerto</i>
Haydn	<i>Concerto</i>
Hubeau	<i>Sonata</i>
Hummel	<i>Concerto</i>
Jazz charts	
Latin music style	
My own exercises	

Table 8.69 First Appropriate Solo Involving Tremolos/Alternate Fingerings

Composer	Title
Andrix	<i>Miniatures for Solo Trumpet</i>
Charlier	<i>36 Transcendental Etudes</i>
Friedman	<i>Solus</i>
Gabaye	<i>Boutade</i>
Marie	<i>The Cock and The Hornet</i>
Nagel	<i>Contemporary Trumpet Studies</i>
Peaslee	<i>Nightsongs</i>
Schulthess	<i>Two Trumpets</i>



Table 8.70 First Appropriate Solo Involving Mute Manipulations

Composer	Title
Bernstein	<i>Rondo for Lify</i>
Campo	<i>Times, Op. 39</i>
Ellington	<i>Echoes of Harlem</i>
Friedman	<i>Solus</i>
Gershwin	Broadway scores
Ghezzo	
Hoffman	<i>Four Miniatures</i>
Persichetti	<i>Parable</i>
Powell	<i>Beatitudes foRay</i>
Shadwell	<i>Theme and Variations</i>
Sheppard	<i>Windloops</i>
Stevens	<i>Sonata</i>
Takemitsu	<i>Paths</i>
Windsor	
Winick	<i>Equinoctial Points</i>

Table 8.71 First Appropriate Solo Involving Means of Extension

Composer	Title
Berio	<i>Sequenza X</i>
Jazz tunes	
Miley	<i>Trumpet and Piano</i>
Plog	<i>Sonata</i>
Suderburg	<i>Chamber Music VII</i>

Table 8.72 First appropriate solo involving Microtones

Composer	Title
Andrix	<i>Miniatures for Solo Trumpet</i>
Ellis	
Erickson	<i>Kryl</i>
Friedman	<i>Solus</i>
Husa	<i>Concerto</i>
Jolivet	<i>Arioso Barocco</i>
Nagel	<i>Contemporary Trumpet Studies</i>
Scelsi	<i>Quattro Pezzi</i>
Schulthess	<i>Two Trumpets</i>

Table 8.73 First Appropriate Solo Involving Removing Slides

Composer	Title
Bach	<i>Brandenburg Concerto</i>
Friedman	<i>Solus</i>
Gruber	<i>Exposed Throat</i>
Jurcisin	<i>Entities for Solo Trumpet</i>
McLaughlin	<i>Duet for Two Incomplete Trumpets</i>
Miley	<i>Trumpet and Piano</i>
Ticheli	<i>The First Voice</i>

Table 8.74 First Appropriate Solo/Orchestral Excerpt Involving Pedal Tones

Composer	Title
Bizet	<i>Carmen</i>
Erickson	<i>Kryl</i>
Friedman	<i>Solus</i>
Husa	<i>Concerto</i>
Kryl, Bohumir	solos
Maxwell	<i>The First Trumpeter</i>
my own exercises	

Table 8.75 First Appropriate Solo Involving Percussive Effects

Composer	Title
Adler	<i>Canto I</i>
Eakin	<i>Trumpet Capriccio</i>
Erb	<i>Diversion for Two</i>
Erickson	<i>Kryl</i>
Stockhausen	<i>Eingang und Formel</i>
Zupko	<i>Masques for Brass Quintet</i>

Table 8.76 First Appropriate Solo Involving Multiple Staves

Composer	Title
Campo	<i>Times, Op. 39</i>
Childs	<i>Interbalances</i>
Erickson	<i>Kryl</i>
Henderson	<i>Variation Movements</i>

Table 8.77 First Appropriate Solo - Complete List

Composer	Title	Number of Respondents
Adler	<i>Canto I</i>	1
Anderson	<i>Sleigh Ride</i>	1
Andrix	<i>Miniatures for Solo trumpet</i>	1
Armstrong		1
Basil	<i>Windsor</i>	1
Berio	<i>Sequenza X</i>	2
Bernstein	<i>Rondo for Lifey</i>	4
Bizet	<i>Carmen Suite</i>	1
Boulez		1
Bozza	<i>Caprice</i>	2
Bozza	<i>Rustiques</i>	5
Browning		1
Campo	<i>Times Op. 39</i>	2
Charlier	<i>Transcendental Etude #2</i>	1
Childs	<i>Interbalances IV</i>	1
Clark		1
Count Basie		1
Doina	<i>Prelude</i>	1
Eakin	<i>Trumpet Capriccio</i>	1
Ellington	<i>Echoes of Harlem</i>	1
Erb	<i>Diversion for Two</i>	1
Erickson	<i>Kryl</i>	6
Ferguson	<i>Sonata #2</i>	1
Friedman	<i>Solus</i>	17
Gabaye	<i>Boutade</i>	1
Gershwin	<i>American in Paris</i>	2
Gershwin	<i>Rhapsody in Blue</i>	2
Ghezzo		1

Gregson	<i>Concerto</i>	1
Haydn	<i>Concerto</i>	2
Gruber	<i>Exposed Throat</i>	1
Henderson	<i>Variation Movements 1967</i>	13
Harpagonie		1
Hoffman		1
Hubeau	<i>Sonata</i>	5
Hummel	<i>Concerto (on Bflat trumpet)</i>	1
Husa	<i>Landscapes for Brass Quintet</i>	1
Husa	<i>Concerto for Trumpet with Wind Ensemble</i>	2
Jolivet	<i>Arioso Barocco</i>	1
Juricisin	<i>Entities for Solo Trumpets</i>	1
Lewis	<i>Monophony VII</i>	1
Lillya	<i>Trumpet Technique book</i>	1
Marie	<i>The Cock and the Hornet</i>	1
McLaughlin	<i>Duet for Two Incomplete Trumpets</i>	1
Miley		1
Nagel	<i>Contemporary Trumpet Studies</i>	1
Peaslee	<i>Nightsongs</i>	2
Persichetti	<i>Parable</i>	4
Plog		1
Powell	<i>Alone</i>	2
Powell	<i>Beatitudes foRay</i>	1
Prado, Perez		1
Ravel	<i>Habanera</i>	1
Satterwhite	<i>Sorrow is Almost Violet</i>	1
Scelsi	<i>Quattro Pezzi</i>	1
Schulthess	<i>Two Trumpets</i>	1
Shadwell	<i>Theme and Variations</i>	1
Sheppard	<i>Wind Loops</i>	2
Speck	<i>Shadow Walk</i>	1
Stevens	<i>Sonata</i>	2

Stockhausen	<i>Eingang und Formel</i>	1
Strauss	<i>Don Quixote</i>	1
Suderburg	<i>Chamber Music VII</i>	13
Takemitsu	<i>Paths</i>	3
	<i>The First Trumpeter Etude Book</i>	1
Ticheli	<i>The First Voice</i>	2
Tull	<i>Solo Profiles</i>	2
Whittenberg	<i>Polyphony</i>	1
Williams	<i>Concerto</i>	1
Wilson	<i>I Remember</i>	1
Wilson	<i>Masks</i>	1
Windsor		1
Winick	<i>Equinoctial Points</i>	1

Other examples outside of traditional solo literature mentioned are listed in Table 8.78.

Table 8.78 Additional Musical Materials Outside of Traditional Solo Literature

Title/Description	Number of Respondents
Baroque pieces	1
Big band charts	10
Cornet solos	2
Latin music	1
Transcriptions of Matt Shulman CD's	1
"The most appropriate"	5
Stamp, <i>Warm-Ups and Studies</i>	1
Various jazz tunes	10

This final analysis reveals similar findings to other literature queries: the pieces receiving the highest mention are Friedman's *Solus* (17), Suderburg's *Chamber Music VII* (13), Henderson's *Variation Movements* (13), Erickson's *Kryl* (6), Hubeau's *Sonata* (5), Bozza *Rustiques* (5). Also receiving strong representation were jazz pieces (10) and big band charts (10).

## Summary of Survey Results and Conclusions

After reporting the data and preparing the comparative analysis, certain patterns regarding the performance and pedagogy of extended techniques are recognizable.

The first pattern concerns the varied interpretations of the term “extended techniques.” Some of the techniques I chose to list are no longer considered extended by many of the survey respondents and are, in fact, being taught to an overwhelming majority of students. I have created a continuum of most frequently to least frequently taught techniques. The first five techniques on the list appear to be regarded as necessary skills for trumpet performance and are each taught by greater than 90% of respondents.

Half-Valve Techniques/Glissandos	97%
Lip Trills/Shakes	97%
Flutter Tonguing	96%
Tremolos/Alternate Fingerings	93%
Pedal Tones	92%
Mute Manipulations	66%
Means of Extension	45%
Removal of Slides	43%
Microtones	35%
Multiphonics	34%
Percussive Effects	33%
Vocalizations	32%
Reading Multiple Staves	26%

The second pattern to emerge from the survey data concerns the respondents’ beliefs about the true need for the study of extended techniques. In the open-ended opinion questions, respondents shared their thoughts, often in great detail. Some respondents believe that these techniques are best taught “as needed” rather than as a necessary element of a comprehensive approach to trumpet study. Individual respondents shared that they might work with students preparing jazz pieces employing some of these techniques, or teach the techniques when called for specifically in other literature. There

were comments reflecting beliefs that students first need a thorough grounding in traditional trumpet technique before exploring these skills. Respondents' indications that the goals, situations, and abilities of individual students were important considerations were offered frequently, as evidenced by the statements that students not pursuing performance degrees rarely have need to go beyond the traditional ways of playing the trumpet. A positive consequence of this "teaching the techniques as needed" argument is seen in schools with contemporary ensembles; it is here that these techniques are being taught more frequently. It would be interesting to track the future development of contemporary music ensembles in college music programs and the impact those ensembles might have on the teaching of extended techniques.

The third pattern evident in the data concerns two specific techniques which seem to be underutilized: multiphonics and removal of slides. The notable survey result reported earlier (which revealed that respondents with more than 15 years teaching experience had a higher percentage of teaching these two techniques) is worth addressing again. I made the suggestion that the existence of literature popular during these respondents' college years may have influenced their teaching of these two techniques. If this is truly the case, it would be interesting to see how current repertoire (specifically a piece such as Gruber's *Exposed Throat* which involves multiphonics, removal of slides and other techniques) may impact the teaching of extended techniques years from now.

A review of the musical materials being used in the study of extended techniques reveals patterns as well. As reported earlier, in response to questions concerning the methods/solo literature involving extended techniques used with students, the following trends were apparent: 1) a number of these professors appear to use performance material

(solos) as primary study material when dealing with certain techniques, 2) nine of these professors referred to exercises they themselves had created to help address the pedagogical study of a specific technique, and 3) based on the data collected, there appears to be little difference between the repertoire used by professors in their own performance and the pieces they teach to their students.

Most interesting to me is the absence of method books being used to introduce extended techniques. None of the respondents to the question regarding methods/solo literature used with students listed *Contemporary Trumpet Studies* by Blatter/Zonn, although three individuals did list that work in response to the question about materials used in their own study. Four respondents did suggest Nagel's *Contemporary Studies* as a method they used with their students (a helpful book that is unfortunately out of print and difficult to obtain). Respondents' frequent references to materials such as Arban's *Complete Conservatory Method*, Clarke's *Technical Studies*, and Stamp's *Daily Warm-Ups and Studies* indicate that professors are adapting common teaching materials to address extended techniques.

Lastly, the responses provided for Question #11 "Please list, in your opinion, the most appropriate first solo to introduce each of these techniques to your students," were surprising. The difficulty level of some of the pieces listed to be used as introductory material is quite high. For the technique of multiphonics, a few respondents listed works such as Erickson's *Kryl*, Gruber's *Exposed Throat*, and Ticheli's *The First Voice*, pieces that are most appropriate for graduate level study. These three pieces, as well as Friedman's *Solus*, Berio's *Sequenza X*, Erb's *Diversion for Two*, and Henderson's *Variation Movements 1967* are also listed as appropriate introductions to techniques



ranging from flutter tonguing to removing slides from the instrument. Responses such as these suggest, in my opinion, that a variety of extended techniques are not being approached until later stages of study when a student is more capable of performing these difficult works. Perhaps the existence of more study material and solo literature of a less advanced nature would allow for an earlier inclusion of these interesting techniques in trumpet pedagogy and performance.

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**APPENDIX A**

**EXTENDED TECHNIQUES  
IN TRUMPET PERFORMANCE AND PEDAGOGY  
SURVEY**



Consent to Participate in a Research Study  
University of Cincinnati  
College Conservatory of Music  
Amy K. Cherry  
Doctor of Musical Arts candidate  
(828) 293-5675 (amy@cherrybrass.com)

#### Extended Techniques in Trumpet Performance and Pedagogy

An invitation from Amy Cherry

You are being asked to participate in a research study about the use of extended techniques in trumpet performance. As part of this investigation 1,209 college- and university-level trumpet teachers are being surveyed to determine current trends and pedagogical practices in the use of extended techniques. You are identified in the College Music Society Directory as being responsible for the area of studio trumpet instruction at your institution(s).

Your response to the following survey would be greatly appreciated in helping to determine the current status of this area of trumpet performance and pedagogy. Completing the survey should take no more than 15 minutes. If you choose to leave a question unanswered it will not prohibit you from completing the survey. If possible, please complete your responses by November 1. Thank you in advance for your assistance.

By completing this survey, you are giving your consent to participate in this research study. Please keep this information sheet for your reference.

All specific responses will be kept confidential; your name will not be associated in any way with the information you provide. The responses will be summarized and reported in aggregate form. Your name, e-mail address, and institutional affiliation will be kept in a separate database and will be used only to verify that there are no duplicate responses. Upon completion of the study, all survey responses and personal information, (names, e-mail addresses, and institutional affiliations) will be deleted and any existing hard copies will be destroyed.

If you have any questions about this research study, you may contact Amy Cherry, Principal Investigator, at (828) 293-5675 or Alan Siebert, faculty advisor/Co-PI, at (513) 556-9555.

The University of Cincinnati Institutional Review Board – Social and Behavioral Sciences reviews all non-medical research projects that involve human participants to be sure the rights and welfare of participants are protected. If you have questions about your rights as a research participant, you may contact the University of Cincinnati Institutional Review Board – Social and Behavioral Sciences at (513) 558-5784. If you have a concern about the study you may also call the UC Research Compliance Hotline at (800) 889-1547, or you may write to the Institutional Review Board-Social and Behavioral Sciences, G-28 Wherry Hall, ML 0567, 3225 Eden Avenue, PO Box 670567, Cincinnati, OH 45267-0567, or you may email the IRB office at [irb@ucmail.uc.edu](mailto:irb@ucmail.uc.edu).

If you would like to receive a copy of the survey results, please so note below and provide your name and email address.

Would like to receive a copy of survey results?

Yes  No

Name:

E-mail address:

If you are willing to have your responses credited to you in the document, please so note below and provide your name and institutional affiliation.

You may credit me as a respondent in the document.

Yes     No

Name:

Institution:

## Extended Techniques in Trumpet Performance and Pedagogy Survey

### Your Experience with Extended Techniques

1. In what areas do you have teaching responsibilities (please check all that apply)?

Classical trumpet

Jazz trumpet

Other:

(If you teach instruments in addition to trumpet, please answer the remainder of this questionnaire only according to your trumpet pedagogical practices.)

2. How many years have you been teaching at the collegiate level?

3. Have you ever performed any literature that makes use of the following extended techniques?

	Please select Yes or No	
	Yes	No
Multiphonics	<input type="checkbox"/>	<input type="checkbox"/>
Vocalizations	<input type="checkbox"/>	<input type="checkbox"/>
Fluttertonguing	<input type="checkbox"/>	<input type="checkbox"/>
Half-Valve techniques/Glissandos	<input type="checkbox"/>	<input type="checkbox"/>
Lip Trills/Shakes	<input type="checkbox"/>	<input type="checkbox"/>
Tremolos/Alternate Fingerings	<input type="checkbox"/>	<input type="checkbox"/>
Mute Manipulations - rapid changes and unconventional uses	<input type="checkbox"/>	<input type="checkbox"/>
Means of Extension - playing into piano, causing sympathetic vibrations	<input type="checkbox"/>	<input type="checkbox"/>
Microtones	<input type="checkbox"/>	<input type="checkbox"/>
Removing slides from the instrument	<input type="checkbox"/>	<input type="checkbox"/>
Pedal Tones	<input type="checkbox"/>	<input type="checkbox"/>
Percussive Effects	<input type="checkbox"/>	<input type="checkbox"/>
Reading multiple staves	<input type="checkbox"/>	<input type="checkbox"/>

If you answered “no” to all of question #3 above, you may skip to question #8.

4. Are there additional extended techniques that you utilize that aren't included in the previous question?

5a. Did you receive any formal training from a private teacher concerning extended techniques in trumpet performance?

Yes  No

5b. If so, at what stage of your studies were you introduced to the following extended techniques?

Multiphonics	Select ▼
Vocalizations	Select ▼
Fluttertonguing	Select ▼
Half-Valve techniques/Glissandos	Select ▼
Lip Trills/Shakes	Select ▼
Tremolos/Alternate Fingerings	Select ▼
Mute Manipulations - rapid changes and unconventional uses	Select ▼
Means of Extension - playing into piano, causing sympathetic vibrations	Select ▼
Microtones	Select ▼
Removing slides from the instrument	Select ▼
Pedal Tones	Select ▼
Percussive Effects	Select ▼
Reading multiple staves	Select ▼

6. What methods/solo literature involving extended techniques have you used in your own study?

	<b>Techniques</b>	<b>Composer</b>	<b>Selection</b>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

7. Do you program solos using extended techniques on your own recitals and, if so, which solos?

	<b>Techniques</b>	<b>Composer</b>	<b>Selection</b>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

## Current Teaching Trends of Extended Techniques

8. Would you consider extended techniques to be a necessary element of a trumpet student's studies?

Yes

No

Why or why not?

9. Have you ever taught the following extended techniques to a student?

	Please select Yes or No	
	Yes	No
Multiphonics	<input type="checkbox"/>	<input type="checkbox"/>
Vocalizations	<input type="checkbox"/>	<input type="checkbox"/>
Fluttertonguing	<input type="checkbox"/>	<input type="checkbox"/>
Half-Valve techniques/Glissandos	<input type="checkbox"/>	<input type="checkbox"/>
Lip Trills/Shakes	<input type="checkbox"/>	<input type="checkbox"/>
Tremolos/Alternate Fingerings	<input type="checkbox"/>	<input type="checkbox"/>
Mute Manipulations - rapid changes and unconventional uses	<input type="checkbox"/>	<input type="checkbox"/>
Means of Extension - playing into piano, causing sympathetic vibrations	<input type="checkbox"/>	<input type="checkbox"/>
Microtones	<input type="checkbox"/>	<input type="checkbox"/>
Removing slides from the instrument	<input type="checkbox"/>	<input type="checkbox"/>
Pedal Tones	<input type="checkbox"/>	<input type="checkbox"/>
Percussive Effects	<input type="checkbox"/>	<input type="checkbox"/>
Reading multiple staves	<input type="checkbox"/>	<input type="checkbox"/>

If you answered "no" to all of question #9 above, please go to question #11.

10. What methods/solo literature involving extended techniques have you used with your students?

	<b>Techniques</b>	<b>Composer</b>	<b>Selection</b>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			



11. Please list, in your opinion, the most appropriate first solo to introduce each of these techniques to your students.

	<b>Composer</b>	<b>Selection</b>	<b>Used in last five years</b>
Multiphonics			<input type="checkbox"/>
Vocalizations			<input type="checkbox"/>
Fluttertonguing			<input type="checkbox"/>
Half-Valve techniques/Glissandos			<input type="checkbox"/>
Lip Trills/Shakes			<input type="checkbox"/>
Tremolos/Alternate Fingerings			<input type="checkbox"/>
Mute Manipulations - rapid changes and unconventional uses			<input type="checkbox"/>
Means of Extension - playing into piano, causing sympathetic vibrations			<input type="checkbox"/>
Microtones			<input type="checkbox"/>
Removing slides from the instrument			<input type="checkbox"/>
Pedal Tones			<input type="checkbox"/>
Percussive Effects			<input type="checkbox"/>
Reading multiple staves			<input type="checkbox"/>

12. At what level do you believe the following extended techniques should first be taught?

Multiphonics	Select ▼
Vocalizations	Select ▼
Fluttertonguing	Select ▼
Half-Valve techniques/Glissandos	Select ▼
Lip Trills/Shakes	Select ▼
Tremolos/Alternate Fingerings	Select ▼
Mute Manipulations - rapid changes and unconventional uses	Select ▼
Means of Extension - playing into piano, causing sympathetic vibrations	Select ▼
Microtones	Select ▼
Removing slides from the instrument	Select ▼
Pedal Tones	Select ▼
Percussive Effects	Select ▼
Reading multiple staves	Select ▼

13. Rate the following extended techniques according to how useful you believe they are for the development of your trumpet students

Multiphonics	Select ▼
Vocalizations	Select ▼
Fluttertonguing	Select ▼
Half-Valve techniques/Glissandos	Select ▼
Lip Trills/Shakes	Select ▼
Tremolos/Alternate Fingerings	Select ▼
Mute Manipulations - rapid changes and unconventional uses	Select ▼
Means of Extension - playing into piano, causing sympathetic vibrations	Select ▼
Microtones	Select ▼
Removing slides from the instrument	Select ▼
Pedal Tones	Select ▼
Percussive Effects	Select ▼

Reading multiple staves	Select ▼
-------------------------	----------

14. Rate the following extended techniques according to how difficult you believe they are for students to perform.

Multiphonics	Select ▼
Vocalizations	Select ▼
Fluttertonguing	Select ▼
Half-Valve techniques/Glissandos	Select ▼
Lip Trills/Shakes	Select ▼
Tremolos/Alternate Fingerings	Select ▼
Mute Manipulations - rapid changes and unconventional uses	Select ▼
Means of Extension - playing into piano, causing sympathetic vibrations	Select ▼
Microtones	Select ▼
Removing slides from the instrument	Select ▼
Pedal Tones	Select ▼
Percussive Effects	Select ▼
Reading multiple staves	Select ▼

15. Do you cover these techniques only with students who approach you with an interest, or do all students study these techniques with you?

- all students
  only with students who approach me with an interest

16. Is there a contemporary music ensemble at your school performing pieces that use extended techniques?


- Yes
  No

## Pedagogical Suggestions

17. Do you have a beginning exercise that you introduce to your students as they are learning multiphonics?

Yes  No

18. If yes, please explain



19. Do you have suggestions for students (male or female) dealing with multiphonics when the sung pitch lies outside the vocal range of the performer?

Yes  No

20. If yes, please explain



21. For students who are unable to roll their "Rs", do you have suggestions/exercises to help them develop the ability to fluttertongue?

Yes  No

22. If yes, please explain

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23. For students who are unable to roll their “Rs”, do you have suggestions/exercises for them to help them replicate fluttertonguing?

Yes  No

24. If yes, please explain

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25. Do you believe that the study of extended techniques improves a player’s overall performing ability?

Yes  No

26. Please clarify and/or provide examples.

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## APPENDIX B

### SURVEY SOLICITATION MATERIALS

The first contact with potential survey respondents was made by postcard. The text of that card is seen below.

Dear Colleague,

I am writing to request your assistance as a participant in a study I am conducting concerning current trends in the pedagogy and performance of extended techniques for trumpet. This research is part of my D.M.A. Thesis. As a college/university level trumpet instructor, your participation and the information you provide would be invaluable to the study. In order to make the process as easy to complete as possible, I have put the survey on the web. The entire survey can be taken in 15 minutes. Even if you have never taught extended techniques or even if you do not perform extended techniques yourself, that information would also be helpful to me.

Your individual responses will be kept confidential, being reported only in aggregate form. **Your name and institutional affiliation will not be reported in any way.**

In return for completing the survey, you may request a copy of the final results of the study. Please go to the website listed below and take a few minutes to respond to this survey; your assistance will be greatly appreciated.

Sincerely,

Amy K. Cherry

D.M.A. Candidate, University of Cincinnati College-Conservatory of Music

The survey may be found at: <http://extendedtechniquessurvey.wcu.edu>

A second solicitation was made by email for those who had not responded initially. The text of that email is seen below.

Dear Colleague,

I am writing as a follow-up to the postcard I mailed you in September concerning my DMA research on current trends in the pedagogy and performance of extended techniques for trumpet.

I know how busy those of us in teaching positions are at the start of a new term, but your participation and the information you provide would be invaluable to the study I am conducting. Even if you have never taught extended techniques or even if you do not perform extended techniques yourself, that information would also be helpful to me. I have provided a direct link to the online survey for quicker access; please consider taking a few moments to help me with this project.

Your individual responses will be kept confidential, being reported only in aggregate form. Your name and institutional affiliation will not be reported in any way. In return for completing the survey, you may request a copy of the final results of the study.

**Please go to the website linked below and complete the survey by Feb. 1.**

Your assistance will be greatly appreciated.

Sincerely,

Amy K. Cherry

D.M.A. Candidate, University of Cincinnati College-Conservatory of Music

The survey may be found at:

**<http://extendedtechniquessurvey.wcu.edu>**

A third contact was made, again by email, with the following message:

Dear Colleague,

I am writing this final plea as a follow-up to the email message you received in January concerning my DMA research on current trends in the pedagogy and performance of extended techniques for trumpet.

I know the life of a college professor is full of too many tasks, some of varying rewards. However, I am asking for your help with this small task, hoping that the knowledge you are assisting a colleague is a worthy reward. Your participation and the information you provide would be invaluable to the study I am conducting.

Please consider taking a few moments to help me with this project.

Your individual responses will be kept confidential, being reported only in aggregate form. Your name and institutional affiliation will not be reported in any way. In return for completing the survey, you may request a copy of the final results of the study.

**Please go to the website linked below and complete the survey by Feb. 20.**

Your assistance will be greatly appreciated.

Sincerely,

Amy K. Cherry

D.M.A. Candidate, University of Cincinnati College-Conservatory of Music

The survey may be found at:

<http://extendedtechniquessurvey.wcu.edu>



## APPENDIX C RESPONDENTS' COMMENTS

### Suggestions by respondents of additional extended techniques

The following answers were given by survey respondents to the question, "Are there additional extended techniques that you utilize that aren't included in the previous question?"

- "pedal tones"
- "unconventional sounds - flapping of lips into mouthpiece (maybe related to percussive effects"
- "Circular breathing"
- "chance music, improvisation"
- "Using a cut out mouthpiece or "rim"; using a straw and pinwheel attached to the horn; and playing into an effects box, looping the track and playing along with it."
- "Aleatoric improvisation, pointillistic effects, circular breathing"
- "Ghosed' notes (jazz). Using two or more techniques at once (Berio). Circular breathing, mouthpiece only, fast air through instrument through reversed mouthpiece"
- "Electronic manipulation and effect use"
- "Whistling into the instrument (Dlugoszewski, Space Is a Diamond)"
- "Extended upper range, dynamic effects, improvisation, non-traditional rhythm& spatial notation, aleatory"
- "Unconventional tonguing applications, such as "doodle" tonguing, etc."
- "Tongue slaps, Blowing air through the instrument"
- "Improvising aleatoric patterns"
- "I've also performed a big band piece that called for blowing air through the instrument, into a mic, hopefully without buzzing."
- "Hand over/in Bell, Wah-Wah techniques"
- "The variation of different degrees of vibrato (ie. slower, faster, wider, no vibrato...) Glottal Fry (lowest inhaled vocal sound), Loud/audible pitched breath"
- "wind sounds"
- "Single, double and triple octave leaps - slurred, tongued, etc."
- "Frequency modulation by inserting the trumpet bell into a bucket of water; attaching tubes to lengthen a particular valve slide."
- "Doodletongue"
- "Change in bell direction"
- "Realizing music from a shape or picture rather than "normal" notation"
- "Older jazz (Dixieland) etc. styles not in current use: vibrato, attacks, "bending" pitches, etc. These are necessary for authentic "Dixie" stylings!"

- "Blowing air through instrument (could be called vocalization), Blow over shank end of Mouthpiece like a whistle"
- "Mouthpieces buzzing, wind noise by blowing air and rapidly moving valves, horse whinny."
- "air through the mouthpiece and or trumpet without buzzing"
- "Modifying the tone without changing equipment."
- ""K"" tonguing - Whisper soft playing"
- "Do you count mouthpiece buzzing? (As part of a piece)."
- "Changes of bell direction. Extreme and immediate contrasts of register, timbre, and dynamic, and rhythmic activity. Additive rhythms. Rhythmic modulation. Lack of time signatures. Concurrently contrasting metric accents and pulse; polyrhythms. Unconventional scales. Improvisation in the context of ""composed"" music."
- "Mouthpiece buzzing, lip buzzing, unconventional vibrato."
- "jazz articulations: doits, shakes, dips and the like"
- "Growling (perhaps similar enough to Flutter tongue, but not quite the same) Specific plunger techniques. Note bending. Guttural sounds – mumblings. Large skips. Growing gradually faster, slower, louder, softer. Playing Random pitches"
- "hitting the mouthpiece with the palm of your hand"
- "Pitch Bending (lip bend) exercises."
- "Blowing air into a brass instrument"
- "Bending tones (up to halfway between harmonics, or the equivalent to an octave below the in between harmonic above). e.g., bending from g' down to f#, f-natural', or e' without valves, the e' being an octave below the 5th partial e"".
- Tongue stops. Baroque trumpet & jazz articulations (le-ra-li-ru-li, te-re-tan, doodle, etc.) Baroque style trillos and gruppos (throat articulations) -- See MY doctoral thesis on Girolamo Fantini. \*From these, and others, you can glean that extended techniques are not merely ""contemporary"" but many have been around and taught for centuries."
- "Circular breathing. Extended upper range."
- "Slide glissandos"
- "Dixieland style of hand over bell in a wa wa style."
- "Beginning the buzz outside the instrument and inserting mouthpiece while playing."
- "Blowing air only through the horn making a hissing sound."
- "Playing without a mouthpiece. In a microphone, it sounds like an alto flute. Vibrato, (different ways to do it...how to control it)."
- "Physical direction of the trumpet and physical staging, i.e. playing in different locations of the performance space."
- "It depends if you consider playing with electronic manipulations as extended techniques. If so, then I have both played with simple reverb (delay, echo, etc.) modification (in a live context) as well as actual computer processing manipulation where the sound is actually changed and processed in the computer and re-sent out through the speakers."

- "Blowing through horn w/o buzzing -- 'wind noises.' Blowing through mouthpiece. Whisper tones. Hand to mouthpiece, with different low valve combinations--low pitches, very soft percussive sound. Growling"
- "I have premiered a piece by Cory Kasprzyk called the *11th hour* which also utilized percussion instruments and piano all played by the trumpeter in which I had to wear a set of rings to perform the percussion instruments."
- "aleatory, body rotation, indeterminate pitch, proportionate duration, unordered elements, half valve, valve clicks, air sounds"
- "The Husa *Concerto for trumpet* calls for half-step glissandos that can be accomplished through a combination of alternate fingerings and use of the 1st and 3rd valve slides creating a wonderful, soprano trombone like effect. Space is a Diamond by Dlugoslowski calls for a "whistle tone" which is simply an under supported, compressed embouchure, creating pitches above high C. In "The Eagle", Eric Nielsen asks the trumpeter to imitate a native American bone whistle. He does not specify the technique, but I have found that employing half-valve technique without glissandos can create a sound that comes reasonable close. In "Masks" Dana Wilson calls for half step glissandos by stopping and unstopping the bell."
- "Whistle tones, extreme high register - I also wonder if you would consider "doodle tonguing" (found in Clark Terry and Clifford Brown's work and, of course, in the Berio *Sequenza*) and jazz swing articulation to be extended techniques..."
- "Growls, fall-offs (as opposed to measured glissandi)"
- "Growl"
- "altered fingering flutter."
- "Hand over bell, Improvised ""mutes""
- "Growl"
- "Squeak tones"
- "some combinations of the above...i.e. glissando with multiphonics...etc"
- "double buzz, whisper tones, doodle tonguing, playing while inhaling, reed mouthpieces, playing while moving or laying down, bell under water, extra tubing attached, no mouthpiece, clucking and kissing noises, circular breathing, hand in bell, notated vibrato rhythms, hand against mouthpiece ( I guess that counts as a percussive effect) use of electronics, etc."

### **Pedagogical Suggestions for Introductory Exercise for Multiphonics**

The following suggestions were given in response to a question about introduction to the techniques of multiphonics. Respondents were asked if they used a beginning exercise with students and to explain that exercise.

- “I use multiphonics as a tool for center of pitch and correct usage of air. I usually have them try multiphonics on whatever piece they are working on from *trump-it* to *Haydn*. Or even scale studies. Most of my students have no problem with this technique and feel it helps them.”
- “Simply playing in the low register and trying to match pitch either at the unison or the octave”
- “I have never performed a work with multiphonics, and I would not give these to my undergraduate students.”
- “Mouthpiece longtones work while singing a 5th away (in falsetto for men)”
- “A beginner’s text for teaching trumpet extended techniques would be something I might purchase for my studio.”
- “Hum while buzzing lips.”
- “Play a low note, sing fifth-sixth-seventh with it.”
- “Playing one pitch and singing the same pitch simultaneously.”
- “sing same note as playing, sing 5th up, try to play note ..once this is accomplished, multiphonics is an acquired talent dependent upon motivation and aptitude of student.”
- “Begin the student by blowing a pitch on the mouthpiece. Then, have the student sing the unison pitch. After this is accomplished, have the student attempt perfect fifths. This may take some time before it can be accomplished with relative ease.”
- “I have them hum first, then play low register notes in long tone format, then add the multiphonics. Lower notes seem to be easier for beginners to start on.”
- “Play a low C and hum the same note. Once they can figure that out you practice different intervals.”
- “Play a beginning pitch and then attempt to sing up and down a scale.”
- “I would love to learn some. This is not a skill I have and I would love to be able to do it AND teach it.”
- “Singing a comfortable note, then matching pitch on the trumpet and producing intervals by changing the voice and/or the trumpet pitch.”
- “1. Play a low concert f on Bb trumpet and then sing any note (growl). 2. Reverse: Sing a comfortable note, put lips together and keep voice going as you sound the trumpet. Either 1. or 2. and change volume of trumpet note as you sing. 4. Move pitch into upper register while keeping air moving (keeping trumpet sound full). 5. Move pitch into falsetto register and sustain pitch while sustaining low trumpet sound. 6. Sing falsetto concert d, put lips together and buzz without instrument. If hard, just skip this step. 7. Sing falsetto concert d, put lips together, add trumpet, and keep d going as low concert f is sounded on trumpet.”
- “To train the ear for intonation and difference (resultant) tones, I have them play say a low g, and sing a d' above it, then move the vocal note to e', creating a movement from the low G difference tone to c (and a full triad).”
- “I teach growling first as a prelude to multiphonics. Also I use the control of this to help students who have problems grunting while they are playing to get control of the use of their throat so it can be relaxed.”

- "Have them sing or hum and while doing so put horn up to face and playing--w/out letting the singing/humming cease. Unrelated Issues, but wanting to give more general feedback than is asked for: #11 Suddenly with this question I am limited to responding about solo literature (in general, solo recital pieces are outdated--much like band literature, and rarely performed for real audiences by professional musicians--students should not be help captive in a musical bubble just because they are learning their craft). I rarely teach students solo pieces that have extended techniques. I teach fairly 'classic' and tried solo rep to students; ext. techniques like their very nature are most successfully and commonly used in less conventional/traditional works and formats. Limiting your question to trumpet solo literature is going to omit most of the relevant, common and important use of these extended techniques. With the amount of interest in this topic that you are suggesting by your research--I think you should be more aware of the actual music that has relied and standardized many of these techniques for quite literally the last 90 years. This is not solo trumpet repertoire, but is music that trumpet players play every day. #15 I can't answer this question using your options--the answer is it depends on the student. If a student is talented enough, I teach them all kinds of important music, regardless of their particular tastes or interest--or mine, for that matter. #16 When a jazz band plays music from the 1920's that has shakes, glissandos, and growls (rep used in Jazz at Lincoln Center contests) the word 'contemporary' is out of place. If anything, my students say it sounds 'old fashioned.'"
- "I have them start by matching pitch-singing and playing. The difficulty seems to lie in visualizing two pitches simultaneously, something trumpeters rarely do"
- "Sing Pitch, then play pitch. Then sing same pitch, and play pitch P5th away (up or down, depending on gender/vocal range)."
- "I find certain techniques to be of very limited usefulness, and this is one of them. The literature that uses multiphonics is generally esoteric and not usually of interest to a wider audience than other trumpeters/musicians."
- "I believe that students should be introduced to these techniques gradually, so that I often create exercises specifically for that student."
- "start by whistling and humming then introduce the trumpet on sustained pitches"
- "drone with voice and playing slow scales, drone with pitch and singing slow scales, short chorales I created"
- "play a G in the staff and practice matching it with your voice"

### **Pedagogical Suggestions for Performing Multiphonics When the Sung Pitch Lies Outside the Vocal Range of the Performer**

The following responses were given to a question soliciting specific pedagogical suggestions for students (male or female) dealing with multiphonics when the sung pitch was outside the vocal range of the performer.

- “Usually I will have them either sing it up or down the octave, whatever they are more comfortable with, as long as it is the correct pitch.”
- “Depend on the situation”
- “switch octaves”
- “Transpose an octave to bring it back into the player's range again.”
- “Substitute something as close as possible (within the range indicated on the piece) and if the student is playing a "student" composition, discuss the issue with the composer.”
- “sing falsetto for out of range up. Use a guttural growl for notes too low”
- “Make sure the desired effect still occurs. For example, if the sung pitch is a minor 9th and that happens to be outside the singing range, then have them sing a minor 2nd or similar pitch so that "beats" are still heard. Likewise, perfect 4ths or 5ths can be inverted to produce the desired effect with an octave displacement.”
- “I have them hum away from the instrument because many times humming outside the range is sometimes easier than producing a vocal sound for singing.”
- “Sing it within their own singing range”
- “Practice singing melodic studies (Concone and Bordogni) until upper register expands. Every day alternate phrases of songs w/voice and trumpet. Systematically increase vocal time.”
- “The only thing we can come up with is to change octaves, which of course changes the intended outcome. This literature can be gender specific, and composers should realize that. It seems that composers could devise alternate passages/notes for female vs. male performers.”
- “move by octave until it is within the range”
- "Male -- use falsetto, if otherwise too high. Female -- change the played note (raise it an octave). Just singing at comfortable pitch would still produce a ""difference"", but the wider gap may emphasize the wrong harmonics."
- “Change octaves.”
- “Put it in the singable octave.”
- “Do something that at least reflects the intention of the composer.”
- “Do not do this piece. A composer must be aware of trumpeters’ limits, as must a trumpeter.”
- “use head voice (falsetto) for high or chest voice for low”
- “vocalise within their range”
- “Sing up or down an 8ve”
- “Avoid that repertoire!”
- “Start with unison or octaves, then progress to sing one pitch and play scale on trumpet. Then play one pitch and sing a scale.”
- “change the music”
- “octave transposition or for men, falsetto”
- “I took voice lessons specifically to sing higher and it increased my range and control”
- “transpose it to the octave that suits them”

## **Pedagogical Suggestions for the Development of the Flutter Tongue Technique**

Respondents were asked to comment on whether they had suggestions or exercises supporting the development of flutter tonguing for students who are unable to roll their “Rs.” The following answers were provided:

- “But I would love to have one.”
- “Growl like a dog or gargle”
- “sometimes starting w/ the guttural approach can (but not always) help”
- “Since we don't roll "r" in English, perhaps listening to the rolled r in another language would be helpful as a model and would facilitate learning it. It occurs to me that the French "r" (more in the throat) is different from the Spanish "r" (further forward in the mouth). I actually use a French "r" probably because I studied French earlier than Spanish.”
- "Keep trying”
- “I teach them to growl or sing through the trumpet--only some of us are genetically predisposed to be able to do this.”
- "I find that most students CAN roll Rs. I associate this process to Spanish"
- “Multiphonics with the sung tone being a 1/2 or 1/4 lower creates a somewhat interchangeable effect”
- “More wind speed is key. It is no different than a ribbon flapping in front of a fan. The tongue must be able to "flap or flutter" freely. First do it off the horn. Once that is controlled and accomplished, then do it on the mouthpiece, then on the horn. At all stages, resistance is an issue, so do not move on until each stage is comfortable.”
- “Practice without the instrument first.”
- “Some will never get it. Others, do it in speech, off the horn, leadpipe/mouthpiece combo, etc.”
- “Try pressing the tongue flat against the roof of the mouth and "forcing" air between the tongue and the roof of the mouth.”
- “Sometimes a growl will work, sometimes discussion/demonstration of moving the tongue motion further forward. I have rarely experienced a student that cannot do this, however.”
- “It is my understanding that it is genetics. Either you can or you can't.”
- "I would explain the concept as follows: Hold the tip of the tongue against the roof of the mouth in the ""T"" position while blowing past it. Think of blowing fast hot air from the diaphragm, and do not allow the air to escape from around the sides of the tongue. The air must pass over the front tip of the tongue."
- “The tongue must be in the front of the mouth. Rolling your "r's" does not imitate a fast single tongue. Begin by single tonguing a few notes then immediately

- begin to flutter by relaxing the tongue yet keeping the front in the same forward position as if single tonguing.”
- “Practice throughout the day without the instrument at first, hurling the tongue at the roof of the mouth to get it started. Then add the instrument. I find that this can be a useful exercise in increasing air support as well.”
  - “Try to pronounce the word "hur" with an accented r. Try to lengthen the "r" bit by bit but letting the tongue relax into the "r" sound.”
  - “sometimes use of a lot of air. sometimes some tongue movement.”
  - “I demand they learn, and I am very brusque with them, as it is rarely a physical limitation. I have several techniques but are used as dictated by the student responses to suggestions, and too variable and complicated to discuss here”
  - “Say it”
  - “Try "growling" first. The constricted airway and the need to keep air velocity up is similar in both cases. Also, practicing without the trumpet on the face focuses the attention on the air speed while saving chops.”
  - “I use the uvula to flutter tongue very effectively, as I cannot roll my rrrr's. This has always worked for those of my students who cannot roll their r's.”
  - “I ask the student to try putting the tip of your tongue on the roof of your mouth, just behind your top front teeth, and trilling the letter R very quickly.”
  - “Despite my "NO" answer I have discovered that students who can roll their tongue into a tube shape are able to roll "Rs" (which is a genetic trait like attached/detached ear lobes) and those who cannot shape their tongue into a tube are not able to roll "Rs.””
  - “Without playing, I tell them to position the tongue tip very close (but not touching) where the roof of the mouth meets the base of the upper teeth. The tongue must not be too rigid, or too loose. It is a matter of blowing the air in such a way as to make it ricochet, similar to a drummer performing a drum roll. The air powers the tongue, it has to be allowed to flap in the breeze. If the student doesn't blow freely or is tensing the tongue and/or throat, it cannot occur. I don't proceed further until they can do this easily without the horn. Once they can flutter effectively, I have them do it with the lips formed in an embouchure (still without the horn) like they are playing. Then I have them go to the trumpet, not worrying about any specific pitch, but have them try to get a flutter on a single pitch. When they can do this, I have them try to actually flutter distinct pitches by first singing the pitch in question with a flutter, then going to the trumpet to do it for real.”
  - "Press the tongue against the roof of the mouth and force the air through the space.”
  - “Have had success with a number of students by having them start off the horn, loosening the tongue and blowing to cause the tongue to flutter. Then continued attempts to connect this with the horn usually bring some success on the horn which the student continues to practice.”
  - “It simply must be done with the back of the throat, like a throat clearing motion.”
  - “For students who cannot roll "R's", they try the "growl" of the throat - not unlike what woodwind players must do. I confess that I find that much more difficult, but I also am able to flutter quite easily.”



- “Begin the flutter with a "D" of the tongue against the gum line of the upper teeth, keep throat open.”
- “For students initially unable to perform the fluttersong, it is one of the most difficult techniques to teach. Studies in Spanish and/or French are sometimes positive.”
- “Start with a normal tongue stroke to set the air in the correct place.”
- “Flutter in the back of the tongue as in a German rr.”
- “IT'S A PHYSICAL LIMITATION; SUBSTITUTIONS ARE NOT THAT EFFECTIVE”
- "Guys-""did you ever play with toy cars when you were little?"" Make a ""motor sound"" with your tongue. Girls-Say ""Carrrrrrrrumba!"" in Spanish. :)"
- “Keep trying. Get the flutter sound without the trumpet, then on the trumpet in a low register, then work up as comfortable. It's possible for anyone to do with patience. The rolled R is used by all Spanish speaking people and you don't see them having trouble with it because of more exposure.”
- “Some students have success if they think about rolling the back of their tongue. I don't have a clue why, but I learned that from one of my students.”
- “The palate must be closed. With embouchure gently formed, alternate between guttural and tip placement (g and d) while blowing (no voice). Be very patient and persistent. It is essential to have a model present who can achieve a successful roll.”
- “Put the tip of the tongue to the roof of the mouth or the upper teeth and try to keep it there while blowing air.”
- “They can experiment with moving the tip of the tongue or using the side of the tongue to try to produce a roll. Doug Hill has some good ideas for this in his "Collected Thoughts" book for the horn.”
- “I don't have an exercise that helps students develop fluttersong, as I have always heard that some people have a genetic inability to roll their "Rs". My suggestions have always been those that would help the student develop alternate techniques---growling, or tremolo using alternate fingerings.”
- “Use a "growl" in the back of the oral cavity. It is not optimal but makes the effect somewhat.”
- “Besides having them arch, but relax the tongue "into the roof of the mouth" and blowing an intense air stream... making the tongue rattle; the only other suggestion is to use a growl or guttural vocalization.”
- “I can't do it, and therefore I "fake" it with a back of the throat "growl" technique that is used commonly in jazz. No one has ever had suggestions for me, and I don't have any for anyone else, other than to learn to do an alternate technique that sounds close.”
- “Similar to a doodle tongue - using the back of the tongue to manipulate the air. Like double tonguing.”
- “Demonstration, patience, and persistence! As someone who was not able to roll r's, and convinced I would never be able to, it took a very patient and persistent teacher to teach me it. Demonstrate different ways of doing it, encourage experimentation, check every lesson, be encouraging, yet very persistent.”

- “I don't roll my ""Rs"" to achieve this effect.”
- “Either tremolo or growl.”
- “Usually, we select an alternative, such as tremolo.”
- "Study private with teacher of language that does roll rs; consider a growl if no other options"
- “I myself have trouble with this. I believe that putting a "D" or "T" sound at the beginning of the "R" helps get the tongue in motion.”
- “Play as if gargling - long tones, scales”
- “Growl”
- “Learn to growl in a way that will achieve similar effect”
- “Since my first language has the need to roll the "Rs" (Portuguese) I try to approach teaching the student how to roll their "R" at first by separating the sounds of a rolled "R" (it is hard to write it down) I use the same language approach for various aspects of trumpet playing since there are sounds in other languages that we don't use in English and vice versa. I have been successful in teaching almost every student to roll their "Rs" but for the occasional exception, if time is an issue, I usually have them create the same flutter effect by growling.”
- “Say "did" and hold the final "d" enough to create some back pressure - then add more air pressure while holding the "d" in place and moving the tongue back - eventually I've had success with this process...”
- “Try Growling as a replacement. Sounds like a slower harder flutter tongue.”
- “Practice relaxing and "flipping" the tongue. Develop good air flow to propel the tongue. Realize that only certain intensities may be possible.”
- “Arban's multiple tongue section”
- “Relax the tongue and bring it up into the air stream causing it to flutter. Do this without the mouthpiece first, then with the mouthpiece and later the horn.”
- "Try to work on this in language away from horn. If a student cannot do a flutter, they need to develop the growl instead."
- “Better air support. Lack of support is what ties up the tongue”
- “press the tongue against the roof of the mouth and blow without the trumpet, if this does not work, experiment with growling or a combination of both”
- “practice a little everyday and maybe some day it will begin to work. otherwise use the back of the throat”

### **Pedagogical Suggestions for the Replication of the Flutter Tongue Technique**

Respondents were asked to comment on whether they had suggestions or exercises to help students who are unable to roll their “Rs” to replicate flutter tonguing. The following answers were provided:

- “Students unable to roll "Rs" have the option of either using a valve tremolo (regular fingering vs. alternate fingering) or "growling" the note. These are the two strategies I use in my own playing, as I am unable to roll my "Rs.”
- “Press tongue to roof of mouth and blow hard.”
- “The same effect can be achieved by gargling into the horn while playing.”
- “only to try and do a throat "growl" to imitate a flutter tongue sound”
- “"glottal" flutter (back of tongue/palate)”
- “throat flutter”
- “I usually have two or three students a semester who are unable to do this. I will have them growl instead with the back of the tongue. This usually works. Often a very similar effect can be achieved by vocalizing indeterminate pitches. Throat Growling. I usually get them to make a "growl" sound in their throat which gives a reasonable approximation of fluttertonguing.”
- “see above”
- “Growl instead”
- “see above”
- “See 22”
- “Purr like a cat. And, (the old TV commercial) "RRRRRRRRuffles have RRRRRRRRidges." Just about any word with a pronounced "R" sound will work for this.”
- “Growling in the back of the throat.”
- “Utilization of alternate fingerings to create tremolo in lieu of flutter tongue.”
- “can be done in throat but not 1st choice”
- “I encourage my student to "growl" into the horn. It gives almost the same effect as flutter tonguing.”
- “I am also unable to roll my "Rs" so I get a flutter sound out of my throat (not with vocal chords but by constricting or flexing my tongue down in the throat to get a "purring" sound.”
- “using a throat growl”
- “A throat "growl" also works, but there is a danger of developing or exacerbating throat tension by using this technique.”
- “If a student can't roll the r's, I ask them to growl like they are gargling. Even this is difficult for some students.”
- “Make a growling noise, using an arched tongue, in the back of the mouth.”
- “growling, rapid tonguing”
- “Practice without the instrument, alternating single and flutter tonguing.”
- “Use the back of the tongue as an alternate.”
- “I suggest that they growl (non-pitched or loosely pitched) through the instrument or seek a valve tremolo if possible.”
- “Usually they will have to growl.”
- “I have known some professional players that cannot roll their "R's" that use more of a growl in the throat to produce the fluttertongue effect.”
- “Guttural growl...roll a back of the throat letter "G””
- “Growl”
- “If done well, growling can take the place in a pinch.”

- “First, we say it loudly with the uvula; then do it loudly in middle range on the horn.”
- “Some are able to growl into the instrument somewhat making a flutter effect.”
- “Imitation of a "rattle snake" sound. Transferring the "i" as in the word "hiss" to a "tu" sound.”
- “An alternative - "growl."”
- “Growling”
- “Some students have had success with a modified growl technique which roughly resembles the flutter tongue.”
- “same. Have them vocalize”
- “see above”
- “In some instances, particularly in a large ensemble, either a valve tremolo, trill will work in loud passages or double/triple tonguing (sometimes with half valves) will suffice particularly at soft dynamics.”
- “growl in the back of your throat and move the wind extremely rapidly!”
- “Have to use the throat version. I have them drink some water and gargle. I have found that if a student can't roll their "Rs" they can't really learn how to flutter. Has to be a growl.”
- “Place the tongue towards the front of the "upper palet" and relax. Now "Blow Air"!”
- “Sometimes growling or humming can produce a similar effect. This might be a solution for a passage that isn't playable by the student for a jazz band or similar ensemble.”
- “Have them approximate flutter by growling -- back of throat.”
- “A back-of-the-tongue placement (g-g-g-g-g) works for some.”
- “Try growling.”
- “If they cannot roll "Rs", they have to use a "growl" instead.”
- “Same as 22.”
- “Relax the tongue "into the roof of the mouth" and blowing an intense air stream... making the tongue rattle; the only other suggestion is to use a growl or guttural vocalization.”
- “in an ensemble situation, a "growl" will suffice”
- “Sometimes, the tremolo is the only thing that will work”
- “Growl, or use alternate fingerings on the same pitch”
- “See above.”
- “using the throat as a distortion to the sound”
- “Growling into the horn or some alternate fingerings can sometimes emulate the desired effect.”
- “I ask the students to experiment in the mirror with their mouth open to vibrate and/or roll the Uvula. Works great in the lower range of the trumpet, however in the upper registrar, top space G and above, this technique is more difficult due to the raising of the back of the tongue to aid in upper register performance.”
- “Use the French uvular "R" -- which becomes more like a growl.”
- “Vibrate the uvula to create a similar effect.”

- “See above. Can try throat growling, or persist with fluttertonguing - it can be done.”
- “Tongue growl (back of tongue)”
- “I teach them to "growl" if possible.”
- “Some can develop a glottal roll, others have to use valve tremolant.”
- “finding an alternate finger tremolo can create a similar effect to fluttertonguing.”
- “Valve tremolo”
- “see 22”
- “Learn to flutter with the back of the tongue, or growl.”
- “I am someone who cannot roll my "Rs", usually I'm relegated to growling or some other kind of vocal sound manipulation”
- “Some students simply can't flutter tongue. If repertoire requires it, I have them hum while they play.”
- “Play as if gargling”
- “see #22”
- “growling”
- “Develop a "growl" technique; that's what I use, as I can't roll my r's.”
- “gargling effect--not as elegant sounding as true flutter-tongue, but it will accomplish the task”
- “growl or sometimes tremolos will substitute”
- “Either do it with the glottis (gargle) or hum while playing...”
- “Growl”
- “Yes, if they are unable to get the flutter tongue happening they can try growling as a replacement. Growling is an important technique that was not included in this survey. It is also easier at softer volumes. If it is notated flutter but the conductor wants less volume you can try growling. To teach this technique, I have the students gargle with water and then try to learn to gargle without water. Throat must be relaxed. Then try on horn at all dynamic levels.”
- “use growl”
- “Not particularly. Sometimes the tongue is "tied" and fluttertonguing is limited to a certain range or loudness level.”
- “If it is impossible for a student to roll their "Rs", they may try pushing the back of their tongue against the roof of their mouth to produce a distortion sound that is not the same as flutter tonguing but will at least appear to sound like flutter tonguing when played with others who can produce the correct sound. It is a lot like playing with a synthesizer. A real trumpet performing with a synthesizer playing a trumpet stop will give the listener the perception of 2 trumpets playing.”
- “the "growl technique””
- “French or German "guttural R””
- “sing using a sustained ch syllable in the back of the throat. Singing will mimic their air flow while playing.”
- “Growl using their throat”
- “Growl using the back of the tongue or throat”

- “Schlossberg slow lip slurs with crescendos and fermatas very loud. This enables them to flow copious amounts of air and let the tongue/throat growl. Also, Arban multiple tongue section to develop control and response”
- “If a student cannot do a flutter, they need to develop the growl instead.”
- “false fingerings, tremolo on the same pitches”
- “Use a growl tone, coming from the back of the throat”
- “growling in the back of the mouth, in some cases very fast tremolo can be substituted”
- “Gurgling in the throat.”
- “Growling usually creates a suitable alternative”
- “see above #22”
- “Some sort of growl or doodle tongue. I have never been able to teach anyone to flutter tongue!”

**Respondents’ comments to the final survey question: “Do you believe that the study of extended techniques improves a player’s overall performing ability?”**

- “Frees them up as a player. Classical players tend to be very uptight about being perfect all the time. Contemporary techniques can give them flexibility in their playing.”
- “Many of the aforementioned extended techniques can be used to help students achieve different goals. Also, I am very hesitant to teach vocalizations, as it encourages students to close off their throat (by activating vocal cords) which in turn creates the habit of constricting the airway.”
- “Only to the extent that it develops their musical maturity - creates an interest in new music.”
- “Not trying to be glib, but the study of EVERYTHING improves one's "overall performing ability."”
- “Lip trills are related to lip slurs and the general strength and flexibility needed for all playing. Shakes and glissandi are used a lot in jazz playing, and both require the control and techniques useful in general playing.”
- “studying this music exposes the student to another facet of musical style and also seems to improve performance ability/ability to communicate with audience”
- “Absolutely. Even if most music doesn't call for it - I use most of the techniques mentioned above as learning tools in both jazz and classical. Lip trills help with flexibility as do pedal tones. I have also used these methods in teaching jazz improvisation for the students to think outside the box - such as taking out slides or playing into the piano or using microtones. I am not sure what you mean by reading multiple staves. I would like a further explanation of that. I would also like to know of other literature that is available.”
- “Tough question - depends on the student. Teaching extended techniques can be a means to an end to fix other problems. For instance, the student who is having trouble with lip slurs: teach them to bend pitches both up and down. I have had success in this helping them conceptualize what to do when slurring. Learning to

vocalize the syllables the student is using when articulating is very helpful in teaching consistency, multiple tonguing, lips slurs (tongue arch) and effecting expressive color changes”

- "I'm afraid I don't have much experience with many of the extended techniques listed in your study. I always try to answer a student's request to study an extended technique, but do not teach them or look for literature that uses these techniques. To be honest, I do not know any trumpet literature that uses these techniques in such a way that I would have to design or research the proper way to teach them or perform them, as I have never performed many of these techniques. The extended techniques I use in my trumpet studio include the history of the trumpet, including performance experience on the natural and Baroque trumpet and how that is applied to the modern piccolo trumpet, E-flat trumpet and C trumpet."
- “Many of the extended techniques you mention are used often in jazz performance. It's very appropriate for the student to be able to play classical and jazz styles in today's world.”
- "I believe that some extended techniques improve a player's overall flexibility and musicianship. Here are a few examples: I have written a set of exercises that incorporate lip trills into flow studies and scales that have been useful for me and for my students. Employing alternate fingerings makes the player conscious of the different timbres that can come out of the trumpet as well as subtle gradations of intonation. Flutter-tonguing can improve airflow and the embouchure responsiveness in multiple tonguing. Pedal tones improve air-flow and embouchure development and listening.”
- "Any progress you can make on something challenging on the trumpet helps you become a better player. Learning extended techniques makes you more familiar with how the trumpet works. It also allows you to relate better to other musicians. It is a creative outlet. It can take you out of your comfort zone. It can be a way to expose students to contemporary music."
- “Yes and no--it depends on what a person is working on. If they need to fluttertongue on a piece, for example, they had better work on it and/or find a way to produce that effect. Pedals, glissing and lip trills are part of normal technique--very necessary for any player in my opinion, so I don't consider them extended techniques. Learning to work out the logistical problems involving mutes is something I do work on--young players don't realize that the success of a given performance can hinge on this. I have had little use for microtones, percussion effects, removing slides, playing into the piano, etc. except on certain works--I just practice them as needed when they are part of the piece.”
- "In my own experience, I have encountered most, if not all of these techniques not in solo literature, but in contemporary ENSEMBLE literature. Many Wind Ensemble and orchestral compositions from the past 15 years or so contain many of these. I performed a world premiere of an opera by a Chinese composer two years ago called ""Poet Li Bai"" in which there were several sections for vocalizations. Many people have performed P.D. Q. Bach's ""Grand Serenade for an Awful Lot of Winds and Percussion"" - mouthpiece only"
- “They provide a wider musical awareness”

- “Extended techniques push our boundaries. By mastering these techniques we often improve our basic needs as a trumpet player. i.e. - Wind Speed, lip manipulation, tongue placement, pitch placement, etc. All of these aspects improve our playing ALL AROUND the instrument.”
- “Extended techniques usually presuppose an excellence of basic technique. Furthermore, they require mental flexibility and a more open attitude to the instrument that then enhance and inform the more fundamental studies.”
- “It allows for the performance of literature otherwise inaccessible”
- “we want to be limitless in our technique, and open to all forms of expression”
- “It expands the repertoire a player can program on recitals, and makes them attractive to programmers of new music.”
- "Some of the techniques (playing into the piano, pulling slides, etc...) don't help overall playing ability. Fluttertonguing, pedal tones, micro tones (with embouchure or with slides), glissandi, circular breathing, and of course lip trills/shakes all require a good embouchure and solid fundamentals to execute well. This reinforces good technique while expanding the tonal and textural palate that a student has to work with. If the goal is freedom of expression (and I hope that it is) then any professional performer should be able to use these techniques (or at least some of them) in a musical way."
- “I believe that if a student does not have a solid foundation that introducing these techniques could be very damaging to the students playing.”
- "It enables them to expand their knowledge, aural skills and ability which in turn will effect their overall ability.”
- “I say "yes" because it will allow them to play a wider variety of 20th (& 21st?) century music.”
- “I think it help with things like lip trills that are closely related to normal playing. As far as techniques not in normal use (microtones, etc.), undergraduates make better use of their time by focusing on the basics. Perhaps graduate students benefit because it stretches them as musicians, but I don't think these special effects are required to develop a great trumpet player.”
- “In my experience, the study of extended techniques makes players more flexible, at least psychologically, and frees them up to play in a more relaxed manner.”
- “They are important for jazz literature. All classical trumpeters need to know jazz techniques to be versatile and cope with orchestral pops concerts and occasional brass quintet pieces that use jazz techniques.”
- “Of course. The more competent the player, the more prepared they will be for future literature.”
- "Some techniques, such as fluttertonguing, pedal tones, removing slides (the Adam routine) and lip trills, aid in development of physical abilities. Others such as multiphonics finding resonant frequencies aid in ear training. Still others, such as using alternate fingerings or microtones, improve intonation and knowledge of the instrument itself. There's also some good work being done with resultant tones, including written literature, by people like Charlie Schleuter and Gerald Webster. I feel that this would also improve intonation and ensemble playing. "
- "These techniques help a player develop an individual voice, whether or not they see themselves as an improviser (but especially if they want to improvise-in or out



of the jazz tradition) There are so many "new music" pieces that use the techniques listed above and being able use these techniques make for a more flexible musician."

- "These techniques can help every student's performance ability. Each student should be aware of these techniques and use them when they see appropriate."
- "Yes, especially in modern solo techniques."
- "It adds to their ability to express themselves. They have more "arrows in the quiver" in which to perform more types of music. Items that involve embouchure strength and development have obvious concomitant benefits. They will then have a wider range of repertoire to look at."
- "Fluttertonguing opens up the sound by requiring more air and control. Pedal tones are great for extending the range up and down. Lip trills and glissandos are used in jazz works regularly. In general, if a student is able to master some of these extended techniques, it greatly increases the control that they have over the instrument. They are going beyond the limitations of the instrument to produce a particular sound that the music calls for."
- "Expands students awareness of the sound universe of the trumpet, and by extension, other instrument's extended techniques...this is a positive change for young players."
- "Yes, but the basic ability to play the trumpet must be mastered first. Bad technique should not be disguised with pieces requiring strange mutes, fluttertonguing or pulled slides."
- "Only in a few cases -- for instance, developing a good shake requires some embouchure development/technique. The same goes for glissandi, lip trills, pedal tones, and microtonal pitch bending."
- "Should the need arise, I find my students focus less on the difficult decorations and focus more on the actual piece of music"
- "In my opinion, one of the most important extended techniques is the ability to play pedal tones. Practicing these helps the student to utilize their airflow much more efficiently as well as focus on tone throughout the entire register of the instrument. Since these techniques do occur in literature it would only seem appropriate that a well rounded player be able to perform at least some of the techniques in order to be flexible and adaptable in ever changing performance situations."
- "I don't think it improves the player's ability, but it does expand their repertoire."
- "It is a technique that is often called for in orchestral and solo literature. If there is anything a student can't do, it limits their overall confidence in their abilities as players. Confidence begets Confidence, Success begets Success. You can't allow yourself to have any area in your playing that is a total weakness, something you can't do."
- "Forces the player to pay attention to the details of the music."
- "The benefit is mainly in the area of analyzing and solving problems generally, usually not so much the learning of any specific technique."
- "It certainly makes them more versatile, but most of the students I'm working with still need to cover more basic repertoire than that which utilizes extended techniques. In some cases, certain techniques strengthen an existing skill. For

instance, I feel that learning to flutter tongue helps a student relax and blow more freely.”

- “One must be able to perform any technique that a composer requests”
- “In my opinion anything that goes beyond the norm makes the norm more approachable. However, I believe it is important for players to have established sound fundamentals before they branch out to extended techniques, much the same as not asking someone who has never exercised to run a marathon tomorrow.”
- “Pedal tones, lip trills and shakes, alternate fingerings, and fluttertonguing are fairly regular aspects of trumpet playing. They are not only skills which help advance basic embouchure, strength, endurance, and rapid fingers, but are also required in many pieces now. For the versatile performer, one who plays in multiple styles of ensembles, these techniques are mandatory. My job as an undergraduate teacher is to prepare my students for all styles.”
- “Provides more versatility for playing all styles of music. Some techniques used in the jazz of the 1930's, 40's and 50's have been abandoned; students, therefore, do not have the techniques, styles etc. to perform these arrangements in the correct style. [Gliss, doit, fall, half-valve, shake (slow-fast), vibrato style (fast, slow, wide, etc.)]”
- “My primary job is as first trumpet in the Louisville Orchestra, an ensemble with a distinct history in contemporary techniques. To keep my job as well as the peace with my colleagues, I have to be at least competent at facing whatever comes my way. Much of what is happening today with composers in contemporary music is not rhythmic and/or melodic objectives but instead experimental orchestrational devices and colors beyond the norm/ often demanding and frustrating encounters.”
- "Especially with half-valve techniques, glissandos, shakes, lip trills/shakes, alternate fingerings, tremolos, mute manipulations and flutter tonguing, you must know how to do these to work in the classical genre: orchestras, brass quintets, and to play in a jazz band, so they improve your ability to do the job. Almost all of my teaching of these techniques, except for Flutter tonguing and Alternate fingerings, which are extremely necessary and useful to know how to do and be aware of, I have taught through the music that demanded it. Repertoire dictates the teaching of these techniques, and it needn't be solo rep. It hasn't necessarily been that, neither extensively or exclusively for my teaching and students. "
- “Flutter tonguing is a great way to teach the students to play with more air support and with less tension. Pedal tones not only serve as a healthy warm-up, but also alleviate tension and help center into the core of the trumpet sound. Half valves and glissandi make the trumpet really "sing" like an extension of the human voice.”
- “Extended techniques implies beyond just "working the horn". I believe they are helpful as a way to get past the instrument itself and past just blowing at the mouthpiece. These techniques also require musical thought and planning which requires my students to stop and think about what they are doing. Always a good thing.”

- “I can't think of any examples; however any exposure to these kinds of techniques will help the student to be more prepared, comfortable and confident to perform these techniques when the occasion arises.”
- “I believe that often most players don't focus enough on the basics and get side tracked with things that don't matter in the long run. Many of these techniques can be learned when needed. But, the positive aspect is that it gets the student to realize that the trumpet and music doesn't have to be done the same way all the time. Versatility is essential if students want to make a living as a player. Some skills like reading multiple staves are very useful when playing from a piano or keyboard part.”
- “At the undergraduate level there is (in my opinion) far too much mainstream/standard literature to cover to devote any meaningful time to the aforementioned extended techniques. If an individual student is so motivated to independently study any advanced technique or aspect of music or musicianship, it is indeed a positive step toward improving a player's overall performing ability. Some of the "extended" techniques you've mentioned (i.e. lip trills/shakes, flutter tongue and pedals are considered standard skills, (or routine practice in the case of pedals) for any commercial or jazz performer. The other skills are of such a highly specific nature, that they provide little, if any, practical musical or technical benefit for the majority of players.”
- “I think that it extends a player's thinking about sounds and the various roles they play in creating effects, musical and otherwise. However, the bulk of trumpet literature (non-jazz) can be performed without a great deal of knowledge about extended techniques.”
- "Not only are expressive boundaries challenged, which can be transferred to conventional music; but overall trumpet playing is improved: -Pitch bends and pedals improve flexibility, resonance, and strength. -Multiphonics, quarter tones, and vocalizations improve the ear and refine embouchure control. -Time coordination and awareness improve with media collaboration. - Creative/interpretive ability improves through exploration of extended techniques. Flutter/growl improves air flow, resonance, and flexibility."
- “I think it adds to an overall confidence in one's playing ability. The idea that the student will be able to tackle whatever new music they confront.”
- "The study of lip trills and glissandos is a must in my opinion. Both these techniques help encourage and maintain flexibility. Glissandos encourage smooth blowing and help students avoid the tendency to use a separate effort for every note. Pedal tones also have many uses and benefits. The embouchure used to form them also is used in the high register, and playing pedal tones correctly encourages good blowing, the feel of ""one embouchure"" for low, high, and middle register, and can be very therapeutic after demanding playing. All the techniques you have listed make us more versatile and free as trumpet players; I believe lip trills, glissandos and pedal tones are the most useful."
- “It extends their expressive palette”
- “by the time they are doing it they are looking to increase their musical horizons”
- “Fluttertonguing (especially while slurring) is helpful in encouraging a steady air flow.”

- "Being able to perform ""outside the box"" techniques is important to develop as a musician and an artist. However, there are situations where some trumpet students (especially non-majors, or high school students who have no interest in a career in music) are fine to not learn extended techniques. It is worth pointing out that several of the ""extended techniques"" listed above are not things I would consider ""extended"". I would argue that techniques like: shake/lip trill, half-valve/glissando and fluttertongue, are all common ""normal"" techniques for jazz trumpeters. You simply can't survive as a serious jazz trumpeter without knowing at least those techniques...they are like trills and slurs for classical trumpeters: essential skills all jazz trumpeters must know."
- "I view extended techniques as advanced elements that I approach with students only when the repertoire calls for it. I do not consider them parts of essential training. Some, like flutter tonguing, trilling, etc., are introduced through core etude repertoire like Charlier and others. Other techniques, perhaps more advanced or unusual, are part of the performance repertoire of advanced players. The pedal register helps simulate the air flow for the upper register. Exercises like Stamp that enter and exit the pedals without an embouchure shift promote flexibility of the embouchure."
- "Can't hurt to be willing to take chances playing the instrument"
- "Lip trills require a balanced embouchure and air column and demonstrate fluid technique and flexibility. Pedal Tones, performed with the embouchure intact and properly set, while moving into the upper register from the pedal range, helps to ensure a properly focused buzz and a balance of lip compression and air flow. Pitch Bending helps to focus the lip buzz in the center of the pitch and gives cues to the player for establishing the proper compression needed for efficient playing."
- "All orchestral and solo brass literature contain "modern" techniques that must be learned. As the world shrinks in musical size, half tones, semi toned literature from the Middle East is becoming more prevalent. It fine tunes our ears to hear microtones and perform them."
- "Vizzutti books"
- "It will improve their ability to perform the piece that contains the techniques, in which case they will improve through their own discovery. It will not improve the players overall ability. As a matter of Fact, it will actually hinder their abilities as a trumpet player if overused and over-practiced."
- "Makes more literature available"
- "Opens the students, performers and audiences to great sonorities of music. Everyone wins!!!"
- "Some extended techniques such as glissandi, lip trills, and alternate fingerings are utilized frequently in jazz; both in the literature and when soloing. In addition to providing the performer with more tools to express themselves, the practice of many of these techniques serves to increase flexibility and endurance."
- "Most of my own background in extended techniques has been either the use of said techniques in a jazz context to imitate the inflection of the blues voice, or using extended techniques as a tool to improving one's approach to the horn. For example, the use of fluttertonguing at softer dynamics to learn relaxation and flow

(efficient wind); the use of note bends and pedal tones to increase command of intonation, or teaching a more efficient embouchure set that allow the wind to lead in the playing, or training a more proactive mental approach in the player's relationship to the horn (rather than the reactive "blow, then analyze"), or learning to hear and feel different "centers" or "slots" on the instrument. Free improvisation incorporating extended techniques has also been an excellent way for helping myself and students to get into a singing mindset. My own background has involved very little performance of extended techniques in "contemporary music," outside of jazz."

- "Yes, giving them the flexibility to play anything given to them, and it also helps strengthen their embouchure, and their musical concepts. Not necessarily."
- "Anything that a performer has available can be useful."
- "It allows a wider range of repertoire to be performed."
- "The use of many of these techniques helps correct problems in basic tone production and in development of techniques to make them a marketable musician. It's nearly impossible to do a shake with too much mouthpiece pressure - microtones make them more intimately aware of tuning issues - multiphonics I covered above - alternate fingers can help in awkward passages and with tuning issues - you have to get used to fast mute changes to play shows."
- "It makes you that much more of a "complete" player and also keeps your mind open to new ideas."
- "lip trills are actually essential"
- "This study helps to broaden the students' abilities in general."
- "Anything that makes the student focus on music rather than mere technical trumpet playing is good for them as musicians. I really enjoy pursuing extended techniques (both in my own performance and with my students) and new music for this reason (among many others)."
- "Yes. Playing "outside" helps one better appreciate what makes up playing "inside". Controlling microtones can help a player to sound like playing on a "natural" trumpet. Playing in odd meters or in non-standard notational or instrumental configurations can help a player realize how the standard literature is not that difficult, that it presents challenges that can be systematically surmounted."
- "I don't teach extended techniques for the purpose of their use in specific repertoire. Rather I use many extended techniques to help develop a player's fundamentals. Examples: Flutter tonguing helps a student move the air more consistently. Lip trills strengthen the embouchure and help with flexibility. Alternate fingerings help the student play better in tune. Microtones (lip bends) help with control and centering. Playing with the slide removed strengthens resolve to concentrate on the melody. Pedal tones improve the tone, low register and embouchure strength."
- "Only some do - flutter tonguing, lip trills"
- "I think certain extended techniques are worthy of study. I think the fluttertonguing, pedal tones, half valve/glissando, and lip trills/shakes are the most important especially to the jazz/commercial trumpet player. I can't think of any Broadway show book that doesn't include these techniques. Also most lead

trumpet charts have shakes as a major part of the arrangement. Pedal tones are great for warm ups and also for strengthening the upper register. The air needed to perform pedal tones directly affects the ability to play in the upper register. Also, they are great for loosening up stiff chops.”

- “Many of them force a student to hear better and listen more closely--that will always help any musician. Shaking and lip trilling is done most successfully when the player is relaxed--learning to play more relaxed contributes to the overall sound and longevity of the players career. Learning any of the techniques affords a young player a wider, more diverse pallet from which to create music and sustain a career.”
- “Assuming that they have a good grasp of the most basic fundamentals of the instrument, then yes, I believe that many of these techniques broaden a performers musical palette.”
- “Overall I believe it opens your mind to new possibilities which is the primary step to evolution. We are far from realizing all the possibilities of our instrument, but extended techniques are constantly helping us to further its limitations.”
- “The ability to properly execute the shake, gliss, fall, doit and many times flutter tongue is very necessary to earn a living as a professional trumpet player.”
- “Developing any skill on the instrument helps the overall abilities of anyone on any instrument...”
- "It's not so much a matter of improving their performing ability as it is expanding the repertoire possibilities for them. It acquaints them with a segment of the repertoire which they otherwise would never explore. Some of the effects, such as pedal tones and flutter tongue, have good pedagogical applications as well."
- "Extended techniques are great for getting students to focus on the actual sound that is coming out of the bell, and not to be satisfied with simply playing the right notes. I do not consider the lip trill an extended technique but rather a basic technique that predates the valve--one could argue that the use of a valve is more of an extended technique than the lip trill--therefore, while I consider the study of lip trills to be basic to playing the instrument, I don't consider their study to be an example of studying extended techniques to improve on the instrument."
- “Sure - Any technique that expands their possibilities for repertoire is a good thing! It also helps them see the instrument as a tool as a means of expression, and may even loosen them up a bit.”
- “Makes the student more well-rounded as a performer and as a listener.”
- “Certain techniques are required for common performance. Some of the more obscure ones seem silly to me. I tend to teach them as the opportunity presents itself. I answered High School to many of the questions regarding when to start teaching these techniques. I believe many of them are needed in Junior High School.”
- “Only to the extent that pedal tones, lip (tongue) trills, 1/2-valves and so on develop the player's range of styles and overall "blowing" ability and the extent to which micro-tones, multiphonics, and playing into the piano develop the ear.”
- “Yes, only after they have attained good performance skills with traditional techniques.”

- “Perhaps. Certainly can open them up to more repertoire and performance opportunities.”
- “Provides more repertoire choices”
- “the study of extended techniques opens ones mind and encourages musical and technical flexibility”
- “Flutter tonguing helps with teaching the student the benefit of both relaxing their tongue and moving much more air through the instrument. Pedals are wonderful for embouchure development and sound production.”
- “I am speaking from a jazz musician's point of view so all of these techniques can be very useful in a player's expressions and improvisations. Some are of more interest to me than others, but they are all very valid techniques. I try to have my students be as "compositional" in their improvisations as possible, and that would certainly involve these techniques. For a jazz artist the challenges lie not only in learning how to use these techniques effectively, efficiently, and musically, they must also learn to judge for themselves what defines that fine line between "artistry" and "gimmickry.””
- “Expands solo literature and musical knowledge making the student a more flexible, knowledgeable and interesting musician”
- “It depends on the type of music or style of music that is to be performed. In jazz music, some of these are necessary. Some of these techniques are good if the student has mastered the fundamentals of good sound, range, musical expression and playing knowledge of major compositions for the instrument. Then to explore new expressions of interpretation in 20th & 21st century music is ok.”
- “I believe it makes the student more versed in styles and colors of sounds, and this can help the playing in all areas.”
- “Everything that expands your perspective makes you a better musician”
- “I think anything that deepens your understanding of the acoustics of the instrument is helpful. You can find many solutions to other technical problems through studying extended techniques. This is not to mention that by eschewing the development of extended techniques, the player has isolated themselves from an entire style of music and ignores an essential part of a comprehensive vocabulary of style.”
- “if you push the envelope then when you come back to the regular playing it can be easier”
- "Some things like shakes, lip trills, pedal tones may be of some general help but most of the others do little to improve trumpet playing in general. In fact, some probably do more harm than good. Sore throats, wasted chops, etc. For those students really interested in the contemporary literature learning these techniques are absolutely necessary and it is an important part of our rep. However I don't believe in forcing it on anyone who doesn't have the desire."

## **APPENDIX D**

### **A GUIDED APPROACH TO THE LITERATURE**

Profiles of Each of the Twenty Chosen Pieces  
Detailing Extended Techniques



## **Guided Approach to the Literature**

One of the original goals of this project was to develop a guide to trumpet music involving extended techniques that could be used as an educational tool, i.e., to take into consideration the younger student who had not yet been exposed to these techniques and the teachers searching for appropriate ways to introduce them. Pieces employing extended techniques are attempted less frequently than traditional literature, in part due to their difficulty. This has led to late (or no) exposure to certain extended techniques. In some cases, the level of difficulty in these pieces can be attributed to the challenge of the actual technique being employed (multiphonics); sometimes it is the combination of large numbers of techniques seen in one piece; and sometimes it is not the techniques that are being avoided, rather the advanced trumpet skills (range and endurance) for which a student might not be ready.

Regardless of the specific reason, the advanced level of many of these compositions holds them beyond the reach of younger students, leading to the unintentional avoidance of some extended techniques. This Guided Approach has been designed to introduce extended techniques and provide specific literature examples that allow their study in a progressive manner.

The twenty pieces were selected to provide examples of many of the techniques explored in the survey. No composer has more than one piece on the list and efforts were made to include recent compositions in addition to literature standards. The majority of the pieces had been selected prior to completion of the survey. The results of the survey, however, did affect the list: respondents' repeated comments indicating an interest in trumpet and electronics led to the inclusion of a more recent composition for trumpet and

tape,<sup>1</sup> and the number of literature suggestions involving pieces with flutter tonguing as the only extended technique helped to influence the choice for the first piece on the list.<sup>2</sup>

The twenty pieces selected have been grouped into four categories of increasing difficulty levels for easy reference: High School, Undergraduate, Graduate, and Professional. Each piece is represented by a profile which documents practical information regarding the piece: date, publication information, equipment requirements, listing of all extended techniques employed, existing recordings, etc.; and a commentary concerning its particular challenges and benefits of study. In many cases, the challenges and benefits derive from the same musical elements as it is useful to study things one cannot already do. It is hoped that this Guide may be helpful to teachers and students alike as they approach this challenging and rewarding aspect of trumpet playing.

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<sup>1</sup> Park, *tl*

<sup>2</sup> Tull, *Eight Profiles* was presented first because of its unique interchanging of valve tremolo and fluttersong techniques.

## Twenty Selected Pieces by Category

### High School

Fisher Tull, *Eight Profiles*

Steven Winick, *Equinoctial Points*

### Undergraduate

Dana Wilson, *Masks*

Robert Suderburg, *Chamber Music VII*

Tae Hong Park, *t1*

Donald Erb, *Diversion for Two (Trumpet in B-flat and Percussion)*

Stanley Friedman, *Solus*

Robert Henderson, *Variation Movements 1967*

### Graduate

Morgan Powell, *Alone*

William Kraft, *Encounters III: Duel for Trumpet and Percussion*

Rex Richardson, *Three Etudes for Solo Trumpet*

Frank Campo, *Times, Op. 39*

Richard Moryl, *Salvos*

Hans Werner Henze, *Sonatina*

Charles Whittenberg, *Polyphony*

### Advanced/Professional

Robert Erickson, *Kryl*

HK Gruber, *Exposed Throat*

André Jolivet, *Heptade pour trompette et percussion*

Luciano Berio, *Sequenza X*

Frank Ticheli, *The First Voice*

***Eight Profiles for Solo Trumpet***  
**Fisher Tull**  
**1978**  
**Category 1 –High School (advanced)**

<b>Publication date:</b>	1980
<b>Published by:</b>	Boosey and Hawkes, Inc.
<b>Written for:</b>	dedicated to eight of Tull's trumpet-playing colleagues at the University of North Texas
<b>Length:</b>	20 minutes; each profile is approximately 3 minutes
<b>Range:</b>	f-sharp to d'''
<b>Notation used:</b>	traditional
<b>Equipment:</b>	no specific trumpet designated; one muted movement, marked as optional

Tull's unaccompanied *Profiles* present a wonderful opportunity for a young student just beginning to explore extended techniques. The only techniques used in this composition are valve tremolo and flutter tonguing. Tull has written them interchangeably to allow the student multiple paths to a successful musical performance. In the second movement of the sixth profile (*VI. to D.O.*) Tull writes for flutter tonguing exclusively; every other application allows the performer to choose between the flutter or valve tremolo. Flutter tonguing is notated by three slashes on the note stem with "opt. flutter" printed above note. Valve combinations are also provided for the student choosing to substitute the valve tremolo.

Additional elements of the composition that make it appropriate for the earliest category of this study are: the shorter lengths of each movement are appropriate for those with shorter endurance spans; the range of the movements (although the piece does include a d''', the tessitura stays in a comfortable range which motivated young students can access with little difficulty); and the standard notation is familiar to the newcomer to extended techniques. *Eight Profiles* provides an accessible introduction to advanced

musical elements such as mixed meter rhythms, angular melodies, and twentieth century harmonies.

Extended techniques employed: flutter tonguing, valve tremolo. Repeatedly throughout the composition, Tull allows for an optional flutter but also provides appropriate fingerings for valve tremolo use.

Performance Instructions: No

Recordings:

Anthony Plog, *Anthony Plog, Trumpet*, Crystal Records, CD 663 (two movements only), (1997)

Kevin Cobb, *One*, Summit Records, DCD 401 (2004)

John Holt, *UNconventional Trumpet*, Crystal Records, CD 763 (2004)

***Equinoctial Points***  
**Steven Winick**  
**1970**  
**Category 1 –High School (advanced)**

**Publication date:** 1970  
**Published by:** Autograph Editions New York  
**Length:** 3 minutes  
**Range:** c (optional ad lib.) g-sharp to b-flat"  
**Notation used:** traditional  
**Equipment:** B-flat trumpet, Harmon mute with shank

The challenges in Winick's short work for unaccompanied trumpet expand upon the skills required in Tull's piece by adding the technique of mute manipulation.

Throughout the middle section of the piece the performer is instructed to play a number of passages while adjusting the harmon mute from an open to a closed position in a gradual manner. The musical passages affected by this mute movement are quite active and challenge the performer to coordinate right and left hand tasks.

Two occurrences of flutter tonguing are seen: one in the staff and followed by a large upward leap at an increasing dynamic (this range and dynamic written by Winick are helpful elements for early study of flutter tonguing); and the second when the student is required to play d-sharp' and decrescendo from forte to pianissimo. One instance of valve tremolo occurs at the end of the piece, causing little difficulty.

Aspects of this composition that make it appropriate for advanced high school/undergraduate students are the shorter length of the piece and a very accessible range (the majority of the piece stays in the staff). The outer range requirements are g-sharp to b-flat" although the piece does include an optional c, offering an opportunity to perform pedal tones. *Equinoctial Points* provides an introduction to mute manipulation,

requires more confidence with the skill of flutter tonguing, and permits the possibility of pedal tone performance. It also introduces musical “events” (found in the passages involving mute use) as separate from traditional melodic material, paving the way for the study of more advanced twentieth century compositions.

Extended techniques employed: flutter tonguing (only two notes), valve tremolo, open and closed harmon mute alternation.

Performance Instructions: Yes. Winick writes at the end of the piece:  
“This composition is based on the combination of a twelve-tone set and references to *We Shall Overcome*, the unofficial hymn of the civil rights movement.”

***Masks***  
**Dana Wilson**  
**2001**  
**Category 2 – Undergraduate**

**Publication date:** 2003  
**Published by:** Boosey and Hawkes  
**Length:** 12 minutes and 20 seconds  
**Range:** f-sharp to d<sup>'''</sup>  
**Notation used:** traditional  
**Equipment:** C trumpet, plunger mute, Harmon mute, stem out and in

Wilson's work for trumpet and piano is an excellent introduction to various mutes and muting techniques. It is placed in this category and considered appropriate for undergraduate study because of the tessitura of the piece (with the exception of the ending of movements I and III, the range involved is mostly in or below the staff), the programmatic elements that encourage the performer to convey the specific intent of the piece, and the previously mentioned mute use. The second movement is a very accessible, beautiful ballad ideal for any student's demonstration of musical expression.

The student should be comfortable with flutter tonguing and half-valve techniques before beginning work on this piece and have a great deal of rhythmic integrity: the first movement requires a strong sense of independence to align with the piano. The third movement presents the biggest challenge with its quickly contrasting hocket between the open and closed plunger mute lines. The half-valve two-octave glissando at the end of the piece will require attention to master.

*Masks* was the winner of the 2001 International Trumpet Guild Composition Competition and was premiered at the 2001 ITG Conference in celebration of that honor.



Extended techniques employed: flutter tonguing, hand muting, gestural growl effects, glissandi, half valve techniques, mute manipulations, lip glissandi.

Performance Instructions: Yes. Wilson writes both program notes and performance notes at the beginning of the piece. Specific instructions for the tuning of the piano are given, as well as information relevant to the timing of certain passages.

Recordings:

Rex Richardson, *Masks: New Virtuoso Music by American Composers*, Summit Records, DCD 423, (2005)

James Thompson, *An American Portrait*, International Trumpet Guild, CD 112, (2003)

***Chamber Music VII***  
**Robert Suderburg**  
**1984**  
**Category 2 –Undergraduate**

**Publication date:** 1984  
**Published by:** Theodore Presser  
**Written for:** commissioned by the International Trumpet Guild  
**Length:** 16 minutes  
**Range:** g to c"  
**Notation used:** traditional  
**Equipment:** C trumpet

Suderburg's work for trumpet and piano requires no experience with extended techniques from the student, and introduces the use of means of extension in an accessible manner. The passages written to be played into the piano are melodic and do not require the quick back and forth movement associated with other examples of this technique. The use of the C trumpet and the suggested use of E-flat trumpet in the second movement make this more appropriate for an advanced undergraduate who has experience with these instruments, but the actual range of the trumpet part is not prohibitive. Musical and trumpet skills needed for the piece demand that the student be comfortable with triple tonguing (third movement), and mixed meter (first movement).

Aspects of this composition that make it appropriate for undergraduate students are: the introduction to the concept of means of extension and emphasis on resonance and effect. This piece focuses solely on the vibration of the trumpet and its ability to cause reactions outside of the instrument; no alterations are made to the trumpet sound and no other extended techniques are required. Suderburg writes in an accessible range although the length of some of the passages in the second and third movements may challenge the

student's endurance. This is a musically rewarding introduction to the exploration of external sound sources and is appropriate for someone who may already have an interest in the possibilities of sound manipulation through electronics.

Extended techniques employed: playing into the strings of the piano and using this means of extension.

Performance Instructions: Yes. Suderburg provides brief performance instructions detailing the direction of the trumpet bell in relation to the piano strings. The more delicate second movement includes instructions regarding valve combinations and desired overtone series in combination with the echo-adjustment of the piano reverberation. The piano part receives more detailed performance instructions.

Recordings:

Terry Everson, *Trumpet Works of Maxwell Davies Suderburg Henderson Castrede Tull Copland*, ITG CD 001 (1991)

Charles Schlueter, *Trumpet Works*, Kleos Classics, KL 5126 (2003)

Michael Tunnell, *Mixed Doubles*, Coronet Records LPS 3210

*t1*  
**Tae Hong Park**  
**2001**  
**Category 2 – Undergraduate**

**Publication date:** currently unpublished  
**Length:** 7 minutes and 30 seconds  
**Range:** F (even lower through use of lip bending microtones) to b-flat"  
**Notation used:** traditional  
**Equipment:** C trumpet, cup mute, tape and necessary sound equipment

Park's work for trumpet and tape is an excellent introduction to performing with electronic accompaniment. The piece works nicely for an undergraduate student who has already been exposed to most of the extended techniques involved. The student should be comfortable with flutter tonguing, valve tremolo and mute alternations before beginning work on this piece. The more difficult techniques for the younger student to master include tongue stops, slide glissandi, and half-valve. The additional challenge of rhythmic coordination should be considered as the tape will be an unforgiving accompanist.

Aspects of this composition that make it appropriate for undergraduate students are a very accessible range (although pedal notes are explored, the upper limits are manageable to most college students), an emphasis on descending half-steps and the presence of melodic patterns easier to grasp than more angular twenty-first century compositions, and the exploration of sounds created by the trumpet. Use of the tape - created solely of electronically manipulated trumpet sounds - encourages students to be open to the effects they can make especially in the use of microtones and the wailing seen near the end.

Extended techniques employed: open and closed alternations of cup mute, alternate fingering indications for valve tremolo, slide glissandi, flutter tonguing, half-valve, microtones via alternate fingerings, tongue stops, blowing/breathing, vibrato variances, kisses.

Performance Instructions: Yes. Although currently in its unpublished state, Park makes detailed notational explanations via a chart provided before the start of the piece. Park suggests the use of a click track during performance and indicates sections that are open for improvisation. Special notation signs which are explained include: the use of blowing/breathing techniques, micro-tones, micro-tonal shifts, open and closed mute positions.

From the composer: All of the sounds in the tape part and the recording are trumpet sounds. Some have been modulated, altered, and some just juxtaposed but they all originate from the trumpet instrument. Yes, there are tongue stops, and "hand stops" (using the palm of your hand for tapping) etc.<sup>3</sup>

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<sup>3</sup> Park, Tae Hong email to author, March 7, 2009.

***Diversion for Two (Trumpet in B-flat and Percussion)***

**Donald Erb**

**1972**

**Category 2 –Undergraduate (advanced)**

**Publication date:** 1972  
**Published by:** Merion Music, Inc.  
**Length:** 6 minutes and 30 seconds  
**Range:** d' to e-flat"  
**Notation used:** traditional and proportional  
**Equipment:** B-flat trumpet, Harmon mute, Stoneline Derby hat

Erb's work for trumpet and percussion provides an interesting opportunity to explore percussive sounds generated by the trumpet. It is placed here in the undergraduate category because the large number of extended techniques involved makes it appropriate for an older undergraduate student. Performers will be challenged to create a plethora of sounds on the instrument, mimicking the possibilities available to the percussionist. A student should have a thorough understanding of the percussive effects produced by the trumpet and experience with half-valve techniques before beginning work on this piece. Of the lip generated sounds, the shakes may be the most challenging.

The opportunity to collaborate with a non-brass musician and non-pianist on a challenging piece is a must for collegiate study. Erb's composition presents such an opportunity and challenges the trumpeter to explore the percussive effects available on the trumpet and communicate with them effectively.

Extended techniques employed: flutter tonguing, air hiss through reversed mouthpiece, doink, shake, lip trill, quarter tones, glissando, smacking sound into trumpet, hand muting, half-valving, half-valve glissando, removal of valve slides, reverse mouthpiece (put cup against tube opening).

Performance Instructions: Composer notes, “The trumpet and percussionist should play from this score.”

Recordings:

Edward Sandor, *The Art of Trumpet and Percussion*, Aca Digital, CD20042 (1998)

Roger Murtha, *Diversion for Two*, Opus One #1 (1966)

***Solus***  
**Stanley Friedman**  
**1975**

**Category 2 – Undergraduate (advanced)**

<b>Publication date:</b>	1978
<b>Published by:</b>	Brass Press
<b>Written for:</b>	dedicated to Sidney Mear
<b>Length:</b>	12 minutes
<b>Range:</b>	B-flat to d-flat <sup>♯</sup>
<b>Notation used:</b>	traditional, proportional, and graphic
<b>Equipment:</b>	C trumpet, Harmon mute w/stem, straight mute

Friedman's work for trumpet unaccompanied is by far the work referenced most by survey respondents and a tour de force of extended techniques. It is placed here in the undergraduate category because its challenges are presented in a manageable format and it involves skills that are appropriately explored at this stage of a student's career.

Students should be prepared to create a wide variety of sounds: using the slide removal effect, the slide glissandi and the scream as well as others. Good flexibility is also required.

Aspects of this composition that make it appropriate for undergraduate students are the accessible range (the highest pitch is d-flat<sup>♯</sup> used in one isolated instance; most of the piece, including almost all of the third movement, is written in or below the staff), the helpful explanations and notations provided by Friedman with regard to the scream, the valve slide removal and the slide glissandi, and the standard four-movement symphonic format (with references to waltzing in the third movement and fanfares in the fourth movement) which aids the player in relating to the piece. The lyricism of the first movement and the mixed meter passages and short improvisatory sections found in the



third movement offer the student a chance to explore extended techniques and advanced playing styles in a melodically engaging composition.

Extended techniques employed: alternate fingerings, flutter tonguing, tremolos, trills, microtonal slide glissandi and slide removals, open to closed mute stem alternations, lip shakes, improvisation, vocalizations, doodle tonguing.

Performance Instructions: Yes. Friedman provides extensive performance instructions that assist with the more difficult extended techniques, such as slide glissandi and open-tubing techniques.

Recordings:

Ole Edvard Antonsen, *Ole Edvard Antonsen, Einar Henning Smebye*, Simax, CD1041, (1989)

Stanley Friedman, *The Lyric Trumpet*, ODE 1327

***Variation Movements 1967***  
**Robert Henderson**  
**1967**  
**Category 2 –Undergraduate (advanced)**

**Publication date:** 1968  
**Published by:** assigned to Avant Music, 1971  
**Written for:** originally composed in 1964, revised in 1967 for an impending recording by Thomas Stevens  
**Length:** 8 minutes  
**Range:** g-sharp to d-flat<sup>♭</sup> (optional e-flat<sup>♭</sup>)  
**Notation used:** traditional, use of multiple staves in fifth movement  
**Equipment:** trumpet specification not given, straight mute, Harmon mute

Henderson's work for solo trumpet is a collection of contrasting movements of varying difficulty levels. Taken as a whole, the piece is most appropriate for advanced undergraduate students due to the angular melodies, challenging intervals, and rapid tempo and register changes. *Variation Movements* is a great introduction to the concept of multiple voices played by one performer, as the last movement is written on three staves challenging the player to fit these parts together seamlessly. The only extended techniques used here are multiple staff notation and flutter tonguing (which in the last movement is difficult due to its use on short eighth notes).

The student should have good control of flutter tonguing before beginning work on this piece and well developed agility. Range requirements should not be taxing for an undergraduate student, with c<sup>♯</sup> and d-flat<sup>♭</sup> present infrequently and an optional e-flat<sup>♭</sup> notated. Challenges include the rapid shifting of dynamic levels in movements two, three, and five, and the frequent use of fourths, fifths and sixths throughout the piece. The second and fifth movements require the most attention due to the hocket between the upper and lower voices. Individual movements of the piece could be introduced at earlier

levels as beneficial study materials. The first, third, and fourth movements allow study of mixed meters and dynamic contrasts without the hocket element and would be appropriate for younger undergraduate students.

Extended techniques employed: Reading multiple staves of music (only in the fifth movement), flutter tonguing.

Performance Instructions: No

Recordings:

Thomas Stevens, *Thomas Stevens, Trumpet*, Crystal Records, CD667, (1989)

Terry Everson, *Trumpet Works of Maxwell Davies Suderburg Henderson Castereade Tull Copland*, ITG, CD 001, (1991)

Håkan Hardenberger, *Exposed Throat*, BIS-CD- 1281

*Alone*  
**Morgan Powell**  
**1973**  
**Category 3 –Graduate**

**Publication date:** 1974  
**Published by:** Brass Music, Ltd.  
**Written for:** commissioned by James Darling  
**Length:** 6 minutes  
**Range:** g to e-flat"  
**Notation used:** traditional, proportional, graphic, and frame  
**Equipment:** B-flat trumpet<sup>4</sup>, straight mute, hat mute, plunger

Powell's work for solo trumpet is a serial composition involving wide intervals and difficult rhythms. It is placed here in the graduate category because of these challenges as well as the use of multiphonics, vibrato variances, and mute manipulations. Elements presenting difficulty include the rips used in ascending and descending passages and the vibrato variances written well above the staff.

Accommodating elements of the piece include the pauses written into the score and the compositional style of the one multiphonic passage (which allows the voice to take over from the played pitch and remains steady on the interval of a sixth). Powell also does not make any indication of an expected resultant tone during the multiphonic. There is also a brief 20-second improvisatory passage on the first page incorporating a three-note cell.

Extended techniques employed: vibrato variances, tremolo, glissandi, open and closed alternations of plunger, improvisatory passages, multiphonics.

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<sup>4</sup> Paul Bradley Ulrich, "An Annotated Bibliography of Unaccompanied Trumpet Solos Published In America." (D.M.A. Dissertation, University of Illinois, 1989), p. 117.

Performance Instructions: Yes. Powell includes a brief section entitled “Notes,” at the end of the piece used to clarify his notations. His last statement in this section is: “UNLESS OTHERWISE INDICATED, USE NO VIBRATO.” There are also written instructions included in the piece where appropriate, specifically at the end in regard to multiphonics.

Recordings:

Ray Sasaki, *foray froMorgan: The Beastly Beatitudes*, Einstein Records EIN 009 (1995)

*Encounters III Duel for Trumpet and Percussion*

William Kraft

1973

Category 3 –Graduate

<b>Publication date:</b>	1973
<b>Published by:</b>	Avant Music
<b>Written for:</b>	commissioned by Thomas Stevens; dedicated to Thomas Stevens and Mitchell Peters
<b>Length:</b>	15 minutes and 30 seconds
<b>Range:</b>	e (with instructions to pull tuning slide and extend 3 <sup>rd</sup> valve slide and finger 1-2-3) to c <sup>'''</sup> (with indication at one point to play “highest note possible”)
<b>Notation used:</b>	traditional; pictorial notation used for improvisatory events; random dots used for events involving random chance music
<b>Equipment:</b>	C trumpet for movements 1 and 3, B-flat trumpet for movement 2, metal straight mute, Robinson mute, cup mute, Harmon mute, hat

Kraft’s work for trumpet and percussion is a programmatic piece which involves the trumpet as one of two combatants in musical warfare. Like Erb’s *Diversion for Two*, the large number of extended techniques used makes this piece more appropriate for graduate study. The interest here is placed more on harmonic elements and timbral effects, with extended sections of the percussion part played on mallet instruments offering support to the quarter-tone and slide glissandi exploration of the trumpet part. The performance of doodle tonguing, as well as the use of directional changes, improvisatory passages, chance music and simple slide removal are also included in Kraft’s piece. Performers will be challenged to interact with the percussionist in the battle depicted by Kraft.

Extended techniques employed: flutter tonguing, air flutter, vibrato variances, as high as possible, improvisatory passages, slide extension, lip trill, quarter tones, glissando, flipping a valve, directional changes, half-valving, splat, removal of tuning slide, rips, softly tongued 8ths in the style of Dizzy Gillespie (doodle).

Performance Instructions: Detailed instructions regarding placement of musicians on stage. Extensive notes for percussionist. Large amount of text used in the piece itself to provide instruction – full text used more frequently than any type of symbolism.

Recordings:

Thomas Stevens, *Thomas Stevens, Trumpet*, Crystal Records, CD667, (1989)

Edward Sandor, *The Art of Trumpet and Percussion*, Aca Digital, CD20042, (1998)

## *Three Etudes for Solo Trumpet*

**Rex Richardson**

**2000**

**Category 3 –Graduate**

<b>Publication date:</b>	currently unpublished
<b>Published by:</b>	to be released as a part of the author's contribution to a trumpet method book published by Carl Fischer
<b>Length:</b>	9 minutes and 35 seconds
<b>Range:</b>	f-sharp to f-sharp" <sup>5</sup>
<b>Notation used:</b>	traditional
<b>Equipment:</b>	B-flat trumpet, Harmon mute, plunger mute

Richardson's work for solo trumpet is one of the more recent pieces in the Guided Approach and reflects the composer's personal interest in multiphonics.<sup>5</sup> It is placed here in the graduate category because of the challenge Richardson's multiphonics provide. Despite the harmonic complexity involved, the range employed by Richardson for multiphonic passages is approachable by almost all students. He focuses on intervals of fourths, fifths and sixths, which are some of the easier intervals to perform; however, his use of collapsing and expanding intervals where the sung and played parts move in opposite directions may be difficult for someone with little experience in multiphonics. The biggest challenges to a student performing this piece will be the trumpet range required in the first movement, (three octaves are covered from f-sharp to f-sharp"), endurance, and the possible first encounter with multiphonics. The plunger mute techniques written in the third movement will require diligent work to be performed at the desired tempo. The middle movement, titled *Farben*, will be helpful in the

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<sup>5</sup> Richardson has performed multiphonics in pieces without any written indication for this technique; this information comes from an email from composer Dana Wilson regarding a performance Richardson gave of Wilson's *Concerto*.



exploration of the timbral possibilities of the trumpet achieved through the use of multiphonics, half-valve techniques and alternate fingerings.

Extended techniques employed: open and closed alternations of plunger, multiphonics, alternate fingering indications for timbre variation, half-valve.

Performance Instructions: Yes. Richardson provides an explanation of the multiphonics section in the second movement by placing an asterisk at the start of the movement referencing the instructions, “Sing upper note, cued notes are resultant tones.” Additional notation is standard, including extensive mute alterations and specifically notated valve combinations in the second movement for timbre changes. Half valve notation is a clear note-head with x through it.

Recordings:

Rex Richardson, *Masks: New Virtuoso Music for Trumpet*, Summit Records, DCD 423 (2005)

***Times, Op. 39* for Solo Trumpet**

**Frank Campo**

**1970**

**Category 3 –Graduate**

<b>Publication date:</b>	1971
<b>Published by:</b>	Pillin Music
<b>Written for:</b>	commissioned by and dedicated to Thomas Stevens
<b>Length:</b>	6 minutes and 30 seconds
<b>Range:</b>	d-flat to f'''
<b>Notation used:</b>	traditional and proportional
<b>Equipment:</b>	no trumpet specification given, hat, Harmon mute with and without stem

Campo's work for solo trumpet is a three-movement composition in which the challenge stems from the trumpet writing as opposed to the use of extended techniques. *Times, Op. 39* is a 12-tone piece employing wide intervals and the extensive use of pedal tones. Campo does not provide barlines throughout the composition but does indicate a metronome pulse for all movements. Despite the absence of barlines, the jazz-influenced writing sounds metered with the exception of short segments of proportional notation allowing for improvisation. It is placed in the graduate category because its high pitch range (d-flat to f''') may exclude it from earlier study. An additional element of difficulty is the frequent shifting between extremes of registers. Also present in the first movement is the quick muting movement in and out of a hat.

In the second movement, the exploration of the timbral capabilities of the trumpet involves slow mute alternation, alternate fingerings, and half-valved notes. Patterns used in the third movement often involve the alternation of pitches separated by half-steps or repeated chordal figures (this writing style assists the player in performing the rapid

passages). Campo also writes frequently for accelerating figures on individual pitches that require concentration on articulation.

Extended techniques employed: improvisatory passages, open and closed mute alternations, flutter tonguing, half-valve techniques, alternate fingerings, pedal tones.

Performance Instructions: Yes. Campo includes a brief section entitled “Notes,” at the beginning of the piece used to clarify his notations.

Recordings:

Thomas Stevens, *Thomas Stevens, Trumpet*, Crystal Records CD 667, (1989)

*Salvos*  
**Richard Moryl**  
**1969**  
**Category 3 –Graduate**

**Publication date:** 1982  
**Published by:** Joshua Corporation  
**Written for:** commissioned by Gerard Schwarz  
**Length:** 8 minutes and 24 seconds  
**Range:** G (specific indications of as low as possible) to c#"  
**Notation used:** traditional, proportional  
**Equipment:** B-flat trumpet, plunger mute

Moryl's piece for unaccompanied trumpet is the most theatrical of all of the works found in this list. Moryl's comments that *Salvos* should be "performed as an 'opera' for one instrument" permit the exploration of musical events in a proportional manner rather than enforce the measured passing of time. The composer has also written that the title *Salvos* refers to "a galaxy of sound and explosions, much like the salvos of a cannon."<sup>6</sup> The double tonguing figures repeated throughout the piece take on a programmatic nature and should be performed to replicate gunfire. Specific aspects of this composition that make it more appropriate for more advanced students include the theatrical nature of the piece and the opportunity to explore the wide variety of extended techniques available on the trumpet, many used in combination with others. The multiphonic passages present some of the greatest challenges, due to the simultaneous use of the pedal register and the distance between the played and sung pitches (Moryl writes for only a half step to separate these notes, resulting in an ugly sound which is very difficult to control). A student's comfort with flutter tonguing and an aggressive double

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<sup>6</sup> Richard Moryl, from a letter written to P Bradley Ulrich referenced in his dissertation, "An Annotated Bibliography of Unaccompanied Trumpet Solos Published In America." D.M.A. Dissertation, University of Illinois, 1989.

tonguing style will improve the performance. Advanced playing skills will also be necessary for performance of extreme registers (Moryl calls for as high and as low as possible), wide shakes, moving the lip in and out of the mouthpiece in the pedal register, and the jazz inspired elements seen throughout the piece.

Extended techniques employed: multiphonics, flutter tonguing, extreme lip vibrato, glissando, mute alternations (plunger), bending of pitch, shake, half-valve, clicking behind teeth into mouthpiece, pedal tones (with lip movement in and out of mouthpiece), stop tonguing, tremolo.

Performance Instructions: Yes. Moryl writes “The notation used in this work is “PROPORTIONAL” and only suggests a pulse or metric system. The performer should observe as closely as possible the “apparent” spatial relationships in each system, but it is to be understood that the performance is not expected to be a precise translation of these relationships. Rather it should be a relative one, through the involvement of the performer with the music. The changes in dynamics should be observed closely, and an attempt should be made to make the performance as dramatic as possible. The work should be performed as an “opera” for one instrument.”<sup>7</sup>

Recordings:

Gerard Schwarz, *New Music for Trumpet*, Phoenix Records, PHCD 115, (1990)

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<sup>7</sup> Richard Moryl, *Salvos* (Joshua Corp, 1969).

***Sonatina***  
**Hans Werner Henze**  
**1976**  
**Category 3 –Graduate**

**Publication date:** 1976  
**Published by:** Schott Musik International  
**Written for:** dedicated to Howard Snell  
**Length:** 5 minutes  
**Range:** g to d-sharp"  
**Notation used:** traditional  
**Equipment:** no trumpet designated, soft mute, sharp mute

Henze's work for solo trumpet is an unaccompanied piece which involves a small number of extended techniques; however, it is one of the few examples from the Guided Approach to utilize quarter tone vibrato. *Sonatina* is placed here in the graduate category because the trumpet skills required make it more appropriate for an advanced student. The first movement is written without bar lines but offers a difficult challenge to the player due to the expected speed of the sixteenth-note figures. The movement does not make use of any extended techniques and consists of arpeggiated figures which are comfortably fingered.

Quarter tone vibrato is used in the second movement and Henze dictates specific mute manipulation involving the mute only half off or slightly removed. Care must be taken to maintain steady intonation while changing the mute position and dynamics during these sustained note passages. The second movement is also without a meter signature, although Henze has provided a quarter note pulse which permits a musical performance of this "Canzona."

The third movement employs only one extended technique: flutter tonguing. The desired tempo notated in this last movement and the more disjunct intervals provide accessible challenges to the graduate student studying the piece.

Extended techniques employed: flutter tonguing, quarter tone vibrato, mute manipulations.

Performance Instructions: No. Henze provides a short key before the piece to clarify the notations he uses for mute alternations, tied notes, flutter tonguing and quarter tone vibrato

Recordings:

Håkan Hardenberger, *The Art of the Trumpet*, Decca 475 9126, (1994)

Thomas Stevens, *Thomas Stevens, Trumpet*, Crystal Records, CD 665 (1993)

***Polyphony***  
**Charles Whittenberg**  
**1970**  
**Category 3 – Graduate (advanced)**

**Publication date:** 1970  
**Published by:** Josef Marx  
**Written for:** dedicated to Gerard Schwarz  
**Length:** 5 minutes  
**Range:** f-sharp to e"  
**Notation used:** traditional  
**Equipment:** C trumpet, straight mute

Whittenberg's work for solo C trumpet is a five-minute virtuosic piece which tests a player's ability to shift rapidly from one extreme to another with regard to range, dynamics, and tempo. It is placed last in the graduate category because of the demanding trumpet skills needed for performance. The extremely wide intervals (towards the end of the piece Whittenberg writes a leap of an octave and an eleventh) occurring at rapid tempos require a trumpeter with great agility. The piece involves an expanded range for the trumpet (f# to e") but maintains a tessitura in the staff. The use of extended techniques is not the prohibitive aspect of the piece as Whittenberg utilizes only flutter tongue, tongued tremolo, and half-valve. His use of half-valve techniques applied to intricate passages with rapidly moving 16<sup>th</sup> notes, however, is the most demanding writing for half-valve throughout all of the pieces in the Guided Approach. The traditional noteheads which notate these half-valved phrases (as opposed to the "x" notation used by other composers for half-valve techniques) indicates Whittenberg's expectation of an accurate performance of the pitches.



The rhythmic complexity of the piece also makes it more appropriate for the advanced graduate student. Frequent tempo changes are combined with shifts in time signatures which occur nearly every measure.

Extended techniques employed: flutter tonguing, tremolos (slurred and involving notes as far apart as a seventh), tongued tremolos, half-valve techniques, mute manipulation.

Performance Instructions: No. Whittenberg provides a brief explanation of his notation: “T. Tr. or T. Trem. = Tongued Tremolo” and “Flut. = Flutter Tongue”

Recordings:

Gerard Schwarz, *New Music for Trumpet*, Phoenix Records, PHCD 115 (1990)  
Kevin Cobb, *One*, Summit Records, DCD 401, (2004)

***Kryl***  
**Robert Erickson**  
**1977**  
**Category 4 –Advanced/Professional**

**Publication date:** 1984  
**Published by:** Sonic Art Editions  
**Written for:** Edwin Harkins  
**Length:** 7 minutes  
**Range:** ff to e"  
**Notation used:** traditional with the inclusion of unique notation for extended techniques such as glottal fry and valve rhythms.  
**Equipment:** not specified

Erickson's work for solo trumpet is one of the more unique compositions on this list. It is dedicated to Edwin Harkins, the well known virtuoso of contemporary trumpet repertoire, and demonstrates again the impact that collaboration can have on the development of new literature. It was chosen because, despite its difficulty, it is a well known part of the canon of twentieth-century trumpet works involving extended techniques and was noted by numerous survey participants in response to specific literature questions. Although a number of techniques are employed in *Kryl*, it is their combination, rather than their individual existence, that causes difficulty. The presence of multiphonics is sparse; despite the voice being an integral part of the piece, only one instance of playing and singing at the same time occurs. Microtonal variations are used frequently but written in a manner that makes them more accessible; the microtones almost always move by step in the manner of grace notes. The most foreign and complicated task is the alternation of the voice and the played trumpet in rapid use.

Six pages of helpful information are provided by the composer through written explanations/notation clarifications and charts. Erickson uses traditional notation in his

composition. Despite new symbols for percussive effects such as valve rhythms, Erickson employs a two-stave score, making the interpretation of the complex notation more manageable. The presence of screaming and the glottal fry ingressive influenced the placement of this piece in the graduate category; these vocalizations were considered to be skills better reserved for the graduate level by some survey respondents. Although at first glance this piece may seem intimidating, the assistance provided by the composer and an excellent recorded performance<sup>8</sup> put it within the reach of ambitious graduate students.

Extended techniques employed: microtonal fingerings, half-valve glissandi, slide glissandi, multiphonics, singing (inhaling and exhaling), removal of first-valve slide, pedal tones, valve clicks.

Performance Instructions: Yes. Erickson provides six pages of instructions including notation explanations, and additional notes on staging, tempo, pedal tones, microtones, glissandi, the use of the voice, etc.

Recordings:

Edwin Harkins, *Robert Erickson*, Composers Recording, Inc., (1991)

Anthony Plog, *20<sup>th</sup> Century Settings for Trumpet*, Crystal Records CD663

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<sup>8</sup> Anthony Plog trumpet. *20<sup>th</sup> Century Settings For Trumpet*. Compact disc CD663. Crystal Records, 1986.

***Exposed Throat***  
**Heinz Karl Gruber**  
**2000**

**Category 4 – Advanced/Professional**

<b>Publication date:</b>	2001
<b>Published by:</b>	Boosey and Hawkes
<b>Written for:</b>	commissioned for the 25 <sup>th</sup> anniversary celebration of the International Trumpet Guild (written for Håkan Hardenberger)
<b>Length:</b>	12 minutes
<b>Range:</b>	f-sharp to d <sup>'''</sup>
<b>Notation used:</b>	traditional, multiple staves used for multiphonics and footsteps
<b>Equipment:</b>	C trumpet, Passim Clear Tone mute, sounding board for footsteps

Gruber's work for unaccompanied trumpet is one of the most recent compositions and a product of collaboration between the composer and Håkan Hardenberger, noted trumpet virtuoso. Hardenberger's interest in new music and his technical mastery of the trumpet have strongly influenced this piece. The length of the piece and the speed maintained throughout passages involving alternate fingerings, slide removal, and slide glissandi make it appropriate for advanced players. Gruber's particular use of multiphonics has both difficult and advantageous aspects. The difficulty is seen in the fact that the multiphonic passages are spread throughout the piece and require the ability to switch to chordal playing rapidly. Wide dynamic ranges are used in a number of the multiphonic passages, making control of the resultant pitch more difficult. One helpful aspect of Gruber's use of multiphonics is the intervals chosen to generate the resultant tones. These consonant sixths and fifths are usually written in one- or two-measure phrases and are written in a vocal register accessible by many.

Additional aspects of this composition that make it appropriate for advanced students/professionals include a range that is not prohibitive for graduate students who may want to explore the piece, the presence of VI-DE's<sup>9</sup> to accommodate a variety of performance situations and capabilities, and the opportunity to explore the use of other body sounds (foot tapping) at the end of the piece. Although a variety of challenges exist in *Exposed Throat*, it is a musically rewarding work reflecting the twenty-first century approach to the use of extended techniques in a melodic manner.

Extended techniques employed: multiphonics, removal of slides, hand muting, glissandi, foot stomping, slide glissandi, reading multiple staves, opening of water key for echo effect, shake-trill.

Performance Instructions: Yes. Gruber includes brief notations at the bottom of each page detailing equipment to be used, fingering suggestions, notation used for intonation slides, and VI-DE's: cuts that have been placed in the score "as an intermediate step for student performance."

Recordings:

Håkan Hardenberger, *Exposed Throat*, BIS Records, CD1281, (2006)

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<sup>9</sup> Gruber writes cuts that have been placed in the score "as an intermediate step for student performance."

*Heptade pour trompette et percussion*

André Jolivet

1972

**Category 4 – Advanced/Professional**

<b>Publication date:</b>	1972
<b>Published by:</b>	Gerard Billaudot Editeur
<b>Length:</b>	16 minutes
<b>Range:</b>	g-sharp to f-sharp"
<b>Notation used:</b>	traditional
<b>Difficulty level:</b>	Advanced/Professional (endurance and range challenges)
<b>Equipment:</b>	C trumpet, straight mute, Robinson mute, Wa-wa mute, Harmon tube

Jolivet's work for trumpet and percussion is a demanding seven-movement composition with widely varying moods. Many of the extended techniques employed, such as trills, flutter tonguing, glissandi and valve tremolo, are found frequently in French repertoire. In the first movement, Jolivet has added microtones and he writes for their use in the upper register of the trumpet, a more difficult task considering pitch deviation is more limited in this range. This piece has been placed in the advanced category because of the outer movements (1 and 7) that make extraordinary range and endurance demands of the player. The most challenging examples of extended techniques can be found in the microtonal writing of the first movement, and the use of flutter tonguing and glissandi simultaneously in the 7<sup>th</sup> movement. This final movement also has short eighth notes fluttered at a tempo of "Vivo e ritmico." A student of the trumpet will have, with this piece, the chance to explore the colorful timbre elements of French writing, from the tremolos to the brief use of the wa-wa mute in the second movement.

Extended techniques employed: trills, glissandi, flutter tonguing, valve tremolo, microtones.

Performance Instructions: No. In the trumpet score, Jolivet does not provide text of any sort to clarify the expectations of the piece. Within the context of the piece, specific details about mutes used, trills, glissandos, octave displacement and flutter tonguing are marked with traditional notation.

Recordings:

*Jolivet: Orchestral and Chamber Works, The Erato Recordings*, Warner Classics  
3564613202, (2006)

***Sequenza X***  
**Luciano Berio**  
**1984**

**Category 4 – Advanced/Professional**

<b>Publication date:</b>	1984
<b>Published by:</b>	Universal Edition
<b>Written for:</b>	Thomas Stevens
<b>Length:</b>	10 minutes
<b>Range:</b>	C-sharp to d'''
<b>Notation used:</b>	traditional, proportional
<b>Equipment:</b>	not specified

Berio's *Sequenza X* is one of only a few compositions written for the combination of trumpet with piano resonance. It was written for Thomas Stevens, whom Berio had heard "could play anything put in front of him."<sup>10</sup> The piece presents many challenging extended techniques and is placed here in the advanced/professional category because of the virtuosity necessary for performance. The most difficult aspects for the trumpet player are the length of the composition (10 minutes without sustained pause), the rapid shifting between dynamic extremes, and the unfamiliar directional changes necessary to play into and away from the body of the piano. Doodle tonguing and the seamless shifting between it and flutter tonguing also present challenges to the player.

With this piece, Berio provides the opportunity to explore the use of piano resonance in a different manner from the Suderburg piece; short, aggressive attacks by the trumpet are called for and the accuracy of the player must be superb.

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<sup>10</sup> *International Trumpet Guild*. [Website], "ITG News: *Sequenza X* comes full circle." 2008. Report by Tom Dambly on a performance and masterclass given by Gabriele Cassone and Thomas Stevens. site address: <http://www.trumpetguild.org>



Extended techniques employed: flutter tonguing, doodle tonguing, growling, pedal tones, Wa-wa sound produced by placing the hand over the bell, fingered valve tremolos, directional changes (playing toward the inside of the piano), shake.

Performance Instructions: Yes. Berio includes comments regarding the use of the piano as a resonating instrument, including placement, use of microphones/speakers, and the relationship to the trumpet. Trumpet specific notation is clarified regarding the composer's instructions for flutter tonguing, doodle tonguing, valve tremolo, closed and open positions using the hand.

Recordings:

Håkan Hardenberger, *The Art of the Trumpet*, DECCA 475 9126, (1995)

Gabriele Cassone, *Sequenzas*, Duetsche Grammophone B00000I93T, (1999)

William Forman, *Berio-The Complete Sequenzas, Alternate Sequenzas, and Works for Solo Instruments*, Mode Records 161-163, (2008)

Guy Few, *Berio: Sequenza I-XIV complete*, Naxos 8.557661-663, (2006)

***The First Voice***  
**Frank Ticheli**  
**1982**  
**Category 4 – Advanced/Professional**

**Publication date:** 1987  
**Published by:** PP Music  
**Length:** 7 minutes and 50 seconds  
**Range:** A1 to d<sup>'''</sup>  
**Notation used:** traditional, proportional, pictorial (for mute use only)  
**Equipment:** B-flat trumpet, straight mute, cup mute, Harmon mute with stem, and harmon mute without stem

Ticheli's work for solo trumpet is one of the most complex pieces in the Guided Approach because of the simultaneous use of multiple extended techniques. It is placed in this category because a trumpeter must be exposed to more difficult techniques such as multiphonics, half-valving, and the performance of pedal tones before attempting this composition. *The First Voice* has a specific musical context (the title of the piece and of its movements are drawn from the Book of Revelations 4:1)<sup>11</sup> which instructs the player to represent speech through the instrument. The microtonal passage at the very beginning is particularly challenging; the player must begin on a bent note playing pianissimo while incorporating hand muting. Multiphonics, only included by the composer on the first page of the first movement, involve a unison expanding to a fourth in one instance and a sung pitch pitted against a half-valved note in another. This second appearance of multiphonics is further compounded by the addition of mute manipulation and flutter tonguing. The coordination required to perform the difficult combinations of extended techniques will help develop greater ease in all elements of trumpet playing.

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<sup>11</sup> Frank Ticheli, introduction to *The First Voice*.

Extended techniques employed: multiphonics, quarter tones, flutter tonguing, valve tremolo, half valve techniques, flap-tonguing, open and closed alternation of hand over harmon mute stem, glissandi, removal of second valve slide.

Performance Instructions: Yes. Ticheli includes two pages at the beginning of the piece detailing the inspiration for the piece, the writing style used “to reflect speech,” equipment to be used, and explanations of extended technique notations which are especially relevant to mute use.

## **APPENDIX E**

Chart of Twenty Chosen Pieces  
Reflecting Which Techniques Each Piece Employs

## Composite Chart of Extended Techniques Used in the Twenty Pieces from the Guided Approach

Composer	Title	M	V	F	H/ G	L	T	M u	M e	Mi	R	P	Ps	M s	#
Berio	Sequenza X			x		x	x	x	x			x			6
Campo	Times, Op. 39			x	x		x	x							4
Erb	Diversion for Two			x	x	x		x		x	x	x	x		8
Erickson	Kryl	x	x	x	x		x			x	x	x	x		9
Friedman	Solus		x	x	x	x	x	x		x	x	x			9
Gruber	Exposed Throat	x		x	x	x		x		x	x		x	x	9
Henderson	Variation Movements			x										x	2
Henze	Sonatina			x				x		x					3
Jolivet	Heptade			x	x	x	x			x					5
Kraft	Encounters III			x	x	x	x			x	x	x	x		8
Moryl	Salvos	x		x	x	x	x	x		x			x		8
Park	t1			x	x		x	x		x			x		6
Powell	Alone	x		x	x		x	x							5
Richardson	Three Etudes	x			x		x	x							4
Sudenburg	Chamber Music VII								x						1
Ticheli	The First Voice	x		x	x		x	x		x	x	x	x	x	10
Tull	Eight Profiles			x			x								2
Whittenberg	Polyphony			x	x		x	x							4
Wilson	Masks		x	x	x			x							4
Winick	Equinoctial Points			x			x	x							3

### Key

M = Multiphonics

V = Vocalizations

F = Fluttertonguing

H/G – Half Valve/ Glissando

L = Lip Trills/Shakes

T = Tremolo/Alternate Fingerings

Mu = Mutes

Me = Means of Extension

Mi = Microtones

R = Removal of Slides

P = Pedal Tones

Ps = Percussive Effects

Ms = Multiple Staves

# = number of techniques in each piece

**APPENDIX F**  
**Suggestions for Future Research: Current Happenings in**  
**the World of Contemporary Trumpet**  
**FONT and the Center for Advanced Musical Studies, International Trumpet**  
**Seminar**

Early in my research, I came across two events/festivals that were unknown to me: FONT (Festival of New Trumpet Music) and the Chosen Vale International Trumpet Seminar hosted by the Center for Advanced Musical Studies. Despite having slightly different focuses, these two events are strong evidence of the interest in and support for new music for trumpet. Much of the music created and studied during these events frequently involves the use of the extended techniques discussed in this document. I have included brief descriptions of these two happenings:

**Festival of New Trumpet Music** – Begun in 2003 at Tonic, a New York City venue for avant-garde music, the Festival of New Trumpet Music started as a collection of 40 performances occurring over 19 nights. Representatives from all worlds of music were a part of the event including jazz, new music, free form, hip-hop, rock, improvisational, classical, and more.

Now in its sixth year, FONT most recently took place September 13-28, 2008 and involved an extremely wide-ranging collection of trumpet music, from a concert celebrating Louis Armstrong to a performance by leading contemporary chamber music groups of the music of Karlheinz Stockhausen and Elliot Carter. Sound manipulation, often involving electronics, is also of interest to the participants of FONT.

The following statements from the FONT website can best describe the focus and goal of this unique concert event:

“The Festival of New Trumpet Music presents as many facets of contemporary trumpet music as possible, regardless of style. By doing so FONT Music opens up new vistas on performance practice, demonstrating the explosion of unique visions that currently coexist. Organized around one of the most unique and personal of instruments, FONT Music aims to expand awareness of the astoundingly broad range of creative activity involving the trumpet. It places this burst of creativity within the explosion of growth and change happening in the culture at large.”<sup>1</sup>

“FONT Music encourages each trumpeter to explore his or her own point of view and to be truly ‘themselves.’ In this way the festival is a celebration of the many ways forward in music.”<sup>2</sup>

Research of web-blogs reporting on FONT events and contact with some of its founders has made it clear that a very heavy emphasis is placed on improvisation and spontaneous collaboration during these concerts.<sup>3</sup> Email conversations with a number of composers/performers involved in FONT commissions have revealed that many of the extended techniques used at the Festival are never notated in the original scores, rather simply expected of the performers during the improvisatory sections of the commissioned pieces.<sup>4</sup> As a result, many of the works commissioned for and created at FONT events are not likely to be published for public consumption in a manner consistent with the original intentions of the composer.

**The Center for Advanced Musical Studies at Chosen Vale** was established in 2006.

The website for the Center for Advanced Musical Studies states:

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<sup>1</sup> Festival of New Trumpet Music [Web site], “History of FONT” (28 February 2009), Site address: <http://fontmusic.net/festival>

<sup>2</sup> Ibid.

<sup>3</sup> email from Taylor Ho Bynum, Aug. 31, 2008.

<sup>4</sup> Ibid.

Musical societies in the coming decades will require musicians to be increasingly flexible, original, and to have an ever broadening set of skills. Rather than simply fostering a steady accumulation of inert, skill-based knowledge, each and every musician today should be focusing on developing her or his original musical voice in order to become a total musician for the emerging world. Music education has to not only keep pace with change, it must foster change as well.<sup>5</sup>

The **International Trumpet Seminar at Chosen Vale**, founded by Edward Carroll, is in its third year. The internationally renowned faculty consists of Stephen Burns, Ed Carroll, Gabriele Cassone, Mark Gould, Thomas Stevens, and Markus Stockhausen.

The Seminar involves study of a wide range of topics, “from natural trumpet to learning how to structure free improv”<sup>6</sup> and encourages participants to explore outside of their comfort zone and take risks. The format for instruction at Chosen Vale includes masterclasses, chamber music experiences, natural trumpet class, individual tutorials, yoga class and workshops. Study culminates in three formal concerts throughout the 12-day event. Examinations of the concert programs presented at the Trumpet Seminar shows that a broad range of trumpet literature is studied and experienced by participants. Concert programs from 2008 demonstrate the Seminar participants’ interest in presenting works involving extended techniques; specifically, performances of Erickson’s *Kryl* and Gruber’s *Exposed Throat* were given.

Additional study of these two events is suggested for future research projects exploring the growing role of extended techniques in contemporary trumpet performance. Determining whether the existence of these kinds of events is having an impact on the

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<sup>5</sup> Center for Advanced Musical Studies [Web site], “Chosen Vale Trumpet Seminar” (28 February 2009), Site address: <http://chosenvale.com>

<sup>6</sup> Ibid.



state of collegiate trumpet pedagogy regarding extended techniques would be an intriguing project.