

# Face|Resection

by Matt Barbier

Rage Thormbones Publication



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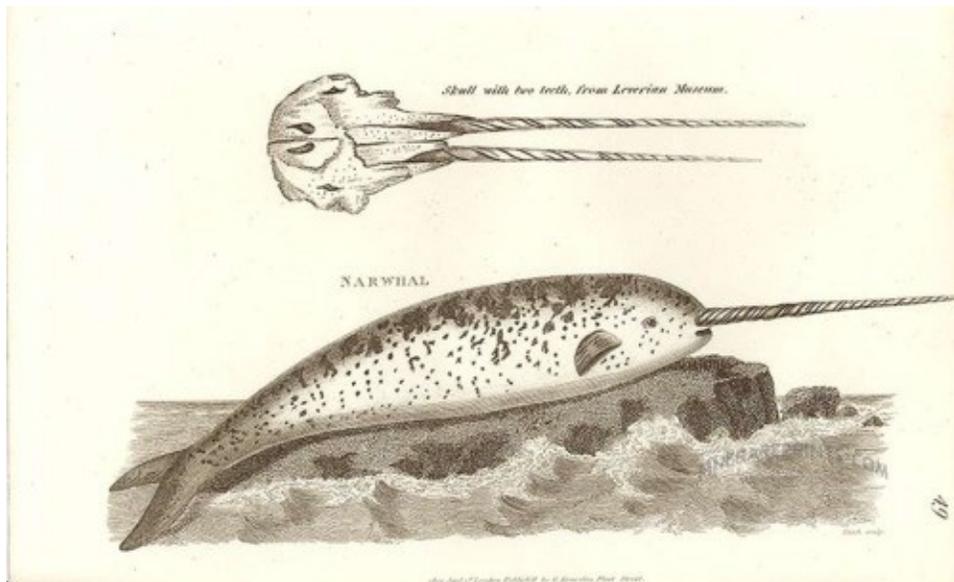
This project exists because of the help, patience, and inspiration of many people. Primarily Nicholas Deyoe, Clint McCallum, Ian Carroll, Weston Olencki, New Music USA, and, most importantly, DanRae Wilson. This project is dedicated to y'all.

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## Table of Contents:

<b>Introduction</b>	<b>5</b>
<b>Chapter 1: Split-tone Basics</b>	<b>8</b>
Section 1A: What is a split-tone?	9
Section 1B: Lip-slur and Over-focus	9
Section 2: Lip Bend	13
<b>Chapter 2: Advanced Applications</b>	<b>15</b>
Section 1: Circular breathing	17
Section 2: Articulations	19
Section 3: 2:1 Split-tones	24
Section 4: common tones, valve transitions, and valve trills	26
<b>Chapter 3: Repertoire Applications</b>	<b>31</b>
Section 1: Bach Cello Suites	32
Section 2: Nicholas Deyoe's <i>facesplitter</i>	37
Section 3: Clint McCallum's <i>Bowel Resection</i>	46
<b>Closing</b>	<b>57</b>
<b>Appendix 1: Split-tone chart</b>	<b>58</b>
<b>Appendix 2: Common-tone Split-tone chart</b>	<b>60</b>
<b>Appendix 3: Stable Instability [notes on learning]</b>	<b>61</b>



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## Introduction

This publication is the result of an obsession that started during my time as a student at CalArts and has continued to grow both in the practice room and through composer-performer relationships. This edition focuses primarily on two solo trombone pieces entitled *facesplitter*, by Nicholas Deyoe, and *Bowel Resection*, by Clint McCallum. Both of these works existed before they arrived in my possession, but had never been performed. Both also involved extensive split-tone components [beyond just producing a basic diad] that were completely new to me and quite beyond what I was capable of producing.

Given that the compositions already existed, I went into the practice room and began experimenting with various methods to attempt to produce these new ideas. I tried different tongue positions and syllables to search for a way to double tongue split-tones reliably; as well as a variety of experiments to find an effective solution for the challenge set by Clint- how to circular breath a split-tone for six and half minutes. During this process I tried to keep close notes of what I was doing and made myself little exercises to solidify concepts. I'd often work with a method only to find that after a few weeks it was not going to work. Because of this drawn out process, I started keeping notes to remind myself of what worked and what failed so I could avoid going down the same road twice.

As I found success with these methods, and some of them became “comfortable,” I began experimenting with Nicholas and Clint. During the experimentation process I often came across new sounds [while searching for a different one] that would appear for a moment, get recorded on my phone, texted to the Nicholas, and then end up in the piece. Then the other technique I was

originally working on would stabilize and this new sound would disappear. I would then start this process over to attempt to build a relationship with a sound that had been a fleeting accident.

This process was most extensive with Nicholas given the fact that Clint's piece, while complex and full of difficulties, is ultimately one sound, so the issue is “what is the best way to make that one sound work?” Given that the question was fairly straightforward, most of the work on *BR* was [and still is] about a search of stability and formal clarity, rather than a collaborative exploration of how far an idea could be stretched.

Often these conversations would bring up a question about what would happen if I could do 'x'? Sometimes Nicholas or Clint asked the questions, but often I did as well and they showed immense patience while I disappeared to attempt to make an idea exist. Sometimes the idea would work immediately, but more often than not the resulting response was “let me get back to you on that.” From there practice would ensue with the idea of sound and little else for direction. Sometimes this worked and sometimes it was a dismal failure, but I kept taking notes to keep my bearings. Because of this open conversation with Nicholas and Clint, we were able to take these two solos and push them well beyond the original conception and our thoughts of possibility.

This course ended with what are, to me, two incredibly special and personal works of art made with two people I care about very deeply. However, they are damned difficult works of art that are not very friendly to a player that does not have a knowledge of how we got there. I really believe in the work of these two people and want their music to be heard and performed by other musicians. Given this fact, at a certain point it became apparent to me that the best way to ensure that this would happen would be to share the most coherent parts of this process.

I hope that this text can help players approach this fantastic and flexible technique. It is also my hope that the descriptions of how to learn and develop this technique, its various applications [both by way of modification and in the repertoire], and the charts included will also prove to be a useful resource for composers. Hopefully it can help demonstrate some possible applications of split-tones while also grounding it in the physical processes and demands that make it possible.

Additionally, I hope that while the recording of *face/resection* provides an example of what these sounds can be, this text can ground that in the years of experimentation and failure to get there. That is to say, these techniques often take an extended period to develop and even longer to control and develop a healthy relationship with. I avoid the word master because this process frequently feels like dealing with a stray animal that needs help but doesn't quite trust you enough to care for it. The sound cannot be forced under your control, but instead a relationship must be developed where the sounds like to live. And, on their terms, you try to find a mode to coax some form of regularity out of them- studying their habits to find a pattern and simply move with their needs while finding ways to corral them in the direction the music demands. I do not mean this to sound dark or discouraging, but instead to remind players to take a patient approach and find the experiments that are right for them.

I always find it useful to remember the words of Jake the Dog: “Sucking at something is the first step to becoming sorta good at something.”

## **Chapter 1: Split-tone Basics**

### **Section 1A: What is a split-tone?**

A split-tone is a type of lip multiphonic achieved by splitting the embouchure between two adjacent partials, creating a dyad-based multiple sonority on a brass instrument. Lip multiphonics differ from voice multiphonics in that they are multiple sonority created entirely by the player's lips- as opposed to the more common voice multiphonics, which is a combination of singing and playing. This book focused primarily on split-tones as they are main technique utilized in the works that this writing focuses on.

### **Section 1B. Lip slur and over focus:**

A split-tone is essentially achieved by reducing the resonance on an individual tone, but over focusing on the center of this pitch. One then takes this over centered note and bends it down slightly to find the point where the note breaks to go down one partial. Instead of going down to the lower tone, the trombonist holds the note at the break point, which results in a dyad-based sonority. However, the lower tone of the dyad sounds higher than it normally would given that the player is not bending to a point where it can resonate exactly. Over time the player essentially develops a feel for the center of the split-tone and it becomes something that she can go it into with an expectation of stable and predictable results.

In this text, split-tones have been refereed to as “dyad-based.” What is meant by this is that, since a split-tone is made by splitting between to adjacent partials in the overtone series, its primary pitch content is comprised of those two tones. However, given that split-tones are created by using interference patterns in the instrument [much like woodwind multiphonics], the result is a complex sonority that is only primarily based in those two tones .



motions to try and find the point where one's sound splits, but remember that the distance one needs to pivot is quite small.

It can also be useful to “keep it in the mouthpiece” by making the pivot with the lip instead of the horn, generally by rolling the lower lip out slightly. Bending from the lip draws one's attention to the center of the embouchure and can be a useful way of developing a clear mental connection with the over-focus concept. One may find that the most effective method is to simply experiment with both varieties of pivot processes to find the mental and physical overlap between them and the center that is most comfortable for the individual player.

Do not leave out the lip slurs, they can be an incredibly helpful way to keep the two pitches one is striving for in the ear. Like all brass playing- the better one can hear the sound, the better one will play it.

This exercise is written for the 3:2 split tone but it is a concept that can be applied as the basis for any expansion up the overtone series.

Once a split tone can be reliably achieved the next major hurdle in finding stability. Associating one's split tones with lip slurs is a reliable way to improve the mental side of the technique by making them intrinsically tied into one of the most fundamentally stabilizing aspects of trombone playing. On the physical side, attempting to maintain a focused embouchure once the split tone has been achieved is invaluable. If one can focus in on maintaining the 'e' phoneme while playing a split tone, the performer can develop a habit of remaining in the center of the sound while the sound created is battling both the acoustics of the instrument and the traditional

embouchure the trombonist has training into her natural functioning. Like any technique, new or old, the most effective way to solidify it is through consistent, focused, and considered practice.

1st position      o - e - o - e - o      , o - e - o - e -

2nd position      o - e - o - e - o      , o - e - o - e -

3rd position      o - e - o - e - o      , o - e - o - e -

4th position      o - e - o - e - o      , o - e - o - e -

5th position      o - e - o - e - o      , o - e - o - e -

6th position      o - e - o - e - o      , o - e - o - e -

7th position      o - e - o - e - o      , o - e - o - e -

## Section 2: Lip Bend

Another way of finding split tones is by [carefully] destabilizing one's embouchure. The most effective way of doing this is to do slow, downward lip slurs paying careful attention to the breaking point where, to use the included example, the F breaks and falls down to the Bb. Repeat this a number of times, trying to memorize where the break is. Try to stop the slur at the breaking point, hold the tone there, and crescendo into the break. Often this exercise is most effective when done in the opposite manner to the 'over focus' ones- play it quite loudly, without the previous careful approach.

This controlled destabilization can further deviate from the previous exercises in the fact that it can be aided by external motion. Puffing the cheeks and allowing some air in between the lips and the teeth can help achieve the needed instability. This is a fairly strong deviation from the standard 'over-focus' approach to achieving split tones and [puffing the cheeks] should not be overly relied upon to achieve split tones. Puffing does have some very particular applications in aiding with extremely loud attacks, finding 2:1 split tones [which are covered in a later section], and preparations for circular breathing.

Another function of a puff based split tone is that it tends to produce a much more complex, extremely loud, noise based sound, as opposed to the more clear and controlled dyad based sound of a centered split tones. So while a properly centered split tone offers a sound with more reliable control and stability, the split achieved by the destabilization of the embouchure has its applications.



It can be helpful, similar to legato practice, to try and 'play into' the space between the notes. It is written as a crescendo in the exercises, but this can also be thought of as simply putting emphasis on the space in between. Another helpful trick can be to slur to the halfway pitch and then to the bottom pitch. Much like a lip slur helping guide one's ear, hearing a middle point can help guide a player to the breaking point of the slur.

Since this exercise involves loud destabilization of the embouchure it is recommended that the user be intelligently cautious with its application. Make sure to take time after to play a few simple lip slurs and long tones to make sure one's face is put back in order and an unintentional split tone doesn't make its way into other playing.

## **Chapter 2: Advanced Applications**

On the whole, the following exercises are based off of 3:2 split-tones [tones split from the 3<sup>rd</sup> partial down to the 2<sup>nd</sup>]. This is because they can often be a solid base when exploring various manipulations of the split-tone. 3:2 provide a reliable groundwork for two primary reasons.

First, given that the 3:2 split-tone is the lowest traditional split-tone, there is nowhere for the split to fall if pushed out of focus and lost when exploring these extensions. With higher split-tones, there is a solid chance of falling down partials, but with a 3:2 the only note a player could fall to is still part of the split-tone.

Second, the second and third partials tend to be quite stable while also maintaining a very reliable malleability. Which is to say that the notes of those partials require a lower level of physical intensity to center and maintain, which allow the player more leeway when manipulating her playing in the following exercises. This is ideal because it allows the player modify his embouchure as needed without causing superfluous tension in the process. Ideally these exercises can be done in a way that is comfortable and does not have a negative effect on the day's playing work.

In this section, it may feel like the exercises have jumped from step 1 to step 50, given that the drills go from the fundamentals of production to fair advanced manipulations. Steps 2-49 are just simply dedicated work on the basics of producing split-tones and a consistent and comfortable relationship which their production. There is no special trick that separates a basic split-tone from these advance manipulations- like all work on the trombone it is just a question of diligent practice and patience with the time one's body needs to develop a skill.

## Section 1: Circular breathing

Circular breathing split-tones is an essential element in both the works that are the focal point of these exercises. Given that the technique has, relatively speaking, a common use and an availability of quality instructional resources already existing; this text will not cover the basics of how to circular breathe. Instead it is written with the understanding that the reader already has this skill in his/her toolkit.

Relatively speaking, circular breathing split-tones is a fairly simple combination of techniques if the player already has a strong relationship with both individually. Circular breathing a split-tone does not require any form of significant alteration to either technique. The primary challenge is to maintain the focus of the split-tone embouchure while changing the tension in one's cheeks [i.e. puffing out and flattening them]. Once the trombonist can maintain a stable split-tone while puffing out and flattening his cheeks the inclusion of circular breathing is essentially the same as with standard playing. Therefore, in the following circular breathing exercise focus entirely on changing cheek tension.

In this exercise 'F' stands for 'flat' [one's normal playing position]. The 'P' stands for 'puff' [holding air in the cheeks in preparation for circular breathing]. The primary challenge, and focus, for this operation is to maintain stability inside the mouthpiece while the outside portion of one's embouchure is shifting dramatically. Focus in towards the center of the embouchure and try to keep it resilient and centered while doing one's best to avoid any more tension than is necessary to produce a stable sound.

The image displays four musical exercises, numbered 1 through 4, written in bass clef with a key signature of one flat (B-flat major). Each exercise consists of a single staff with a melodic line and a split-tone accompaniment. The exercises are as follows:

- Exercise 1:** The melodic line starts with a quarter note G2, followed by quarter notes A2, B-flat2, and C3. The split-tone accompaniment begins with a half note chord (G2, B-flat2) marked 'F', followed by a half note chord (A2, C3) marked 'P', and ends with a half note chord (B-flat2, D3) marked 'F'.
- Exercise 2:** The melodic line is identical to exercise 1. The split-tone accompaniment consists of five half-note chords: (G2, B-flat2) 'F', (A2, C3) 'P', (B-flat2, D3) 'F', (C3, E-flat3) 'P', and (D3, F3) 'F'.
- Exercise 3:** The melodic line is identical to exercise 1. The split-tone accompaniment consists of seven half-note chords: (G2, B-flat2) 'F', (A2, C3) 'P', (B-flat2, D3) 'F', (C3, E-flat3) 'P', (D3, F3) 'F', (E-flat3, G3) 'P', and (F3, A2) 'F'.
- Exercise 4:** The melodic line is identical to exercise 1. The split-tone accompaniment consists of eight half-note chords: (G2, B-flat2) 'F', (A2, C3) 'P', (B-flat2, D3) 'F', (C3, E-flat3) 'P', (D3, F3) 'F', (E-flat3, G3) 'P', (F3, A2) 'F', and (G3, B-flat2) 'P'.

Once the player feels comfortable maintaining a split while altering his/her cheeks, simply begin to add small breaths where useful in the above exercise. It's recommended that quick, frequent breaths be relied upon as opposed to a slower, more relaxed style of breathing. The less time one has with her split-tone being supported by the cheek muscles, the more stable and predictable it will remain.

Losing the center, and therefore the split-tone, is the primary pitfall of circular breathing with this technique. If one can maintain a focused center on the multi-phonetic without developing undue tension, then circular breathing split-tones is relatively simple.

## Section 2: Articulations

Another integral modification of the split-tone that both of the works hinge on is being able to double and triple tongue while executing split-tones<sup>1</sup>. Similarly to circular breathing, it is a technique that finds its primary difficulty in locating a method to implement one technique without interfering with the other.

Split-tones require a great deal of air, so the need for efficiency of tongue placement and use is paramount. Given the volume of air moved while executing a potentially unstable technique, it is incredibly important to keep the tongue as low as possible and articulate with as much economy of motion as possible. Considering the delicate balance that needs to be found, it can be helpful to approach this technique from the same standpoint one would when first learning multiple articulations. It's advisable to simply take one's time. Try to develop each tongue stroke on it's own and experiment to find the best balance and tongue position that works efficiently for the individual. Additionally, it is helpful to keep the notes long- think tenuto on every split-tone one articulates. They rely on air and vibration to maintain their focus, so it's essential to give each note as much of those things as possible.

For the 'T' or 'D' stroke, the physical use is virtually [if not actually] identical to a normal articulation, but the trick is to approach it much like legato tonguing at first. Start by articulating too little and focus on not damaging the stability of the split-tone. Just get comfortable with moving one's tongue while not stopping the simultaneous technique. As one's comfort level

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<sup>1</sup> It is recommended, for triple tonguing, to use a TKT KTK approach [essentially double tonguing] to help maintain an efficient split-tone center. Often a rapid, repetitive stroke [TTK] can lead to a larger interruption of air and a break in the split-tone.



This second exercise falls within the same domain as the first.



Like preceding exercises, this one starts and ends with a slur to outline the split-tone and help enforce a relaxed and supple approach. Also, like previous exercises, strive for a focus and relaxed core to the splits- try to stay in the middle of one's playing and end the exercise as calmly as possible. Breathe as often as is necessary and play at a relaxed dynamic.

o - e - o - e -

t k t k t k      sim.

6      6      3      3      6      6

6      6      6      6

Continue this exercise by sequencing down by position.

Another precarious use of this technique appears in Nicholas Deyoe's *facesplitter*. The particular challenge is that one must start split-tones with rapid articulations, as opposed to articulating one that is already sounding<sup>2</sup>. This presents a dangerous situation because often the least stable moment of a split-tone is the initial attack. To accurately execute this technique one needs to be able to achieve a maximum amount of vibration on the very front of the articulation. One approach for this concept is to repeat a single split-tone multiple times. Begin by sustaining it and slowly shorten the sustain. Once one is able to still achieve an acceptable staccato split-tone, begin to add second note on the tongue's backstroke. As this method stabilizes one can slowly lengthen the articulated line. An example of this approach is below:



Practice this exercise very deliberately, with a metronome, taking care to breath exactly in time and have rhythmic releases. Use the rhythm as momentum to create the sensation of playing on a line rather than a cold start. Start at a comfortable tempo, but quick enough to have a clear feeling of momentum. Try to keep each split-tone equal in resonance regardless of the length of sustain. It can be helpful to play this exercise at an assertive dynamic level with a feeling of forward momentum.

<sup>2</sup> Examples found in bars: 18, 21 ,28, 30, 51-53, and 76

With all of these articulation concepts it is important to focus on staying in the center on the trombone seesaw. One must find a balance between an aggressively assertive attack while simultaneously maintaining a centered and calm control. One should not play at such a forceful volume as to force his embouchure open and lose the split. However, it is important to throw caution to the wind to a certain degree as being too conservative in one's approach can lead to tension and a reduction in vibration. Experiment to find a balance that is correct for the individual and allows maximum results with the least strain possible.

### **Section 3: 2:1 split tones**

A unique timbre can be achieved by splitting between the 2<sup>nd</sup> and 1<sup>st</sup> partial. Given the width of the interval [an octave] and the low frequency involved, the 2:1 split-tone has a rather singular sound in which the interference pattern tends to be more prominent than the pitches being played. The process involved in producing a 2:1 split-tone is derived from the basic split-tone approach with some slight modifications.

The primary challenge is presented by the fact that the two partials being split require fairly divergent production methods and the player must find a way to balance the demands of these partials in order to create a stable multiphonic.

To start, it is effective to slur between the two partials and try to find the center, like in the previous 'Lip Bend' exercises of section 2. Once one feels comfortable with the breaking point between the two partials, an effective method is to imagine creating a physical split between the

two divisions [the 1<sup>st</sup> and 2<sup>nd</sup> partial]. Do this by trying to keep the very center of the embouchure intensely focused, like with other split-tones. While maintaining this focus, attempt to bend from the 2<sup>nd</sup> partial down to the 1<sup>st</sup> partial, allowing everything but the center of the embouchure to relax into a comfortable pedal tone position. It can also be helpful to let the lower jaw come forward and make a slightly more exaggerated 'O' phoneme. The further one can move the corners of one's embouchure toward the pedal range while maintaining a focused center, the better chance one has of finding reliability. The 2:1 split-tone can often be found at the point where the 1<sup>st</sup> partial begins to intermittently sound and interfere with the 2<sup>nd</sup> partial.

Another challenge in this process is managing one's air stream. The predicament is to find a balance point of blowing slow, steady air, while maintaining a focused column that can blow through the middle of the embouchure and help maintain one's position at the breaking point between the two partials. There is no exact method to balance this other than conscious experimentation.

The exercise below is designed to focus in on the above steps in a simple way. One starts by playing a simple slur between the 2<sup>nd</sup> and 1<sup>st</sup> partial to help outline the involved pitches. Then one slowly bends down and up the octave to try and find the middle point where the lower tone just begins to start speaking, but the center can be maintained on the 2<sup>nd</sup> partial tone. Try and memorize the jaw position at this mid point. It is one of the most challenging parts of this techniques because it can often feel like one's jaw has no reference point and is floating in space. It is a bit like 5<sup>th</sup> position- there is not a great reference point, but consideration of one's body and taking the time to regularly check in lead to consistent results.

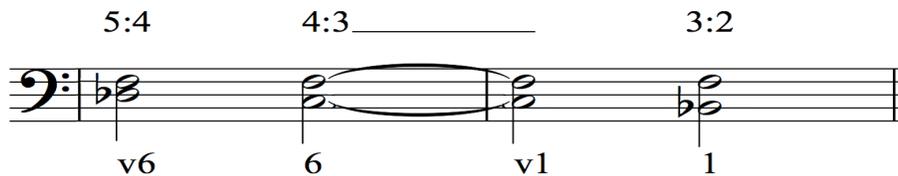
2:1



For some players, the 2:1 split-tone may come very quickly, but for the most part it is a fairly mailable sound produced by a loose embouchure so it can often take some time to consistently locate and call upon. A careful balance of patience, perseverance, and experimentation is important when working on this sound.

#### Section 4: common tones, valve transitions, and valve trills

While often utilized for their aggressive timbre and intense volume, split-tones are a dyad-based multiphonic and as such can also be used very effectively to create ideas of harmonic movement and chord progressions. One of the simplest ways to achieve this is by connecting multiple split-tones via common-tones. The excerpt below is one possibility to demonstrate the concept.

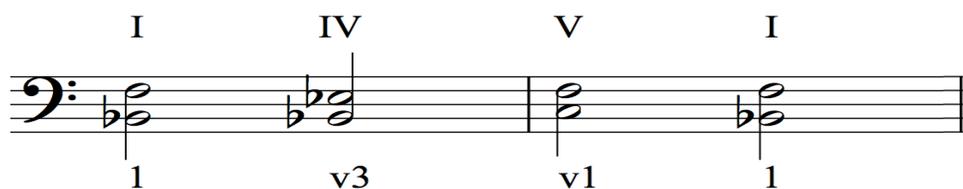


The numbers above the staff indicate the partials split and the numbers below the staff indicate slide positions [v indicates tenor-bass valve position].

By connecting successive split-tones by way of a common upper tone, one can maintain a stable drone while generating a motion beneath it. Given the utonal construction of the trombone [4:3 based pitch relationship between the open horn and the tenor-bass valve], the common-tones appear in order [3, 4, 5 in the example] and there for tend exist in simple harmonic relationships. Accordingly, this results in simple scalar movement of the lower pitch of the split-tone, allowing one to create subtle changes to a complex timbre.

In *Bowel Resection*, this technique had the practical application of allowing a smooth transition between a 3:2 and 4:3 [and back] split-tone, which allows for a more consistent level of volume. This application is covered more thoroughly in the *Bowel Resection* entry.

Another use of this concept is to use the valve and simple relationships to create harmonic shifts and chord progressions. By utilizing the tenor-bass valve one can switch between various overtone relationships without having a large shift in pitch, therefore being able to apply basic voice leading concepts to a solo melody instrument. One possibility is below.



The numerals above the staff indicate chord numbers and the numbers below the staff indicate slide positions [v indicates tenor-bass valve position].

This concept can allow a player to outline chord progressions in her playing and also provides a useful practice method for consistency of sound.

Creating chord progressions with split-tones is a underutilized method that is effective on the trombone, but is significantly more effective on large bore valve instruments [such as the euphonium and tuba] given the ease of legato and conical timbre. These instruments are intensely capable of creating harmonic motions similar to those possible with bass clarinet or bari-sax multiphonics.

Creating a consistent timbre of split-tone across different overtone relations is difficult to achieve but can be highly effective in works like Iannis Xenakis's *Keren*. While the passage is effective without timbral consistency, the ability to make an even line with consistent color and attack is a practical tool to have to allow for musical flexibility.

In practicing simple relations and common-tones, like the above examples, one can find a simple and concise method for finding the balance of needed for a consistent result that comes from the demands of inconsistent production. That is to say that, much like getting an even sound across disparate registers, one must use unequal effort to create an equal sound. Approaching this issue through simple relations in a comfortable register is a good starting place for approaching this delicate issue.

Another functional exploitation of common-tones and the tenor-bass valve is for their use in split-tone valve trills. The concept is to simply execute a valve trill while maintaining a split-tone. Given what is involved in functionally executing the concept, the highest success rate lends itself to valve trills that are executed between two common-tones. The below exercise focuses in on one of the more uncomplicated valve trills to execute.



It can be useful to start on the high of the two split-tones [4:3] so that one's embouchure is starting from a place of higher focus. This way one can focus in on the diad with a higher tension and use that as a home base to help maintain a focused center. Like a standard valve trill, the challenge is to focus on blowing through the valve shift to maintain an even sound and help compensate for the difference in demands on one's air flow. It can be helpful to focus in on the lower notes, given that they are the moving pitches, while executing a valve trill to help instill stability.

Below are excerpts from Clint McCallum's *gnarphwhallanie* [for soprano, clarinet/bass clarinet, trombone, cello, and piano] that utilize valve trills. The first excerpt requires slide motion, which makes it decidedly more difficult than the second section, which is a pure valve trill.

168

Cl. *f* *multiphonic trill* *f* *multiphonic trill*

Tbn. *f* *ST valve trill* *f*

Pno. *f* *f*

S *p* *uh* *ah*

Vc. *f* *f*

**M** 13

Cl. 180

Tbn. 180

Pno. 180

S 180

Vc. 180

## **Chapter 3: Repertoire Applications**

In this section, the actual application of split tones in repertoire, both intended by the composer and intruded upon by the trombonist, is explored. The practical application of many of the proceeding exercises will be employed directly to *facesplitter* by Nicholas Deyoe and *Bowel Resection* by Clint McCallum.

Additionally, using the Bach Cello Suites as a starting point, the addition of split-tones to more standard repertoire will be explored as practice method for expanding the demands and standards of one's use of the technique. The choice of the Bach Cello Suites is due to their central place in the trombonist's practice room repertoire and the per-existing issues of how to handle double and triple stops, and is intended as a jumping off point for the application of a practice concept.

## **Section 1: Bach Cello Suites**

**Disclaimer:** Although this section is utilizing the Bach cello suites for their effectiveness in learning to control lip-multiphonics, they are intended as a teaching and practice tool. This is meant to fit into the traditional use of Bach's cello suites in trombone pedagogy and is not intended to imply that the author is advocating their use in public performance. Aside from the debate on the value of performing the cello suites on trombone, many of the possible lip-multiphonics used will create distractingly extreme changes in timbre and therefore their use is for a more theoretical application than a directly musical one.

In an attempt to demonstrate the concept behind this, the majority of the 2<sup>nd</sup> Cello Suite has been included in this text with suggested split-tones and interpretations of various multiple sonorities included<sup>3</sup>. The complete movements of the *Allemande* and *Menuets* are intended to provide practice for quickly and accurately hitting split-tones as a quick direction change within a larger phrase. It is often difficult to incorporate split-tones into a cohesive phrase without their attack or release bogging down both the player and the music- these movements provide an excellent way to address this issue. Try to blow through the split-tones in the same way a cellist can integrate a double stop smoothly into a larger phrase and compliment his playing with it.

The inclusion of the *Preludé* and *Sarabande* come with some what loftier goals. Given the slower speed and style, these parts provide an opportunity for a player to strive for an integrated sound that is focused not just upon immediacy and accuracy, but also attempting to truly create a beautiful, harmonic sound with her split-tones. In the *Sarabande*, try to draw the split-tone out of a lush tone and focus on a timbre that matches one's monophonic sound. It can be helpful to play the split-tones with as much of an 'O' phoneme as possible. Often, the more open the phoneme one can play with while maintaining the center, one can achieve an unclouded split-tone that has more room to be perceived as a simple dyad. This type of music is an ideal situation to develop a gentler, more controlled and elegant touch with one's split-tones.

The included excerpt begins at the end of Prelude, where the first dyads appear.



This page of musical notation is a single-staff bass line. It begins with a treble clef, a key signature of one flat (B-flat), and a 4/4 time signature. The first staff contains a series of eighth and sixteenth notes, with some accidentals (B-flat, A-flat, G-sharp). The second staff features a more melodic line with a long slur over several notes. The third staff is a complex, fast-moving line with many sixteenth notes and some slurs. The fourth staff continues this fast-moving line with various accidentals and slurs. The fifth staff includes trills (marked 'tr') and continues the fast-moving line. The sixth staff has a double bar line at the beginning, followed by a repeat sign and continues the fast-moving line. The seventh staff continues the fast-moving line with a slur and a flat. The eighth staff continues the fast-moving line with various accidentals. The ninth staff continues the fast-moving line with various accidentals. The tenth staff concludes the piece with a double bar line.

Mineut I

Mineut II

Menuet I da capo

Obviously, many of the split-tones written into this cello suite are more theoretical than practical and their production has the potential to be immensely unmusical. Their inclusion is intended to be a practice method to develop an immediate attack and remove the stationary feeling many players associate with the creation of split-tones. Try to approach it in this way while continuing to strive for the highest musical ideals in one's playing. Holding a technique to the highest possible standards, even if they may be unattainable, is a practical method for raising the bar both in one's own playing and one's definition of possible. This application is much like a player working to develop her high or low range well beyond what is required by the repertoire because of the security it adds to what is demanded on the job.

## Section 2: Nicholas Deyoe- *facesplitter*

Nicholas Deyoe's *facesplitter* is a work for solo trombone composed in 2011, and collaboratively revised in 2014 by Matt and Nicholas. The performing musician is asked to integrate the human element of her playing into the piece as part of an irregular mechanical function, finding a way to regulate those human elements into the work's sonic framework. Deyoe describes the piece as 'inorganic and concrete covered,' setting the challenge to create a sonic world that is perceived as an erratic machine rather than a human attempting to disguise his human functioning in regularity.

Deyoe's thoughts on the process he is exploring are succinctly summed up by his program note for the work's recording:

*facesplitter* is a study in mechanism and degradation. This piece began an obsession for me in music that can highlight the mechanical aspects of playing an instrument while highlighting the parts that are inherently human. The closer we get to a purely mechanical representation of something, the human failures become all the more apparent. *facesplitter* alternates (and wanders the territory) between machine and person to exhibit the moments when each becomes the other. Rhythmically regular split tone pulsations eventually falter. Vocal multiphonics combine human with machine, suggesting some creation that has come to life, but is broken and dangerous. Bolts loosen and rattle. Human moments of pure and quiet tones are degraded and forced to last too long, revealing imperfections.

This vision creates a series of singular challenges that require thoughtful consideration when applied to the concepts laid out in this manual.

The primary challenge in *facesplitter* is the immediate production and cessation of split-tones in a wide spectrum of dynamics. *facesplitter* also challenges the performer by demanding a seamless integration of circular breathing into the work's rhythmic fabric as well as the performer being able to circular breathe 2:1 split-tones. The piece also requires that the performer rapidly and precisely alternate between split-tones and vocal multiphonics of the same interval. The score for *facesplitter* is included in this section. Because of this, individual measure numbers will be referenced rather than inserting score excerpts into the text.

The challenge of hard starts and stops is present throughout *facesplitter* in disparate styles and ranges of split-tone attacks that require a considered application of a similar method. The exercise on page 22, that focuses on immediate attacks with rhythmically intense releases, is the dominate method for approaching this challenge. All of the challenges related to this in Deyoe's work can be addressed by applying this exercise in contextually modified ways to individual difficulties.

The first, and most often missed by the author, occurrence of this challenge is at m. 17. The attacks in this section [mm. 17 to 20] present particular challenges because of the speed of reiteration and the volume of attack. The sudden volume shift can easily encourage the performer to overdo the attack and therefore lose embouchure focus and with that, the split-tone. Given that the initial attack at m. 17 is the first 4:3 split-tone of the work, the performer can help her stability by taking back the dynamic shift slightly and allowing the aggressiveness of the split-tone to create an impression of dynamic increase. In general, 4:3 split-tones tend to have a more aggressive, high overtone centered timbre than the low frequency heavy 3:2 split-tone, thus producing a brighter sound.

The other precarious element in this gesture is to not break the split-tone when executing

the multiple tonguing at the written tempo. One method to avoid this is to lengthen the first note very slightly to allow the split-tone to center before disturbing it with articulation. Another technique to aid its stability is to keep the tongue low in the mouth when double tonguing. While this is something one should always strive for, an inconsistent airflow can drastically effect the stability of a split-tone. Because of this, a high tongue position increases the potential of instability and increases the probability of errors when articulating so close to the beginning of the tone. By devoting careful focus to the efficiency of tongue position and allowing the split-tone to imperceptibly settle before delivering the initial back stroke while multiple tonguing, one can increase his security in the attack and deviation of this sound.

The next potential pitfall is at m. 28. If one utilizes the above suggestion of allowing the shift in split-tone to create an impression of a loud dynamic, then the performer must compensate for this by adjusting the volume at m. 28. Given the increased tempo and aggressive sound created by the 4:3 split-tone combined with double tonguing, it is easy for the player to not give an impression of a softer, *mp* dynamic. While seemingly a small challenge, it is actually an incredibly important moment in the work. If the performer fails to create a gradation of split-tone dynamics, *facesplitter* can lose its structural clarity. If the integration of split-tones into the form and texture are lost, the work can threaten to become a series of extended techniques and noises rather than the carefully thought out work it is. Much like a brass section “taking back” certain dynamics in a Bruckner symphony to maintain interest and impact, the performer must devote careful attention to the dynamic gradations in *facesplitter*.

Since this is such a pivotal detail, it is recommended that the performer slightly over emphasize the softer dynamic. Careful attention must be paid to finding a healthy middle point between executing the split-tone softly enough to create a change in contour while also still

playing it loud enough to present a full image of the sound and create a clear forward momentum to emphasize the tempo shift. One useful method for creating a stable attack at a softer volume while being able to focus on a clear, full sound, is to practice this section with a practice mute. Much like in traditional trombone practice, the application of a practice mute to this phrase can assist in finding the balance point between creating the physical sensation of a soft attack while playing into the resistance of the mute to create of full width of tone. While the work demands many extreme techniques, consistent delivery is created through the same practice methods one would apply to any more traditional work.

A quite precarious appearance of this issue occurs from mm. 51-53. This spot provides an unlikely challenge for a few reasons. Primarily because these are the split-tones in the work most inclined to instability, they are the softest, and they are performed without the resistance benefits [and wiggle room] of a mute. A practical method for approaching a consistent low 3:2 split-tone attack is to utilize the attacks exercise with breath attacks. Do the exercise at a soft volume and deliberate tempo while striving for a square beginning to one's split-tones without the aid of the tongue. Much like the application of breath attacks to traditional playing, they are incredibly useful for finding the correct balance of vibration in this context. Find the balance point where one relies on an immediate attack from the air and lip, while the articulations simply provide a small touch of clarity. As with m. 28, this section can also greatly benefit from the use of a practice mute.

Another singular challenge materializes from mm. 46 to 48. This figure presents the challenge of one executing a 2:1 split-tone, circular breathing it, and adding vocal multiphonics to its texture. Much like circular breathing a more standard split-tone, circular breathing a 2:1 split functions largely on one's ability to maintain a focuses center to one's embouchure inside the

mouthpiece while the external parts shift. This is complicated by the fact that the 2:1 split-tone does not have the same form of anchor that higher split-tones do, however one can compensate for this by keeping her breaths short, relaxed and with the smallest amount of puff possible. This will require the performer to breathe more often, but this is built into the structure of the phrase. The periodic vocal rests that correspond with the 3/4 closing of the mute are intended to be moments for the trombonist to integrate the necessary breathing into the form of the work and use the slight aid of the mostly closed mute, both in resistance and filtration, to assist with this precarious challenge. Allow the soft dynamic to create a calm but complex sound and simply allow the breathing to exist in that space.

The secondary issue in this phrase is the addition of the voice. Similar to circular breathing, the actual mechanics are no different than traditional vocal multiphonics, assuming that one can maintain a focuses center to the split-tone. The primary challenge with the integration of vocal multiphonics into a 2:1 split-tone is balancing the amount of air needed for the voice and extremely slow rate of air needed for the 2:1. If one sings fully and with a direct sound, she runs an incredibly high risk of destabilizing the split-tone. It is instead helpful to allow the voice to be diffuse and blend into the texture of the 2:1. This challenge is most effectively navigated by allowing the voice to integrate into the composite split-tone sound and be a portion of the sound that creates timbrel and spectral change rather than the direct audibility of dyads.

A modified but less delicate version of this challenge also appears at m. 76. This measure combines the voice with the more stable 3:2 split-tone. The difficulty with this measure is to balance the voice with the split-tone, which allows the downward glissando to be audible. Given the presence of sound a 3:2 split-tone creates, one must sing with a full and well supported voice to make an audible sweep in the timbre of the split-tone. This combinatory effect also sets the

performer up for a balanced execution of the rest of the phrase. Once the glissando reaches its lowest point [a 1:1 with the top tone of the split], the trombonist drops the split-tone down to the lower tone while maintaining the voice and performing a crescendo. As this phrase is building into the dynamic climax of the work [m. 83], a drop in intensity at this exchange creates a reduction where the build should begin. If the performer can enforce a balanced sound between the voice and split-tone, a dynamic integrity will be maintained when the split-tone is dropped, thus allowing a foundation for a logical sonic build into m. 83. This balance also lays a foundation for the proceeding exchanges of split-tone and vocal multiphonics on the same interval. The practical execution of this challenge will take care of itself if the foundation is laid the moment the voice enters against the split-tone.

Nicholas Deyoe's *facesplitter* is a uniquely challenging and rewarding work which effectively explores the physical mechanization of the performer while avoiding the creation of a work that only aurally functions from the knowledge of that process. While extremely challenging, *facesplitter* is a work that was made through an extensive collaborative process and that process is reflected in the exactness of notation. That is to say that all the materials were carefully worked on with the intention that the work can be performed as it is written and the sounds were chosen for their effectiveness and potential for reliability. This is in contrast with its B side, *Bowel Resection*, which is a work that allows itself to mold to the limits of the individual performer. *facesplitter* exists as inorganic matter with a clear plan intended for a clear execution of a musical concept. It is the author's hope that this writing provides a starting point for a trombonist interested in *facesplitter* to begin a dialogue with herself as how to best approach the work and create paths for his own playing style to fit into the required mechanization.

## About the piece:

### Mutes:

Harmon Mute with Stem

Metal Bowl approximately the same size as the bell

Both mutes are indicated by name. When "harmon" appears backwards, the mute is to be turned around and held backwards against the bell.

### Open/Closed mute pulsations:

With both mutes, pulsations between open and closed positions are used. When these symbols are used over a long note, a rhythmic indication will be shown above the staff.

### Multiphonics:

Split Tones. Multiple Split Tones are called for in this piece. They are always accompanied with the symbol [ST] to specify that a Split Tone is desired rather than singing while playing.

When singing while playing is desired, the text [sing] will appear. In these cases, the upper note is always the note to be sung.

### THORNBONES

#### High/Low playing/singing:

#### Publications.

When an arrow is used as a notehead, it specifies that the played or sung note should be as high, or as low as possible (depending on the direction of the arrow). These are never meant to be pure or stable sounds. Rather, they should be somewhat impure in nature. The specific extreme of the highness or lowness should be determined based on desired dynamic level.

### Duration:

c. 8 minutes

Dedicated to  
Matt Barbier  
[www.mattbarbier.com](http://www.mattbarbier.com)

facesplitter was premiered by Matt Barbier in January of 2012. From 2012 to 2014, we have regularly met and workshopped this piece together, resulting in this revised version of the score. The work we have done on this score is to accurately depict the way that he plays the piece. This version of the piece would not be able to exist if it weren't for Matt Barbier's dedication in developing his own techniques and his enthusiasm for sharing his new discoveries with me.

# facesplitter

solo trombone

Nicholas DEYOE

harmon w/ stem

♩ = 70

ST

Trombone

mp/mf

6

5:3

11

mp/mf

16

mf > p mp

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19

f mf

pp ppp mp pp

23

mf

sub p

mp

♩ = 80

27

mp

pp mf p mp ff

31

[sing]

[slowly waver]

[sturdy]

ppp

36

remove harmon

♩ = 72

metal bowl mute (pick up mute while playing)

1/2

let rattle

p ppp p

♩ = 80

41

[sing]

ST

ST

[sing]

[Sudden]

mp pp p f mp (as long as possible) ff

46 [sing]  $\hat{\wedge}$   $\frac{3}{4}$   $\frac{1}{2}$   $\frac{3}{4}$   $\frac{1}{2}$   $\frac{3}{4}$   $\frac{1}{2}$   $\frac{3}{4}$   $\frac{1}{2}$   $\frac{3}{4}$   $\frac{1}{2}$   $\frac{3}{4}$   $\frac{1}{2}$   $\hat{\wedge}$

p ppp

extremely long

49 [put down mute while playing] ( $\text{♩} = 80$ ) ST

(ppp) p

55 [sing] 3

mf pp

60 [harmon] RAGE THORNBONES [sing] o+ o+

p ppp p

Molto Accel.

65 ST III [normal]  $\hat{\wedge}$

mp/mf p mp p

$\text{♩} = 72$

68 [harmon] [scream] ST [play] f

mf pp f

$\text{♩} = 60$

73 [sing]  $\hat{\wedge}$  3

pp pocco p mp mf p

77 ST 3 [sing] o+ o+ o+ ST o+ o+ o+ o+ [sing] o+ o+ o+ o+ 5:3 3

f p mf mp mp p

83 ST  $\frac{1}{2}$   $\frac{3}{4}$   $\hat{\wedge}$  ST [normal] [bass with splid]

fff fff ffff poss. pp

### **Section 3: Clint McCallum- *Bowel Resection***

Clint McCallum's *Bowel Resection* is a solo trombone work from 2011 that takes the concepts from the circular breathing and articulation sections and pushes them to their limits while demanding a stable execution. This section explores the practical application, and expansion, of the previous exercises in the frame work of McCallum's solo.

The defining challenge of *Bowel Resection* is the fact that it presents a singular demand- the work is a single split-tone, sustained for six and half minutes, that is constantly altered, but never broken. The piece takes this single sound and requires that the trombonist circular breathe and rapidly double tongue while slowly stretching the split-tone down the slide. It is a work that requires a mastery of both of these skills, while also demanding that the trombonist maintain an intensely focused sound, for an extended period, while she plays multiple techniques that cause one's sound to spread.

*Bowel Resection* is a work that explores the physical limits of the musician by exploiting a single sound, but the sound created by this act can create an illusion of stasis that can undermine the desired result. Therefore, an additional challenge for the trombonist is to maintain utter stability while still clearly asserting her human existence and struggle into the work's aural fabric. The performer must break away from the piece's potential to fall into a glacial stability that is conceptually divorced from the physical demands of the performer.

The importance of this issue is underlined by McCallum's program note for the *Face*

*Resection* EP:

When Matt Barbier premiered *Bowel Resection* in 2014 a majority of the audience assumed there was electronic processing involved. This was due partly to the rich sonic complexity his split-tones, but mostly because he never took a breath. Transitioning between split-tones while at a loud dynamic and circular breathing is an inhuman (and inhumane?) task. In fact, when I wrote the piece I wasn't sure that it was physically possible. After the performance I revealed that there had been no electronic processing, that what we had all just heard was someone circular breathing a split-tone for seven minutes. People were shocked. This experience at the premiere me concerned as we approached this project. If people assumed it was electronic in a live situation, how were we going to preserve the physicality of the performance that is so important to the piece when we create a recorded version? To me, all of the distinguishing aspects of the piece—insistence, an engulfing spectrum of sound, a blurriness that thwarts the perception of proportion and hence the formal sense of time, the bizarre instrumental mechanics, the physical extremity of the instrumental technique—all invite a vivid imagining of what is happening both inside of the trombone and inside of the trombonist's body. This is imagining is a sort of empathetic transcendence of both space and subject. If we hear *Bowel Resection* as electronic music it loses that sense of gravitational pull towards some (imagined) body. Then again, this zero-g approach could be a completely valid way to listen to the piece. And perhaps what is so exciting about this recording is that you can now listen to the piece in many different ways. But Matt's brief, convulsive sniffs should, on some level, continue to return you to the mystery of his struggling body.

Expanding upon McCallum's ending focus, much like in *facesplitter*, the act of circular breathing is an import musical tool for the form and function of the work. However, unlike *facesplitter*'s mechanically regulated breathing scheme, the need for humanization [and the practical execution of what is required] in *Bowel Resection* suggests rapid, convulsive patches of

breaths. Irregular, desperate attempts to fill one's lungs anchor the work in the sound of a human body and make the breath a constant and intrinsic part of the work's framework. On the side of practical execution, the longer the breath one takes, the higher the probability one has of destabilizing and losing the split-tone. Therefore, multiple short and rapid breaths help a player maintain focus on the center of his embouchure, while also adding an important sonic parameter to the work.

An additional issue found with early performances of *Bowel Resection* is that as one continued the glissando into the further reaches of the slide the written *ff* dynamic could not be maintained because of the nature of the lower 3:2 split-tones. Another problem is that the lower end of the glissando requires a wider aperture to maintain a full tone which will potentially destabilize the split-tone, particularly when combined with the destabilizing effects of circular breathing and rapid articulations. This destabilization, combined with a registerally created decrescendo, creates an anti-climactic drop in energy for the work's second half. A solution found to counteract this problem is to utilize common-tone slurs. This causes deviation from the score, but one that is approved by the composer.

Common-tone slurs, like circular breathing, can serve a dual function in this work by providing assistance with practical execution while also providing sonic material that promotes the composer's conceptual desire for humanistic clarity. By utilizing common-tone slurs to transition between 3:2 and 4:3 split-tones, one is able increase, rather than lose, intensity over the second half of the work, while also enacting hard shifts in harmony which break an illusion of sonic stasis. In doing so, the trombonist is able to shift the listener's focus and bring him into the body and mechanics of the performance, while maintaining the standing wave of the work.

## Practical Application of Concepts

In this next section the practical applications of these concepts will be explored in relation to the previous exercises and specific examples from the *Bowel Resection* score. The score is included here for reference with the permission of the composer.

McCallum's notation and instruction is much less exacting than that contained in *facesplitter*. This allows the work to have a certain degree of flexibility in execution. While the form and shape of the score is clear, the flexibility of certain parameters allows for the work to be shaped to push the limits of the individual performer while still remaining *Bowel Resection*.

The score contains the instruction, “*sempre split-tone (circular breathe)*” without specifying which partials are split, although it does imply a 4:3 split-tone from the written Bb. For the purpose of the author's own playing strengths and practical concerns, the partials split on the recording and in live performance are a 3:2 split-tone. This was chosen for practicality and security. Given the extreme modifications required, the flexibility of the 3<sup>rd</sup> partial on the trombone and its conducive nature to the techniques involved made it a more practical candidate for the demands of the work. Another reason for the choice is the inherent stability of a 3:2 split-tone. In consideration of the fact that the next split-tone down the overtone series requires a sizable embouchure shift, this helps reduce the danger of the performer, because of fatigue, losing muscular focus and dropping down a partial. With a much less malleable 4:3 split-tone, this possibility is much greater, therefore a 3:2 split-tone was selected increase control and to make the other technical modifications more exact.

One of these modifications is McCallum's desire for a specified shift between “*complex*” [noise based] split-tone and more clarity in the timbre of the dyad being split. In discussion with the composer, what was stated as important is not that an exact distinction is made between a complex and dyad-based split-tone, but that the performer utilizes two distinct timbres of split-tone. For this specific issue the choice was made to have a shift in phoneme to change the overtone spectrum of the sound. For the “*complex*” timbre, which is the bulk of the work, a basic “o” phoneme was chosen. This allows the maximum amount of information into the sound while remaining closest to traditional playing, which allows for a greater amount of stability while maintaining a comfortable level of focus inside the mouthpiece. For the more sporadic dyad sections, it was decided to utilize a closed “e” phoneme, which filters out a significant portion of the sound, therefore creating the impression of a dyad. The additional function of this choice is that, while the “e” phoneme is taxing to maintain for long periods, it comes from over-focusing the embouchure. This over-focus brings a much needed stability inside the mouthpiece periodically throughout the work, which helps maintain an unbroken split-tone.

An additional modification suggested by the composer relates to pragmatic demands of circular breathing for such an extended period. McCallum allows for the player to add fermati where he requires more time to breathe. This allows the performer to extend certain notes and create patches of breath, which assists in creating space in which this aural portion of the work can exist. Much like the opening phrase of *facesplitter*, it is recommended to include this aspect earlier and more regularly than initially needed at the beginning of the work to both normalize the sound and stake its claim in the aural fabric.

The final modification mentioned in this section is the utilization of common-tone slurs between split-tones. The interpretations involved in this project involves two common-tone slurs and both correspond with changes in direction of glissando. The author found that his 3:2 split-tones began to lose power and focus past the D/G, 3:2 split-tone. The solution found, with the composer, is to utilize the [almost] common-tone at m. 81. Shifting between a D/G 3:2 split-tone to a D/A 4:3, by utilizing the tenor-bass valve, creates a massive boost in both volume and intensity at the point where the authors limit of control was being reached. The shift between the two split-tones also creates an illusion of chord shift from I to V. This harmonic shift, combined with an increase in intensity, creates a strong deviation at a point where the work begins to bring the listener into a sense of stasis.

At the point of this shift, the glissando is reversed in direction while the same slide proportions are maintained. By doing this the performer is able to further break any feeling of stasis while more reliably increasing intensity. At the height of the glissando, the performer reverses the process and releases the tenor-bass valve at the end of m. 152. This creates an common-tone slur from the F/C 4:3 split-tone to a F/Bb 3:2 split-tone. The reversal creates an impression of a V to I resolution and modifies the timbre from a more direct and aggressive 4:3 split-tone to a wider 3:2. These aspects encourage a further deviation from any illusion of stasis and assist in presenting a larger formal direction to the listener. In the author's performances, at this point mm. 153-159 are repeated while a long glissando down to 7<sup>th</sup> position [B/E 3:2split-tone] is executed to create a longer coda and provide the full visual and sonic effect of a tritone glissando.

One challenge not yet discussed are practice techniques for combining circular breathing and multiple tonguing concepts as well as practical solutions for building the strength and focus necessary for the work. A basic approach for the first issue is simply to modify the articulation exercise on page 21 by adding circular breathing to it.

1st position

o - e - o - e -

t k t k t k sim.

3 3 6 6

Sequence down by position, like previous exercise.

This process is obviously contingent on the trombonist being completely comfortable both the original exercise and circular breathing, as covered in the previous sections. For the author, the next step was to take this exercise and continue it by removing the first and last two bars and utilizing glissandi to sequence through positions involved in *Bowel Resection* to create a controlled practice of the piece. It is recommended to not sequence by full position, but by quarter step or smaller. One should start with only first position. Once that is comfortable, add a small glissando and repeat the exercise. Continue this process by slowly increasing the number of cycles while methodically covering all parts of the slide utilized in *Bowel Resection*. This meticulous process forces a player to familiarize herself with his own tendencies and pitfalls. Concentrate on

maintaining focus and center in one's sound and mind. Pay careful attention to small habits that lead to losing the split-tone or unbearable discomfort. Try to find the point not where they affect the production, but where these issues actually start. By slowly and deliberately covering the entire surface of the work, one must search for these issues at their root- not their growth. *Bowel Resection* is a long work that's success hinges on the eradication of inefficiencies before they are physically perceptible. Once the player realizes a problem has arisen, it is often too late to correct it given that utter stability must be maintained for the work to receive a successful performance.

In this process, the places that the split-tone is lost in this exercise often corresponds with where the split-tone is lost in performance. By taking time to deliberately find one's weak points divorced from the piece, one can learn the personal, physical habits and warning signs that frequently lead to failure or success in an unstable work.

While *Bowel Resection* presents a host of challenges and pitfalls, it is a work well worth the undertaking. It is a work that creates an extreme instability but is not intended to be a work of failure. It is a piece that demands the individual performer find the edge of his own limits and not surpass them. One must hold themselves on that edge and move neither forward or back. She must remain stable and motionless while simultaneously avoiding stasis. Of works exploring severe physical limits, *Bowel Resection* is largely unique in the fact that it allows itself to be molded to the performer. It finds a way to push an individual trombonist to his bodily limit while still maintaining a cohesion and form that clearly makes it Clint McCallum's work.

# Bowel Resection

Clint McCallum

$\text{♩} = 280$   $\text{♩} = 60$   
sempre split tone (circular breath)  
complex

Trombone

**ff** **mf** **gliss.**

11 **gliss.** **gliss.** **gliss.** **gliss.**

25 **f** **gliss.** **gliss.** **gliss.** **gliss.**

30 **mf** **f** **mf** **f**

41 **gliss.** **gliss.** **gliss.** **gliss.**

46 **gliss.** **gliss.** **gliss.** **gliss.**

50 **gliss.** **gliss.** **gliss.** **gliss.**

58 **f** **mf** **f**

65 **gliss.** **gliss.** **gliss.** **gliss.**

70 **mf** **f** **mf**

78 **f** **mf** **mf**

86 **f** **mf** **mf**

95 **f** **mf** **mf**

105 **f** **mf**

© clint mccallum

Bowel Resection

→ complex → 4th

117  
Tb. *gliss.*

→ complex

128  
Tb. *f* *mf* *f* *mf*  
3:2 6:4 12:8 *gliss.* 12:8 12:8

136  
Tb. *f*  
*gliss.* 4th 6:4

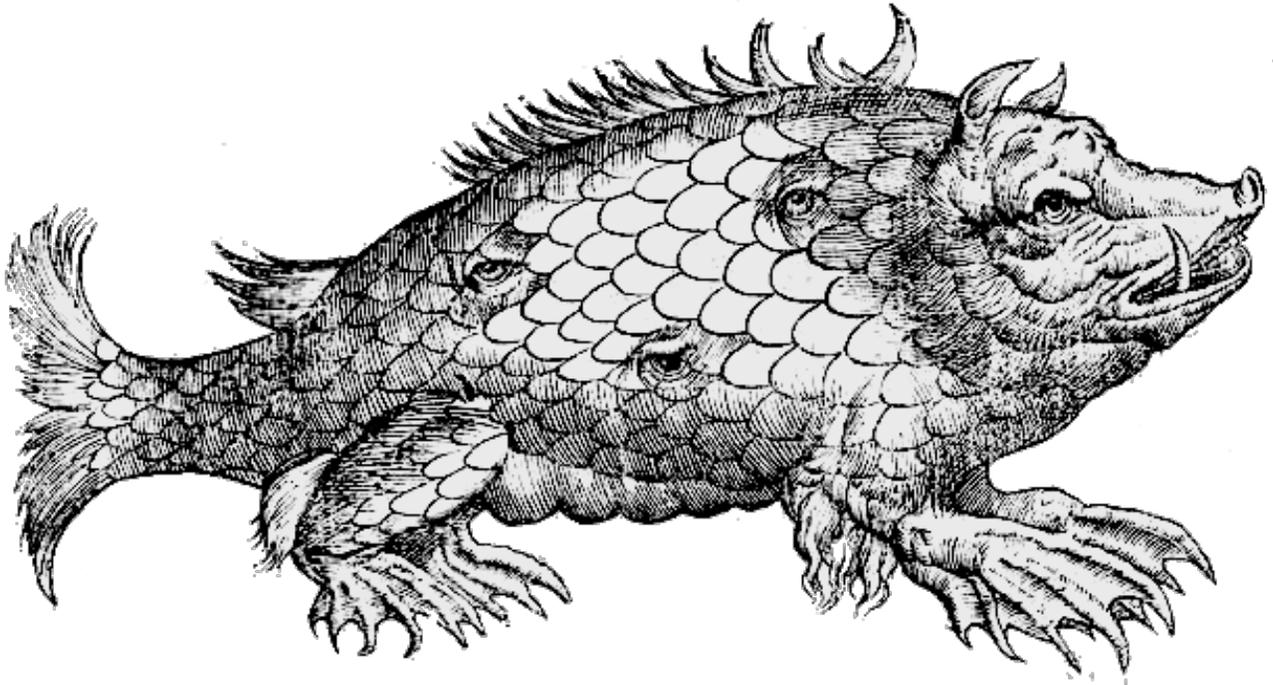
144  
Tb. 6:4 3:2 6:4 12:8

148  
Tb. 3:2 3:2 3:2 3:2 3:2

152  
Tb. *mf* *ff*  
→ complex → 4th

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Monstrosus Sus marinus



## Closing

In closing, I hope that this text is found to be useful to those who are interested in split-tones and in performing Nicholas and Clint's music. Both pieces are incredible works that have been very carefully and thoughtfully considered by both composers. I hope that some of the information written will be useful to musicians who are interested and useful to composers for understanding what is involved in making these sounds happen. This can hopefully deepen one's perception of how one can successfully integrate these sounds into an expansion of the trombone's understood vocabulary.

I can not express enough gratitude towards Nicholas and Clint for writing this music and showing such patience and flexibility in the process of learning and reworking. I am also deeply thankful for the support and flexibility of New Music USA. Their kind grant made this possible and their time line flexibility allowed this to develop fully. Also an immense debt of gratitude is owed to Ian Carroll. Not only did he teach me how to create split-tones, but he also is the person responsible for the initial creation of both these works. While he left the trombone before performing this music and I reworked them both with the composers, none of this project would be possible without his work and inspiration.

# 1. Appendix 1: Split-tone Chart

Below is a chart of possible split-tones arranged chromatically by partial split and with a division for partials split with and without the use of the tenor-bass valve. Some ranges come more naturally to different players than to others. Given the individual nature of all brass playing and a desire for exploration, the included charts encompass a significantly larger range than the use of split-tones in the existing repertoire. As with any extended technique, it is recommended that the composer utilizing this chart work with the trombonist she is writing for the find the best match with his playing tendencies.

2:1	2:1 valve
1    2    3    4    5    6    7	v1   v2   v3   v4   v5   v6
3:2	3:2 valve
1    2    3    4    5    6    7	v1   v2   v3   v4   v5   v6
4:3	4:3 valve
1    2    3    4    5    6    7	v1   v2   v3   v4   v5   v6
5:4	5:4 valve
1    2    3    4    5    6    7	v1   v2   v3   v4   v5   v6
6:5	6:5 valve
1    2    3    4    5    6    7	v1   v2   v3   v4   v5   v6

7:6 7:6 valve

1 2 3 4 5 6 7 v1 v2 v3 v4 v5 v6

8:7 8:7 valve

1 2 3 4 5 6 7 v1 v2 v3 v4 v5 v6

9:8 9:8 valve

3 4 5 6 7 v1 v2 v3 v4 v5 v6

10:9 10:9 valve

5 6 7 v1 v2 v3 v4 v5 v6

11:10 valve 12:11 valve 14:13

v1<sup>d</sup> v2<sup>d</sup> v3<sup>d</sup> v4<sup>d</sup> v5<sup>d</sup> v6<sup>d</sup> v3 v4 v5 v6

## 2. Appendix 2: Common-tone Split-tone Chart

Here is a chart, organized by the upper pitch of theoretically possible common-tone split-tones. It is by no means entirely playable by the author or universal possible. It can, however, provide a general idea of the possibilities of this technique and can be used as a set of goals for approaching this technique.

The chart displays common-tone split-tones organized by their upper pitch. The ratios for each split-tone are listed above the notes. The notes are written in bass clef for the first five staves and alto clef for the last two staves.

Staff 1 (Bass clef): Ratios 2:1, 3:2, 2:1, 3:2, 2:1, 3:2, 2:1, 3:2. Notes:  $\text{B}_2$ ,  $\text{B}_2$ ;  $\text{B}_2$ ,  $\text{B}_2$ .

Staff 2 (Bass clef): Ratios 3:2, 4:3, 3:2, 4:3, 3:2, 4:3, 3:2, 4:3, 3:2, 4:3. Notes:  $\text{B}_2$ ,  $\text{B}_2$ ;  $\text{B}_2$ ,  $\text{B}_2$ .

Staff 3 (Bass clef): Ratios 3:2, 4:3, 5:4, 4:3, 5:4, 4:3, 5:4, 6:5. Notes:  $\text{B}_2$ ,  $\text{B}_2$ ;  $\text{B}_2$ ,  $\text{B}_2$ .

Staff 4 (Bass clef): Ratios 4:3, 5:4, 6:5, 4:3, 5:4, 6:5, 4:3, 5:4, 6:5, 7:6. Notes:  $\text{B}_2$ ,  $\text{B}_2$ ;  $\text{B}_2$ ,  $\text{B}_2$ .

Staff 5 (Alto clef): Ratios 5:4, 6:5, 7:6, 5:4, 6:5, 7:6, 8:7. Notes:  $\text{B}_2$ ,  $\text{B}_2$ ;  $\text{B}_2$ ,  $\text{B}_2$ .

Staff 6 (Alto clef): Ratios 5:4, 6:5, 7:6, 8:7, 5:4, 6:5, 7:6, 8:7, 9:8. Notes:  $\text{B}_2$ ,  $\text{B}_2$ ;  $\text{B}_2$ ,  $\text{B}_2$ .

### **Appendix 3: Stable Instability [notes on learning]**

This is taken from my program note of the *Face/Resection* album.

When I first received the scores to *facesplitter* and *Bowel Resection* in 2011, I was fairly certain that both pieces were far beyond my abilities. The primary issue was the same in both pieces: how to learn/perform music that may or may not be possible and cannot be understood until learning how to play the unknown sounds. This catch 22 was a common theme in the trial and error (and more error) process of finding the sounds needed to make these pieces exist. It was often maddening to try and find a way to merge the disparate demands of creating an unstable sound with a way to apply techniques that require a massive amount of stability and control, such as circular breathing and multiple tonguing. The process frequently felt like dealing with a stray animal that needs help but doesn't quite trust you enough to care for it. The sound cannot be forced under your control, but instead a relationship must be developed within which the sounds like to live. And, on their terms, you try to find a mode to coax some form of regularity out of them- studying their habits to find a pattern and simply move with their needs while finding ways to corral them in the direction the music demands.

Because of this process, learning the music was something I had to take at an extremely slow pace, picking at it over a long period of time. It was an immensely rewarding and fluid process to work with Nick and Clint to tweak the pieces to work with the habits sound exploration. Quite frequently, the work would create familiarity which would shift the possible limits of certain sounds and allow us to push the music further than originally conceivable. The more I

worked on the sounds the more daunting some became, but for others the limits seemed to get pushed further to find an unstable edge we could stand on. In some cases we came across sounds I did not know were possible- sometimes prompted by a sound Nicholas or Clint was seeking, sometimes entirely by accident or fatigue. I'm eternally grateful for Nicholas and Clint's patience with this slow process of back and forth and long delay before the premiere, which allowed me to bring the most I could to their music.

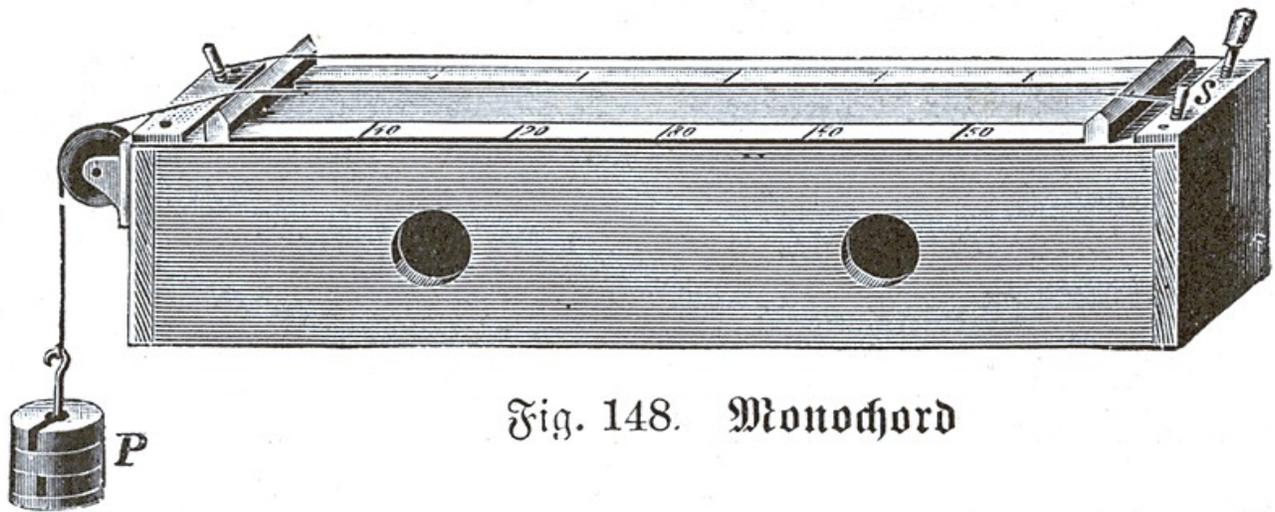


Fig. 148. Monochord