

Telemann and Baroque Hand Horn Technique

by

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## ABSTRACT

In 1808, Heinrich Domnich (1767-1844) published his book, *Méthode de Premier et de Second Cor*, in which he credited the invention of hand horn to Dresden hornist Anton Joseph Hampel (1710-1771). The notion that Hampel was the first horn player to experiment and teach hand horn technique has persisted to the present day. This assumption disregards evidence found in Telemann's compositions and Baroque instrument design, where hand horn technique was clearly in use before Hampel.

This paper presents evidence that before Hampel, hand horn was in use and called for by composers. Because of the number of works for horn he generated before and during Hampel's life, Telemann's pieces provide powerful insight into the use of Baroque horn. Musical examples originate from passages in Telemann's works where the horn performs in a solo capacity and the music requires the performer to produce pitches outside the harmonic series. By necessity, the performer must use either the hand or bend the note with the embouchure in order to produce the correct pitch with the hand being the logical choice. The paper also examines published interviews from horn pedagogues, history books, method books from the classical and baroque eras, baroque and hand horn design, as well as articles written by some of the world's foremost baroque and hand horn experts.

By indentifying the number of non harmonic series tones in Telemann's music, combined with the opinions of hand horn experts, this paper suggests that horn players during the Baroque era must have known about, and used, hand horn technique. This knowledge will influence performer's interpretation of baroque pieces by providing a more historically informed performance, clearer understanding of intonation, the variety

of tone colors expected, and create a better understanding of the development of the horn from foxhunting to the concert hall.

To my family, without whose faith and support this research project would not have been possible.

## ACKNOWLEDGMENTS

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## ABBREVIATIONS

- D-DI Dresden, Sächsische Landesbibliothek - Staats- und Universitäts-Bibliothek,  
Musikabteilung
- D-DS Darmstadt, Hessische Landes- und Hochschulbibliothek, Musikabteilung
- NHT Non-Harmonic Tones
- SLUB Sächsische Landesbibliothek - Staats- und Universitätsbibliothek Dresden
- ULB Universitäts- und Landesbibliothek at the Technische Universität Darmstadt

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## Chapter 1

### INTRODUCTION

The prevailing conventional wisdom in existing horn literature, in both the modern and classical eras, is that Joseph Hampel (1710-1771) invented or codified hand horn technique around 1750.<sup>1</sup> Heinrich Domnich (1767-1844), gave Hampel credit for the invention of hand horn technique in the section describing hand stopping technique in the 1808 edition of his method book:

It was a ray of light to him ... he saw the means, by introducing and pulling out the stopper alternately, of running through the diatonic and chromatic scale of all keys without interruption. Then he composed for the horn new music where he introduced some notes which until now were strange to him. Some time after, having noticed that the stopper could be replaced advantageously by the hand, he ceased to use it.

Before this revolution, fortunate as it was brilliant, the manner of holding the horn was the same as that used today (1808) for the tromp de chasse [hunting horn]. But as the arm on which it was supported was required for the execution of the stopped notes, the holding of the instrument was changed....

Creator, in a sense, of a new instrument, Hampel, who was not experienced in his youth in the practice of stopped notes, restricted the usage to slow pieces. It was reserved for one of his disciples to give to this discovery all the extension and brilliance of which it was capable.<sup>2</sup>

Domnich was a student of horn virtuoso Giovanni Punto (1746-1803), who had been a student and published an edition of a horn method by Hampel in 1794.<sup>3</sup> Domnich most likely obtained his information during his lessons with Punto.<sup>4</sup> Interestingly enough, Hampel's book *Method pour Cor* published by Punto, albeit with only brief

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<sup>1</sup> John Ericson, "University of Horn Matters: The Baroque Origins of Hand Horn Technique, and the Early Classical Horn," Horn Matters, February 19, 2012, accessed August 25, 2014, <http://hornmatters.com/2012/02/university-of-horn-matters-who-invented-hand-horn-technique-and-the-early-classical-horn/>.

<sup>2</sup> Heinrich Domnich, *Méthode de Premier et de Second Cor* (Paris: Le Roy, 1808), III-V. This passage was translated in Birchard Coar, *A Critical Study of the Nineteenth Century Horn Virtuosi in France* (Sarasota: B. Coar, 1952), 6-8.

<sup>3</sup> Ericson, "Baroque Origins".

<sup>4</sup> Ibid.

descriptions of the exercises, does not purport to have invented or codified a new or revolutionary technique. Published posthumously by Punto, this book states that it was "composed by Hampel and perfected by Punto, his student."<sup>5</sup> The story Domnich quotes exemplifies the Baroque era tendency toward the dramatic and extravagant. Virginia Neylon notes that seventeenth century "artists looked to the past and often based their work on the old masters."<sup>6</sup> Besides this Baroque tendency, Domnich surely benefitted economically from this romanticized story, with students flocking to study with the student of master performer Punto, who studied with the master of hand horn technique. This is especially evident since Baroque composers and teachers considered publishing a book or score a form of advertising for both their performances and teaching careers. Telemann, for example, required audience members to bring copies of the published score to the performance of his musical setting of the Passion as their admission ticket.<sup>7</sup>

Because of the success of Domnich's story in his method book, the story lives on to the present. Morley-Pegge in his 1973 book, *The French Horn*, states, "It has been generally assumed that this new use of the hand in the bell was 'invented' by Anton Joseph Hampel."<sup>8</sup> Robin Gregory even goes as far as to give definitive credit to Hampel in another romanticized version of history:

About 1760, during the course of experiments on muting which he was carrying out in order to try to modify the still raucous tone of the horn, the

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<sup>5</sup> Anton Hampel, *Methode Pour Cor*, ed. Giovanni Punto (Paris: J.H. Naderman, ca. 1794), 1, accessed October 11, 2014, [http://japanese.imslp.info/files/imglnks/usimg/4/47/IMSLP70042-PMLP140927-Hampel-Punto\\_\\_M\\_\\_thode\\_-\\_Paris\\_\\_H.\\_Naderman.pdf](http://japanese.imslp.info/files/imglnks/usimg/4/47/IMSLP70042-PMLP140927-Hampel-Punto__M__thode_-_Paris__H._Naderman.pdf), 1.

<sup>6</sup> Virginia Neylon, "The Baroque Orpheus and the Positive Power of Art: A Study in Music and Painting" (master's thesis, California State University, 2010), 2.

<sup>7</sup> Richard Petzoldt, *Georg Philipp Telemann*, trans. Horace Fitzpatrick (London: Ernest Benn Limited, 1974), 34.

<sup>8</sup> R. Morley-Pegge, *The French Horn; Some Notes on the Evolution of the Instrument and of Its Technique*, 2nd edition (New York: Ernest Benn Limited, 1973), 87.

Dresden player Hampel discovered that the presence of the hand in the bell went a long way towards achieving his aim. Moreover he found that by changing the position of the hand in the bell it was possible to fill in many of the gaps between the notes of the harmonic series, although these 'stopped' notes were of somewhat inferior tone quality. To Hampel, therefore, is given the credit for founding the great bohemian school of hand horn virtuosi, whose influence later spread to France, where the hand horn had its heyday in the first half of the nineteenth century.<sup>9</sup>

The evidence in the musical scores from Baroque era composers, predating Hampel, however, calls into question the belief that Hampel invented or was the first to codify hand horn. Horn performers during the Baroque era were experimenting with and had developed a system of hand horn technique, which is clearly visible in the works of Telemann.

### **Method of Inquiry**

The main methods of inquiry are score analyses of the works containing horn parts by Telemann with a focus on pitches that occur outside the harmonic series, and research into writings by modern (1960's to present day) and historical (Classical and early Romantic Era) horn teachers, builders, and historians on hand stopping and traditional performance practices. The analysis considers Baroque instrument designs, known historical performance methods, and the practical experience of natural horn performers. The analysis is based on the critical edition by Richard Dunn (published by RD Editions in 2011) and the earliest manuscripts available.<sup>10</sup>

This paper focuses on pieces composed by Telemann using the horn in a solo capacity composed between 1708 and 1735. These include: Solo Concerto in D (TWV

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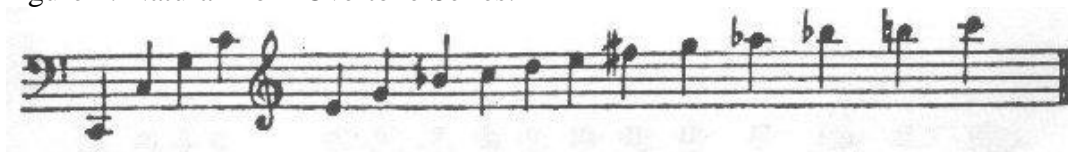
<sup>9</sup> Robin Gregory, *The Horn: A Comprehensive Guide to the Modern Instrument and Its Music.*, 2nd ed. (London: Faber & Faber, 1969), 29.

<sup>10</sup> Selections from the scans of the manuscripts of some figures are available for reference in Appendix C.

51:D8), Concerto in F (TWV 52:F3), Concerto in F (TWV 52:F4), Concerto in D (TWV 52:D1), Concerto in D (TWV 52:D2), Concerto in Eb (TWV 52:Es1), Concerto in F (TWV 54:D2), Concerto in Eb - *from Musique de Table* (TWV 54:Es1), Concerto in F (TWV 54:F1), 'Alster' Suite (TWV 55:F11). Because of Telemann's role as a transitional composer into the Classical era and the quantity of his works containing prominent solo horn parts, his music is ideal for identifying sections which require some form of manipulation.

My analysis aims to identify non-harmonic series tones within any horn part. The basic harmonic series contains the following pitches: C2, C3, G3, C4, E4, G4, Bb4, C5, D5, E5, F#5, G5, Ab5, Bb5, B5, and C6 (Figure 1).

Figure 1. Natural Horn Overtone Series.<sup>11</sup>



Any note not listed is a non-harmonic pitch and requires some form of lip, hand, or device change to produce. The presence of non-harmonic notes, especially in faster technical passages, will indicate the use of the right hand as lip bending is inaccurate at best and mutes were not commonplace at the time.

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<sup>11</sup> John Ericson, "Horn 101: The Harmonic Series," *Horn Matters*, July 11, 2008, accessed August 25, 2014, <http://hornmatters.com/2008/07/horn-101-the-harmonic-series/>. It is also sometimes referred to as the harmonic series. They can also be referred to as ranging from harmonic 1 to 16 starting at pedal C (C1).

## **Tuning system and Explanation of the Frequencies of Pitches**

Telemann used and invented a variety of temperaments during his lifetime. The equal temperament tuning system was chosen as the standard system, due to the variety of temperaments used during the Baroque period and the horns used for analysis being built at 440 cycles per second (cps)<sup>12</sup>. There is also the possibility of Baroque horns were built to a variety of tuning levels, and narrowing the exact frequencies for the temperament and horns used for each piece is impossible. Most likely, other tuning systems would not change the analysis dramatically and only serve to bring some pitches more in tune while forcing other pitches further out. The general application of equal temperament provides both convenience and familiarity for the analysis of the instruments available today, with some examples containing comments about mean tone temperament (with A4 at 440cps) where necessary.

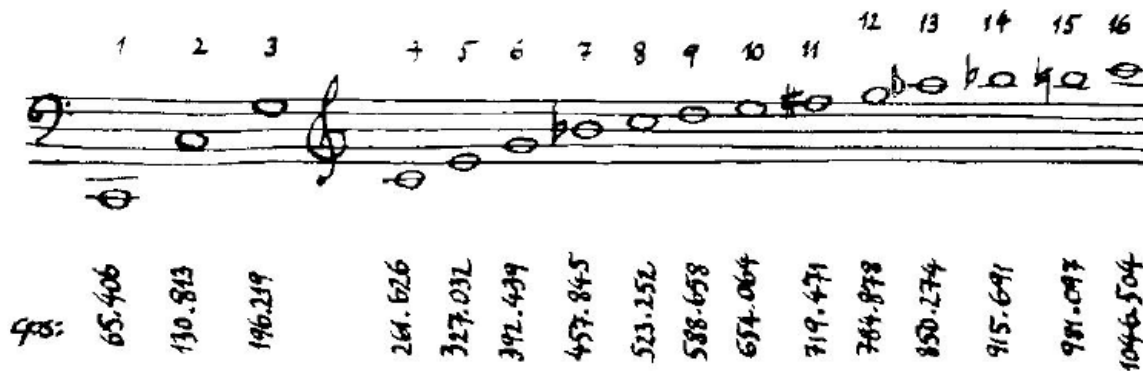
While the Bb4, F#5, Ab5 (the 7th, 11th, and 13th harmonics) and the number of neighboring tones requiring modification (B4, F5, A5) are the main pitches addressed in this paper, it is important to note the reason for identifying the specific frequencies with these open harmonic pitches. The natural horn produces Bb4 at 457.845 cps, F#5 at 719.471 cps, and Ab5 at 850.274 cps (Figure 2).

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<sup>12</sup> 1 cycle per second is equal to 1 Hertz (Hz)



Figure 2. Cycles per Second Chart for the Harmonic Series.<sup>13</sup>



The Bb4 and F#5 frequencies produced are significantly flat when compared with pitches in the equal temperament scale, and the Ab5 pitch lies directly between Ab5 and A5. In equal temperament, the frequencies for the in tune pitches (based on A4 at 440 cps) would be Bb4 466.16 cps, B4 493.88 cps, F5 598.46 cps, F#5 739.99 cps, Ab5 830.61 cps, A5 880.00 cps.<sup>14</sup> The difference in pitch produced by the natural horn versus the 'in tune' note for equal temperament would be -8.315 cps for Bb5, -20.519 cps for F#5, and +19.664 cps.<sup>15</sup> This indicates that the open harmonic for Bb4 is flat for the open harmonic and extremely flat for B4, F#5 is approximately half way between F5 and F#5, and the Ab5 pitch is closer to Ab5 than A5 by 10.062 cps. Because the pitches produced by the open natural horn are closer to the equal temperament frequencies of Bb4, F#5, and Ab5 than their neighboring tones (B4, F5, A5), this paper identifies those pitches as the ones produced by the open horn even though they would need some form of manipulation themselves to be performed in tune.

<sup>13</sup> Christopher Leuba, *Study in Musical Intonation* (n.p.: Cherry Classics, 1981), 5.

<sup>14</sup> See Appendix B

<sup>15</sup> The difference between the harmonic pitches produced on the horn and the NHTs called for in Telemann's music are: -36.035 cps for B4, +21.011 cps for F5, and -29.726 cps for A5.

Because Hampel has received such wide credit for the invention of hand horn technique, the evidence of a large number non-harmonic series tones, in repetitious passages and over a large segment of time, suggests the use of a standardized technique well before the date of Hampel's supposed invention (1750).<sup>16</sup> The following chapters will discuss the historical development of horn design, the use of the horn in Baroque music, and the large number of non-harmonic series tones present in Telemann's music. Each concerto or suite by Telemann discussed in this paper will have a brief summary and analysis, with reference to the number and function of the various non-harmonic tones and their counterparts.

### **A Note about the Editions Used**

For this paper, three different editions of Telemann's works were used: RD Edition, Barenreiter, and the scans of the original copyist's manuscripts found in the Sächsische Landesbibliothek - Staats- und Universitätsbibliothek Dresden (SLUB Dresden) and Universitäts- und Landesbibliothek at the Technische Universität Darmstadt (ULB). The RD Edition scores are very clean and readily available from multiple sources. Unfortunately, the scores contain very little explanation of these pitches and editorial markings. The Barenreiter scores are exceptional in their explanation of their markings, but only two scores (TWV 51:D8 and TWV 54:Es1) are currently in print. The scans available through SLUB Dresden and ULB are excellent clear reproduction of the manuscripts. Only a few manuscripts exist in score format, the rest are in parts. The poor penmanship of the copyists and the toll of time (three hundred

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<sup>16</sup> See Introduction paragraph on pg 1.

years) on these paper documents has deteriorated the clarity of some of these manuscripts.

### RD Edition Scores

Compiled, edited, and printed by Richard Dunn in 2003, this edition claims to be a critical edition, although not an authoritative one. While the score's typeset and minimal to no editing performance-markings provide a clear edition to work from, there are several editorial mistakes in the horn parts with a majority in the form of incorrect pitches. The incorrect notes were identified by comparing the chord structure in the accompaniment and with the manuscripts available. This edition served well as a reference when the manuscripts were unclear. The reduced piano scores proved very helpful in determining the harmonies and the historical commentary explains the original context for this repertory.

### Barenreiter

The definitive critical editions, the Barenreiter edition scores contain a preface, facsimile reproductions from the source material, and a critical report for each volume. At this time, the only scores published are TWV 52:D2 and TWV 54:Es1. Unfortunately, the lack of availability of a majority of the scores was quite limiting to the desire for a consistent score for analysis.

## Manuscripts

Most of Telemann's works for horn in the autographed scores are lost and only the copyist-generated parts are still available. The copyist's works used were Johann Pisendel (1687-1755), Johann Grundig (1706-1773), and Christoph Graupner (1683-1760). A majority of the analysis and examples came from the manuscripts. Most of the pieces mentioned in this paper do not exist as full scores and have some mistakes either by copyist error or due to the illegibility of the part.<sup>17</sup> Only having individual parts available made analysis and generating examples easier but diminished the ability to get a larger sense of the piece. The RD Edition scores were helpful in overcoming this obstacle. As the closest scores to Telemann's originals with minimal editing, the manuscripts provided the best scores for analysis and examples.

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<sup>17</sup> Potential mistakes in any of the scores were cross-referenced using the other scores available (Barenreiter, RD Edition, or manuscripts).

## Chapter 2

### BACKGROUND INFORMATION AND HISTORICAL RESEARCH

While no detailed research currently addresses the topic of Telemann's contributions to hand horn technique, a great deal is written about Telemann's life and works, late Baroque instrument design, and the development of hand horn in the early classical period. For the purposes of this paper, late Baroque will be classified as dating from 1700-1750. Evidence in the design and use of the horn, suggests using the hand horn technique would not only be possible but beneficial to intonation, accuracy, and artistry. Without knowing the context for the different models of Baroque era horns, the effect of putting the hand in the bell, vent holes, and the use of the horn in Baroque music, the analysis in Chapter 3 could point to any variety of methods or theories of producing non-harmonic tones.

### Instrument Design

John Humphries' book *The Early Horn: A Practical Guide* (published in 2000) deals closely with late Baroque and Classical horn performance practice.<sup>18</sup> Humphries classifies the instruments used in the Baroque era as similar to the *cor de chasse*. The *cor de chasse* is what is most commonly pictured when talking about the design of Baroque horns, although designs varied greatly by region. With only one key playable on each instrument, this requires the performer to own various horns in various keys, most commonly F, E, Eb, and C. In this design, the mouthpiece is part of the instrument and is not removable. The *cor de chasse* is the most closely related to the hunting horn and the

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<sup>18</sup> John Humphries, *The Early Horn: A Practical Guide* (Cambridge: Cambridge University Press, 2000), 27.

first used in the concert hall Designed for hunting trips on horseback, Humphries dates its invention to around 1680.<sup>19</sup>

An interesting development of the *cor de chasse* in the twentieth century is the use of vent holes. As explained by Albert Hiller, vent holes are used to scale the pitch of a natural horn—any horn without valves—up an interval of a fourth depending on the pitch.<sup>20</sup> This is true in theory but not in practice. In reality, vent holes produce different pitches depending on the register and note in the harmonic series.<sup>21</sup> According to Hiller, vent holes were present on the Baroque trumpet, which prove an interesting contrast to the Baroque horns that have survived.

The other horn design Humphries discusses is the master crook and coupler system. There is evidence of this design as early as 1700.<sup>22</sup> This instrument uses the crooks (used to put the instrument in different keys) inserted into the corpus, with the right hand inserted into the bell. The mouthpiece is removable, due to the innovations of the Leichnamschneider brothers in Vienna who manufactured instruments with a tapered master crook, a requirement for any removable mouthpiece system.<sup>23</sup>

The advantage of a crook and coupler system is the ability to change keys rather quickly on the same instrument. In addition to using crooks, Horace Fitzpatrick writes that performers added devices called Aufsatzel<sup>24</sup> regularly to correct intonation:

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<sup>19</sup> Ibid., 27.

<sup>20</sup> Albert Hiller, “Finger-Holes in Post Horns: An Explanation”, *The Galpin Society Journal* 43 (March 1990): 161.

<sup>21</sup> Ibid., 162.

<sup>22</sup> Humphries, 28.

<sup>23</sup> Ibid., 28.

<sup>24</sup> Aufsatzel are straight terminal tuning shanks (also known as bits) used in combination with the insert crook.

[They] were made in various lengths from 10 cm. to 15 cm. to facilitate tuning: interesting evidence of the importance of accurate intonation even in those days! The presence of a set of tuning shanks, usually six in number, explains the mysterious hole, too large for mouthpieces, which one finds in Austrian and German horn-chests. The terminal tuning shank and central insert crook are the definitive features of the *Inventionshorn*.<sup>25</sup>

Crook and coupler system horns also tend to have larger bell throats and flares than Baroque horns, which aids hand horn technique in attaining the higher partials accurately.

Another aspect of the use of the hand in the bell is the documented effect the hand has on the higher partials of the instrument. Modern horn players today spend a great deal of time trying to find the correct positioning of the right hand which might best serve them in the upper register both for security and tone. The well-known German horn maker, Engelbert Schmid, produces exact replicas of a variety of Baroque horns and has done extensive harmonic and resonance testing to provide the best overall summary of the playing qualities of each instrument he builds. As the two graphs below show, the addition of a hand in the bell of a crook and coupler system horn increases the definition of the upper level harmonics.<sup>26</sup>

Figure 3 shows the resonance curve for a crook and coupler system without the right hand. Make note of how pitches above 700 Hz (approximately third space C for the horn) lose their definition when played without the right hand. This lack of definition means that those pitches would be extremely unstable and almost impossible to perform with any consistent accuracy. In spite of this, many composers of the Baroque and

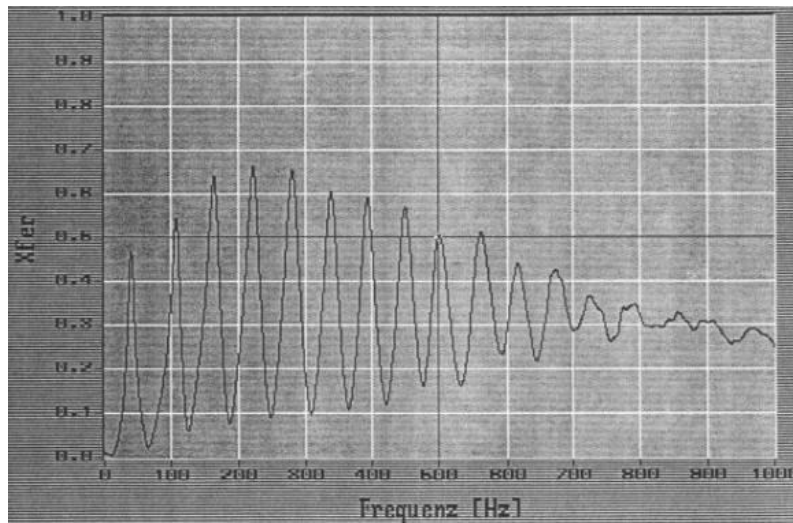
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<sup>25</sup> Horace Fitzpatrick, "Some Historical Notes On the Horn in Germany and Austria", *The Galpin Society Journal* 16 (May 1963): 34.

<sup>26</sup> The upper graph is of harmonics produced without the hand in the bell and the lower one is with the hand.

Classical era felt free to write pitches well above C5 (horn pitch) and in extremely technical passages.

Figure 3. Resonance Curve for a Crook and Coupler System Without the Right Hand.<sup>27</sup>



In Figure 4, the resonance curve for crook and coupler systems *with* the right hand shows clearly defined pitches well above third space C. Because of this, it is clear that horn builders had in mind that horn players were using their right hand in the bell to help clarify the upper harmonics.

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<sup>27</sup> Engelbert Schmid, “Natural Horn Models,” last modified May 17, 2011, accessed April 24, 2014, <http://www.corno.de/schmid/en/naturalhorn.htm>.



Figure 4. Resonance Curve for Crook and Coupler Systems With the Right Hand.<sup>28</sup>

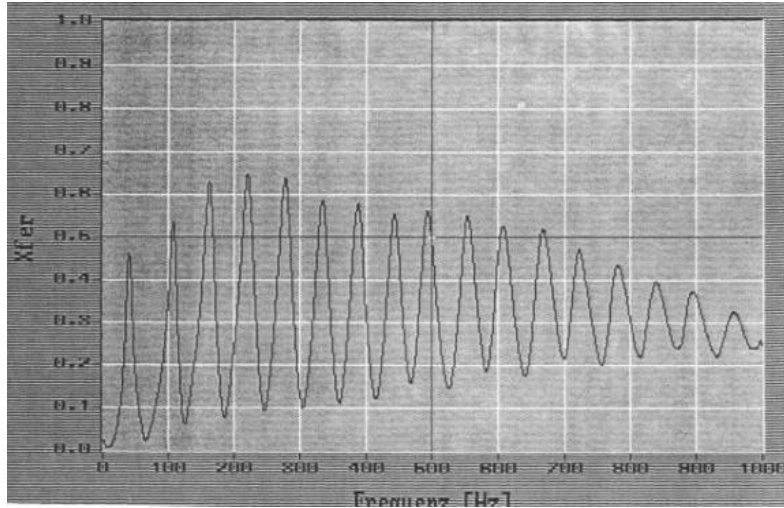
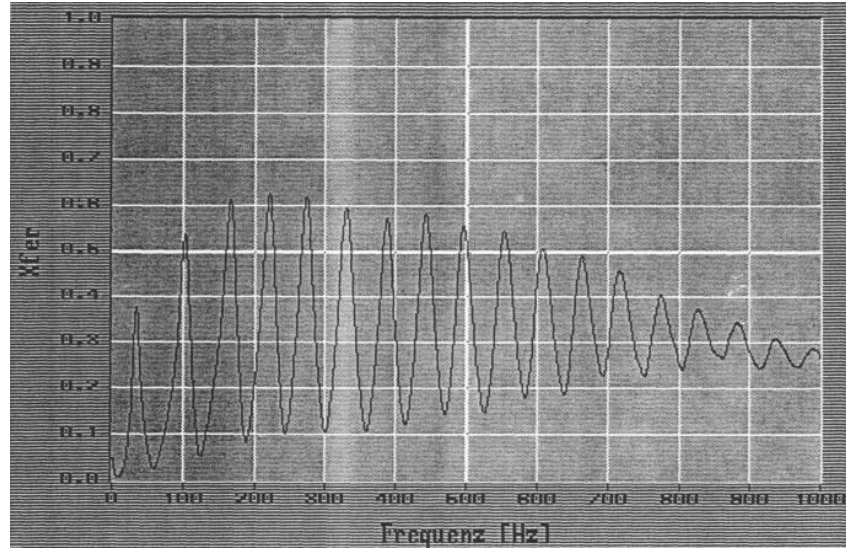


Figure 5 shows the resonance curve for the Baroque horn without the right hand. While the upper register harmonics do not diffuse in the upper register as they do in the crook and coupler system in the above graphs, it is evident that the space between each note is less even and not quite as defined. This is especially noticeable for notes above 800 Hz (D5 in Horn pitch).

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<sup>28</sup> Ibid.

Figure 5. Resonance Curve Graph for the Baroque Horn Without Hand.<sup>29</sup>



The findings demonstrated by these graphs point to why hornists who played on Baroque horns would have experimented with the use of the right hand well before the original crook and coupler system required it. Because many Baroque pieces call for the extreme upper register, hornists would have needed to develop the means to produce well-defined frequencies for those pitches. As is evident within Figure 6, the notes above G5 (783.99 Hz) lose much of their clarity. This in turn is strong evidence for the use of the right hand in order to provide the definition needed for those notes in the high tessitura.

Baroque horn players, some of whom played trumpet as well, would have expected these notes to be just as clear as the notes available lower on the horn. It would be reasonable to expect some experimentation with the right hand, instrument design, or division of parts if the current instruments or methods of performing were not producing the desired results.

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<sup>29</sup> Ibid.

## Baroque Use of the Horn

During the Baroque and early Classical era, horn players were divided into two different types; cor alto and cor basse. The addition of and separation of the two parts seems to have occurred around the early 1700's. This closely coincides with the Dresden Hofkapelle hiring musicians whose sole responsibility was to perform on the horn.<sup>30</sup> Before this split, most horn players performed on the trumpet and switched to the horn when called for in the score. Cor alto parts typically ranged from G on the staff and up while cor basse parts only called for notes below the G on the top of the staff. Cor alto parts are also more likely to contain non-harmonic series tones, especially in solo works while the cor basse performed basic horn calls residing in the overtone series, most similar to the more traditional hunting horn lines. In terms of equipment, the horns are similar, with differences mainly pertaining to mouthpiece depth and inside rim diameter.

Evidence in the design and use of the horn suggests that the use of vent holes did not become wide spread and using hand horn technique would not only be possible but beneficial for the artist. The subsequent evidence in the frequency charts implies that not only were players using hand horn technique, builders were designing horns where this technique makes a larger difference to the playing qualities. These graphs also point to the increasing need for accuracy in all ranges, with the right hand an integral part of that equation. With the increased possibility of non-harmonic tones in cor-alto parts, increased accuracy coupled with hand horn technique increases the performer's chances to perform accurately and in tune.

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<sup>30</sup> Thomas Heibert, "Virtuosity, Experimentation, and Innovation in Horn Writing from Early 18th-Century Dresden," *Historic Brass Society Journal* 4 (1992): 113.

## Chapter 3

### ANALYSIS OF TELEMANN'S SCORES

Within the following analyses of ten of Telemann's concerti with solo horn parts, the focus will be on identifying non-harmonic tones and their context within the music.<sup>31</sup> The number and consistency of non-harmonic tones found will provide evidence hand horn is required, suggesting performers were familiar with the technique and used it consistently. Telemann wrote the following pieces dating between 1708 and 1733 during his residency in three different German cities: Eisenach (1707-1712),<sup>32</sup> Frankfurt (1712-1721),<sup>33</sup> and Hamburg (1721-1767).<sup>34</sup> The compositions all show similar features and usage of the non-harmonic tones B4, F5, and A5, even across different orchestrations and cities.

#### **Eisenach**

In 1706, Telemann moved from his post at Sorau to Eisenach for his new position as 'Concertmeister' of the Eisenach orchestra.<sup>35</sup> He made the acquaintance of many of the musicians in the town and met J.S. Bach through Bach's cousin, Johann Bernhard Bach.<sup>36</sup> Telemann also gained employment to conduct and compose for a professional choir and began to turn out a multitude of works. His popularity quickly rose and the Eisenach Court demanded music for every festival imaginable.<sup>37</sup>

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<sup>31</sup> Refer to Figure 1 for notes within the harmonic series.

<sup>32</sup> Petzoldt, 27-30.

<sup>33</sup> Ibid., 30-36.

<sup>34</sup> Ibid., 36-65.

<sup>35</sup> Ibid., 27.

<sup>36</sup> Ibid., 28.

<sup>37</sup> Ibid..

## TWV 51:D8 Concerto in D for Solo Horn (1708-1714)

Sometime between 1708 and 1714,<sup>38</sup> Telemann composed the Concerto in D for Solo Horn. The earliest and only solo horn concerto he composed, the manuscript is the only one that exists as a full score. Located in the Hessische Landes- und Hochschulbibliothek in Darmstadt with the designation Mus. Ms. 1033/3, the manuscript is a copy made by Christoph Graupner (1683 - 1760). Having a modest range, the horn part expands from G4 up to D6 in concert pitch.<sup>39</sup>

The first movement, marked *Vivace*, sheds some light on the composer's thought process. It contains a total of 32 A5 and 39 F5 pitches, with only two F#5 pitches.<sup>40</sup> Surprisingly, within the manuscript score, the copyist Graupner clearly specifies that the two F#5 pitches should be sharp immediately following several F5 pitches (Figure 6). This distinct marking between sharp and natural pitches indicates Telemann knew the horn could produce these two distinct pitches. Being a highly educated composer, Telemann would not ask a horn performer to produce pitches they could not easily perform.

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<sup>38</sup> Steven Zohn, "Telemann, Georg Philip," accessed September 2, 2014, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/27635pg9>.

<sup>39</sup> All note names following this will be stated in written pitch, regardless of the transposition of the horn.

<sup>40</sup> See Appendix A

Figure 6. TWV 51:D8, Movement 1, Measures 14-16.<sup>41</sup>



The trills in the first movement also point to something interesting (Figure 7). The trill in measure 32 would be a whole step trill with a F5 following immediately after. If the performer plays an F#5 instead, the cadential figure providing the tonicization of the IV chord does not resolve properly, destroying the feeling of arrival which the F5 brings.

Figure 7. TWV 51:D8, Movement 1, Measure 32, Whole Step Trill.<sup>42</sup>



The quantity of A5 notes guides us towards the feasibility and practice of using hand horn. There are 32 different instances of A5 pitches through the movement, many of them in quick 16th note scalar patterns (Figure 8). For the passage to work, A5 pitches must be easy to produce both quickly and in tune.

<sup>41</sup> Georg Telemann, *TWV 51:D8 Concerto in D for Horn*, D-DS, Mus.ms 1033/3, 1.

<sup>42</sup> *Ibid.*, 2.

Figure 8. TWV 51:D8, Movement 1, Measures 11 to 20, A5 Passage.<sup>43</sup>



Ab5 instead of A5 pitches would introduce unintentional minor chords (g minor instead of G major in the third beat of bar 44), drastically changing the passage leading to the end of the first movement a few bars later (Figure 9).

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<sup>43</sup> Ibid., 1.

Figure 9. TWV 51:D8, Movement 1, Measures 42 to 44, A5 Passage.<sup>44</sup>

The image displays two systems of musical notation for measures 42 to 44 of the A5 passage in TWV 51:D8, Movement 1. The first system includes parts for Horn in D, Violin, Viola I, Viola II, and Bassi. The second system includes parts for Horn (Hn.), Violin I (Vln. 1), Viola (Vla.), another Viola (Vla.), and Violoncello (Vc.). The music is in 4/4 time with a key signature of one sharp (F#). The A5 passage is characterized by a prominent A5 note in the bass line and a complex, rhythmic texture in the upper staves.

The second movement, marked Adagio, requires a slightly smaller range, from C5 to D6, with a minimal number of non-harmonic tones (13 A5, 8 F5, and 4 F#5). The context of the A naturals are important however. In this movement, four particular spots would have inappropriate dissonances because of an out of tune note or Ab5.

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<sup>44</sup> Ibid., 2.



In the initial figure in the horn part for this movement, at measure 3, the horn plays in unison with the violins on the upbeat of the third large pulse (Figure 10).<sup>45</sup> Since this is only the second note in the horn part, the Baroque listener would not expect to hear dissonance at this point. The slow context of this passage also exposes any dissonance or intonation discrepancies.

Figure 10. TWV 51:D8, Movement 2, Measure 3, Unison with Violins.<sup>46</sup>

The image displays a musical score for five instruments: Horn (Hn.), Violin 1 (Vln. 1), two Violas (Vla.), and Violoncello (Vc.). The score is for measure 3 of the second movement of TWV 51:D8. The Horn and Violin 1 parts are circled together, indicating they play in unison. The Horn part begins with a dotted quarter note on concert B (written as A5), followed by an eighth note on concert B. The Violin 1 part begins with a dotted quarter note on concert B (written as A5), followed by an eighth note on concert B. The two Viola parts and the Violoncello part play a steady eighth-note accompaniment. The key signature is one sharp (F#) and the time signature is 3/8.

A few measures later in measure 12, the horn plays the third of the chord on the downbeat as shown in Figure 11.<sup>47</sup>

<sup>45</sup> The pitch is concert B.

<sup>46</sup> Georg Telemann, *TWV 51:D8*, 2.

<sup>47</sup> The chord is G Major (G,B,D), with the horn playing the concert B pitch (written A5).

Figure 11. TWV 51:D8, Movement 2, Measure 12, Horn with Third of the Chord.<sup>48</sup>

The image displays a musical score for five instruments: Horn (Hn.), Violin 1 (Vln. 1), two Violas (Vla.), and Violoncello (Vc.). The score is for Measure 12 of the second movement of TWV 51:D8. The key signature is D major (two sharps) and the time signature is 3/4. The Horn part (top staff) features a melodic line with a trill (tr) on the final note. The Violin 1 part (second staff) plays a rhythmic pattern of eighth notes. The two Viola parts (third and fourth staves) play a similar rhythmic pattern, with the second Viola part including a sharp sign on the final note. The Violoncello part (bottom staff) plays a simple rhythmic pattern of eighth notes.

In Figure 12, the horn's written A5 acts as the suspension resolved to the fifth of the chord.

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<sup>48</sup> Georg Telemann, *TWV 51:D8*, 3.

Figure 12. TWV 51:D8, Movement 2, Measures 14 to 15 A5, Horn as the Suspension and 5th of the Following Chord.<sup>49</sup>

The image shows a musical score for measures 14 and 15 of TWV 51:D8, Movement 2. The score is written for four parts: Horn (Hn.), Violin 1 (Vln. 1), Viola (Vla.), and Violoncello (Vc.). The key signature is one sharp (F#) and the time signature is 3/8. The Horn part (Hn.) is in the treble clef and features a suspension in measure 14, followed by a chord fifth in measure 15. The Violin 1 part (Vln. 1) is in the treble clef and features a melodic line with a suspension in measure 14. The Viola part (Vla.) is in the alto clef and features a melodic line with a suspension in measure 14. The Violoncello part (Vc.) is in the bass clef and features a melodic line with a suspension in measure 14.

A few bars later, the horn performs in unison with two of the string parts on the last note of the movement (Figure 13).

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<sup>49</sup> Ibid., 3.

Figure 13. TWV 51:D8, Movement 2, Measure 19, Final Horn Note in Unison with 2 String Parts.<sup>50</sup>

These two passages show the expectation of good intonation composers demanded from the early horn performers.

Allegro, the third and final movement of Telemann's solo concerto, leaves the same impression as the previous two. A high quantity of F5 and A5 pitches, with only a few F#5. He does not use the F5 and F#5 pitches close to one another. However, the only long 16th note passage does contain two F5 and A5 pitches on strong beats, in rapid succession (Figure 14).

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<sup>50</sup> Ibid., 3.



Bb4, which rests on the 7th harmonic of the series, tends to be extremely flat and C5 directly above B4 rests on the 8th harmonic and is an extremely stable note. A performer who wishes to play B4 runs a high risk of missing the note completely if they do not use the right hand. Because the first and second horns perform this passage in unison, exact intonation requires both horns to use the same technique to produce these tones.

### TWV 52:D2 Concert for 2 Horns in D (1708–1714)

TWV 52:D2 is the last horn concerto we shall look at from Telemann's time at Eisenach. While probably less technically difficult than TWV 52:F4, this concerto requires a slightly larger range for the first horn player. It boasts a larger number of F5 pitches (106) than the previous concerti as well.<sup>54</sup> The melody of this Concerto for 2 Horns in D centers around the F5 pitch. The opening of the third movement exemplifies the prevalence of the F5 pitch in Telemann's writing (Figure 16).

Figure 16. TWV 52:D2, Movement 3, Measures 1 To 5, Opening of the Third Movement for the First Horn.<sup>55</sup>



<sup>54</sup> See Appendix A

<sup>55</sup> Georg Telemann, *TWV 52:D2 Concerto for 2 Horns in D*, D-DL, Mus.ms 2392/0/27, 1.

The allegro tempo of this movement requires the hand stopping technique to be quick and fluid. The repeated ascending passage of notes transforms the NHT's into more important notes because of the repetition and placement in the scalar line.

Following this impressive display of F5 pitches, only a few measures later the copyist clearly writes an F#5 for several bars. The change of key from D to A major necessitates this change (Figure17).<sup>56</sup>

Figure 17. TWV 52:D2, Movement 3, Measures 21 to 24, F#5 Pitches in First Horn.<sup>57</sup>



## Frankfurt

In 1712, Telemann moved from Eisenach to Frankfurt and established himself as a musician and composer for the church in Frankfurt.<sup>58</sup> He composed vast amounts of music for both the church and royalty in Frankfurt in a short period of time (1712-1721). As he began his position composing music for the Church of the Barefoot Friars, Petzoldt states:

Once more piece after piece flowed from his pen, for the musical public of that time, unlike that of today when old music is often preferred to modern, constantly demanded new music. Specially composed cantatas were required, whether for the weekly liturgical services or for the political solemnities of town and Court; and for these secular functions, festival cantatas with texts to suit the occasion were the order of the day.<sup>59</sup>

Telemann also acquired the position of director of St. Catherine's Church and began to receive commissions from the Duke of Saxe-Eisenach. In addition to these new positions and commissions, he was awarded the title of Kapellmeister von Haus aus.<sup>60</sup> In his spare time, he organized celebrations, banquets, tobacco-smoking collegia, and similar festivities, and ran the finances and administered the income from its various charities for the Frauenstein society (a smoking-club).<sup>61</sup> In spite of the vast workload these responsibilities put on Telemann, he also wrote music for the weekly concerts at the 'Braunfels' house hosted by the Frauenstein society.<sup>62</sup>

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<sup>58</sup> Petzoldt, 30.

<sup>59</sup> Petzoldt, 31.

<sup>60</sup> Ibid., 32.

<sup>61</sup> Ibid..

<sup>62</sup> Ibid..



## TWV 52:F3 Concerto for 2 Horns in F (1716–1721)

Sometime between 1716 and 1721, Telemann composed the *Concerto for 2 Horns in F*.<sup>63</sup> We can conclude, with a reasonable amount of confidence because of Telemann's clientele in the various positions he held, that the horn concerti composed were part of a demand from a wealthy patron. With performances of new compositions every week, compositions needed to be easily prepared and performance ready with only a few days for rehearsal.

In TWV 52:F3, while the second horn part does not contain much of interest, the first horn part has several passages quite similar to TWV 51:D8. It contains long stretches of exposed F5 pitches against a rhythmically unison passage in the second horn a third lower. This indicates that in tune F5 pitches would be playable and a common occurrence for horn players of the day (Figure 18).<sup>64</sup>

Figure 18. TWV 52:F3, Movement 1, Measures 98 to 101, F5 Pitches.<sup>65</sup>



This work exemplifies the use of the open F#5 pitch for cadential, tonicization, or modulation passages. It appears typical for Telemann to specify the open F#5 pitch only near chords with a dominant function. Using hand technique makes these open notes louder, clearer, and adds more emphasis to the phrase. In Figure 19, the V<sup>7</sup> chord (G7) in

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<sup>63</sup> Zohn, "Telemann, Georg Philipp," Grove Music Online.

<sup>64</sup> See Appendix A

<sup>65</sup> Georg Telemann, *TWV 52:F3 Concerto for 2 Horns in F*, D-DS, Mus.ms 1033/77, 1.

measure 10 requires the F#5 pitches, written at the end of the Largo section of the first movement, to resolve properly to the I chord (CM) in measure 11.<sup>66</sup>

Figure 19. TWV 52:F3, Movement 1, Measures 7 to 11, End of Largo Section.<sup>67</sup>

The image displays two systems of musical notation for measures 7-11 of TWV 52:F3, Movement 1. The first system covers measures 7, 8, and 9. It includes two Horn parts (top) and a Piano part (bottom). The Piano part has figured bass notation: '6' under measure 7, '6 6 4 5' under measure 8, and '6 7' under measure 9. The second system covers measures 10 and 11. It includes two Horn parts (top) and a Piano part (bottom). The Piano part has figured bass notation: '3 7' under measure 10 and '3 7' under measure 11. The key signature is one flat (B-flat), and the time signature is 4/4.

<sup>66</sup> Starting in measure 9, the chords would be V6, vi7, V7/V, V

<sup>67</sup> Georg Telemann, *TWV 52:F3*, 1.

The Largo tempo has the added effect of exposing poor intonation, even in the quicker notes. The scalar passages, along with the blend and intervals between the two horn parts, reveal the technique required of the performers. This is especially true because of the more independent second horn line.

#### TWV 52:D1 Concerto for 2 Horns in D (1716–1721)

TWV 52:D1 sits within the standard length of Telemann's concerti and does not contain a large variety of non-harmonic tones or expand the technique required in previous concerti.<sup>68</sup> The last movement, however, is unique for its multitude of trills. The first horn part contains 32 individual trills in the short movement (less than 1'30"). Eight of these trills lie on non-harmonic tones (F5) and all are on the fourth beat of the bar. Most of these trills act as the dominant or pre-dominant chord before a cadence. This gives them greater importance in the chordal progression (Figure 20). While the trills are mere ornamentation, Donnington, a Baroque performance practice specialist, states that the trill developed two functions during the Baroque era:

One is melodic and rhythmic decoration and coloration; the other is harmonic modification and intensification. Both were current throughout the Baroque period; but during the second half of it, the harmonic function assumed prominence to such an extent that its behavior in practice influenced the behavior of the melodic function.<sup>69</sup>

The trills in this movement operate in a harmonic modification and intensification role, shown by their dominant and predominant functions. This is especially clear with the stepwise melodic contour to the G5 pitch in Figure 20. The written F5 pitch, if played out of tune or as the F#5 pitch available on the harmonic series, would disrupt the

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<sup>68</sup> See Appendix A

<sup>69</sup> Robert Donnington, *Baroque Music: Style and Performance* (New York: W. W. Norton and Company, 1982), 125.

entire movement and destroy the harmonic and intensification function of the ascending line from I to V to I.

Figure 20. TWV 52:D1 Movement 3, Measures 1 to 3.<sup>70</sup>

The image shows a musical score for three measures of a piece. It is divided into three parts: two Horns (Hn.) and one Piano (Pno.). The tempo is marked 'Allegro'. The key signature is one flat (B-flat) and the time signature is common time (C). The Horn parts are in treble clef, and the Piano part is in grand staff (treble and bass clefs). The music shows a simple harmonic progression in the first three measures.

TWV 52:Es1 Concerto for 2 Horns in Eb (1716–1721)<sup>71</sup>

Considerably simpler than the previous concerto discussed, Telemann composed the *Concerto for 2 Horns in Eb* TWV 52:Es1 between 1716 and 1721. Even with the higher range demands, this piece contains fewer dramatic shifts and less diverse rhythmical requirements. Only six F#5 pitches exist in the second horn part and none in the first horn part. Instances of repeated tones appear within quite a few figures, which become almost pedantic due to their frequency during the third movement. This piece also includes quite a few examples of non-harmonic tones following harmonic tones.

<sup>70</sup> Georg Telemann, *Twv 52:D1 Concerto for 2 Horns in D*, D-DS, Mus.ms 1033/66.

<sup>71</sup> Zohn, "Telemann, Georg Philipp," Grove Music Online.

Two points of interest in this piece, measure 63 in movement 1 (1st horn) and measures 11 to 14 in movement 3 (2nd horn), are technically demanding for the performer. In measure 63 of the first horn part, the performer moves from A5 to G#5 and back to A5 in quick succession (Figure 21). The G#5, because it is in the harmonic series and played with an open hand position, allows the trill to be more fluid and project above the orchestra. These trills start from above in almost every context. Donnington states that there appears to be "a very rare consensus indeed among textbook descriptions, tables of ornaments and documentary evidence of this kind, in favour of an upper-note start."<sup>72</sup> In using some form of hand stopping technique, the opening of the right hand helps the performer to jumpstart the trill. In contrast, the use of just the lips to bend the pitch into tune and start the trill would tend to bind up the embouchure and the performer runs the risk of the trill not speaking.

Figure 21. TWV 52:Es1, Movement 1, Measures 63 to 64, First Horn.<sup>73</sup>



In measure 11 to 14 of movement 3 in the second horn part, Figure 22 shows a quick shift from the use of F5 to F#5 pitches. The second horn part typically performs only rudimentary and complementary parts compared to the first horn in the pieces previously discussed. However, as Telemann's writing progressed, the second horn parts

<sup>72</sup> Donnington., 125.

<sup>73</sup> Georg Telemann, *TWV 52:Es1 Concerto for 2 Horns in Eb*, D-DL, Mus.2392/O/31, 1.

become more complicated and the instances of non-harmonic tones increased. This suggests that more horn players knew about this technique and used it in public performances.

Figure 22. TWV 52:Es1 Movement 3, Measures 11 to 14, Second Horn.<sup>74</sup>



Leipzig, the council increased his salary and release money to hire more musicians.<sup>77</sup>

This led to an increase in compositions from Telemann and is reflected in his progressively larger and more complex works.

#### TWV 54:D2 Concerto for 3 Horns and Violin (1716–1725)

TWV 54:D2 is the only concerto in this set composed for more than two horns. The scoring for the orchestra is quite thick, especially in the bass parts (a total of 6!).<sup>78</sup> The scoring suggests Telemann composed for a rather large Baroque orchestra, which influenced the horn parts.<sup>79</sup> The register required is slightly higher than that of the other concerti, the note values in the horn parts are longer, and the violin has an extensive role. While hand stopped notes might be overpowered by the thick scoring, this does not appear to have deterred Telemann. The principal horn alone performs forty-five A5 and fifty-four F5 pitches in the first movement.<sup>80</sup>

As in the previous pieces, TWV 54:D2 contains several sections that shift from using F#5 to F5 pitches in the course of a passage (Figure 23).

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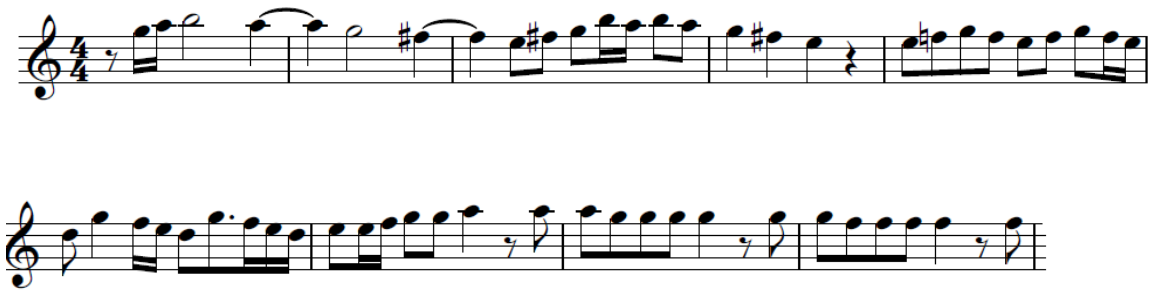
<sup>77</sup> Ibid., 45-47

<sup>78</sup> Georg Telemann, *Twv 54:D2 Concerto for 3 Horns and Violin*, ed. Richard Dunn (Williamsburg: RD Editions, 2004), ii.

<sup>79</sup> Baroque orchestra orchestration was not standard and could range from just a few players to over one hundred.

<sup>80</sup> See Appendix A

Figure 23. TWV 54:D2, Movement 1, Measures 68 to 76, Horn 1.<sup>81</sup>



It also contains larger sections of octave scalar passages. These scalar passages do not occur very often in earlier pieces (excepting TWV 51:D8 Concerto in D) and are typically only seen in tetrachord form. TWV 54:D2 contains scalar passages that descend a fifth and then jump to the octave above in the same bar (Figure 24).

Figure 24. TWV 54:D2, Movement 1, Measures 87 to 89, Horn 1.<sup>82</sup>



This work also contains longer passages containing repetitious tetrachordal scales, ending with a sharp ascent and descent to the octave (Figure 25). These two forms of very exposed scalar passages require exact intonation to ensure the successful conveyance of the tonality and musical expressions.

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<sup>81</sup> Georg Telemann, *TWV 54:D2 Concerto for 3 Horns and Violin*, D-DS, Mus.ms 1033/63/0001, 1.

<sup>82</sup> *Ibid.*, 1.



Figure 25. TWV 54:D2, Movement 1, Measures 78 to 81, Horn 1.<sup>83</sup>



Figures 23, 24, and 25 come from the Vivace movement of TWV 54:D2. In general, Telemann tries to avoid NHT's in slow movements. When there are other instruments included (usually strings and in this case a violin), he tends to write only string parts. However, in TWV 55:F11 the tempo is more moderate and Telemann clearly differentiates between sharp and natural F5 pitches.

#### TWV 55:F11 'Alster' Suite (1725)

The only suite included in this paper, the Alster Suite contains a unique passage in movement VII. This piece, composed in 1725,<sup>84</sup> imitates a variety of scenes Telemann would have heard in Hamburg. The horns, featured in a variety of movements, portray the sounding of bells, echoes, frogs, and crows.<sup>85</sup> Telemann wrote less non-harmonic tones in many of these movements than in the other concerti examined in this paper. He wrote even fewer of these tones sequentially. In movement VII, there is one passage where the horns play alternating F5 and F#5 pitches (Figure 26).

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<sup>83</sup> Ibid., 1.

<sup>84</sup> Zohn, "Telemann, Georg Philipp," Grove Music Online.

<sup>85</sup> John Ericson, *Playing Natural Horn Today: An Introductory Guide and Method for the Modern Natural Hornist* (Tempe: Horn Notes Edition, 2012), 12.

Figure 26. TWV 55:F11, Movement 7, Measures 15 to 22.<sup>86</sup>

The image displays two systems of musical notation for four horns in F major. The first system is labeled 'Horn in F 1', 'Horn in F 2', 'Horn in F 3', and 'Horn in F 4'. The second system is labeled 'Hn. 1', 'Hn. 2', 'Hn. 3', and 'Hn. 4'. Both systems are in 3/4 time and consist of four staves. The first two staves (Horn 1 and 2) play a melodic line with eighth notes and rests, while the last two staves (Horn 3 and 4) play a simpler accompaniment of quarter notes and rests. The music is in F major, indicated by one sharp (F#) and one flat (C).

Within the eight bar section, Telemann attempts to portray frogs croaking in the night. Even though this could mean intonation is less important, the mirrored parts between first and second horn seem to indicate that he wanted both lines to sound identical. Graupner's copy of Telemann's work clearly specifies between F5 and F#5 with the use of accidentals (Figure 27). Hand horn technique is the only way a hornist could imitate frogs and achieve the correct sound for this passage.

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<sup>86</sup> Ibid., 12-13.

Figure 27. TWV 55:F11, Movement 7, Measures 15 to 22, Horn 1.<sup>87</sup>



TWV 54:Es1 Concerto for 2 Hns in Eb and 2 Violins (from *Tafelmusik*) (1733)

TWV 54:Es1, composed in 1733,<sup>88</sup> follows the pattern of using many soloists and larger orchestras, seen in the development from TWV 51:D8 in 1708 using a solo horn through to TWV 54:F1 using seven. Written as music for a feast for banquet, *Tafelmusik* means "table music" in German. Perhaps Telemann's most well-known work, this collection contains three different sets of music (with multiple works per set). Each set has enough music for a long evening of dining and drinking.<sup>89</sup> The third set of pieces contains TWV 54:Es1. The work moves from larger to smaller ensemble pieces, and concludes with another large ensemble piece. By this time (1733), Telemann had already been in Hamburg several years as cantor of the Hamburg Johanneum.<sup>90</sup>

Rather unremarkable for Telemann, TWV 54:Es1 shows little expansion of the hand technique requirements visible in previous works. However, this piece contains the greatest number of F5 and F#5 pitches of any of his works. The notes typically repeat in a series of close sectional groupings of one pitch rather than swift changes between F5 and F#5.<sup>91</sup>

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<sup>87</sup> Georg Telemann, *Twv 55: F11 Alster-Overture*, D-DS, Mus.ms 1034/78,1.

<sup>88</sup> Georg Telemann, *From Tafelmusik: Twv 54:Es1 Concerto for 2 Horns in Eb and 2 Violins*, ed. Richard Dunn (Williamsburg: RD Editions, 2004), ii.

<sup>89</sup> Petzoldt, 72-73.

<sup>90</sup> *Ibid.*, 36-41.

<sup>91</sup> See Appendix A

Figure 28 shows another typical line from the horn part with multiple F5 pitches before the F#5 pitch directly preceding the cadence. This increases the effect of the horn line by creating a covered sound before the very open cadential point.<sup>92</sup>

Figure 28. TWV 54:Es1, Movement 1, Measures 15 to 19, Horn 1.<sup>93</sup>



TWV 54:F1 Concerto for 2 Horns in F, 2 Violins, Oboe, Recorder, Bassoon, and Strings  
(1720-1735)

The last concerto in this set and published between 1720 and 1735, *Concerto for 2 Horns, 2 Violins, Oboe, Recorder, Bassoon, and Strings* was one of the last to feature the horn in a prominent solo role.<sup>94</sup> This concerto uses seven soloists, the most out of any examined in this paper. The horn parts contain both supportive and soloistic roles using transitioning between quick sixteenth note passages and repeated eighth notes. The most complex out of the five movements, the first movement uses a large number of F5 pitches, with a few F#5 during tonicization of the dominant. Once again, Telemann uses

<sup>92</sup> Musica Amphion, *Telemann "Tafelmusik,"* by Georg Telemann, performed by Pieter-Jan Belder, Brilliant Classics, CD, 2006. A great example of how hand stopping increases the effectiveness of this work by Musica Amphion and Pieter-Jan Belder on period instruments.

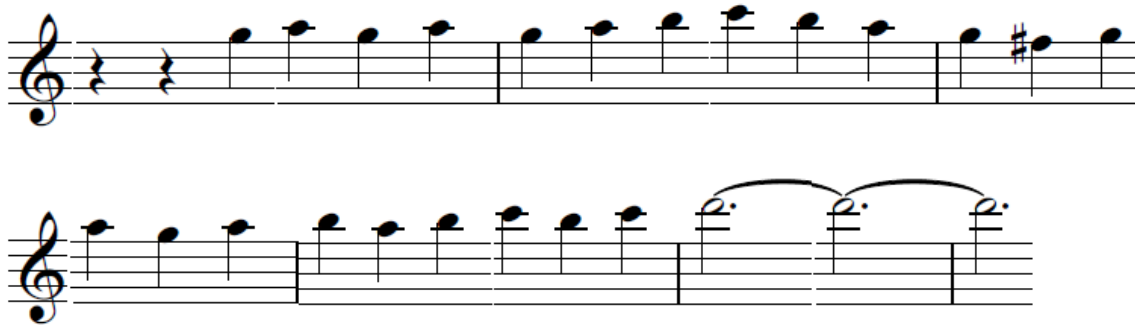
<sup>93</sup> Georg Telemann, *TWV 54:Es1 Concerto for 2 Horns in Eb and 2 Violins*, D-DS, Mus.ms 1033/74, 13.

<sup>94</sup> Georg Telemann, *TWV 54:F1 Concerto for 2 Horns in F, 2 Violins, Oboe, Recorder, Bassoon, and Strings*, D-DL, Mus.ms 2392/0/59, 1.

the same non-harmonic pitches as in his previous concerti. He calls for F5 pitches in the body of the work, and uses F#5 pitches at the tonicization of the dominant.

Even with the large amounts of A5 pitches in the first and third movements, the last movement contains an interesting passage, with both F#5 and A5 pitches rising in a scalar pattern from F#5 to D6 (Figure 29). This movement is a Gigue, which is a fast dance. In Figure 29, the horns echo the opening passage in the violins. The oscillation between open and stopped pitches enhances the phrase by using open sounds on the strong beats and stopped sounds on the weak beats. Out of tune notes (especially open harmonic series pitches) in this oscillating pattern would sound out of place and ugly, as opposed to performing the passage in tune with stopped horn.

Figure 29. TWV 54:F1, Movement 5, Measures 24 to 28, Horn 1.<sup>95</sup>



### Conclusion of the Analysis

The analysis on the previous works by Telemann (TWV 51:D8, TWV 52:F3, TWV 52:F4, TWV 52:D1, TWV 52:D2, TWV 52:Es1, TWV 54:D2, TWV 54:Es1, TWV 54:F1, TWV 55:F11) definitely shows that the use of non-harmonic tones (B4, F5, and

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<sup>95</sup> Ibid., 38.

A5) were common practice between the years 1708 and 1735. The totals for all the non-harmonic tones between all the pieces came to: 425 A5, 1123 F5, and 3 B4 pitches.<sup>96</sup>

The total of their open harmonic neighboring pitches came to: 0 Ab5, 203 F#5, 0 Bb4.<sup>97</sup>

The prolificacy of the non-harmonic tones and the lack of their open harmonic neighboring pitches suggests that Baroque horn performers, at least within Telemann's sphere of influence, had some formalized method of producing non-harmonic tones with ease and dexterity. While not prevalent, there are a decent number of non-harmonic tones indicated as trills within these works. It is the author's opinion that these pitches were performed on the correct pitch for the proper resolution of the harmony.

The evidence for the proper production of non-harmonic tones throughout Telemann's music, as well as the historical and performance practice background suggesting that muting and lip bending pitches would have been impractical at best, weighs in favor of hand stopping as the most logical solution.

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<sup>96</sup> See Appendix A

<sup>97</sup> See Appendix A

## Chapter 4

### CONCLUSION

#### **Objections and Refutations**

##### Lack of Physical Evidence for Hand Stopping

Critics may argue that the musical evidence does not preclude the fact that little published evidence for hand stopping exists from the Baroque time. Few horns from Telemann's time have survived and many paintings show horn performers without the right hand in the bell. In addition, Hampel is the first pedagogue credited with teaching hand stopping, an idea perpetuated by many teachers to the present day. Experimentation with mutes was also popular in Telemann's time and mutes may have been used for some of the less chromatic passages.

Very little scholarship examining this issue exists and the works that do come from a very small subset of natural horn scholars. Lisa Norman, commonly cited as an expert in early orchestra horn technique, brass acoustics, and the history and acoustics of the Wagner tuba, has published much of her research in journals such as the *Historic Brass Society Journal* and the *Galpin Society Journal*. Richard Seraphinoff, an expert natural horn performer, builder, researcher, and professor at Indiana University since 1986, has been published by the *Horn Call* and the *Historic Brass Journal*, and has recorded CD's on natural horn.

In her article, "An Acoustical Approach to the Question of Early Horn Technique," Lisa Norman examines the acoustical properties of 18th and early 19th century horn in order to help her infer the type of playing technique based on their

playing qualities.<sup>98</sup> Her research appears to prove her conclusion that early eighteenth century horn construction did not account for the use of the right hand. The acoustical properties of adding the right hand does not affect the playing quality of these smaller, hunting horn like instruments to the extent that it affects classical horns. A performer's attempt to bend the note with the lips would tend to be more successful because the small bores of the instruments would make the notes much more malleable and responsive. Norman also comments on the lack of discussion of hand technique in the methods and treatises that have survived from the Baroque period.

The lack of published evidence and the effects of the hand on the acoustical properties of the early eighteenth century horn suggest Norman is correct. These effects could imply that hand horn technique was a novelty, with lip bending being the preferred way to produce non-series tones.

Richard Seraphinoff has a more practical reason for arguing against Norman's findings:

I prefer to work under the assumption that by using hand stopping, I am emulating the technique of the best horn players of the Baroque era. We must give the players of that period the benefit of the doubt and assume that they were clever enough to try the experiment of putting the hand into the bell to correct intonation when asked by a conductor or violinist or oboist to "please do something about those out of tune notes," a request that was probably made more than once in the early part of the eighteenth century. Job security has always been the mother of invention.<sup>99</sup>

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<sup>98</sup> Lisa Norman, "An Acoustical Approach to the Question of Early Horn Technique", *Historic Brass Society Journal* 23 (2011): 67-88, accessed April 24, 2014, <http://dx.doi.org/10.2153/0120110011004>.

<sup>99</sup> Richard Seraphinoff, "Nodal Venting on the Baroque Horn," 2011, accessed April 2, 2014, <http://www.seraphinoff.com/Content.aspx?bf9e6fd4-be82-47b8-a5b2-fddc3354f6a0>.



While chapter 2 discussed vent holes and disregarded them as being a viable alternative to lip bending or hand stopping, the lack of writings about any of these methods (venting, lip bending, and hand stopping) is curious. Performers possibly treated hand horn as a trade secret, restricting its proliferation for a long period after its discovery. Even though the acoustic properties of the surviving Baroque horns and the pieces by Telemann could point towards different conclusions, the number of non-harmonic tones suggests performers knew some method or technique to change pitches. Based on the evidence from Telemann's concerti (discussed in Chapter 3) and Seraphinoff's experience, the use of the right hand provides the easiest and most dexterous solution to producing non-harmonic tones.

#### On Performing Notes Out of Tune

In addition to performing non-harmonic tones with the previously mentioned methods and because of the lack of published method books during Telemann's time, the possibility remains that horn players in the Baroque era simply played notes out of tune. Perhaps patrons came to accept faulty intonation as one of the flaws or even characteristic of the horn.

However, Telemann's clientele, some of the most influential patrons of his music, most likely expected only the best. Musicians were easily replaceable and replaced quite frequently, especially if they did not meet the court or church's expectations.<sup>100</sup> Because string and keyboard instruments performed in tune, these audiences would expect the same from horn players. Within a twenty-seven year period, Telemann composed vast

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<sup>100</sup> Petzoldt, 26.

amounts of music for the horn (much more than any previous composer). The aristocracy clearly enjoyed his writing and performances, and commissioned more. Certainly, after twenty-seven years, the novelty of an out of tune horn would have worn off. Quantz, in his book *On Playing the Flute*, makes several comments regarding intonation and especially the poor intonation of the Baroque flute:

Without purity of intonation in playing the ear can never be completely satisfied. Poor intonation is contrary to the proportions of the notes, and because of this weakness on the part of its performers the flute has fallen into disrepute among many connoisseurs who comprehend neither the characteristics nor the difficulties of the instrument, and suppose that it cannot be played more truly than has, until now, been the case among the majority.<sup>101</sup>

Quantz (1697-1773), who lived at the same time as Telemann, was very concerned with the intonation of his students.<sup>102</sup> In this statement, Quantz specifies that performers need to focus on intonation in order to appeal to their audiences. With Quantz and an audience this particular about intonation, certainly Telemann and his clientele would have been equally as demanding.

### **Conclusion**

The prolific use of non-harmonic series pitches throughout the music of Telemann supports the theory horn players of the Baroque era knew about and used hand stopping. Instrument design, especially the lack of vent holes, limits the options performers had to produce these notes. Other potential methods prove unreliable or unrealistic at best. Unfortunately, the lack of writings from the Baroque era hinders research into the

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<sup>101</sup> Johann Joachim Quantz, *On Playing the Flute*, 2nd ed. (Boston: Northeastern, 2001), 104.

<sup>102</sup> *Ibid.*, iv.

performance practice of the horn and analytical analysis of the music only supports theories.

With this information, it is clear that Hampel did not invent hand stopping as Dominich claimed. Although Hampel should be recognized as a pioneer in expanding its use, Baroque performers certainly knew about and used an established system well before Hampel taught his system to his students. More in-depth and broader based research into early to mid Baroque period horn writing would help to pinpoint the time at which composers began to use non-harmonic series tones. Other topics to explore would be the difference between writing for horn and trumpet, the construction differences between the two instruments, and trumpet pedagogy to see at what point both trumpets and horns began to use non-harmonic series pitches. When thinking about the invention of hand horn technique, Seraphinoff's quote puts it best, "Job security has always been the mother of invention."

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APPENDIX A  
NON-HARMONIC TONE LISTS



Piece	Mvt	A5	F5	F#5	B4	Range
				HT*		
TWV 51:D8 Concerto in D for Solo Horn	1	32	39	2	0	G4-D6
	2	13	8	4	0	C5-D6
	3	18	24	3	0	C5-D6
TWV 52:F3 Concerto for 2 Horns in F 1st hn	1	10	73	7	0	E4-C6
	2	4	11	4	0	C5-B6
	3	22	10	4	0	G4-D6
TWV 52:F3 Concerto for 2 Horns in F 2nd hn	1	0	12	0	0	E4-G5
	2	0	0	0	0	E4-E5
	3	0	16	0	0	C4-F5
TWV 52:F4 Concerto for 2 Horns in F (Hn 1)	1	38	33	10	3	C4-A5
	3	18	10	11	0	E4-A5
TWV 52:F4 Concerto for 2 Horns in F (Hn 2)	1	0	12	0	0	C4-G5
	3	0	2	0	0	E4-G5
TWV 52:D2 Concert for 2 Horns in D (Hn 1)	1	0	22	1	0	G4-G5
	3	11	38	3	0	E4-A5
	5	14	46	1	0	C4-Bb5
TWV 52:D2 Concert for 2 Horns in D (Hn 2)	1	0	0	0	0	E4-E5
	3	0	14	0	0	C4-F5
	5	0	14	0	0	C4-G5
TWV 52:D1 Concerto for 2 Horns in D (Hn 1)	1	0	9	5	0	C4-G5
	2	6	57	2	0	C5-A5
	4	0	28	0	0	G4-G5
TWV 52:D1 Concerto for 2 Horns in D (Hn 2)	1	0	0	0	0	C4-G5
	2	7	17	0	0	E4-A5
	4	0	0	0	0	C4-E5

Piece	Mvt	A5	F5	F#5	B4	Range
TWV 52:Es1 Concerto for 2 Horns in Eb (Hn 1)	1	31	37	0	0	C4-D6
	3	7	15	0	0	C4-D6
TWV 52:Es1 Concerto for 2 Horns in Eb (Hn 2)	1	2	24	0	0	C4-A5
	3	0	18	6	0	C4-B5
TWV 55:F11 Alster Suite (Hn 1)	1	29	56	4	0	C4-C6
	2	0	1	1	0	C4-G5
	3	4	25	0	0	C5-A5
	4	0	0	0	0	N/A
	5	2	0	3	0	C4-A5
	6	0	1	4	0	G4-D6
	7	1	5	6	0	C4-A5
	8	0	0	0	0	N/A
	9	18	4	6	0	C4-A5
TWV 55:F11 Alster Suite (Hn 2)	1	0	8	0	0	C4-G5
	2	0	0	0	0	C4-C5
	4	0	4	0	0	C4-C5
	5	0	0	0	0	C4-D5
	6	0	0	0	0	C4-G5
	7	0	3	2	0	C4-D5
	9	1	10	6	0	C4-A5
TWV 55:F11 Alster Suite (Hn 3)	1	3	21	0	0	C4-C6
	2	0	0	0	0	C4-G5
	4	2	24	0	0	C5-A5
	5	0	0	0	0	C4-D6
	6	0	2	4	0	G4-D6
	7	1	0	1	0	C4-A5
	9	1	0	0	0	C4-A5
TWV 55:F11 Alster Suite (Hn 4)	1	0	2	0	0	G3-F5
	2	0	0	0	0	C4-B4
	4	0	2	0	0	C4-F5
	5	0	0	0	0	C4-D5
	6	0	0	0	0	C4-G5
	7	0	0	0	0	C4-D5
	9	0	0	2	0	C4-G5

TWV 54:D2 Concerto for 3 Horns and Violin	1		45	54	17	0	G4-D6
	3		18	50	3	0	E4-D6
TWV 54:D2 Concerto for 3 Horns and Violin	1		6	13	4	0	C4-A5
	3		0	12	0	0	C4-G5
TWV 54:D2 Concerto for 3 Horns and Violin	1		0	0	0	0	C4-E5
	3		0	0	0	0	C4-E5
TWV 54:Es1 Concerto for 2 Hns in Eb (from <i>Tafelmusik</i> ) (Hn 1)	1		2	32	3	0	C4-D6
	2		14	53	16	0	E4-D6
	3		1	5	1	0	E4-C6
	4		14	22	34	0	E4-D6
TWV 54:Es1 Concerto for 2 Hns in Eb (from <i>Tafelmusik</i> ) (Hn 2)	1		0	3	1	0	C4-G5
	2		1	10	5	0	C4-G5
	3		1	4	2	0	E4-A5
	4		0	21	0	0	C4-G5
TWV 54:F1 Concerto for 2 Hns, Ob,	1		7	53	8	0	C4-C6
	3		5	4	4	0	E4-C6
	5		15	20	2	0	C4-D6
TWV 54:F1 Concerto for 2 Hns, Ob,	1		1	2	1	0	C4-C6
	3		0	0	0	0	C4-E5
	5		0	8	0	0	C4-G5
Total			425	1123	203	3	
*HT - The F#5 pitch is a harmonic series tone and is provided in this chart to help compare with the non-harmonic series tone.							

APPENDIX B  
FREQUENCIES

Frequencies for Equal Temperament Compared to Meantone Temperament Based on the  
 "D'Alembert Modified Meantone Temperament" Assuming A4 is 440 cps<sup>103</sup>

Note	Equal Temp. Frequency (cps)	Meantone Frequency (cps)	Difference (cps)
C <sub>1</sub>	32.70	32.54	0.17
C <sup>#</sup> <sub>1</sub> /D <sup>b</sup> <sub>1</sub>	34.65	34.73	-0.08
D <sub>1</sub>	36.71	36.64	0.07
D <sup>#</sup> <sub>1</sub> /E <sup>b</sup> <sub>1</sub>	38.89	38.71	0.18
E <sub>1</sub>	41.20	41.28	-0.08
F <sub>1</sub>	43.65	43.36	0.29
F <sup>#</sup> <sub>1</sub> /G <sup>b</sup> <sub>1</sub>	46.25	46.52	-0.28
G <sub>1</sub>	49.00	48.83	0.17
G <sup>#</sup> <sub>1</sub> /A <sup>b</sup> <sub>1</sub>	51.91	51.85	0.06
A <sub>1</sub>	55.00	55.00	0.00
A <sup>#</sup> <sub>1</sub> /B <sup>b</sup> <sub>1</sub>	58.27	57.79	0.48
B <sub>1</sub>	61.74	61.98	-0.24
C <sub>2</sub>	65.41	65.07	0.33
C <sup>#</sup> <sub>2</sub> /D <sup>b</sup> <sub>2</sub>	69.30	69.46	-0.17
D <sub>2</sub>	73.42	73.27	0.14
D <sup>#</sup> <sub>2</sub> /E <sup>b</sup> <sub>2</sub>	77.78	77.42	0.37
E <sub>2</sub>	82.41	82.57	-0.16
F <sub>2</sub>	87.31	86.72	0.58

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<sup>103</sup> B.H. Suits, "Frequencies for Equal Temperament Compared to Meantone," Physics of Music - Notes, 1998, accessed October 1, 2014, <http://www.phy.mtu.edu/~suits/etvsmean.html>.

$F^{\#}_2/G^b_2$	92.50	93.05	-0.55
$G_2$	98.00	97.65	0.35
$G^{\#}_2/A^b_2$	103.83	103.70	0.12
$A_2$	110.00	110.00	0.00
$A^{\#}_2/B^b_2$	116.54	115.58	0.96
$B_2$	123.47	123.96	-0.49
$C_3$	130.81	130.14	0.67
$C^{\#}_3/D^b_3$	138.59	138.92	-0.33
$D_3$	146.83	146.54	0.29
$D^{\#}_3/E^b_3$	155.56	154.83	0.73
$E_3$	164.81	165.14	-0.33
$F_3$	174.61	173.45	1.16
$F^{\#}_3/G^b_3$	185.00	186.10	-1.10
$G_3$	196.00	195.30	0.69
$G^{\#}_3/A^b_3$	207.65	207.41	0.24
$A_3$	220.00	220.00	0.00
$A^{\#}_3/B^b_3$	233.08	231.16	1.92
$B_3$	246.94	247.92	-0.98
$C_4$	261.63	260.29	1.34
$C^{\#}_4/D^b_4$	277.18	277.84	-0.66
$D_4$	293.66	293.08	0.58
$D^{\#}_4/E^b_4$	311.13	309.66	1.46

E <sub>4</sub>	329.63	330.28	-0.65
F <sub>4</sub>	349.23	346.90	2.33
F <sup>#</sup> <sub>4</sub> /G <sup>b</sup> <sub>4</sub>	369.99	372.19	-2.20
G <sub>4</sub>	392.00	390.61	1.39
G <sup>#</sup> <sub>4</sub> /A <sup>b</sup> <sub>4</sub>	415.30	414.82	0.48
A <sub>4</sub>	440.00	440.00	0.00
A <sup>#</sup> <sub>4</sub> /B <sup>b</sup> <sub>4</sub>	466.16	462.33	3.84
B <sub>4</sub>	493.88	495.84	-1.96
C <sub>5</sub>	523.25	520.58	2.67
C <sup>#</sup> <sub>5</sub> /D <sup>b</sup> <sub>5</sub>	554.37	555.69	-1.32
D <sub>5</sub>	587.33	586.17	1.16
D <sup>#</sup> <sub>5</sub> /E <sup>b</sup> <sub>5</sub>	622.25	619.33	2.93
E <sub>5</sub>	659.26	660.56	-1.30
F <sub>5</sub>	698.46	693.80	4.66
F <sup>#</sup> <sub>5</sub> /G <sup>b</sup> <sub>5</sub>	739.99	744.39	-4.40
G <sub>5</sub>	783.99	781.21	2.78
G <sup>#</sup> <sub>5</sub> /A <sup>b</sup> <sub>5</sub>	830.61	829.64	0.97
A <sub>5</sub>	880.00	880.00	0.00
A <sup>#</sup> <sub>5</sub> /B <sup>b</sup> <sub>5</sub>	932.33	924.65	7.67
B <sub>5</sub>	987.77	991.68	-3.91
C <sub>6</sub>	1046.50	1041.16	5.35
C <sup>#</sup> <sub>6</sub> /D <sup>b</sup> <sub>6</sub>	1108.73	1111.37	-2.64

D <sub>6</sub>	1174.66	1172.34	2.32
D <sup>#</sup> <sub>6</sub> /E <sup>b</sup> <sub>6</sub>	1244.51	1238.65	5.86
E <sub>6</sub>	1318.51	1321.12	-2.61
F <sub>6</sub>	1396.91	1387.60	9.32
F <sup>#</sup> <sub>6</sub> /G <sup>b</sup> <sub>6</sub>	1479.98	1488.78	-8.80
G <sub>6</sub>	1567.98	1562.43	5.55
G <sup>#</sup> <sub>6</sub> /A <sup>b</sup> <sub>6</sub>	1661.22	1659.28	1.94
A <sub>6</sub>	1760.00	1760.00	0.00
A <sup>#</sup> <sub>6</sub> /B <sup>b</sup> <sub>6</sub>	1864.66	1849.31	15.35
B <sub>6</sub>	1975.53	1983.36	-7.82
C <sub>7</sub>	2093.00	2082.31	10.69
C <sup>#</sup> <sub>7</sub> /D <sup>b</sup> <sub>7</sub>	2217.46	2222.75	-5.29
D <sub>7</sub>	2349.32	2344.68	4.64
D <sup>#</sup> <sub>7</sub> /E <sup>b</sup> <sub>7</sub>	2489.02	2477.30	11.71
E <sub>7</sub>	2637.02	2642.24	-5.22
F <sub>7</sub>	2793.83	2775.19	18.64
F <sup>#</sup> <sub>7</sub> /G <sup>b</sup> <sub>7</sub>	2959.96	2977.56	-17.60
G <sub>7</sub>	3135.96	3124.86	11.11
G <sup>#</sup> <sub>7</sub> /A <sup>b</sup> <sub>7</sub>	3322.44	3318.56	3.88
A <sub>7</sub>	3520.00	3520.00	0.00
A <sup>#</sup> <sub>7</sub> /B <sup>b</sup> <sub>7</sub>	3729.31	3698.61	30.70
B <sub>7</sub>	3951.07	3966.72	-15.65



$C_8$	4186.01	4164.63	21.38
$C^{\#}_8/D^b_8$	4434.92	4445.49	-10.57
$D_8$	4698.64	4689.36	9.28
$D^{\#}_8/E^b_8$	4978.03	4954.61	23.42

APPENDIX C  
MANUSCRIPT SCANS

Manuscript Scans of Selected Figures

Figure 6. TWV 51:D8, Movement 1, Measures 14-16.



Figure 7. TWV 51:D8, Movement 1, Measure 32, Whole Step Trill



Figure 8. TWV 51:D8, Movement 1, Measures 11 to 20, A5 Passage



Figure 9. TWV 51:D8, Movement 1, Measures 42 to 44, A5 Passage.



Figure 10. TWV 51:D8, Movement 2, Measure 3, Unison with Violins.



Figure 11. TWV 51:D8, Movement 2, Measure 12, Horn with Third of the Chord.



Figure 12. TWV 51:D8, Movement 2, Measures 14 to 15 A5, Horn as the Suspension and 5th of the Following Chord.



Figure 13. TWV 51:D8, Movement 2, Measure 19, Final Horn Note in Unison with 2 String Parts.



Figure 14. TWV 51:D8, Movement 3, Measure 57, 16th Note Passage with F5 and A5 Pitches on Strong Beats



Figure 15. TWV 52:F4, Movement 1, Measures 26 to 28, B4 Pitches



Figure 16. TWV 52:D2, Movement 3, Measures 1 To 5, Opening of the Third Movement for the First Horn.

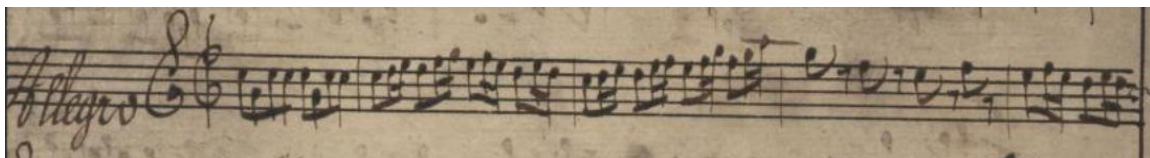


Figure 17. TWV 52:D2, Movement 3, Measures 21 to 24, F#5 Pitches in First Horn

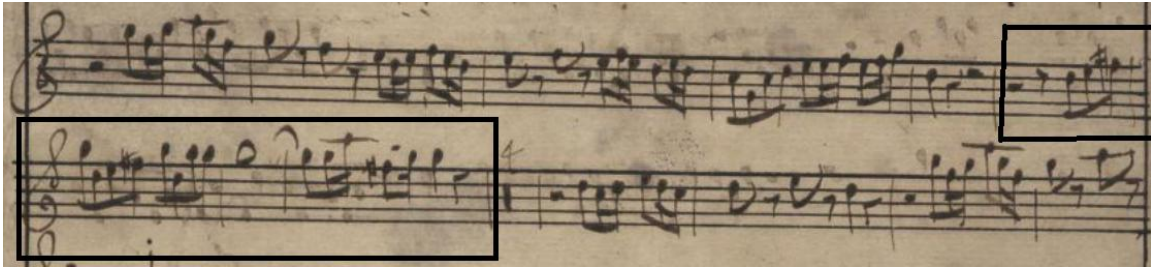


Figure 18. TWV 52:F3, Movement 1, Measures 98 to 101, F5 Pitches



Figure 20. TWV 52:D1 Movement 3, Measures 1 to 3.



Figure 21. TWV 52:Es1, Movement 1, Measures 63 to 64, First Horn





Figure 22. TWV 52:Es1 Movement 3, Measures 11 to 14, Second Horn.



Figure 23. TWV 54:D2, Movement 1, Measures 68 to 76, Horn 1



Figure 24. TWV 54:D2, Movement 1, Measures 87 to 89, Horn 1.



Figure 25. TWV 54:D2, Movement 1, Measures 78 to 81, Horn 1.



Figure 26. TWV 55:F11, Movement 7, Measures 15 to 22



Figure 28. TWV 54:Es1, Movement 1, Measures 15 to 19, Horn 1



Figure 29. TWV 54:F1, Movement 5, Measures 24 to 28, Horn 1



APPENDIX D  
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**From:** donangeldelapalma@gmail.com [mailto:donangeldelapalma@gmail.com] **On Behalf Of**  
Engelbert Schmid Horns  
**Sent:** Monday, August 18, 2014 12:13 AM  
**To:** Schmid GmbH; jggilbe1@asu.edu  
**Subject:** Re: Baroque and Classical Horn

Dear Mr. Gilbert!

Of course you may include those diagrams into your doctoral dissertation.

Just please mention from where you got it.

Thanks and greetings!

Engelbert Schmid

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D-86513 Mindelzell  
www.engelbert-schmid-horns.com  
Tel. 0049 (0) 8282-890412  
Fax 0049 (0) 8282-890512  
DE 129090161



2014-08-18 8:34 GMT+02:00 Schmid GmbH <engelbert-schmid-horns@t-online.de>:

From: John Ericson  
To: Joel Gilbert  
Sent Friday 10/10/2014 3:38PM  
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John Ericson

+++++

*Dr. John Ericson, horn*

*Brass Area Coordinator*

*Arizona State University*

<http://www.public.asu.edu/~jgerics/welcome.html>

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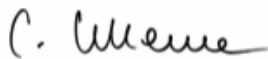
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**Mus ms 1033/78**  
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