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An Equipment Guide to Performing Baroque Horn Music

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UNIVERSITY OF MIAMI

AN EQUIPMENT GUIDE TO PERFORMING
BAROQUE HORN MUSIC

By
Joseph Falvey

A DOCTORAL ESSAY

Submitted to the Faculty
of the University of Miami
in partial fulfillment of the requirements for
the degree of Doctor of Musical Arts

Coral Gables, Florida
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UNIVERSITY OF MIAMI

A doctoral essay submitted in partial fulfillment of
the requirements for the degree of
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AN EQUIPMENT GUIDE TO PERFORMING
BAROQUE HORN MUSIC

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Since the renewed interest in Baroque music in the twentieth century, no instrument has been more vexing for performers than the horn. The valveless Baroque horn, coupled with the anachronistic technique of clarino playing places hornists at a major disadvantage when faced with music of the Baroque Period. This study is an equipment guide that can be used as a starting point for conquering the upper-register, sound quality, and endurance challenges posed by Baroque horn writing. Chapter Two focuses on the options available to present-day period horn performers. Although it is not practical to perform on original Baroque horns, there are a number of craftsmen creating replicas of historical models that are available to today’s performers. A discussion of performance techniques as well as different approaches to horn design is included with pictures of original instruments and historical replicas. Chapter Three is of interest to artists performing on the modern horn. It examines specialty instruments and interchangeable components and includes relevant images. Chapter Four is a list of recommended recordings that demonstrate the options offered by this essay. Chapter Five consists of the conclusions of the study.
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Octave Designation

The octave designation system used in this essay is the one preferred by *The New Harvard Dictionary of Music*, edited by Don Randel (1986), as follows:

\[
\begin{align*}
&\text{C}, \\
&\text{C} \\
&\text{c} \\
&\text{c'} \\
&\text{c''} \\
&\text{c'''} \\
&\text{c''''}
\end{align*}
\]
CHAPTER ONE

INTRODUCTION

PURPOSE OF THE STUDY

This essay focuses on equipment options available to horn players when performing Baroque Period works written between 1600 and 1750. Since valves had not yet been invented, the horn was limited to the notes of the harmonic series. (In addition to the marks for quarter-flat and quarter-sharp, the – denotes a flat note and the + denotes a sharp note).

Figure 1.1. Harmonic Series

As a result, the music had to be written in the extreme upper-register in order to create step-wise melodies; consequently, hornists of the Baroque Period were sometimes expected to be able to play as high as the twenty-fourth harmonic. This was possible for a number of reasons. First is the bore size of the instrument. Bore refers to the diameter of the tubing, and this is smaller on the Baroque horn than the modern double horn. Second, due to the lack of valves, Baroque horns are very light. Third, the bell throats of Baroque

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horns are very narrow in comparison to the modern double horn, while the bell diameters of Baroque horns are also smaller than modern horns. These factors combine to make a horn that is less taxing to play than its heavier modern counterparts and facilitates the production of the upper-register.

In addition to the design of the Baroque horn itself, playing in the extreme upper-register was possible because of the technique known as *clarino* playing. Baroque hornists were not expected to play in the low register, allowing them to use an embouchure and mouthpiece combination that favored the upper-register. According to renowned horn historian Horace Fitzpatrick, “A definitive aspect of the earlier baroque technique was that the mouth-piece was placed with one-third of its width on the upper lip and two-thirds on the lower, or in some instances half-and-half. This was well suited for playing in the altissimo register.”² This is consistent with a more trumpet-like mouthpiece placement on the lips and is supported by Fitzpatrick’s examination of and experimentation with surviving mouthpieces from the Baroque Period.³

In addition to a different mouthpiece placement, the design of the mouthpieces themselves has changed considerably since the Baroque Period. The mouthpiece rim was much thicker with a flatter inside edge than mouthpieces of later periods. The following image features a rim thickness of 6.5 mm, significantly wider than most modern mouthpieces.⁴

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⁴ Ibid., 156.
Baroque horn mouthpiece cups were also narrower and longer than mouthpieces from later periods. This was another feature that favored the upper-register.

Figure 1.3. Internal profiles of Baroque horn mouthpiece (left) and Classical horn mouthpiece (right)

Horns during this time were also held with the bells in the air, producing a brighter, more direct sound than modern day listeners are accustomed to hearing.

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5 Ibid., Plate XV, c and d.
6 Ibid., Plate XV, g.
The evolution of horn design has made much of the Baroque repertoire difficult to perform on the larger and heavier modern instruments. Bore size, bell throat width, and bell diameter have increased considerably since the Baroque Period. The design of mouthpieces has also changed in correspondence with the structural changes of the horn.

These changes have occurred for a number of reasons. Initially, the bell throat became wider to accommodate the placement of the right hand in the bell as hand horn technique developed. Bore size has also steadily increased, in large part due to the development of the double horn. An increase in bore was necessary in order to even out the sound quality between the B-flat and F sides of the double horn.\(^8\)

While some professional horn players can play above c''' for horn in F with relative ease, it is safe to say that the majority of horn players will struggle to produce these notes with regularity and accuracy. Accordingly, many Baroque works are effectively unplayable by most horn players, even in an advanced college or professional

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\(^8\) Ibid., 225.
setting. One example is the aria to J.S. Bach’s cantata *Wär Gott nicht mit uns diese Zei*, BWV 14. In this particular instance, the *corno da caccia* part reaches the eighteenth harmonic for horn in B-flat alto. Transposed for horn in F, this would be a written g'’’.

Figure 1.5. Excerpt from Bach Cantata BWV 14

However, there are a number of options available to the modern hornist in order to perform Baroque horn music with greater ease and a more authentic sound. The two main possibilities for modern performers are: 1. period instruments (or replicas); 2. modern instruments and equipment. An in-depth survey of the equipment possibilities available is the focus of this essay.

An additional goal of this essay is to create a reference resource not only for performers, but music directors as well. If musicians have this information available, Baroque works that are not programmed as often because of their upper-register demands can become more accessible to performers. The study will increase options for music directors when looking for brass musicians capable of performing Baroque horn parts.

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10 Ibid.
METHOD

This study will be limited to works of the Baroque Period, from 1600 to 1750 (the beginning of the hand horn era). The focus will be on discussing the performance problems faced by modern hornists when encountering Baroque literature.

This essay begins with an examination of the issues faced by hornists when performing Baroque music on period instruments or replicas. These include the scarcity of surviving original instruments and the departure from original designs by the makers of historical replicas. I provide a description of the performance techniques used today and the issues associated with each method. Images of currently produced Baroque horn reproductions are included, as well as some of the original instruments they were based upon.

The following chapter deals with all manner of modern equipment. Each subsection discusses a different type of instrument, interchangeable component, or other modification. Images of each topic are included as an aid to understanding.

A selection of recommended recordings is included. This list is a valuable resource which will help the prospective Baroque hornist to hear the various options in practice.

REVIEW OF RELATED LITERATURE

The literature that deals with Baroque horn music tends to focus on either performing on a period instrument or a modern instrument. This study compiles information about period instruments and modern instruments into one resource.

There is a lot of controversy when it comes to performing Baroque horn music on period instruments. The first issue revolves around the specific instrument used by a
performer. There are few existing examples of Baroque horns and mouthpieces for current performers to use; as a result, replica instruments are employed by most players. It is important to understand that some replica makers, such as Engelbert Schmid, have significantly altered the original design of the instrument.\textsuperscript{11}

The next topic is the method of performance itself. There are three performance techniques: 1. hand-stopping; 2. nodal venting; 3. lipping. While the goal of this study is not to recommend one performance method over another, proponents of each method will be presented. Hand-stopping and nodal venting are discussed by Richard Seraphinoff, a well-known historical horn builder, in an article available on his website.\textsuperscript{12} Javier Bonet, one of the foremost early horn players in the world, is quoted as an advocate of hand-stopping in an article by J. Drew Stephen.\textsuperscript{13} Lipping is a method of using the embouchure to bend pitches in tune. While more difficult than hand-stopping or nodal venting, it has been used in a number of recordings by British hornist Andrew Clark.\textsuperscript{14}

Steven Gross’ doctoral essay discusses different issues pertaining to the performance of Johann Sebastian Bach’s horn parts in particular. In his essay, Gross traces the history of the horn to J.S. Bach’s time and focuses on Bach’s writing for the horn. Gross gives special attention to the eight unique terms Bach used to denote the horn in his scores. Gross also makes an argument for using the horn in place of the trumpet


\textsuperscript{14} Andrew Clark, Personal email to author, January 30, 2011.
when performing Bach’s Brandenburg Concerto No. 2, which he recently put to the test in a CD recording.\footnote{Steven L. Gross, The Evolution and Nomenclature of Bach’s Horn Parts, (doctoral essay, University of Cincinnati, 1994).}

_The Early Horn: A Practical Guide_, by John Humphries is a resource dealing with the issues of performing on period instruments. Humphries writes about the development of the horn through the invention of the valve. While there is a chapter on equipment, there are no images of actual horns (or reproductions) of the Baroque Period. Of particular interest are Humphries’ thoughts on choosing an instrument.\footnote{John Humphries, The Early Horn: A Practical Guide, (Cambridge University Press, 2000).}

Descant and triple horns are discussed in-depth by John Ericson, associate professor of horn at Arizona State University, in his online article “Descant and Triple Horns” and in his book _Playing High Horn: A Handbook for High Register Playing, Descant Horns, and Triple horns_. Ericson also discusses the rarer single descant horns in his article “The Little Descants.” His work focuses on the pedagogy of high register playing and performing on modern equipment.\footnote{John Q. Ericson, “Horn Articles Online,” http://www.public.asu.edu/~jqeric/online.htm (accessed December 10, 2009).}

A simple adjustment is suggested by Philip Farkas in his book, _The Art of French Horn Playing_, consisting of removing non-essential slides and valve caps to reduce the weight of the instrument. Farkas specifically recommends this alteration for Bach’s Brandenburg Concerto No. 1.\footnote{Philip Farkas, The Art of French Horn Playing, (Secaucus, New Jersey: Summy-Birchard Inc., 1956), 83.}
Changing the mouthpiece is the cheapest and easiest variation that horn players can make. There are four main components that can be altered: cup, throat, backbore, and rim. There are a multitude of mouthpiece options available and each player will need to experiment in order to find what works the best with a specific instrument and an individual’s playing idiosyncrasies. Mouthpieces can also be custom made for a specific instrument, which can be especially helpful when using a descant horn. Horn players can be guided through this process by contact with a mouthpiece craftsman such as Tom Greer of Moosewood Hornists’ Requisites.\textsuperscript{19} Osmun Music offers a wide range of horn mouthpieces, as well as offering the option for hornists to design their own mouthpiece.\textsuperscript{20}

Custom leadpipes can be made in a variety of tapers and alloys that can have a great effect on the sound and response of a horn. Some horn makers, such as Finke, offer their horns with a detachable leadpipe system that makes changing a leadpipe no more difficult than changing a mouthpiece or bell.\textsuperscript{21} It is also possible to have custom work done that can allow any horn to accept detachable leadpipes.\textsuperscript{22} A listing of North American leadpipe makers is included in the study.

Finally, a listing of recommended recordings is included. Descriptions of each recording call attention to the different equipment choices and methods of performance made by the performers.

\textsuperscript{19} Thomas Greer, Moosewood Hornists’ Requisites, http://www.hornmouthpiece.com (accessed December 9, 2009).


There are a number of problems facing hornists wanting to perform on authentic Baroque horns. First of all, few instruments have survived the hundreds of years since these horns were regularly in use. Those that have survived are often found in museums or are prohibitively expensive. Since authentic instruments from the Baroque Era are not readily available and affordable, modern hornists must resort to using replicas of historic models. There are a number of fine craftsmen building these instruments today and choosing one is a matter of personal taste, as the amount of variation from authentic designs can vary widely.

Why would horn makers choose to vary the original design? One issue is the pitch idiosyncrasies of the harmonic series. In the Classical Period, these notes would not pose a problem, as hand horn technique (hand-stopping) was well developed. Hand-stopping required the hornist to manipulate the pitch by moving the position of the right hand in the bell. While development of this technique is attributed to Dresden hornist Joseph Anton Hampl around 1750, there is no hard evidence that this technique was used by hornists in the Baroque Era.\(^{23}\)

Compared to later periods, the horn of the Baroque Period was played in a completely different manner. Rather than holding the bell down at the player’s side, the bell was held in the air.

Figure 2.1. Hand horn playing position

Figure 2.2. Fixed pitch horns with bells in the air

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25 Stephen, “To Stop or Not to Stop,” 60.
Before choosing an instrument, the hornist must first decide which performance technique to use. There are three performance techniques: nodal venting, hand-stopping, and lipping.²⁶

Nodal venting is described in an article by Richard Seraphinoff, a well-known period horn player and builder who teaches at Indiana University.

The concept of nodal venting can be described briefly as follows. If a natural horn or trumpet is pitched in, for example, the key of C, it will produce an overtone series based on C, with the eleventh partial (corresponding to F) being higher than F in either equal temperament or any of the historical unequal temperaments, and the thirteenth partial (corresponding to A) being too low.

Figure 2.3. Harmonic series for an instrument in C

One solution to this is to place a hole in the instrument at the point about one-third of the way from the end of the bell to the mouthpiece. When the hole is closed (with a finger or a bit of cork), the instrument sounds its C overtone series, but when opened, the instrument acts as though it were now pitched in F (see Figure 2.3), and the F and A become usable notes as the eighth and tenth partials of the series based on F.

Figure 2.4. Harmonic series in F produced by a nodal vent

By alternating between these two series on the open horn, the player can use the best notes of each series to play more in tune than with the single overtone series of the instrument.²⁷

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The use of vent holes, however, is definitely not historically authentic. There are no surviving examples of horns from the Baroque Period that have vent holes and no written mention of the practice being applied to the Baroque horn. The earliest known example which survives is a trumpet with vent holes by William Shaw of London from 1787. However, Shaw’s application of vent holes was an attempt to make the trumpet more chromatic, not to correct intonation. So without any evidence whatsoever of this method of performance from the Baroque Period, why would a performer choose to use vent holes?

One answer is quite simple: the age of recording has changed the expectations of the audience, conductors, and performers. While Baroque audiences may have been accepting of the brass players’ attempts (successful or unsuccessful) to adjust the out of

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tune partials with their embouchures (known as lipping), current audiences carry the expectation of perfection. This is in large part due to the age of digital recording, where the smallest phrases can be spliced together to create a flawless performance.\textsuperscript{30}

So if hand-stopping is considered a more historically authentic technique, why would a hornist resort to the use of vent holes? There is no way of knowing exactly when hand-stopping became the norm for horn players or how widespread it was practiced. The idea of using vent holes is to create a more tonally authentic performance while accounting for the more finely attuned ears of contemporary listeners. Advocates of nodal venting point to the proliferation of artwork from the era that shows the horn held with the bell in the air, perpendicular to the ground. It would have been impossible for the hornist to reach a hand into the bell while playing in this manner. Employing vent holes allows the brightness of tone and evenness of sound afforded by having the bell in the air, while simultaneously allowing for better intonation of the problem partials.\textsuperscript{31}

Advocates of hand horn technique believe that using hand-stopping is a more accurate historical method of performance. They believe that using a technique that does not alter the design of the instrument is preferable to using vent holes. They often refer to the slow rate of the dissemination of information in Europe during the Baroque Period as a reason that there is not written evidence of the use of hand-stopping prior to the 1750s.\textsuperscript{32}

\begin{footnotesize}
\begin{enumerate}
\item Ibid.
\item Ibid.
\end{enumerate}
\end{footnotesize}
Javier Bonet, a well-known Spanish period horn performer, is a strident supporter of hand-stopping as opposed to vent holes: “Is it really thinkable that someone who held a horn in his hand for 30 years wouldn't notice that putting his right hand in the bell had an effect on the harmonic series? (on the other hand, it is out of the question for me to resort to [nodal vents] to be able to play certain parts, as most of my colleagues do. For security in concerts and recording sessions, they are obliged to fool conductors and listeners in this way).”33

The use of hand-stopping, however, changes the fundamental tone of the horn perceived by audiences. In order to get a hand inside the bell, the horn must be held down at the side. This creates a much darker sound than with the bell held aloft. There is also the problem of the difference in tone quality between the open and stopped pitches. Hand-stopped notes often have a brassy, nasal sound.

The technique of bending pitches in tune with the lips, known as lipping, is a more difficult technique and is rarely used by period instrument performers today. Andrew Clark, a British artist on both period and modern horns, has used this technique in live performances and on recordings. These recordings are listed in the Recommended Recordings chapter of this study. Brass instruments of the Baroque Period did not have tuning slides, so pitch-bending to correct intonation was an everyday necessity. Evidence of this technique exists in reference to Baroque trumpet playing as early as 1634. Italian trumpeter Girolamo Fantini was said to “play with his trumpet all the notes and [unite] to those notes those of the organ.”34

33 Stephen, “To Stop or Not To Stop,” 60.
34 Ibid. 64.
Altering the pitch of a given note with the lips was easier on Baroque horns due to the method of construction. Modern manufacturing methods allow tubing to be made with a very smooth bore, creating a more defined and stable harmonic series. The imperfections present in tubing formed by hand make for less definite harmonics; as a result, adjusting the intonation of specific pitches with the lips is accomplished more easily.35

Engelbert Schmid is a world-renowned horn craftsman whose workshop is located in Mindelzell, Germany. In his catalog of natural horns, Schmid describes his thinking on the building of period instruments: “I as a hornmaker had to recall historic measures, material thicknesses and manufacturing methods.” With this being said, Schmid makes significant changes to the basic design of the instruments themselves. He offers two Baroque horn models: 1. corno da caccia or corno da tirarsi; 2. Baroque corno.36

First is Schmid’s smaller design, which he refers to as corno da caccia or corno da tirarsi. This horn is based on an instrument by Friedrich Ehe of Nürnberg, ca. 1730.

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35 Stephen, “To Stop or Not To Stop,” 64.

Figure 2.6. Engelbert Schmid *corno da caccia or corno da tirarsi*\textsuperscript{37}

Figure 2.7. Original horn by Friedrich Ehe of Nürnberg, c. 1730\textsuperscript{38}

\textsuperscript{37} Ibid.

\textsuperscript{38} Ibid.
The reason for the two names has to do with a radical alteration of the original instrument. In order to conquer the problem of out-of-tune partials and non-harmonic tones, Schmid has incorporated a trombone-like slide in the center of the instrument. He justifies this addition by pointing out that trombones were already using this type of slide in the Baroque Era and “this idea would have been adopted with some gratitude.” The *corno da tirarsi* from the period “was held with one hand and with the other hand the whole rest of the instrument was moved” to correct intonation and create non-harmonic tones. In effect, Schmid has updated the *corno da tirarsi* with a more ergonomic slide. Schmid sees this departure from the traditional design as preferable to using nodal vents. In addition, Schmid has altered the original tapers for improved intonation through the use of “computerized calculations”.  

Schmid’s Baroque *corno* has a slightly larger bell throat than his *corno da caccia*. This creates a darker sound than the *corno da caccia* model.

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39 Ibid.
As opposed to being based on a single historical model, Schmid has incorporated elements from three of them into his Baroque *corno*: 1. J. Fr. Schwabe from Leipzig; 2. J. H. Eichentopf from Leipzig; 3. J. Leichnamschneider from Vienna.\(^{41}\)

As seen in the photo above, Schmid has also added a central tuning slide to the instrument. While a tuning slide was not present on any original Baroque horn models, Schmid has included it for the convenience of modern players. However, Schmid does

\(^{40}\) Ibid.

\(^{41}\) Ibid.
not offer vent holes for his Baroque corno. He recommends a combination of a hand in the bell and lip technique for correcting out-of-tune partials.\(^{42}\)

Richard Seraphinoff’s approach to building period instrument replicas is different than Schmid’s. According to his personal website, “Since 1983, Richard Seraphinoff has produced accurate copies of 18\(^{th}\) and 19\(^{th}\) century horns. His authentic horns range from the Baroque to early Romantic eras and are carefully created using traditional methods. Artists throughout the world trust and perform on Mr. Seraphinoff’s faithful reproductions.”\(^{43}\)

Seraphinoff offers vent holes as an option on his Baroque horns. He admits that “although they did not exist at the time, for better or for worse, vent holes are part of the early brass world today for horn” players.\(^{44}\) However, he does not go as far as to incorporate a central tuning slide, which did not appear until the Classical Period. Instead, tuning adjustments are made through the use of traditional tuning bits. Seraphinoff’s additional modifications will be noted in the following discussion of his specific models.

Seraphinoff offers two types of Baroque horn configurations. The first is a fixed pitch version in Jagdhorn configuration with two coils (only capable of playing in a

\(^{42}\) Ibid.


single key). The other uses the master crook and coupler system (allowing multiple keys with a single instrument by changing crooks).

Seraphinoff offers two fixed pitch models and they are based on horns by Johann Wilhelm Haas and Joseph Leichnambschneider. “Both the Haas and Leichnambschneider have a 24 cm bell diameter, but the Leichnambschneider model has a slightly smaller bell throat than the Haas Baroque horn, resulting in a brighter tone color, and more compact sound.”

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Figure 2.9. Seraphinoff fixed pitch Baroque horn in *Jagdhorn* configuration

Seraphinoff also offers two models of Baroque horns with the master crook and coupler system. The first is based on an original instrument by Johann Wilhelm Haas of Nürnberg from the first half of the eighteenth century. He describes this model as being equally well-suited to using hand-stopping technique or vent holes. The bell diameter for this model is also twenty-four centimeters with a bore of .440 inches.\(^{49}\)

The original horn that Seraphinoff based this model on was a fixed pitch horn. Since this horn could only play in one key, a current period horn performer would need to purchase a number of horns in different keys to cover the Baroque literature. As a result,

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Seraphinoff chose to slightly alter the original Haas horn. “I chose to copy the bell and all conical sections of the horn as faithfully as possible, but to make the instrument in the orchestra horn style, with a small double coil body and terminal crooks and couplers. I felt that this alteration in the configuration of the instrument was justified, because the instrument is unaltered in its bore profile, staying within the acoustical boundaries of the period, and because of the historical precedent of makers doing just this alteration, or variation, with their own models.”

Seraphinoff’s second master crook and coupler model is derived from an original by Christopher Hofmaster of London. The original can be found in the Edinburgh University Collection of Historic Musical Instruments (#3297) in Edinburgh, Scotland. Seraphinoff was able to study technical drawings and measurements of the original, as well as having the opportunity to play it himself. Seraphinoff also found it necessary to make a few minor modifications to the original. The original was a left-handed horn, so he wrapped it to be comfortable to those used to right-handed horns. Also, the original only had a crook in C alto, requiring Seraphinoff to fashion his own tapers for crooks and

couplers. The final adjustment is concerned with the construction of the body of the horn. While the original was made in two pieces and brazed directly together, Seraphinoff chose to use a ferrule (a narrow metal ring) to connect the two portions of the horn. While it shares the cylindrical diameter of .440 inches with the Haas model and the diameter of the bell is slightly smaller at twenty-three centimeters, Seraphinoff describes the sound as “somewhat darker and fuller than the Haas model.”

Figure 2.11. Seraphinoff Baroque orchestra horn after Hofmaster, ca. 1760

Another historical brass instrument manufacturer is Thein Brass located in Bremen, Germany. Thein’s *corno da caccia* is based on a design by Friedrich Ehe of

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54 Ibid.
Nürnberg, c. 1720, in the collection of the Carolino Augusteum Museum in Salzburg, Austria. This horn is able to accept either a horn or trumpet mouthpiece.\textsuperscript{55}

Figure 2.12. Thein \textit{Corno da Caccia}\textsuperscript{56}

Andrew Clark gives his comments on the Thein \textit{corno da caccia} on his personal website:

This horn made by Max & Heinrich Thein is a copy of an instrument by Ehe of Nürnberg c.1720 and it has one of the smallest bells I have seen on a horn - 18.5 cm in diameter. It is an example of an instrument which is hard to classify: the original was apparently found with just one cylindrical crook of 10.5 mm diameter bore, making it something of a cross between a horn and a coiled trumpet. Since the instrumental nomenclature of 18th century composers (such as that of Bach) is often ambiguous perhaps this one is appropriate for use in works where this is the case. It has been useful to me when performing those Bach Cantatas which have horn parts in high keys, such as A, Bb & C alto.\textsuperscript{57}


\textsuperscript{57}Ibid.
Another popular horn amongst period horn players is made by the British hornsmith John Webb. It is based on a horn with crooks by Joseph Leichnambschneider from approximately 1720 and was developed in collaboration with Anthony Halstead, a well-known British period instrument performer. It is marketed as the Webb-Halstead Baroque horn.\textsuperscript{58}

\textsuperscript{58} John Webb, “Webb-Halstead Baroque Horn.”
The Webb-Halstead Baroque horn features a few departures from the original design. As seen in Figure 2.13, this horn includes vent holes. Also, the length of the hoop

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had to be slightly adjusted in order to play at the currently accepted Baroque pitch of A=415HZ. For the convenience of modern players, it features a tuning mechanism which was not available in the Baroque Period.\textsuperscript{60}

Figure 2.14. Webb-Halstead tuning mechanism\textsuperscript{61}

\textsuperscript{60} Ibid.

CHAPTER 3

MODERN EQUIPMENT

Double Descant Horns

The most common way hornists attempt to meet the upper-register demands of Baroque music today is to employ a descant horn. A descant horn is a specialty instrument that is pitched in a key higher than the B-flat side of a standard double horn. These can be made in a variety of keys with many different designs. The most common of these are discussed in this chapter.

The principle of using a shorter valved horn to create an easier high register has been around since the nineteenth century. Using a single horn in F alto (half the length of the F side of a modern double horn, therefore one octave higher) was promoted as early as 1883 by Friedrich Gumpert for excerpts such as the off-stage horn call from Wagner’s Siegfried. Another such instance was Gebrüder Alexander’s creation of a G alto (with F crook) single descant horn for the Mainz Festival in 1906. This horn was meant to be used for Handel’s Judas Maccabeus and Bach’s B minor Mass.\(^\text{62}\)

For modern hornists, the most common type of descant is known as a double descant horn in B-flat/F alto. A double descant horn is built with one side pitched in the key of B-flat that is the same length as a standard double horn. The other side of the horn is typically pitched in the key of F that is one octave higher than that of a standard double horn. This side of the horn is commonly referred to as F alto or high F. The purpose served by this instrument is to retain the general playing and fingering techniques that a

\(^{62}\) Baines, Brass Instruments: Their History and Development, 226.
player is used to, while increasing the accuracy and ease of production of the notes in the high register. These horns are usually designed to make the transition from the player’s normal horn as easy as possible. Not every hornist owns one of these specialty horns because they are not often used in everyday playing situations.\textsuperscript{63}

One manufacturer that has been at the forefront of descant horn design is Paxman of London. They released one of the first successful full double descant models in 1959 and it featured a unique double change valve configuration, with the upper valve incorporated into the bell branch.\textsuperscript{64}


\textsuperscript{64} Paxman Musical Instruments Ltd., personal email to author, March 16, 2011.
Figure 3.1. Paxman full double descant 1959 model front view

Figure 3.2. Paxman full double descant 1959 model back view

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66 Ibid.
Other manufacturers use a double change valve configuration today, but they differ from Paxman’s 1959 model. Two popular models are the Model 107 by Alexander and the Model ES3 by Engelbert Schmid. In these cases, the leadpipe feeds directly into the upper valve, while the lower valve feeds into the bell branch. These models do not have a separate tuning slide for the F alto side of the horn. Tuning the F alto side can only be accomplished by adjusting the leadpipe, affecting the pitch on both sides of the horn.

Figure 3.3. Alexander Model 107 B-flat/F alto full double descant horn

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Paxman, however, soon came up with a double descant model that had a single change valve. This model also featured a shared leadpipe for both sides of the horn, but had an independent tuning slide for the F alto side (the small slide directly above the thumb levers in Figure 3.5).

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Many of Paxman’s descants from this period are available on the used market. This change valve configuration has also been incorporated by a number of other manufacturers currently producing full double descants, including Conn, Holton, Hoyer, and Patterson.

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Figure 3.6. Conn 12D B-flat/F alto full double descant

Figure 3.7. Holton H200 B-flat/F alto full double descant

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In 1979, Paxman created another new change valve for its Model 60 B-flat/B-flat soprano full double descant.

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In 1986, Paxman applied this innovative change valve design to its Model 40 B-flat/F alto full double descant. “All of our descant horns incorporate a unique valve, designed by Paxman, that gives the airway diverging routes from a point close to the mouthpiece where the tube diameter is still small. This allows both the Bb and f-alto sides to have the correct tapers for both the mouthpipe and branch. The two sides then converge in the same valve, in another chamber with a much larger tube diameter, in the expanding approach to the bell throat.”

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This change valve design has since been adapted by a number of manufacturers, most notably by Alexander with the recent release of their model 107X.

76 Ibid.
Paxman also pioneered the dual-bore system. This system utilizes tubing of differing diameters for each side of the horn, thus creating equal resistance felt by the

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player. Paxman’s Model 45 full double descant features the dual-bore system. This idea has been incorporated by other manufacturers, including Holton and Lawson.\textsuperscript{78}

Figure 3.13. Dual-bore system\textsuperscript{79}

Lawson Horns of New Hampshire offers two unique full double descant horn models. Both descants incorporate Lawson’s own dual-bore design, “throughout the cylindrical, leadpipe, and first branch taper, making them indistinguishable in loudness and tone from a double horn. This prevents any trumpet-like sound quality on the high F side, a common problem with many descant horns today.”\textsuperscript{80}


Figure 3.14. Lawson Model 8211 B-flat/F alto full double descant\textsuperscript{81}

Figure 3.15. Lawson 8211 descant back view\textsuperscript{82}


\textsuperscript{82} Ibid.
According to the Lawson website, “The 8211 is our large bore orchestral descant horn. Similar in playing characteristics to the Fourier 804, this horn is a very free blowing descant horn crafted in collaboration with many major orchestral principal players.” While it could certainly make many Baroque works easier to play, Lawson’s description seems to recommend that this horn be used for large-scale orchestral works. However, this model was used by Barry Tuckwell on his solo album *Baroque Horn Concertos.*

Lawson’s second full double descant is Model 963. As opposed to the 8211 descant, the 963 “is designed to be an all-around soloist, chamber, and light orchestral horn.” This instrument would seem to be better suited for Baroque literature than the 8211. Lawson Horns also offers a thinner metal thickness on all of their horn models. Known as Lawson “Lite,” this option is designed specifically to have a “quicker, cleaner response” and a “lighter tone.” This would be a good option for Baroque horn music, as playing a lighter horn would also be less tiring for the player.

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The double descant horns offered by Finke Horns of Germany feature an original change valve design. Rather than using a rotary change valve, Finke uses a piston that is actuated by a traditional thumb trigger. The placement of the piston allows for a separate leadpipe for each side of the horn. This design was developed in 1975.  

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Theoretically, this should allow for improved intonation, as each leadpipe is optimized for its respective length of horn.\textsuperscript{89}

\textsuperscript{87} Ibid.

\textsuperscript{88} Ibid.

\textsuperscript{89} Ibid.
Another double descant (mentioned briefly earlier) that is available is in the keys of B-flat/b-flat soprano. The b-flat soprano side of the horn corresponds to the length of a standard B-flat trumpet.

Figure 3.19. Finke B-flat/b-flat soprano full double descant\textsuperscript{90}

This type of descant would be very useful for works such as J.S. Bach’s Cantata BWV 14.

\textsuperscript{89} Ibid.

Single Descant Horns

As stated earlier in this chapter, single descant horns have been in use since the late nineteenth century. These instruments are ideal for Baroque horn performance due to their easily produced high register and light weight. They are currently offered by a number of manufacturers and are available in a variety of keys.

Engelbert Schmid offers a very versatile single descant horn. Rather than being in a single key, it comes with additional valve slides that allow the horn to play in F alto, E alto, E-flat alto, or D alto. F, E-flat, and D are three of the more commonly found keys in Baroque literature.91

Figure 3.20. Schmid single F alto descant horn (convertible to E, E-flat, or D)92


92 Ibid.
As previously noted, Alexander was producing single descants as early as 1906 and currently offers a range of single descant horns in a variety of keys. These horns are played with a horn mouthpiece, but the small bell and narrow bell throat taper create a tone that is “bright and lustrous – emphasizing the relationship to the Baroque hunting horn.”

Figure 3.21. Alexander Model 105 single F alto descant

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Alexander’s Model 99 is in the key of b-flat soprano, the same length as a standard B-flat trumpet. It accepts a standard horn mouthpiece and the shorter length has distinct advantages in the upper-register.

Figure 3.22. Alexander Model 99 single b-flat soprano descant\textsuperscript{95}

While not as utilitarian as the double descant horn, these specialty horns are closer to the tonal spectrum of the horns played on in the Baroque Period. This is due to the narrower taper in the bell throat of the instrument and smaller bell diameter.

Whereas the design of the double descant has to be a compromise between two horns of different lengths, the single F alto horn can be optimized for the best possible performance for one length of horn. This allows for a more easily produced high register. The sound created by a single F alto horn is also typically lighter and brighter than a double descant. The lighter weight is also an aid to endurance.96 The use of such a horn probably would not be practical in a full orchestra setting because of blending problems with a section of double horns. However, it would be perfect for works such as J.S. Bach’s cantatas and other pieces calling for notes above concert f”.

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Single B-flat Horns

Single B-flat horns have been around since the early valved horn era. Before the invention of the double horn in 1897, there was no consensus over which key the new valved horn should use. The single F horn was promoted for its velvety tone, but the single B-flat horn had advantages in upper-register security. One of the most notable proponents of the single B-flat horn was Franz Strauss, principal horn of the Munich Court opera orchestra from 1847 to 1889 and father of Richard Strauss. The elder Strauss premiered many of Wagner’s operas; as a result, his choice of the single B-flat horn was directly related to the challenging horn parts in Wagner’s operas. The light weight was an aid to endurance and the shorter B-flat horn responded more easily in the upper-register, two advantages that are also important when performing Baroque horn music.

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While mostly replaced by the double horn for everyday use today, single B-flat horns are still valuable tools due to their ease of playing and light weight. As a result, they are still the choice of many soloists, including Peter Damm.  

There are generally three types of single B-flat horns available. The most basic is a three valve version, offered by a number of different makers.

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Many models include a fourth valve, known as a stopping valve. This allows the player to perform stopped horn passages in tune which would not otherwise be possible on a single B-flat horn. It can also be used to lower the horn a half-step, putting the horn in the key of A. Another feature that is often available is a longer additional slide that can replace the stopping slide. This slide is known as an F extension and is long enough to provide the F harmonic series, allowing for better intonation for notes such as concert f.

and c’ as well as additional alternate fingerings. While useful for general playing, the stopping valve would not be a necessity for Baroque literature.

Figure 3.25. Alexander Model 90 four valve single B-flat horn

Many professional level single B-flat horns have five valves, incorporating separate levers for the stopping valve and F extension. These extra valves are also not absolutely necessary for performing Baroque literature and only add greater weight to the instrument.

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While four and five valve professional level single B-flat horns can be expensive, there are many three and four valve horns by King, Yamaha, Conn, Holton, and others available on the used market. They can be a more affordable alternative to descant horns. Recommended online marketplaces include auction sites such as Ebay and www.hornplayer.net, a classified ads service for hornists.

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Mouthpieces

The simplest adjustment that a modern hornist can make is to change mouthpieces. Mouthpieces are currently available with interchangeable cups, stems, and rims, making experimentation easier than in the past. While it is not practical to include mouthpiece specifications from every mouthpiece manufacturer, diagrams and cross-sections of mouthpieces offered by Houser Mouthpieces and Osmun Music will be shown here. Their mouthpiece cup offerings can be used as a starting point for further experimentation.

There are a number of mouthpiece cups and rims available that are designed to aid endurance, create a brighter sound that can emphasize the higher overtones, and allow for a more easily produced high register. This is achieved by altering four major components of the mouthpiece: 1. contour of the cup; 2. diameter of the throat (bore); 3. rim; 4. shape of the backbore. ¹⁰³

Figure 3.27. Horn mouthpiece diagram\textsuperscript{104}

The first element that a player usually experiments with is the cup contour. Many players will change to a mouthpiece with a shallower cup because this creates a brighter sound and a more easily produced high register. Since Baroque hornists did not have to play in the extreme low register, they were able to play on shallower mouthpieces than that typically used today.\textsuperscript{105}

Changing the bore size is yet another consideration. A smaller bore creates more resistance, making the high register easier to produce. It is necessary for hornists to know


\textsuperscript{105} Janetzky, \textit{The Horn}, 33.
the bore size of their current mouthpiece in order to make informed decisions and to begin experimentation.

Many horn mouthpieces are made with detachable rims, allowing a player to experiment with different mouthpiece cups while maintaining the same feel on one’s embouchure. There are some players, however, that want the possibility to change rims. This allows the hornist to switch to a thicker rim and/or a rim with a smaller inner diameter, which can increase endurance.\textsuperscript{106}

Trying different backbores is not as easy, as there must be a balance between the backbore, cup contour, bore size, and the instrument being used. In the past, this could only be done through trial and error or consultation with a mouthpiece professional such as Thomas Greer of Moosewood Hornists’ Requisites.\textsuperscript{107}

In 2010, however, Dave Houser of Houser Mouthpieces introduced mouthpiece cups for horn with detachable stems (also known as shanks). At the present time, Houser is the only manufacturer offering detachable stems for horn mouthpieces.\textsuperscript{108}


This gives the player more flexibility in trying different bore sizes with a given cup without having to purchase multiple mouthpieces. In the case of Houser’s San Francisco cups, there are also multiple options for backbores as well as throat sizes. As seen in the chart below, the San Francisco cup is the shallowest available from Houser’s standard line and would be of the most interest for Baroque music performance.
In addition to the cups shown here, Houser also has an extensive library of mouthpieces that are not currently listed on the website. A pdf catalog is in the process of being created and should be available in 2011.\textsuperscript{112}

\footnotesize
Mouthpieces available from Osmun Music offer a great variety of cup depths and shapes, with models specifically designed for high register playing. The following charts detailing Osmun’s mouthpiece offerings provide a general idea of the myriad options that are currently available to hornists. Many of their cup shapes are variations of popular models and can be used as a point of departure for hornists wishing to experiment.\textsuperscript{113}

Figure 3.30. Osmun mouthpiece chart #1

<table>
<thead>
<tr>
<th>Model</th>
<th>Contour</th>
<th>Specs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td></td>
<td>ID .650, .675”&lt;br&gt;Bore 16&lt;br&gt;Depth .752”</td>
<td>A shallow cup with a pronounced curve in the side wall. Designed to favor the extreme high register.</td>
</tr>
<tr>
<td>B</td>
<td></td>
<td>ID .650, .675”&lt;br&gt;Bore 12, 14&lt;br&gt;Depth .877”</td>
<td>A relatively shallow cup with a moderate cup shape supports the high register and produces a brilliant tone.</td>
</tr>
<tr>
<td>G (Replica)</td>
<td></td>
<td>ID .650&lt;br&gt;Bore 17&lt;br&gt;Depth .895”</td>
<td>This Geyer-copy cup, while still on the shallow end of the spectrum, has a less cup shaped profile. The flatter sides help it to produce a sound with more low frequency information.</td>
</tr>
<tr>
<td>L</td>
<td>London</td>
<td>ID .650, .675”&lt;br&gt;17.5mm&lt;br&gt;Bore 8, 10, 12, 14, 16&lt;br&gt;Depth .926</td>
<td>A moderately deep cup with a pronounced curve in the sidewall helps produce the clear, ringing sound preferred by the great British players.</td>
</tr>
<tr>
<td>LD</td>
<td>London Deep</td>
<td>ID .650, .675”&lt;br&gt;17.5mm&lt;br&gt;Bore 8, 10, 12, 14, 16&lt;br&gt;Depth 1.026</td>
<td>Similar to the London cup but .100” deeper. The extra depth translates to a larger volume of sound and a better low register.</td>
</tr>
<tr>
<td>CH</td>
<td>Orange</td>
<td>ID .650, .675”&lt;br&gt;17.5mm&lt;br&gt;Bore 8, 10, 12, 14, 16&lt;br&gt;Depth .977</td>
<td>The quintessential American mouthpiece, Designed after the original Farkas model. Moderately deep and with fairly straight sides it produces an even sound rich in overtones.</td>
</tr>
</tbody>
</table>

114Ibid. 6.
Figure 3.31. Osmun horn mouthpiece chart #2

<table>
<thead>
<tr>
<th>Model</th>
<th>Contour</th>
<th>Specs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5BN</td>
<td>5BN</td>
<td>ID .650</td>
<td>Our 5BN replica cup is a little deeper than the CH and has a more pronounced cup shape.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bore 17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth .988</td>
<td></td>
</tr>
<tr>
<td>CHD</td>
<td>CHD</td>
<td>ID .650, .675”</td>
<td>A deeper version of the Chicago model.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bore 8, 10, 12, 14, 16</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth 1.077</td>
<td></td>
</tr>
<tr>
<td>NY</td>
<td>NY</td>
<td>ID .650, .675”</td>
<td>The New York cup has a moderate cup shape with the curve to the throat opening pushed down about as far as it can go. It produces a large body of sound and is well suited for use with large bell horns with small mouthpipe venturis, like Conn 8D's.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bore 4, 8, 10, 12, 16</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth .926</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>V</td>
<td>ID .650, .675”</td>
<td>The Vienna cup is different from all the others. Its shape is simple-one convex line from rim to throat. The result is a mouthpiece with a smaller interior volume, which balances the large throats normally used. The sound is rich in harmonics and even throughout registers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17.5mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bore 8, 10, 12, 14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth 1.262</td>
<td></td>
</tr>
<tr>
<td>JS</td>
<td>JS</td>
<td>ID .695”</td>
<td>This is the cup used by Jimmy Stagliano. It's enormous in every dimension and allows tremendous volume and color for the player who can master it.</td>
</tr>
<tr>
<td>(Replica)</td>
<td></td>
<td>Bore 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Depth 1.271</td>
<td></td>
</tr>
</tbody>
</table>

\[115\] Ibid. 7.
Detachable Bells

Detachable bells have been available on horns as far back as the eighteenth century.\(^\text{116}\) While the idea was originally conceived for ease of transport, it opens up a wealth of tonal possibilities for today’s performers as bells of different alloys, thicknesses, and rates of taper can be swapped in and out at will.

Horns are made from many different metal alloys and have their own unique characteristics. While different manufacturers have their own formulas, there are three alloys that are most the most common: yellow brass, gold (also known as rose or red) brass, and nickel silver.

All of these alloys can have ratios that will differ slightly from one manufacturer to another. Yellow brass is the most common alloy for horns worldwide. It generally consists of 75% copper and 25% zinc. Gold brass is usually made up of 85% copper and 15% zinc. It is a softer alloy than yellow brass and produces a darker tone quality. Nickel silver is an alloy popular in the United States due to the prevalence of the Conn 8D, a nickel silver double horn. Although it creates an alloy that is silver in color, it actually contains no silver. A common formula for nickel silver is 67% copper, 18% nickel, and 15% zinc. To detail the differences between manufacturers, Paxman has used an alloy of 63% copper, 10% nickel, and 27% zinc for its nickel silver. “Nickel Silver is a harder material and therefore produces a brighter sound since the metal absorbs fewer higher overtones. It does not corrode like yellow brass and is less susceptible to damage.”\(^\text{117}\)


This may seem to contradict what many players believe about nickel silver. This confusion is in large part due to the nickel silver Conn 8D, which is generally accepted as a dark sounding horn. This perception of darkness, however, owes itself to the wideness of the 8D’s bell throat rather than its nickel silver alloy.\(^{118}\)

Unfortunately, there is no universal screw ring used by horn manufacturers. The screw rings made by Alexander, however, are used by the majority of small horn makers, as well as the Alexander company itself. Osmun Music recommends Alexander rings “when compatibility with Alexander, Lawson, Conn/King, Holton, and Atkinson horns is desired.”\(^{119}\)

However, Alexander uses three different sizes of rings to correspond to the different size bell throat tapers of their horns. All of their rings have the same thread size, outside dimensions, and large diameter of the taper, but the angle on the inside is different. If a detachable bell has a male ring that is larger or smaller than the female ring on the horn, there will be a step due to the different angles of each ring. While this will look fine from the outside, the uneven step can be very uncomfortable for the player’s hand. In addition, the taper and length of the bell may not match up properly for a given horn. This means that if a player has a horn with an Alexander (or compatible) ring, not all bells with such rings will work well on a given horn, as intonation problems are a possibility with flares meant for different size bell tapers. In the case of converting a


fixed bell horn to a detachable bell horn, this information may help decide which type of screw ring to use.¹²⁰

Engelbert Schmid’s bells are some of the most popular because of the wide variety of alloys, widths, and methods of construction. Schmid offers four different alloys: yellow brass, gold brass, nickel silver, and sterling silver. Due to the placement of the screw ring, Schmid is able to offer bells with a greater difference in rate of taper than many other manufacturers. In addition, all of Schmid’s bells share the exact same screw ring, eliminating the previously stated problems with the Alexander ring. These are known as medium, wide, and extra-wide. The medium bells are recommended for their “advantages in the high range,” making them ideal for Baroque music. Schmid also offers two methods of construction, spun from a disk or hand-hammered. Schmid’s hand-hammered bells are some of the thinnest and lightest bells currently available and would be the preferred choice for Baroque literature.¹²¹

Finke also offers three different bell tapers in yellow brass, gold brass, and nickel silver that share the same size screw ring. Finke markets these as sizes M, L, and XL and they are only compatible with Finke’s proprietary rings. Note the difference in the rate of taper between the three bells in Figure 3.32.¹²²


Lawson Horns offers two specially-developed metal alloys, ambronze and nickel bronze. Ambronze, originally designed for architectural use, was first applied to the horn by Lawson in 1979. It is a departure from the traditional gold brass alloy of 85% copper and 15% zinc, using 84% copper, 2% tin, and 14% zinc. According to Lawson, “The ambronze bell flare has a powerful, wide dynamic range. The color is nearly constant throughout.” Another alloy Lawson has developed is known as nickel bronze. Lawson’s nickel bronze consists of 89% copper, 2% tin, and 9% nickel and “responds quickly (short start-up time), has a powerful, wide dynamic range. The color changes from dark at low dynamics to bright at high volume.”124 As mentioned earlier, Lawson rings are compatible with Alexander rings.

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123 Ibid.

Leadpipes

Custom leadpipes (also referred to as mouthpipes) can be made in a variety of tapers and alloys that can have a great effect on the sound and response of a horn. Some horn makers, such as Finke, offer their horns with a detachable leadpipe system that makes changing a leadpipe no more difficult than changing a mouthpiece or detachable bell.125 It is also possible to have custom work done that can allow any horn to accept detachable leadpipes.126

Stuart de Haro is a horn craftsman in Urbana, Illinois. “The leadpipe, despite the fact that it is a relatively small part (approximately 1/7th the total length) of the horn, has a profound impact on its playing qualities. The definition of the harmonics, the amount of resistance, the intonation, the blend between the F and Bb sides, and the register the instrument favors are all affected by the mouthpipe to some degree.”127

De Haro offers a range of custom leadpipes in the three alloys of yellow brass, gold brass, and nickel silver. For the purposes of this study, a nickel silver leadpipe would be recommended due to its emphasis on the higher overtones and quicker response.128

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127 Ibid.

128 Ibid.
Finke is one of the few companies that offers a detachable leadpipe system as a standard feature. They can be exchanged quickly, changing only two screws on their double horns and one screw on descants and triples.\textsuperscript{129}

Figure 3.33. Finke leadpipes\textsuperscript{130}


\textsuperscript{130} Ibid.
Finke currently offers five leadpipe models, available in yellow brass, gold brass, or nickel silver. The following descriptions appear on Finke’s website:\footnote{Ibid.}:

- No. 2: very small pipe, high resistance, flexible sound forming
- No. 4: medium pipe, good response in the low and high range, full sound, flexible sound forming, higher resistance in the middle range
- No. 5: large pipe, direct response, some resistance, very even playing qualities
- No. 6: large pipe, very even feel, even resistance in all ranges
- G2: very large pipe, direct, focused response, less resistance, brighter sound

There are a number of craftsmen that can make custom leadpipes for any model of horn. This is an alphabetical listing with contact information for selected hornsmiths in North America:

\begin{tabular}{l}
\textbf{Atkinson Brass & Company} \\
825 N. Lake Street Suite "D" \\
Burbank, CA 91502 \\
phone: (877) 291-4198 \\
email: info@atkinsonhorns.com \\
\end{tabular}
Balu Musik
1568 Sawmill Creek Lane
Cordova, TN 38016
phone: (901) 517-7226
email: sales@ionbalu.com
website: www.ionbalu.com

Berg Horns
5915 Brown Rd. General Delivery
Dunster, B.C. V0J-1J0, Canada
contact info available through form on website
website: www.berghorns.com

Cantesanu Horns
4401 Wrenwood Ave
Baltimore, MD 21212
phone: (202) 640-0719
email: felix@cantesanuhorns.com
website: www.cantesanuhorns.com

de Haro Horns
101 N. Coler Ave.
Urbana, IL 61801
phone: (217) 377-1462
email: hornluv@yahoo.com
website: www.deharohorns.com

Houghton Horns
6713 Bison Tr.
Fort Worth, TX 76137
phone: (817) 479-3266
email: houghton.horns@verizon.net
website: www.houghtoncustomhorns.com

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Lawson Horns, Kendall Betts Company
23 Ammonoosuc Street
Littleton, NH 03561
phone: 603-444-0299
e-mail: kendallbetts@aol.com
website: www.lawsonhorns.com138

Patterson Hornworks
3380 Thurmond Rd.
Las Cruces, NM 88012
phone: (575) 373-0789
e-mail: info@hornworks.com
website: www.hornworks.com139

Valved *Corno da Caccia*

German trumpeter Ludwig Güttler, in cooperation with Musikhaus Syhre, developed a modern valved instrument known as the *corno da caccia* to more closely create the tone quality of its Baroque ancestor. The idea was to make an instrument that would be more authentic tonally while being playable by modern performers using valves and modern mouthpieces. These instruments are typically, but not always, played by trumpet players rather than horn players. Güttler has also revived concertos for the *corno da caccia* that had not been heard since the Baroque Period.

Today, Musikhaus Syhre produces a number of valved *corno da caccia* models in various keys.

Figure 3.34. Syhre *corno da caccia* model sycd-001 in B-flat/A

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141 Ibid.


143 Ibid.
Figure 3.35. Syhre *corno da caccia* model sycd-002 in C\textsuperscript{144}

Figure 3.36. Syhre *corno da caccia* model sycd-003 in D\textsuperscript{145}

Figure 3.37. Syhre *corno da caccia* model sycd-004 in B-flat/A with five valves\textsuperscript{146}

\textsuperscript{144} Ibid.

\textsuperscript{145} Ibid.

\textsuperscript{146} Ibid.
Miscellaneous

One adjustment that requires no special equipment was suggested by Philip Farkas in his book, *The Art of French Horn Playing*. For players without access to a descant horn, the performer can remove the F valve slides and valve caps of the double horn in order to reduce the weight of the instrument. Making the horn lighter can be an aid for endurance and response. Farkas specifically recommends this alteration for Bach’s Brandenburg Concerto No. 1. This could additionally be applied to a descant or triple horn. In cases where the hornist will exclusively use the F alto side of the horn, the other slides could be removed to achieve the same advantages of increased endurance and response.

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Chapter Four

Recommended Recordings

Descant Horns

Zdenek Tylsar and Bedrich Tylsar, et al., Horn Concerti, Munich: Naxos 8.550393, 1991.\textsuperscript{148}

The Czech Tylsar brothers perform Antonio Vivaldi’s Concerto for Two Horns, RV 539 on modern instruments. Their approach to horn playing and choice of equipment yields a light sound, perfect for performing Baroque music.\textsuperscript{149}

Peter Damm, Hornkonzerte am Sächsischen Hof, Berlin: Berlin Classics 0011772 BC, 1996.\textsuperscript{150}

Peter Damm uses a Walter Mönnig double descant horn with a narrow bore in B-flat/F alto. This is a brighter sounding horn than the Lawson 8211 double descant used by Barry Tuckwell for his Baroque Horn Concertos album. Damm also gives the measurements of his descant horn mouthpiece: rim, 4.7 mm; cup width, 16.6 mm; cup depth, approx. 19 mm, slender form; bore, 3.6 mm.\textsuperscript{151}


\textsuperscript{149} Ibid.

\textsuperscript{150} Peter Damm, Hornkonzerte am Sächsischen Hof, Berlin: Berlin Classics 0011772 BC, 1996.


Barry Tuckwell made this recording on an ambronze Lawson 8211 full double descant horn in B-flat/F alto. This highlights the benefits of the F alto side in terms of brightness and ease of playing in the high register. This Lawson descant is designed for orchestral playing and is not meant to have as bright a sound as some other descants. This features the difference that choice of alloy and style of horn can make, especially when comparing the sound quality to that of Peter Damm on his album *Hornkonzerte am Sächsischen Hof*.153

VALVED CORNO DA CACCIA


This album by Ludwig Güttler features the valved *corno da caccia*. The significantly different mouthpiece, smaller bell diameter, and narrower bell throat creates a much brighter sound than typical descant horns played by horn players, even those that are in the same key as the valved *corno da caccia*.155

VENT HOLES


This recording features hornists Derek Conrod and Willard Zirk using period instrument replicas with vent holes to correct intonation on Bach’s Brandenburg Concerto No. 1.157

153 Ibid.
155 Ibid.
157 Ibid.
Johann Sebastian Bach, *B Minor Mass*, The King’s Consort, Hyperion CDD22051, 2005.\(^{158}\)

Andrew Clark uses a Jungwirth Baroque horn with vent holes for the horn obligato.\(^{159}\)

HAND-STOPPING

Johann Sebastian Bach, *Brandenburg Concertos*, Academy of Ancient Music, Decca DEC 4141872, 1985.\(^{160}\)

This is an example of hand-stopping technique used on Brandenburg Concerto No. 1, featuring British hornists Richard Watkins and Michael Thompson.\(^{161}\)

Johann Sebastian Bach, et al., *Complete cantatas, Vol. 20*, [S.l.]: Antoine Marchand, 2005.\(^{162}\)

Andrew Clark performs Bach’s BWV 14 on a Jungwirth horn modeled after an original by Kerner of Vienna. Its bell diameter is between the average Baroque and classical horns and Clark uses hand-stopping technique on this recording. This includes the highest notes Bach ever wrote for the horn, reaching written d”” for horn in B-flat alto. There are only a few stopped notes that are evident and they might not be noticeable to the untrained ear.\(^{163}\)


\(^{159}\) Ibid.


\(^{161}\) Ibid.


\(^{163}\) Andrew Clark, personal email to author, January 30, 2011.
PITCH-BENDING WITH THE LIPS V. VENT HOLES


According to Andrew Clark, “I attempted to play using my lip-bending technique for the first part of the recording session, but then ran out of strength for that technique and had to start using a bit more mouthpiece pressure about half way through. For this I used my Webb/Halstead baroque horn. Listening carefully one can just hear the change of technique from no vents to the use of vents for different takes.”\textsuperscript{165}

Johann Sebastian Bach, *Hercules Cantata*, BWV 213, Gustav Leonhardt, Orchestra of the Age of Enlightenment, Philips 442 779-2, 1994.\textsuperscript{166}

Andrew Clark plays without the aid of vent holes or hand-stopping, choosing instead to rely on his lips to put the eleventh and thirteenth harmonics in tune. The horn used on this recording was made by Andreas Jungwirth and is based on a fixed pitch model by the Leichnambschneider brothers of Vienna.\textsuperscript{167}

Johann Sebastian Bach, *Christmas Oratorio*, BWV 248, Philip Pickett, New London Consort, Decca L’Oiseau-Lyre (458 838-2), 1995.\textsuperscript{168}


\textsuperscript{165} Clark, personal email.


\textsuperscript{167} Clark, personal email.

This features the same horn part as in Bach’s *Hercules Cantata*, BWV 213. In this case Andrew Clark uses the same horn he played to record BWV 213. This time, however, he uses vent holes rather than lipping the eleventh and thirteenth harmonics in tune. This is a unique situation in which the difference between the use of vent holes and lipping can be examined via recordings of the same player with the same horn.\textsuperscript{169}

Georg Frideric Handel, *Judas Maccabeus*, The King’s Consort, Hyperion CDA66641/2, 1992.\textsuperscript{170}

Andrew Clark uses his lipping technique with a horn made by Max and Heinrich Thein in 1991, after Ehe (c.1720). This is a very small-belled instrument and is close in size to a coiled trumpet.\textsuperscript{171}

Georg Frideric Handel, *Joshua*, The King’s Consort, London: Hyperion CDA66461/2, 1992.\textsuperscript{172}

In this recording from 1990, Andrew Clark performs on a Webb/Halstead Baroque horn with vent holes. See the Conquering Hero from *Joshua* contains the same chorus as *Judas Maccabeus*, and the difference in vent holes and lipping technique can be compared directly.\textsuperscript{173}

\textsuperscript{169} Clark, personal email.


\textsuperscript{171} Clark, personal email.


\textsuperscript{173} Clark, personal email.
CONCLUSIONS

There are an endless number of options for horn players wishing to perform works of the Baroque Period. This study has provided information that is useful for beginning a journey of experimentation and personal discovery with period instruments and modern equipment.

With period instruments, the differences in approach to the design of historical replicas have been carefully laid out. An understanding of these differing approaches and the ideas behind them will help the hornist choose between them based on personal preference. The advantages and disadvantages of vent holes, lipping, and hand-stopping have been discussed and recorded examples of each have been put forth to the reader. Rather than recommending one method of performance over another, it is left to the hornists to find the technique that best suits their abilities and beliefs.

The dizzying array of modern equipment available could prove paralyzing for many players. This study has broken down many of the possible variations and encourages the hornist to investigate each of the alternatives further. The differences between the numerous descant horn designs have been detailed and will prove useful to individuals trying to match a horn to their personal tastes. Rather than merely focusing on the most expensive possibilities, however, a thorough discussion of cost-effective changes has been included as well.
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