

12-2023

A SURVEY OF THE COMPARATIVE PERFORMANCE DEMANDS OF PERFORMING MOZART'S FOURTH HORN CONCERTO ON THE NATURAL HORN AND MODERN HORN

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A SURVEY OF THE COMPARATIVE PERFORMANCE DEMANDS OF
PERFORMING MOZART'S FOURTH HORN CONCERTO ON THE NATURAL
HORN AND MODERN HORN

by

Brandon Garrison

A Doctoral Project
Submitted to the Graduate School,
the College of Arts and Sciences
and the School of Music
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Musical Arts

Committee:

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Dr. Joseph Jones

December 2023

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2023

Published by the Graduate School



ABSTRACT

The four horn concertos by Wolfgang Amadeus Mozart are fundamental standards of horn repertoire. Since the production of Dennis Brain's early recordings in 1953, many virtuoso horn players have recorded these concerti on the modern horn. However, there are few professional recordings made on the natural horn. Though Mozart's four horn concertos are prominent in horn study across the world, they are rarely executed with correct performance practice techniques. In my presentation, I will demonstrate passages from Mozart's Horn Concerto No. 4 to survey the challenges when performed on natural horn versus the modern horn. It is important to understand the stark contrast in difficulty to comprehend the virtuosic demands of these concerti. Additionally, understanding the hand-stopping technique of the natural horn brings attention to the music's intended phrasing. Though Mozart satirized the horn within his compositions, the horn concerti were just as technically demanding as any of his other instrumental concertos.

ACKNOWLEDGMENTS

I wish to thank my horn professor Dr. Robert Detjen for the constant words of encouragement and pushing me to complete this project. He has been a tremendous help in more ways than he truly knows and is one of the best examples of professionalism I've personally seen in all my years of study. My only wish is that I could've learned under your tutelage for a longer period of time. Your kindness and encouragement have been greatly noted and will always be remembered.

I would like to thank my committee chair, Dr. T.J. Tesh, for his leadership, professionalism, and friendly advice he offered me through this writing process. I thank him for taking over the chair position of my committee at the last minute and appreciate his dedication to my success.

I would like to thank Dr. Kristine Coreil, my former horn professor from Northwestern State University of Louisiana, for all of her help in answering my many natural horn questions related to my project.

I would like to thank Dr. Richard Perry for all of the time he took to answer my doctoral project-related questions as well as the multitude of other questions he's helped me navigate through the years.

Finally, I would like to thank my parents for all of their love and support through my many years of school. You both saw me through three different degrees and supported me the entire way. Thank you for your faith and constant prayers. I love you and appreciate you both more than you'll ever know.

DEDICATION

I'd like to dedicate this project to my mother and father Jeri L. Garrison, and Earl W. Garrison.

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CHAPTER I – INTRODUCTION

Wolfgang Amadeus Mozart's Horn Concerto No. 4 in E-flat Major, K.495 was composed in 1786 and is comprised of three movements: Allegro moderato, Romanza (Andante), and Rondo (Allegro Vivace).¹ The original manuscript was written in red, green, blue, and black ink, and was assumed early on to be a humorous attempt to bemuse the intended performer, Joseph Luetgeb, a lifelong friend of Mozart and the principal horn of the Salzburg court at the time. It was recently suggested that the multicolored score may also be a kind of color code² though these theories have not been substantiated. The final movement is a clear example of a hunting theme, in which the intervallic construction, with prominent tonic and dominant triads in the main melody, was somewhat dictated by the horn's limited melodic capability. As such, it more closely allies the "chasse" characteristics with "open-air" hunting calls.³

Heinrich Stözel invented the valve system in 1814, twenty-eight years after the fourth horn concerto's completion, and twenty-three years after Mozart passed away. The introduction of the valved horn into the orchestra was a slow process affected by groups of musicians with opposing views on the natural horn versus the valve horn.⁴ Heinrich Stözel, Franz Strauss, Richard Wagner, and Robert Schumann were among the players who embraced the new valved system's extended low register and fully chromatic range.⁵ George Kopprasch composed music that could be performed on both the natural and

¹ Jean- Pierre Marty. "The Tempo Indications of Mozart." New Haven & London: Yale University Press (1988): 43.

² Henrik Wiese. *W.A. Mozart's Hornkonzert Nr. 4 Es-dur KV 495*. München: G. Henle Verlag, pp. 3.

³ John Irving. *Mozart, the "Haydn" quartets*. Cambridge: Cambridge University Press (1998): 95, note 20.

⁴ John Q. Ericson. "The Early Valved Horn." Last modified March 4, 2012. Accessed March 1, 2023. <https://www.hornmatters.com/2012/03/university-of-horn-matters-the-early-valved-horn/>

⁵ John Q. Ericson. "The Early Valved Horn." Last modified March 4, 2012. Accessed March 1, 2023. <https://www.hornmatters.com/2012/03/university-of-horn-matters-the-early-valved-horn/>

valved horn, but never dedicated himself to writing music specifically for the valved instrument and made extensive use of hand-horn technique throughout his compositions.⁶ Felix Mendelssohn, a composer who looked to the past for inspiration, never utilized the valved horn.

The valve system was a breakthrough innovation in its time and is used by all modern brass instrumentalists today. The utilization of valves on the modern horn brings with it the luxury of a full range of chromatic pitches, evenness of sound throughout the entire extended range of the instrument, and allows the player to change keys with the orchestra without having to add or change crooks. The horn players of Mozart's day did not have this luxury and had to play all available horn repertoire on the natural horn.

Mozart's concertos require the natural horn player to use hand-stopping technique. The orchestral accompaniment showcases the chromatic, colorful tones produced on the horn through hand-stopping. Each horn concerto, particularly the second and fourth, increases in technical difficulty when played on the natural horn. Utilizing the E-flat crook sets the natural horn in E-flat, allowing the player to play most of the written notes on the open horn in the same key as the orchestra. The absence of valves and lack of certain chromatic tones within the E-flat harmonic series requires natural horn players to adjust the oral cavity and incorporate the use of hand-stopping to play all written notes. The modern horn can approximate this technique by holding the first valve down throughout the entirety of play and using hand-stopping technique as a means of pitch alteration. Figure 1.1 below demonstrates the open notes within the E-flat harmonic series. Every note between those shown in Figure 1.1 is achieved through oral cavity

⁶ Ibid., 1

adjustments, or stopping the horn completely or partially with the hand. Each of the natural horn's eight crooks contains its own set of open and stopped tones, each different from the other:

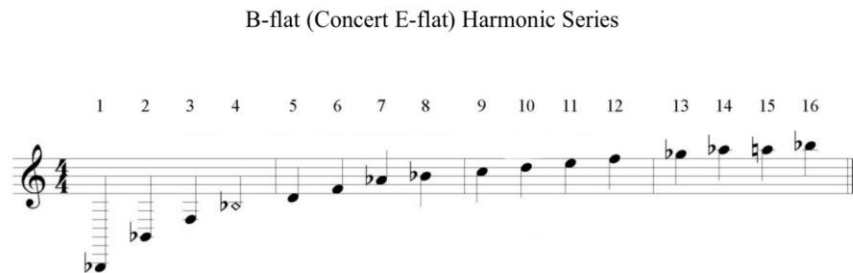


Figure 1.1 The Harmonic Series Through The Sixteenth Partial⁷

Anton Joseph Hampel is cited as having codified the hand-stopping technique around 1750–60, with contributions from several different teachers and performers.⁸ The natural horn player's goal was to achieve the most homogeneous timbre possible, striving to make muted notes sound like open notes.⁹ A prominent challenge on the hand-horn is achieving a resonant, pure sound while fully stopping the instrument. Hand size greatly affects hand position in the bell, thus there is no “standard” hand shape or technique for every player. Through trial and error, a player can find the optimal hand placement and begin working to make seamless transitions from open to fully closed notes. Mozart wrote his melodies to fit closely into the harmonic series, using the open tones as much as possible to capitalize on the resonant tone of the open horn.

⁷ John Q. Ericson. *The Natural Horn*. Last modified January 1, 2018.

⁸ Reginald Morley-Pegge. *The French Horn*. New York: W.W. Norton & Company, 1973. 87.

⁹ Horace Fitzpatrick. *The Horn and Horn-Playing*. London: Oxford University Press, 1970. 183.

CHAPTER II – MOVEMENT I (ALLEGRO MODERATO)

Modern horn transposition is primarily a mental practice. Using valves, a modern horn player would read a whole-step below the written line of music to play in E-flat. Because the modern horn is pitched in F, the modern player must transpose downwards a whole-step to produce the correct pitches in the music. The opening two bars of Figure 2.1 show a written E, C, and F; in order to sound these pitches correctly, the modern player using a valved horn pitched in F must valve a D, B-flat, and E-flat to match the sounding pitches of an E-flat natural horn:



Figure 2.1: Wolfgang Amadeus Mozart *Concerto in E-flat for Horn and Orchestra*, K. 495, *Allegro Moderato*, mm. 36–40¹⁰

In contrast, to produce the written F in the first beat of the second bar, the natural horn player must fully close the bell. Each written B-natural must be fully stopped and every written A-natural must be three-quarters stopped. To match the texture of the orchestral accompaniment, the stopped tones are not strained, but covered and unforced.

¹⁰ Wolfgang Amadeus Mozart. *Four Horn Concertos and Concert Rondo*. Milwaukee, WI: G. Schirmer, Inc., 1939, 1967.

At measure 50, the written D-sharp should be played fully stopped. Careful attention must be paid to the marked slur at measure 50. The challenge here is to differentiate between the two pitches without sounding muffled:



Figure 2.2: Mozart Concerto in E-flat for Horn and Orchestra, *Allegro Moderato*, mm. 43–54¹¹

Measures 97–132 are among the most difficult to execute in the concerto due to the quantity of hand-stopping required over a short period of time. This section is highly chromatic, requiring the horn player to quickly find the proper hand position between fully stopped and three-quarters stopped while playing each note in tune. The tendency at measures 108 and 123 is to open the hand too far while quickly transitioning from fully stopped B-naturals to three-quarters stopped A-naturals. Measures 117 and 118 require the horn player to perform stopped lip trills on a written F that quickly open up for a sixteenth note E-natural, only to quickly return to stopped F trills. Weight should be placed on the first beats of measures 126 and 127, while paying close attention to the differentiation of pitch between fully stopped C#, and fully open D-natural. Tuning of the octave G-naturals in measures 128–132 is important; each repeated G-natural should be short and lifted. Contrasting the opening material, the stopped tones in this passage are prominent and should be played deliberately and with forward momentum:

¹¹ Ibid., 1

Figure 2.3: Mozart Concerto in E-flat for Horn and Orchestra, *Allegro Moderato*, mm. 97–132¹²

¹² Ibid., 2.

CHAPTER III – MOVEMENT II – ROMANZA (ANDANTE)

The *Romanza* is a short, melodic movement that tests the player's ability to execute each stopped note evenly and with a pure tone. Beyond a three-quarters stopped A-natural, the only stopped pitch required within the first ten measures are written B-naturals:



Figure 3.1: Mozart Concerto in E-flat for Horn and Orchestra, Romanza, mm.1–10¹³

If a player overblows the natural horn to compensate for slurred and connected passages, rather than staying relaxed and playing with a supported and gentle airstream, the player's lips will quickly lose strength. The absence of tubing within the natural horn creates less resistance through the entirety of the instrument, thus allowing air to escape quicker than it would on the modern horn. The lack of resistance pushing back into the mouthpiece encourages a supported and relaxed airstream. In contrast, the resistance found on the modern horn is familiar to the modern player, though it too brings challenges. If the player using a modern horn plays this movement with too little air support and too slow of an airstream, the player unavoidably compensates by using more lip muscle strength. The overcompensation tires the lips and causes fatigue that will negatively affect the rest of the performance.

¹³ Ibid., 3.

Additionally, blending stopped and open notes is crucial to this movement's success for the natural horn player. There must be a stark contrast between the stopped tones' timbre in measures 22–40 of the *Romanza* and the ones in the first movement. This is especially difficult to accomplish, as B-natural, C-sharp, D-sharp, and F-natural are all fully stopped pitches on the E-flat crooked natural horn. Playing smooth transitions in-tune between fully stopped B-naturals and three-fourths closed A-naturals is challenging. Keeping the triplets' rhythmic integrity and forward motion while hand-stopping requires precise hand placement, accuracy of pitch, and a consistent airstream:



Figure 3.2: Mozart Concerto in E-flat for Horn and Orchestra, Romanza, mm.21–41¹⁴

¹⁴ Ibid., 3.

CHAPTER IV – MOVEMENT III – RONDO (ALLEGRO VIVACE)

The Rondo movement is representative of the hunting horn style. The theme is light, playful, and demanding in technical execution. The Allegro vivace tempo makes quickly switching between open and stopped pitches a challenge. In its limitation to two stopped pitches, a written B-natural and F-natural, the first eight measures are reminiscent of the Romanza's opening. Mozart primarily uses the open notes of the natural horn in the opening of the Rondo to create the characteristic sound of the hunting horn:



Figure 4.1: Mozart Concerto in E-flat for Horn and Orchestra, Rondo, mm. 1–8 ¹⁵

Measures 19 and 23 utilize quick alternations between three-fourth closed written A-naturals and fully stopped B-naturals. The challenge in these sections is making these transitions quickly and efficiently while maintaining clarity of melody. The tendency here is to meld notes together by not opening the hand enough on the three-quarter tone, creating blurred and indistinguishable pitches:

¹⁵ Ibid., 4.



Figure 4.2: Mozart Concerto in E-flat for Horn and Orchestra, Rondo, mm.16–26¹⁶

Measures 38–46 center primarily around the stopped B-natural. Executing wide interval leaps in tempo while matching the timbre of both stopped and open pitches is challenging. Comparatively, achieving the open sound of each note is easier on the modern horn. The modern horn player can choose to alternate between the B-flat and F-side of the horn in this passage, however, the speed of this transition can prove challenging at tempo. An easier and more efficient alternative would be to hold the B-flat trigger down through the passage, playing the section entirely on the B-flat side of the horn. This method is especially useful in measure 48 and allows for better accuracy of pitch than playing the first three pitches on the F-side of the horn:



Figure 4.3: Mozart Concerto in E-flat for Horn and Orchestra, Rondo, mm. 38–46¹⁷

Measures 86–99 heavily incorporate the stopped tone. The repeated F-natural patterns in measures 86 and 94 prominently showcase this stopped sound. The G-sharp in

¹⁶ Ibid., 4.

¹⁷ Ibid., 4.

measure 88 and the E-flat in measure 97 are fully stopped pitches introduced into the concerto for the first time. A quick transition between the three-quarters stopped A-naturals to the fully stopped F-naturals at the top of the staff poses a challenge:



Figure 4.4: Mozart Concerto in E-flat for Horn and Orchestra, Rondo, mm. 84–99¹⁸

Measures 136–161 present the final melodic development before the finale’s opening call returns. The primary challenge is executing wide intervallic leaps accurately while maintaining purity and resonance in the stopped tones. Pitch accuracy is challenging in this passage, primarily between measures 140 and 146. Using the modern horn to reinforce pitch is useful here:



Figure 4.5: Mozart Concerto in E-flat for Horn and Orchestra, Rondo, mm. 136–161¹⁹

¹⁸ Ibid., 5.

¹⁹ Ibid., 5.

CHAPTER V – RESISTANCE AND AIRSTREAM DIFFERENCES BETWEEN THE NATURAL AND MODERN HORN

Among the biggest challenges the natural horn player faces when learning any piece is the proper airstream usage for each passage. On the modern and natural instruments, faster air is required to approach the higher tessitura, while a slower, more moderate airstream is required in the mid to low range of the instruments. However, the absence of extra tubing on the natural horn results in a noticeable lack of resistance in comparison to what a player finds on the modern instrument. Because of the extra tubing added to the modern instrument, an even and relatively prominent resistance throughout the entire range of the horn is felt within the mouthpiece. More resistance is added to the natural horn in three ways: the addition of crooks (making the instrument longer), hand-stopping, and approaching the upper tessitura.

Simply put, for the horn with more resistance, a more vigorous airstream is needed and achieved by pushing from the support of the stomach; for the horn with less resistance, a lighter, more delicate airstream is needed and achieved by pushing less volume of air through the instrument while supporting from the stomach.²⁰ For any modern horn player learning to play the natural horn, this is a frustrating and challenging obstacle to overcome. For both the modern and the natural horns, lacking an understanding of airspeed changes and resistance differences between the instruments will lead to overplaying. This in turn will result in increased mouthpiece pressure and lip exhaustion.

²⁰ Heidi F. Wick. "Applying Natural Horn Technique to Modern Valved Horn Performance Practice." Order No. 10835988, The Ohio State University, 2001.

The modern horn player must also be aware that a valve mechanism alters the length of a valved horn while a natural horn changes length by changing crooks. The modern horn player adds or subtracts tubing length depending on which valve is being utilized. For example, changing to C-sharp from C-natural in the treble staff requires the addition of the second and third valve to the triggered C-natural. This (T) to (T23) alternation adds two slides of tubing to blow through as opposed to the (T) C-natural open tone on the B-flat side of the horn. The forward momentum of the airstream must be maintained and supported through the changing of every note. Ultimately, the embouchure, the length of the instrument (in this case, valve combination) and the hand in the bell can all be used to modify pitch when playing a valved horn.

To change pitch on the natural horn, the player uses his or her embouchure and hand in the bell. Natural horn players must execute correct oral cavity adjustments while moving smoothly throughout the vertical range of the instrument to achieve proper tone and intonation. Seamless execution of trills and turns are challenging to combine with the natural horn's hand-stopping technique. Pitch accuracy is strenuous above the 12th partial of the horn's harmonic series and the centering of the lower harmonics of the instrument is equally arduous.²¹ Utilizing valves provides more consistency in sound, a wider range, and a stronger sound throughout that range, but ultimately eliminates the hand-stopping technique needed on the natural horn and transfers that technique to the left hand.²²

²¹ Ibid., 12.

²² Ibid., 12.

CHAPTER VI – SUMMARY AND CONCLUSIONS

The purpose of this project is to show the technical demands Mozart created for natural horn players in his fourth horn concerto and compare difficulties in performance on the natural and modern horn. My hope is to encourage other horn players and teachers to promote proper practice techniques when studying repertoire vital to horn history. Without studying the natural horn's historical timbre and harmonic aesthetics, a modern horn player could never truly achieve what is considered today as *correct* performance practice within any early horn work. The technical demands, nuances of the hand-stopping technique required to play the natural horn's full range, and the instrument's harmonic limitations require careful study and rigorous practice. Given that a concerto is written primarily to emphasize the colors and specific characteristics found on the prescribed instrument, it is practical for the modern player to study Mozart's *Horn Concerto No. 4* on the instrument that the composer originally intended – the natural horn.

Conclusions:

When initially selecting this research topic, I could not have imagined the performance challenges that lay ahead in the process. The natural horn is distinctly different from its modern counterpart in nearly all respects. The most prominent differences, and the most challenging to overcome, were the natural horn technique and performance practice. Technical execution of the natural horn's hand-stopping technique would, at first glance, seem easy to master. However, this is not the case. The natural horn is an entity unto its own; to master it, one must relearn, or perhaps unlearn, the most basic principles of their horn playing. Though the modern horn is built upon the same

harmonic series as the natural horn, the technical execution required to play the natural horn is entirely foreign to the modern player. The most substantial challenge to overcome is not the hand-stopping technique or the heavy use of oral cavity adjustment required, but, rather, the difference in airstream that must be used between the natural and modern horn. The foundation of brass playing is airstream usage and control. The most common misconception when attempting to play the natural horn is that the volume of air required is the same as its modern counterpart. This difference is quickly realized within minutes of playing the natural instrument and is identified by overplaying and lip exhaustion.

Understanding the hand-stopping component of this research was the second largest challenge to overcome. On the modern instrument, careful attention to hand placement and shape within the bell is an important concept to understand but easily attainable. Knowledge of the open tones within the harmonic series of any key on the natural horn is crucial to the proper execution of works written for the early instrument. Without this knowledge, the process of determining where to begin stopping the horn bell, where to leave it open, and finding the different hand-stopping positions, becomes strenuous.

Lack of consistent research made finding the various hand-stopping positions a prominent challenge. Through trial and error, I found that the open, stopped, and three-quarters stopped notes stay consistent throughout the harmonic series. By relating the open and stopped pitches to the harmonic series and the degree of the scale and pitch of the horn I was using, I eliminated the need to figure out new hand-stopping positions for every note when changing keys (crooks).

My research experience was both a humbling and enlightening process, and I hope that this research may be used by students and teachers looking to expand their playing opportunities and their historical knowledge of what makes the horn such an intricate and special instrument. Learning the natural horn as a player only accustomed to its modern counterpart is no easy feat, and it is certainly not an endeavor that can be rushed; its difficulties and historical significance should be studied, noted, and respected by all modern horn players.

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