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# Cello Technique: A Result of Cello Construction and its Effect on Virtuoso Playing in the Works of Dvořák and Pärt

Mineo P. Yasutake Mr.  
*Augustana College, Rock Island Illinois*

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*Cello Technique: A Result of Cello Construction and its Effect on Virtuosity*

*Playing in the works of Dvořák and Pärt*

Mineo Patrick Yasutake

MUSC 480: Senior Inquiry

Advisor: Dr. Janina Ehrlich

April 22, 2016

What is it about musical virtuosi that intrigues listeners? Is it their ability to play challenging passages flawlessly? Perhaps it is their impressive command of the instrument, making it follow their every command. We view them as gods among us, accomplishing things no other performer could possibly hope to accomplish. While this is somewhat true, the work these musicians have put into their craft is often overlooked. In an interview with Vladimir Horowitz, considered by many to be one of the greatest pianist to grace the stage, the following dialogue took place:

**Mike Wallace:** They say that Horowitz's fingers can do anything on the keyboard impossible for others to do. Is this...?

**Vladimir Horowitz:** [Shakes head] Not true... It is just the opposite.

**MW:** What do you mean?

**VH:** I hear the others and they can do something which I cannot do.

**MW:** You're still learning, You're still...

**VH:** All the time. All the time...<sup>1</sup>

We are so often captivated by virtuosi, but rarely think about how they achieved their notoriety. Not only through careful and creative practice, but their incredible mastery of many different musical skills have allowed them to reach the apex of their art. By spending countless hours in practice rooms, studying the music, and mastering the endless amounts of technique, they then have the opportunity to display their work to the world. Only the most successful musicians at studying and practice may hope to one day be called a virtuoso.

While the topic of virtuosi could fill many long papers, this one will explore only a small aspect of this topic. Throughout its history, changes in the construction of the cello caused a shift

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<sup>1</sup> "Horowitz TV Interview 1977," YouTube video, 14:58, Posted [August 2010], <https://www.youtube.com/watch?v=eZm7OW3ufbc>.

in technique. As the cello evolved, technique was expanded, allowing a greater diversity in the sonic palette of the cello. As a result, these techniques influenced and allowed more virtuosic playing. The organization of this paper will be in two main sections. The first section will examine changes in the cello construction, such as the bow, the endpin, the fingerboard, and the bass-bar which have affected its technique. Each of these and their concomitant changes have created some noticeable shift in technique. The second section of this paper will examine how, through the use of technical and musical writing, composers attempted to display the virtuosity of players. By studying two specific pieces, Pärt's *Spiegel im Spiegel* (1978) and Dvořák's *Concerto in B minor*, Op. 104, and citing a number of specific examples in each piece, the paper will explore how these composers use these pieces to display the cellist's virtuosity.

## OVERVIEW

Until about 1600, the cello bow had a number of characteristics that were common to all viol family bows. The bows were always convex, like a hunting bow, with the horsehair, or some other string-like material, looped around the tip and attached directly to the stick at the holding end.<sup>2</sup> Since the bow was usually made out of weaker woods (snakewood, speckelwood, and letterwood), this gave it a feeble shape and did not allow any adjustment to the tension of the hair.<sup>3</sup> Although these traits were common to viol family bows, the actual shape of the bow varied greatly, ranging from very large curves, to absent ones. The bow was kept at a constant tension, and the high arch of the stick created a high center of gravity, making the bow difficult to control.<sup>4</sup> This discrepancy in a codified bow shape led to a great amount of variance in the sound quality that each bow produced. The stick was eventually made flatter and straightened

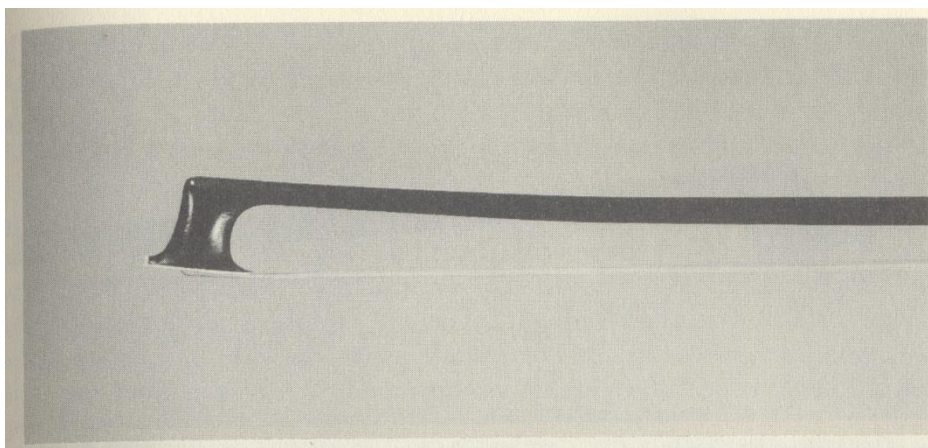
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<sup>2</sup> Werner Bachmann et al, "Bow," *Grove Music Online, Oxford Music Online*, Oxford University Press.

<sup>3</sup> Ibid.

<sup>4</sup> Robin Stowell e.d., *The Cambridge Companion to the Cello* (Cambridge: Cambridge University Press, 1999), 28.

out, while still maintaining a slightly convex shape. Since the hair was still close to the stick at the tip and the frog, this made using those parts of the bow difficult, and greatly reduced the available playing surface. Many players at the time noticed a distinct lack of responsiveness in the tip of the bow where the distance was small as well.<sup>5</sup> As a result, luthiers began to lengthen the stick as well as continuing to raise the head, and by the end of the eighteenth century, the bow's head resembled a higher hatchet or battle-axe tip style (Fig. 1).<sup>6</sup> This, combined with the development of the clip-in frog at the other end, successfully separated the hair from the stick, thus allowing the entirety of the hair to be used (Fig. 2).



*Figure 1: Transitional bow by Edward Dodd c. 1770-80 (The Smithsonian Institution, Washington, D.C.).<sup>7</sup>*

One of the greater developments of the bow was the shift from the convex to the concave shape of the stick. As described above, the convex nature of the stick did not allow great control of the bow due to the high center of gravity. At the end of the eighteenth-century, luthiers began to make the bow more concave and incorporated a *cambre* into the stick. As a result, this lowered the center of gravity much closer to the hair, further increasing the control. With the help of

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<sup>5</sup> Bachman, "Bow."

<sup>6</sup> Valerie Walden, *One Hundred Years of Violoncello: A History of Technique and Performance Practice, 1740-1840*, (Cambridge: Cambridge University Press, 1998), 97.

<sup>7</sup> *Ibid.* 71.

François Tourte's innovations in the frog and the heightened tip, this created a bow that allowed full use of the hair as well as increased control.<sup>8</sup>

### **SHORT, LONG, AND TRANSITIONAL BOWS**

Before the codified shape of today there were many different standards for bow shapes and lengths. The bow went through four distinct periods of development: the short, long, transitional/classical, and Tourte bows. Before 1720, when Tartini introduced longer bows, the standard bow for stringed instruments was rather short, around 62 cm in total length (compared to 75 cm today).<sup>9</sup> Common practice was to match the length of the bow to the size of the instrument, such that violin bows were shorter than cello bows. These bows for the cellos could weigh as little as 50 to 60 grams, compared to modern bows, which weigh around 80 grams. By 1760, most types of long bows began to appear, gaining more favor, due in part to Tartini. In an attempt to reduce the weight of these long bows while still maintaining its strength, some luthiers fluted the upper two-thirds.<sup>10</sup> Long bows continued to be used until the end of the eighteenth-century, where they began to be replaced by the transitional/classical bows. These bows, when compared to the short and long bows, continued to raise the head further because of the hatchet and battle-axe tip styles. The bounced bow strokes of the Mannheim school, which included Mozart and Haydn, seem to be the main reason for the bow's introduction.<sup>11</sup> As these transitional/classical bows had increased springiness, it performed these techniques more naturally than long bows. A lighter, more elastic pernambuco wood replaced the heavier woods. This wood increased the flexibility of the stick while still maintaining its structural integrity.

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<sup>8</sup> Stowell, *Cambridge Companion*, 28-30.

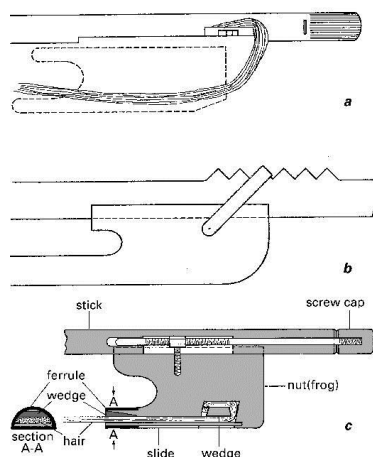
<sup>9</sup> Bachman, "Bow."

<sup>10</sup> *Ibid.*

<sup>11</sup> *Ibid.*

## FRANÇOIS TOURTE

The last period of development would prove to be the most important to the bow. François Tourte was one of the great pioneers of the modern bow. He introduced a number of innovations to the bow, all of which helped to increase its versatility. Earlier versions of frogs were quite simple, only requiring the frog to be placed in between the stick and the hair, creating tension (clip-in frog). Another design, called the *crémaillère*, only used a notch system to increase or decrease tension. Tourte created a new frog that incorporated a narrow metal ferrule, a mother-of-pearl slide, a small wooden shim, and a tightening screw (Fig. 2).<sup>12</sup>



*Figure 2: Three methods of tightening the bow hair: (a) clip-in or slot-notch frog; (b) crémaillère; (c) screw mechanism of the modern frog<sup>13</sup>*

This new frog was more mechanically complicated than its predecessors, changing a number of factors to the advantage of the player. The purpose of the metal ferrule was critical to the sound of the bow. The ferrule, when combined with the wooden shim inside and the mother-of-pearl slide, allowed the hair to spread evenly flat. With this innovation, the surface area was increased, allowing more hair to contact the string. This helped players to create consistent sound quality as

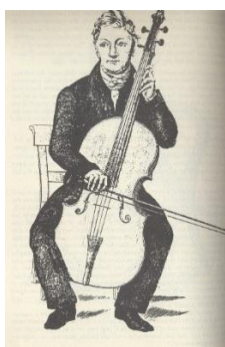
<sup>12</sup> Bachman, "Bow."

<sup>13</sup> Ibid.

well as production. Tourte also implemented a hatchet style head;<sup>14</sup> this raised the tip further from the hair, increasing the clearance. While this increased the playing surface, it also displaced the weight more towards the tip, leaving the balance point closer to the middle of the stick. Since Tourte's new frog incorporated many new parts, subsequently increasing the weight at the frog, the balance point was once again shifted closer to the frog. This change in balance point also allowed easier execution of articulation, as the bow could be manipulated more easily.

## ENDPIN

As the cello evolved, one of the greatest changes made to the instrument was the introduction of the endpin. A standard playing position for the cello was not well established until around 1900.<sup>15</sup> This led to a large variance in how players supported the instrument, mainly due to the lack of widely accessible instruction books. As a result, techniques and performance practices were generally passed down through word-of-mouth from teacher to pupil. During the eighteenth-century, it was commonplace for soloists to raise the cello from the floor and to support it between their calves on the lower bouts (Fig. 3).<sup>16</sup>



*Figure 3: Romberg's hold of the Violoncello.<sup>17</sup>*

<sup>14</sup> Bachman, "Bow."

<sup>15</sup> Tilden A. Russell, "Endpin.," *Grove Music Online, Oxford Music Online*, Oxford University Press.

<sup>16</sup> *Ibid.* 93-97.

<sup>17</sup> Walden, *One Hundred Years*, 96.



Method books before the nineteenth-century avoided references to the endpin when discussing solo playing. Eighteenth-century players also tended to hold the cello lower than nineteenth-century cellists, mainly due to the shortened playing length of the fingerboard.<sup>18</sup> While this was the more accepted hold, there were problems that arose due to how low the instrument was held; bowing could be impeded due to the placement of the knees, as well as restricting the player the ability to sit with a straight back to allow ease of breathing and to avoid chest pain.<sup>19</sup> In addition to these physical constraints, there was also the problem of sound production. Since the instrument had to be held with both legs contacting the ribs, the vibrations, and in turn the sound production, was greatly reduced. This led players to adopt a hold in which the legs gripped the edges of the bouts instead of the ribs, increasing the vibrations. While holding of the instrument between the legs was common, it was also quite normal for the player to support the instrument using props like boxes, spikes, stools, barrels, and even one's own feet.<sup>20</sup> During this period, larger cellos began to be used for accompaniment purposes. As larger instruments were used to increase sound production, the expanding width of the cello required players to use previously mentioned lifting devices. The use of a primitive endpin or spike seemed to be solely reserved for accompaniment players or ripienists,<sup>21</sup> allowing the cello to be played standing as well as seated. Accompanists also often placed the cello on the insole of the left foot at this time. This provided a second, lower option of cello support, but was also convenient for orchestral playing and necessary for people who were too small to grip the cello between their legs.<sup>22</sup> One notable exception to this was cellist A.F. Servais, who, owing to his

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<sup>18</sup> Walden, *One Hundred Years*, 97.

<sup>19</sup> Ibid.

<sup>20</sup> Russell, "Endpin."

<sup>21</sup> Ibid.

<sup>22</sup> Walden, *One Hundred Years*, 98-99.

considerable girth (or the large size of his cello, as accounts differ); he found that use of the endpin was relieving.<sup>23</sup>

Despite all of these methods, it was not until around 1880 that method books began to advocate the use of endpins, and by then it was still considered to be a new invention.<sup>24</sup> This was due, in part, to the help of Servais and other cellists in his circle. Despite this, it was not met with immediate acceptance, and great cellists of the time, such as Piattii, Hausmann, and Grützmacher, still refused to use it.<sup>25</sup> One reason for this was because of the perceived idea that the endpin was only to be used by an amateur. Early examples (1765) of the endpin use was explained as "...[creating] a hole in the tail-pin and a wooden peg to screw into it to rest upon the floor which may be taken out..."<sup>26</sup> Once the cellist had control of the instrument, the use of the endpin could be dispensed of.<sup>27</sup> This helped to enforce the stigma that endpins were reserved for amateurs attempting to develop technique. Endpins of this time were primarily made of wood and of a fixed length, and it wasn't until 1890 that the adjustable endpin was invented and the player was able to raise and lower the height of the cello to best fit him better.

## **LEFT-HAND TECHNIQUE**

Following the introduction of the endpin, there was a shift in the way left hand placement and shape was thought about. Because the endpin raised the cello, the left hand could now be placed with a rounder shape. The fingers could also now be placed at a more perpendicular angle to the fingerboard. As a result of these developments, there were two opposing methods of

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<sup>23</sup> Russell, "Endpin."

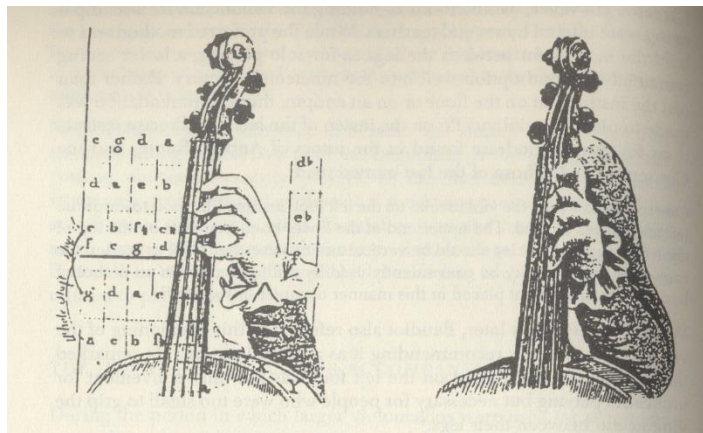
<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

<sup>26</sup> Stowell, *Cambridge Companion*, 57.

<sup>27</sup> Ibid. 58.

placing the left hand on the neck: an oblique, violin-like left hand shape, and a perpendicular shape (Fig. 4).



*Figure 4: Left hand positions as illustrated by John Gunn (perpendicular on the left and oblique on the right).<sup>28</sup>*

While today, a perpendicular hand shape is more widely accepted as better, there were advantages to having the oblique hand shape advocated in the eighteenth and early nineteenth centuries.<sup>29</sup> One of the main advantages for this type of position was the strength of the finger pressure. This shape increased the pressure the player was able to exert, allowing increased sound production. The strings were still pressed down with the tips of the fingers, but because of the slant of the fingers, they would no longer buckle under the pressure if the player had weak-jointed fingers. This also allowed the third and fourth fingers the ability to press the string down with greater force.<sup>30</sup> Despite these advantages, the perpendicular hand shape was adopted as the most efficient hold. While the fingers were able to depress the string with more force using an oblique hand shape, a perpendicular hand shape allowed the player more dexterity along the full range of the instrument; the player could also more easily cross strings and place his fingers more effectively because of the perpendicular hand shape.<sup>31</sup> As thumb position became more

<sup>28</sup> Walden, *One Hundred Years*, 100.

<sup>29</sup> *Ibid.* 99-102.

<sup>30</sup> *Ibid.* 99.

<sup>31</sup> *Ibid.*

common, the use of an oblique hand shape fell out of use even more. This led to the tips of the fingers being used to depress the string as opposed to sides of the fingertips. Along with this shift, the left arm was in turn raised, allowing ease of shifting into higher positions.

## **BASS-BAR**

Early violin makers made their bass-bars much smaller compared to present day. The bass-bar was originally developed as a way of making bowed instruments more responsive. As it strengthened the front plate, this allowed the belly of the instrument to be made thinner. The thinner the front and back plates, the more they could vibrate. Since older instruments had thicker front and back plates to support the pressure of the strings and bridge, thinner plates allowed more freedom of vibrations.<sup>32</sup> Originally, the bass-bar had been carved into the body of the instrument, rather than glued in separately and was more centralized than today. This continued into the eighteenth-century while it steadily began to be moved closer to its current placement under the bass foot of the bridge.<sup>33</sup> Early bass-bars were also very small when compared to their modern counterparts. The bar began to lengthen in the eighteenth-century and then acquired more mass thanks to a distinct hump-backed shape that continued to develop well into the twentieth-century.<sup>34</sup> This helped to increase the projection of the instrument, in response to players' need for greater projection and depth of sound.

## **STRINGS**

Thanks in part to the increased support provided by the bass-bar, the evolution of cello strings helped add to this increased sound. Before the nineteenth-century, gut strings were the

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<sup>32</sup> John Dilworth, "Bass-bar," *Grove Music Online, Oxford Music Online*, Oxford University Press.

<sup>33</sup> *Ibid.*

<sup>34</sup> *Ibid.*

only available option to players. These strings are generally made from sheep intestines, and sometimes wrapped in wire or metal. This type of string, while still used today, has fallen out of favor, mainly due to the introduction of steel core strings. Most modern strings are usually made of steel rope or solid steel, and are wrapped in a variety of metals and alloys (tungsten, chrome, silver, and gold, to name just a few). This allows soloist the ability to create clearer and crisper articulations when compared to gut strings. In addition to this, as the number of players in the orchestra increased, the soloist required more sound production to be able to be heard over the orchestra's increased volume. These are main reasons that gut strings have become less preferred. In contrast, gut strings provide a warmer, richer sound, whereas steel strings tend to have a more metallic, tinny sound. This richness and depth in color is what still leads some soloists to favor gut strings over more modern steel-core strings.

## **FINGERBOARD**

The length of the fingerboard was an advancement that allowed an increased range of the cello. Early examples (1695) of cellos have the length from nut to the end of the fingerboard being about 13 inches, allowing only about three and a half octaves.<sup>35</sup> From the beginning of the eighteenth-century, the fingerboard grew longer as the range demanded by players increased; it expanded up to four octaves, and the use of thumb position soon became standard by this time. In conjunction with this, the materials of the fingerboard also changed from laminated woods to ebony.<sup>36</sup> This change increased the longevity of the fingerboard, as well as increased the structural integrity, allowing for more forceful playing. In addition, the harder, denser wood allowed for a small increase in sound production, as vibrations could be more focused. The

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<sup>35</sup> Stephen Bonta, et al, "Violoncello," *Grove Music Online, Oxford Music Online*, Oxford University Press.

<sup>36</sup> Bonta, "Violoncello."

fingerboard remained relatively the same until the late nineteenth century when scooping of the bass side of the fingerboard became standard.<sup>37</sup> This advancement allowed the wide vibrations of the C-string to clear the fingerboard.

## **VIRTUOSITY**

What is it that makes a player a virtuoso? Up until the nineteenth-century, the idea of a virtuoso differed from the modern interpretation. Often in Italian courts, musicians would apply the title to themselves, whether or not they merited such a distinction.<sup>38</sup> Later, it changed in meaning to a musician of exceptional training, especially in theory. Today, the word is often applied to musicians who have exceptional skill in technique, as well as displaying their talents and work through performance. It is this idea of technical mastery that will be explored in depth. To be a virtuoso cellist, one must have mastery of fingering technique, bowing styles, and the ability to shape musical lines and phrases to convey the music correctly. He must show his understanding of the accompaniment line, displaying his knowledge of the piece as a whole. Both the Dvořák's *Concerto in B minor*, Op. 104 and Pärt's *Spiegel im Spiegel* (1978) help the performer to display his virtuosity in these ways. This is accomplished by the use of three main aspects of technique: control of bow and bowing techniques, understanding and shaping of musical lines, and dexterity across the full range of the instrument.

## **BOW CONTROL AND TECHNIQUES**

One way that these pieces display virtuosity is by use of various bowing styles and techniques. Control of the bow is important as it allows the player to convey the composer's

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<sup>37</sup> David D. Boyden, "Fingerboard," *Grove Music Online, Oxford Music Online*, Oxford University Press.

<sup>38</sup> Owen Jander, "Virtuoso," *Grove Music Online, Oxford Music Online*, Oxford University Press.

intended affect effectively. If the player is unable to perform these bowings, a number of elements would be lost, including articulation, rhythm, and clarity of pitch.

The first movement of Dvořák's *Concerto in B minor*, Op. 104 contains a wide range of bowing techniques.<sup>39</sup> This variance helps the player to display his virtuosity by allowing him to showcase this aspect of his technical mastery. It is not enough that these techniques vary in their execution and intended sound, but they also require the player to play in different parts of the bow, use different bow lengths, and various bow speeds. They test the player's ability to quickly change between each of them effectively and, seemingly, effortlessly. Ex. 1 shows one way in which the player must use a precise bow speed.

Ex. 1: Dvořák *mt. I, mm.*  
95-101



If he is unable to play mm. 95, and its analogous spots, with the correct bow speed, the final sixteenth-note is lost and the articulation on all of the notes is lost, effectively creating one long slurred passage. In order to play the passage effectively, the player must play the passage in the lower half of the bow and remain there for the entirety of the passage. In addition, the player must restrict his use a slower bow speed on the first three sixteenth-notes, releasing the last of the three, and use a fast up bow to recover back to the same place in the bow. Already, the concerto begins with a very difficult technique to master properly. Dvořák has already begun to test the

<sup>39</sup> Antonín Dvořák, *Concerto in B minor*, Op. 104 (New York: International Music Company, 1952).

player within the first twelve measures of his entrance, and as a result, sets the tone for the rest of the movement.

In Ex. 2, the cellist now must switch between a few different types of bowings to accomplish his goal.

**Ex. 2: Dvořák *mvmt. I, mm. 110-115***

The image shows a musical score for two staves. The top staff is for the violin and the bottom staff is for the cello. The key signature is one sharp (F#). The time signature is 4/4. The tempo is marked 'a tempo'. The music features a series of short, accented sixteenth notes in the violin part, followed by slurred eighth notes in the cello part. The dynamic markings are 'fp' (fortissimo piano).

First, he has to play short, separate, accented sixteenth notes. While this is not difficult on its own, he must also navigate the numerous and quick string changes. Without the ability to execute the string changes, he will begin to lose the clarity of pitch as the passage progresses. Immediately following that, the cellist must play two groups of slurred eighth notes, all within the context of a crescendo and decrescendo. This pattern, and those similar, are repeated a number of times before the end of the first theme. Lastly, he must be able to shift his contact point on the bow from the middle to the frog and back again, adding another factor. The opposing nature of these bowings tests the cellist's ability to shift modes quickly. The last notable section, Ex. 3 is unique, insofar that the staccato articulation in conjunction with the bariolage bowing is difficult to execute effectively.



Ex. 3: Dvořák *movt. I, mm. 158-159*

This passage requires the player to use a lower part of the bow than is typical for bariolage, as well as slightly more weight into the string. In order to accomplish this, the player must be near the balance point of the bow. By applying slightly more weight into the string and maintaining a good bow angle, the staccato articulation becomes a by-product of the technique. The problem arises when he must create the staccato articulation for each note. If executed incorrectly, both the top and bottom notes will be lost, and the articulation throughout the section will become muddled. When compared with mm. 69-74 in the second movement, they are almost exactly opposite to one another in articulation, bow weight, and bow placement, although both being bariolage passages. The player must consider all of these factors to make execution of these passages effective.

While Dvořák's *Concerto*, Op. 104 contains many technically challenging bowing patterns, Pärt's *Spiegel im Spiegel* requires different techniques to achieve its goal.<sup>40</sup> With long note values, a slow tempo, and long slurs, the player now must consider their rationing of the bow very carefully. He must think about where to place his bow at the start of a passage in order to end up in the right part of the bow for the end of the passage. As Ex. 4 shows, there are often three notes under one slur, requiring him to use one bow length over twenty beats at a slow tempo.

<sup>40</sup> Arvo Pärt, *Spiegel im Spiegel* (1978), 2<sup>nd</sup> edition, (Wein: Universal Edition A.G. 1996).

**Ex. 4: Pärt *Spiegel im Spiegel*, mm. 1-11**



Ability to sustain a consistent sound over the entirety of the bow is necessary for this piece to be effective. One factor seen in both the Dvořák and the Pärt is the careful consideration of bow placement. In *Spiegel im Spiegel*, bow placement is critical to a smooth and even tone. Each entrance must be considered and the tone must be factored into placing the bow. In Ex. 4, for instance, the player must start about two-thirds of the way to the tip. This is due to the fact that the next down bow must sustain fifteen quarter notes. Once bow placement is decided for this piece, the bowing and note length will automatically follow and a more consistent and even tone will result.

## **UNDERSTANDING OF MUSICAL LINES AND PHRASES**

Another way that the player's virtuosity can be displayed is through the understanding of musical lines and phrases within the piece. More generally, he must know the accompaniment parts and how they interact with his own, formal structures, key areas, and other aspects of the piece as a whole. This knowledge aids him in his endeavor to convey the piece as correctly as possible. His understanding of each of these elements helps to give the piece continuity. In addition, it can inform him about the other elements of the piece, allowing him to execute them effectively. With this understanding, he is equipped to play the piece fully informed, and able to make decisions based on this knowledge. Lastly, the musician must answer a few questions about musical lines and phrases. Where is the music leading? What is the apex of the phrase? How do I approach it? Once he answers these questions and understands the structures, he can

use them to inform him on the shape of the lines. His ability to do this will result in an effective phrase, and as a result, the piece will be more compelling. Both these pieces contain a number of moments that help him display his mastery of this element.

One place where this idea is present is in the second movement of the Dvořák. In this movement, Dvořák crafts long and lyrical musical lines, and as a result, the player must shape them correctly if he hopes to play it well. In order to do this, he must consider the different parts of the phrase and how they support the overall shape and contour. Already, in the first entrance of the cello in m. 8, we have a few elements present with which the player must contend (Ex. 5).

*Ex. 5: Dvořák mvt. II, mm. 8-14*



With the pair of repeated notes, the player must answer a number of questions about how he will execute them. What kind of space should there be? Which note should be stressed? Where is the music leading? As the phrase progresses, he encounters a couple of large leaps, which require him to consider how to direct the line in relation to these notes. As all music is either going toward or away from the apex of the phrase, the player must also consider whether these leaps are going toward or away from it. The last element to this passage is how each small phrase fits within the larger phrase structure. As this example contains multiple phrase fragments, he must play each of these fragments in a way that supports the overall structure. Inability to evaluate and analyze these elements will result in a stagnant line that has no direction. Within the first 14 measures of the movement, there are a large number of musical decisions that the player must make when thinking about how to shape the phrase.

Another example in this movement occurs in mm. 29 - 35. The cello has a descending figure of eighth note – sixteenth note – sixteenth rest (Ex. 6).

*Ex. 6: Dvořák mvt. II, mm. 29-35*

It is an almost entirely chromatic line, and on initial inspection, seems deceptively simple.

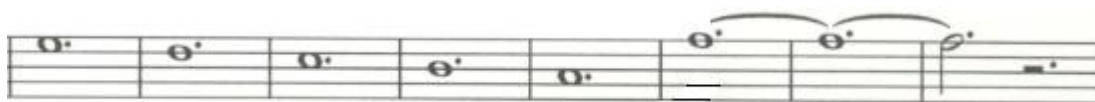
Despite this, the player's knowledge of musical line is paramount. While the solo cello part isn't indicative of the direction of the phrase, the orchestra part contains the key information to help him shape it. By studying the score (or even the piano reduction) he will be able to see the direction of the phrase. He will also gain an understanding of his part within the context of the whole piece. Without the proper direction, the effect of this section would be completely lost to the listener. It wouldn't lead anywhere and the line would not be compelling. Therefore, understanding of all parts of the piece is essential to the successful execution of this phrase. The last example in Dvořák is in mm. 105 - 112, where the cello has a short cadenza like figure for several bars.

*Ex. 7: Dvořák mvt. II, mm. 105-112*

Here, the player must make similar considerations as before. Unlike the earlier two sections, however, he no longer has the orchestra part to aid him in the shaping of the line. In addition to the musical line, the player must also contend with six double-stops, each of which need to be played differently. The execution of each of these greatly affects the shape of the phrase, and thus, must be given the same consideration as all other parts of the phrase.

In *Spiegel im Spiegel*, Pärt's use of musical lines is slightly different than Dvořák's. As Pärt's piece is based on the minimalist and tintinnabuli styles, he does not use the same tools as Dvořák to outline his musical phrases, and thus, the piano doesn't play as large a role in helping the player shape the lines. Since the piece is based around an expanding F major scale, both ascending and descending, the direction of the line is either towards the top or the bottom of the scale with the rest note of A (the mediant of F) as a secondary destination.

**Ex. 8: Pärt's *Spiegel im Spiegel*, mm. 48-55**



As *Spiegel im Spiegel* is much more subdued, the addition of small amounts of vibrato can help the player shape the line towards its final goal. The type of vibrato here is very important, as the player must use a wide, slow vibrato that is consistent from note to note. In addition, he is able to use different elements of the bow, such as pressure, speed, and contact point to influence the shape. While independently, these ideas are not too difficult to execute, when added to the piece's slow tempo and the exposed nature of the cello part, the player's every inaccuracy is obvious. If he is able to control the use of these two aspects, then he will be able to display the musical lines correctly and effectively.

## FINGERING/RANGE/COMMAND OF THE FINGERBOARD

The last aspect of virtuosity that these pieces address is that of range and dexterity around the fingerboard. In addition to exceptional skill in technique, a virtuoso player must have also have the ability to play cleanly across all parts of the instrument, moving quickly and with incredible accuracy. Dvořák uses, in the third movement specifically, a large range of the instrument, spanning four octaves. In order to master these passages, the player must have strong knowledge of the fingerboard geography in addition to the technical ability to move around the fingerboard quickly and efficiently.

An example (Ex. 9) occurs in mm. 49 - 56, just after the initial statement of the first theme.

*Ex. 9: Dvořák mvt. III, mm. 48-56*

The passage requires the player to move up one and a half octaves and prepare for a very fast double-stop section. In this passage, which occurs twice, the player needs to move lower in range while also adjusting the pattern of their fingers from Lydian to Minor and then Phrygian finger patterns. In addition, the player then must add in trill-like notes with second and third fingers, also with varying spacing as he descends. Lastly, the player must show his ability to bring out

the musical line embedded within all this activity. While each of these elements is difficult in its own right, the combination of them creates a passage with many levels of activity.

Another example (see Appendix A) occurs in mm. 177 – 204. During this passage, the player must navigate the fingerboard of the cello in a different way. Previously, he needed to move around the high range of the cello within a smaller range, but with the focus on finger spacing and patterns. Here, he now must be able to move around three octaves of the cello within a very short amount of time. The passage requires him to play small note values with trill-like figures while shifting multiple times a bar. The descending diminished figures in mm. 199 - 202 are the culmination of this passage. As the player must rapidly shift down the fingerboard, he must open the shoulder and elbow quickly and simultaneously. If the player allows the fingers to lead the shift, or any large shift, he will find it difficult to shift quickly and accurately enough. The player must prepare the shift, either higher or lower, with the shoulder and elbow. As these joints can open and close faster, the hand will just follow their lead, allowing for faster shifts. Finally, the two and a half octave scale in mm. 203 acts as a cadential figure leading to the tonic.

Beginning in mm. 347 (see Appendix B), the remaining measures of the movement are in B major, a notoriously difficult key for string players. As there are no sympathetic overtones, playing in tune is tough and requires that the player be completely confident in his knowledge of the fingerboard. Through the end of the movement, he must play a string of difficult double stop passages that require him to shift between 2 ½ position to 5<sup>th</sup> position with the thumb. Each one of these double stops is a different interval and thus, he has to be able to constantly adjust the spacing and tuning of every one of these double stops. While this sort of pattern is difficult to play, within the contexts of B major, it is made even more arduous. The player must fight the tendency to go sharp while also taking into consideration the changing finger patterns.

## FINAL THOUGHTS

Both Dvořák and Pärt have written into their pieces, moments that aid the player in displaying his virtuosity. Each of their pieces are written well for the cello, and the inclusion of those elements discussed have created incredible pieces of music. Through the first movement of the Dvořák, the player primarily displays his mastery of multiple bowing techniques. This allows him to show his ability to play in many different parts of the bow and play passages with differing articulations. Because of the second movement of Dvořák as well as Pärt's *Spiegel im Spiegel*, the player can show his understanding of musical lines and phrases. With the careful study of accompaniment figures, in addition to the knowledge of direction of musical lines, he is now able to convey these elements correctly, leading to compelling phrases. Finally, Dvořák uses passages spanning the full range of the cello as a way to help the player display his fingering technique. This allows the player to show his complete command of the instrument. Not only is he able to show his dexterity with the numerous changes in finger patterns, he can also display his ability to move around the entire range of the cello efficiently and accurately.

Why is it that we are so intrigued by musical virtuosi? I believe that it is their ability to create inspired and exciting performances. As an audience, we are able to notice these performances and they captivate our attention and delight our ears. As commented earlier by Horowitz, the view of virtuosi by audiences is much different from their own views. It is through the careful study of music, theory, technique, and other elements, that the average player can hope to one day reach the sublime peak of his art. By never letting their study and performance stagnate, virtuosi are able to elevate their abilities to sublime heights. With careful and innovative practice of his instrument, as well as informed considerations of all aspects of the music, he will hopefully create an entertaining and compelling musical experience for all.



## APPENDIX A: Dvořák mvt. III, mm. 117 – 204.

Tempo I *M M* ( $\text{♩} = 104$ )

*f* *ff* *cresc.* *tr* *tr* *rit.* *a tempo*

OSSIA.

OSSIA:

12

## APPENDIX B: Dvořák mvt. III, mm. 347 – 516.

Musical score for Dvořák's Third Movement, mm. 347–516. The score is in G major and 3/4 time. It features a complex texture with multiple staves for strings and woodwinds. Key markings include:

- Tempo I**: Initial tempo marking.
- cresc. e string.**: Crescendo and string emphasis.
- ff**: Fortissimo dynamic.
- molto espress.**: Molto espressivo.
- molto rit.**: Molto ritardando.
- a tempo**: Return to the initial tempo.
- string.**: String emphasis.
- crescendo**: Gradual increase in volume.
- rit.**: Ritardando.
- ff**: Fortissimo dynamic.
- risoluto**: Resolute.
- Meno mosso**: Moderately slow.
- poco a poco sim. e rit.**: Gradually more and more similar and ritardando.
- [14] Andante (♩ = 76)**: Marking for the 14th measure, tempo change to Andante.
- p**: Piano dynamic.
- f**: Forte dynamic.
- espressivo molto**: Very expressive.
- dim.**: Diminuendo.
- [15] Andante maestoso**: Marking for the 15th measure, tempo change to Andante maestoso.
- ff**: Fortissimo dynamic.
- 5** and **4**: Measure numbers.
- Allegro vivo**: Tempo change to Allegro vivo.

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