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Domenico Dragonetti: A case study of the 12 unaccompanied waltzes

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Abstract

This thesis uses the 12 waltzes composed by the famous double bass virtuoso, Domenico Dragonetti, as a case study to examine certain key aspects of his playing style. More specifically, this thesis seeks to answer the question: what aspects of Dragonetti's playing could be deemed virtuosic? I select a number of instances in the waltzes where the demands posed by various passages suggest a specific solution required to execute the passage. I suggest various solutions to these passages that reveal the types of solutions Dragonetti might have employed and help shed light on my initial question. The analysis reveals that Dragonetti might have been an athletic musician who was agile across the fingerboard, and whose bow technique afforded him a large palette of articulations that helped him achieve polyphonic textures on the instrument.

Keywords

Domenico Dragonetti, unaccompanied double bass, double bass technique, virtuoso

Summary for Lay Audience

Domenico Dragonetti (1763-1846) was a double bass virtuoso who had a large impact on the musical scene of his time. It was said that the way he approached the double bass inspired the composers who heard him play to write more complex double bass parts for their music. This thesis poses the question: what about Dragonetti's approach to the instrument was so virtuosic? The 12 waltzes, Dragonetti's last work, are used as a case study to help answer the question. In my analysis of the waltzes, I choose specific passages from individual waltzes that demonstrate a technically demanding feat that would require consideration for performance. These feats permit limited solutions and I provide various technical explanations that suggest ways they might be executed. Because the solutions are limited, they provide a potential indication of the type of approach Dragonetti would have needed to perform the passages. The conclusions drawn from the analysis demonstrate that Dragonetti had agile hands and was able to create a complex range of sounds through his use of the bow.

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1 Chapter 1

Near the end of his life, the great double bassist, Domenico Dragonetti (1763-1846), composed a set of twelve waltzes for unaccompanied double bass. These waltzes were the first ever composition for unaccompanied double bass and also the last work written by the great virtuoso. He never performed them in public nor were the works published within his lifetime. The first publication of the full set was released by G. Henle Verlag in 2007 nearly two hundred years after his death.[1]

Dragonetti is most famous for his influence on the double bass orchestral and chamber repertoire. For example, he once notably performed a difficult piece for Beethoven; after the performance the composer was so impressed by Dragonetti's technical ability on the instrument that he embraced him. As Palmer points out in her biography, the association between Dragonetti and Beethoven's orchestral music has a long history. It is said that Dragonetti's performance for Beethoven inspired the composer's writing for the double bass. Further, many believe that Beethoven wrote the famous recitative solo in the ninth symphony with Dragonetti in mind. Although it is impossible to prove that Beethoven wrote the recitative specifically for Dragonetti, it should be noted that the symphony was commissioned for the Philharmonic Society, an ensemble with which Dragonetti performed. Dragonetti was principal of the double bass section of the Philharmonic Society and it is likely that Beethoven would have known that Dragonetti held that position. It is interesting to note that despite the supposed connection between the two men, Dragonetti was unable to be part of the performance as he demanded too high a fee (due to the technical challenges of the piece) for his involvement.[2]

Dragonetti was also an acquaintance of Gioachino Rossini. Rossini composed a famous duo for cello and double bass for Dragonetti and his stand partner, the famous cellist Robert Lindley.[3] A good deal of anecdotal evidence suggests that Dragonetti was an extremely talented

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[1] Domenico Dragonetti, *Twelve Waltzes for Double Bass Solo*, ed. Tobias Glöckler (Dresden: G. Henle Verlag 2007).
[2] Fiona Palmer, *Domenico Dragonetti in England (1794-1846): The Career of a Double Bass Virtuoso* (Oxford: Clarendon Press, 1997) 151-152, 177-185; on the commission, see Pamela J. Willetts, *Beethoven and England: An Account of the Sources in the British Museum* (London: British Museum, 1970), 49-53.
[3] Palmer, *Domenico Dragonetti in England*, 103.

double bassist but the descriptions of his playing do not give us a sense of what about his playing was so remarkable.

What about Dragonetti's technique was so inspiring that it drove composers such as Beethoven and Rossini to keep him in mind when they were composing their works? This question has in previous years been hard to address due to the lack of published musical material from Dragonetti himself. Although Dragonetti was a prolific composer for the double bass, much of his work was not published until the late twentieth century and much of it still remains unpublished.[4]

As they were likely written for personal use, Dragonetti's twelve waltzes can be considered a lens into the ways in which he approached the double bass. Each waltz is extremely challenging but very idiomatic for the double bass. Therefore, the waltzes provide a strong suggestion of the manner in which Dragonetti may have approached playing his instrument. Further, these pieces significantly expand the technical challenges unique to the instrument by, for example, demanding the execution of polyphony on the double bass.

The technical demands of the waltzes are daunting due to the size, shape and register of the double bass. The double bass is unique to string instruments, as it is an instrument roughly the height of a human. Due to the size of the instrument, playing fast passages, especially passages that traverse the entirety of the instrument, can be extremely difficult as the left hand might need to travel distances of several feet. Throughout its history, the bass has gone by many different names (violone, contrabass etc.), all describing similar instruments, the same instrument or different instruments that perform the same function. Today, the double bass is more standardized than in the past and yet it still fluctuates in size, shape, tuning and playing style.

Generally, most modern double basses use four or five strings. The most common system employed is a four-string bass tuned in fourths on E, A, D and G. When a fifth string is used, it is often tuned to either low B or C. Some instruments employ a higher fifth string tuned to C a fourth above G, but this tuning is less common. Tuning in fifths an octave lower than the cello, C, G, D and A also occurs. To reach the notes below the E string (on a four-string bass using a fourths tuning), a mechanical extension is often installed to extend the range of the E string above the nut.

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[4] Palmer, *Domenico Dragonetti in England*, Appendix iii, 250-252.

A safe conclusion to draw of a broad definition for a double bass is a string instrument that is roughly human sized, that plays in a low register with both a bow and pizzicato. Because the double bass is so hard to categorize, it is harder to track its historical trajectory. In what follows, I focus on Dragonetti and the bass he played.

1.1 Domenico Dragonetti Biography (1763-1846)

Born in Venice on 7 April 1763, Dragonetti spent his most famous years in England. Anecdotal evidence suggests that his father was an amateur musician and that his household was a musical one. Dragonetti played many instruments and eventually started the double bass at a young age. It seems that he was entirely self-taught on the instrument and became proficient very quickly. He began his professional career in an orchestra at St Mark's.[5]

Dragonetti left his position at St. Mark's for a career in London, England on a trial basis. He was so valued for his musicianship that he was still paid by St. Mark's during his initial stint in England, as his employers believed he would be returning after a year. Dragonetti did not return to Venice and instead was hired for three positions during his career in London: member of The King's Theatre, The Ancient Concerts, and the Philharmonic Society.[6] The King's Theatre was a lucrative position and was the only theatre in England that had permission to play Italian operas. The Ancient Concerts specialized in chamber music of the baroque and frequently performed for the highest members of the English aristocracy. Through the Ancient Concerts, Dragonetti was introduced to aristocratic social circles. He held an orchestral position in the Philharmonic Society where he had the opportunity to perform works such as Beethoven's symphonies. Throughout his career, Dragonetti was one of the highest paid musicians for each ensemble, a distinction that demonstrates the value of his musical ability. Further, it is interesting to note that his fame during his time was as an ensemble player rather than as a soloist. It seems that he began his solo performances in his early days in England to demonstrate his ability to the musical community of London. After obtaining his many posts, it was rare that Dragonetti would play solo performances often due to his high fee.

Dragonetti's compositions spanned many genres including pieces for double bass and piano, many concertos, string quartets and quintets. Upon his death, his compositions were left to his friend, the music publisher Vincent Novello. He hoped that Novello would help publish his music for future generations to play. Surprisingly, very few of his compositions have been published and the ones that have were not published until the late twentieth century.

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[5] The summary of Dragonetti's biography that follows is based on Palmer, *Domenico Dragonetti in England*, 7-96; and Paul Brun, *A New History of the Double Bass* (Villeneuve d'Ascq: Paul Brun Production, 2000) 240-254.
[6] Palmer spends considerable time in her biography describing the three ensembles and Dragonetti's involvement with each organization. Palmer, *Domenico Dragonetti in England*, 97-185.

Dragonetti was held in high respect by many in London. He was in communication with and moved in the circles of such musicians as Johann Baptiste Cramer, Giovanni Battista Viotti and Muzio Clementi. Further, there are well documented encounters of Dragonetti's performances for Napoleon and also Beethoven. His best-known relationship was with his stand partner, Robert Lindley, the famous cellist, with whom he frequently performed arrangements of Corelli trios and various duets.

1.2 Dragonetti's Double Bass

During Dragonetti's career, there was no clear standard for double bass tuning, shape or size. Palmer prints a copy of Dragonetti's will, which lists many fine instruments including some made by famous Italian luthiers such as Stradivarius.[7] He owned many double basses of different shapes and sizes. It is likely from Dragonetti's collection of instruments that he experimented with many different types of basses and tunings. The question is for which bass was Dragonetti writing when he composed the waltzes.

Dragonetti favoured the fourths tuning, as demonstrated in Palmer's biography.[8] Further, she demonstrates that he preferred a double bass with three strings rather than four. The tuning Dragonetti would have favoured for his double bass was then from low to high, A, D, G. It is likely that his twelve waltzes were composed for such an instrument**.** The evidence that he tuned in fourths is located in the waltzes themselves as much of the material is playable only in this tuning: in the range used in the waltzes, clear use of open strings, and the handshape required for many of the passages.

The top range of the waltzes sounds as the G above middle C and written two octaves above middle C as the double bass is an octave transposing instrument. On the double bass, that G would be easily obtained with a harmonic if the top string was tuned to a G. Further, the high G is always used at the end of a G major conjunct motion passage that would be most easily executed on a string tuned to G. The reason for the ease lies in the two tetrachords that are the building blocks of a G major scale. The first tetrachord, which spans G-C, can be executed with the thumb on the first octave G harmonic (located at the midpoint of the fingerboard) and using the first three fingers with an extension between first and second finger for the A to B. The second tetrachord, spanning D-G can be played with the same fingering as the first tetrachord but

[7] Palmer, *Domenico Dragonetti in England,* Appendix I, 233-235.
[8] Ibid.

with thumb on the D harmonic, which is located at the midpoint between the octave G harmonic and the top G harmonic. Paul Brun describes some of the other tunings employed by bassists in Dragonetti's era; they often used a top A string rather than G, which would make the G major scale described above harder to execute.[9] Further, the waltzes do not descend lower than a low A, which would coincide with the use of a low A string and the lack of a lower E string.

There are instances within the waltzes where the easiest way to execute the passage is using an open string. Each time a passage requires the use of an open string, the open strings coincide with the three-string tuned in fourths A, D and G. In the second half of the second waltz, the phrase includes a descending passage in which a G sounds between each descending note. The most efficient way to execute this passage is to play it all on the G string, where the interjection of the G note would be attained by lifting the hand and playing the open G string. If not performed on a G string, the left hand would need to shift for each note and the passage would be nearly impossible to play.

A similar passage occurs in the second phrase of the third waltz, where an ascending triad is interspersed with a low D. The easiest way to execute the passage would be to use a triadic handshape with an open D. If a different tuning were used, each note would require a shift, which would generate undue difficulty for the left hand. In the second half of the sixth waltz, a double-stop occurs of which one of the notes is a pedal on low A. The notes of the double-stop range from a minor tenth to a perfect fifth above the A, which would be impossible to finger unless the low A was played as an open string. The average handspan of a double bassist spans a major second; when paired with the tuning of perfect fourths, it affords the left hand a number of handshapes across the strings. For instance, a first finger on a low string with a fourth finger on the upper adjacent string produces a perfect fifth handshape and across two strings produces an octave. The reverse handshape of a fourth finger on a lower string and first finger on the adjacent higher string produces a major third. There are many instances throughout each waltz where those handshapes would solve many of the technical challenges posed by the waltzes.

[9] Brun, *A New History of the Double Bass*, 118.

1.3 The Waltzes

Dragonetti uses the template of a waltz to exploit virtuosic playing on the double bass. The waltzes become increasingly difficult from one waltz to the next within the order of the set; however, the structure of each waltz rarely changes. Many of the difficulties that each waltz presents arise from the coordination of the bow with the demanding fast movements of the left hand. The speed of each waltz is evident due to the tempo markings Dragonetti assigns. Eight of the waltzes bear the marking Vivace, two of the waltzes are marked Presto, one is marked Allegro, and another Allegretto. All the waltzes therefore carry a tempo marking denoting a fast tempo.

Each waltz follows a similar structure. Broadly, all the waltzes are divided into two sections. Each section is divided into phrases with repeats and the second section is always marked with a Da Capo al Fine, indicating a repeat of the first section after the completion of the second section. In two of the waltzes, waltzes nine and ten, the second section is further differentiated by using the marking of "Trio." The first section is always in a major key and the second section is usually in a minor key, although in waltz eleven both sections are in major. The first section of the waltz is typically longer than the second, although that proportion differs in a small number of waltzes. The second sections of the waltzes have the most diversity in structure, often varying in length and style.

Explanation of Analysis

The waltzes present many technical and musical challenges. Many of these feats can be solved in only one way. At the very least, the challenges in the waltzes often require considerations that suggest limited options for solutions. These technical opportunities indicate ways in which Dragonetti might have played the bass. Further, as they are the first set of unaccompanied pieces for the double bass and remained the only unaccompanied pieces for the double bass for nearly a century, they represent a unique and unprecedented technical achievement for the instrument.

To gain an understanding of techniques required to perform the waltzes, I present an analysis of various phrases in the waltzes. The analysis portion of the thesis is organized around various technical demands that are used in the waltzes. Specific examples have been chosen and explained to demonstrate both the technical challenge and solutions to the problem. The

techniques chosen begin from simplest to most complex. The first challenges concern the left hand, move towards the use of the right hand and eventually culminating in musical challenges.

The left hand's job while playing the double bass is to stop the string against the fingerboard so as to change the pitch needed for each note in a passage. Although the left hand might need to travel great distances on the double bass (due to its size) or move at fast speeds, mechanically the use of the left hand is simple. Therefore, the challenges posed by the left hand are presented first as they are the easiest presented in the waltzes.

The right hand holds the bow, which activates and generates the sound of the double bass. The bow is a proprioceptive tool that delivers the response of the string back to the player and a relationship is formed where the bow activates the string and the response of the string is felt through the bow and adjusted for the desired effect. Because of the feedback loop posed by the bow, challenges in regards to the right hand are more complicated than those posed by the left hand and are presented last in the analysis. The section on the right hand will end with virtuosic bow techniques that include some of the most challenging feats in the waltzes including advanced articulations and polyphony.

Chapter 2

2 Chapter 2

2.1 Left hand techniques

Shifting in a slur

Slurring is performed by connecting two or more notes under the same bow stroke. A glissando or slide occurs when a single finger depresses the string and slides between two notes. Slurs pose a number of challenges on the double bass. Shifting during a slur is undesirable as there is a chance an unwanted slide can occur during the slur as the left hand and right hand move simultaneously. As the scale of the double bass is so large, the average handshape spans a major second and therefore any intervals beyond a minor third would generally require a shift. Dragonetti's waltzes present a number of instances where shifting during a slur is a major consideration in performance.

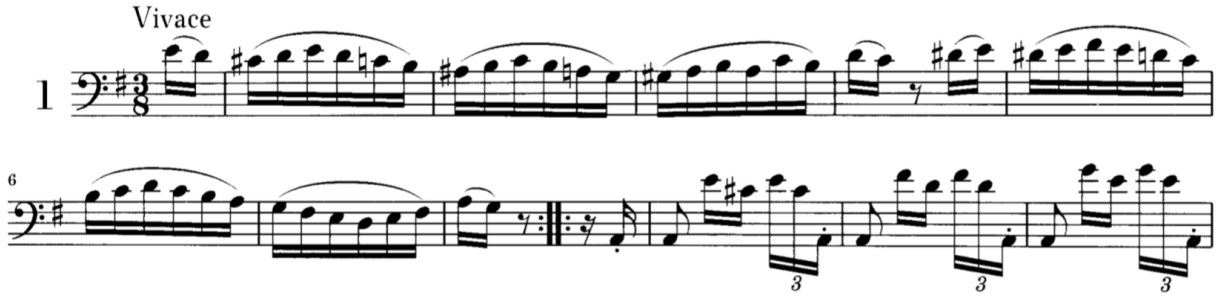

Figure 1 -Waltz 1, Opening Phrase

Dragonetti marked in the first phrase of his first waltz slurs by the measure. Each measure spans a fourth, which is much larger than the typical left hand span of a bassist. A bassist using an extension fingering or pivoting the hand would be able to span a major third at most and not be able to cover the span of perfect fourth as needed to execute the passage. As a result, one has no choice but to shift in each measure in the middle of the slur. The combination of shifting while slurring presents a significant technical problem and suggests that Dragonetti did not see this as a problem technically or musically.

The solution to the passage described above is located in the speed of the shift. Since each slur will require a shift, the shift will need to be executed extremely fast so as to avoid any extraneous sound. The speed of the shift will have to be particularly fast if shifting on the same finger, for instance in measure 1 the C-sharp to D might both be played with first finger to set up

the fourth finger E. If the shift is not made quickly enough, the resulting sound will be that of a glissando rather than the slurred passage that is written.

Dragonetti's ninth waltz also contains a significantly challenging slur that requires planning. The first four measures contain a figure of three eighth notes with the second two notes slurred together. The passage begins at a higher tessitura and descends until an arrival point on the fifth measure. The two slurred notes exceed a whole step and thus must be played across two strings so as to avoid shifting in the slur. The first slur contains the interval of a minor sixth and can be executed across two strings with an extension or pivot.

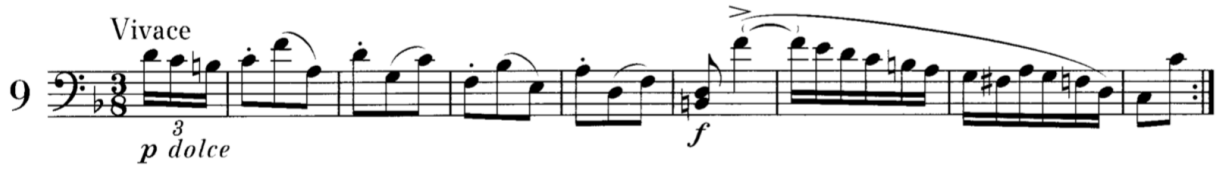

Figure 2- Waltz 9, Opening Phrase

The rest of the slurred eighth notes require a double-stop hand shape across the D and G strings. In the fifth measure, a double-stop is played, followed by an accented quarter note that is tied to a sixteenth note in the next measure and is slurred across two bars. This figure, presents a significant technical challenge. The left hand has to make the transition from being positioned on the low A string, fingering a double-stop, and then leaping to a higher position. Because the rest of the passage is slurred, a fingering is needed that will not contain audible shifts. One approach to conceal the shift is located in the way the fingers move.

The way in which fingers depress or lift from the string affects the sound and articulation in passages of moving notes. The fingers can be depressed in such a way that their movement adds a new layer of articulation apart from the bow. The way in which the fingers move can also conceal or exaggerate shifts by lingering on a pitch or quickly releasing it. In the case of a slurred passage such as the one described above, the fingers would need to release quickly and shift smoothly so as to conceal the shift.

Thumb Position

A standard hand shape of a bassist uses the index, middle, ring and little finger to depress the string while the thumb counterbalances behind the neck of the bass. As the left hand ascends the upper bouts of the bass, it becomes physically impossible to keep the thumb behind the neck to counter balance the fingers depressing the string. The double bass is shaped similarly to a large cello; has rounded shoulders (called the upper bouts) and the fingerboard of the bass

extends past the neck towards the midpoint of the instrument. The solution to the problem of where to move the thumb when ascending past the neck of the instrument that modern bassists adopt is to bring the thumb onto the fingerboard and lean the bass into the body so that gravity allows the fingers to depress the string without the use of the thumb behind the fingerboard. Modern bassists and cellists (who use the same technique for access higher registers) call this technique thumb position.

Palmer refers to Dragonetti's fingering as documented by Francesco Caffi, an early biographer.[10] In this document, Caffi describes a fingering used by Dragonetti for a chromatic scale beginning on the open G string that begins with an A-flat played by the thumb, followed by the first, second, third and fourth finger. This pattern then repeats itself to finger the whole chromatic scale. This fingering system drastically differs from the fingering system of English bassists of the time who were Dragonetti's contemporaries. They would have played with only the first and fourth fingers, which would outline a semi-tone, described as a closed hand shape, and a tone, described as an extended hand shape.[11]

It is hard to imagine the fingering system that Dragonetti was said to employ as described by Caffi. When the thumb is being used to finger a note, the support for the neck of the bass is transferred to the shoulder/collar bone from the thumb (which normally resides behind the neck) so as not to drop the bass. The position of the left arm forms a triangle with the neck where the thumb of the left hand rests on the string, and the shoulder and collar bone meet the neck of the instrument. The elbow forms the upper part of the triangle, extending perpendicularly to the fingerboard of the bass. Because of these angles, it would seem that stopping the A-flat with the thumb would put Dragonetti at an angle where his elbow would be over his head, making it quite difficult to depress the string as the collar bone would not be able to meet the neck of the bass to stop it from falling. It would seem more likely that there would be much easier and more efficient ways of fingering a chromatic scale, such as using a standard first, second and fourth finger pattern.

Caffi's description of Dragonetti's fingering seems likely to be false or an exaggeration of how Dragonetti would have likely fingered a chromatic scale. Instead, it would seem that

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[10] Palmer refers to the work of Francesco Caffi (1778-1847), who wrote an early biography of Dragonetti following his death, dated 20 September 1846. Palmer, *Domenico Dragonetti In England*, 65.
[11] Ibid., 65.

Caffi is hyperbolically describing Dragonetti's lack of reservation for using the thumb in the lower positions and also the use of all four fingers as his technique greatly contrasts with the standard fingering approaches of the English bassists of the time.

The main challenges for the second section of the fourth waltz occur at the end of the second phrase of the second section. The first issue presented in this passage is how to finger the passage efficiently as it occurs in the region of the neck where the player makes the transition into thumb position. The first measure of this passage (m. 53) has the notes E (in the low position), G (a tenth above) and F-sharp (a ninth above the low E). This passage can be executed without entering thumb position. The second measure contains an F-natural, A-flat and G. The A-flat would typically occur in thumb position as it is located beyond the octave harmonic. The rest of the passage weaves around in thumb position and contains leaps of a third in each measure.

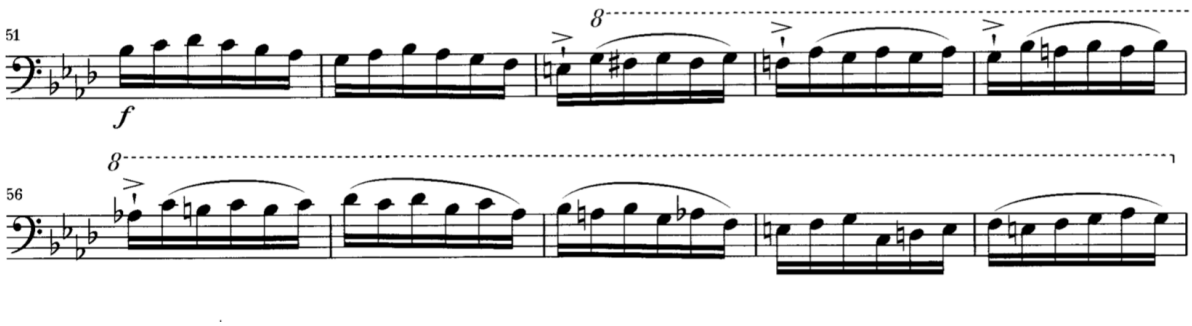

Figure 3- Waltz 4, Last Phrase

One of the major challenges outlined in the passage above is that because it occurs under a slur, the optimal fingering would be one that would avoid a shift during the passage.
The thumb can be a very useful tool on the double bass as it extends the reach of the left hand, which can then span intervals between the thumb and third finger as large as a perfect fifth. The thumb also can serve as a capo in that it can create a stopped note that can be anchored while the other fingers can ascend. Further, the thumb can be used in the lower register, outside the traditional thumb position register, to extend the reach of the left hand, which could also be used in this passage.

For the passage described above the thumb can be used as a moving anchor to help locate the notes in the passage. After playing the low E, the leap will be made to the G (a tenth above), located visually as the halfway point between the nut and the bridge. The G will be played with second finger and the F-sharp will be played with first finger so as to set up the F-natural of the

next measure, which will be played with the thumb. As the thumb depresses the F, the first and second finger will expand to play the subsequent notes of the measure and the thumb will follow to prepare for the following measure.

The advantage of a thumb position hand shape lies in the distance between the thumb and the first finger. Without any major extension of the hand, the handshape gives access to larger intervals that would make this passage playable without needing to shift during the slur. The advanced use of the thumb position such as using the thumb in the lower register (specifically in the region below the octave harmonic) and using specific thumb position handshapes was most famously codified in the double bass method book, *Simplified Higher Technique* by bassist Franco Petracchi. Although Petracchi formally introduced the technique of using thumb position below the octave harmonic, it would seem that, according to Caffi as I discuss above, Dragonetti may have been using his thumb in similar manner nearly a century and a half earlier with this waltz. It is possible and likely other bassists have used thumb position below the octave harmonic prior to the invention of Petracchi's system; however, it is remarkable to see the use of such a technique being potentially employed a century earlier.

Petracchi describes a series of thumb position hand shapes that can be applied to different intervallic patterns.[12] The first handshape is called the chromatic handshape, in which each finger is separated by a semitone. From thumb to third finger, the chromatic position spans a minor third. The semi-chromatic hand shape has a full tone between the thumb and first finger but semitones between the first, second and third finger, spanning a major third. The final handshape is the diatonic handshape where the first finger is placed a tone away from the thumb, the second finger is a tone away from the first finger and the third finger is a semitone away from the second finger. This handshape spans a perfect fourth from thumb to third finger and outlines a major tetrachord.

[12] Franco Petracchi, *Simplified Higher Technique for Double Bass* (Rome: York Edition, 1980), 1.

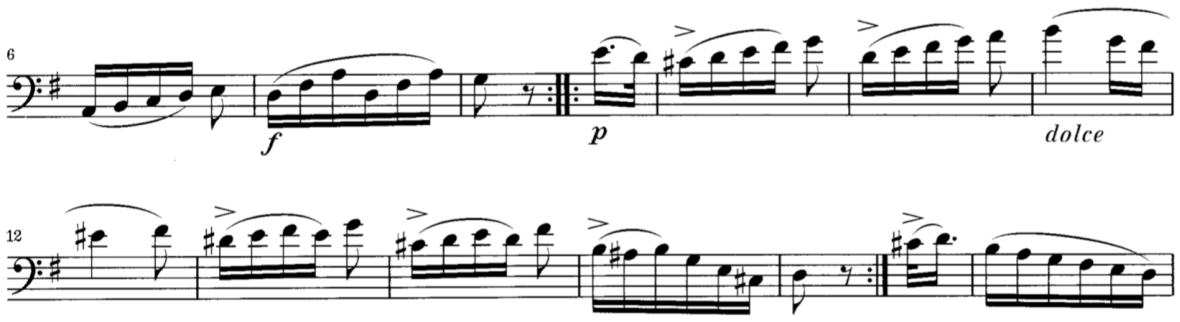

Figure 4- Waltz 8, Second Phrase

The second phrase of the eighth waltz contains a familiar challenge in Dragonetti's writing, avoiding shifting during a slur. The climax of the phrase (m. 11) points to the solution for this problem. As the first slurred passage occurs around the heel of the neck (transition zone) and the arrival point is located in thumb position, the whole passage could conceivably be played in thumb position to avoid any transition. Further, the use of a thumb position hand shape would eliminate the need to shift during the slur.

Petracchi's handshapes would provide a simple fingering solution for slurred material in this passage. The second measure of the phrase (depicted above) has the notes, D, E, F-sharp, G under a slur. A standard fingering if the passage was not slurred would be first finger (D), fourth finger (E), shift for second finger (F-sharp) and harmonic G. Using the Petracchi diatonic handshape, the hand would remain in thumb position and would not require any shifts. Further the handshape would set the hand up so that the G could be stopped and remove the timbral change of using the harmonic.

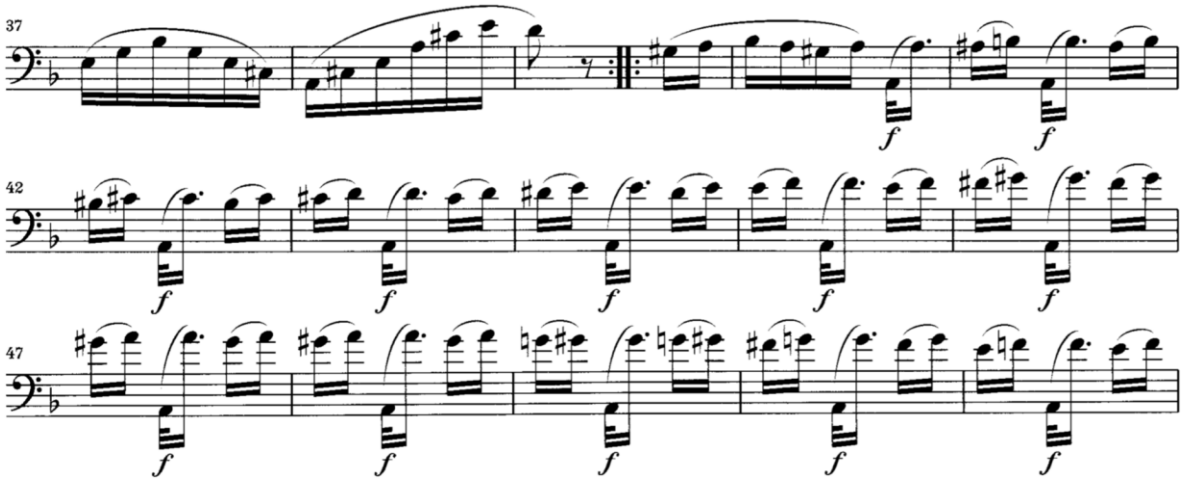

Figure 5- Waltz 9, Trio

The trio section of the ninth waltz presents a new challenge in thumb position and one of the hardest to execute in all the waltzes. In the last phrase of the waltz (beginning in m. 41), a chromatic ascending passage occurs with a low A occurring in the midst of the rising line. The low A is always slurred into the following note and hence arises the source of the difficulty of the passage. The slurred note rises in pitch and begins with an octave, fingered on the D string. The slur presents a challenge as the initial reaction is to finger the upper note of the slur on the G string as this fingering would be the standard place for this note. The notes cannot be fingered on the G string as skipping over the D string (which is between the A and G string) from the low A would break the slur. The required fingering for the passage is to finger every note on the D string. This fingering is particularly difficult as it would require the left hand to depress the string in the upper half of thumb position on the D string.

The reason for the difficulty in playing in thumb position on lower strings comes from the way in which the fingers depress strings. Muscle activation to press strings down is not an effective method to depress the string and can lead to an overuse injury. A better strategy is to position the arm in such a way that its weight is centred on the finger and requires little muscle activation.

Thumb position requires the bass to lean at such an angle that the left hand can centre the weight on the string. The lean usually occurs by bending from the hip so that the neck of the bass comes to rest on the shoulder and the rib of the bass touches at the stomach, forming a triangle that supports the bass so that it does not fall. To play on the D string in thumb position, the bass will rotate so that the F holes will be pointing in a more forward position. This rotation will allow for the arm weight to be centred on the D string. The difficulty with this rotation is that as one bends at the hip to get higher, the bass will no longer be able to rest on the stomach. The bass will then only be able to rest at the collar bone and the endpin. The result is that the bass will run the risk of spinning out and potentially fall. The only solution is to hold the bass at an awkward angle. The second solution is using a bent endpin, which was invented for the double bass by Francois Rabbath, a century after Dragonetti lived, to deal with precisely this type of fingering challenge. Dragonetti may have had a body type that allowed him to keep the bass pinned against his stomach while ascending without the risk of the bass spinning out; specifically, Dragonetti must have had particularly long arms to make the reach.

The use of the high register in the eleventh waltz is particularly challenging for a number of reasons. The first is finding a fingering that will facilitate the transition from neck position to thumb position. A standard handshape used on the double bass is first, second and fourth finger. The second finger is substituted for the third finger depending on the school of playing and for musical or technical reasons. In the transition zone, the third finger can substitute for the fourth finger.

When the hand wraps the heel of the neck to play the notes in the position just prior to thumb position, occasionally the third finger might be better suited than the fourth finger as it is longer. The third finger is closer to the centre of the hand and thus has the potential for greater weight transfer into the string. Typically, the third finger is used on the note F-sharp (on the G string) as a substitute for the fourth finger.

The use of the third finger can help with the transition between thumb position and neck position. In thumb position, there is typically a tone between first and third finger. Substituting the fourth finger with the third finger on an F-sharp (on the third beat of measure 44, depicted below) with first finger floating above E, would in theory be using the same handshape as thumb position hand shape. Using the third finger for F-sharp allows the thumb to move from behind the neck and make the transition naturally and smoothly into thumb position.

Once into thumb position, the "crab" technique can be used to execute the passage. The passage in thumb position can be thought of as groups of two notes spanning a tone or semitone that are separated by a third, for instance: G, F-sharp, A, G. Because the passage is quick, a simple fingering will help facilitate the execution of the passage. The simplest fingerings are always ones that use the same pattern because they do not require constant mental energy to process every change of note. For the passage described, a simple fingering that could be used is first finger, followed by thumb for each note using the crab technique.

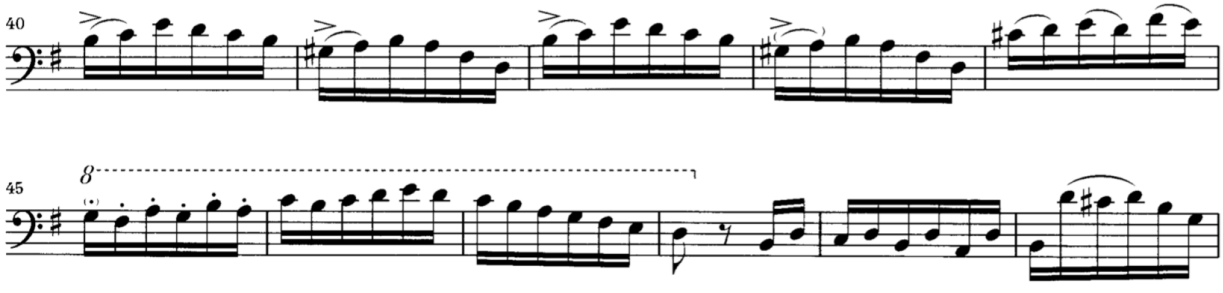

Figure 6- Waltz 11, Last Phrase

The crab technique is often associated with the double bass soloist François Rabbath due to the exercises described in his method book.[13] The technique is used to conceal shifts and extend the range of the left hand. While a finger depresses the string, the rest of the hand is shifted towards that finger to ready the next note. The hand then expands again and the process is repeated making the left hand contract and expand in similar fashion to the way a crab walks. In the passage above, the first finger plays the G-natural and the thumb rests on the F-sharp. As the F-sharp is being played**,** the left hand expands and reaches for a first finger A. As the first finger A is depressed, the thumb moves towards the first finger and is placed on the G. The rest of the passage can be played with the crab technique following this pattern.

As mentioned earlier, the English school of bass during the time of Dragonetti approached both half steps and whole steps with the first and fourth finger. This handshape would then need to be able to expand and contract depending on the notes presented. That type of motion is not dissimilar to the crab technique and might suggest that Dragonetti would have employed a variation of the flexible contracting and expanding handshape in much of his music.

<u>Pivot</u>

From 1977-1984, bass soloist and pedagogue François Rabbath released a method series detailing his unorthodox way of playing the bass. One of techniques described in Rabbath's method is called the pivot, which is a technique that allows bassists to play larger intervals (generally up to a major third) within one hand shape.[14] This extension is achieved by keeping the thumb behind the neck in the same place and rocking one's hand either forward or backward so as to reach notes outside of that hand position.

The need for an extension technique such as the pivot can be seen most clearly in the third waltz. The opening measure of the waltz contains a significant challenge to execute. The first measure has three groups of two notes slurred together outlining a G major triad. There are two ways of executing this passage. The first is to play the first slurred pair (B and D) by fingering the B on the D string and D on the G string in the manner of a double stop. Then the next pair (G and B) would be played similarly across the D and G string and the final pair (D and G) would simply be the two open strings slurred together. It is however more likely that

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[13] François Rabbath, *Nouvelle Technique de la contrabasse méthode complète: et progressive en trois cahiers* Cahier 3 (Paris: Editions Musicales Alphonse Leduc, 1984), 91.
[14] Ibid., IX.

Dragonetti played the passage on one string using a system similar to a pivot or was able to use the same fingering with a large extension of the left hand.

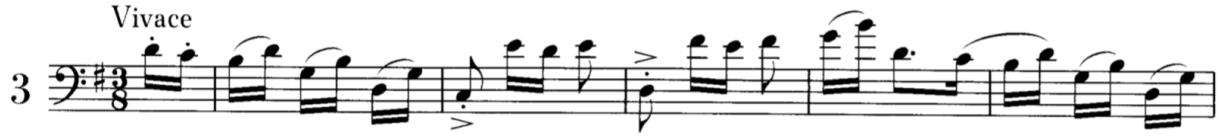

Figure 7- Waltz 3, First Phrase

A challenging aspect of fingering passages in string playing is not just finding a solution to the difficult passage, but also finding out how to get one's fingers to the position to play the optimal fingering. In the suggested fingering provided above, there is a question of how one can get the hand into the double stop shape to execute the slur based on the position from which the hand would be moving as it plays the pickup notes and proceeds to the first full measure. The two notes preceding the slur are D and C leading to the B and D slur. The difficulty is that to land with one's fourth finger on B (on the D string) and first finger on D (on the G string) to play the first slur, the D and C pickup notes must also be played on the D string so that the first finger can arrive accurately to depress the D on the G string.

The D and C on the D string are not impossible to play but are located in a potentially uncomfortable place. Because of the rule that the thumb generally stays behind the neck until thumb position and makes the transition into thumb position roughly around the octave of the string (in this case D), these notes would be located in this transitional zone. Even if one chooses not to play these notes in thumb position so as to avoid shifting one's hand position from thumb position to neck position quickly over the course of two notes, the D would need to be played as a harmonic. This would create timbral difference between the D (harmonic) and C (stopped note) that might not be desired.

The second solution to executing the pickup and first measure of the waltz would be to finger the whole passage on the G string. Because a bassist's hand shape generally spans a major second, there is a difficulty in playing the first slur of B and D as those notes span a minor third. There are two ways one could execute this slur on the G string: either by simply making an extension fingering, which would require very large hands, or by using the pivot technique described earlier.

Double-stops

A double-stop is a technique wherein two notes are played at the same time on a string instrument. This technique opens up the opportunity for polyphony as it allows for chords and multiple voices to be executed. Dragonetti uses two types of double-stops throughout his waltzes. The first is a true double-stop where two notes are depressed and articulated at the same time. The second is the use of a double-stop handshape where the hand depresses two notes at the same time for efficiency in a fast passage but the bow plays each note separately and not as a chord.

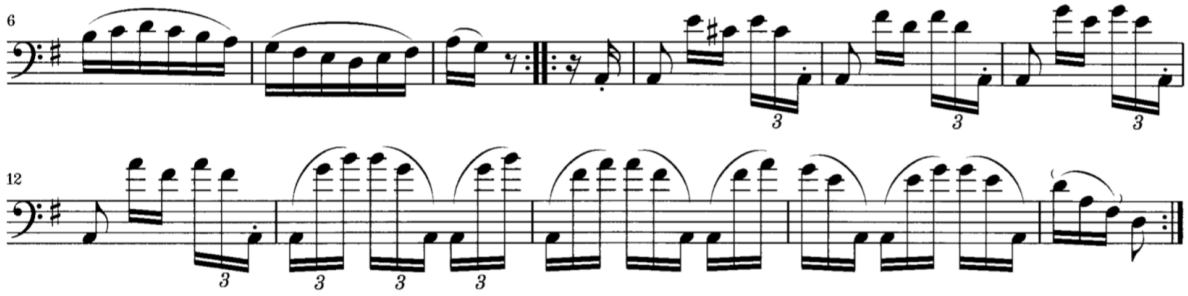

Figure 8- Waltz 1, Second Phrase

In his first waltz, an arpeggiated sequence is presented that requires the use of a double-stop handshape. The arpeggiated sequence is performed in a bariolage style where the open A string (the lowest string on Dragonetti's bass) is played while the upper two notes (outlining a third) of the arpeggio continue to change. The dyad on the upper two strings is broken and not played as a double-stop despite the handshape needed to execute the passage. Since a major and minor third can be played on the double bass in one position across two strings, the most efficient way of performing this passage would be to use the hand shape of the appropriate third and move that shape up and down throughout the passage. Consequently, the arpeggio would span all three strings of the bass. If this passage were played in the method suggested, it would work in such a way that the bowing would be a bariolage pattern where the bow plays a single note on each string travelling across all three strings. A bariolage passage would require a very skilled left hand as it would be shifting in a double-stop handshape while stopping two strings simultaneously instead of just one. This technique would take coordination, strength and accuracy of the left hand to move it both in time and accurately in tune.

An instance of true sequential double-stop playing comes in the fourth waltz. Here, instead of employing arpeggios in the second phrase (common throughout the waltzes), the

arpeggios are replaced with conjunct motion on the first two beats and a double-stop on the third beat. The double-stops span both a major and minor third that rise in pitch throughout the passage. The hand shape to execute the rising double-stops would be switching from playing a first or second finger (depending on if the double-stop is a major or minor third) on the G string with a fourth finger on the D string.

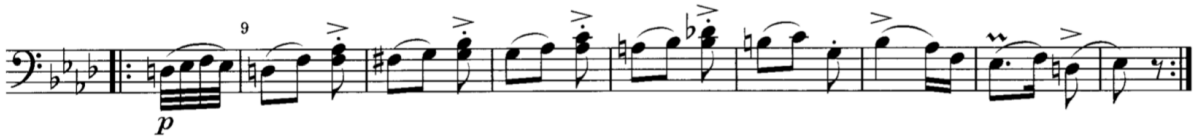

Figure 9- Waltz 4, Second Phrase

Double-stops on the double bass are difficult for both the left hand and the right hand. For the left hand, the challenge is timing two fingers to land accurately at the same time. In the passage above, this movement of the hand becomes increasingly challenging as the pitch of the double-stop rises and the handshape becomes incrementally smaller. The normal challenge of landing one note in tune while shifting is now made more complicated by requiring a shift of two notes with a changing hand shape depending on the interval of the double-stop.

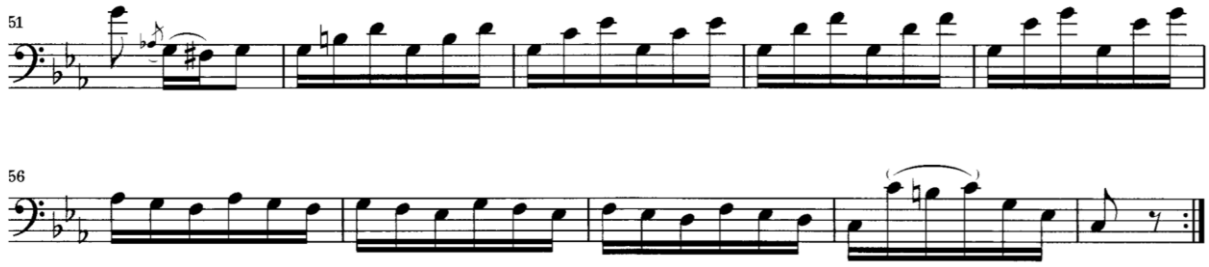

Figure 10- Waltz 5, Last Phrase

A further instance of double-stop handshape is in the fifth waltz. In this instance, the open G string is interrupting a moving passage in thirds. One way to execute the moving thirds would be to use a double-stop hand shape that ascends on the D and G string. This type of movement has been used in other waltzes; however, the player would need to maintain the double-stop handshape into thumb position on the last measure of the sequence. The difficulty with this solution is that the measure that follows the thumb position double-stop hand shape is in a register on the low end of the G and D string. The result would be a leap out of thumb position with the possibility of losing control of the bass during the shift back.

Another way a double-stop handshape can be effective is to hover the left hand over multiple notes to reduce extraneous motions in the left hand for fast passages but also to create a shape in the hand that can help with locating additional notes on the instrument. The first challenge presented by the sixth waltz is the opening phrase, which contains a series of melodic arpeggios. The first arpeggio contains the notes A, C-sharp, E, C-sharp, A, C-sharp. One way of executing this passage is to shift for each note ascending and descending the G string. The second fingering solution is to take advantage of the fourths tuning that Dragonetti used. On the double bass, the distance from a first finger on a lower string and then a fourth finger on the next highest adjacent string spans a perfect fifth. The distance from a second finger on a low string and then a first finger on the next highest adjacent string spans a major third. The benefit of the fourths tuning is that within one hand shape with a minor extension or pivot, the left hand can outline a triad. For instance, the measure mentioned above (first measure of the sixth waltz, depicted below) can be easily fingered by putting the second finger on A (on the D string) the first finger C-sharp (G string) and a small pivot with the fourth finger to the E-natural (G string). This triad hand shape can be used to execute the rest of the passage with less difficulty than shifting for each individual note.

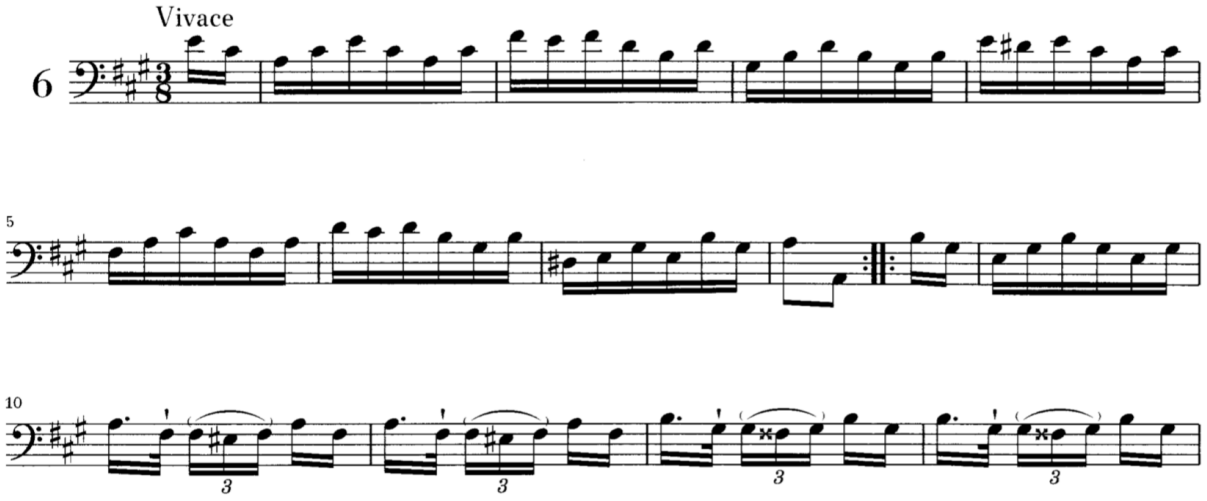

Figure 11- Waltz 6, First and Second Phrase

The second phrase of the waltz (pictured above) poses a few technical difficulties. The first is the fingering problem that consists of a rising third pattern (mm. 10-13) with the third alternating between a minor and major third over a slurred triplet. In view of the fingering rule mentioned earlier, a major third can be played with second finger and first finger across two

strings while a minor third is played with the fourth finger and first finger across two strings. To execute this rising third passage (with minor and major third alternating triplet), a hand shape of first finger (on the G string) and fourth finger (on the D string) could be used. To play the second finger to achieve the alternating minor major third triplet pattern that occurs in the middle of each measure, the fourth finger can be lifted so as to alternate between the two intervals. This handshape can be used to execute the rest of the passage by shifting it up the D and G string.

Later in the same waltz (depicted below), Dragonetti employs a true double-stop where two notes are depressed and articulated at the same time. The first challenge is the two double-stops presented in the first measure of the phrase, following the double stops in the pickup measure. The two double-stops are a D and F-natural (a minor tenth above) and a G and B-natural. The first double-stop can be executed by playing an open D and stopped F-natural (m. 33).

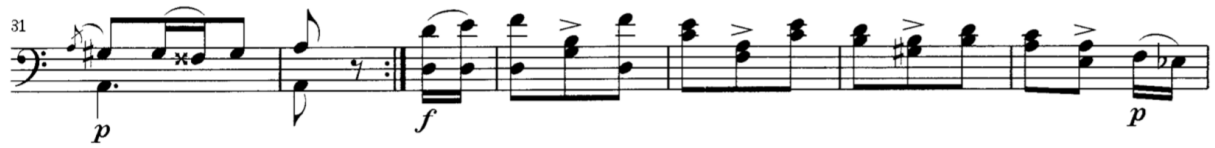

Figure 12- Waltz 6, Last phrase

The second double-stop can be played by either shifting the hand back and closing the two notes or by simply moving the hand to the D string after playing the first double-stop to depress the B and leaving the G to be played as an open string. The first fingering is hard to execute because of shifting and landing two notes simultaneously in tune. While the second fingering requires no shifting of the left hand but does require care with the bow, the bowing challenge for both double-stops would then be similar to challenges discussed later where the bow speed must be calibrated to facilitate the two different string thicknesses of the depressed and open string.

<u>Moving in and out of thumb position</u>

One of the largest challenges on the double bass is not only using thumb position but making the transition into or out of thumb position. The waltzes have many examples of passages where the speed of the waltz makes it difficult to juggle the movement in or out of thumb position. One example is in the opening phrase of the fifth waltz, which contains an instance where the thumb extends the reach of the left hand and allows for clarity within a slur. This phrase occurs in the transition zone between thumb position and the neck position with the

easiest fingering occurring all in thumb position. The new challenge presented in this passage occurs near the end of the phrase where Dragonetti writes a flourish of three notes (B-natural, C, D) on the pickup to measure seven in the top register of the bass. The second flourish, (B-flat, D, E-flat) occurs in the same rhythm in the following measure. Because the tempo of the waltz is Vivace, this is a remarkably fast shift to execute and there is an additional challenge of shifting back out of thumb position.

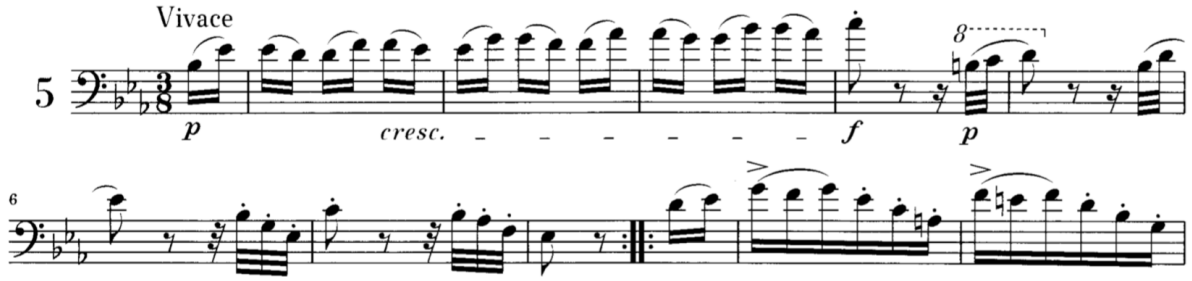

Figure 13- Waltz 5, First Phrase

To execute the first flourish of the passage, there are two main fingering options. The first is using the first and second finger to play the B and C and then extending the third finger for the D. The difficulty with this fingering is that due to the way the muscles and ligament lie in the hand it is harder to extend between the second and third finger than the first and second finger. The second solution for the fingering is to use the thumb on the B, first finger on the C and third finger on D. This fingering would require no extension; it would instead require proper preparation to land the thumb on the B. The previous note before the flourish is a C-natural played with the third finger. To execute the flourish the thumb will approach the third finger during the rest to land on the B.

The second flourish occurs in the lower position and contains the notes B-flat, D and E-flat. One way to execute this passage would be to play it on the G string but that would require a shift during the slur. The easiest solution would be to play the B-flat on the D string and the D and E-flat on the G string. Because this waltz is in a fast tempo, to achieve this fingering would require the hand to land in a double-stop shape outlining the major third between the B-flat and the D.

The final challenge of the two flourishes lies in the transition between them. In thumb position, the neck of the bass lies on the collar bone, as the thumb is no longer behind the neck. During the approach to the transitional zone between thumb position, it is optimal to begin to rest

the neck of the bass on the collar bone so as to prepare the switch into thumb position. The struggle with leaping in and out of thumb position is finding a way to balance the bass and make the transition smoothly to resting the neck of the bass on the collar bone or standing up from having the neck resting on the collar bone without dropping the instrument.

Perfect Fourths

Playing a perfect fourth under a slur is a significant challenge on the double bass. Because Dragonetti used a double bass tuned in perfect fourths, when he played two notes separated by a fourth his approach would likely be to use the same finger in the same location on adjacent strings. For example, in the sixth waltz, a passage contains the notes F and B-flat together. They can be played with first finger on the D string and first finger on the G string in first position. The convenience of this parallel fingering is limiting when the adjacent fourths are slurred. The first finger would need to leave the D string to depress the G string with a resulting gap in sound between the two notes if the notes are slurred together. A solution for this problem is to use a "bar" fingering where instead of depressing a single string with the tip of the finger, two strings are depressed by laying the finger across both strings. The strings are then depressed with the flesh of the tip of the finger and the knuckle joint. The bar fingering facilitates perfect fourths to be executed in a slur and eliminates the fingering problems presented in the last phrase of this waltz.

Figure 14- Waltz 6, m. 37

The second phrase of the seventh waltz (depicted below) contains a challenging sequence of triads that pose potential fingering problems. Each triad would not pose a fingering problem individually but the transition between triads requires consideration. The first triad contains the notes A, C-sharp, E, which could be executed with an open A, fourth finger C-sharp and first finger E on the D string. The problem with this fingering is that the next measure contains the notes D, F-sharp and B. To keep this passage all in the same position, the F-sharp and B would need to fingered with a bar fingering using the little finger. Barring with the little finger can be difficult to execute as the weight distribution across two strings is hard to manage. The little finger is the shortest finger and so it is harder for it to reach two strings. It also is at the bottom

of the hand and so to rotate weight into the finger to depress the string puts the wrist in an uncomfortable position.

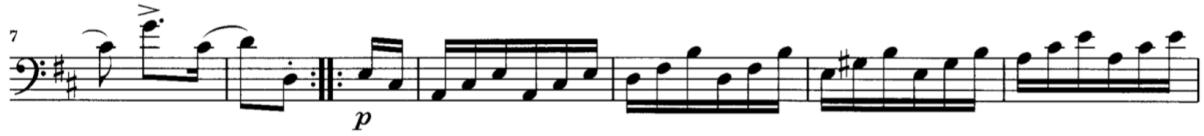

Figure 15- Waltz 7, Second Phrase

The solution for the above passage is to finger the A major triad entirely on the A string with the fourth finger on the E reached by a pivot from the first finger C-sharp. The second triad would be played in the same position with the open D string, and barring the first finger for the B and F-sharp. The rest of the triads could be fingering similarly with a triadic double-stopped handshape.

The first measure of the trio of the ninth waltz (depicted below) has a difficult fingering problem. The passage contains three descending slurred pairs: C-sharp-D, A-D, F-A. The main difficulty is located in the perfect fourth between A and D. The previous solution to slurred perfect fourths involved a bar fingering. The bar fingering is easiest executed with the first finger due to the way the weight can be rotated into the string. The left hand can rotate backwards into the string so that the weight can be pulled into the first finger. The thumb and first finger line up so that the weight is easily put into the finger, whereas leaning weight into the fourth finger requires a twist of the wrist. The twisting of the wrist breaks the chain of weight from the forearm and thus requires more muscle activation, which could lead to injury.

A bar fingering for the fourth would not be easily executed on the first finger because the preceding notes C-sharp and D would be played with first and second finger. In theory, the first finger could be used twice in a row with a shift but it would not be an ideal fingering because the notes that follow would be best played in first position. The solution for the fourth is to use a "fork" fingering.

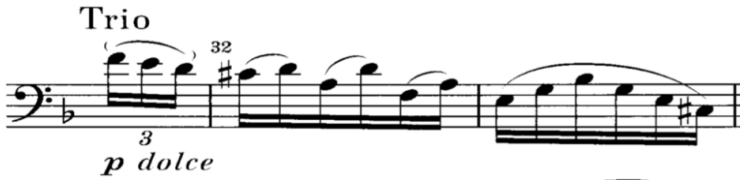

Figure 16- Waltz 9, Trio

A fork fingering is a technique used to play a perfect fourth when a bar fingering is not possible or ideal. In a fork, two different fingers are placed on adjacent strings across from each other with a rotation of the hand so that the palm faces the ground. In this case, the C-sharp (m. 32) will be played with a first finger and the D with the second finger. The hand will then rotate so that the palm faces the ground, the third finger depresses the D (where the second finger had been) and the second finger depresses the A. From there, the hand can slide back holding a double-stop handshape to play the F and A slur with second and first finger to finish the passage.

Summary of the challenges of the left hand

The first technical challenge addressed was that of shifting during a slur. I described a number of instances where these shifts would have posed a degree of difficulty in performing the waltzes. What can be learned from these instances where a shift during a slur would be required is that Dragonetti was not concerned about the resulting effect either due to the fact that his technique was such that it was not a problem for him personally or the situation is that any additional noise (from the movement of the left hand in the slur) was not consequential to his performance practice.

The next challenge described was that of the use of thumb position. It is impossible to know exactly how Dragonetti would have approached the technique but because of the registers used in the waltzes (going beyond the octave of the open G string), he must have employed a technique to play the passages located in the upper registers of the instrument. Further, from the description of his technique provided in the section by Caffi it is clear that Dragonetti did employ the use of the thumb to depress the string.

The third technique described in regards to the left hand is that of the pivot. The pivot extends the intervals available in a single handshape without causing excess strain on the muscles. The passages described in the section required a handshape that exceeded the standard handshape of a tone. What can be gleaned from the examples is not whether Dragonetti might have used a pivot but that the passages would have required a solution such as the pivot or a left hand that was large enough to easily make the extensions without injury. The techniques described above in the discussion of thumb position, where a solution might be required for the awkward angles in which the bass must be positioned to execute the passage, suggested that Dragonetti may have been an extremely tall man or at least had long arms to execute the passages. In combination with the previous information regarding passages where a pivot or

extension might be required, it can be deduced that Dragonetti might have possessed long arms and large hands, which might explain some of the feats posed by the waltzes.

The use of double-stops throughout the waltzes would also reinforce the notion that Dragonetti might have had large hands. As a double-stop requires one to hold two notes down at once, it would also mean that one would have to have hands large and strong enough to be able to execute a double-stop. Because the double bass has such a large string length, many of the double-stops asked would require the left hand to hold down two notes as much as a few inches apart in the lowest register.

The transition between thumb position and low positions requires the movement of the thumb on top of the fingerboard and the neck of the bass to come to rest on the shoulder or the collar bone of the player so that the instrument does not fall due to the absence of the thumb behind the neck. The passages I discuss in the thesis demonstrate that Dragonetti would have had to take the transition into consideration when performing. The frequency of the leaps in and out of thumb position found throughout the waltzes would suggest that he was able to make the transition well, suggesting both a good balance of the instrument and a degree of athleticism.

I describe a variety of ways by which one might perform a perfect fourth across two strings. The solutions all use non-standard handshapes to achieve the effect. The examples of passages that I provided suggest that Dragonetti must have had a solution to the technical feats. Although it is impossible to state that he would have used the exact fingerings I describe, because he played other instruments (including guitar, violin, viola etc.), it is not a leap to suggest that he would have used different types of non-standard handshapes learnt from playing other instruments.

In summary, many of the techniques described here point to some potential facts about Dragonetti. From the analysis, we can deduce that that he might have been to some degree a tall man, with strong and large enough hands to effectively grapple with the music he composed for himself. Also, due to the quick tempo markings assigned to each waltz, he must have possessed a level of athleticism that allowed him to play the passages that traversed the large distances and leaps he composed for himself throughout the waltzes.

2.2 Challenges of the right hand

Bow speed and placement rules

Each note on the double bass has a specific sounding point for the plane of the bow in terms of its physical location between the bridge and the fingerboard of the instrument. The bowing plane changes according to the dynamic and desired tone quality of the note in question and also its relationship to the speed of the bow used for the note and the weight being generated into the string by the bow arm. The bow placement is often adjusted during passages to maintain the same string resistance for the right hand so that the sound of the passage is maintained while either ascending or descending. During a slurred passage, adjusting the bow placement becomes more challenging as moving the bow vertically from one sounding point to another might result in either loss of contact with the string (interrupting the slur) or an unwanted scraping sound. If changing the bow placement during a slur can result in unwanted sound, then bow speed and weight are the factors that must be taken into consideration. Gary Karr, the famous pedagogue and soloist, demonstrates in his method book that bow speed is the most important portion of the equation when dealing with large shifts.[15]

In the second half of the fifth waltz (depicted below), the opening of the phrase begins with a melodic gesture in the lowest register of the bass. The low register of the double bass is usually reserved for bass lines to create the foundation in an ensemble. The difficulty with passages in the lower register is creating enough clarity for the individual pitches to be heard. In ensemble playing, the clarity of the notes is less important because the notes are providing colour and rhythm as much as they are providing harmonic stability. To achieve clarity in this register would require sensitivity in the bow arm and a knowledge of how the sound of the double bass will carry in a performance space and project over other instruments.

In the case of the unaccompanied waltzes, projecting over other instruments is not a concern. Instead the concern would be for the clarity of articulation and sensitivity of the bow arm to execute the melodic material effectively. Dragonetti's writing for the bass demonstrates how in the right circumstance (in this case unaccompanied settings) the double bass's low register can be used effectively for melodic writing.

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[15] Gary Karr, *The Gary Karr Double Bass Book 1 with Music by Alice Spatz* (Oakdale: Amati Productions, 1996), 59.

Following the melodic material in the low register, Dragonetti writes an arpeggio (mm. 27 to 28, depicted below) slurred over two measures that ranges an octave and a fifth. The challenge for this arpeggio is not one for the left hand although it does need to travel a large distance. The difficulty lies in the slurring of the notes for the duration of two measures and the rising tessitura. The rule of ideal bow placement, speed, and weight for each note applies to this passage and gives the equation for deciphering the way to execute the passage. The top note of the arpeggio is an F located on the G string just before the octave harmonic. Because the F is the highest pitch, it will require the most weight and bow speed. Therefore, each note leading up to the high F will require incrementally more weight, more bow speed and ultimately a slightly higher bow placement between the bridge and the end of the fingerboard.

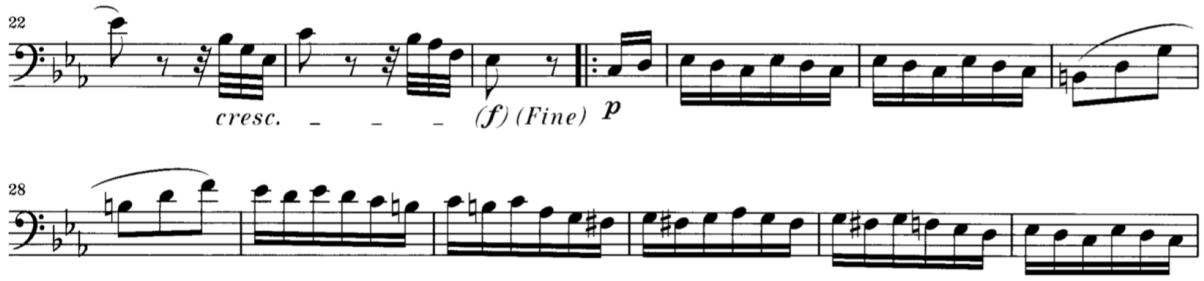

Figure 17- Waltz 5, Second Half

To execute this passage, the bow must be put in an ideal place between the bridge and fingerboard so that it can execute the lowest note of the arpeggio (B natural on the A string) and the highest note of the passage (F natural on the G string). From there the bow speed must be calibrated in such a way that would allow the bow to play each note under the slur without choking any note. The bow will begin in a position favouring a higher bow placement (to prepare for the high F natural) and each note will use more bow speed, with the most bow speed and weight of the arm being used on the final F.

The final difficulty in this arpeggio is its length. The arpeggio spans two measures and is contained in one slur. The problem with the length of the slur is avoiding running out of bow. It is especially pertinent to take this into consideration for this passage because the slur connects notes from the bottom of the instrument to an octave and a half above. If the only factor of bowing that can be manipulated in this passage is bow speed and more bow speed requires more bow space, then there is a great risk of running out of bow in this passage. Therefore, if too much bow is used on any of the notes, there will not be enough bow for the final note of the arpeggio

and the effect of the two-measure slur will be entirely ruined. Judicious planning such as determining the amount of bow used per note in the slur and a sensitive bow arm that feels if the string is speaking are thus necessary for executing this two-measure arpeggio passage.

Bow Curves

In 1934, Percival Hodgson published a book entitled *Motion Study and Violin Bowing*.[16] The book is often cited for its concept of bowing curves, which are determined by the shape the bow makes in relation to the bridge. If the bow travels down bow, slurring from G string to D string, the bow is traveling with the curvature of the bridge and this type of bowing is called a forward curve. The shape the arm moves would draw an "n," which is the same shape as the bridge in relation to the top of the instrument. A reverse curve happens when the bow draws a "u" shape, the opposite of the bridge shape.

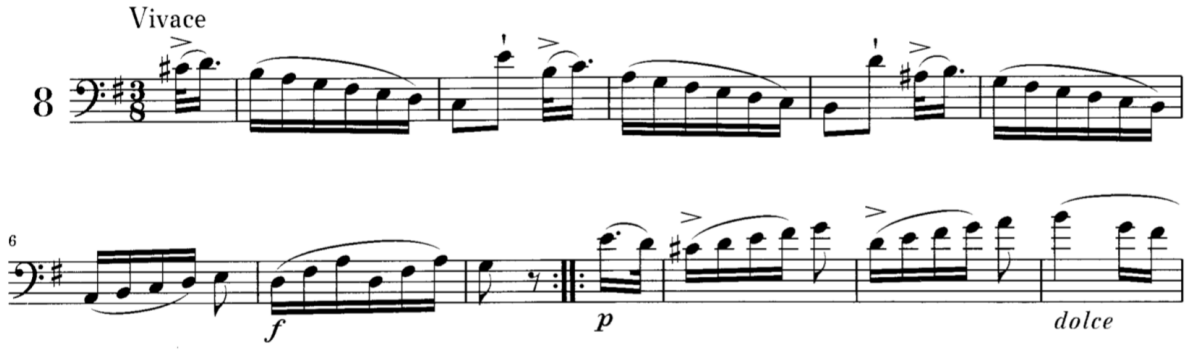

Figure 18- Waltz 8, First Phrase

Generally, in string playing, an upbow is weaker than a downbow and as such upbows are typically used on upbeats. The pickup measure for the eighth waltz is marked with an accent, the following measure is fully slurred and this two-measure pattern is repeated over the full phrase. Because there is an accent on the pickup measure, a downbow could be used to achieve the articulation. Using a downbow on the pickup would allow the slurred passage to be played upbow and would drive it to the downbeat of the subsequent measure. The problem with this bowing is that the slurred passage, which travels across three strings, would be taken on a reverse curve. The opposite bowing could also be used so that the slur would be taken with a forward curve of the bow. The difficulty with this bowing is that the accent in the pickup measure would

[16] Percival Hodgson, *Motion Study and Violin Bowing* (London: The Strad, 1934; reprinted by American String Teachers' Association Urbana, IL, 1958).

need to be on an upbow. Both bowings have weaknesses and strengths and so one is not better than the other. My preference would be to begin upbow to avoid slurring on a reverse curve and the upbow on the pickup would be more familiar as string players often begin pickup measures with an upbow as mentioned earlier. Further, despite the difficulty it is still possible to execute an accent at the tip on upbow.

One of the defining features of the tenth waltz is the contrast between long slurs and short separate notes or shorter slurred groupings. The first four measures are completely slurred, a marking that poses a technical challenge as the bow needs to be saved over four measures. The main challenge for this passage is located in the last two notes of the slur, G and C. If the G is played open, the C (a fifth below) will not be slurred because of the string skip. The solution to connect the bowing is to play the G as a stopped note on the D string so that the bow can connect the slur to the C on the A string.

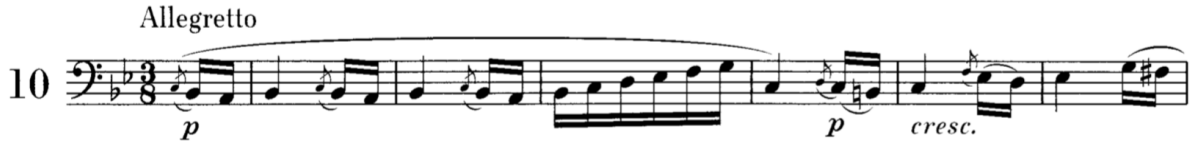

Figure 19- Waltz 10, First Phrase

The bridge curvature rules come in to play for connecting the G to the C. Because the slur is so long and encompasses multiple measures, the decision to begin downbow or upbow is not decided based on the hierarchy of beats. The bowing choice comes from looking at the path the bow will travel and which bowing will facilitate the string crossings. In this case, the slur will need to be taken on a downbow so that the G (on the D string) can be slurred into the C (on the A string) in the final two notes of the slur.

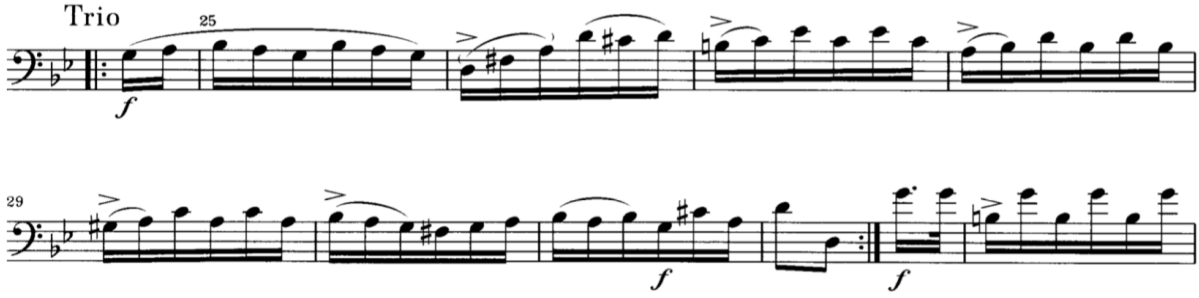

Figure 20- Waltz 10, Trio

The awkward bowing beginning on the third measure in the trio of the tenth waltz provides the most significant challenge of the waltz, to which no solution presents itself. The first two sixteenth notes are slurred while the remaining sixteenth notes are separated. For the separated notes, the left hand will use the double-stop handshape across the D and G string so that the bow will be moving back and forth between both strings. This pattern repeats throughout the sequence. Because of the slur at the beginning of each measure, every time the separate pattern is played, it will begin on a different bow direction, the first time upbow, the second time downbow, etc. Due to curvature of the bridge, one bow direction will not be easier than the other and so the challenge will be not to allow the difficulty to affect the phrase. The result is that when bowing the reverse curve, the bow will need to move faster to make the string crossing in time.

Uneven bowing

Bow distribution is an extremely important component in string playing. The speed and amount of bow that is used on any given note is fundamental in creating a phrase as the more bow used on a single note the louder the note. Planning out the amount of bow usage on each note is essential for crafting the high points and low points of the phrase and how it affects the musical flow of the whole piece. Therefore, uneven bowing, where one note is longer than the other, must be taken into consideration so that the phrase can be executed. Dragonetti writes many phrases with uneven bowings that require virtuosic solutions.

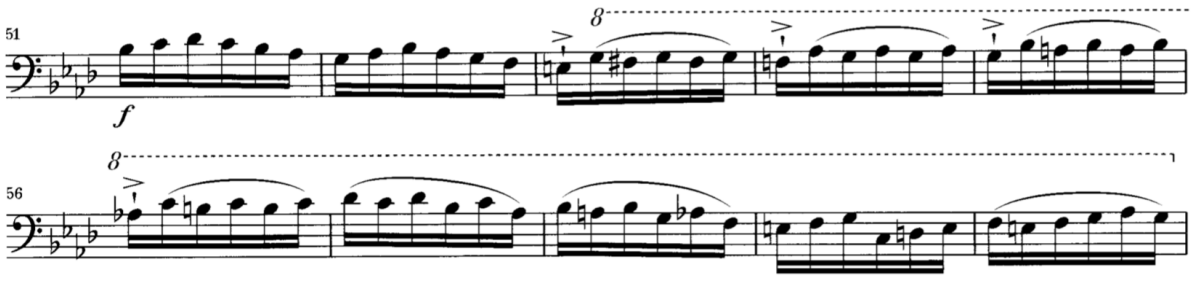

Figure 21- Waltz 4, Last Phrase

In the last phrase of the second half of the fourth waltz (beginning on m. 53), the bowing separates an accented downbeat sixteenth note from the five slurred sixteenth notes that follow. The main challenge this bowing presents is one of proportions with regards to the bow. The first sixteenth note will require the bow to travel a much shorter distance than the bow will travel for the remaining five sixteenth notes. The uneven bowing over the course of the repeated passage

will result in the bow running out of space to execute the passage. The solution to the challenge of the disproportionate bowing is to change the proportions by picking the bow up between the downbeat sixteenth note and the slur over the remaining five sixteenth notes. Picking up the bow during a fast passage is very difficult as the bow will naturally want to bounce out of the string because of the resistance of the hair. This bowing style would be quite a virtuosic and theatrical use of the bow, as the bow would be making large circular movements as it is carried and reset at the frog for the beginning of each measure.

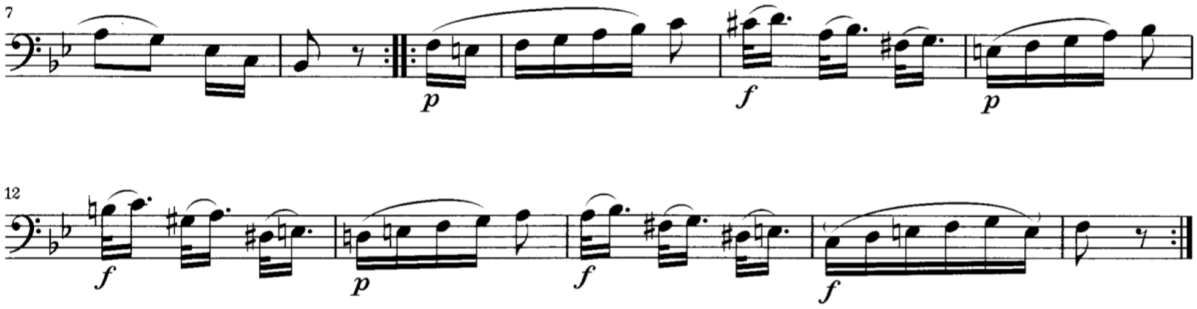

Figure 22- Waltz 10, Second Phrase

The second phrase of the tenth waltz contains a two-measure sequence that is repeated three times and presents an interesting technical challenge. The first measure (m. 8, depicted above) of the sequence features slurred ascending conjunct motion. The second measure is in *forte* and contains groups of slurred thirty-second notes to dotted eighth notes. The challenge in the sequence is to create the dynamic contrast from the first measure to the second. In view of the three rules of dynamics (bow weight, speed, placement), the variables must be changed to create the dynamic contrast. The first measure is slurred from the pickup to the first two-thirds of the measure and separated on the last third of the measure. If the slur is done downbow, then the upbow will begin near the tip due to disproportionate bowing lengths. For this passage, the disproportionate lengths of bow usage work positively towards the execution of the passage. As the second measure will now begin near the tip, the player must use a lot of bow on each pair of notes to work its way back to the frog. Using a lot of bow speed will naturally create a *forte* and a contrast to the first measure of the sequence.

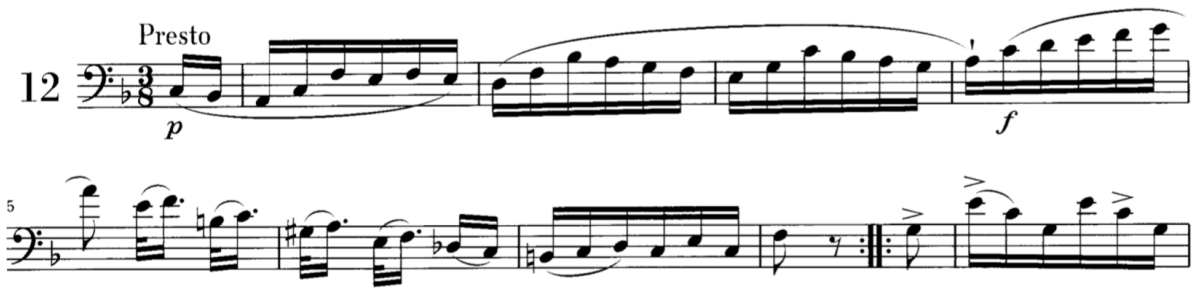

Figure 23- Waltz 12, First Phrase

The first phrase of the twelfth waltz has a number of technical challenges. The first measure and its pick-up are completely slurred in *piano*. The first challenge is determining which bow direction to begin the slur. Because the passage ascends from the A string to the D string and due to the curvature of the bridge rules, the best direction is to take the slur on the upbow. Using an upbow will connect the slur easily from the A to the D string. The added challenge is navigating the two different string thicknesses across the slur during the *piano*.

The thicker the string, the slower the bow speed needed and therefore the notes on the A string will use less bow than the notes on the D string. The challenge will be to achieve the consistency of tone without creating a crescendo as the bow moves faster on the D string. The slur is in *piano* and will need a slow bow to execute the dynamic. The bow will require care so as not to choke the sound but also travel fast enough to set up the next slur. To avoid a crescendo, the bow will have to move instantly faster on the higher string rather than gradually getting faster throughout the slur. The increase of velocity in the bow is what creates the crescendo; therefore, the bow must move instantly faster (at the speed needed for the higher string) when moved to the higher string.

The second slur, occurring across measures two and three, is much longer than the first and will require more bow. If nothing is done to adjust the bow distribution for the passage, the bow will run out of space to travel because of the two different proportions of bow usage. There are two additional challenges the slur presents. As the passage travels from D to the G string and back to the D string, the bow curvatures will need to be considered. Finally, a perfect fourth in m. 2 between F and B-flat will require a fingering that does not interrupt the slur.

A fingering solution for the passage might solve many of the problems presented in mm. 2 and 3. The first step is avoiding the “reverse curve” that would happen if the passage was fingered from the D to the G string. The second step is to consider the perfect fourth in m. 2.

Previous solutions to perfect fourths under a slur have been to use a bar fingering or fork fingering so as to depress both notes of the fourth. For the second measure, shifting up the D string during the slur to achieve the fourth could solve many of the problems. Shifting during the slur will create a fingering entirely on the D string and will avoid the reverse curve from fingering on the D and G string. Although the shift for the perfect fourth under the slur runs the risk of disrupting the slur, it positively affects the bow. Gary Karr's rule of shifting dictates that the bow should travel the speed of the lower note when shifting during a slur on the same string.[17] The bow speed will then be slower if fingered on the D string as it will not have to travel the speed used for the upper notes that might have laid on the G string.

Playing the second measure entirely on the D string creates a problem for shifting during the slur but eliminates the bow curvature problem presented if the passage is played on the G string, and it solves the uneven bow distribution from the first measure slur. The third measure, which is still under the same slur as the second measure, has the notes E, G, C followed by descending conjunct motion. Shifting during the slur in the same manner as the second measure might provide the solution to the problems of the measure; however, because of the note G, two ascending shifts would be required and so might run the risk of disrupting the slur. Instead, I suggest fingering the third measure between the D and G string and using the reverse curve as an advantage for the bow distribution.

The bow's approach to the string can often be thought of as similar to a plectrum on a plucked instrument. The plectrum plucks the string from two different sides of the string and the bow approaches the string in the same manner. If travelling downbow on the G string, the bow approaches the string from the left side and if travelling upbow, the bow approaches the string from the right side. The idea is that the bow "plucks" the string from the side to begin the oscillation of the string. For measure three of this passage, if the bow travels from the D to G string, it will need to rotate from the downbow side of the D string to the downbow side of the G string. The gap between both notes will become larger due to the bow curvature. The advantage of the string crossing is it helps slow the bow down so that the bow will not run out of space due to the large slur.

The following measure begins with a sixteenth note that is attached to the slur carried over from the previous two measures. The sixteenth note downbeat is also marked with a caret

[17] Karr, *The Gary Karr Double Bass Book*, 59.

accent that will require the bow to rearticulate the note at the end of the slur, a challenge Dragonetti has presented in other waltzes. The remaining notes of the measure are all contained in a new slur that carries through to the downbeat of the next measure. The new slur is in a *forte* dynamic and will require a drastically faster bow speed than the previous slur, which was longer and in *piano*. The left hand will ascend in conjunct motion throughout the slur and land in thumb position.

A note about certain psychological elements that happen when playing a string instrument follows. The first is the sense of tension and release. After playing long slurs, a quick slur can offer relief and this sense of relief can be used to push the bow fast through the slur. Further, movements on string instruments are more easily executed when both hands move towards each other. In the passage mentioned above, the left hand must ascend (move towards the bridge) through a short *forte* slur to thumb position. After the two previous slow slurs, the short slur will feel easier. The slur will be taken on an upbow with the result that the right hand will be moving from the right side of the body to the left side of the body. The left hand will ascend the fingerboard and will be moving downwards towards the bow hand. The energy of the release from the long slurs to the fast slur, coupled with both hands moving towards each other, can make the passage psychologically easier.

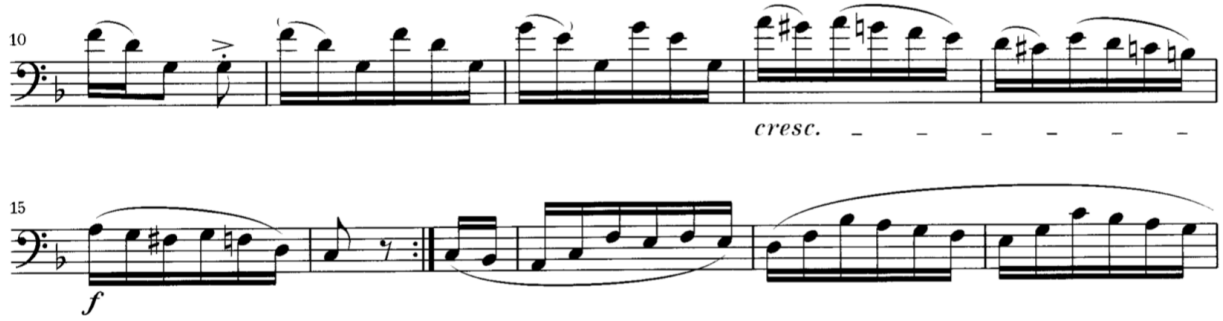

Figure 24- Waltz 12, Second Phrase

The last three measures of the second phrase of the twelfth waltz (depicted above, starting on m. 13) contain slurred descending sixteenth notes in conjunct motion with a crescendo. The slurs for each measure connect the first third of the measure and the second slur connects the second two-thirds of the measure, creating an uneven bowing problem. The solution for the bowing distribution is in the crescendo. Creating a crescendo will require more bow speed to be played on each subsequent slur with the fastest bow speed occurring on the final slur. Instead of devising the bow speed based on the length of the slur, the bow speed will be

found by finding the final bow speed of the last slur. Each slur previous to the final slur will use progressively less bow and as such avoid the problem of the uneven slur lengths.

Advanced Articulations and Polyphonic Textures

Articulation is a major component of a piece of music. A hard or soft attack can drive the way in which a phrase can be perceived by the listener. Dragonetti is very detailed in his notation of articulation through the waltzes. It is rare for any of the passages or phrases not to contain articulation marking. The detailed markings make it clear that Dragonetti was not simply capable of playing extraordinarily fast passages on the double bass but that he also had the ability to control many aspects of his sound. The articulations in the waltzes are therefore some of the most difficult aspects of executing them.

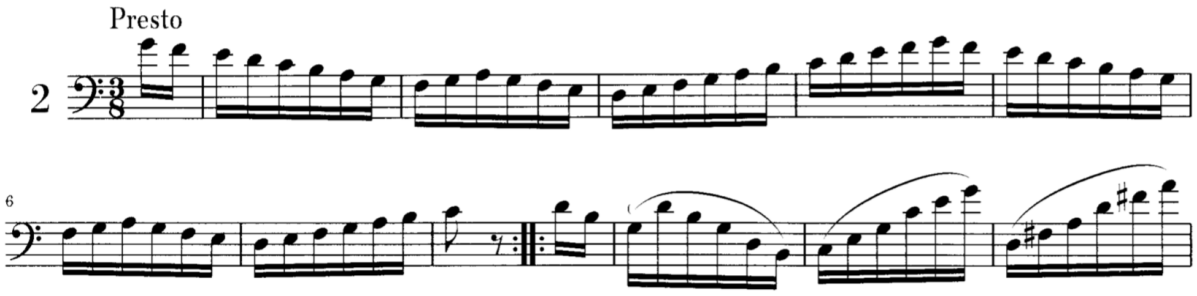

Figure 25- Waltz 2, Second Phrase

The first phrase of the second waltz is one of the few passages for which Dragonetti does not provide detailed articulation marking. The phrase features conjunct motion that weaves up and down for eight measures, and is détaché throughout. Although it may look like a simple passage, due to the lack of articulation markings, it poses a few interesting musical challenges to the performer. The first challenge is the speed of the passage, which requires extreme clarity and coordination from both the bow hand and left hand. The left hand and right hand must arrive at the same time for each note, a challenge at such a high speed. The second problem this passage poses is the difficulty in phrasing. The phrase consists of sixteenth notes all in conjunct motion beginning on the upbeat to the first measure and there is nothing rhythmically or even melodically that suggests this passage is in a triple metre. Therefore, the challenge for this passage is deciding which beats to emphasize to delineate the metre. One solution would be emphasizing the first and third beat either with heavier articulation or more pronounced dynamics.

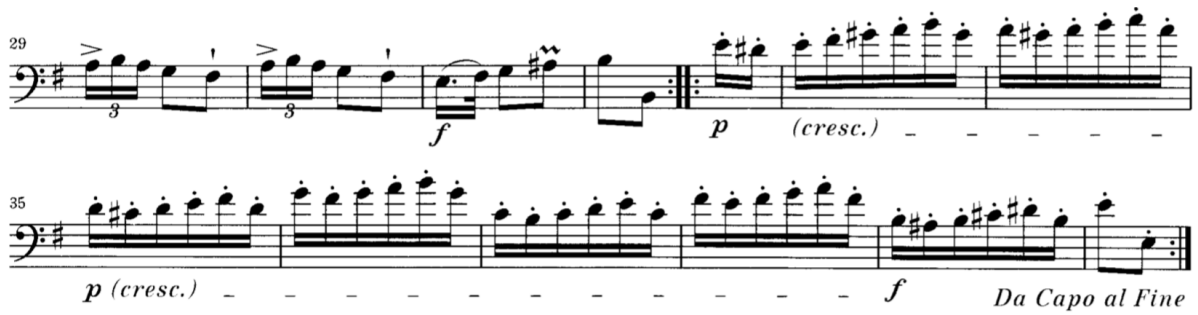

Figure 26- Waltz 1, Last Phrase

The last phrase of the first waltz contains some challenging material. The whole section is a sixteenth note conjunct motion passage in E minor. One of the major challenges is that, while each note is marked *staccato*, the entire passage crescendos from *piano* to *forte*, a requirement that poses difficulty. To increase the volume on a string instrument, one needs to use more bow speed, more weight in the string and bow placement closer to the bridge. Because the passage is marked *staccato*, it would take impressive bow control to make the crescendo without letting it affect the shortness of the bow stroke. The solution is to increase the volume by making each note more percussive through vertical height of the stroke rather than increased bow usage. Further, the bow must move to a more resistant sounding point (closer to the bridge) so that the energy used in the stroke will cause the string to oscillate more (meaning more volume) without having to use more bow resulting in a disruption of the *staccato* marking.

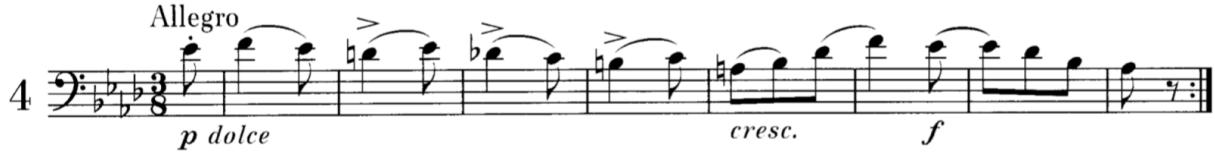

Figure 27- Waltz 4, First Phrase

The first challenge of the fourth waltz is one that requires a sensitive bowing style. The phrase has a lyrical passage marked *dolce*; it begins in *piano* and crescendos to *forte* at the cadence. The problem presented by this passage occurs on each down beat, which is marked with an accent and is slurred into the next beat. The main challenge of this bowing lies in the slur and its relationship to the accent. An accent on the bass is made by catching the string with the hair of the bow in such a way that the hair loses contact with the string, creating a consonant such as a P or K like attack at the beginning of the note. The degree of speed and the amount of weight in the string determines the strength of the accent and how much the hair of the bow will

lose contact with the string. The accented note in this passage is slurred to the following beat. Therefore, it requires a gentle enough accent so that the bow is able to maintain relatively close contact to the string in order to maintain the slur.

This phrase begins with a pickup note followed by a series of fully slurred measures. The first accent is marked on the downbeat of the second measure. As the pickup would be taken on an upbow the first measure would be played with a downbow and the second measure would follow with an upbow. Therefore, the accented note would be taken as an upbow. A downbow at the frog is the easiest place to begin a note as the player's hand sits above the string, and thus generates the most direct arm weight into the string to create the "pop" in the accent. If the downbow at the frog is the easiest place to execute an accent then an upbow accent at the tip is the hardest. The reason for the difficulty lies in the fact that the tip of the bow is far away from the body and right hand. To perform this passage would require the ability to execute accents evenly at both the tip and the frog of the bow. Such control of the bow would point to Dragonetti's expert and virtuosic use of the bow.

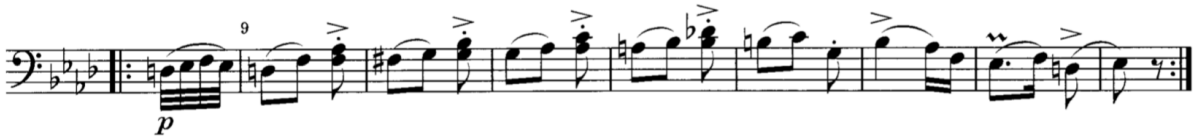

Figure 28- Waltz 4, Second Phrase

In the fourth waltz, the double-stops pose a challenge for the bow because of the different thickness of the strings. Because of the rule that an optimal speaking point for a note requires a certain speed, weight, and placement of the bow, then during a double-stop, the bow needs to accommodate these factors for two notes rather than one. Bowing a double-stop often results in a bow speed, weight and placement that is compromised for both notes. Dragonetti added the challenge of executing each double-stop with a dotted accent. Therefore, not only does each double-stop need special attention to speak properly but there is an added challenge of generating enough energy on each double-stop to create an accent on them. The simplest way to deal with the double-stop bowing speed is to find the speed required for the upper note of the double-stop and favour that speed throughout the passage. The lower note will be less pronounced in each case but will still speak. If the lower note speed is used, the upper note will not have enough speed.

Dragonetti was a theatrical person who brought this theatricality to his music. His seventh waltz is the most theatrical of the set. The theatricality comes not only from the sheer virtuosity required to play the piece but also the large dynamic and articulation contrasts used throughout it. The pickup to the opening measure of the seventh waltz is a triplet figure marked *forte* leading to the first measure, marked *piano* with *staccato*. The figure has a theatrical effect as the drop in dynamic and change in articulation are abrupt. The abruptness of the figure makes it quite difficult to execute. The *forte* in the pickup measure requires a fast bow speed and weight into the string. The first measure requires a slower bow speed and pinch of the string to execute the *staccato* marking.

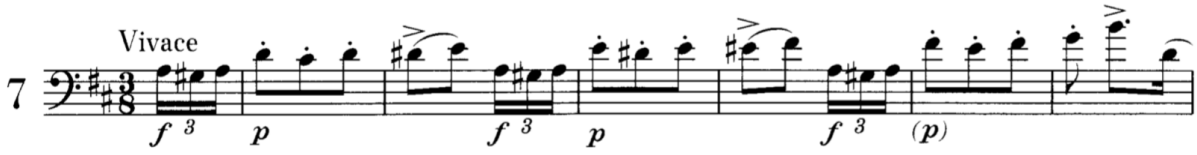

Figure 29- Waltz 7, First Phrase

Staccato on the double bass requires a strong attack of the note and a release to create the shortness of the articulation. The release can be achieved either by literally taking the bow off the string or by letting the hair of the bow ride on the surface of the string to stop the oscillation and mute the remainder of the note. The initial attack of the *staccato* is achieved by "catching" the string with the bow and pulling at an angle that releases not unlike a pizzicato. A *staccato* differs from an accent only in the energy in the release of the catch but not in the approach to the string.

There is a challenge switching from *forte* to an eighth note marked *piano* and *staccato*. The energy of the preceding triplet marked *forte* propels the bow into the next measure. The energy from the *forte* note needs to be stopped and reset to engage the *staccato* eighth note. Energy (bow speed) must then be reapplied to catch the string to articulate the *staccato*. It is difficult to stop the potential energy of the *forte* as it creates momentum that wants to arrive on the next measure. The passage would be easier to execute if the whole section were marked *forte* but because of the *piano* marking, the stopping of the momentum of the *forte* and reengaging to articulate the eighth note runs the risk of choking the note. There is no direct solution for the problem; instead a sensitive and skillful bow arm is required that can land softly and articulate the eighth note in *piano*.

The passage is made even more difficult because the pattern of *forte* followed by eighth notes marked *piano* and *staccato* is repeated with a rising tessitura of the *piano* section. The solution for the rising tessitura requires the bow to be stopped before each *piano* as was indicated in the previous paragraph. However, with the rising tessitura, the bow must then be moved closer to the bridge for each subsequent *piano* passage to facilitate the rising tessitura. Bow speed in this circumstance cannot help with the rising tessitura as it will create an accent rather than a *staccato* and will create a crescendo that is not marked in the passage.

The second half of the eighth waltz uses tonal, articulation and dynamic contrasts to create the appearance of multiple voices as a method of achieving polyphonic textures on the double bass, in this case with the use of compound melody. Dragonetti marks precise articulations that create contrast but are difficult to execute. The first instance of two voices is created by the articulation, dynamic and register of the passage. Dragonetti writes a slurred passage in first position marked *piano,* which is answered by a passage an octave above in *forte* with caret accents.

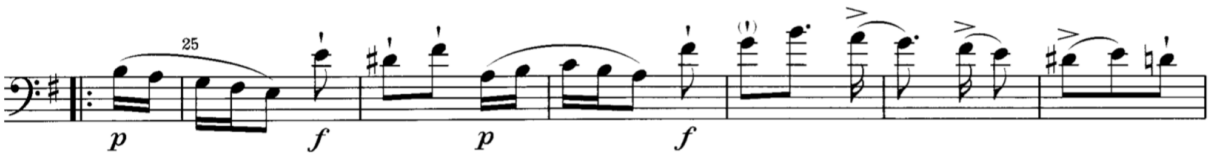

Figure 30- Waltz 8, First Phrase of Second Section

The change in articulation, register and dynamic creates the illusion of a second voice and as such it requires careful handling so that the effect is not lost. The slurred portion is marked *piano* but to make it contrasting to the *forte* section, it requires the *piano* characteristic to be exaggerated. To create contrast, the bow can be placed closer to the fingerboard on a less resistant part of the string. With less resistance near the fingerboard, the bow can travel faster without increasing the volume. The quick speed of the bow in a quiet dynamic would also give the figure a *dolce*-like quality.

Now that a way of exaggerating the quiet dynamic has been explored, an approach will be needed to exaggerate the *forte* section so as to create enough contrast that a polyphonic texture is heard. The eighth notes in the *forte* passage are marked with a caret accent. This type of articulation can be considered as a mix between an accent and a *staccato*. The effect is achieved like other accented notes by pinching the string and releasing it. The caret accent is

much shorter in duration than a regular accent but is more accented than a *staccato* marking. Therefore, sufficient energy must be put into the attack of the note but the release must be controlled in such way that it is shortened so as to differentiate it from a regular accent.

There is an inherent problem with articulations like a caret accent on the double bass. The double bass is a sonically dark instrument due to its register, tuning, and large complex overtone palette. The register of the instrument coincides with the lower register of human hearing and as such, clarity is needed to insure notes are heard. The warm and dark characteristics often attributed positively to the double bass can work against it for its clarity.

The problem with the caret accent is that its shortness runs the risk of exposing the lack of clarity on the double bass. Therefore, it is imperative that extra care be used in the passage to use the correct amount of bow. The amount of bow needed is enough for the pitch to be heard but not so much bow that the caret accent sounds like a regular accent. The situation is further made complicated as the caret accent occurs on the pickup note and the downbeat note of the next measure. More bow will be needed on the downbeat caret accent than the pickup note so as to maintain the hierarchy of beats. The resulting challenge is that within the small articulation palette in which the caret accent exists (between *staccato* and accent), a range must be used to create contrast between the pickup and downbeat note.

The final challenge occurs in the last phrase of the waltz. It has two main aspects: the first is creating contrast in the line to simulate the polyphonic texture; the second is to manage the uneven bowing proportions. These problems are made more complicated in this phrase as the challenges occur within the context of single measures rather than over two measures. Thus, the problems are magnified and much more challenging to execute.

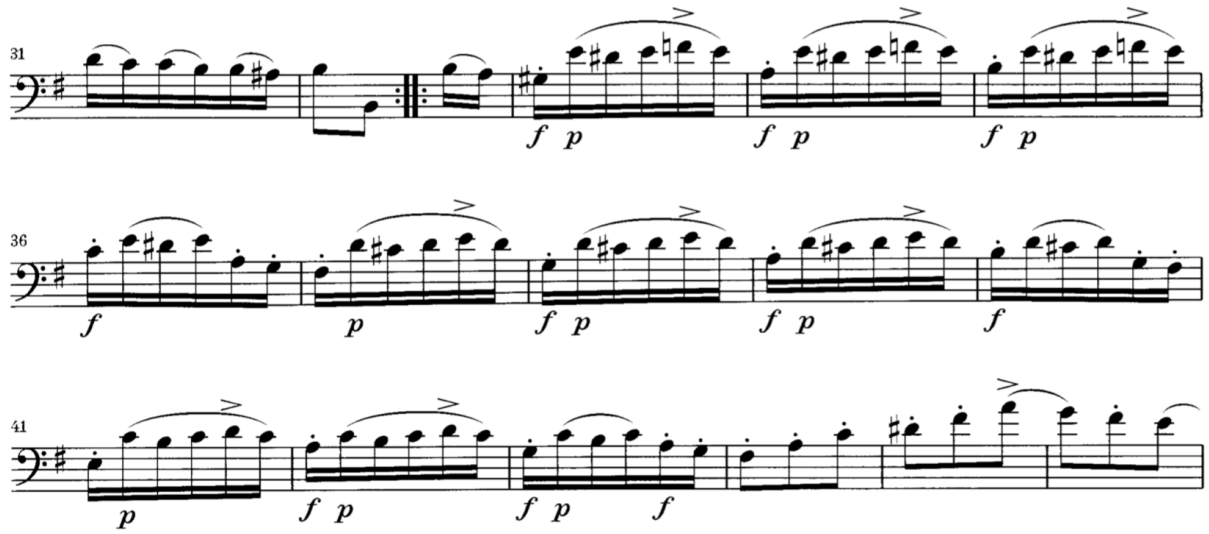

Figure 31- Waltz 8, Last Phrase

The downbeat of each measure (the first sixteenth note) in this section functions as the bass voice, while the upper voice fills the rest of measure. The distinction of voice is generated in the same way as the previous section: the bass line is marked *forte* and *staccato* while the second voice is presented at a higher pitch, slurred and *piano*. The bow will need to be picked up quickly and placed at the tip after the downbeat note to facilitate the length of the slur.

The final difficulty appears during the slur in this passage. In the middle of the slur**,** Dragonetti marks an accent over one of the notes. This accent is peculiar because it is unclear whether he is suggesting that the accent should occur during the slur or if the accent indicates that a bow change should occur at this place. Dragonetti is very clear with his markings throughout the waltzes and is specific with each articulation. In view of his clarity, an assumption can be made that the marking is supposed to be taken literally.

To execute an accent during a slur, an understanding of the springing mechanism that allows the bow to work is required. The string of the instrument is under tension and the tension works as a spring that the bow engages to produce sound. The bow contains two additional springs that work together to initiate the string. Force is driven through the wood of the bow, which is flexible but under tension; that force travels into the bow hair, which is also under tension. The bow hair takes the energy from the initial force and generates that force into the string, which when released creates sound. The pinch of an accent happens when the force generated through the string causes the string, which is under tension, to fire the bow back out of the string and create an articulate sound. By means of this formula, the amount of energy that is

put into this springing system will determine how much the string will bounce the bow out of the string.

To articulate an accent during a slur without disrupting the slur requires the bow arm to manage the springing system of the bow and the string. It is possible for an accent to be generated that brings the bow out of the string but still has the hair of the bow remaining in light contact with the string. To perform this passage, during the slur, the bow angle will need to be changed so that the springing system of the bow can catch and rearticulate the string. The energy of the stroke will need to be controlled in such a way that the accent of the bow will carry the hair to the surface of the string. The bow will then be able to continue to be drawn so that no audible gap will be heard and the slur will not be disrupted.

Polyphonic Textures

Polyphonic writing in string compositions is a major component of much of the unaccompanied string repertoire, the most famous examples being J.S. Bach's Cello Suites and violin Sonatas and Partitas. It is particularly challenging to create polyphony on a solo double bass due to its size and the fourths tuning that Dragonetti used. A standard way to create polyphony on other string instruments is by using moving double-stopped chords. The double bass is limited in the available double-stops as the handshape spans only a tone. Dragonetti achieves polyphony on the double bass through a number of innovative techniques not limited to articulations, dynamics, register, and special types of double-stops.

One method of achieving polyphony on the bass is the repeated use of an open string as a pedal. The first example of this technique occurs in the last section of the second waltz. The section includes a descending passage (beginning on measure 33) in which a G sounds between each descending note. The most efficient way to execute this passage is to play it all on the G string, where the interjection of the G would be attained by lifting the hand and playing the open G string. Because of the speed of the waltz, this technique would result in a drone-like effect throughout the passage. The section is punctuated with a double-stop G and B that works to reinforce the G pedal and overall sonority of the passage.

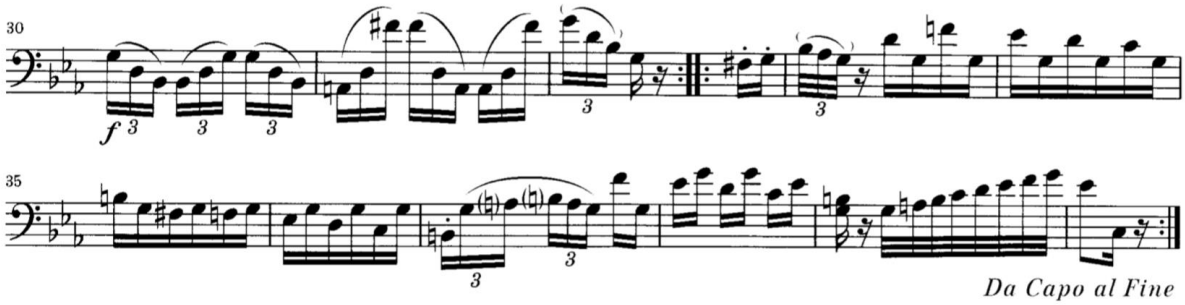

Figure 32- Waltz 2, Last Phrase

Before continuing with the analysis, a comment about the thickness of the strings and how that affects fingering choices should be made as it is a relevant consideration for the previous section of the waltz and especially the upcoming sections. The traditional fingering approach for playing an ascending passage on the double bass is to use the lower strings only in first position and ascend on the top G string. The reason for this fingering approach is the thickness of the strings. Gut strings, as opposed to steel strings, have a much greater degree of variation in thickness. The lower the pitch, the thicker the string. The result is that playing in higher positions on a very thick string, in this case the bottom two strings of the instrument, becomes quite difficult because the thicker strings require more room to oscillate fully to produce a clear tone. As such, as one ascends the string, it will have less space to oscillate and thus it is difficult to achieve a full tone.

If we take the rule that the thinner the string, the easier it is to play higher pitches, then the D string will be easier than the lower A string to play pitches at a higher register. In the first half of the sixth waltz, Dragonetti employs the D string in higher registers frequently, for instance when a double-stop is being used. It is also possible that in other waltzes, Dragonetti may not have had to use the D string at all and instead shifted for each note, for instance in the triad passage mentioned in the first phrase of the sixth waltz (described in the double-stop section). However, in the second section of the same waltz, there is no question that Dragonetti is employing the D string in a higher register not only for passage work but as the main melodic line as will be demonstrated below.

The first phrase of the second half of the sixth waltz uses a unique notation to delineate visible polyphonic writing for the double bass. Two stem directions are notated, one pointing down with a dotted half note indicating a low A to sound continuously throughout the measure.

The second beam is pointing upwards, indicating the moving melodic line that has its own articulations including slurs and accents removed from the lower pitch.

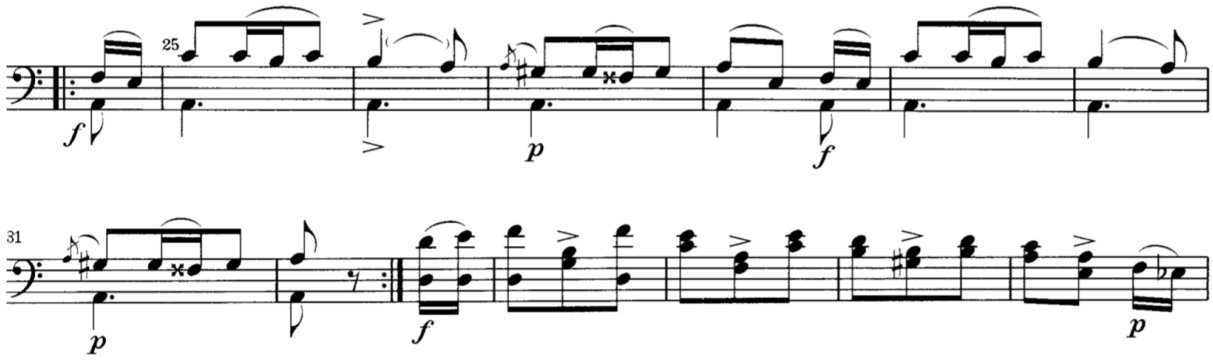

Figure 33- Waltz 6, First Phrase of Second Half

The low A pedal poses a potential fingering difficulty as the left hand requires a fingering that would not disrupt the low A that is marked as sustaining throughout the whole measure. The only possible solution for this dilemma is to play the open low A string while playing the melody on the next adjacent string, the D string. This fingering allows for the low A to go undisturbed despite the moving melodic line.

There are a number of difficulties that go along with this unavoidable fingering. The first difficulty is the one mentioned earlier, where the thicker the string the harder it is to play in higher tessituras without losing clarity of tone. The second fingering problem is that because the D string is the only string being used with moving notes, the left hand is required to move large distances quickly while maintaining the line. For instance, the pickup to the first measure is played in first position (notes F and E) and then must shift to the transition zone before thumb position to depress a minor sixth above.

The right hand has the most difficulties in this passage. The bow must travel in such a way that the A string is heard throughout but because the whole passage is a double-stop, it must also travel at such a speed that the upper notes can speak. Because of the rules of the bow, the upper string will require more bow speed, while the lower string will require less. Therefore, the bow will have to compromise drastically as the low A will require the least amount of bow speed of any note on the instrument, while the D string will require substantially more bow speed as many of the notes lie in a higher position. Further, due to all the shifting the left hand must make because it is playing solely on the D string, each note will require a major adjustment in bow speed. To make the passage even more difficult, the rule of string thickness must be

remembered. The D string in its higher registers already has problems speaking due to the tessitura so that each of the problems of bow speed mentioned above must be handled with even more care so as not to not choke the notes played on the D string.

As if this passage were not already difficult enough, Dragonetti adds the additional challenge of executing dynamics. To play softly on the double bass, one must use less bow speed, less weight and change the placement of the bow. To play loud, the reverse rules apply. The first two measures of this double-stopped passage are marked *forte*, which does not pose a problem. *Forte* is the easier dynamic to execute for this passage because the upper register of the D string problems can be resolved with the fast bow speed that is needed for a *forte* dynamic. The second two measures of the phrase pose a problem because they are marked *piano* and so the slower bow speed will make it difficult for the D string to sound with the low A string. The only solution for this situation is that the bow will need to favour the upper D string and barely play the low A string. When resting weight into a string, the bow can either be evenly balanced on a single string, balanced evenly between two strings or the weight can be distributed mainly on one string with light brushing contact to the second string. If the D string is favoured for the *piano* measures and the hair of the bow brushing the A string at a ratio of roughly eighty (D string) to twenty (A string) then the *piano* can be achieved. The A string will not vibrate as vigorously, with the result that the figure will sound at a lower volume that will contrast when the A is more actively engaged at the return of the *forte* in two measures.

The final challenge of this low A pedal passage is the articulation, specifically the accent marked in the second measure. The first problem of the accent is that as mentioned in previous discussions of the waltzes, an accent inherently pops the bow out of the string. The problem with the bow leaving the string is that in this passage the low A must be played continuously throughout. A subtle adjustment of weight into the A string must be made then to compensate for the accent so that the bow only partially leaves the string and does not interrupt the drone.

There is a notational challenge with this section as well as it is unclear what Dragonetti is marking. The low A is written as a dotted quarter note (time signature is 3/8) and is to continue throughout the measure. However, Dragonetti marks the upper line with the rhythm eighth note, two sixteenth notes, and an eighth note. The sixteenth notes are slurred together and also in one measure the sixteenth notes are slurred to the final eighth note of the measure. It is unclear if Dragonetti's marking indicates separate bows to be used on the slurs and the low A is

rearticulated at the change of bowing. The other option is to play the passage as written, which would be the more difficult solution.

It is possible when playing a double-stop for the bow to leave one of the notes in the double-stop and then rearticulate that note. The result is that one note of the double-stop is undisturbed while the note that is taken out and rearticulated sounds as if it is a second voice entering the line. This bowing is performed by pivoting the bow on one single string and simply leaning the bow into a second string as it is being drawn to add or subtract from the double-stop. In the passage discussed, the slur could be articulated by the bow leaving the D string on the first eighth note and remaining on the A string so that the low A is not being disturbed. The D string would then be rearticulated and the bow would remain on both strings to produce the slurred sixteenth notes on the D string.

Polyphonic writing of this nature during Dragonetti's era is unique for the double bass. Pieces for the double bass that use a droning string with moving double-stops are not found until the twentieth century. To put this style of writing into context, François Rabbath provides an illuminating passage in the introduction to his third method book. In his method, Rabbath stresses an approach built on relaxation and use of the fingerboard that is not limited to traditional fingerings that would favour ascending the instrument using only the top string. He states that approaching the bass with the techniques described in his method will allow bassists the freedom of fingerings such as the ability to play a full passage of music solely on the D string without having to use the top G string.[18] Therefore, the low A pedal passage in this waltz takes the type of left hand approach that would have been deemed virtuosic when Rabbath was writing his method in the 1980s let alone in the nineteenth century.

The second phrase of the ninth waltz uses a new technique to achieve polyphony on the double bass. Dragonetti exploits the technique he has used in other waltzes by using large leaps to create an effect that two voices are being heard. In this waltz, the lower voice is slurred across the bar line, descending by step, and the upper note (the second voice) moves upward by step. An interesting effect happens with bow lines moving at different octaves. Because of the octave leap, two voices are heard and the movement gives the effect of voice leading. There is also an added element of excitement for the audience because the leaps get larger each time and require a larger shift.

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[18] Rabbath, *Nouvelle technique de La contrabasse méthode complète et progressive en trois cahiers*- Cahier 3, 9.

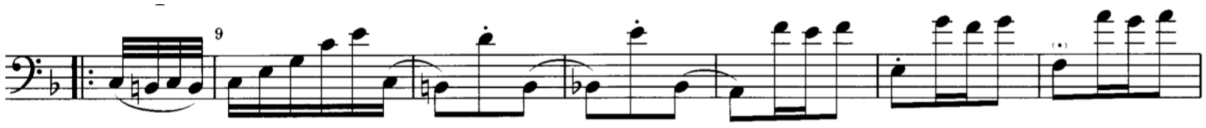

Figure 34- Waltz 9, Second Phrase

Summary of the challenges of the right hand

Some of the most challenging aspects of the waltzes that I describe are those that pertain to the movements of the bow. These difficulties lie in the many rules of the bow that I describe in the various passages. What can be learned from the many examples provided is that much of Dragonetti's virtuosity must have been located in the sounds that he was able to execute with the bow. The sounds include the many articulation described, the lack of the disruption in the sound when notes ascend large intervals (due to the ideal bow placement), and the lack of disruption despite slurs traversing the curvature of the bridge.

The shear amount of articulation markings found in the waltzes suggests that different bow strokes were integral to Dragonetti's compositions and performance practice. If the waltzes were simply for personal use, it would be conceivable that no articulation markings would be present as that would have given him the flexibility to adjust the articulations as he felt. Instead, we have a situation where each waltz is riddled with articulation and dynamic markings. The degree of markings suggests to me that Dragonetti believed articulations were fundamental components to his musical voice.

Dragonetti does not simply use a lot of articulation markings but very specific markings throughout the waltzes. The markings demonstrate that he valued contrast in bow strokes and further that he employed a variety of bow strokes. The first waltz presents a strong case of the varied bow strokes Dragonetti might have used. I discussed early in this thesis his use of long slurs, his use of *staccato* and the bariolage sequence in the first waltz. I include below an image taken from the second half of the first waltz. Although it is one of the easiest passages to execute in the whole collection of the waltzes, it contains two types of accents, *staccatos* and slurs all within the period of an eight-measure phrase (beginning in the pickup to m. 25).

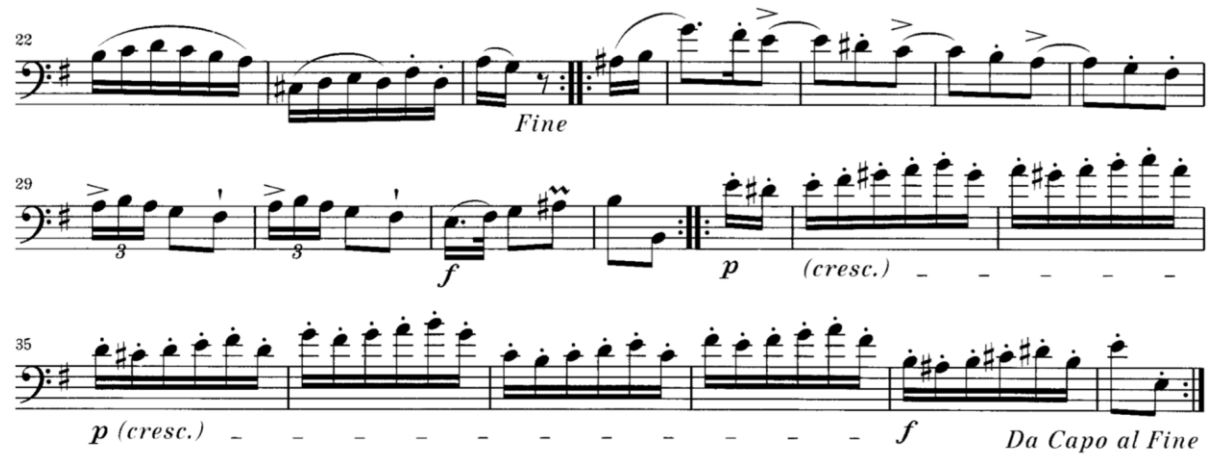

Figure 35- Waltz 1, Second Half

In the fifth waltz, a similarly simple passage occurs. The phrase is not technically hard to execute but it demonstrates another instance where Dragonetti uses multiple articulation markings in a short passage. Without the articulation markings, the passage would simply be a phrase with conjunct motion. Instead, Dragonetti infuses the phrase with musical effects through the contrast between slurs and short notes. He does not simply write a slur followed by détaché strokes: he writes an accent slurred note followed by *staccato* notes. The added marking of *staccato* makes it clear that the contrast between the smooth slur and short notes is directly important to the execution of the phrase.

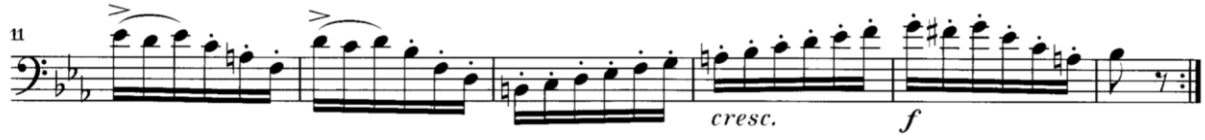

Figure 36- Waltz 5, Second Phrase

There are a few points in addition to the ones mentioned earlier that illuminate the type of player Dragonetti must have been. The first one concerns articulation. As discussed previously, the waltzes are filled with articulation markings. One particularly interesting feature is the many types of articulation markings that he employs. He employs two similar types of accents, the caret and the dotted. The caret accent can be thought of as a short, accented stroke and the dotted accent is a *staccato*, short accent. The fact that Dragonetti employs both markings suggests that he viewed them as distinct gestures. These details paint the image of a very meticulous musician with a large palette of accents and gestures at his disposal. The only differentiation between the types of accents would then be with the use of distinct bowing techniques, as described earlier.

The second point is the frequent use of low registers. Much of the solo repertoire written for the double bass predominantly uses the higher registers of the double bass. For instance, many of the most famous works by the virtuoso Giovanni Bottesini (1821-1889) employ the upper register, including extensive use of harmonics. Because the bass in solo contexts often competes with other instruments, composers opt for using the higher register as our ears are drawn to higher registers. Also, because much of the music performed by bassists is located in the lower register, the use of the higher register has the association of being reserved for solos and is therefore considered difficult. Dragonetti, who spent his life as an orchestral musician, must have had respect for the difficulty of playing clearly in the low accompanying register. His use of the low register for melodic material in the waltzes shows that he did not fear playing in the low register with clarity. Further, the use of the low register demonstrates his awareness of the types of writing that could be employed when composing for the medium of an unaccompanied rather than an accompanied double bass.

Finally, the frequent adjustments of the bow described throughout the section, such as retaking the bow to help with uneven bow strokes or navigating the bridge curvature, adds an element of theatricality to his performance. The constant circles the bow would make and the quick resetting of the bow would have been an exciting and thrilling feature to watch as well as hear.

In summary, the waltzes point to a player whose use of the bow was extremely virtuosic. Not only was Dragonetti able to navigate complex bowing patterns (uneven slurs, bow curves), but he was able to execute passages clearly in many registers on the bass. Further, his use of articulation offers listeners the opportunity to hear multiple voices, perceived as a form of polyphony on the double bass.

Chapter 3

3 Chapter 3

Dragonetti's twelve waltzes sit firmly in the repertoire as some of the most technically challenging pieces written for the double bass. Because they are the only set of unaccompanied pieces written for the instrument in the nineteenth century, they are historically unique in the repertoire. Further, as he did not leave any pedagogical material for the double bass, these pieces can serve as a glimpse into some of the techniques and feats that Dragonetti would have been possible of playing.

In my analysis of the waltzes, I have demonstrated many of the challenges posed and offered solutions that might suggest some of the ways in which Dragonetti might have approached the selected passages. The modern solution to many of these passages also can show how the demands of each waltz are some of the same technical concepts that double bass pedagogues are still contemplating and finding ways to execute. Whether Dragonetti, may have played with the solutions suggested is not the point; rather, the solutions suggest that he would have had to employ a virtuosic technique to execute the passages described.

Dragonetti's waltzes demand many technically challenging feats but also pose unique and fruitful musical challenges. They traverse the territory of polyphonic textures on a solo string instrument much like the great solo string repertoire of J.S. Bach or the works of Paganini for the solo violin. The waltzes offer a glimpse into the physicality and manners in which Dragonetti might have approached the instrument.

Dragonetti bequeathed the waltzes to his close friend, the music publisher Vincent Novello upon his death. On the manuscript that he inherited, Novello wrote notes to himself documenting his experiences with the waltzes. He writes that Dragonetti used to play the waltzes for him privately. Further, he describes them as the composer's "last playful exercises" and states that pieces comparable to these "will probably never be heard again" on the double bass.[19]

Novello's comments point to a fact to which this thesis has been pointing to. The techniques demanded by the waltzes are virtuosic in such a way that modern innovations and techniques that were formally codified in the twentieth century are often required to execute the pieces effectively. The need for such techniques to grapple with the demands of the waltzes

[19] Dragonetti, *Twelve Waltzes for Double Bass Solo*, ed. Glöckler, IV.

suggests that Dragonetti was not only a remarkable bassist for his time but also would be counted among today's virtuosos. Further, the image presented of the composer derived from the analysis of the waltzes helps clarify one of the initial questions this thesis posed. What about Dragonetti's playing was so remarkable that it inspired and affected the ways in which composers wrote for the double bass?

The analysis of the waltzes suggests that Dragonetti was a bassist of such skill that his left hand was able to play seamlessly across the entirety of the instrument. His use of the bow was so extraordinary that he was able to access many different sounds through various bow strokes. Further, his skill with the bow afforded him many distinct articulations with which he was able to achieve effects like polyphony on an unaccompanied string instrument.

The modern techniques described throughout this thesis were often invented in response to the demands of the repertoire double bassists play. A large portion of the music that classical bassists perform is standard orchestral repertoire, some of the same repertoire that Dragonetti was said to have inspired, for instance the mid- to late symphonies of Beethoven. He was able to achieve feats as explored in this thesis that inspired certain bass parts. The situation has now come full circle because in response to these orchestral bass parts, modern bassists have invented specific techniques that may have looked very similar to the techniques Dragonetti might have employed to perform these orchestral parts.

The waltzes bring the double bass's repertoire into the same conversation with other similarly challenging early unaccompanied string repertoire, such as the 24 Caprices for violin written by Dragonetti's contemporary Niccolò Paganini (1782-1840) and the unaccompanied string works of J.S. Bach. They share many of the same characteristics with these pieces as they demand technically challenging feats, use of polyphony and exploit the idiomatic features of their respective instruments. The caprices are famous for their use of double-stops and fast passages that traverse the instrument. The waltzes are directly comparable as they too have many of the same challenges as demonstrated throughout the second chapter of this thesis. Writing for the unaccompanied cello poses many of the same problems as writing for an unaccompanied double bass. Due to the size of the instrument, large double-stops can be hard to execute and so Bach chose to create polyphony through arpeggiation and register. Dragonetti's waltzes also employ similar virtuosic techniques to achieve these types of effects. Because of both the historical and technical significance of the waltzes, it is surprising they do not hold a

larger spot in the repertoire of modern bassists. The explanation for their obscurity might be due to the fact that the waltzes were only published in their entirety in 2007.

The late publication of the waltzes is unexpected due to a dearth in comparable repertoire and the desire for a larger solo library of both new and old compositions for the new age of double bass soloists. Much of the solo music for the double bass was composed after the 1860s and as pointed out many times in this thesis, these waltzes are the first pieces written for an unaccompanied double bass and are therefore an important contribution to bass soloists' repertoire.

The waltzes can also serve the needs of students and professionals. Standard concert and audition repertoire for double bassists includes movements of Bach's cello suites arranged for double bass. Transcribing Bach on the bass is often argued to be necessary due to the lack of other early unaccompanied repertoire written specifically for the instrument. It often requires drastic alterations to accommodate the size and tuning of the bass. The keys, the octave and bowings are frequently adjusted. Further, the double-stops that Bach wrote are often eliminated or changed with the intervals inverted, sometimes creating unwanted results. Because of the difficulty in transcribing the cello suites for double bass, the waltzes might be a good alternative to playing Bach, specifically on orchestral and conservatory auditions. Now that an edition of the complete set of the waltzes is published, perhaps they might be able to fill that role.

Orchestral auditions and university auditions for double bassists often require a "classical" concerto, a "romantic" concerto and a movement transcribed from Bach's cello suites. Two options for a classical concerto in the context of an orchestral auditions are generally presented, by Vanhal and Dittersdorf. Both concerti were written for the five-stringed bass in Viennese tuning, a tuning remarkably different from the fourths tuning employed by most bassists: from low to high F, A, D, F-sharp, A. As a result, when approaching these concerti, players who play with a standard four-string bass tuned in fourths, are forced to alter the piece by eliminating certain passages, by changing the octave of certain phrases and other strategies. With the publication of the waltzes, it would seem that the use of repertoire composed for a Viennese tuned bass is no longer necessary for auditions. Because the waltzes are more idiomatic for the standard tuning of fourths, they would be a good candidate for audition repertoire as they do not run the risk of requiring alterations like the ones mentioned above that might take away from the integrity of the performance.

As demonstrated in this thesis, the waltzes are extremely challenging to execute on the bass but are also idiomatic to the instrument. In the case of an audition, they would be both technically challenging and comparable to the musical problems posed by Bach. They provide a wide variety of articulations that traverse all registers, make use of different dynamics and provide musically rewarding feats to execute such as polyphony.

Domenico Dragonetti's 12 waltzes are remarkable pieces that are comparable to other solo string pieces such as the Bach cello suites and the 24 Paganini caprices that are standards for their respective instruments. Through examination of various technical and musical challenges, I have demonstrated that not only are the waltzes historically interesting but remain relevant for modern consumption. Like Bach's suites, which rose to fame long after the death of the composer, perhaps it is time for the waltzes to have more prominence in the double bass repertoire.

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Curriculum Vitae

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Post-secondary Education and Degrees:	University of Toronto Toronto, Ontario, Canada 2011-2015 B.M.
	The Longy School of Music Cambridge, MA, United States 2015-2017 M.M.
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	The University of Western Ontario London, Ontario, Canada 2018-2020 M.A.
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