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THE APPLICATION OF CONTEMPORARY DOUBLE BASS

LEFT HAND TECHNIQUES APPLIED IN

THE ORCHESTRA REPERTOIRE

by

Eric Hilgenstieler

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Musical Arts

May 2014
ABSTRACT

THE APLICATION OF CONTEMPORARY DOUBLE BASS
LEFT-HAND TECHNIQUES APPLIED IN
THE ORCHESTRA REPERTOIRE

by Eric Hilgenstieler

May 2014

The uses of contemporary left hand techniques are related to solo playing in many ways. In fact, most of these techniques were arguably developed for this kind of repertoire. Generally the original solo repertoire is idiomatic for the double bass. The same cannot be said for the orchestral repertoire, which presents many technical problems too difficult to solve using the traditional technique. Historically, the double bass passed through several transformations in its shape, structure, and tuning system. Only in the late 19th century did the instrument begin to have its own standard pedagogy and experiments with the tuning system diminished. Consequently, the orchestra literature is challenging to master, since many works were composed during this transition period. This research will discuss the use of modern approaches of double bass pedagogues, especially those used by François Rabbath. Techniques such as pivot, four-finger, low-thumb, and crab will be demonstrated using orchestral excerpts. A further objective of this investigation is to demonstrate the possible advantages and disadvantages of the modern approaches to traditional techniques. Consequently, a study and analysis of the traditional left-hand technique will be important in order to provide evidence of the benefits of contemporary techniques. This investigation will also provide contemporary solutions for the most famous excerpts, often requested in auditions.
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by

Eric Hilgenstieler

A Dissertation
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of The University of Southern Mississippi
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for the Degree of Doctor of Musical Arts

Approved:

Marcos Machado
Director

Christopher Goertzen

Joseph Brumbeloe

Alexander Russakovksy

Susan A. Siltanen
Dean of the Graduate School

May 2014
DEDICATION

I would like to say thanks to Nilza Hilgenstieler for her support and patience during the pursuit of my doctoral degree.
ACKNOWLEDGMENTS

The writer would like to thank the dissertation director, Dr. Marcos Machado, and the other committee members, Dr. Christopher Goertzen, Dr. Joseph Brumbeloe, and Dr. Alexander Russakovsky, for their support throughout the duration of this project.

Special thanks go to Silvio Dalla Torre and Hans Roelofsen for their extra advice in this project. Appreciation must also be expressed to Dr. Jay Dean, director of orchestral activities.
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TUTORIAL

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**Figure T1.** This figure shows the fingerboard and breaking point of the instrument, or transition between basic technique and thumb-technique.

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Figure T7. The symbol |---------| will be used to represent pivot technique shown in the Chapter V.
**Figure T8.** The circle around fingerings represents the crab technique.

**Figure T9.** Rabbath’s fingerboard positions based on harmonics.
CHAPTER I
INTRODUCTION: HISTORICAL OVERVIEW

Since the principal function of the double bass is to keep time, and support the ensemble harmonically, the orchestra is arguably the best musical environment in which the instrument can fulfill its purpose. Perhaps this is why the orchestra literature has developed considerable importance for the double bass, especially the repertoire of the 18th, 19th, and early 20th-centuries. During the 18th and 19th-century, instrumental music started to gain more importance and symphonic literature increased considerably. As a result, “in the 18th-century, the solo and the orchestral bass became a single entity. A number of celebrated soloists flourished and the orchestral bass was considered far more than a support instrument by the likes of Haydn and Dittersdorf.”\(^1\) In particular, the Viennese bass repertoire flourished in the 18th-century as the first virtuosos of the double bass emerged.\(^2\) Names such as Johan Mathias Sperger (1750-1812) and Joseph Kampfer (1735) gained respect among fellow musicians.\(^3\) Although this century was considered the golden age of the double bass, the tuning system that featured fourths and thirds and the use of *scordaturas* (literally *mistuning* or alternate tuning of open strings) limited the ways the instrument might modulate. The Viennese bass was capable of playing in keys such as D major and its relative minor, and using scordaturas capable of playing in keys

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\(^1\) Paul Ramsier, “Bridging the Divide,” *Double Bassist* 5 (Spring 1998): 64.

\(^2\) The Viennese bass was used in Europe in the 18th century and featured a tuning system of fourths and thirds, from the bottom strings to the top as follows: F-A-D-F#.A.

\(^3\) Joseph Kampfer (1735) was a Hungarian double bass player that might have worked with Haydn in Esterhazy.
such as Eb. Consequently, the frequent modulations in 19th-century music presented technical problems to the Viennese bass.

By the beginning of the 19th-century, instrumental music started to gain more importance as more demanding instrumental parts were composed. One of the first composers to challenge orchestra musicians this way was Ludwig van Beethoven (1770-1827), who wrote daring parts for violin, viola, cello, and bass.

In Beethoven’s day and later in the century, the orchestra became an important venue for instrumental music. The creation of the Philharmonic Society, an ensemble committed to performing new music, contributed to the rise of the orchestra repertoire. One of the most important orchestral musicians in the century was Domenico Dragonetti (1763-1846), a bass player and member of the Philharmonic Society. His expertise in the orchestra literature made him one of the best paid musicians in London. Dragonetti had a distinctive technique, illustrative of the approaches discussed in this dissertation. His technique helped him to shine among other bass players and among musicians generally.

The history of the double bass demonstrates that orchestral literature stands out for the instrument in comparison to other music and has been vital for the development of the instrument. Haydn, for instance, wrote double bass solos in his symphonies, and Beethoven once said: “The double bass ought to be the most musical musician of the

---


6 The Philharmonic Society was founded in London, in 1813, by a group of musicians who wanted to promote orchestral and instrumental music.

orchestra.” Thus, the study of orchestral performance practice became important for bass players, and today many scholars and students of the bass choose to specialize in this subject.

A large percentage of bass players pursue a career as orchestra players. As a result, some institutions have adapted their curriculums to satisfy this demand, developing strong pedagogy programs that prepare students for the orchestra. Before the 1970s, the double bass traditionally was taught in a manner similar to that of the violin and piano, in which the focal point was solo repertoire. Consequently, double bass players often lacked orchestral training. However, in the early 1970s, audition screens emerged and orchestra committees chose more demanding orchestral excerpts. Even as the pedagogy of the instrument started to change, not all teachers and institutions followed along. For example, in some studios today some reluctance still persists in accepting orchestral literature in classroom format. Some teachers believe that orchestra music should not be approached in class, considering this literature and performance practice secondary. Nevertheless, students ask for help in their private lessons for this kind of repertoire, showing that orchestral music is a challenge to master. As a result, students without this training have fewer opportunities, as the process of an audition is


11 Ibid., 16.

very demanding for a bass player. There are two ways of approaching the excerpts. One is the approach as a member of the orchestra, in which the player blends his sound within the section, following the bow of the principal bassist, even in some cases trying to match the same fingerings. In another approach, within the audition scenario, the candidate will apply the fingerings, bowings and interpretation that make him sound at his best, approaching the excerpts “with the attitude of a soloist.”

The orchestral literature for bass has proven to need further investigation as it pertains to the role and the career of bass players. In this dissertation, I will demonstrate the technical demands of the literature and their importance to the vitality of any bass player wanting to perform in this genre.

---

13 Harold Robinson, *Orchestra Lecture/Recital with Hal Robinson, Double Bass*. (Houston, TX: Rice University Press, 2006), DVD.
CHAPTER II
TRADITIONAL APPROACHES TO DOUBLE BASS PLAYING

Since the common tuning system of the double bass became E A D G in the 19th-century, this system in fourths resulted in an array of methods of playing.\textsuperscript{14} Thus double bass pedagogy was established in the 1800s, especially in the second half of the century. Wenzel Hause (1764-1847), one of the most important bass pedagogues, was the first instructor in the Prague Conservatoire and helped establish the pedagogy of the double bass.\textsuperscript{15} “Graduates of the Prague Conservatoire were among the leading performers and pedagogues of the nineteenth century in Europe”: Joseph Hrabe (1816-1870), Anton Slama (1799-1865), Wilhelm Sturm (1829-1898), Franz Simandl (1840-1912), and Gustav Laska (1847-1928) were some of Hause’s famous pupils.\textsuperscript{16} One of the first important method books from this period was by Franz Simandl, still in use today. Many of the methods that appeared during the time of Simandl, such as those of Italo Caimmy and Edouard Nanny, have a similar fingering approach, a system which uses each half-step as a new position, with a similar application of fingerings. Isaia Billé, a pupil of Italo Caimmi, also devised a method (see Figure. 2). In contrast, the German school employs the 1-2-4 fingerings for two half-steps while the Italian system employs the 1-3-4 system. However, in both methods the player reaches just a whole step for each position. Consequently, for an interval larger than a whole step, the player has to shift position.


\textsuperscript{16} Ibid., 480.
Figure 1 illustrates the bass fingerboard of the German system, Figure 2 illustrates the Italian system.

**Figure 1.** The German fingerboard system.

**Figure 2.** The Italian fingerboard system.

Even as the systems described above provide a progressive way of teaching the topography of the double bass, they give less than a complete understanding of the fingerboard. For instance, the Billé and Simandl methods view scales generally in a vertical manner. Both schools avoid the use of lower strings on higher positions and have the tendency to climb up the G string to reach higher pitches, resulting in many shifts. Both German and Italian schools avoid using all the fingers in the first positions.
Consequently, the finger not employed achieves less than ideal strength and dexterity. This will eventually cause technical problems for the student, particularly when advancing to the thumb position.

A good example of this problem is explained by Gary Karr, an important bass virtuoso in the history of performance. Karr observed a flaw in the traditional method’s delaying the use of the third finger, which instead was used only for the sixth and seventh positions. Figure 3 describes this use, for a G-major scale in two octaves, in which the third finger is used in the seventh position.

Figure 3. G-major scale using 3rd finger according to Simandl’s system.

These traditional methods start bass fingerboard training half-step by half-step, thus avoiding the 3rd finger until later, in the thumb position. (Depending on the school used, the student can take one to two years before learning the thumb position.) As a

---

17 The double bass uses two systems for fingerings on the basic positions: the German that uses the system 1-2-4 and the Italian that uses the system 1-3-4.

18 Thumb position is a technique applied by the cello and the double bass on the high register. The fingering system used for this technique is thumb, 1-2-3.

19 Gary Karr (1941) was the first solo double bassist with a full-time solo career and is perhaps the most well-known classical bass soloist today.
result, when the student finally reaches the realm between the fingerboard and the thumb position, the lacking strength and dexterity of this finger puts him or her at a disadvantage. The same disadvantage emerges in training with the Italian system, which avoids the 2nd finger, used only later in the thumb position.

Ironically, even as the first volume of Simandl’s method was designed for orchestral studies, his pedagogical approach fails to prepare a student completely for performing the entire orchestra repertoire effectively, even revised editions from the 20th-century. Many passages of later orchestra repertoire are written on the breaking point of the basic positions, where the thumb positions begin. These kinds of passages would be more approachable if the 3rd finger had been taught sooner in Simandl’s system.

Different technical concepts relating to fingerboard positioning in the bass pedagogy have been undermined by representatives of the half-step system for several reasons. Nationalistic ideas may have prevented ideas around the different methods from moving between countries. Also, a pupil’s loyalty to a professor might cause him or her to avoid attempting other systems that could enrich musical knowledge. In addition, instrument set-up was limited in the past, and uses of heavy gear such as gut and steel strings could have hindered the progress of the double bass technique. Strings were positioned higher from the fingerboard, thus it would be uncomfortable for the bass player to use more advanced techniques. Fortunately, by the 20th-century, bass technique flourished and several systems different from the old school appeared.

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CHAPTER III

MODERN APPROACHES TO TECHNIQUE

AND THE USE OF DOUBLE BASS PEDAGOGY IN REPERTOIRE

Beyond the traditional schools, modern concepts of double bass technique are applied today. Many achievements in conceptualizing and teaching bass technique came through solo repertoire, especially as transcriptions of other instrumental literature for the double bass. A pioneer of using transcriptions in double bass pedagogy was the Ukrainian Rodion Azarkhin, who transcribed such pieces as Sarasate’s Zigeunerweisen, the Chaconne from Bach’s Partita No. 2, BWV 1004, and many other works composed originally for cello and violin. Azarkhin’s fascination especially for the cello repertoire was an important factor to the development of his technique and musicality. His approach was pivotal in establishing new ways of achieving double bass technique such as the use of all five fingers of the left hand, different tunings, and the use of a heavy bow, to name of few of his experiments. Moreover, Azarkhin contributed to the pedagogy of the instrument in the Soviet publication Contrabass: History and Method, which included his article “Modern Solo Playing on the Bass” (his book Kontrabass was published in 1978).

While Azarkhin was bringing fresh developments to the double bass in Russia, in France François Rabbath (1931) emerged; as a pedagogue, Rabbath founded a new

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22 Ibid., 54.

23 Ibid., 54.
approach of playing the double bass that has likely been the most successful. All of his techniques and styles of playing are compiled in four volumes entitled *Nouvelle Technique de la Contrabasse*. Rather than use the semitone as a home position, as others had, Rabbath organized the bass positions using only 6th positions based on the double bass harmonics (see Figure T9, p. vii). His techniques, including the pivot, the crab technique, and his new approach to the thumb position are described thoroughly in his book.

In any discussion of applying orchestral repertoire into bass pedagogy, works by Eugene Cruft and Barry Green must not be forgotten. Cruft (1887-1976) authored *Eugene Cruft School of Double Bass Playing; A Method With a Repertoire* (1966). Using orchestral repertoire, Cruft’s method teaches all the bass positions in a progressive manner. From the first page of his method Cruft demands the student be exposed to the orchestral literature. Despite its very traditional regard of left-hand technique, his uncommon approach using repertoire as a pedagogical tool should be considered by students and pedagogues.

Later, Barry Green also published a method book, *Advanced Techniques of Double Bass Playing* (1976), using a similar concept to Cruft’s. However, Green proposes applying modern concepts of the technique to the repertoire. He addresses

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24 François Rabbath was born in Aleppo, Syria. Rabbath moved to France to study in the conservatory in Paris. His first solo album appeared in 1963 and sold out quickly.


subjects such as bowing, fingerling and scales. Also, Green’s book includes a small entry on the pivot and the four-finger technique.\textsuperscript{27}

Bass teacher, George Vance, has also incorporated repertoire as an educational instrument. In his three-volume \textit{Progressive Repertoire for Double Bass}, Vance adapts Rabbath’s \textit{Nouvelle technique de la Contrebasse} to direct the material toward children.\textsuperscript{28} This work introduces the fourth position rather than initiating the student on the arduous half-position. The repertoire employed by Vance begins at “Twinkle, Twinkle, Little Star” and develops to Saint-Saens’ “Elephant.”\textsuperscript{29}

The use of repertoire can be a valuable asset to pedagogy and thus can prepare the musician earlier for the orchestra repertoire. For that reason, the intention of this dissertation is to provide a practical instruction of the left hand technique applied in the orchestral realm.


CHAPTER IV

MODERN DOUBLE BASS TECHNIQUES

Pivot Technique

A modern technique used often in orchestral literature is the pivot. This technique uses a rotating forearm around a fixed thumb.\textsuperscript{30} By employing the pivot, the performer reaches more notes in just one position. This approach is not entirely new. In fact, the first description of pivot came from W. Sturm (of Berlin), who described it as the “turning of the hand with fixed thumb resulting from the raising and dropping of the elbow,” and it is known as Sturm’s Gymnastic.\textsuperscript{31} Hause provides another description of a similar technique. In the third book of his method, Hause proposes reaching a minor 3rd by stretching the hand.\textsuperscript{32} In the orchestral repertoire the use of such a system decreases considerably the effort of the left hand in fast passages. It also minimizes motion by reducing shifts, a problem common to the bass with its enormous size.


\textsuperscript{31} Friedrich Warnecke, \textit{Das Studium des Kontrabass-Spiels: nach eigener Methode verfasst} (Hannover: Louis Oertel, 1900), 68.

\textsuperscript{32} Ibid., 68.
François Rabbath most extensively developed this technique. Although Rabbath approaches such as the pivot have long been considered appropriate for solo bassists, they can also be useful for orchestra players. Nonetheless, some teachers refuse to acknowledge Rabbath’s technique as a practical approach. Comments like “Stay away from Rabbath stuff…it’s only for soloist,” and, “You’ll never get a job practicing that” have dissuaded use of the pivot. Nevertheless, the principal bass player of Philadelphia

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33 Green, 112.

orchestra, Hall Robinson—who studied the *New Technique for Contrabass* for years—has dispelled the notion that the pivot cannot be used in orchestral music. Figure 6 illustrates orchestral excerpts employing the pivot technique.

*Figure 6.* Excerpts above from Beethoven’s *Symphony No. 5* and Mozart’s *Symphony No. 39*, which Robinson uses in performances and auditions, illustrate the pivot.

Figure 7 on the right illustrates the advantages of the pivot in the passage of Mozart’s *Symphony No. 39*, executed in only one position. The example on the left of the figure presents the same excerpt employing one string resulting in a total of three shifts. This approach represents the traditional technique.
These excerpts demonstrate the pivot as an important tool in performing orchestral literature—they particularly facilitate dealing with the huge size of the instrument. The traditional approach reaches just a major 2nd on the same string, and a 4th, 5th, tritone, and major or minor 3rd when crossing two strings. The pivot extends this range considerably to a minor 3rd on the same string and a minor 6th and major 2nd when crossing two strings. As a result, the use of this technique expands the musical possibilities and can refine the left-hand approach possibilities.

The pivot is one of the best techniques for avoiding the vertical movement of the hand. It is also the most efficient technique for string crossing. Nevertheless, there are some considerations the bassist should be aware of when using the pivot. First, avoid extensions, which stress the left-hand and can jeopardize intonation. Some pedagogues advise the performer to first have a strong basis in traditional technique in order to move

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on to pivot or extensions.\textsuperscript{36} Also important is the fluid knowledge and execution of scales, arpeggios, double stops, and bowings that help solidify technique.\textsuperscript{37}

Secondly, the bass player should be aware of the articulation of the passage, as the pivot sometimes works better with \textit{detaché, staccato, spiccato}, and less efficiently with slurred or cantabile passages, which are harder to connect using this technique, especially in slow tempos.

Third, a strong knowledge of scale modes can improve the bassist’s efficiency with the pivot technique. A thorough knowledge of modes is widely promoted in jazz studies in order to outline the harmony when improvising or accompanying another’s solo. Jazz guitarists and bass players use the modes as reference points on the fingerboard. Knowing modes well, these players gain a faster response in choosing the best musical material in a solo or in “walking” bass lines. The modes give a better melodic and intervalllic sense of the fingerboard and also provide a stronger perception of the arpeggios. In addition, they give a well-rounded view beyond the major and minor scale because of the strong physical connection the modes give to the bass player. Since most modes can be played in one position and have distinctive patterns, a well-trained jazz bass player can walk bass lines for any changes by using aural skills and muscle memory. The modes give a more solid diatonic view, especially when using string crossing. With a solid diatonic view, the mode might be given in both melodic and harmonic spelling. The jazz teacher Joel Di Bartolo explains the process of using the

\textsuperscript{36} Green, 112.

\textsuperscript{37} Robinson, 35.
modes: “Cma7 [pitches] for example, are contained in the scale that the chord comes from, in this case, the C-major scale—the—1st, 3rd, 5th and 7th scale steps or degrees. This works out very nicely as we are all accustomed to reciting (spelling) out scales 1, 2, 3, 4, 5, 6, 7, octave this is the \textit{melodic spelling}.”\textsuperscript{38} Di Bartolo converts the \textit{melodic spelling} into \textit{harmonic spelling}, thus the (1, 2, 3, 4, 5, 6, 7, 8ve) becomes 1, 9, 3, 11, 5, 13, 7, 8ve. To illustrate this in the Ionian mode, Figure 8 represents the horizontal approach, showing how the notes fit on the double-bass fingerboard.

\begin{table}[h]
\centering
\begin{tabular}{c|c|c}
\hline
\textbf{Major tetrachord} & \textbf{Major tetrachord} \\
\hline
\(1\quad 4\quad 1\quad 2\) & \(4\quad 1\quad 2\quad 4\) \\
\hline
\textbf{Melodic} & \textbf{Harmonic} \\
\hline
1 & 1 \\
2 & 9 \\
3 & 3 \\
4 & 11 \\
5 & 5 \\
6 & 13 \\
7 & 7 \\
Oct & Oct \\
\hline
\end{tabular}
\caption{Melodic and harmonic spelling, and tablature represents Ionian scale on fingerboard; by applying pivot technique the scale falls in single block facilitating diatonic view of major tetrachords and intervals.}
\end{table}

\textit{Figure 8}. Melodic and harmonic spelling, and tablature represents Ionian scale on fingerboard; by applying pivot technique the scale falls in single block facilitating diatonic view of major tetrachords and intervals.

Although in the orchestra the musical elements of style for bass playing are quite different, the classical bassist can also employ modes to help in mapping a passage. Consequently, he or she can recognize patterns, motives, and entire passages on first readings. This system might also increase memorization of an orchestral excerpt. As a result, the modes give a more clear diatonic view of the fingerboard, helping the

\textsuperscript{38} Joel Di Bartolo, “Jazz Bass Lines: A Talk with Joel Di Bartolo.”
performance in orchestral auditions. Learning the tetrachord and the pentachord is also useful for recognizing patterns.\textsuperscript{39} Figures 9-15 illustrate the modes and their fingerings.

The tablatures represent each pattern on the fingerboard.

\begin{figure}
\centering
\includegraphics[width=0.8\textwidth]{figure9.png}
\caption{Ionian mode.}
\end{figure}

\begin{figure}
\centering
\includegraphics[width=0.8\textwidth]{figure10.png}
\caption{Dorian mode.}
\end{figure}

\textsuperscript{39} Joel Di Bartolo, “Jazz Bass Lines: A Talk with Joel Di Bartolo.”
**Figure 11.** Phrygian mode.

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**Figure 12.** Lydian mode.

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<td>F1</td>
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</table>
Figure 13. Mixolydian mode.

Figure 14. Aeolian mode.

Figure 15. Locrian mode.
Thus, the study of pivot technique and modes gives the bassist a better understanding of the double-bass fingerboard, facilitating the performance of orchestral passages. The bassist will consequently acquire more efficient fingerings, with minimum motion, which maximizes the best music performance.

Although the pivot, together with the horizontal approach, facilitates the performance of orchestral excerpts, it can also create a few bowing issues. Because this system may increase the use of string crossing, the bow technique should be mastered beforehand. In order to address this, some method books focus exclusively on the subject—Sevick’s and Zimmermann’s works are excellent in solving string-crossing issues. Their studies aid in mastering the bow technique required for the horizontal approach.

An example of the benefits of the pivot and of the horizontal approach can be seen in the excerpt of Mozart’s Symphony No. 39, 4th movement. In Figure 16, the excerpt shows motives separated by a red square, the notes of which are arranged in one position. This organization is only possible with the use of the pivot technique.

Figure 16. Mozart, Symphony No. 39, movement IV.


By using the horizontal approach, each motive is placed in a block, and each block has a melodic pattern corresponding to a scale mode. For instance, in Figure 17 the fretted fingerboard related to bar 10 in Figure 16 illustrates the diatonic view, the fingerings, and string used by the left hand. It is also possible to recognize the melodic pattern of the excerpt in which the notes Ab, Bb, C, D, and Eb represent the Ab-Lydiann mode (Lydian pentachord) of Eb major.

Figure 17. Motive from Mozart’s Symphony No. 39, 4th movement, containing Lydian pentachord.
In Figure 18, an excerpt from Tchaikovsky’s *Capriccio Italiano, Op. 45*, the application of the modes is clear. The first measure shows the Lydian mode with the horizontal approach represented by T1. The second measure shows the Ionian mode (T2-T3) using the same approach with a shift from C# to D on the end of the first beat. This shift helps set the new pattern, a descending Ionian mode in a different octave. The Mixolydian mode is represented in the last measure (T4). Since most of these scales can be placed in a single position, the process of learning the passage goes quickly, and this extremely virtuosic passage is rendered easy.

The pivot not only improves the bassist’s technique; it also improves the passage musically by avoiding interruptions caused by big shifts and bringing uniformity of sound when used with the horizontal approach. By contrast, the traditional approach, even as it uses less string crossing, requires more shifts, which can cause unwanted syncopation in the rhythm or uneven values of the notes.
Four-Finger Technique

The four-finger technique, a common practice for the viol da gamba family, entails the use of frets, even on the large bass instruments. This practice on the large viols dates presumably from the late 15th-century if not earlier; the first descriptions of “Man High Viols” come from court reporter Bernardo Prospero, who wrote about Spanish musicians travelling from Rome to Mantua in 1493. Prospero mentions the expression “viole quasi come me” (viols as big as me).

The Viennese bass player, Johan Mathias Sperger (1750-1812), was adept at the four-finger technique, but rather than use this single approach, he employed different fingerings. He used the traditional double bass system 1-2-4, which encompasses two semitones on the low register without shifts, and also used 1-2-3-4-finger technique beginning in the fourth position and spanning a minor 3rd, the fingering system 1-2-4 for semitone/whole-tone and 1-3-4 for whole-tone/semitone.

![Figure 19. Sperger’s system.](http://www.silviodallatorre.com)

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43 Alfred Planyavsky, “Get the Picture: What We Can Learn From the Way the Double Bass was Depicted in Art in Its Early History” Double Bassist 17 (Summer 2001): 50.


Sperger’s example proves that the four-finger technique was not new in his era but became commonly employed in the 18th-century and early 19th-century. Although Sperger was already using 1-2-4 fingerings for two half steps, Hause was likely the first to describe it in his three-volume book, *Contrabass Schule*, the 1-2-4 system for two semitones.\(^{46}\)

![Diagram of fingerings](image)

*Figure 20. Wenzel Hause approach.*

In contrast, in the 1820s Friedrich Cristoph Franke published one of the first methods applying and explaining the 1-2-3-4 finger system for double bass. He applied four fingers on a chromatic scale in the lower positions, and even used the first and third fingers to reach a whole step, a practice still unusual today.\(^{47}\) Consequently, the two systems coexisted.

\(^{46}\) Ibid.

Figure 21. Franke’s system.

Figure 21 exemplifies Franke’s approach to chromatic scales. In order to better understand how his system works on the instrument, the diagram represents the fingerboard of the double bass and its fingerings. The notes outside of the diagram represent the open strings. Figure 22 shows Franke’s system using 1-3 fingers for an interval of whole tone, still an atypical practice today.

Figure 22. Franke, *Anleitung den Contrabass zu spielen*, p. 9. (1st and 3rd fingers used for whole step).

While in Germany, Sperger and Franke had become the authorities of the four-finger technique, in England, Italian bass virtuoso Domenico Dragonetti (1763-1846) developed into one of the most successful bass players of the era using this approach.
Dragonetti arrived in London in 1794; “before Dragonetti’s career in England the double bass was not an instrument on which a musician achieved fame or fortune; Dragonetti was the first player to prove that it was possible to do so.” Francesco Caffi, an observer of Dragonetti’s style of playing, described that he not only used the four-finger technique but also used the thumb all over the fingerboard.

![Figure 23. Dragonetti’s fingering system described by Caffi.](image)

Unfortunately, this system was replaced by Franz Simandl’s system during the second half of the 19th-century. The four-finger system fell into obscurity, perhaps aided by opposition from the followers of Simandl. Proof of this opposition is the total omission of the technique in traditional methods. One exception is found in Edouard Nanny’s (1920) method, where he dedicated a few pages to describe the four-finger technique. During this same period, Friederich Warnecke also tried to revive this system by writing a method about four-finger-technique. He decided to withdraw it, however, only writing on the subject years later in his Ad infinitum, around 1918-1928, a book describing double bass history and method finger positions in Germany, Italy and France.

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49 Ibid., 65.

Thus, only in the 20th-century did the four-finger technique start to reappear. Some bass professors were perhaps influenced by works of Franke and Warnecke. The quest to improve the fingering system to one more efficient was also an important factor. Bass pedagogues such as Knut Guettler, François Rabbath, Mark Morton, and Michael Wolf represent this school of thought.

The modern-day resurgence of the four-finger technique is portrayed in the first articles of the Sound Post, where Professor Walter Coplin relates his experiments with Franke’s technique.52 Even though he agrees that the system is helpful, Coplin points out that this approach can be distressing for the hand in the first position.53 Hans Roelofsen and Silvio Dalla Torre are among the bass pedagogues who most achieved good results from the rebirth of the four-finger technique. Their collaboration resulted in the creation of the New Dutch School, similar to Sperger’s left-hand technique. Roelofsen’s opinion was that the four-finger technique can improve sound quality and expression.54 He states that “as a soloist both in chamber and symphonic settings, I require a solid, musically consistent fingering system that gives me the technical scope to create and contrast in sound quality and expression.”55 Dalla Torre explains that the New Dutch School practice “has nothing to do with stretching the fingers.”56 Instead, he implied, by applying the

51 Klauss Stoll, Book and DVD reviews, Double Bassist 36 (Spring 2006), 79.

52 The Sound Post was an American double bass journal that started in the 60s. Walter Coplin, “Problems of the Left Hand,” The Bass Sound Post (June 1967): 3-4.


55 Ibid., 18.

pivot technique, the bassist is able to reach the notes without stretching. Further instructions about the New Dutch School can be found in Dalla Torre’s method, *Bassics: of the Four-Finger-Technique of Playing the Double Bass*. Dalla Torre named positions in order to associate them with melodic patterns that might be encountered in music. He indicates three positions:

Basic Position

![Basic Position Diagram]

Extended Position

![Extended Position Diagram]

Close Position

![Close Position Diagram]

Figure 24. Dalla Torre’s fingering system.

An interesting characteristic of Dalla Torre’s method is that he discourages the steady hand. This instruction, similar to the explanation of the pivot technique, shows the concept of the New Dutch School as contrary to the traditional technique of Simandl. In order to explain the application of his approach, Dalla Torre describes five steps:

First, each finger takes up the optimal position at each time. Second, the fingers that are not stopping should always be as relaxed as possible. Thirdly, the

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58 These positions are related to Sperger’s approach discussed in the beginning of Chapter V.

59 Dalla Torre, 5.
intonation is controlled by the idea of the note in the mind, and the "orders" sent to the fingers are based on this, and not by a fixed position span. Fourth, a prerequisite for this is the greatest possible flexibility of the fingers including the thumb, and of all the joints involved (“fluent mobility”). Fifth, the thumb plays a special role because it serves as a pivot around which wide reaches of the fingers are possible without changing position (“pivoting”).

Arguably, the advantages of using this technique are many; for instance, the possibility of the left hand reaching a minor 3rd without shifting; the intonation possibly improved with no *extra finger* between the half steps—which can make the intonation lower or sharper—and, finally, the technique’s mobility leaves the left hand more agile.

A proof of the four-finger technique’s effectiveness can be seen in the testimonies pertaining to Domenico Dragonetti’s technical expertise, which impressed many of his contemporaries, perhaps even Beethoven. His expertise in orchestra performance also shows the four-finger technique as a useful tool for playing orchestral excerpts. He “shifts from gaining individual recognition through solo performance to a long term commitment to chamber and orchestral music.”

The main disadvantage of the four-finger technique is that it requires learning a different approach than the one traditionally taught in the conservatories and universities. Exercises shown by Franke and Dalla Torre require extra effort and time to overcome barriers to fluid execution. For instance, the “innervations” technique, an exercise of finger coordination, and a basic step in learning four-finger-technique, can take nearly a year for the player to feel comfortable. Furthermore, the New Dutch School uses two

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62 Dalla Torre, *BASSics*, 5.
types of basses, the Basseto—a small instrument used in the Baroque period and nowadays for solo playing—and the modern double bass for orchestra playing. The Basseto is tuned in fifths, and it might be quite difficult for the bassist to switch from the standard tuning in fourths.\footnote{Basseto is an instrument from the Baroque period which is tuned in fifths.}

Perhaps the most effective position described by Dalla Torre that can improve the performance of the orchestra literature is what he terms the \textit{basic position}. This position consists of two sets of fingerings, 1-2-4 for half-step and whole-step, and 1-3-4 for whole-step and half-step.

\begin{figure}[h]
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\includegraphics[width=0.8\textwidth]{basic_position.png}
\caption{Basic Position.}
\end{figure}

The main advantage of the \textit{basic position} is that it does not require any unusual system. This approach can be described as a combination of German and Italian left-hand techniques. As a result, this hybrid technique retains the approach in a three-finger system while taking advantage of all fingers of the left hand. For that reason, and because the patterns encompass a minor 3rd, the pivot can be easily applied.

When the four-finger technique is applied together with the pivot, scale modes can be used to master the four-finger technique. Figures 26-32 (below) represent the modes of the major scale with horizontal approach fingerings. In addition, the pivot is combined with the fourth-finger-technique approach. The important characteristic of Dalla Torre’s approach is that the hand is always relaxed; the performer never stretches.
it. As a result, any minor 3rd on the same string can be performed with the pivot technique and in the basic position.

![Ionian mode](image1)

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*Figure 26. Ionian mode.*

![Dorian mode](image2)

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<td>D1</td>
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*Figure 27. Dorian mode.*
Figure 28. Phrygian mode.

Figure 29. Lydian mode.

Figure 30. Mixolydian mode.
Figure 31. Aeolian mode.

Figure 32. Locrian mode.

Figure 33 shows orchestral excerpts from Prokofiev’s *Lieutenant Kijé* in which the use of the four-finger technique and pivot, with the horizontal approach become important assets.\(^{64}\) In this excerpt, the basic position is applied on beat 4 of the first measure on the notes A, B, and C. Note that the entire passage is written in the Phrygian mode and that the first run is traditionally performed in a vertical manner. However, the

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following scales are performed using a horizontal approach in order to avoid a huge shift
to the second string. The fingerings in the second measure give the option of string
crossing, avoiding shifts and making it easier for the performer to reach the F on beat 1 of
the second measure, and the A on beat 4 of the same measure. The diagram below the
excerpt represents a better approach to the mechanics of the instrument.

![Diagram of fingerings for Lieutenant Kijé]

Figure 33. Prokofiev’s Lieutenant Kijé. Scales performed in vertical and horizontal
manner.

In Figures 34-36 (below) the excerpt is analyzed to locate and explain the modes.

The first extract from Lieutenant Kijé presents the Phrygian mode in a vertical approach.
Figure 34. Prokofiev, Kije. Double bass passage using the vertical approach.

The second extract (Figure 35) shows the scale in the horizontal approach, which requires more string crossing. Although this example describes the Phrygian mode, the fingerings can also be thought of as in the Lydian mode, finishing on its seventh. The third extract (Figure 36) has the same notes as in the Phrygian mode, but the pattern is part of the Aeolian mode. These excerpts also present the fourth-finger technique with the use of Dalla Torre’s basic position.

Figure 35. Pattern in the Phrygian mode applying the horizontal approach.

Figure 36. Pattern in the Aeolian mode.
Figure 37 presents an excerpt of Mendelssohn’s *Symphony No. 4*, a passage in the Mixolydian mode. By applying the horizontal approach, the fingerings contribute to the uniformity of the sound, as nearly all of the excerpt is played in one position. The change of fingerings in the fifth measure might enhance the effect of volume and color of the crescendo starting in the fourth measure. In other words, this example demonstrates that the fingerings not only facilitate the passage technically, but contribute to a better interpretation of the music.

The analysis of these examples shows the horizontal approach as giving the bassist a better command and reference to the fingerboard. The player’s diatonic view of the excerpts improves, as does mobility, by applying both four-finger and pivot techniques.
Comparing Dalla Torre’s basic position (1-3-4) to the whole-tone/half-tone position and one applying the traditional pivot (1-2-4) with the same intervals shows that the pivot applied with the basic position creates less movement because the 3rd finger is closer to the note than when using the 2nd finger. The same happens when using (1-2-4) for half-tone/whole-tone; in this case the 2nd finger is closer than when using the 3rd. Consequently, in this case less effort is used with Dalla Torre’s system.

There are many other approaches to the four-finger technique, one of which was Eugene Levinson’s system, which uses the 3rd finger in the low positions to link whole-step to half-step. Along with similar concepts for the pivot and four-finger techniques, Levinson’s process also uses extension rather than pivot. Once the 3rd finger is placed, the 1st finger is immediately released. Thus, the player stretches the fingers rather than using a rotating forearm. Figure 38 shows the 3rd finger linking the 1st and 4th fingers.

Figure 38. Eugene Levinson’s approach with 3rd finger linking 1st and 4th fingers. (This concept is reminiscent of the pivot technique)

In Levinson’s approach the movement is executed in the left hand and fingers, with the 3rd finger acting as the pivot point rather than the forearm.

Another view of the four-finger approach, described by Barry Green in Advanced Techniques of the Double Bass Playing as the study of equidistant fingerings, implies the

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restraining of the pivot. However, Green advises that this approach might not be suitable for every player, since some hands may be too small to cover the range of the intervals. In Figure 39 Gerber’s exercises demonstrates a simple chromatic passage using the equidistant approach. Even so, this simple task can be extremely difficult if executed without pivot or shift because of its location in 2nd position on the third string.

![Characteristic Study: Stephen Gerber. Four Finger Technique in C Minor.](image)

**Figure 39.** Extract from Green’s book using equidistant fingerings.

Knut Guettler’s book, another important source, describes the four-finger technique with some differences to the approaches cited thus far. His instruction of the technique consists of the “stretching of fingers with the ‘rolling’ of the hand;” this “rolling” movement as described is similar to the pivot technique. However, Guettler advises the player to stretch the hand, yet a different instruction for the pivot technique.

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66 Green, 116.

67 Ibid.

This source is very important because, in contrast to Dalla Torre’s and Franke’s discussions because Guettler exposes the advantages and disadvantages of this technique.\textsuperscript{69} Even though it might be obvious that the use of the four-finger technique has disadvantages when moving to the first and half positions, Guettler advises that this technique is efficient even when using in the fourth position, and so forth.\textsuperscript{70} Although the four-finger technique can be useful in avoiding shifts, if the technique is used excessively with extension, it can lead to hand fatigue. Another drawback of the four-finger technique is that its use on poorly constructed instruments results in unevenness of tone at string crossing.\textsuperscript{71}

In summary, the four-finger technique, a well-established system descended from viol family methods, is used in instruments such as the Viennese double bass. During the transition to the modern double bass, the technique seems to have had trouble surviving. It can be presumed that an unfriendly set-up, such as strings set too high off the fingerboard, or the size of the double bass—bigger than the violone and bass gambas—are some of the possible reasons for the demise of this technique. Moreover, many bassists of the 19th-century simply favored the Simandl system. Consequently, this approach was adopted primarily in Germany and Austria, but also in almost all of Europe and other countries. Although differences appeared between fingerings in Germany and Italy, the approach of each half step as a home position encompassing a whole tone was the common practice. The resurgence of the four-finger technique later in the 20th

\textsuperscript{69} F. C. Franke, \textit{Anleitung den Contrabass zu spielen} (Chemnitz, Saxony: Häcker, 1820).

\textsuperscript{70} Guettler, 66-67.

\textsuperscript{71} Ibid., 66-67.
century suggests that bass pedagogues were looking for a more effective fingering system and illustrates the acknowledgement of the limitations of the traditional technique promoted by their predecessors.

Nevertheless, even with the rebirth of the four-finger technique, it still remains uncommon. Perhaps this is because so many different systems have incorporated this technique with so much variation. The lack of consistency in the pedagogy of the four-finger technique, with the exception of the New Dutch School, shows that this approach still needs more research in order to fully understand its musical benefits. In demonstrating this different technique, this section presented alternatives in order to expand music possibilities regarding technique and musicality. It also showed that nothing is entirely new or different in the approaches from the past. Further, four-finger study can be beneficial to bass players and scholars alike, and this discussion might inspire them to do more research on the technique, with its many styles and intricacies.

Low-Thumb Technique

The thumb-position is a double bass technique commonly used from the G, D, A, and E harmonics to the end of the fingerboard. This technique is also used for solo playing, particularly in the higher registers of the instrument; the advanced solo repertoire explores these registers extensively. Consequently, the study and mastery of the thumb technique is crucial for the performance of the solo literature. In fact, many double bass methods are written in two or more volumes, one of which is largely dedicated to thumb position technique. Pedagogues have also written single works that focus on this subject.

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Figure 40. Physical location of where thumb is generally applied on double bass fingerboard.

The double bass has two distinctive techniques, one for performing in the higher registers, and another for performing in the low registers of the instrument. The first technique is used more often in solo repertoire and the second in the orchestral realm. For other stringed instruments such as the violin, only one technical approach is used for the entire fingerboard. The violin solo repertoire shares essentially the same register as its orchestral literature, exploring low and high registers with similar frequency and intensity.

The cello shares more aspects of the technique with the double bass. Like the double bass, the cello explores various techniques for differing registers and uses the thumb technique to execute higher notes. However, the cello solo repertoire explores all registers of the instrument, and with significantly less use of the thumb position than does the double bass solo repertoire. Cello pieces that illustrate this are Bach’s Prelude from Cello Suite No. 5; Elgar’s Cello Concerto, first movement; Brahms’ Cello Sonata in E Minor; and Beethoven’s Cello Sonata, Op. 69, first movement, to name a few.

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Although the thumb technique is used in the solo repertoire, this technique occasionally also incorporates into the orchestral repertoire. Figures 41-46 represent excerpts in which the use of thumb position is commonly applied. Beethoven’s 7th Symphony, Shostakovich’s 5th Symphony, and Strauss’ tone poem Don Juan all use the thumb position, representing just a small sample of works that do so.

![Figure 41. Beethoven, Symphony No. 7, 1st movement.](image)

Figure 41 illustrates a run with the highest note as A natural, located after the G harmonic on the G string, best played using the thumb position technique. Although no thumb symbol is indicated, the thumb stays in position once the G# of the fourth beat is executed.

![Figure 42. Beethoven, Symphony No. 7, 1st movement. The excerpt shows the use of the thumb technique.](image)

The notes in excerpt Figure 42 lie mainly in the lower register. Nevertheless, the A-natural and F# (both played on the G string) require the thumb position technique.

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75 For comparison, see Figure 40.
Figure 43. Shostakovich Symphony No. 5, 1st movement. This is an orchestral excerpt using higher notes, ones not generally seen in this kind of repertoire.

In contrast, the extract from Shostakovich’s Symphony No 5 shows most notes situated in the thumb position area.

Figure 44. Richard Strauss, Don Juan, includes a melodic passage that also requires the use of the thumb position.

Sadly, the orchestral pedagogy applied in some bass methods does not accurately portray the employment of the thumb position in the orchestral repertoire. For example, in the preface of the 1st volume of Simandl’s method (edited by F. Zimmermann), the author claims that orchestral training is the main pedagogical application. The excerpts shown in this method include excerpts that require the use of thumb technique, but the technique is not included in the first book. Thus, the lack of tutorials on thumb

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77 Ibid., 121-122.
technique will not prepare the student for a satisfactory execution of such excerpts. The thumb technique is just discussed in the 2nd book, which is directed to solo playing.

![Figure 45](image_url)

**Figure 45.** Verdi’s *Rigoletto* excerpt taken from Zimmermann’s edition of Simandl’s method. Measures 6 and 7 explore a higher register, requiring thumb-position technique.\(^{78}\)

![Figure 46](image_url)

**Figure 46.** Verdi’s *Othello*, excerpt taken from Zimmermann’s edition of Simandl. Measure 2 presents a high C-flat, requiring the use of thumb position.\(^{79}\)

Furthermore, the thumb technique can be used in lower positions. The advantages of this approach are many. First, the left hand can be steady and reach more notes. Second, the low thumb is able to reach bigger intervals and several other different tetrachords without any stretch of the hand. As a result, this technique avoids constant string crossing.

Francesco Petracchi, an important pedagogue of the thumb position technique,\(^{80}\) organized this technique into three positions: chromatic, semi-chromatic, and diatonic.\(^{81}\)

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\(^{79}\) Ibid.

\(^{80}\) The low thumb technique is similar to the thumb position used in the orchestral repertoire. For the low register, the use of this technique has an accompanimental rather than a solo function.
Figure 47. Petracchi, *Simplified Higher Technique*, chromatic, semi-chromatic, and diatonic thumb positions.

The following example illustrates an exercise of Petracchi’s book that starts with the thumb on the note D on the G string in 4th position.\(^{82}\)

Figure 48. Petracchi, *Simplified Higher Technique*, lower register thumb technique.

Figure 48 also shows the thumb technique as used in lower registers and illustrates this particular approach in improving legato playing. Because the thumb technique reaches a major 3rd, the slurred notes can be executed without shifting; thus, a cleaner sound is produced.

Although Petracchi’s book is a go-to reference for understanding the thumb position, some flaws appear when he describes the positions this technique can include. For instance, Petracchi ignores the minor, diminished, augmented, and Locrian tetrachord, patterns common in the solo and orchestral literature.\(^{83}\)

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\(^{81}\) Petracchi, 1. The method is one of the most used in music schools.

\(^{82}\) Ibid., 9.

Figure 49. Michael Barry Wolf, *Principles of Double Bass Technique*. Tetrachord in thumb position.

Figures 50-56 illustrate scale fingerings as applied in the orchestral repertoire. All scales start on the same note and use the low-thumb position and the horizontal approach. Some scales are extended to a 12th or 13th in order to display the reach of the semi-chromatic and diatonic positions.

*Figure 50*. Ionian mode applying the low-thumb technique.
Figure 51. Dorian mode applying the low-thumb technique.

Figure 52. Phrygian mode applying the low-thumb technique.

Figure 53. Lydian mode applying the low-thumb technique.
Figure 54. Myxolidian mode applying the low-thumb technique.

Figure 55. Aeolian mode applying the low-thumb technique.

Figure 56. Locrian mode applying the low-thumb technique.
The previous examples show how low-thumb technique is executed in theory, using the modes. Next shown is the application of the technique in the orchestral repertoire. Many method books about thumb technique demonstrate only callisthenic exercises rather than applying the technique in practical musical contexts. Figures 57 to 61 show excerpts that help discuss the advantages of the low thumb applied in the orchestral repertoire. The examples below will use the same excerpts from Mozart’s Symphony No. 39 used in the Pivot section. However, instead of applying the pivot technique, the excerpt will show the option of the low thumb position.

Figure 57. Mozart’s Symphony No. 39, 4th movement, mm. 115-125. The tablature on the left represents the pickup and first measure. The tablature on the right represents the last two measures of the excerpt.

For the pick-up notes of the first measure, the excerpt uses the thumb in the A string in the 3rd, half position. The thumb applied this way appears again in the passage at measures 8 and 9, where, with a similar principle, it is the point of reference for all notes played. The exception is on measure 10 and 11, where the thumb functions to stretch the position, reaching a descending major 3rd (G, Eb). Here, the passage is
traditionally played on the G string, resulting in many shifts, but when performed in the same position as shown in the last tablature, the open string and the G harmonic are avoided. A uniformity of sound results.

Figure 58 presents the major technical challenges of a famous passage from Beethoven’s *9th Symphony*. This is an extremely fast passage, not idiomatic for the double bass. Traditionally, it is performed with the vertical approach, resulting in many shifts. Nevertheless, this passage can be played applying the horizontal approach, which allows the player fewer shifts, and thus more security. The Mixolydian mode appears in the first bar. In order to link this to the new pattern in the third measure, Rabbath takes advantage of the A harmonic on the A string to set the new position.\(^\text{84}\) The use of the major tetrachord (or diatonic) position is appropriate for the third and fourth bars.

\[\begin{array}{cccc}
  & D + & E 1 & F# 2 \\
  A + & B 1 & C# 2 & D 3 \\
  E + & F# 1 & & \\
\end{array}\]

\[\begin{array}{cccc}
  A + & B 1 & C# & D 3 \\
  E + & F# 1 & G# 2 & A 3 \\
  & C# 1 & D 2 & \\
\end{array}\]

*Figure 58.* The tablature on the left represents the Mixolydian mode in bars 1 and 2, with a choice of Rabbath’s fingerings. He also applies a major tetrachord position on the second beat of second bar. The tablature on the right represents fingerings in the third measure.

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Figure 59. The tablature above represents the fourth bar of the excerpt, which refers to the same position as previous. Here, Rabbath uses the minor tetrachord position represented by the notes inside the circle.

Figure 60. The last part of the excerpt applies conventional techniques.

Figure 61 shows Oscar G. Zimmerman’s traditional approach.\textsuperscript{85} The tablatures show his fingerings. Where Rabbath’s methodology uses an economy of shifts, facilitating the performance of this excerpt, Zimmerman’s approach requires a large number of shifts. Another possible approach could be the application of the pivot technique. However, even the pivot would require too much effort when executing at tempo. Clearly, the low-thumb position is the most efficient option.

Figure 61. Oscar G. Zimmerman, *The Complete Double Bass Parts of Beethoven’s Nine Symphonies* and *Leonore No. 3, Overture*. Use of so many positions and fingerings makes an organized representation of tablature almost impossible for the first two measures of the excerpt. A comparison to Rabbath’s approach in the same passage shows what his system uses only one position, and the fingerings are consistent, possibly because Rabbath applies thumb technique together with the horizontal approach and tetrachord positions.

In conclusion, the thumb technique is very useful for the orchestral repertoire, especially the low-thumb position. This technique provides more agility when performing passages either crossing strings or on the same string. Although in the past the low-thumb was considered an unusual technique, today, with the double bass’s more approachable set-up, the thumb and low-thumb techniques can be applied with less effort.

That said, the thumb is not the best finger to use for vibrato. The bassist should be aware that when a note requires more intensity of sound, the thumb should be avoided. Musical maturity and common sense should guide the bassist’s approach to the excerpt.
One of the instrument’s greatest virtuosos, Domenico Dragonetti, used the low-thumb technique as early as the 19th-century.\textsuperscript{86} Thus, the low thumb has long been established as a technique appropriate for the orchestral literature; it proves to cut down on unnecessary movement. Traditional approaches and even the pivot technique can be substituted for the low-thumb position. As a result, although the technique is usually associated with solo playing, it can solve several issues encountered in the orchestral literature.

Crab Technique

François Rabbath was the first to develop the crab technique and to incorporate it into pedagogy. He made the Bach suites his laboratory for experimenting with developing and mastering the crab technique. While transcriptions of Bach suites for double bass are usually written in new keys or sound an octave lower, most of Rabbath’s transcriptions use the same range and key as those for the cello, creating enormous technical demands. In order to solve some of these technical problems, Rabbath created the crab technique. This particular technique assists the player with thumb position and permits greater security in executing a succession of notes. Rabbath explains that one of the principles of the technique is to never lift a finger off the string without making sure of the ensuing fingering. Consequently, “this is the system of fingerings where you never actually make a shift, but alternate fingers instead.”\textsuperscript{87} According to Rabbath,

... it is vital to have completed the study of the scales before beginning crab technique. You must be able to play scales for at least two hours. Since most of


the crab exercises are in C major, that the scale seems to be the preparation. Arpeggios provide a secure knowledge of the upper part of the fingerboard. Double stops develop strength and intonation. To play octaves or unisons as double stops, the hand must be quite open. At the lowest point in C major, most players will have to line up the thumb and third fingers in an almost straight line. It takes time to develop enough strength and endurance to play one octave up and down in octaves or unisons. It also takes time to develop intonation with these intervals and to move only one finger when adjusting for intonation. Being able to play octaves is a good indicator that you are physically able to start the crab technique. Alternate thirds are also excellent preparation for crab technique because they anticipate many of the movements, and because many of the crab exercises are in alternating thirds. \textsuperscript{88}

Figure 62 below demonstrates the technique; the circle around the number denotes that “the finger should not move before the next finger has been placed.” \textsuperscript{89}

![Figure 62. Exercise of crab technique from Rabbath’s La Nouvelle Technique de la Contrabasse, Vol 3.]

One of the negative aspects of this technique may be the collapse of the fingerings in the thumb position. By disguising the shifts, however, the unusual shaping of the left hand gives the bassist many advantages that can improve musicality.


\textsuperscript{89} Rabbath, Volume 3 (Paris: A. Leduc, 1977), 80.
Figure 63. Iconography of Rabbath’s *Nouvelle Technique de la Contrabasse*, Vol 3.

Because the crab technique is used mainly for solo work, and in the thumb position area, this contemporary approach can rarely be simply *inserted* in the orchestral literature. Neither is the horizontal approach necessarily indicated for this particular technique, as crab technique works better for passages using the same string or with few string crossings. However, the following excerpts present some exceptions.

The excerpt from Mozart’s *Symphony 41*, 2nd movement is composed of slurred 16th notes, facilitating the use of the crab technique. Since the bow works well for this, it
might be wiser to avoid the common practice of this excerpt, which is to execute the passage on the first string. Performing it instead on the second string results in a mellower, darker sound. Thus, the crab technique enhances the piano dynamic and improves the connection of the notes because finger anticipation camouflages the shift.

Figure 64. Mozart’s Symphony No. 41, 2nd movement, m. 66.

Although Rabbath was the first to describe it formally, bass players and cellists had used this technique before. Petracchi used a similar technique, one which relies on anticipating where the thumb will move. In his system, the thumb can move forward or backwards while the other notes are still in position. The excerpt of Strauss’s Don Juan demonstrates where it can be applied.

Figure 65. Strauss, Don Juan, thumb position anticipation.
Left-hand Articulation Techniques: The Hammer-On and Pull-Off

Special techniques that enhance slurred passages, and consequently improve the articulation of the notes, are the hammer-on and pull-off. These techniques are predominantly used in rock, jazz, and pop, but seldom discussed in the classical realm. Since these techniques involve an extra articulation, they can help prevent muddy sounds the bass sometimes produces due to its low frequencies, especially in the lower and middle registers. Because most instruments are electric in pop bands, the hammer-on and pull-off techniques are easier to execute with the fast response of pick-ups and other electronic devices. These techniques require extra effort on acoustic instruments, but nevertheless constitute good alternatives, particularly for performing an orchestral audition.

The hammer-on can be described as a technique performed on stringed instruments where sharply bringing the finger down on the fingerboard causes a note to sound. As a result, slurred notes have a boost in articulation; thus a clearer sound is produced. This approach is used particularly for ascending lines.

The pull-off is a related technique, consisting of plucking the string off the fingerboard with a left-hand finger. This approach is used in descending music lines. The player can combine these techniques with others, such as the pivot, crab, four-finger, and low-thumb techniques. Using the hammer-on or pull-off—left-hand techniques—improves the clarity of the notes in the lower and middle registers.

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90 Jeff Bradetich, *Double Bass: The Ultimate Challenge* (Juliaetta, ID: Music For All to Hear, Inc., 2009), 57.

91 Ibid., 57.
Combining Approaches

Contemporary, or modern, techniques can improve the execution of orchestral excerpts exponentially. However, the best approach for taking advantage of these techniques in the orchestral literature is in their combination. Although these techniques might be much improved over traditional ones, the old school should not be ignored. Depending on which melodic patterns or other musical concepts that the music demands, traditional techniques might be best. Nevertheless, they may not work when using the horizontal approach, for which the pivot technique has an advantage, as it facilitates playing scales when crossing strings. Furthermore, because the pivot has the capability of reaching a minor 3rd on same string, it can be applied for conjunct melodies within this range. Generally, because excerpts present more than one of the scenarios discussed in excerpts above, the bassist will often be required to use several approaches or techniques for the same passage.

Chapter V discusses orchestral extracts of entire passages requested in most orchestral auditions.
Figure 66. Mozart’s Symphony No. 39, 1st movement.

This excerpt displays the use of the pivot technique in measure five. Also, the low-thumb technique is applied in measures 50-57.

Figure 67. Mozart’s Symphony No. 39, 4th movement.

The excerpt above (Figure 67) shows the application of low-thumb technique in measures 1-4, and in measures 9 and 10. In measures 11-15, 18, 19, 22 and 23, the pivot technique is applied. The use of this technique allows the motives to be grouped in a single position.
Figure 68. Mozart’s *Symphony No. 40*, 1st movement.

The first four measures of Figure 68 display the use of the theme being applied on the D and G strings. The use of this approach provides a smoother sound and articulation. Measure 5 uses the four-finger technique, assisted by the pivot technique. Measure 6 shows arpeggios using the horizontal approach. This approach illustrates the option of string crossing rather than playing the passage on the D and G strings, resulting in an enormous shift of a 4th and major 6th. (See Figure 69, measures 6)
Figure 69. Mozart’s Symphony No. 40, 1st movement.

Figure 69 shows the traditional practice in the first six measures of Mozart’s Symphony No. 40.

Figure 70. Beethoven’s 7th Symphony, 1st movement.

The excerpt of Beethoven’s 7th Symphony shows conjunct notes encompassing a minor 3rd, a clear example of pivot technique.
Figure 71. Strauss’ *Don Juan*,

In Figure 71, the excerpt shows the application of pivot technique from the last beat of measure 3 to measure 4. In measures 10 and 12, the excerpt displays the application of the crab technique.

Figure 72. Mozart’s *Symphony No. 41*, 2nd movement.
In Figure 72, the excerpt shows the application of the pivot technique in measures 1, 4, and 6. Also, in measure 6 the application of the crab technique is shown. Measure 10 is a typical example of the application of the traditional technique. Almost the entire passage is executed on the first string (G string), which enhances the *fortissimo* dynamic.
CHAPTER VI

CONCLUSION

Mastering the orchestral repertoire is the main goal of most bassists concentrating on the Western European canon. Thus, the study of this repertoire is important and should be approached with the same intensity as the study of solo repertoire. Knowing contemporary left-hand techniques facilitates the mastering of orchestral repertoire.

This research has demonstrated that most modern double bass techniques have been used in the past, but were neither fully developed nor included in formal pedagogical systems such as double-bass method books. For instance, a technique such as the pivot had been described in the past, and perhaps commonly used by bass players without calling it by its name. François Rabbath was probably the pioneer to explain the pivot in a pedagogical manner, the low thumb and the crab techniques.

While the pivot technique had already appeared as a pedagogical system, more alternatives have appeared historically in the theory and practice of the four-finger technique. This technique may be the oldest, as it derives from viola da gamba technique. The New Dutch School seems the most consistent system for teaching the four-finger technique. However, it requires an approach to playing that demands learning outside traditional basic positions and can take longer to fully develop. Although the four-finger technique is quite different from the standard technique, the basic position which encompasses semitone/whole-tone and whole-tone/semitone might be more useful for the orchestral repertoire. As seen in combination with German and Italian fingering, a hybrid approach is perhaps easiest for applying the four-finger technique. Finally, this system used together with the pivot technique potentially brings great mobility, and a more
useful application of the left-hand technique. However, because the four-finger technique uses a different system, it remains controversial as a pedagogical tool. Consequently, this system is the less used by bass teachers and performers alike.

The low-thumb combined with the pivot technique is perhaps most useful for the orchestral literature. It facilitates legato and virtuosic passages by reaching over a great number of notes. These systems seem to have been used extensively by the great 19th-century bass virtuoso, Domenico Dragonetti. Although in the 19th-century this technique would not have been considered for everyone, today low-thumb technique is widely known and used to facilitate execution of the double bass solo repertoire. This modern technique requires no special approach apart from that of playing in the lower position of the double bass.

The crab technique, another thumb technique, is also useful. By alternating fingerings this technique is perhaps best for smooth shifts, providing better connection between the notes.

All of the techniques discussed in this dissertation, with the exception of the four-finger technique, were systematically organized by Francois Rabbath, who perhaps best represents modern double bass pedagogy. Although his technique has primarily been considered for solo playing, professors who studied Rabbath’s technique have students who have been major winners of orchestral auditions today, demonstrating that Rabbath’s style of playing should not be ignored.

This dissertation has shown how modern double bass left-hand techniques might be used to facilitate performances of the orchestral repertoire. These concepts have improved upon traditional approaches, as the performer can use them either in the vertical
or horizontal manner of playing. Further studies might investigate how these techniques enhance musical possibilities, such as improving legato and other articulations. Finally, the study of modern double bass performance practice gives players more options for improving in phrasing and expressing musical ideas both large and small. Especially for bassists who started in the traditional system, those modern techniques can improve exponentially musicality and agility.
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