



An Investigation Into the Bowing Techniques in Performing Bach Cello Suite NO.2 For Double Bass

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Abstract

The performance of Bach's Cello Suite No. 2, BWV 1008, on the double bass presents unique bowing challenges, primarily stemming from its origin as a cello composition that has been transposed for the double bass. This study delves into the intricacies of bowing techniques required for this transcription, aiming to address these challenges and enhance the understanding of historical performance practices. This research comprises two primary objectives. Firstly, it seeks to identify and analyse the bowing technical challenges inherent in performing Bach's Cello Suite No. 2 on the double bass transcription. Secondly, it aims to develop effective bowing techniques tailored to this particular transcription, enabling double bassists to navigate and interpret the suite with proficiency and artistry. This study employs an artistic research approach, combining practical performance exploration with analytical investigation. It involves in-depth examination of historical performance practices, critical analysis of the transcription's challenges, and the development of innovative bowing techniques suited to the double bass. The study's outcomes encompass both textual and non-textual documentation. The textual documentation includes detailed analyses of the bowing challenges and the development of performance strategies. Non-textual documentation encompasses audio and video recordings of the performed transcription, demonstrating the

practical application of the developed bowing techniques. This research significantly enriches the scholarly discourse surrounding Baroque music, historically informed performance practices, and the intricacies of double bass technique. By addressing the unique challenges posed by Bach's Cello Suite No. 2 transcription, this study offers valuable insights for double bassists, educators, and researchers. It contributes to a deeper understanding of the relationship between bowing techniques and the performance of Baroque music on the double bass, furthering the appreciation of this captivating musical genre.

Keyword: *The bowing techniques of Bach's Cello Suite No. 2 BWV 1008 on the double bass, Artistic research in Double bass music performance, Practice research on Bach's Cello Suite No. 2 BWV 1008 on the double bass, the bowing challenges on Bach's Cello Suite No. 2 double bass transcription,*

Introduction and Background of Study

The significance of bowing technique in the context of double bass performance cannot be overstated, as it exerts a profound influence on the timbre, articulation, and emotive qualities inherent in this particular instrument. In the field of musical performance, it is imperative to possess a robust and unwavering bowing technique. This particular skill is of utmost importance as it bestows upon the performer the ability to generate a lucid, vibrant, and precisely enunciated sound. Moreover, it is through the mastery of this technique that one can attain a seamless and emotionally evocative musical expression.

In accordance with the aforementioned assertion, it is imperative to possess a profound understanding of the intricacies of bowing techniques in order to execute virtuosic solo compositions on the double bass. As articulated by Karr (1970; p.14), the mastery of right-hand technique undoubtedly paves the way towards uncharted spheres of emotiveness and liberation”.

This study chooses the renowned Cello Suite No. 2 in D minor, BWV 1008 which composed by the distinguished Johann Sebastian Bach. This composition has garnered significant attention and admiration from both composers and musicians alike. This masterpiece has not only been transcribed but also skilfully adapted for the double bass by a diverse array of talented individuals within the musical dimension. The suite, initially crafted for the cello, has garnered significant admiration for its resplendent melodic motifs and elaborate contrapuntal interplay, thereby rendering it a favoured selection for transposition onto the double bass. In the field of double bass transcriptions, it is customary to undertake certain adaptations to ensure the seamless integration of this instrument's distinctive lower range and its unique technical capacities.

The primary objective of these transcriptions is to preserve the intrinsic musical qualities and distinctive nature of the original suite, while adapting it to be performed on the double bass. In the realm of musical performance, adaptations may be employed to accommodate the inherent characteristics of a given instrument. These adaptations can manifest in various forms, such as alterations in fingerings, bowings, and occasionally, octave transpositions. The purpose of these adjustments is to ensure optimal utilization of the instrument's unique range and capabilities.

When embarking on the performance of Bach's Cello Suite No. 2, BWV 1008, on the double bass, one encounters various bowing challenges (Isserlis, 2021). These challenges arise primarily from the fact that the piece was originally composed for the cello and has been

transcribed for our instrument. Although both the double bass and the cello are string instruments, they differ significantly in terms of range, string tension, and size.

In terms of range, it is important to note that the double bass possesses a notably lower range when compared to the cello. When transcribing the suite for the double bass, it is necessary to adjust the notes in order to accommodate the instrument's lower register, particularly the fingerings and bowings in this adaptation (Tanenbaum, 1980).

In the term of string crossing, Bach frequently uses complex string crossings and polyphonic passages in his compositions. Double bassists may often face challenges when it comes to executing seamless transitions between strings while simultaneously ensuring a consistent and balanced tone and articulation (Wolff, 2020). The meticulous execution of bowing technique is of utmost importance in order to achieve a flawless and harmonious sound.

In the delicate act of transposing a musical opus from one instrument to another, the discerning musician may encounter a plethora of challenges pertaining to the nuanced articulation and sublime phrasing of the composition. When delving into the sphere of the double bass, musicians must embark on a meticulous exploration of the intricacies that lie within bow pressure, speed, and contact point. These elements serve as the conduits through which they can effectively convey their desired musical expression (Raposo, 2007).

When conducting an analysis of Bach's work, one must also consider the ornaments that he used in his compositions (Miletic, 2010). Some examples of these ornaments include trills and mordents. Bach's music is characterized by the frequent use of ornamentation. Incorporating these ornaments into the repertoire of the double bass and performing them with the utmost precision and clarity can be a challengingly difficult technical challenge.

In regards to bow control, it is worth noting that Bach's suites frequently showcase rapid scale passages and arpeggios that demand a high level of proficiency in bow control (Bowman, 2018). To achieve a seamless performance, it is imperative for double bassists to cultivate dexterity and synchronize the movements of both the bow and the left hand while manoeuvring through these musical passages. The double bass's long strings can make it difficult to perform intricate bowings, especially in faster passages. In order to properly accommodate the longer strings of the instrument, musicians must adjust their bowing techniques.

In the field of musicality, one must strive to achieve a harmonious equilibrium when it comes to the sonorous vibrations produced by the various strings of the double bass. This task, my dear student, can prove to be quite a formidable endeavour, particularly when executing expeditious and intricate passages. As aspiring double bassists, it is crucial to dedicate ample time and effort towards honing our skills in the areas of bow distribution and string sensitivity (Gaynor, 2012).

In order to conquer these bowing challenges, it is essential for double bassists to dedicate ample time to practice and perfect their technique. This entails engaging in scale exercises, mastering string crossings, and paying meticulous attention to dynamics and phrasing. Furthermore, it would be highly beneficial for you to consult transcriptions and interpretations by seasoned double bass players or seek the guidance of a well-informed instructor to truly grasp the intricacies of performing Bach's Cello Suite No. 2 on the double bass (Tanenbaum, 1980).

The design of investigation of this study conduct bases on the stage of investigation. The first is to identify the bowing technical challenges in Bach's Cello Suite No. 2 on the double bass transcription. The second is to develop bowing techniques in in Bach's Cello Suite No. 2 on

the double bass transcription. This study conducted based on artistic research paradigm, The outcome of this study reported in the form of textual and non-textual data presentation. The musical interpretation of this renowned double bass suite is enhanced by the use of effective bowing techniques, which also deepen the performance's emotional impact and the clarity of the voice-to-voice communication.

Literature Review

Bowing Techniques and Their Significance in Double Bass Performance

In the double bass, the term "bowing techniques" refers to the various methods that are used to produce sound by moving the bow across the strings of the instrument. These methods can include variations in the speed, pressure, and direction of the bow stroke, as well as the placement and angle of the bow on the strings. Bowing techniques are used to produce a wide variety of tones and sounds (Billeter & Mores, 2014; Zimmerman, 2013). These techniques can be used to create a wide range of tonal qualities, ranging from smooth and sustained notes to percussive and staccato articulations. They are an important aspect of developing expressive and nuanced performances on the instrument, and they can be used to create a wide range of tonal qualities (Mick, 2012; Vance, 2011). In the past, numerous aspects of double bass bowing techniques, such as the employment of different bow grips, the application of pressure and weight, and the positioning of the bow on the strings, have been investigated in various pieces of written literature (Billeter & Mores, 2014; Zimmerman, 2013). In addition, research has been conducted to study the connection between different bowing techniques and musical expression, with a particular emphasis on the ways in which a broad spectrum of feelings and moods can be communicated through music using a variety of techniques (Mick, 2012; Vance, 2011).

In the term of compositional style, each periodisation has a difference characteristic of bowing. Baroque Period. During the Baroque period, double bassists frequently used fast and intricate bowing patterns, such as *bariolage*, to achieve virtuosic effects. *Bariolage*, according to Billeter and Mores (2014), is a technique that involves rapidly alternating between two or more strings, producing a quick and lively effect – this can also be referred to as strings crossing. Other common bowing techniques used during the Baroque period included *staccato* and *legato* strokes, as well as *pizzicato* for a light and delicate effect.

In the Classical Period, double bass players used more balanced and harmonious bowing techniques, such as the *arpeggio*. This technique involves playing the notes of a chord in succession, creating a flowing and arpeggiated effect, according to Billeter and Mores (2014). Other common bowing techniques used during the Classical period include *detaché* strokes to produce a clear and articulate sound, as well as *spiccato* to produce a rhythmic and dynamic effect.

During the Romantic period, double bass players frequently used expressive bowing techniques such as *portamento* and *vibrato* to create a singing and emotional effect. *Portamento*, according to Mick (2012), is a technique that involves sliding the bow smoothly between two notes to create a smooth and flowing effect, whereas *vibrato* involves oscillating the pitch of a note to create a warm and expressive sound. Other common bowing techniques used during the Romantic period included *tremolo* for a shimmering and intense effect, and *martelé* for a powerful and dramatic effect.

Modern Period: Double bass players have continued to experiment with a wide range of bowing techniques in the modern era, frequently incorporating extended techniques such as *col legno* and *sul ponticello*. According to Zimmerman (2013), *col legno* is a technique that

involves striking the strings with the wood of the bow to create a percussive and muted sound, whereas *sul ponticello* is a technique that involves bowing near the bridge of the instrument to produce a metallic and eerie sound. Harmonics, *glissandi*, and multiphonics are other common bowing techniques in modern music.

There are many bowing techniques used in double bass playing, and the objectives of each technique may vary depending on the specific musical context and artistic choices of the performer. The common bowing techniques and their objectives, based on previous literature:

1. *Detaché*: This is a basic bowing technique that involves separate and distinct strokes, with a slight pause between each note. The objective of this technique is to create a clear and articulate sound, and it is commonly used in fast or rhythmically complex passages (Zimmerman, 2013).
2. *Legato*: This is a bowing technique that involves smooth and connected strokes, without any discernible pause between notes. The objective of this technique is to create a seamless and flowing sound, and it is commonly used in slow or lyrical passages (Billeter & Mores, 2014).
3. *Spiccato*: This is a bowing technique that involves bouncing the bow off the strings, producing a short and percussive sound. The objective of this technique is to create a rhythmic and dynamic effect, and it is commonly used in fast and energetic passages (Vance, 2011). This technique can also be used over indications of *staccato* markings on a music.
4. *Col legno*: This is a bowing technique that involves striking the strings with the wood of the bow, producing a percussive and muted sound. The objective of this technique is to create a special effect or color in the music, and it is commonly used in contemporary or experimental music (Mick, 2012).
5. *Martelé*: This is a bowing technique that involves using a heavy and accented stroke, producing a sharp and punctuated sound. The objective of this technique is to create a powerful and dramatic effect, and it is commonly used in bold and expressive passages (Zimmerman, 2013).
6. *Bariolage*: This is a bowing technique that involves rapidly alternating between two or more strings, creating a quick and lively effect. It was commonly used in the Baroque and Classical eras, and the objective was to create a virtuosic and showy effect (Billeter & Mores, 2014).
7. *Pizzicato*: This is a technique that involves plucking the strings of the instrument with the fingers, rather than using the bow. It was commonly used in the Baroque era, and the objective was to create a light and delicate effect (Zimmerman, 2013).
8. *Portamento*: This is a bowing technique that involves sliding the bow smoothly between two notes, creating a smooth and flowing effect. It was commonly used in the Romantic era, and the objective was to create a singing and expressive effect (Mick, 2012).
9. *Tremolo*: This is a bowing technique that involves rapidly repeating the same note, creating a shimmering and intense effect. It was commonly used in the Romantic era, and the objective was to create a dramatic and emotional effect (Vance, 2011).
10. *Arpeggio*: This is a bowing technique that involves playing the notes of a chord in succession, creating a flowing and arpeggiated effect. It was commonly used in the Classical era, and the objective was to create a balanced and harmonious effect

(Billeter & Mores, 2014). Arpeggio is indicated by succession of notes that forms a broken chord. It involves leaps on the left hand while controlling a consistent weight on the right-hand is important for successful effect.

Bowing techniques in double bass have evolved and changed over time, and different composers and musical eras have emphasized different techniques and styles. Baroque music often featured fast and intricate bowing patterns, such as *bariolage*, while Romantic music often used expressive techniques like portamento and vibrato to create a singing and emotional effect. In addition, different compositions within the same era may have different bowing requirements depending on the style and context of the piece. It is important for double bass players to be familiar with a wide range of bowing techniques and styles in order to effectively interpret and perform different musical works.

Bach Cello Suite No 2

The Bach Cello Suite No 2. consists of 6 different movements was composed during the baroque period is an unaccompanied piece - originally composed for cello during the baroque times which was different in construction as compared to today's modern cello. The artistic review of this piece is based on a recording of Edicson Ruiz, dated June 12, 2020 and was uploaded to the following youtube link

<https://www.youtube.com/watch?v=BU3RalsC3zs>

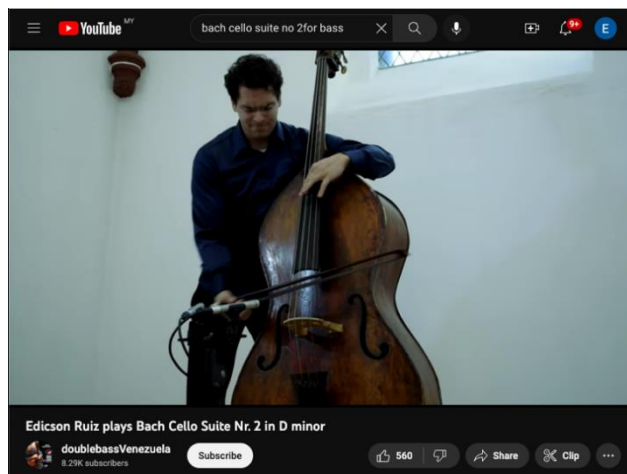


Figure 1 : Edicson Ruiz plays Bach Cello Suite No 2.

Edicson Ruiz, the virtuosic bassist, captivates listeners with his impeccable technique and profound in this recording, Ruiz expertly employs a German grip of a baroque bow, showcasing his profound understanding of historical performance practices. The ethereal qualities of this bow are evident in its weight, which effortlessly produces a delicate and airy sound, setting it apart from the bold and robust tones typically associated with modern bows. Ruiz's masterful execution of *detache'* bowings creates a resonating sound that lingers in the air, refusing to fade away completely. This deliberate choice allows for a more connected musical line, while still maintaining a subtle sense of detachment. The result is a performance that strikes a delicate balance between continuity and a nuanced legato quality.

The auditory experience commences within the initial measure of the Prelude. Ruiz's performance showcases a remarkable emphasis on the downbeat of the 16th notes, skilfully executed through the deliberate use of a down bow technique. This choice not only highlights the rhythmic precision but also adds a distinct flavour to the musical passage. Furthermore,

in measure 5, Ruiz's artistry shines through as he seamlessly transitions into a captivating three-note slur, effortlessly connecting the subsequent notes.

Such attention to detail and nuanced execution truly elevates the overall musical experience. In the sixth measure, the Ruiz skilfully employs a distinct bowing technique on the 16th notes, yet manages to maintain a seamless connection between them, showcasing a masterful execution of legato. Ruiz's masterful execution on the strings transcends the boundaries set by conventional transcriptions, as he effortlessly incorporates an abundance of bow strokes that elevate the musical experience to new heights.

In his execution of this suite, the Ruiz showed skilfully employs a plethora of legato techniques, seamlessly blending each note into the next with utmost precision. Furthermore, he demonstrates his virtuosity by employing a variety of distinct strokes, each one meticulously executed to create a rich and diverse sonic palette. The Ruiz 's deliberate approach in this rendition ensures the preservation of the intricate sound, commanding volume, and dynamic bowing technique, resulting in a profoundly cohesive and captivating performance of the Prelude.

The Ruiz perform preserves this thematic coherence in the *Allemande* of Movement II, mirroring the tempo established in the *Prelude*. In the realm of the six movements, the illustrious *Courante* – Movement III stands as a testament to speed and agility. With its lightning-fast tempo, this movement takes the listener on a thrilling journey through a whirlwind of musical prowess. The use of double stops was employed throughout the movements except for movement III- *courante*. Ruiz, executed this technique flawlessly. The strings vibrate at its optimum as the right pressure were put to execute the double stops.

In the captivating span from measure 12 to 17, the composition demands a level of technical prowess akin to the mesmerizing bariolage technique. The performance showcases a breathtaking display of virtuosity, as the artist effortlessly navigates through a flurry of rapid notes and seamlessly transitions between different strings. Ruiz's masterful execution is evident in his adept utilization of various bow strokes, skilfully employed to sustain the unwavering intensity that permeates throughout the composition *Sarabande* – Movement IV, a captivating composition, gracefully unfolds with a deliberate pace, allowing the listener to fully immerse themselves in its ethereal beauty. This mesmerizing movement is adorned with a plethora of meticulously executed trills and resounding chords, which add depth and texture to the overall sonic tapestry.

Ruiz's masterful execution of sound takes center stage in his suite. In this particular movement, the artist showcases a deliberate and calculated approach, opting for an emphasis on bow strokes rather than a flurry of rapid notes. With an unwavering commitment to coherence, the artist effortlessly upholds the seamless flow of the composition, skilfully employing the legato technique from start to finish.

Menuet I&II, a delightful composition, gracefully embraces the enchanting $\frac{3}{4}$ meter, allowing the listener to be transported to a world of elegance and sophistication. The legato technique employed in this piece is executed with utmost finesse, creating a seamless flow of melodic lines that effortlessly intertwine. The judicious use of embellishments, particularly in the form of chords, adds a touch of ornamental charm, further enhancing the overall musical tapestry. Ruiz's interpretation of this menuet showcases a deliberate and measured pace, allowing for a heightened sense of introspection and contemplation.

The Ruiz's interpretation is clearly directed towards the meticulous execution of auditory elements. In the captivating realm of Menuet II, the skilled artist masterfully employs *detache'*

bow strokes and punctuates the air with short staccato passages, creating a delightful interplay that intermittently suspends the graceful flow of the legato technique.

Gigue – Movement VI exudes an exuberant aura, as it gracefully dances to the rhythm of a delightful 3/8 meter. The composition showcases a plethora of 16th notes, imbuing the musical line with a perpetual sense of rapidity. This technique effectively upholds the piece's connectivity, seamlessly blending legato strokes throughout. Ruiz's masterful execution is evident in the abundant utilization of rapid, sweeping bow strokes that permeate every moment of this captivating movement.

The Ruiz's interpretation incorporates the left-hand vibrato technique, adding a captivating touch to the repeated section's quarter notes. The artist's musical interpretation is skillfully showcased, demonstrating a captivating range of styles and expressions. The *Gigue* showcases an impressive array of *Bariolage* techniques, expertly woven throughout the entire piece. Ruiz's masterful execution of the legato technique is truly awe-inspiring, as witnessed in these captivating movements. With a seamless flow and an emotive resonance, Ruiz effortlessly connects each note, creating a profoundly moving sonic experience throughout the entirety of this Suite.

METHODOLOGY

Practice-based research is defined as a unique investigation carried out to gain new knowledge, partly through practice and the results of that practice (Linda Candy, 2018). An academic setting allows artists to carry out research based on art practice and Elkins (2009) describes it as "Artists with PhDs". These understanding claims that practice-based research must seek two results; 1) artistic process; and 2) artistic works; as reiterated by Smith and Dean (2009); Sullivan, 2009; Borgdorff, 2006; Djahwasi and Saidon, 2020).

According to de la Fuente (2019), methodology in art research involves a critical and reflective process that integrates different theoretical perspectives, research methods, and creative practices. It includes methods such as archival research, ethnography, visual analysis, interviews, and surveys, among others. The methodology chosen should be appropriate to the research questions and objectives and should be able to provide reliable and valid data. There are four discussions in the chapter three; First is related to the research paradigm in art. Second discussion is the phase of investigation. Third is depicting the artistic design, and finally, the fourth is suggesting the critical reflections.

This study focuses on the technical bowings and articulations of the right hand in the transcription of J.S. Bach's Cello Suite No.2 for Double Bass. The execution of these techniques has been cultivated and manifested in the context of double bass recitals 01 and 02. The methodologies being employed here are the tools to serve the mentioned research objectives; (1) To identify the bowing technical challenges in the works of J.S. Bach Cello Suite No.2 for Double bass transcription. (2) To develop bowing techniques in J.S. Bach Cello Suite No.2 for Double bass transcription.

The research objectives of identifying and developing the bowing techniques are investigated distinctively in the selected compositions using score analysis method. The score analysis can be looked at from four different aspects; (1) Phrasing as written in the music; (2) articulations and expressions as indicated by the respective composer; (3) dynamic markings as indicated in the score; (4) compositional aspects that involves bowing technical difficulties like arpeggios, strings crossings and double-stops as written by the respective composers.

The following is the Conceptual Framework describing how this study being conducted. The findings and discussions of each repertoire are discussed based on this conceptual framework which is also describing the phase of investigations.

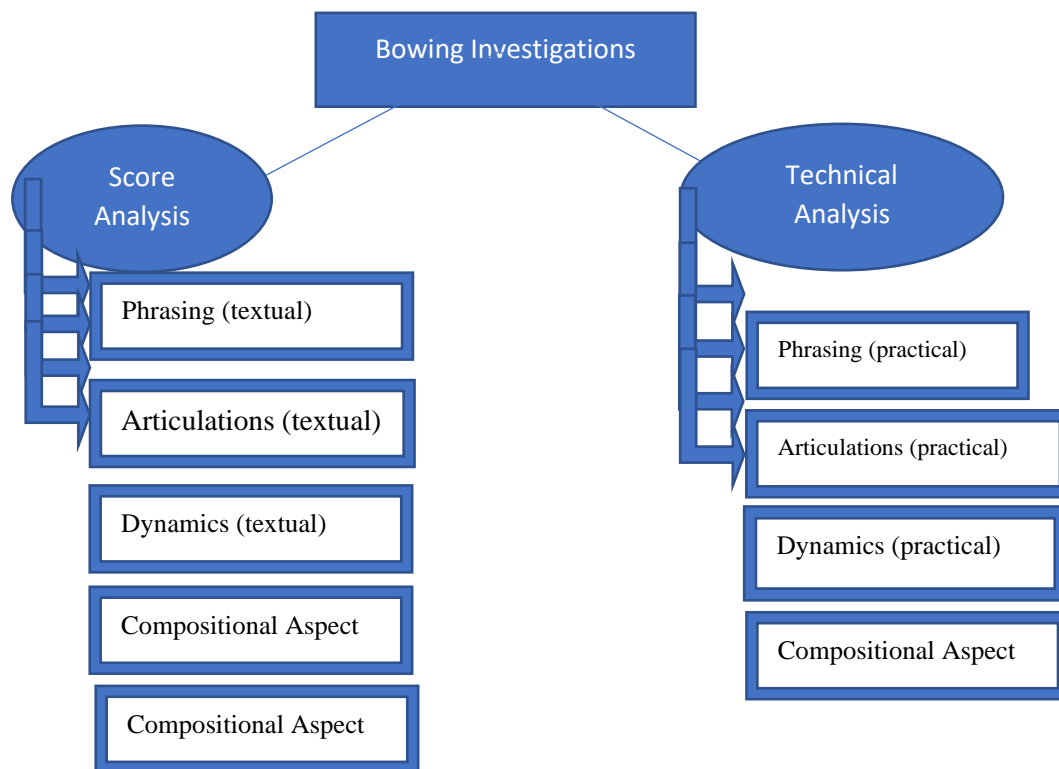


Figure 2: Conceptual Framework

The research instrument is a method used to collect data in achieving the purpose of this study. Referring to the research objectives of this study, the table below explains some of the instruments that will be applied throughout this research process.

No.	Research Objective	Research instrument
1	To identify the bowing technical challenges in the works of J.S. Bach, J.B. Vanhal, and G.Bottesini.	<ul style="list-style-type: none"> • Score analysis • Video Analysis
2	To develop bowing techniques in selected works by J.S. Bach, J.B. Vanhal, and G.Bottesini.	<ul style="list-style-type: none"> • Practice investigation • Critical reflection

Table 1 Research Instruments Used Based on the Research Objectives

When attempting to comprehend the practice investigation, according to Djahwasi and Saidon (2022), there are three significant aspects of the practice of investigation in the study of music performance that needs to be clarified. These aspects are as follows: (1) is to incorporate different facets of comprehension and practice into the scores and sounds; (2)

purpose is to encourage the performer's intentionality and creativity in their work, and; (3) is to acquire knowledge of music performance on multiple levels.

Finding and Discussions

The unaccompanied Bach Cello Suite No.2 transposed to A minor consists of six movements is based on Bernard Salles transcription in G minor. This composition was originally written for an unaccompanied cello. Bach's compositions are known for its progressive harmonic movements and rapid melodic movements making it a challenge to be played on the double bass. Therefore, reading a transcription written for double bass has omitted many more compositional issues because it has been simplified to be playable on the double bass. A selected transposition of this suite showcases on certain range of the instrument. The transposition of this Suite in A minor showcases the middle range of the instrument while taking the advantage of the many open strings associated in this piece as an anchor for synchronizing its tuning of this composition.

The unaccompanied Bach suite deals with many right-hand bowing technical issues. The discussions of the right hand-bowing technical issues are to be looked at from the following aspects:

1. The Bowing Technical Challenges

The bowing technical challenges in this study are interpreted using the score analysis and bowing analysis perspectives which can be looked at from four smaller aspects; (1) phrasing; (2) articulations; (3) dynamics); and (4) compositional aspects.

Phrasing breaks a whole composition into smaller musical units to be easily analysed and conveyed during a performance. It is also a way of how a musician shapes the expressions and musical meanings in a performance. This aspect demands a thorough understanding of a composition so to deliver musical passages that imitates a speech-like sentences. Phrases are marked using slur symbols in the score.

Articulations are marked in the music scores by editors or composers in the music scores to give an idea to its performers on how a particular note should sound like.

Dynamics marks are indicated in the score using abbreviations in Italian like: *pianissimo*, (*pp*) very soft; *piano*, *p* (soft); *mezzo piano*, *mp* (moderately loud); *forte*, *f* (loud; literally, strong); *fortissimo*, *ff* (very loud). Continuous change from one degree of loudness to another may be specified by the terms *crescendo* (getting louder) and *diminuendo* or *decrescendo* (getting softer) or by the symbols and, respectively.

Compositional aspects that can be looked at in this study are the use of arpeggios figure, repetitive notes thus demand a bariolage technique, manipulation of scale used indication of chords that demands double stops.

The followings are the discussion of the score and bowing analysis relating to this work of J.S Bach Cello Suite No. 2.

Phrasing

Movement I – Prelude is a slow 8th note tempo but consists of many moving 16th notes melodic lines. This movement can be viewed in two big phrases. Each big phrase can still be broken down into smaller phrases as described in the next table :

<p>Phrase 1 (measure 1 - 48)</p>	<p>Phrase 1a (measure 1 – 4) Phrase 1b (measure 5 – 12) Phrase 1c (measure 13 – 24) Phrase 1d (measure 25 – 39) Phrase 1e (measure 40 – 41) Phrase 1f (measure 42 – 48)</p>
<p>Phrase 2 (measure 49 – 63)</p>	<p>Phrase 2a (measure 49- 54) Phrase 2b (measure 54 – 59) Phrase 2c (measure 60) Phrase 2d (measure 61) Phrase 2e (measure 62) Phrase 2f (measure 63) Phrase 2g (measure 64)</p>

able 2 Grouping of Phrases for Movement I – Prelude from Score Analysis Perspective

Articulations

Movement I – Prelude consists of indicated articulations that should be carefully looked at like *detaché* and *staccato*. The following figure describes the articulations that can be found in the score at measure 4.



Figure 3 : *Detaché* bow stroke

Dynamics

Movement I – Prelude contains an important dynamic marking that appears at the beginning of phrase 2 as shown in the following figure.



Figure 4 : A contrast of indicated pianissimo dynamic marking

There is a contrast of dynamic range since the measure before is the end of phrase 1 which understood to end in a *forte* dynamic marking. There is not much indication of dynamic markings in the score from t this era, but it is understood for the performers to employ basic principles of ones understanding to use a *crescendomarks* at ascending notes while a *decescendo* marking at descending notes. An interpretation of the prominent notes in this score are mostly the highest notes of a scale, dissonant notes that do not belong in the A minor scale and notes that hold 8th notes or longer values deserved to be played louder than other notes.

Compositional Tools

At the end of movement I – Prelude, Bach wrote successions of chords to end the movement. When transcribed for double bass, some notes were omitted to suit the playability on this instrument as can be seen in the original transcription of Bernard Salles. This employment of chords in this composition requires some technical demand referring to as double stops.



Figure 5 : Succession of Chords

Bach also includes a compositional tool that is adopted throughout this Suite where he writes rapid alternating ascending and descending lines while maintaining its bass notes. This displays a flashy virtuosic effect of strings crossings which requires another technical bowing difficulty known as the *Bariolage* shown in the next figure taken from Movement III – Courante.



Figure 6 : Bariolage effect

Bowing Analysis

Bowing analysis is a textual description of how to execute the mentioned bowing interpretation as identified in the score analysis looking from the common perspectives like phrasing, articulations, dynamics and compositional tools.

Phrasing

Movement I – Prelude consists of two big phrases as mentioned in Table 2. These big phrases can be broken down into smaller phrases as shown in the table. These phrases require a right-hand *legato* bowing technique throughout the movement. This technique demands smooth and connected strokes, without any discernible pause between notes. In order to execute this technique, the bow resistance and weight needs to be carefully planned out. The crucial demand is during the bow changes where one needs to maintain the bow resistance and weight so to be able to execute this technique smoothly.

Articulations

Figure 3 depicts a *detaché* articulation. This *detaché* stroke appears throughout this movement I – *Prelude* to indicate separate and distinct strokes, with a slight pause between each note. In interpretation of Bach's music, these *detaché* strokes are not completely silenced between notes, instead - the bow slightly leaves the string to let the note rings just enough before playing the next consecutive note using separate bow.

Dynamics

Figure 4 shows a contrast in dynamic markings at the beginning of the Phrase 2. Here, a bowing technique called *Sul Tasto* could be used which is to play on the fingerboard in order to execute a very soft and warm dynamic marking.

Compositional Tools

Figure 5 depicts a succession of chords at the end of the *Prelude*. This compositional tool requires a right-hand bowing technique known as the double stop. Double stop requires to play two notes from two adjacent strings simultaneously. The last chord in measure 63 of this prelude requires to play more than two notes simultaneously. A strong physical left-hand fingerings help to support the execution of the double stops. The right-hand bowing technique requires a balance distribution of weight and consistent bow speed in order to make good sound during a double stop. Bariolage effect is displayed throughout the Suite where Bach adopted a rapid alternating ascending and descending lines while maintaining its bass notes. This effect requires excellent strings crossings technique (See Figure 6).

2. Development of Practice

Development of practice describes the problem solving or also known as artistic processes in this study. The challenges were identified based on my own video and audio practice recordings that I have recorded earlier. The technical difficulties where I have stumbled are discussed here.

Legato

Legato is a bowing technique that involves smooth and connected strokes, without any discernible pause in between notes. It is very important not to accent during bow changes. The opening of the prelude demands these legato strokes which needs to be maintained throughout the movement.



Figure 7 : Legato Bow Strokes

The common problem that I encountered in executing this technique is mostly when there are leaps or moving notes involved on the left hand. I tend to put more focus on the left hand and forget to maintain the resistance and weight on the left-hand resulting in inconsistent tone. Therefore, I try to break down this issue, by practicing the left hand and right hand independently first. Singing the left hand's notes while focusing on execution of consistent open strings help to improve the right-hand's delivery of sound. Another focus is to minimize the silence between bow changes. This can be practiced by understanding the movements of the right-hand arm and wrist. (Please refer to Appendix B1).

Dynamics

Displaying a wide dynamic range in this Suite is another problem area that I had to give attention to. Without being able to execute dynamics, the music shall only sound plain and

boring. This excerpt from measure 44-49 taken from the Prelude shows a wide dynamic contrast as displayed in the next figure 4.5. Measure 44 to 48 demands a very loud dynamic because the music is approaching at the end of the big phrase 1 reaching the climax of the *Prelude*. The next phrase at measure 49 starts with an indicated *pp* (*pianississimo*). The demand of this contra in dynamic range requires a detailed planning in executing it.

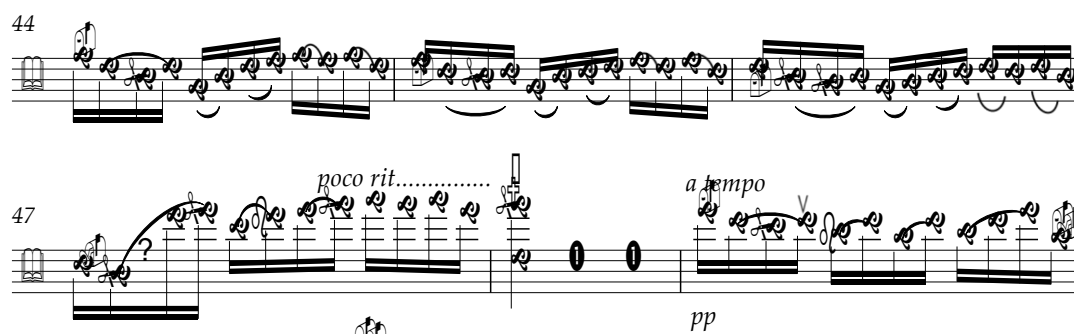


Figure 8 : Dynamic Contrast

In order to deliver a forte dynamic range, using a full bow and a fast bow speed are the contributing factors. The challenge is to execute the forte dynamic on the single 16th note followed by slurred notes like in the 1st beat of measure 44, 45, 46 and 47. Here, using a full bow on every separate stroke is important to deliver the forte dynamic. An isolated practice in executing a fast down and up bow helps to execute this passage successfully. At measure 48, indicates the end of phrase 1 that ends with a double stop. The challenge here is to arrive at the double stop with a similar loud volume as the measure before. The double stop figure requires a slightly slower bow speed because it demands more weight in executing it. At measure 49 is a pianissimo dynamic range. Here, I would place the bow nearer to the finger board using a Sul Tasto technique, which gives an airy soft dynamic range effect. (Please refer to Appendix B2).

Double Stop

This technique is displayed throughout this Suite. One of the prominent challenging figures is taken from the last 5 measures of the Movement I – Prelude (Please refer to Figure 5) . To execute these double stops often result in inconsistency of execution. Sometimes, only one string is sounding or unintended louder volume than the other. These problem areas needed extra attention in executing them.

Whenever harmonic note is possible, I take this advantage to use it. It is easier to make sound of a harmonic note, because lesser effort on the left hand is required. I use both down and up bow to play these double stops to deliver a strong loud dynamic range. Planning a suitable contact point of each figure is important. I do not place the bow too close to the bridge, because this will make harder to find the right balance of the bow. The final chord is played simultaneously with a down and up bow stroke. An equal weight needs to be imposed on both of the down and up bow stroke to deliver consistent sounding of the chords (Please refer to Appendix B3).

Bariolage

Bariolage technique discussed here is taken from the Movement III - *Courante* demands excellent strings crossings (Please refer to Figure 6) . Usually, this effect is written in a way to be played in a fast tempo. Usual problem is to be playing this figure in messy strings crossings.

Unintended sound of more than one strings occurs as a problem. An equal weight and fast bow speed helps to be able in executing this effect. At the same time, a clear understanding of which strings crossing are involved helps to play *bariolage* figure more effectively. The flexibility of the wrist and arm helps to display an effective flowy sound. (Please refer to Appendix B4)

Conclusions

The identification of bowing technical challenges is accomplished through the meticulous examination of both score analysis and bowing analysis. These analyses are undertaken with a keen focus on four fundamental aspects: phrasing, articulations, dynamics, and compositional elements; (1) phrasing; (2) articulations; (3) dynamics); and (4) compositional aspects.

Both score analysis and bowing analysis can be discerned through careful examination of the textual context, relying on the indications provided within the score. Both analyses contribute to the identification and demand for specific bowing techniques that are required in each carefully chosen repertoire.

Understanding the technical issues of each selected repertoire using the score and bowing analysis methods helps the performer to deepen the understanding of the various demanded expressions and articulations of the distinct works. This improved understanding helps to deliver a better musical meaning in a double bass recital.

The exploration of different bowing techniques and the overall inclusiveness of the samples might be limited due to the chosen repertoire. Hence, it is important to acknowledge these limitations when attempting to apply the findings of the study to other contexts. To address these gaps, future research can expand by incorporating a wider variety of repertoire and exploring additional factors that can impact bowing technique in double bass performance.

The present study exhibits considerable potential for varied expansion. Primarily, one may undertake a critical examination from a left-hand perspective in order to attain a commensurate comprehension of both analogous and disparate musical compositions, thus augmenting subsequent renditions. Furthermore, it is worth noting that the underlying structure of methodologies and discoveries can be extrapolated in order to scrutinize additional analogous works created by either the same or distinct composers.

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APPENDIX B : YOUTUBE LINKS TO VIDEO RECORDINGS

APPENDIX B1 : Legato Bow Strokes of Bach Cello Suite No 2 opening phrase

<https://www.youtube.com/watch?v=cM-CNbg0a8g>

APPENDIX B2 : Dynamic Range

<https://www.youtube.com/watch?v=bP68W1X5g2I>

APPENDIX B3 : Double Stop Technique

<https://www.youtube.com/watch?v=k7iZcViicEA>

APPENDIX B4 : Bariolage Effect

<https://www.youtube.com/watch?v=W3sesifPjIk>

APPENDIX B5 : Staccato Technique

<https://www.youtube.com/watch?v=K1rL0gD2p0E>

APPENDIX B6 : Crescendo – Decrescendo Expression

<https://www.youtube.com/watch?v=5vJb4xYLyCM>

APPENDIX B7 : Bow placement for arpeggios execution

<https://www.youtube.com/watch?v=SN496UWmX68>