Modernizing our Methods:

An Exploration of Innovative and Extended Techniques in Contemporary Music for Cello

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Abstract

Many professional cellists recognize the challenges inherent in performing and teaching contemporary music for their instrument. Whereas original musical discourses and unexpected variations of sounds are exciting to learn and perform, with new works come new and daunting technical challenges. Many works written over the last 50 years require significantly more preparation time than traditional works of similar technical difficulty. The growth of technical literature and methods has lagged behind the pronounced expansion of technical demands: thus, cellists now stand in urgent need of innovative technical methods, uniquely designed to effectively address the challenges of the rapidly growing contemporary cello repertoire.

In this paper I consider strategies for approaching these challenges using new methods as well as variations of traditional methods. After exploring the development of cello technique and the methods commonly used today, I propose a new, personalized work-model for the preparation of contemporary repertoire that balances physical practice with critical thinking. Three works for solo cello, Kaija Saariaho's *Sept Papillons*, Geof Holbrook's *Wish, Want, Need*, and Helmut Lachenmann's *Pression*, act as the reference for a sample of extended techniques. After analysing the challenges presented by these techniques, I provide examples of solutions in the form of preparatory exercises.

Abrégé

De nombreux violoncellistes professionnels reconnaissent les défis liés à l'exécution et à l'enseignement de la musique contemporaine pour leur instrument. Alors que les discours musicaux originaux et les variations de sonorités inattendues sont passionnants à apprendre et à exécuter, avec de nouvelles œuvres proviennent de nouveaux et redoutables défis techniques. Pour nombre des œuvres écrites au cours des 50 dernières années, la préparation nécessite beaucoup plus de temps que pour celle d'œuvres traditionnelles de difficulté technique similaire. La croissance de la littérature et des méthodes reliées à la technique du violoncelle est plus lente que l'expansion rapide des exigences techniques : de ce fait même, les violoncellistes se trouvent aujourd'hui face à un besoin urgent de nouvelles méthodes d'apprentissage innovantes, spécialement conçues pour répondre efficacement aux défis du répertoire contemporain pour violoncelle.

Dans cet article, je considère des stratégies pour aborder ces défis en utilisant de nouvelles méthodes ainsi que des variations des méthodes traditionnelles. Après avoir exploré le développement de la technique du violoncelle et les méthodes couramment utilisées aujourd'hui, je vous propose un nouveau modèle de travail personnalisé pour la préparation du répertoire contemporain qui concilie la pratique physique avec la pensée critique. Trois œuvres pour violoncelle seul, *Sept Papillons* de Kaija Saariaho, *Wish, Want, Need* de Geof Holbrook, et *Pression* de Helmut Lachenmann, font lieu de références pour un échantillon de différentes techniques étendues. Après avoir analysé les défis posés par ces techniques, je fournis des exemples de solutions sous la forme d'exercices préparatoires.

Acknowledgements

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Chapter 1: Introduction

Musicians and composers are always searching for innovation: new sounds, new concepts, new interpretations of traditions, new modes of presentation. When it comes to contemporary music, musicians are faced with the challenge of absorbing new techniques (and new languages) while navigating the realities of time and demand. How can performers optimize the investment of time and energy necessary to assimilate these works? The creation of technical literature has not progressed with the same vigor as the innovation of new techniques and timbres found in contemporary works. Therefore, cellists stand in urgent need of innovative technical methods, uniquely designed to effectively address the challenges of the rapidly growing contemporary cello repertoire.

In this paper, three works provide the point of departure for the sample of techniques and challenges to investigate: Kaija Saariaho's *Sept Papillons* (2000), Geof Holbrook's *Wish, Want,* Need (2015), and Helmut Lachenmann's *Pression* (1969). Through an analysis of these works, I will address techniques that are commonly found in contemporary music for cello which are still considered unconventional, along with those that are new. Broadly, the techniques can be divided into categories including bow technique, left hand technique, and mental challenges. Specifically, they include the use of texture as a governing element of consonance and dissonance, uncommon combinations of intervals, extended use of the register of the instrument, uncommon notation, percussive effects, and scordatura, among others. The works chosen can be

seen as extreme examples of these techniques and challenges; each focuses on a different collection of techniques.

Saariaho's and Lachenmann's works are archetypal in their use of extended techniques (exploration and unconventional uses of the instrument to create different sounds) on the cello. Saariaho's *Sept Papillons* includes substantial use of harmonics (natural and false), difficult string crossings, and the use of the entire register of the cello, often showcasing unfamiliar note connections. Holbrook's *Wish, Want, Need* encompasses technical and mental challenges found in much new music while recalling the traditionally-used technical materials of todays' cellists – specifically the etudes of David Popper. Modern uses of pitch are at the forefront of this work, demonstrating unfamiliar melodic and harmonic patterns, the use of scordatura, and the exploitation of natural harmonics. Lachenmann's *Pression* requires precise control of large and small-scale physical gesture along with a unique notational system. All of these works demonstrate an extended use of instrumental range and varying pressures in the bow and left-hand fingertips.

I aim to present cellists with strategies to approach the new challenges found in these works. As such, I will present prelude-exercises that apply to certain techniques encountered in the works discussed in addition to suggesting other approaches to preparation. These approaches form a work-model featuring physical awareness, mental engagement, and creativity in practice. These learning tools, and the integration of some of these exercises into daily practice, can help to bridge the gap between traditional technique practice and contemporary music for cello.

Exposure to the new technical aspects of contemporary music in the controlled settings of isolated exercises will allow cellists to develop familiarity with the language and style while

simultaneously allowing the integration of the technical demands of contemporary music into daily practice. It is my hope that the presentation of isolated techniques and sounds will have the same effect with students of music: that familiarizing young musicians with new sound-worlds will act as a preparation to learning this music, thereby allowing them to experience contemporary music on a different level.

1.1 Outline and Methodology

Cello technique today is the result of centuries of analysis and development, thus Chapter 2 outlines this development and presents a survey of selected methods. Chapter 3 acknowledges that the development of cello technique goes beyond these texts, presenting ways of personalizing one's technique practice by adapting existing methods and engaging one's critical thought when preparing new works. This groundwork sets the stage for Chapter 4, in which specific examples of extended techniques from the repertoire are chosen and strategies for approaching these challenges are presented. The strategies for overcoming these challenges include references to earlier methods and traditional practice as well as personalized exercises designed to isolated difficulties, allowing the cellist to develop the skills necessary to successfully execute the given technique.

How were these exercises determined, and what were markers of success? Performers encounter a range of limits in real-life situations, and so for my research, I both embraced the real limits of my own situation and applied artificial limits to my own practice. The limits that I faced were: the reality of my technical practice before approaching the works featured in this thesis (what I commonly practiced and what I often neglected); limits of time; the effects of

stress on my ability to fully concentrate. In order to take full advantage of limited time, I first completed a light analysis of each work so that I could best divide them into workable sections that made musical sense: however, the more complicated the music was, the smaller the section became. Two of the works on which I focused were already written when I began my research, and thus their treatment was slightly different than that of the commissioned work.

For Saariaho's *Sept Papillons* and Helmut Lachenmann's *Pression*, I equally divided the sections into a period of five weeks and adhered strictly to that timeline, although this was three months before my first performance of these works and ten months before the lecture-recital performance. For Holbrook's *Wish, Want, Need*, I had only four weeks before the first performance and had to work with longer, more technically dense sections. Further, each work required the cello to be tuned slightly differently, requiring a highly structured practice schedule to reduce the amount of time spent tuning the strings. In each practice session, I determined the difficulties by considering differences between the sections in these new works and traditional techniques, and created short exercises to isolate and master these techniques. The most obvious measure of success was retention of the information of days before: if, after a day's work, the technique was just as physically or conceptually difficult as it was before, I needed to change my approach. Months later, when returning to *Sept Papillons* and *Pression* for the performance of my lecture-recital, the benefits and success of these short exercises (and variations of those exercises) written in the initial learning process were clear. Very little time was needed to prepare the works for performance, and improvements after practicing the exercises were immediate.

The final steps were to connect the sections and to reconsider the relationships between tension and release of the work as a whole, between the characters of each section, in order to

create an interpretation that communicated my own thoughts and impressions of the work. At times this meant further experimentation with the techniques of earlier sections, in search of different colours or timbres than those initially settled upon. Chapter 5 presents my concluding thoughts, including how to engage more completely in personal practice and embrace one's "failures" as a necessary part of the path to success.

Chapter 2: Technical Literature for Cello

2.1 Development of Cello Technique and Relevant Methods

Many aspects of current cello technique result from innovative thinking from the preceding two and a half centuries. Traditionally, cellist-composers have led the way in revolutionary cello technique, and modern cello technique is clearly rooted in past innovations. The works and methods of figures such as Jean-Louis Duport, Bernard Romberg, Luigi Boccherini, Alfredo Piatti, and David Popper remain critical touchstones in tracing the progression of modern cello technique.

Guidance of such expertise was not always the case. Most early methods were written by non-cellists and focused on adaptation or ease of transition from the violin rather than on excellence of playing. One of the earliest methods for cello is *Méthode théorique et pratique pour apprendre en peu de temps le violoncelle dans sa perfection* by Michel Corrette (1741). This early method addresses the hold of the instrument and bow, provides fingering guides, instruction for playing recitative accompaniment, and discusses why one might prefer the cello to the viola da gamba.[1] Corrette's method, which can be considered an attempt to popularize the cello, was "designed for the mature violinist who wanted to study the cello and proved practical in facilitating the switch to the larger instrument."[2]

The French were especially prolific when it came to instructional methods for cello, two notable examples being the Paris Conservatoire *Méthode de violoncelle et de basse*

[1] Charles Douglas Graves, "The Theoretical and Practical Method for Cello by Michel Corrette: Translation, Commentary, and Comparison with Seven other Eighteenth Century Cello Methods," Volumes I and II (PhD diss., Michigan State University, 1972).
[2] Graves, "Method for Cello by Michel Corrette," 113.

d'accompagnement (1804)[3] and Jean-Louis Duport's *Essai sur le doigté de violoncelle et sur la conduite de l'archet* (1806) and its accompanying etudes.[4] David Rosen writes:

> In spite of these notable contributions by the French to establish a concrete methodology of violoncello playing, progress was slow. One important reason for this was, ironically, the rapid growth of the violin as a solo instrument. Because the method of violin playing had reached such an advanced level, it was used as a model for the less developed violoncello methods. This was done without taking into consideration the important difference in the dimensions of the fingerboard of each instrument.[5]

The Paris Conservatoire *Méthode* and Duport's *Essai* are innovative in their content. They both include numerous bowing exercises and thumb position exercises, but while the Conservatoire method begins with the usual instruction on how to hold the instrument and bow, Duport specifies that his method is for expert players, adding that the instructions are too complicated for beginners.[6] Duport extends his discussion on position to include hand position that is specifically suited to the cello, in comparison to the left hand's relationship to the violin. One of Duport's most revolutionary implementations in cello technique was authorizing a stretch only between the first (index) and second (middle) fingers of the left hand, rather than stretches between all fingers, something that is idiomatic to the violin, but uncomfortable and ineffective on the cello. Excerpts of works by Boccherini and Haydn grace the pages of the Conservatoire

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[3] P. Baillot et al., *Méthode de violoncelle et de basse d'accompagnement,* 1804, Facsimile of the first edition (Genève: Minkoff Reprint, 1974).
[4] Jean-Louis Duport, *Essai sur le doigté de violoncelle et sur la conduite de l'archet* (Paris: Offenbach, ca. 1880).
[5] David Simon Rosen, "Vieuxtemps, Servais, and Popper: Their Music and Influence on the Belgian School of Violoncello (1840 – 1900)" (DMA diss., University of Miami, 1988), 17.
[6] Duport *Essai*, 32. "Je ne crois pas devoir multiplier ici les exemples ; je ne compte parler qu'à des professeurs ou à des forts amateurs. Les commençants ne doivent pas meme regarder ceci ; il faut déjà avoir, pour le comprendre et l'exécuter, une très-grande habitude du Violoncelle, sans quoi l'on se fausserait l'oreille ..."

method, while Duport wrote his own exercises (in both methods these exercises are in duet form, as was traditional).[7]

The method produced by Bernhard Romberg, *A Complete Theoretical and Practical School for the Violoncello* (1839), was already outdated in terms of its stance on technique,[8] position, and musicality by the time of its publication;[9] however, an examination of the illustrations demonstrating Romberg's playing position reveals a bow grip that is very similar to the modern bow grip. Personal letters between Romberg and Friedrich Kunst, a Viennese civil servant, include documentation that Romberg's bow grip was at the frog, and he was "almost certainly using a Tourte bow in 1807."[10] This feature of his playing makes Romberg uniquely influential: "Although it is possible that some Austro-German violoncellists held the bow at the frog, there is no evidence that other Austro-German violoncellists were using a Tourte bow before Romberg returned [to Vienna] from Paris in 1804."[11] The significance of the letters between Romberg and Kunst is great, as Romberg's method was published in 1839, near the end of his life, but the principles described in it were a collection of his lifetime of playing and teaching – these letters date Romberg's practices in relation to the practices of other cellists.

Even the most virtuosic and influential cellists of the late-eighteenth and early-nineteenth centuries were heavily influenced by violin technique. Boccherini is a compelling example of

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[7] The 21 etudes that accompany Duport's volume are those used today by the modern cellist. The majority of the etudes were written by Jean-Louis, and one each were written by his brother, Jean-Pierre, and Martin Berteau (numbers 8 and 6, respectively). Martin Rummel, preface to *21 Etudes for Violoncello*, by Jean-Louis Duport, trans. J. Bradford Robinson (Kassel: Bärenreiter, 2005), v.

[8] Lev Ginzburg suggests that Romberg's early lessons must have been with a violinist, "as the violin character of his technique indicates." Lev Ginzburg, *History of the Violoncello*, ed. Herbert R. Axelrod, trans. Tanya Tchistyakova (Neptune City, NJ: Paganiana Publications, 1983), 16.

[9] Ibid., 26 – 27.

[10] Valerie Walden, *An Investigation and Comparison of the French and Austro-German Schools of Violoncello Bowing Techniques: 1735 – 1839* (PhD diss., University of Auckland, 1993), 537 – 538.

[11] Ibid., 538.

this – the stunning virtuosity called for in his works are still challenging for professionals and amateurs alike. Through the composition of such works, cellist-composers set the level of expectations higher for cello performance, as well as the level of potential achievement to burgeoning cellists. The experimentation of cello technique in opposition to that of the violin was absolutely necessary in order to create new technical possibilities on the instrument. The role of the cellist-composer is especially seen in the works of Boccherini, without which we would no longer have knowledge of the cellist's technique and style.[12] The technical possibilities of the cello were not restricted to brilliant passagework and the use of the higher registers, but also included the virtuosic use of the lower strings of the instrument.

The works of Boccherini, as well as the nineteenth century methods of Duport and Romberg, revolutionized movements and fingerings idiomatic to the cello and furthered bow technique. The hand's natural position, flexibility, and susceptibility to tension were all taken into consideration when developing the fingering system and bow hold in use today. With the technical developments and revolutionary methodology of these eighteenth century cellist-composers, cello technique developed its own idiom. Further development of this technique by cellist-composers such as Piatti and Popper fostered higher performance expectations and developed a virtuosic style that was now attainable to cellists. They also created a means for others to develop technique through their collections of works and etudes. The cellist-composer, with a vision for advanced cello playing, undoubtedly played a fundamental role in the liberation of cello technique from the restrictive physiological context of violin playing, while elevating the standards of works for cello, thereby providing the foundation of modern cello technique.

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[12] Christian Speck notes that "in 1805 [Reichardt] wrote that Boccherini had been forgotten by the musical world in his own lifetime." Christian Speck, "Boccherini as Cellist and His Music for Cello," trans. Laurenne Chapman, *Early Music* 33, no. 2 (May 2005): 201.

2.1.1 Notable Methods Applicable Today

Methods and etudes by Jean-Louis Duport, Alfredo Piatti, David Popper, Otakar Ševčík, Louis Feuillard, and Bernhard Cossmann are considered to be staples in the technical literature for cello. Most of the exercises and etudes in these collections are devoted to the development of the left hand: some isolate issues of technique, such as legato, thumb position, or shifting, and others are focused on ideas such as finger strength for articulation and independence. Double stops, scalar movement and arpeggios, chromaticism, and simple string crossings are featured in almost all of these works, and many etudes encompass the entire fingerboard of the cello. Much of the melodic movement is stepwise or in small intervals.

Throughout these collections, we see two types of formats: longer etudes that incorporate technical goals into music-making, and shorter exercises that isolate the desired techniques in a more focused way (Table 1 outlines the focus and format of each in this sample). These methods and compilations are a useful resource for technical development and are well applied to a large body of difficult repertoire for cello. A few examples can clarify the shared goals while demonstrating the variety of style and focus found in this material.

Collection	Primary Focus	Defining Features and Detailed Focus	Notes	Format
Bernhard Cossmann: Studies for Developing Agility, Strength of Fingers, and Purity of Intonation	Left Hand	For finger strength and independence		Exercises
Jean-Louis Duport: 21 Etudes for Violoncello	Left Hand	To incorporate detailed technical practice into musical context		Etudes
Louis Feuillard: Daily Exercises	Left Hand	For good hand position and shifting; intended to be included in daily practice	Includes a short section of bowing exercises	Exercises
Alfredo Piatti: Twelve Caprices for Violoncello Solo, Op. 25	Left Hand	Virtuosic melodic lines and double stops; requires a relaxed left hand during shifting and extending	Includes complicated bow strokes	Etudes
David Popper: High School of Violoncello Playing, Op. 73	Left Hand	To incorporate detailed technical practice into musical context; chromaticism, use of the whole fingerboard	Requires high level of bow control for string crossings and long slurs	Etudes
Otakar Ševčík: 40 Variations Op. 3, trans. L. R. Feuillard	Bow	Variations on a theme, variety of bow strokes		Exercises

Table 1. Summary of a sample of commonly used technical methods for cello

Bernhard Cossmann, *Studies for Developing Agility, Strength of Fingers, and Purity of Intonation*

The studies in this collection are based on whole-tones, semi-tones, and thirds, and include arpeggio and scale studies. The goal of each is to strengthen the fingers so that they are able to function independently of one another. Some of the exercises are monophonic, whereas others are polyphonic (in double stops). Further, two kinds of motion are found in the double stop exercises: parallel, and contrary, seen in Figure 1.

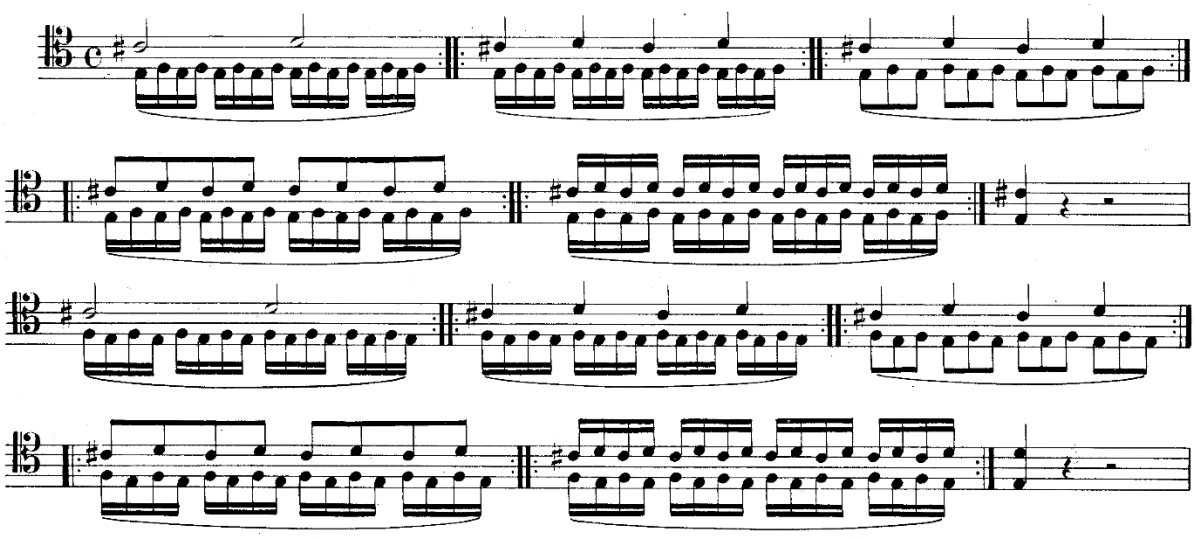

Figure 1. Excerpt from Cossmann's Studies for Developing Agility, Strength of Fingers, and Purity of Intonation, page 1. Published by International Music Company. Public domain.

Otakar Ševčík, *40 Variations Op. 3*, transcribed for cello by L. R. Feuillard

Using a simple theme with variations, Ševčík's Op. 3 focuses on bow technique, including variations of bow and note length, the use of different areas of the bow (at the frog or

at the tip), and variations in and different combinations of slurred and non-slurred notes. These short exercises often move in step-wise motion and progress in difficulty, and as seen in Figure 2, sometimes contain several changes of bowing-styles in a single variation.

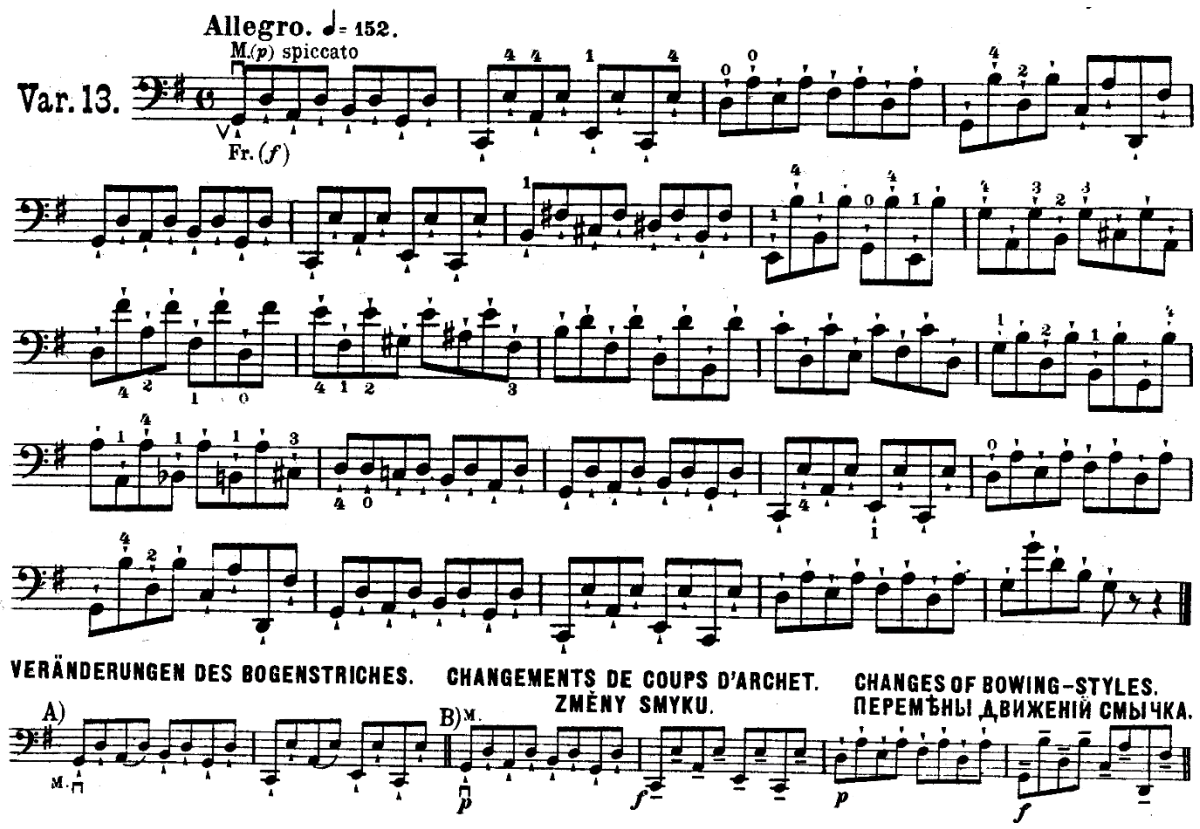

Figure 2. Variation 13 from Ševčík's 40 Variations Op. 3, page 7. © 1905 by Bosworth & Co. Used with kind permission.

Alfredo Piatti, *Twelve Caprices for Violoncello Solo, Op. 25*

These twelve caprices are written in virtuoso style, demonstrating the influence of the stylistic principles of twentieth century violinists, specifically the *24 Caprices* of Paganini.[13]

[13] Christian Bellisario, preface to *Twelve Caprices for Violoncello Solo, Opus 25,* by Alfredo Piatti, ed. Christian Bellisario (München: G. Henle, 2003), iv.

Each caprice is a short showpiece suitable for performance that includes numerous technical challenges for the left hand while still incorporating complex bow strokes. As seen in Figure 3, motion is usually step-wise or by small intervals and covers the entire range of the fingerboard. When the intervals are larger, the left hand usually stays in position, avoiding large leaps. Though extremely challenging and virtuosic, Piatti's caprices are idiomatic to the cello.

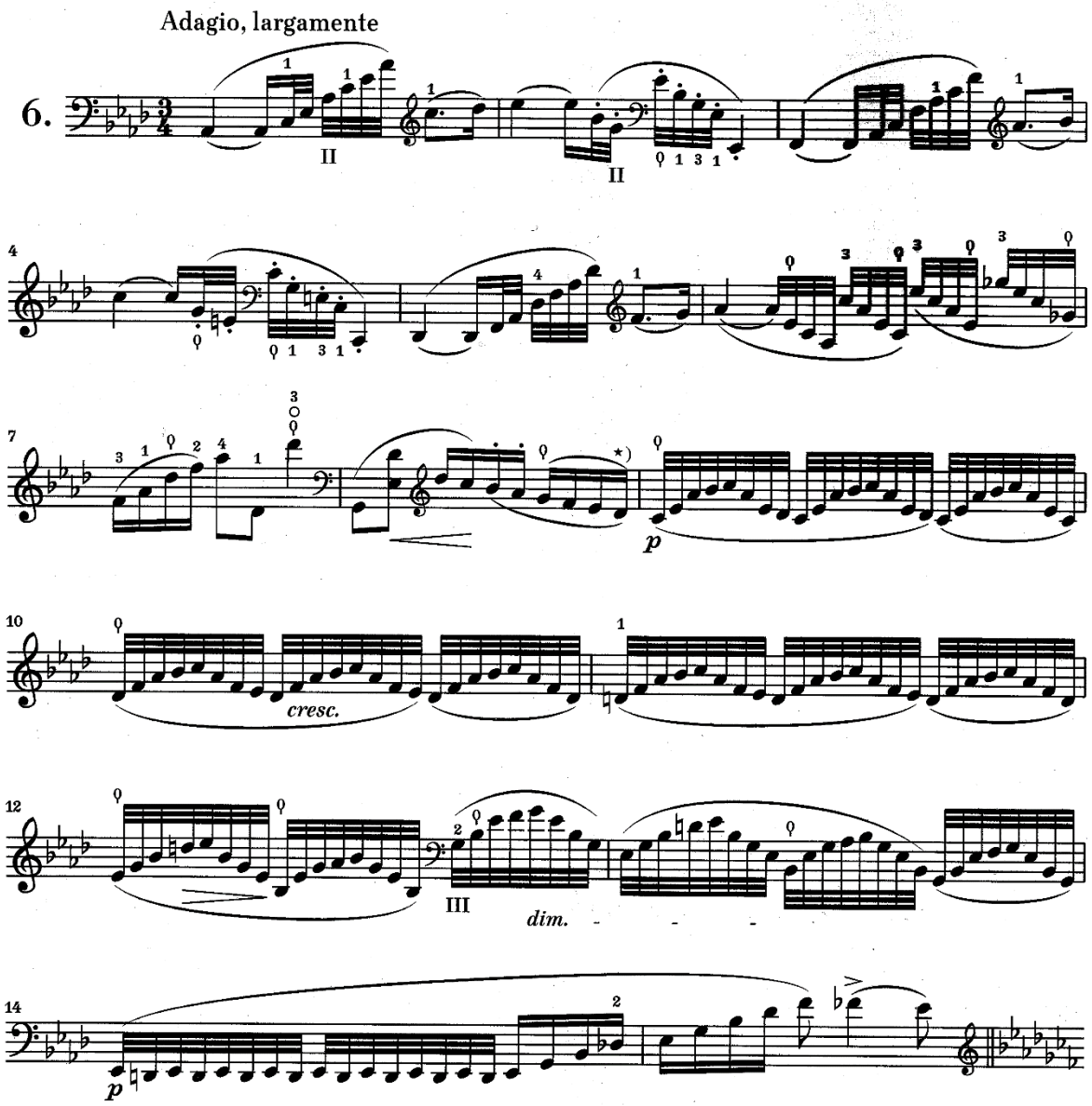

Figure 3. 6th Caprice from Piatti's Twelve Caprices for Violoncello Solo, Op. 25, page 15, mm. 1 -15.

David Popper, *High School of Violoncello Playing, Op. 73*

Like Alfredo Piatti, David Popper was known for his brilliant virtuosity. David Rosen writes that Popper "patterned much of [his] philosophies on sound, expressiveness, and musicality from [his] violin counterparts," [14] Modern pedagogues hail Popper's etudes as "covering the basics that all cellists need" while providing a structure and musical material to maintain musical satisfaction.[15] Cellist and pedagogue Alexander Baillie finds that the Popper etudes are "very good at isolating particular elements of technique," especially as each consistently follows the same patterns: "chromatic, Wagnerian, post-Lisztian harmony with lots of diminished chords" – a useful quality, as "those combinations of notes often feature in Romantic music."[16] Most of the etudes in Popper's *High School of Violoncello Playing* focus on development of the left hand, are sequential, and use the entire range of the instrument. Although a large variety of bow strokes are not found in the Popper etudes, the occurrence of complex string crossings and very long slurs (such as those seen in Figure 4) necessitate advanced bow control.

[14] Rosen, "Vieuxtemps, Servais, and Popper," 19.
[15] Quote from Alexander Boyarsky, professor of cello at the Royal College of Music, UK. In David Kettle and Ariane Todes, "Rites of Passage" *The Strad* 124, no. 1480 (August 2013), 60.
[16] Kettle and Todes, "Rites of Passage," 61.

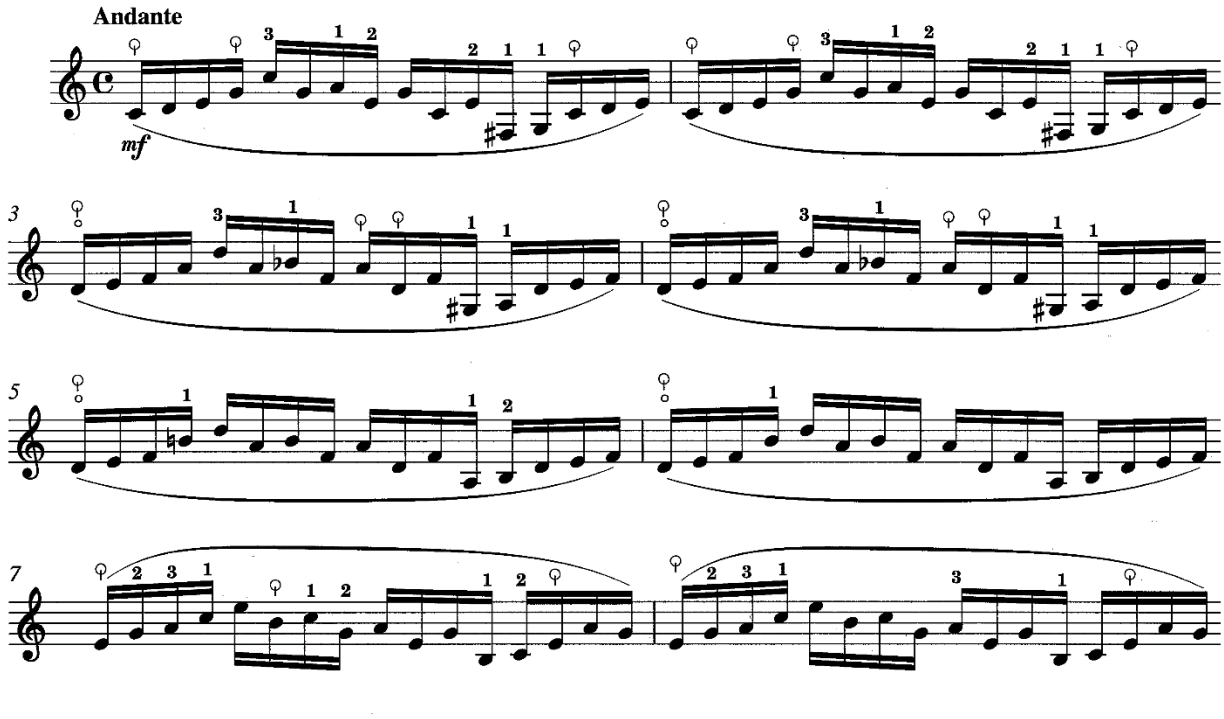

Figure 4. Excerpt from Popper's etude no. 8 in High School of Violoncello Playing, Op. 73, page 16, mm. 1 – 8. © 2004 by Bärenreiter-Verlag Karl Vötterle GmbH & Co. KG, Kassel. Used with kind permission.

2.2 Modern Technical Methods

Newer methods for cello have recently appeared, notably by Janos Starker, Paul Tortelier, and Caroline Bosanquet, as well as an innovative volume by violinist Terje Moe Hansen. All have, in some way, addressed complexities of new music. Analyzing these collections allowed me to determine the disparity between the techniques available in the etudes and those techniques present in contemporary music. Further, analysis of the different formats of exercises and etudes led to the development of a model on which to base future technical exercises (or prelude-exercises) that relate to contemporary repertoire. As did the compilations mentioned earlier, these four methods share commonalities; however, they are each unique in their focus, and so each will be presented individually.

2.2.1 *An Organized Method of String Playing*: Janos Starker

Starker and Tortelier both felt the need to approach deficiencies in cello technique by the compilation of new methods. Starker's objectives were to "answer professional needs: stability, power, health, maximum use of limited time, increase of confidence and avoidance of stagnation, deterioration, nervousness, and insecurity."[17] He discusses ways to achieve the most efficient way of playing in terms of physicality and energy, and provides exercises with and away from the cello to feel the proper movements that support good playing. In the foreword to his method, *An Organized Method of String Playing*, Starker clarifies:

> It is not my intention to suggest the neglect of other books, methods, and exercises. Their use is imperative in most instances. However, as I am using samples and patterns to show available combinations, the most important element should be the attempt to ignite the dormant imagination and to stop the time-wasting mechanical repetition of a written text. Each player has to evolve his own patterns and exercises (teachers must do the same for their pupils) to suit the individual needs according to the physical and musical characteristics and available time.[18]

The specificity of Starker's instruction and methodology would suggest a type of rigidity; however, his method was in fact meant to help stimulate the imagination of teachers and students, allowing them to create their own system of technical exercises, flexible and individual.

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[17] Janos Starker, "An Organized Method of String Playing," in *Concepts in String Playing: Reflections by Artist-Teachers at the Indiana University School of Music*, ed. Murray Grodner (Bloomington: Indiana University Press, 1979), 133.

[18] Janos Starker, foreword to *An Organized Method of String Playing: Violoncello Exercises for the Left Hand* (New York: Peer International Corporation, 1965).

2.2.2 *How I Play, How I Teach*: Paul Tortelier

Tortelier believed that he could not help a student develop musically without passing on his technique,[19] at the same time accepting that some aspects of technique must be adapted to an individual's physical build.[20] Tortelier's method, *How I Play, How I Teach,* emphasizes the importance of intense mental focus with little physical demand. He suggests alternate fingerings for double-stop scales, in order to serve a more melodic line, and includes many exercises to address bow technique, one of his most valued resources.[21] The inclusion of exercises in duet form (also seen in most early cello methods) is useful for several reasons: practice for harmonic intonation, the experience of playing with an expert performer such as one's teacher, and simply the pleasure the student will experience by listening to the harmonies and playing music with another cellist. Finally, Tortelier developed a new method of *solfège,* which he called *Solmisation contemporaine* – a system that assigns similar syllables to notes as traditional *solfège*, but adjusts the vowel sound based on the note's natural, sharpened, or flattened version, thus supporting the colour, or harmonic tendency of the note, and is thus more specific.[22] His method includes exercises in pizzicato and false harmonics, and as does Starker, Tortelier considers playing with the left thumb under the fingerboard in upper positions.

2.2.3 *The Secret Life of Cello Strings*: R. Caroline Bosanquet

Bosanquet's volume is based entirely on natural and false harmonics on the cello. It is a clear and thorough explanation of how harmonics work on the cello, where each is found on the

[19] Paul Tortelier and David Blum, *Paul Tortelier: A Self-Portrait* (London: Heinemann, 1984), 210.
[20] Ibid., 212.
[21] Ibid., 29 – 30.
[22] Ibid., "Teaching," chapter 11 in *Paul Tortelier*.

string, the relationships between notation and sounding pitches, and the different possibilities with "stopped" (false) harmonics. This method is particularly interesting as Bosanquet includes a written tutorial, illustrations of the harmonics on the string, depictions of the harmonics in common notation, and short, melodic exercises for practice. Though harmonics are included in other approaches, Bosanquet's volume is much more thorough in scope.

2.2.4 *A Modern Approach to Violin Virtuosity*: Terje Moe Hansen

Hansen's own introduction to his method explains his goal to make the ideal a reality:

> A Modern Approach to Violin Virtuosity is the first complete method for intervals and shifts. It originates from the dream of most string players to be able to carry out all possible pitches, intervals and shifts to the same degree of accuracy. … The standard study repertoire has remained virtually unchanged while the concert repertoire has developed immensely.[23]

The focus of *A Modern Approach to Violin Virtuosity* is to create a technical base that is equal across the entire instrument. Hansen advocates for a more thorough knowledge of the fingerboard in order to create new reference points for technical execution, for example, starting a scale from any note in the pattern rather than always from the bottom of the scale. His exercises, presented as short motives that expand cumulatively throughout each section, incorporate large intervals and the use of the whole register of the instrument. Applicable excerpts from the violin repertoire are included as practice examples.

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[23] Terje Moe Hansen, *A Modern Approach to Violin Virtuosity* (Norway: Warner/Chappell Music, 1997), 4.

One of the innovative features of Hansen's method is the emphasis on improvisation and experimentation. As he explains:

> Through intuition, experimentation, improvisation and constructive playing we can learn to fully explore the pitches and interval relations on our instrument. No specific expectations are involved in this and therefore it provides us with the best medicine against destructive perfectionism and performance anxiety. Our ability to analyse, improvise and experiment meaningfully develops in step with our maturing as human beings. All this provides the necessary conditions for a continuous and limitless development.[24]

The notion of "creative practicing,"[25] an idea also promoted in Starker's method, places high importance on mental engagement and imagination, encourages the performer to become more self-reliant by taking the responsibility to determine his or her own practice needs, and opens the performer to the exploration of new sounds. *A Modern Approach to Violin Virtuosity* concludes with exercises in both guided and unrestricted improvisation.

[24] Hansen, *A Modern Approach,* 8.
[25] Ibid.

Chapter 3: More than Methods: Individuality and Personal Responsibility in Practice and Preparation

A comprehensive list of extended and innovative techniques for cello would be extensive (and perhaps infinite) – there are certainly many not mentioned in the sample of literature presented earlier. In fact, there are many that are fairly common yet still considered unconventional: playing in scordatura, the necessity of flexible left hand positioning (from different pitch patterns and combinations in multi-stopping), extreme uses of vibrato, pizzicato effects, percussive effects, harmonics, complex string crossings, and unfamiliar melodic and harmonic patterns.[26]

Further, a compilation of etudes and exercises to address every challenge would quickly become obsolete, as musicians continue to innovate and experiment. How can we as performers prepare ourselves for this continuous change? If the demands of the performer are to be in a state of constant variability, then the answer to these demands must be met through flexibility and creativity. These skills must be learned and practiced as much as do individual techniques.

3.1 Adjusting Our Existing Methods

Traditional methods and etudes, although they do not address all modern technical needs, are an integral resource for technical development and are especially useful for the preparation of music of the late-eighteenth century and late-nineteenth century.[27] The techniques these methods

[26] For an extensive explanation of some of the new technical requirements for cellists in contemporary music, please see Frances-Marie Uitti, "The Frontiers of Technique," in *The Cambridge Companion to the Cello*, ed. Robin Stowell (Cambridge: Cambridge University Press, 1999), 211 – 223.

[27] Martin Rummel writes: "It is the editor's opinion that Duport's *Twenty-One Etudes*, besides training the player's general technique, are especially well-suited for practicing late eighteenth-century performance style, thereby

promote are likewise present in modern music, and the type of music for which they were written is still played, in concert and in casual settings. Collections of etudes and caprices such as those by Popper, Piatti, and Duport present specific technical challenges in a controlled musical context – the cellist need not be overloaded with challenges as they work on these. Further, exercises such as those of Cossmann and Ševčík develop strength and agility of the fingers of both hands. Once a cellist develops independence of the fingers of the left hand and flexibility of the fingers of the right, she may move on confidently to different bow strokes, double stops, patters of intervals, variations of vibrato, and so-on.

The more recent methods – those of Starker, Tortelier, Bosanquet, and Hansen – are slightly more progressive in the techniques that they include and the parameters they follow. These methods break the rules of when and where to use the thumb of the left hand, break out of a position-oriented technique into something with more flexibility, and expand the list of techniques that should be practiced regularly. With the inclusion of these methods, pizzicato, harmonics, and all manner of intervals are promoted as necessary components of a good technical base. Scale and arpeggio practice are present throughout all of these methods, written explicitly in the exercises or described in accompanying text.

How can we as performers use the existing materials to their greatest effect when our needs are in constant flux? Traditional technique practice, including the use of etudes as well as scale and arpeggio practice, can be adjusted to suit immediate and ongoing needs, for example, the contexts (and additional challenges) of new music. Common scale practice can be used as a template for other techniques: this idea is already presented in the methods previously discussed

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enhancing their special position in the repertoire of teaching material for the cello." Martin Rummel, ed., text volume to *21 Etudes for Violoncello* by Jean-Louis Duport, trans. J. Bradford Robinson (Kassel: Bärenreiter, 2005), 12.

by including different fingering patterns for the same scales. For example, many performers will practice scales and arpeggios with variations (such as with different slur-lengths or bow strokes) or using different areas of the bow (at the tip or at the frog, for example). Further deviations of this model would be to practice scales with pizzicato, with harmonics or false harmonics, using different bow pressures (*flautando* or pressed), different contact points (*sul tasto* or *sul ponticello*), or different pitch departure points (from the top or from various points mid-scale).

3.2 Flexibility, Mental Engagement, and Physical Gesture

It is interesting to note that early methods included extensive written descriptions and instruction, explaining how to vary the exercises or how to properly hold the instrument.[28] Modern methods discussed in this paper have the same property, implying the importance the authors place on creativity and flexibility in technical practice. The performer must constantly re-evaluate technical needs specific to the moment and work – pre-written exercises require critical thought and expansion to be effective. This indicates the importance of mental work, physical awareness, and flexibility of the method.

In her article on compositional trends of the twentieth century, cellist Marie-Frances Uitti explains that the mental boundaries required of cellists in many new works have been drastically extended, even when the physical techniques of a work are conventional.[29] Uitti gives the example of Elliott Carter's Sonata of 1948:

[28] For example: Baillot et al., *Méthode de violoncelle*; Duport, *Essai sur le doigté de violoncelle*; Bernard Romberg, *A Complete Theoretical and Practical School for the Violoncello* (Boston: Oliver Ditson, c. 1839).
[29] Uitti, "The Frontiers of Technique," 211 - 212.

> Carter introduced 'metric modulation'; a method of notating the gradual passing from one tempo to another, it is one of the major motifs of the whole work, relating all the movements in a coherent conception. Speeds are always in a state of flux, interweaving permutations throughout all the movements. Thus, while the physical cello techniques exploited by Carter are conventional, the mental frontiers have been extended to reveal new horizons of perception.[30]

With this "mental gymnastics"[31] required of the performer in many new compositions, a new work pattern could aid the learning process. Specifically, the performer must take the time to decipher the score before preparation can begin with the instrument.

As part of the learning process when approaching a new work, the performer forms associations with musical gestures as well as connections between musical components (at times an active effort and at others a passive one). This not only naturally divides the music into sections or chunks (depending on the length), but creates musical meaning between these sections. As percussionist Steven Schick explains, "It would not be unusual to hear a performer say, 'This part is like the first section only twice as fast.' Or, 'The end of this repetition leads into the key change.' These are comments that reflect notions of category, comparison, and action that comprise core components of meaningfulness."[32] For a percussionist, physical gesture is an obvious and integral part of performing, and for Schick, these components are triggered by physical and gestural memory as much as musical meaning. His work model for memorization,

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[30] Uitti, "The Frontiers of Technique," 212.
[31] Uitti writes: "Not least, performers accustomed to playing the traditional repertory by heart found themselves suddenly required to count! Metres changed constantly in order to equalise rhythmic energy and eliminate the 'tyranny of the beat', and metronome markings were in constant flux, requiring mastery of further mental gymnastics." Uitti, "The Frontiers of Technique," 213.
[32] Steven Schick, "The Affliction of Memory," in *The Percussionist's Art: Same Bed, Different Dreams* (Rochester: University of Rochester Press, 2006), 128.

outlined in *The Percussionist's Art*, is easily adaptable into a model of general preparation: dividing the whole work into small "chunks" (sometimes consisting of only a few measures, depending on the density of challenges found in the work and the natural divisions of the composition), creating a work time-line based on these components, and balancing practice between the physical and mental (I differentiate between the initial mental preparation of deciphering the score and the mental practice of visualization of the actions and sounds of oneself performing).

All of these components – traditional technical literature, mental involvement, and physical awareness – inform the creation of short, personalized exercises. These exercises can be thought of as something to assist the development of new techniques or as preparation for certain works, but the key characteristic is that each exercise is short and isolates or simplifies something challenging. Exercises can be developed during score study or after physical practice has begun – they are a combination of critical thinking and flexibility of method. In the following chapter, short exercises designed to successfully and efficiently master a sample of extended techniques will be presented.

Chapter 4: Extended Techniques and Approaches

In this chapter, I determine a sample of extended techniques and present strategies for approaching these challenges using three works as reference: Kaija Saariaho's *Sept Papillons* (2000), Geof Holbrook's *Wish, Want, Need* (2015), and Helmut Lachenmann's *Pression* (1969). In brief, techniques presented include varying pressures in the bow and left fingertips, extended use of instrumental range, utilization of different contact points of the bow, the expansion of mental boundaries, and control of physical gesture. Approaching the complexities of these works, I first determined the most successful way of executing a given technique before considering what kind of practice could ensure that success. Determining the necessary body movements that correspond to the desired sounding outcome informed the development of the sample exercises for each of the three works.

I chose to model these exercises after those found in the methods of Cossmann, Feuillard, and Ševčík for two reasons: first, to best isolate the individual techniques without distraction, and second, to take advantage of available time as efficiently as possible. The exercises present the techniques in their most rudimentary form.

4.1 Kaija Saariaho: *Sept Papillons* (2000)

Written immediately after and partly during rehearsals for the premiere performance of her first opera *L'amour de loin*, Saariaho's *Sept Papillons* explores a style and form that is seemingly in opposition, not only from the grand production of an opera to a work for a single instrument, but further: "From the metaphors of the opera which all have an eternal quality -

love, yearning and death - she moved now to a metaphor of the ephemeral: butterfly."[33] *Sept Papillons* is a set of seven delicate miniatures exploring fragility and transitory movement while using textures and timbres as much as pitch to create tension and release in the music.

The challenges presented in *Sept Papillons* can be divided into two categories, as can many works: left hand technique and bow technique. The main challenges for the left hand is the control of pressure of the left fingertips in varying forms: the presence of harmonics and harmonic trills, the gradual change in pressure transforming a harmonic to a stopped note and vice versa, and percussive action of the left fingertips on the strings. The same issues of pressure control are in the category of bow technique, as well as changes in contact point (sudden or gradual and over various lengths of time) and complex string crossings. The two categories share a challenge that I call the extreme use of register: for the left hand, this refers to the interval between two pitches in one melodic line necessitating unusually large shifts; for the right hand, or the bow, this refers to the interval between two pitches in a double stop, requiring a carefully considered contact point of the bow.

4.1.1 Example: *Papillon II*

The second movement (*Papillon II*) consists of natural and false harmonics interwoven with stopped notes. Throughout the entire movement there are two major challenges: first, the left hand is responsible for maintaining different levels of pressure in different fingers at the

[33] Anssi Karttunen, "Sept papillons - Works for cello by Kaija Saariaho," retrieved from http://www.karttunen.org/home.html/Sept_Papillons.html.

same time; second, the movement is made up of continuous, complex string crossings (see Figure 5).

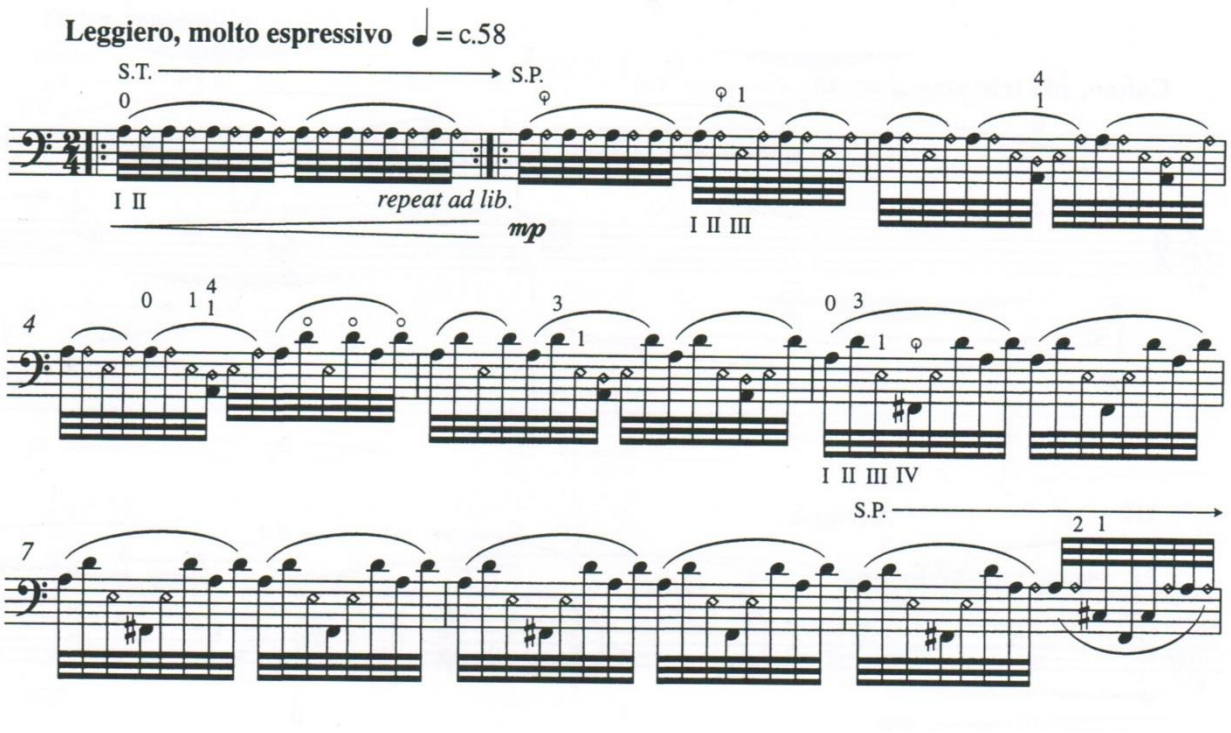

Figure 5. Saariaho: Sept Papillons – Papillon II mm. 1 – 9. Alternating natural harmonics, false harmonics, and stopped notes combined with difficult string crossings. © Copyright 2002 Chester Music Limited. Used with kind permission.

In order to successfully execute the pitch patterns, the cellist must develop a higher level of control of the left fingertips – not only when placed on or off the string, but achieving dexterity at levels between these two positions. In this instance, adapting a common scale practice to include two vertical finger positions (on the string and lightly touching the string) acclimatizes the cellist to find comfort and agility with this technique. Figure 6 is a preparatory exercise that gradually integrates these finger positions in one scale, beginning with a light finger

pressure (the harmonic symbol, or diamond note-head) and later alternating light pressure and normal pressure, culminating in a use of the two pressures at once in a double stop scale.

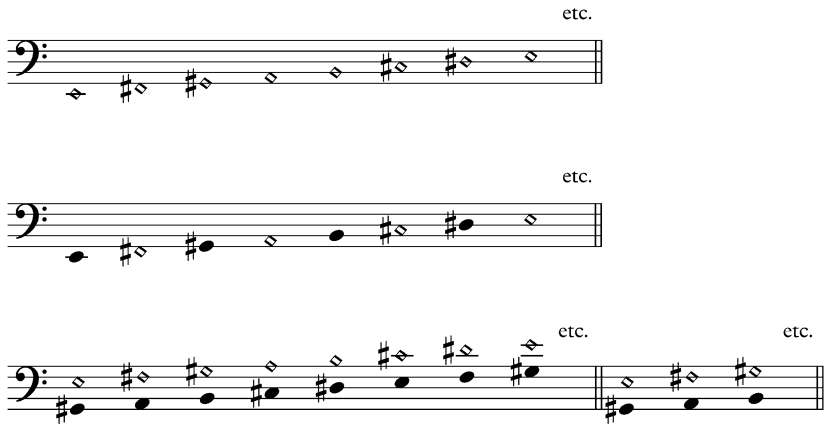

Figure 6. Preparatory exercises for control of finger pressure in the left hand.

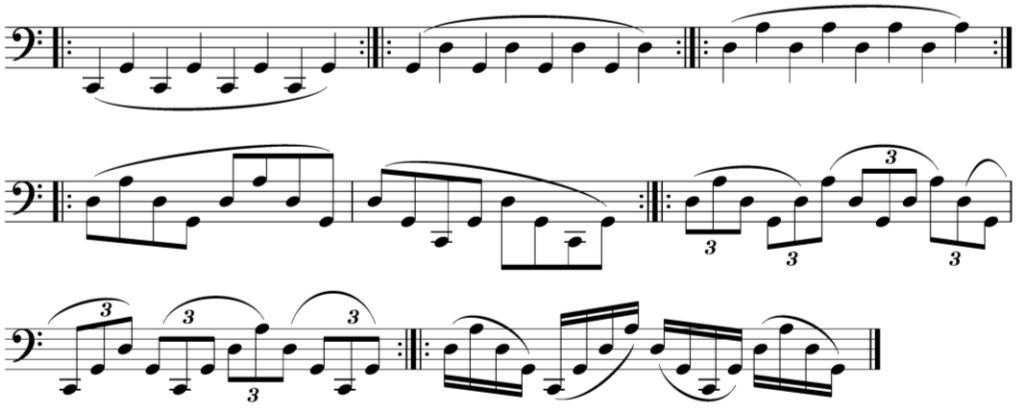

Figure 7. Preparatory exercises for string crossings. To be practiced with a variety of bowings, displacing the beginning of the slur groupings by one note at a time.

The string crossings in this movement are repetitions of the same pattern as well as slight variations. Figure 7 is an exercise to practice these string crossings using open strings, gradually

progressing in difficulty and speed. By removing the difficulty of the left hand, the bow technique becomes more comfortable.

4.1.2 Example: *Papillon III*

The third movement of *Sept Papillons* combines both of the outlined uses of extreme register – large intervals that a) require unusually large shifts, or b) affect the choice of contact point in the bow. These examples are shown in Figure 8: the larges shifts in the upper line in measures 2 – 4, and the opening double stop.

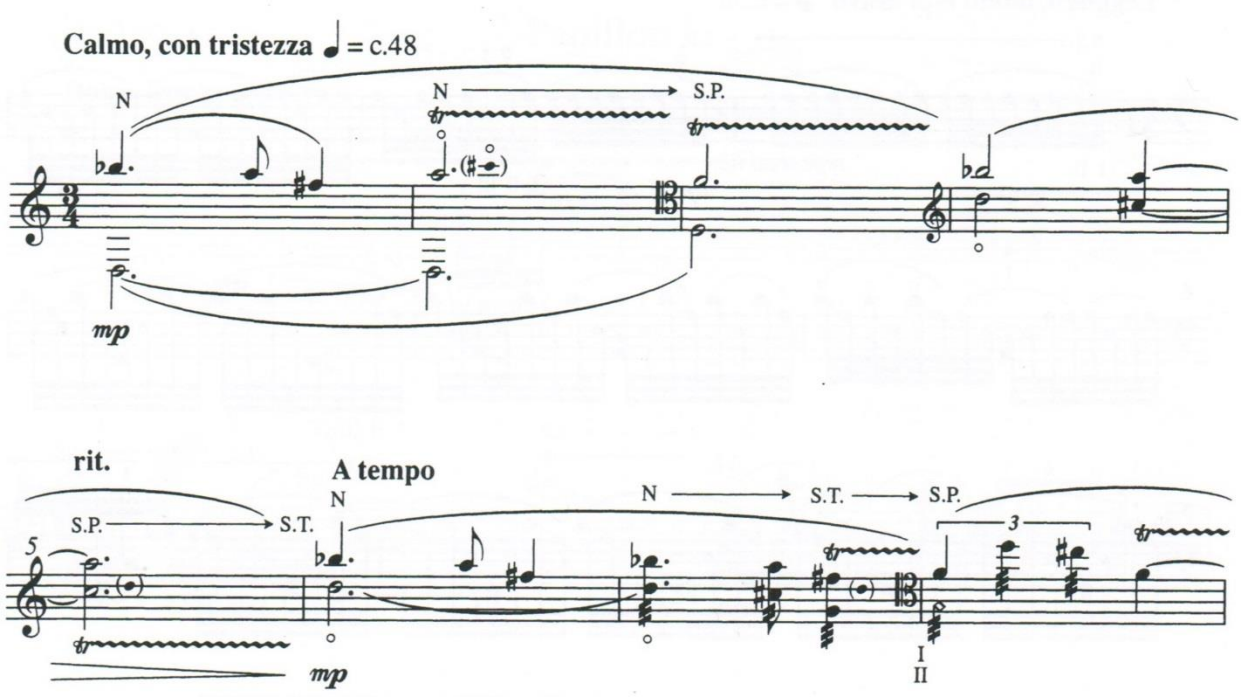

Figure 8. Saariaho: Sept Papillons – Papillon III mm. 1 – 8. © Copyright 2002 Chester Music Limited. Used with kind permission.

Using Feuillard's *Daily Exercises* as a template, Figure 9 demonstrates shifting exercises that encompass large intervals such as those exhibited in the opening measures of *Papillon III*.[34] To find the appropriate contact point for the opening double stop (Figure 8), the cellist must also find compromise in the balance of the weight of the bow between the two strings. Normally, the proximity of the pitch to the bridge determines the contact point of the bow; thus, the upper note (a B-flat) would require a contact point very close to the bridge while the lower note (the open-string D-natural) would require a contact point farther away from the bridge. Figure 10 demonstrates an exercise using the exact pitches of the challenge found in the repertoire, first separating the pitches and then alternating from one to the other. In this exercise, it is important that the cellist practices the movement from the usual contact point to the unusual contact point while maintaining the same tone quality throughout – this will train the arm to adjust the weight accordingly before the cellist moves on to the second part of the exercise, alternating from the lowest note to the highest, again maintaining the optimal tone quality.

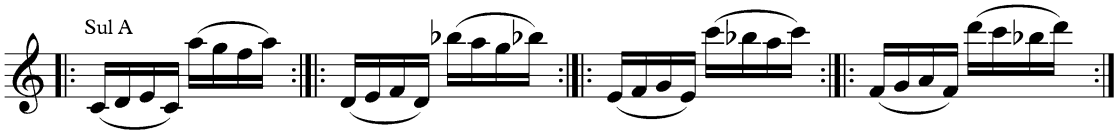

Figure 9. Preparatory exercises for shifting large intervals. To be practiced slowly at first, gradually increasing the tempo.

[34] The exercise on which my original is based does not exceed the interval of a sixth between positions. Please see Louis R. Feuillard, *Daily Exercises for Violoncello* (Mainz: Schott Musik International, 1919), 19.

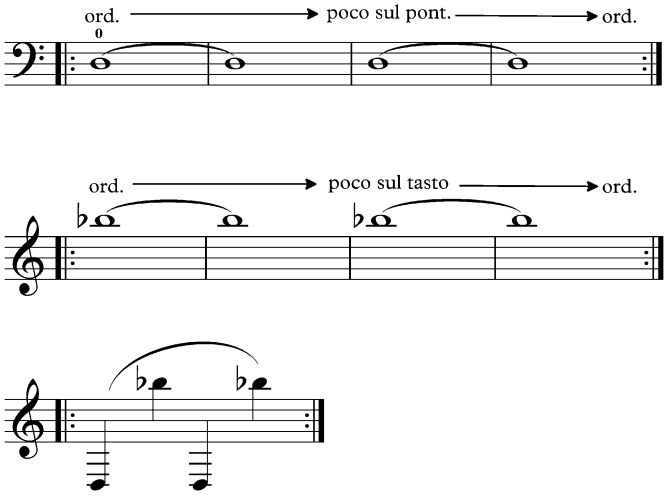

Figure 10. Preparatory exercises for double stops with large intervals.

4.1.3 Example: *Papillon IV*

The opening of the fourth movement (*Papillon IV*) is an example of changes in pressure and changes in contact point. In the first measures, there are indications to increase and then decrease bow pressure (see Figure 11). Further indications prescribe the movement of the contact point between the fingerboard and the bridge – passing through *sul tasto*, *ordinario*, and *sul ponticello*.

In this example, in order to smoothly and quickly transition through different bow textures by changing the proximity to the bridge (*sul tasto* to *sul ponticello*), the angle of the bow is more important than the movement of the arm towards and away from the bridge. Thus, developing an exercise around the change in bow angle is necessary for successful execution of this technique. Figure 12 is a preparatory exercise isolating these two techniques: first, taking long bows to learn control of pressure without other distractions such as a change of pitch, change in pressure of the left fingertip, or change in contact point, all of which are present in the

first two measures of the movement; then, taking the same, single pitch, and slowly moving from in and out of *sul ponticello*. The cellist must achieve this by pointing the frog of the bow downward and pulling the frog upward,[35] allowing the rest of the bow to follow naturally.

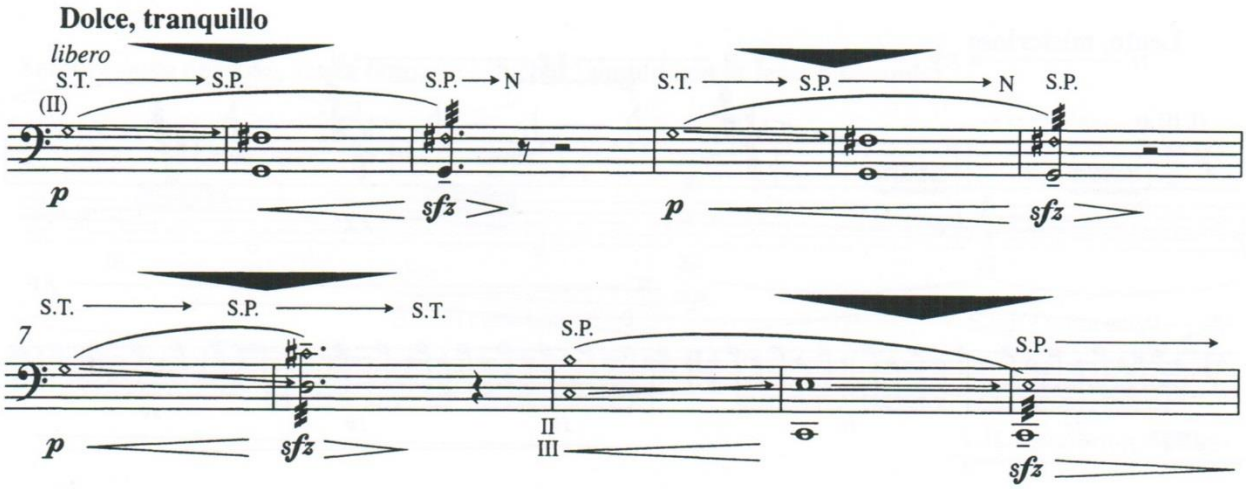

Figure 11. Saariaho: Sept Papillons – Papillon IV mm. 1 – 11. Black triangular figure above the staff indicates changes in bow pressure. Arrows between S.T., S.P., and N indicate shift of contact point of bow. © Copyright 2002 Chester Music Limited. Used with kind permission.

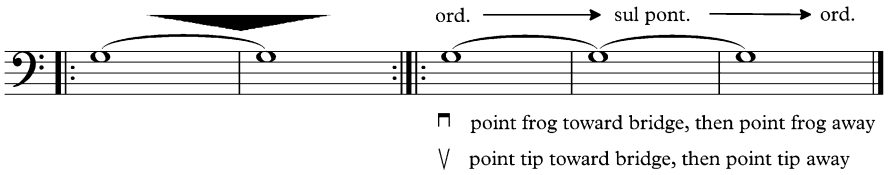

Figure 12. Preparatory exercises for controlling bow pressure and contact point.

[35] This is the instruction for a down-bow; for an up-bow, the cellist must point the tip towards the bridge to move towards *sul ponticello* and point the tip away from the bridge to come back.

4.2 Geof Holbrook: *Wish, Want, Need* (2015)

I commissioned a work for solo cello from Canadian composer Geof Holbrook for performance and inclusion in my doctoral research. *Wish, Want, Need* was completed in early 2015. Geof and I discussed the possibilities for this work: something that would demonstrate the different pitch relationships and intervals often found in contemporary music, while still having a relationship with something familiar to cellists. Much of the passage work in *Wish, Want, Need* was based on Popper's etudes (a staple in cellists' technical repertoire as discussed in Chapter 2), which naturally guided my practice.[36]

Geof was also keen to write in scordatura, so the A string and C string are each tuned down a semi-tone, becoming A-flat and B-natural, respectively. This opens up the harmonic possibilities and gives the instrument a different resonance. Like Saariaho's *Sept Papillons*, Geof's work exploits the high register of the instrument, but also uses the full length of the fingerboard on all strings for harmonics and stopped notes. Despite this difficulty, the different tuning of the instrument and Geof's generous use of natural harmonics make reading the music and making an auditory connection a great challenge.

[36] Before receiving the work from the composer, I often practiced the etudes we had discussed, nos. 18 and 39 from *High School of Violoncello Playing*, commonly known as the Forty Etudes. As the patterns and hand positions were often very similar to those in the etudes, this was extremely helpful. See David Popper, *High School of Violoncello Playing, Op. 73*, ed. Martin Rummel (Kassel: Bärenreiter, 2012).

4.2.1 Example: Use of Harmonics

Figure 13 is an excerpt of one of the natural harmonic passages in *Wish, Want, Need*.[37] The composer has graciously indicated the string on which to find each harmonic in Roman numerals. Adding to the difficulty of finding each of these harmonics, the instrument is tuned differently, thus, the pitch the cellist sees, and expects to hear, is not actually what is heard. The "sounding" staff is a good legend, but cellists are not often trained to read two staves at once; therefore it is a "cerebral workout" for the cellist, highly trained to quickly interpret traditional notation, to remember which notes are truly as written and which are a semi-tone lower.

As preparation for this passage and others like it, I created and worked with a chart of natural harmonics specific to the tuning of my cello, demonstrating the sounding pitches and their placement on the fingerboard. Figure 14 is an example of the harmonics on the fourth string (the B-natural string), which was tuned a semi-tone lower. Practicing "scales" of harmonics – going through the series of natural harmonics from the bottom to the top of each string – was an integral part of my preparation of this work, ensuring that I could find each harmonic easily when needed.

[37] The top staff indicates where on the fingerboard to play, and the bottom staff is the "sounding" staff, indicating the pitches one will hear.

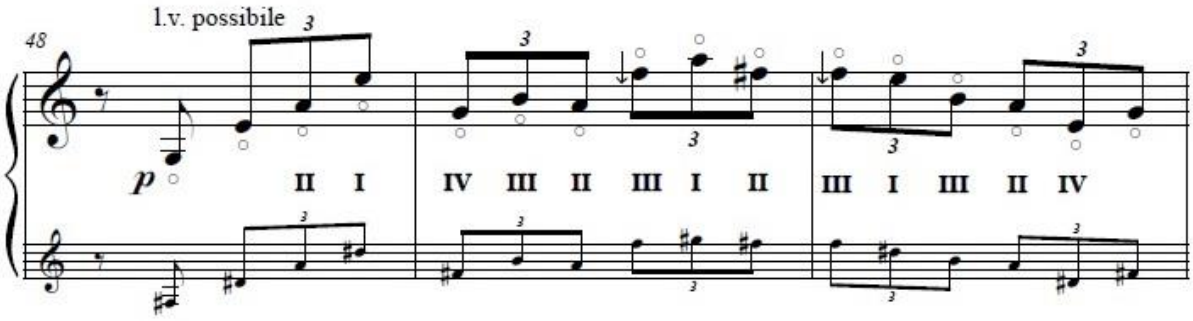

Figure 13. Holbrook: Wish, Want Need – mm. 48 – 50. Natural harmonics in scordatura (altered tuning of the strings). © 2015 Geof Holbrook. Used with kind permission.

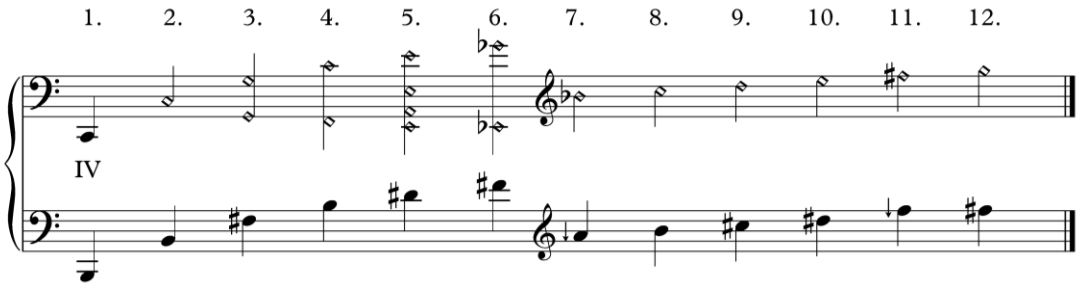

Figure 14. Preparatory work: Harmonics chart for the fourth string with written harmonics (top staff), sounding pitches (bottom staff), and indications of partials.

4.2.2 Example: Interchanging of Harmonics and Stopped Notes

There are still physical difficulties with *Wish, Want, Need*, especially with the integration of harmonics into lines of stopped notes. Harmonics and stopped notes, even if they are found next to one another on the fingerboard, require different contact points.[38] Figure 15 is an example of this kind of passage – since the harmonics and stopped notes are alternating one after another,

[38] The contact point required relates to the sounding pitch: since a harmonic played in the same place as a stopped note sounds several octaves higher, it requires a contact point that the sounding pitch would require were it actually a stopped note – in other words, the contact point of the bow must be closer to the bridge for a harmonic than for a stopped note played in the same part of the fingerboard.

there is very little time to change the contact point. With the wrong combination of bow pressure, bow speed, and contact point, the harmonics will not speak or the other notes will sound "crunchy". Similar to the challenges found in Saariaho's *Sept Papillons*, this technique requires a high level of control of the left fingertips. The passage itself, practiced under tempo, can be seen as an exercise in this technique. Since time is limited at a fast tempo, the bow should make minimal movements in contact point between each note.

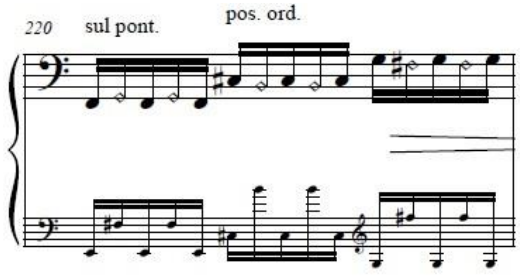

Figure 15. Holbrook: Wish, Want Need – m. 220. Integration of natural harmonics within a line of stopped notes. Can be practiced slowly on all strings and in all positions in which natural harmonics are found. © 2015 Geof Holbrook. Used with kind permission.

4.3 Helmut Lachenmann: *Pression*

Helmut Lachenmann's work *Pression* for solo cello, although written 1969, is still considered to be radical. Lachenmann created his own notational system[39] to prescribe the actions one must take in performance, rather than the resulting sounds.[40] True to the work's name, the performer must hit, slide, tap, and scratch using combinations of her own body, the cello, and the bow.[41] Further, *Pression* calls for scordatura, this time a more thorough re-tuning of the strings, to eliminate the familiar open fifths of the instrument and to offer new combinations of tones. This work is an introduction to Lachenmann's *musique concrète instrumentale*; each sound is characterized by its own acoustic attributes, rather than tradition and previous musical experiences.[42] Lachenmann calls the result of this "beauty denying habit."[43]

Each sound, many of them soft and delicate, will have subtle changes based on the body and instrument of the performer, but, as cellist Tanja Orning explains of her time working with the composer on this piece, "Lachenmann's conception of the distinct qualities of each single

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[39] The work was first published in 1972. In 2010, Lachenmann redesigned the notation and included an explanation in the preface: "The present edition is not a compositional revision of my work, but rather a new design of the notation, one which takes into consideration the knowledge and experience gained in regards to the performance of the work and reading of the score since its first publication, over 40 years ago. For the realization of the new score, many thanks are due to cellist Lucas Fels, whose helpful suggestions and advice led to decisive improvements and increased precision of the score design." Helmut Lachenmann, preface to *Pression* (Wiesbaden: Breitkopf & Härtel, 2010).

[40] For further reading on *action notation* in *Pression*, see Tanja Orning, "*Pression* – A Performance Study," *Music Performance Research* 5 (2012): 12 – 31.

[41] Orning, *Pression*, 12.

[42] Helmut Lachenmann, "Lachenmann: Pression," retrieved 24 July 2012 from http://www.breitkopf.com/feature/werk/1129; for further reading on Lachenmann's *musique concrète instrumentale*, in a way the rejection of tradition and habit, see: Helmut Lachenmann, "On Structuralism," *Contemporary Music Review* 12, no. 1 (1995): 93 - 102; Helmut Lachenmann, "Philosophy of a Composition: Is There Such a Thing?" in *Identity and Difference: Essays of Music, Language and Time*, 55 – 69 (Leuven: Leuven University Press, 2004); and Abigail Heathcote "Sound Structures, Transformations, and Broken Magic: An Interview with Helmut Lachenmann," in *Contemporary Music: Theoretical and Philosophical Perspectives*, 331 – 348, ed. Max Paddison and Irène Deliège (Burlington, VT: Ashgate, 2010).

[43] Lachenmann, "Lachenmann: Pression."

sound was crystal-clear."[44] In 2013, the Breitkopf & Härtel label released a CD-ROM entitled *Extended Techniques of Helmut Lachenmann*, reconciling Lachenmann's original notation with the intended sounds, supported by literary description, video, and sound recording. Using this resource, it is clear that an oral tradition is necessary for a work like *Pression*. Orning also concludes that the score does not provide all of the necessary information to perform the work to Lachenmann's sound specifications; that his notation, though clear, is "far from precise."[45]

Unlike in *Sept Papillons* and *Wish, Want, Need*, Lachenmann's work is almost entirely pitchless in the traditional meaning. Although *Pression* is not a work that involves theatrics, the physical gestures are a part of the music, just as is every carefully created technique in the work. The performance instructions indicate that any performance of *Pression* should be played as much as possible by memory, or set up in a way that the pages do not obstruct the view of the instrument and bow and require no page turns. It is a whole body work, in which extra visual action can potentially distract the listener.

Many of the sounds in *Pression* come from friction of the hands and fingertips over the body of the instrument and parts of the bow. Other techniques include vertical bowing, *col legno* under the strings, and bowing on the surface of the bridge, the body of the instrument, and the tailpiece. The sounds that Lachenmann creates and his unique notation are difficult to decipher on their own, thus he includes a description of certain techniques in the score. Due to the physical nature of this work, the preparatory exercises that I have written can be viewed on the

[44] Orning, *Pression*, 21.
[45] Ibid.

accompanying DVD. Since the techniques that Lachenmann has created are highly original, these exercises aim to simplify and isolate each so that the cellist can more quickly master them.

4.3.1 Example: Legno Saltando with the Bow Beneath the Strings

In the first example, "legno saltando with the bow beneath the strings" (see Figure 16), the wood or the hair of the bow is positioned between the strings and the body of the instrument and strikes either the strings (I or IV), the body of the instrument, or the surface of the bridge.[46] This can be divided into two techniques: that where the wood of the bow bounces on the underside of the first or fourth strings, and that where the hair of the bow bounces on the body of the instrument or the surface of the bridge. This action is notated in precise rhythms, and the cellist must allow the bow to bounce with control. The exercise in Figure 17 isolates the technique where the wood of the bow hits the strings, and the exercise in Figure 18 includes impact with the bridge and body of the instrument.

[46] Lachenmann's description of this in the score is very detailed and specific: "The left hand lies lightly across all four strings in order to dampen them. The bow – held ideally in the fist – is positioned beneath the strings between the bridge and the fingerboard so that the middle of the wood of the bow can be made to strike against or rebound on the underside of the strings (I and IV). Horizontal bowing action is to be strictly avoided, i.e. neither upbow nor downbow action should be allowed. Particular attention should be made to the glissandi, which result from changing the striking position of the bow along the indicated string (I or IV). Where the bow hair is struck against and then continues to bounce on the instrument body or on the upper surface of the bridge, a very brief horizontal upbow movement may be required in order for the individual actions to be properly audible." Lachenmann, *Pression*, 11.

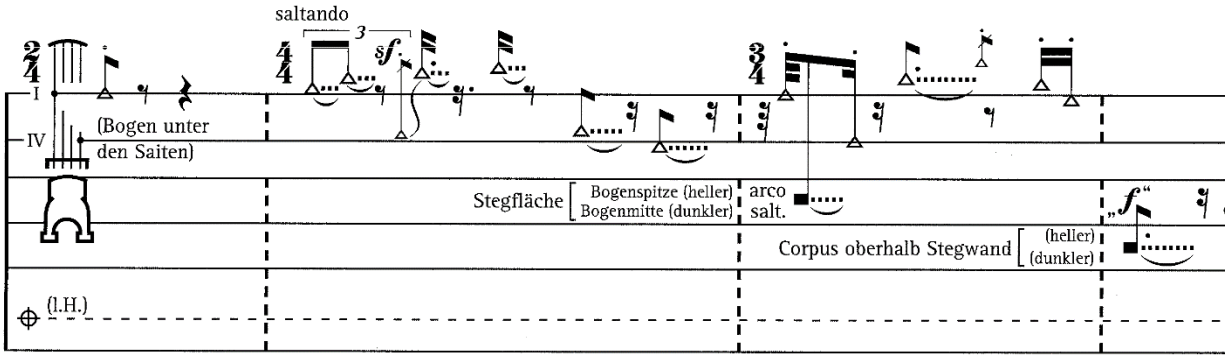

Figure 16. Lachenmann: Pression. "Legno saltando with the bow beneath the strings" (excerpt), page 3. © 1972 by Musikverlage Hans Gerig, Köln. 1980 assigned to Breitkopf & Härtel, Wiesbaden. Used with kind permission.

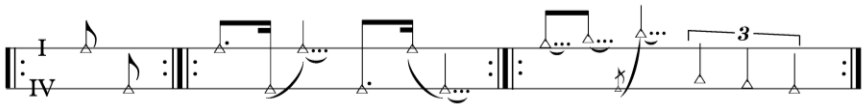

Figure 17. Preparatory exercises for "legno saltando with the bow beneath the strings".

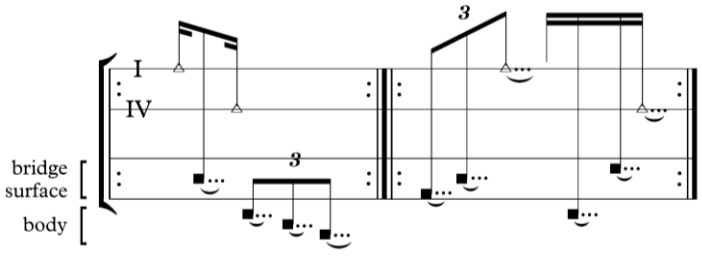

Figure 18. Preparatory exercises for "legno saltando with the bow beneath the strings" including impact with bridge and body of the instrument.

4.3.2 Example: "Morse" Section

The next technique is Lachenmann's "Morse" section, styled like Morse code, with dots and dashes (see Figure 19). Lachenmann describes this as "calm, rapid flautando with upbow and downbow motion extremely close to the bridge … at the same time, the thumb of the left hand touches the underside of the string directly in front of the bow in an extremely high position."[47] The Morse code appears when the thumb is lifted from and returned to the string, and the notated dynamics, even sforzandi, are a result only of bow speed, not of bowed accents.

There are two timbres: the "white noise" sound, when the thumb is pressing against the string, and the open string sound (the dots and dashes of the Morse code). The string changes must be coordinated with the open string sounds. The exercises in Figure 20 first isolate the movement of the thumb from complex rhythms, string changes, and dynamics, and then introduce unsophisticated string changes. They can be practiced on all strings.

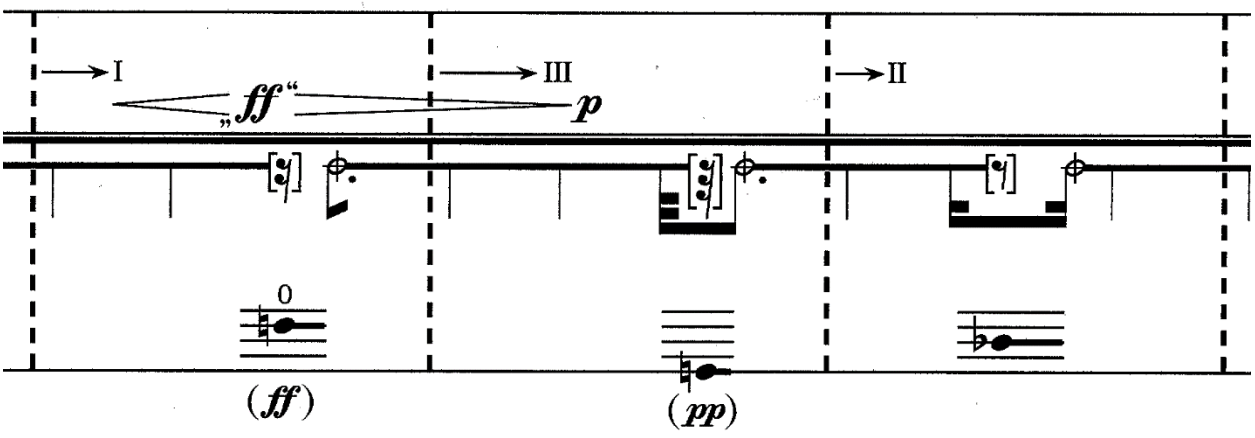

Figure 19. Lachenmann: Pression. "Morse" section (excerpt), page 5. © 1972 by Musikverlage Hans Gerig, Köln. 1980 assigned to Breitkopf & Härtel, Wiesbaden. Used with kind permission.

[47] Lachenmann, *Pression*, 11.

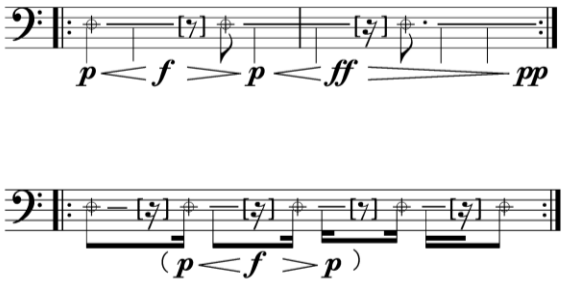

Figure 20. Preparatory exercises for "Morse" section: to be practiced on each string and with all combinations of adjacent strings.

Chapter 5: Conclusions

The three works discussed in this paper differ aesthetically, structurally, and conceptually; however, all demand new abilities from the cellist through the search for new and complex timbres, as well as the conception and use of pitch and melody. With a continued focus on noisy sounds as a governing element, the cellist must develop facility in new instrumental techniques to successfully execute the multi-layered, complex sounds envisioned by the composer, as well as a fresh way of considering phrase structure and interactions between musical elements. Once the cellist has achieved a degree of success in the mechanics of music-making, she can engage in making music – if, in performance, the mind is preoccupied with the execution of techniques, the creative perspective can be lost.

5.1 More than Technique

A cellist's technique is her foundation – the ability to create textures and timbres leads to the creation of music. This is not necessarily different in contemporary music than in traditional repertoire. If one considers consonance and dissonance from the perspective of tension and release, transferring this musical function from harmony to timbre, then the same skills used in traditional repertoire to create music from technique – musical gesture from physical gesture – are applicable. The performer must continue to ask the same questions as before, from the simple, "How can I create *degrees* of tension from this harmony/timbre/colour?" to the structural, "How can I connect these small chunks of music to each other?" and now to the more complex, "How can I translate these textures into a 'melody' or phrase?" This final question is perhaps one that is unique to contemporary music, however, it is best answered with the same

musical tools as the other two questions: by discovering and assessing the various degrees of tension or release that can be found within techniques or timbres.

5.2 Individualized Perspective

Paul Tortelier believed that the interpreter is able to reveal his own character, as well as the character of the music, when he is able to transcend the technical difficulties of a work.[48] In this sense, a highly developed technique can liberate the performer and allow him to speak as he wishes through the music. Regarding the technical discoveries I have made through physical awareness and the creation of preparatory exercises: do they have musical and interpretational implications? As I found ease in the individual techniques, I found that I was open to exploration and change in the actual music – this was, of course, because these abilities were now available to me. Certainly, in performances of all genres of music, different performers bring different interpretations, and removing technical restrictions allows each performer to more clearly express these interpretations.

Lachenmann's *Pression* is a striking example of how different bodies, different physical realities, can create varying interpretations (and sounds, in this case). If one cellist's fingernails are stronger than another's, or if one's fingertips are more calloused, the sound of the fingernails or fingertips sliding up and down the strings will be different. If my skin sticks to the wood of the instrument when I scratch my hand back and forth, the resulting squeaks and irregularity of

[48] Paul Tortelier, Maud Tortelier, and Rudolf Caspar Baumberger, *How I Play, How I Teach* (London: Chester Music, 1976), 215. Tortelier also believed that he couldn't help a student develop in musical terms without conveying his technique, as these two principles, technique and musicality, go hand-in-hand. Tortelier, Tortelier, and Baumberger, *How I Play*, 210.

movement produce a more aggressive interpretation than that of someone whose hands are dryer and cooler, moving more gently, more smoothly, and with more consistency. It is possible that various cellists practicing the same preparatory exercises would create very different sounding interpretations of this work, in that each cellist must find her own unique physical gestures and movements in order to achieve the order of movements prescribed. Even Tortelier believed that "certain aspects of cello technique will depend on how you are built physically."[49]

5.3 "Success" and "Failure"

The path towards the exercises presented in Chapter 4 was understandably not direct, but the "non-successes" (or the "failures") were never end-points (dead ends). What can be learned from failed attempts, and what form do they take? Each sound and collection of sounds comes with an attached tradition and history, and as interpreters and as listeners we make unconscious associations to these sounds.[50] Therefore, every exercise or motion influences future decisions and movements in some way; one cannot say that an approach did not work unless it was used without flexibility or critical thinking.

In the process of creating preparatory exercises for the challenges in the works discussed, the actual exercise came only in the final phase. The crucial first stages were to determine the difficulty of the passage, determine *why* this was a difficulty (change in physical balance, large shifts, demand for pressure in the bow where normally there is not, etc.), and then consider what

[49] Tortelier, Tortelier, and Baumberger, *How I Play*, 212.
[50] Lachenmann calls this the "aura" of musical material. Helmut Lachenmann, "Philosophy of Composition: Is There Such a Thing?" in *Identity and Difference: Essays on Music, Language and Time* (Leuven: Leuven University Press, 2004), 58.

could be done to overcome the challenge using the natural balance of the body or the natural properties of the instrument. Experimentation comes between this determination and the creation of the exercise – these are moments of discovery: "If I feel the weight of my shoulder blade, then I feel anchored in the left hand while playing only harmonics" or "If I hold the bow in the traditional way, it takes too long to move the bow hair from the surface of the instrument to the surface of the bridge."

At times this experimentation can reveal an incorrect determination of the cause of the difficulty or of the necessary solution. For example, in some cases I initially assumed that the difficulty of wide-interval harmonic trills was due to a lack of finger independence: my solution was to adapt common trill exercises. When this did not yield the results I hoped for, I considered other differences between this technique and the common version of it (non-harmonic trills). The realization that my fingers were no longer grounded in the fingerboard in the "extended technique" version brought me to find other ways to feel stability, thus bringing me to anchor my weight from the shoulder blade rather than from the fingers. These "eureka" moments are small moments of "failure," and are integral to finding success in technique.

5.4 Summary and Final Thoughts

The components of technical practice that I have presented in this paper form a new work model that includes: physical awareness, especially for techniques that involve unconventional body movements or changes in stability of the body; mental engagement, particularly score study and determination of the technical needs before work begins with the instrument; and creativity in practice, namely the creation of specialized exercises that address the challenges of any new

techniques encountered. As seen in the past technical innovations of cellist-composers, the continuation of cellists' involvement in the exploration and experimentation of the instrument is integral to the progression of cello technique. Many important developments are initiated through the collaboration between composers and performers, and all of the works presented in this paper are examples of this. Further, the ability to assimilate techniques written by others into one's own skills will come from knowing the instrument and its possibilities intimately.

In this paper, I have presented only a few strategies for approaching the challenges found in many works. The challenges faced by performers of contemporary music are numerous, but it is my hope that these methods of preparation and my proposed work model will provide cellists with a foundation on which to approach this repertoire with direction and efficiency, and will inspire other cellists to explore this vast and always growing repertoire.

Appendix A: Lecture-recital program, March 13, 2015

McGill
Schulich School of Music
École de musique Schulich

Salle Tanna Schulich Hall
527, rue Sherbrooke ouest, Montréal, QC
Billetterie / Box Office: 514-398-4547
Renseignements / Information: 514-398-5145

Le vendredi 13 mars 2015
à 19h

Conférence-récital de doctorat

Friday, March 13, 2015
7:00 p.m.

Doctoral Lecture Recital

Andrea Stewart

violoncelle / cello

"Modernizing our Methods: An Exploration of Innovative and Extended Techniques in Contemporary Music for Cello"

classe de / class of
Matt Haimovitz

Sept Papillons pour violoncelle solo / for solo cello (2000)	Kaija Saariaho (née en / b. 1952)
Pression für einen Cellisten (1969)	Helmut Lachenmann (né en / b. 1935)
Wish, Want, Need* (2015)	Geof Holbrook (né en / b. 1978)

**commande, création / commissioned work, premiere*

Ce concert fait partie des épreuves imposées à Andrea Stewart pour l'obtention d'un doctorat en interprétation.
This recital is presented by Andrea Stewart in partial fulfilment of the requirements for the degree of Doctor of Music in Performance.

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