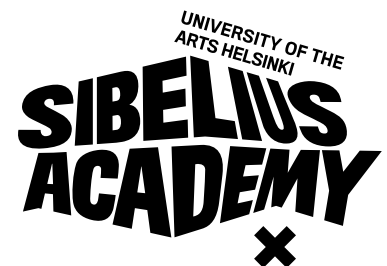


**String Quartet Ensemble Techniques Explained on the Basis of the First
Movement of Haydn's String Quartet in D minor, Op. 42**

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Abstract

This thesis discusses some of the ensemble techniques necessary for string players to be able to practice more effectively and to perform string quartet repertoire more convincingly: what to prepare for the rehearsal; how important it is to train harmonic intonation; how to perform dotted and syncopated rhythms more accurately; how to improve bowing and vibrato techniques; how to achieve good sound balance and benefit from reading from full scores as opposed to individual parts. This study also presents a phrase rhythm analysis of the first movement of Haydn's String Quartet in D minor, Op. 42. The study is intended for undergraduate students who major in string instrument performance and specialize in string quartet chamber music. Some of the techniques discussed here also apply to repertoire from other style periods such as Romantic and contemporary string-quartet literature. The purpose of this study is to help string-performance majors not only to enhance their ensemble skills but also to prepare them for a career in music performance.

Keywords: Ensemble Techniques — Haydn — String Quartet — Harmonic Intonation —
Op. 42 — Rehearsal Techniques — Bowing Technique — String Instrument Tuning

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Introduction

This thesis discusses the basic ensemble techniques necessary for effective string quartet rehearsals and performances. It discusses how to prepare rehearsals and how to perform dotted and syncopated rhythms. It provides information on how to achieve good harmonic intonation in a string quartet ensemble. And it also discusses the means by which to achieve a unified ensemble sound as well as the benefits of playing from full scores as opposed to individual parts. The centerpiece of the study is a phrase rhythm analysis, intended to help ensemble members to perform the first movement of Haydn's String Quartet in D minor, op. 42 in a more convincing way. I chose the first movement of op. 42 because it is relatively short and not too challenging. The ensemble techniques discussed in connection with op. 42 apply to Classical string quartet repertoire in general.

The first chapter discusses the basic ensemble skills necessary for effective string quartet rehearsals and performances. The second chapter presents a phrase rhythm analysis of the first movement of Haydn's String Quartet in D minor, Op. 42. This chapter also provides explanations for the phrase rhythm analysis with particular attention to passages where the hypermeter changes.

I have written this thesis for string-instrument majors with an interest in string chamber music, particularly the string quartet. My study provides advice on how to overcome the kind of technical challenges string quartet ensembles frequently encounter in rehearsals and performances. While some of the advice offered here is of a more general nature, I also hope that by studying my phrase rhythm analysis string quartet ensembles will be able to perform the first movement of Haydn's op. 42 more convincingly. Last but not least, I also hope that this thesis can prepare string-performance undergraduate students for a career in string chamber music.

Chapter 1: Basic String Quartet Ensemble Techniques

This chapter discusses basic string quartet ensemble techniques that help string players to practice in a more efficient way. The topics illustrated in this chapter include: (1) rehearsal preparation; (2) harmonic intonation; (3) the performance of dotted and syncopated rhythms; (4) bowing technique; (5) sound balance; (6) vibrato technique; (7) the advantage of using full scores rather than parts.

Chapter 1.1: Rehearsal Preparation

Before the first rehearsal, the ensemble members should obtain full scores of the string quartet and ensure that the bar numbers and rehearsal letters match those of the other members. Failure to do so may result in the waste of precious rehearsal time. In the first rehearsal, ensemble members should play through the piece to get an overall impression. After that, the ensemble members should analyze the large-scale form and phrase structure of the piece in question. Lastly, the ensemble members should read relevant literature about the composer and piece in question and listen to recordings before meeting with the chamber music coach.

Tuning open strings is an important step to prepare for a rehearsal. There are three common tuning methods for string quartet. Herter Norton suggests in *The Art of String Quartet Playing: Practice, Technique, and Interpretation* that all ensemble members tune the A strings according to A442. After that, the members tune their open strings in perfect fifths.¹ Norton also suggests the members check their open strings with each other by playing C's together, G's together, and so on for each string. In *Chamber Music: Notes for Players*, James Christensen suggests that the cello provide the A because the cello changes its tuning relatively

¹Herter Norton, *The Art of String Quartet Playing: Practice, Technique, and Interpretation* (New York: Simon and Schuster, 1962), 176.

slowly because of the longer strings.² Christensen also suggests that the violins separately tune their E strings to the C string of the cello. The reason is that the E string will sound high in relationship to the low open C and G strings if the open-string fifths are tuned purely, as string players usually do. Therefore, Christensen espouses tuning the C and G strings slightly higher to match the open E strings.³ David Waterman supports this opinion in a chapter entitled *Playing Quartets: A View from the Inside* in *The Cambridge Companion to the String Quartet*.⁴ Waterman recommends that one member take an A from a tuning fork and then give that A to the ensemble members. Waterman also advocates for the G and C strings to be tuned high and the E strings of violins to be tuned as low as possible. I recommend tuning the C and G strings slightly higher in Haydn's String Quartet, op. 42 since the harmony sounds more in tune if the subdominant G is higher.

Chapter 1.2: Harmonic Intonation

Playing in a string quartet requires each player to listen harmonically and to adjust the intonation based on the harmonic context. Each member of the group should have a humble and flexible attitude, which is the most vital prerequisite for students commencing with their study of harmonic intonation. There are several exercises to train harmonic intonation. Linda Susann Blanche created a series of etudes for string quartet in her dissertation *Selected Etudes for the Development of String Quartet Technique: An Annotated Compilation*.⁵ The first etude is taken from Jenö Lenor's *The Technique of String Quartet Playing*. Every player starts from

²James Christensen, *Chamber Music: Notes for Players* (Newcastle upon Tyne: Distinctive Publishing, 1992), 4.

³Ibid.

⁴David Waterman, "Playing Quartets: A View from the Inside," in *The Cambridge Companion to The String Quartet*, eds. Robin Stowell (Cambridge: Cambridge University Press, 2003), 113.

⁵Linda Susanne Blanche, *Selected Etudes for the Development of String Quartet Technique: An Annotated Compilation*. (Diss., Columbia University Teachers College, 1997), 31.

his or her lowest C and then plays a two-octave C-major scale.⁶ The second intonation etude is similar to the first one except that the cello and second violin join in from C when the viola and first violin reach E. This results in a C-major scale accompanied by thirds.⁷ Based on this tuning exercise, Ex. 1 below shows a warm-up exercise for Haydn's String Quartet in D minor, op. 42.

Ex. 1: D-minor scale in octaves and thirds

The musical score for Ex. 1 is written for four staves: Violin I, Violin II, Viola, and Violoncello. The key signature is one flat (B-flat) and the time signature is 2/2. The score is divided into two systems. The first system contains measures 1 through 9. The second system, starting at measure 10, contains measures 10 through 19. The exercise involves playing the D-minor scale in octaves and thirds across the four staves.

Building chords from the bass up is another exercise presented by Blanche. She recommends that one member sustain the dominant pitch of a passage while the other members tune their intervals. Tuning perfect intervals could first be done in pairs. After that, any remaining voices can be added.⁸ Example 2 below demonstrates how this tuning method could be employed: The cello sustains the tonic pitch D. Then the second violin and viola tune the

⁶Ibid., 32.

⁷Ibid., 34.

⁸Ibid., 35.

notes on the first beat of m. 1. Finally, the first violin plays the melody, ensuring that every pitch is in tune.

Ex. 2: Haydn, op. 42, i, mm. 1-2



According to Zhinuo Ding, professor of violin at the Shanghai Conservatory of Music, there are several methods to improve intonation: The first method is to play the scale in thirds on two instruments in the key of the movement. The second method consists of arpeggiating a chord starting with the bass note and adding the fifth, third, and seventh one at a time. The second method could be employed to improve the intonation in the last two measures of the first movement. See Ex. 3 below. Finally, the lowest voice should be louder so that it sounds more unified.⁹

Ex. 3: Haydn, op. 42, i, mm. 104-105



⁹Zhinuo Ding, "The Essentials of String Quartet Rehearsal," in *China Academic Journal*, (Electronic Publishing House, no. 2, 1990), 44.

In 2014, the present author attended a master class of Hatto Beyerle, the violist of the Alban Berg Quartet. He recommends that violinists control the intonation by playing the melody on the A string rather than the E string. The purpose of playing the melody on A string is to avoid the wide interval between the open E strings of the violins and the C strings of the cello and viola since the interval is usually out of tune. *The Art of Quartet Playing* by David Blum includes transcriptions of interviews with the Guarneri String Quartet. The second violinist, John Dally, also opposes using open strings: “if a quartet plays in the key of D or A, then the open strings will fall on the tonic or dominant, and the intonation will not be an issue. However, if the A string is used in F major, where it is the third scale degree, it may sound slightly flat.”¹⁰ Haydn’s works are well suited to harmonic intonation training because his harmonic progressions tend to be diatonic rather than chromatic. Therefore, the tuning can be adjusted more easily, which is the reason for choosing works by Haydn for string quartet novices.

Chapter 1.3: Performance of Dotted and Syncopated Rhythms

It is difficult to perform dotted eighth notes followed by sixteenth notes with four instruments because musicians have a tendency to play rhythms slightly differently. The sixteenth note should be played as an upbeat to the following beat to ensure that the rhythm is performed in a coordinated manner. See Ex. 4 below. In addition, the present author proposes the following method: when several different rhythms appear at the same time, as they usually do, the players need to feel the smallest beat to be able to play these rhythms accurately. For instance, if one ensemble member plays sixteenth notes and the other ensemble members play eighth notes or quarter notes, then the sixteenth notes should govern the other rhythms. The melody can be played with *rubato* as long as it conforms to the shortest note durations. Michael

¹⁰David Blum, *The Art of Quartet Playing*, (New York: Random House, 2013), 33.

Tree, violist of the Guarneri Quartet speaks about the importance of being aware of the player who has repeated eighth notes or sixteenth notes and the need to adjust to his or her playing.¹¹

Ex. 4: Haydn, op. 42, i, mm. 40-43

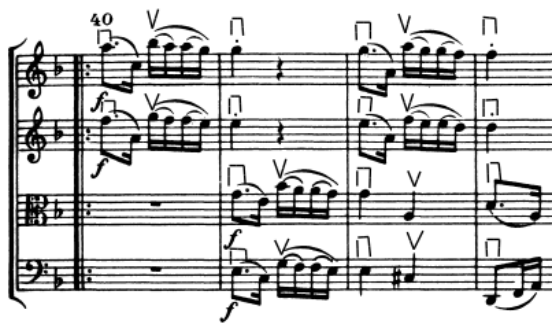


Chapter 1.4: Bowing Technique

If the ensemble members unify their bowing, the visual effect of a performance tends to be more convincing. Since the cellist holds the instrument differently than the violinist and violist, it is necessary that the ensemble members accommodate each other by finding the most suitable bow placements for down- and upstrokes. Sometimes the cellist does not need to use the same bowing as the violinists and the violist. In Ex. 4 above, the two violins can play the sixteenth notes in m. 40 with a single or separate bow strokes. Nonetheless, the cellist and violist need to play down strokes at m. 43 due to physiological reasons. If they play the sixteenth notes in m. 41 a single up-stroke, there will automatically be a down stroke in m. 43. See Ex. 5 below. Otherwise, if the cellist and violist play the sixteenth notes with separate bowing, then the up bow does not properly convey the sense of a downbeat. See Ex. 6. Therefore, to achieve a more unified approach to bowing, the two violinists should play the sixteenth notes in a single stroke.

¹¹Ibid., 32.

Ex. 5: Haydn, op. 42, i, mm. 40-43



Ex. 6: Haydn, op. 42, i, mm. 40-43



Chapter 1.5: Sound Balance

As a cellist, the present author found that cellists always need to make significant adjustments from rehearsal room to performance space. The ensemble members usually feel that the volume of the cello is too high when the group rehearses in the practice room. Therefore, the cellist has to reduce the volume in order to keep the balance. However, the cello tends to be too soft in dress rehearsals and performances. The volume is unbalanced from the perspective of the audience due to the fact that the cello sounds less resonant when played in a large space such as a concert hall. Also, the sound of the cello is not as powerful as that of the violin or viola in the concert hall. Furthermore, the cellist of the Guarneri Quartet, David Soyer, mentions that the cello should play louder because of the critical harmonic role of the bass.¹²

Chapter 1.6: Vibrato Technique

Consistency in vibrato speed can make the ensemble sound more unified. The tempo, duration, dynamics, and rhythm of the music determine which type of vibrato should be used. Wide and slow vibrato is often used for long notes in slow and lyrical passages. It has a warm and soft effect. This kind of vibrato can be employed in a slow movement. See Ex. 7 below.

¹²Ibid.

Ex. 7: Haydn, op. 42, iii, mm. 1-14

Adagio e cantabile

Wide and fast vibrato is typically used for loud dynamics because it makes the music sound more energetic. Narrow and slow vibrato is usually used in soft and introspective passages. Narrow and fast vibrato has an exciting effect, which is often used in rhythmically active passages and fast movements. See the half notes in Ex. 8 below.

Ex. 8: Haydn, op. 42, iv, mm. 1-15

Finale
Presto

Chapter 1.7: The Advantage of Using Full Scores as Opposed to Parts

Since ensemble players need to be aware of each other's parts, it is better to play from a full score. When the ensemble members focus on their own parts, they tend to be unaware of the other parts, which results in wasting precious rehearsal time. Full-score reading helps the

ensemble members not only to make better use of rehearsal time but also to gain a better understanding of the formal organization of the movement and the relationship among the four voices. See Ex. 9 below. In mm. 96-102, the parts of the two violins alternate with the viola and cello parts in a very fast manner. If the ensemble players have not studied the other parts in advance, the music is likely to sound mechanic and lifeless because the players fail to bring out musically relevant relationships among the parts.

Ex. 9: Haydn, op. 42, i, mm. 96-105

The musical score for Haydn's String Quartet, Op. 42, No. 1, measures 96-105, is presented in two systems. Each system contains four staves, representing the two violins, viola, and cello. The key signature is one sharp (F#), and the time signature is 2/4. The first system (mm. 96-102) is marked 'dolce' and shows a rapid alternation of parts between the two violins, viola, and cello. The second system (mm. 103-105) continues this pattern, with dynamic markings including 'dim.' and 'pp'.

Chapter 2: Phrase Rhythm Analysis of the First Movement of Haydn's String Quartet, Op. 42

In this chapter, I present a phrase rhythm analysis of the first movement of Haydn's String Quartet in D minor, op. 42. To facilitate the discussion of phrase rhythm, I have included a score analysis which can be found at the end of this chapter. See Ex. 10 below.

The reason why I present a phrase rhythm analysis is to help string quartet ensembles to perform this movement more convincingly. Before I turn to the analysis, I will need to introduce a few concepts that are necessary for understanding the analysis portion. According to William Rothstein, phrase rhythm embraces both phrase structure and hypermeter. Phrase structure refers to "the coherence of a musical passage on the basis of the total musical content" (melodic, harmonic, and rhythmic).¹³ Hypermeter "refers to the combination of measures on a metrical basis, including both the recurrence of equal-sized measure groups and a definite pattern of alternation between strong and weak measures."¹⁴ Hypermeter and phrase structure "may coincide or they may not. The agreement and conflict" serve as a compositional resource.¹⁵ In the Classical period, music is often presented in four-measure units (quadruple hypermeter). "The term 'hypermeasure' refers to a grouping of measures, which results in a specific type of hypermeter. For example, a four-measure unit labeled "1 2 3 4" indicates quadruple hypermeter."¹⁶ Not all hypermeter is quadruple. Duple and triple hypermeter can also occur (i.e. two-measure and three-measure groupings); however, quadruple hypermeter is particularly common in music of the Galant and Classical eras. Phrase rhythm analysis reflects

¹³William Nathan Rothstein, *Phrase Rhythm in Tonal Music*, (New York: Schirmer Books, 1989), 12-13.

¹⁴*Ibid.*, 12.

¹⁵*Ibid.*, 13.

¹⁶David Beach and Ryan McClelland, *Analysis of 18th- and 19th-Century Musical Works in the Classical Tradition*, (New York: Routledge, 2012), 78.

not only the phrase structure of the music but also the meter that occurs above the measure level (hypermeter).

Chapter 2.1: Phrase Rhythm Analysis

I will now present a phrase rhythm analysis that string quartet ensemble members can rely on when practicing the first movement of Haydn's String Quartet, op. 42. The form diagram below provides the necessary formal context for this phrase rhythm analysis. See Fig. 1 below.

The listener is likely to hear mm. 1-8 as two four-bar groupings because the passage represents an archetypal sentence, consisting of a presentation phrase followed by a continuation phrase. According to William Caplin's *Theory of Formal Functions*, many Classical themes feature two phrases consisting of four measures each.¹⁷ Once a hypermeter is established, the listener tends to continue that meter unless some musical element contradicts it. Therefore, we hear also mm. 9-16 in four-bar groupings.

Although quadruple hypermeter occurs frequently, passages in triple hypermeter occur occasionally. For example, we hear triple hypermeter in mm. 17-19 because the underlying harmony leads to a cadential arrival on the third hyperbeat in m. 19. Furthermore, the prolongation of dominant harmony in mm. 20-22 lasts three measures and therefore supports a weak triple hypermeter (surface hypermeter). We again hear quadruple hypermeter in mm. 23-26 because these four measures recall the thematic material from m. 1 and the associated hypermeter. Furthermore, the four-measure grouping is supported by the alternation of dominant and tonic harmonies in mm. 23-26. The *forzandi* in m. 23 and m. 25 strengthen the impression that quadruple hypermeter is active again. In mm. 27-33, the size of the grouping

¹⁷William Earl Caplin, *Classical Form: A Theory of Formal Functions for the Instrumental Music of Haydn, Mozart, and Beethoven*, (Oxford: Oxford University Press, 1998), 256.

unit is seven hyperbeats. This grouping unit is longer because mm. 29-30 are an echo of mm. 27-28. Without the echo, the passage could have supported a four-bar grouping. The size of the grouping is five hyperbeats because the harmony in m. 31 lasts longer than expected, one whole measure instead of half a measure. Had Haydn compressed the harmonies of mm. 31 and 32 into one measure, the phrase would have been four instead of five hyperbeats. In mm. 33-39, the listener hears four-measure units again because the chord successions in these measures are complete cadential progressions. Measure 33 features a metrical reinterpretation—that is, one hypermeasure ends (mm. 27-33) and another begins (mm. 33-36). Another metrical reinterpretation occurs in m. 36.

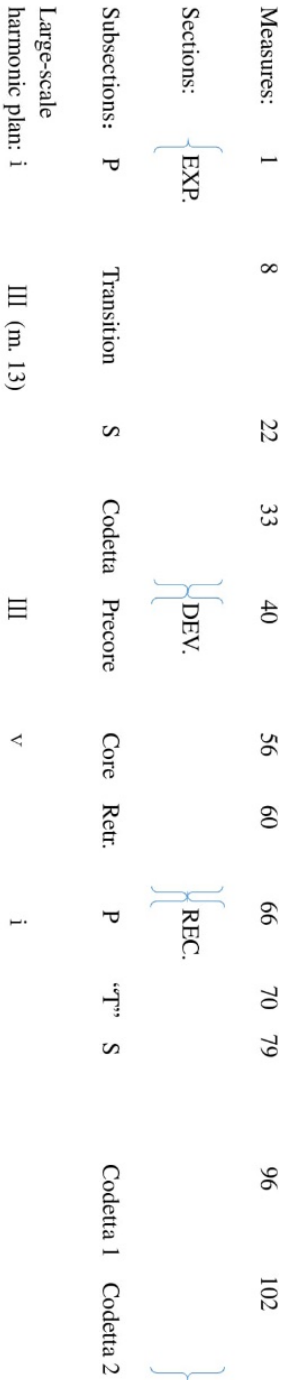
In the precore and core sections of the development, one can perceive several four-bar hypermeasures. The listeners can hear quadruple hypermeter because four-measure units were re-established in mm. 33-36 and 36-39. Since listeners tend to continue a given meter once it is established, they are likely to hear mm. 40-47 in four-measure groupings as well. The impression that four-bar hypermeter is active again is confirmed by the prolongation of F-major harmony in mm. 48-51 and E-major harmony in mm. 52-55. In addition, the beginning of a new measure grouping unit is suggested in m. 56 after the half cadence in m. 52. The retransition (mm. 60-65) features triple hypermeter because of the half cadence in m. 62 and the dominant harmony which is prolonged for three measures in mm. 63-65. The phrase-rhythmic properties of mm. 60-65 compare to those of mm. 17-22.

Measures 66-73 mark the beginning of the recapitulation and therefore feature thematic material from the exposition. Thus, the phrase rhythm explanation of mm. 1-8 also applies here. In mm. 74-79, we hear again triple hypermeter because the phrase-rhythmic properties are identical to those of mm. 17-22. Triple hypermeter remains active because of the Phrygian half cadence (d: IV⁶ - V) in m. 81, the prolongation of dominant harmony in mm. 81-82, and the change in thematic material in m. 83 (piano-like gestures in the violin). The phrase

in mm. 80-82 features thematic material from m. 1. The dynamic change in m. 83 contributes to the impression of triple hypermeter. Listeners can hear two four-bar units in mm. 83-90 because the rests in the violins and viola in m. 86 imply the end of a phrase. In addition, the half cadence in m. 90 unequivocally represents the end of a hypermeasure. Listeners can hear a two-measure unit in mm. 94-95 because of the dynamically heightened augmented sixth chord in m. 94 as well as the dynamic and harmonic change in m. 96.

In my phrase rhythm interpretation above, I have relied on the following: First, unity of melodic-motivic material is an important aspect of phrase rhythm analysis. Second, harmonic progressions and cadences determine our perception of phrase rhythm. Cadences indicate boundaries of measure groups. From a performance point of view, listeners tend to perceive symmetrical types of hypermeter, such as four-bar hypermeter, as illustrated in mm. 1-8. Longer passages tend to increase the tension in a performance because the players must keep the tension until the harmony is resolved. For example, see mm. 27-33. Passages in triple hypermeter (mm. 17-22, mm. 60-65 and mm. 74-79) usually come in units of two in this movement. The listeners feel the cadential arrival earlier than their expectation in the third measure in the passages mentioned above. Performers should try to convey six-measure rather than three-measure groups in passages of triple meter. String quartet ensembles can perform this movement more convincingly by applying this phrase rhythm analysis. String quartet ensemble players are encouraged to develop their ability to analyze the phrase rhythm of other Classical works.

Fig. 1: Haydn, String Quartet, Op. 42, i, form analysis



Ex. 10: Haydn, String Quartet, Op. 42, i, phrase rhythm analysis.

Op.42, in D Minor

Exposition

I

P

Andante ed Innocentemente

Violino I

Violino II

Underlying hypermeter:

Viola

Violoncello

III

Surface hypermeter : 1 2 3

MC S

III 30 Codetta

Codetta ./.

Development

Precore 40

III

50

fz

Core

dim.

fz

1 2 3 4 1

dim.

dim.

dim.

fz

V-

RT 40

fz

2 3 4 1 2

fz

fz

Recapitulation

Surface hypermeter : 1

The musical score is divided into four systems, each containing three staves (treble, alto, and bass clef). The notation includes various musical symbols such as notes, rests, and dynamic markings.

- System 1 (Measures 65-70):** Labeled with a blue box containing "P" at measure 68. A blue line spans measures 65 to 68, labeled "3". Measure 69 has a blue box containing "T" and the number "70".
- System 2 (Measures 71-76):** Labeled with a blue box containing "T" at measure 74. A blue line spans measures 71 to 74, labeled "4". Measure 75 has a blue box containing "MC" and the number "2".
- System 3 (Measures 77-80):** Labeled with a blue box containing "S" at measure 77. A blue line spans measures 77 to 80, labeled "3". Measure 78 has a blue box containing "T" and the text "Surface hypermeter : 1". Measure 79 has a blue box containing "MC" and the number "2".
- System 4 (Measures 81-86):** Labeled with a blue box containing "S" at measure 81. A blue line spans measures 81 to 84, labeled "3". Measure 85 has a blue box containing "T" and the text "Surface hypermeter : 1". Measure 86 has a blue box containing "MC" and the number "2".

Dynamic markings include *p* (piano), *fz* (forzando), *f* (forte), and *cresc.* (crescendo). The tempo marking *dolce* (dolce) appears in the third system.

The musical score is divided into four systems, each with a vocal line (treble clef) and a piano accompaniment (bass and treble clefs).

System 1: The piano part features a complex rhythmic pattern with triplets and sixteenth notes. The vocal line has a melodic line with some rests.

System 2: The vocal line includes the lyrics "cre", "scen", and "do". The piano part has a steady eighth-note accompaniment. Dynamics include *fz* and *p*.

System 3: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1" is placed above the piano part.

System 4: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 5: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 6: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 7: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 8: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 9: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 10: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 11: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 12: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 13: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 14: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 15: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 16: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 17: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 18: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

System 19: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 1 -/." is placed above the piano part.

System 20: The vocal line includes the lyrics "dolce". The piano part continues with eighth-note accompaniment. Dynamics include *dolce* and *f*. A blue box labeled "Codetta 2" is placed above the piano part.

Conclusion

In this study, I presented several training methods and techniques for practicing string-quartet repertoire. The topics demonstrated in this study include: (1) three suitable tuning methods for chamber music; (2) several methods of harmonic intonation training; (3) suggestions for performing syncopated rhythms; (4) the importance of bowing choices; (5) the role of the cello with respect to sound balance; (6) the effects of different types of vibrato; (7) and the advantage of using full scores rather than parts. Finally, I have also presented a phrase rhythm analysis of the first movement of Haydn's String Quartet, op. 42.

As a cellist, I have tried many different tuning methods. I recommend tuning the G and C strings slightly higher in chamber music playing because the harmony sounds more consonant. Ensemble members should devote much time to harmonic intonation since intonation is one of the most important aspects in a music performance. In the first movement of Haydn's String Quartet, op. 42, there are a few passages that are particularly challenging as far as harmonic intonation is concerned. For example, the chords in mm. 96-105 are usually out of tune because of the short note durations. The ensemble members need to spend more time practicing this passage during rehearsals.

I did a phrase rhythm analysis of the first movement of Haydn's op. 42 when I studied it with my chamber music coach. This phrase rhythm analysis was slightly different from the one presented in this thesis since it relied more on the intuition of the performers. I think it is necessary for the ensemble members to do a phrase rhythm analysis together during the rehearsal since it is likely to improve the effectiveness of rehearsals and the quality of performances.

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