Spring 2021

An Exploration of Late Twentieth and Twenty-First Century Clarinet Repertoire

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AN EXPLORATION OF LATE TWENTIETH AND TWENTY-FIRST CENTURY CLARINET REPERTOIRE

by

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B.A., Albion College, 2017

A Research Paper
Submitted in Partial Fulfillment of the Requirements for the
Master of Music

School of Music
in the Graduate School
Southern Illinois University Carbondale
April 2, 2021

RESEARCH PAPER APPROVAL

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Graduate School
Southern Illinois University Carbondale
April 2, 2021

AN ABSTRACT OF THE RESEARCH PAPER OF

Grace Talaski, for the Master of Music degree in Performance, presented on April 2, 2021, at Southern Illinois University Carbondale.

TITLE: AN EXPLORATION OF LATE TWENTIETH AND TWENTY-FIRST CENTURY CLARINET REPERTOIRE

MAJOR PROFESSOR: Dr. Eric Mandat

This is an extended program note discussing a selection of compositions featuring the clarinet from the mid-1980s through the present. The first work, *arioso/doubles*, was composed by Benjamin Broening in 2002 for clarinet and electroacoustic sound. *Folk Songs* was composed by Eric P. Mandat in 1986 for solo clarinet. *An Illustrated Ontogeny of The Flower Snark* was composed by Carl Schimmel in 2013 for clarinet and piano. *Lake Huron Sketches* was composed by Grace Talaski in 2019-2020, and is a yet-to-be premiered work for solo clarinet. *New York Counterpoint* was composed by Steve Reich in 1985 for solo clarinet plus ten pre-recorded clarinet and bass clarinet parts to be played alongside the solo clarinet part by speakers during the live performance.

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CHAPTER 1

ARIOSO/DOUBLES

Benjamin Broening's chief compositional interests are the "expressive nature of sound and a sense of line derived from his background as a singer."[1] His compositions include orchestra, chamber, choral, and electroacoustic music. His works have been performed in over twenty-five countries by many ensembles including Eighth Blackbird, the Choral Arts Society of Philadelphia, the Charlotte Symphony Orchestra and Chorus, and the Richmond Symphony Orchestra.[2] Throughout his career, he has received many awards including Guggenheim, Howard, and Fulbright Fellowships. Broening is Professor of Music at the University of Richmond and is the founder and artistic director of Third Practice Electroacoustic Music Festival.[3]

Benjamin Broening wrote *arioso/doubles for clarinet and electroacoustic sound* in 2002. The piece was commissioned for clarinetist Arthur Campbell by the Band and Orchestral Division of the Yamaha Corporation of America. According to Broening, the title *arioso/doubles* references the piece's vocal music influences, seventeenth century opera in particular. His goal was to evoke the "changing nature of the melodic line that moves fluidly among declamatory or recitative-like passages, short melodic phrases and longer, more strongly characterized lines." The term "doubles" refers to a variation technique in seventeenth and early eighteenth-century French music where ornamentation is applied to a melody while the supporting harmonies

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1. Benjamin Broening, "arioso/doubles Program Notes," 2020.

2. Benjamin Broening, "Benjamin Broening, About," Accessed Mar. 7, 2020, https://benjaminbroening.net/about.html.

3. Broening, "arioso/doubles Program Notes."

remain unchanged.[4] It is interesting that Broening chose to look to seventeenth century music as his inspiration for a very contemporary, electroacoustic work. The hundreds of years old techniques have been recontextualized and intermixed with modernist techniques and pitch structures.

There are many tempo/pulse changes throughout *arioso/doubles*.[5] The tempo markings are mathematically related to each other, not arbitrarily chosen. Each tempo marking can be related to the previous one through a ratio of whole numbers. This is known as metric modulation, a technique originally pioneered by Elliot Carter in the twentieth century. The piece begins with quarter note = 120 bpm. At m. 26, the tempo changes to quarter note = 90 bpm. This is three-quarters of the original tempo. At m. 62, the tempo becomes quarter note = 72 bpm, four-fifths of the previous tempo. The tempo returns to quarter note = 120 bpm at m. 84, which is five-thirds of the previous tempo indication. In m. 95 the pulse becomes dotted-quarter note = 72 bpm, which is three-fifths of the previous pulse. Measure 95 through m. 102 is the only section of the piece that is in mostly compound meter. In m. 103 the piece returns to simple meter with a quarter note pulse of 108 bpm. The quarter note length remains the same as it was in mm. 95-102, but the main pulse unit switches from the dotted-quarter note to the plain quarter note. Consequently, the pulse becomes one and a half times faster. The final tempo change occurs at m. 146 where the quarter note = 72 bpm. This is two-thirds of the previous tempo. The technique of metric modulation helps the changes in tempo sound smooth and natural.

A pitch-class set analysis was performed to explore the structure of *arioso/doubles*.

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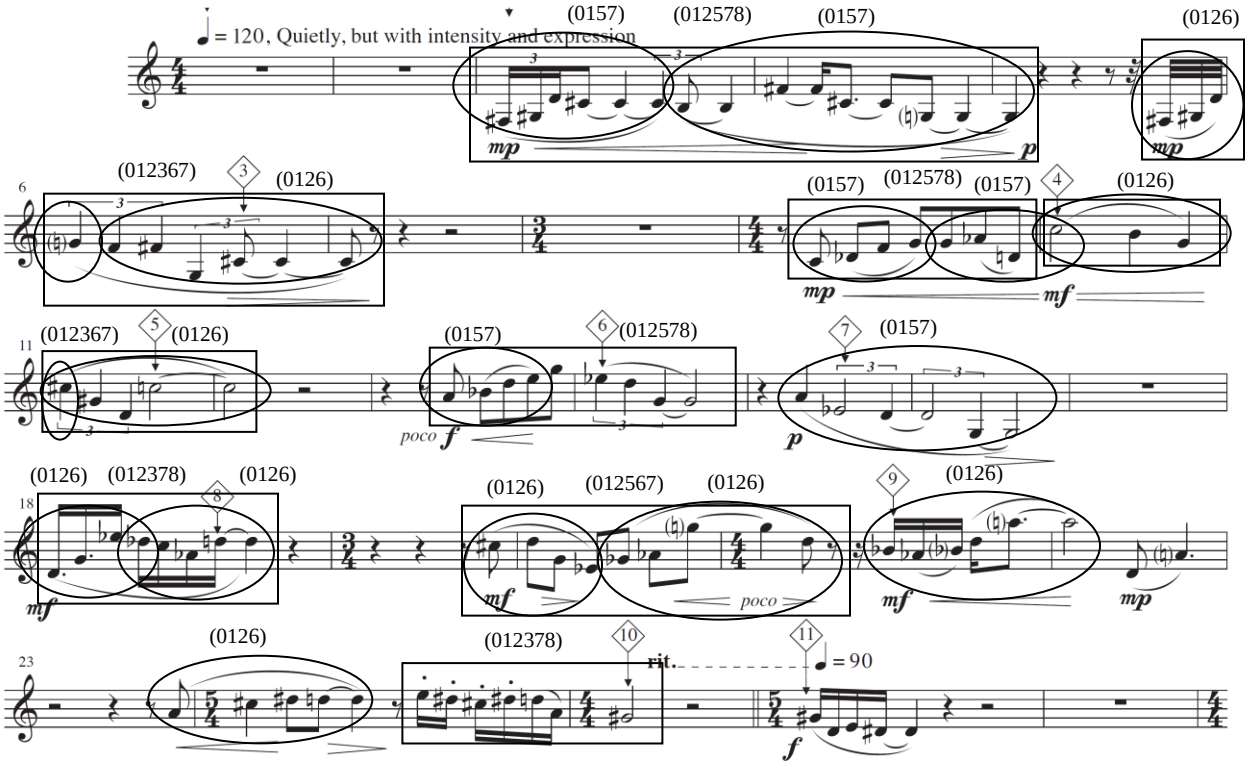
4. Broening, “arioso/doubles Program Notes.”

5. Broening, *arioso/doubles for clarinet and electroacoustic sound*, (2002).

Because this piece is for clarinet only, all pitches will be named as written (sounding one whole step below written). Many of the melodic gestures can be classified as either (0157) or (0126) tetrachords. Apart from tempo changes, the use of different sets throughout the piece helps show structural boundaries. The first section from mm. 1-25 contains several hexachordal melodic gestures. These hexachords are typically made of multiple (0157) or (0126) tetrachords. For example, sometimes two (0157) tetrachords that are five semitones apart combine to make (012578) hexachords. In addition, sometimes two (0126) tetrachords that are one semitone apart combine to make (012367) hexachords. In the figures below, hexachords are enclosed in rectangles, and smaller sets are enclosed in ovals.

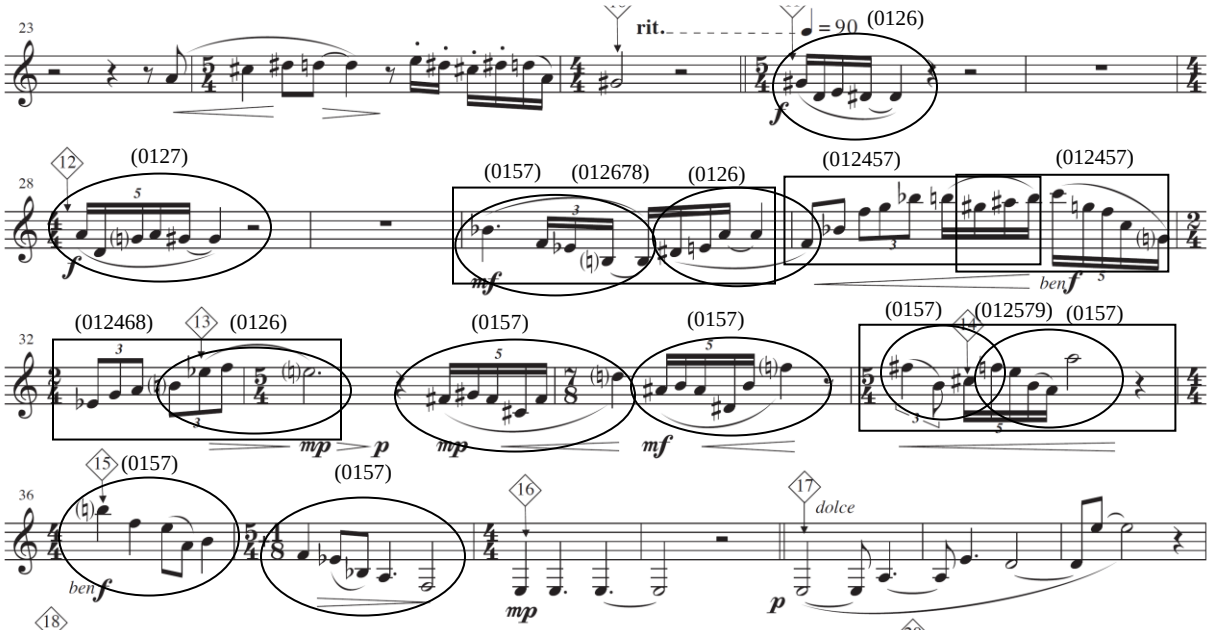
Figure 1 - *arioso/doubles* mm. 1-25, sets labelled



In the second section from mm. 26-39, (0157) and (0126) tetrachords still dominate the pitch content and are juxtaposed with hexachord gestures that sometimes include these

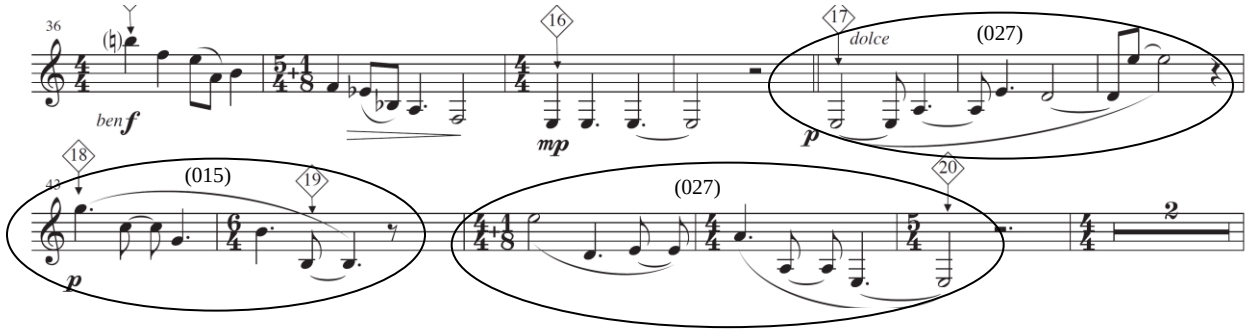
tetrachords inside them. The last two notes of this section, F and E, form a half step dyad that is seen several times at transitional points throughout the piece.

Figure 2 - *arioso/doubles* mm. 26-39, sets labelled



In mm. 40-47 a series of trichords begins with set [D, E, A], a (027), followed by set [G, B, C], a (015), followed by set [D, E, A] again. This shows contraction/expansion pattern as the set interval-classes decrease by one semitone each moving from (027) to (015) and increase by one semitone again moving back to the (027).

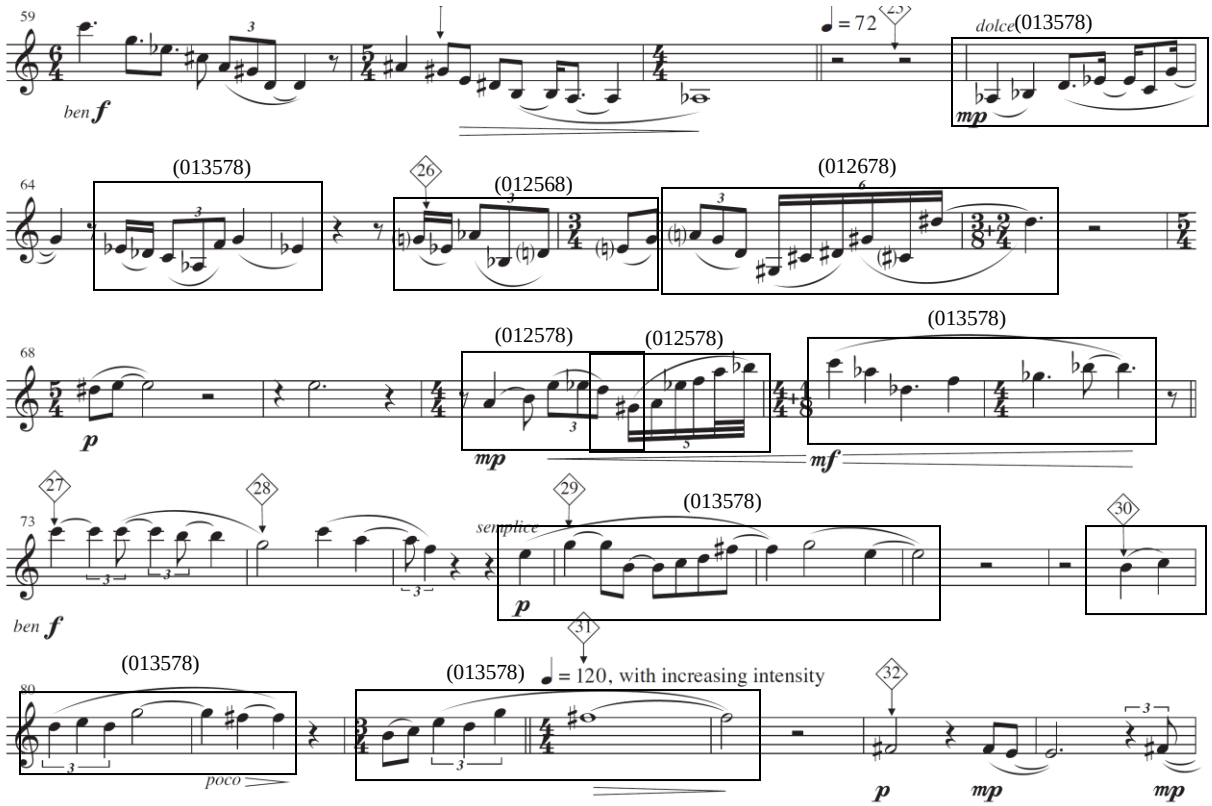
Figure 3 - *arioso/doubles* mm. 40-47, sets labelled



Measures 50-61 contain both the original (0157) and (0126) tetrachords but also smaller

subsets taken from these tetrachords. The section from mm. 62-82 is more stepwise and modal sounding. Here there is a recurring (013578) hexachord in several melodic gestures as well as the original (012578) hexachord in m. 70 and some other hexachord gestures that do not recur.

Figure 4 - *arioso/doubles* mm. 63-84, sets labelled



The section from mm. 83-94 is a transition back into the tetrachord sonorities found at the beginning of the piece. It begins with a whole step E-F# dyad repeating several times. This may be an intervallic expansion by a semitone of the E-F dyad in mm. 37-38. After the whole step dyad, the (0157) and (0126) tetrachords reappear. After their return, the (0157) and (0126) tetrachords are presented as sustained melodic gestures with descending contours in mm. 95-141. Rapid ascending contour and highly chromatic gestures oftentimes precede the sustained descending tetrachords. Combining the rapid gestures with the sustained tetrachords following

them create hexachords, some of which have the prime form (012578) as seen at the beginning of the piece.

Figure 5 - *arioso/doubles* mm. 95-100, sets labelled

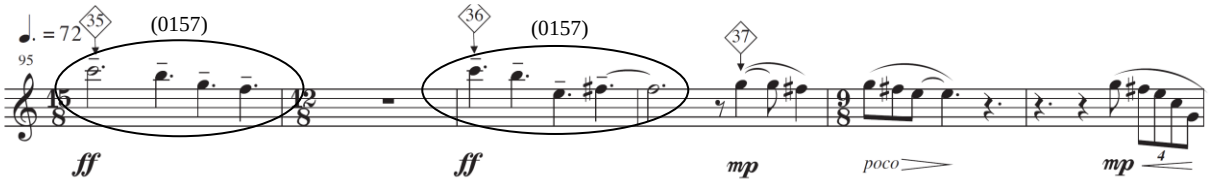
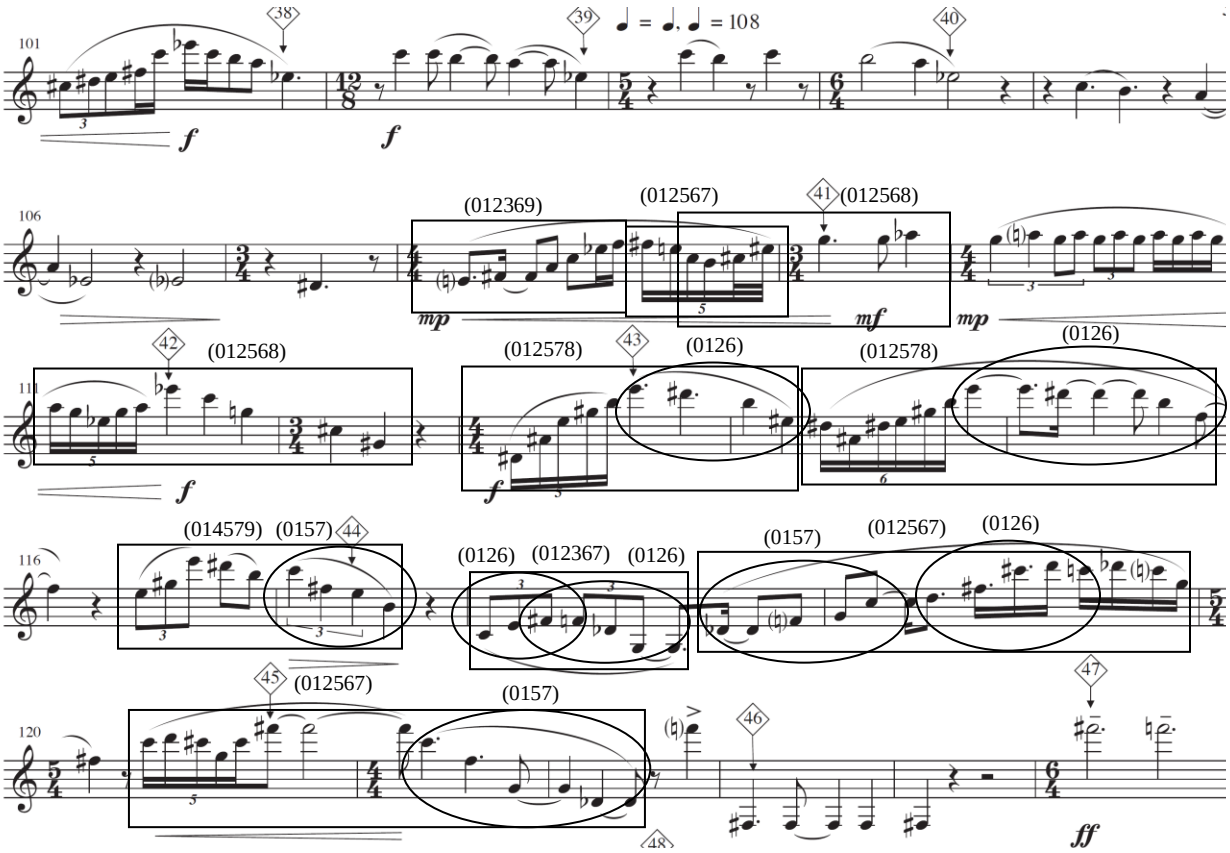
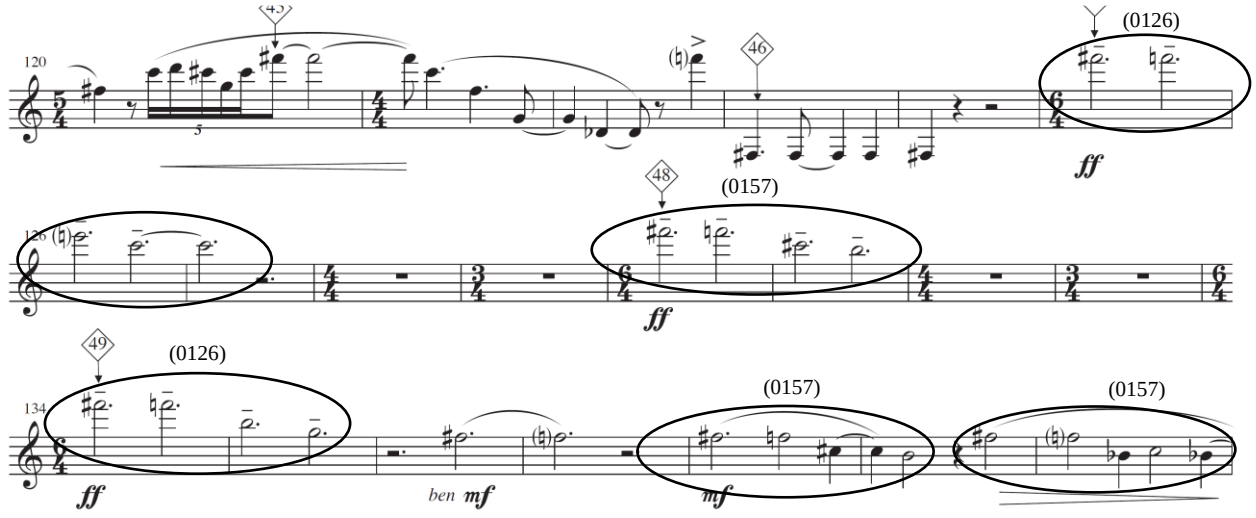


Figure 6 - *arioso/doubles* mm. 101-125, sets labelled



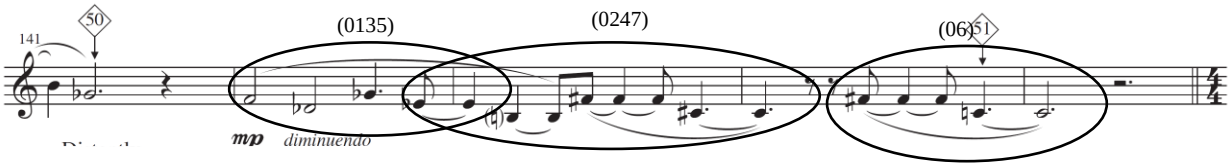
In mm. 122-124, the half step dyad of F to F-sharp is stated in isolation before it is heavily emphasized in mm. 125 and 140 as the first two pitch classes of every sustained tetrachord gesture. This dyad can be associated with the E-F half step dyad from mm. 37-38 but transposed up a semitone.

Figure 7 - *arioso/doubles* mm. 125-140, sets labelled



Measures 142-145 are a transition into the ending/coda section. Measure 142 starts with a (0135) tetrachord, which is expanded in m. 143 to a (0247) tetrachord. In mm. 144-146 a tritone dyad of F-sharp to C appears, which foreshadows the ending of the piece to come in mm. 158-161.

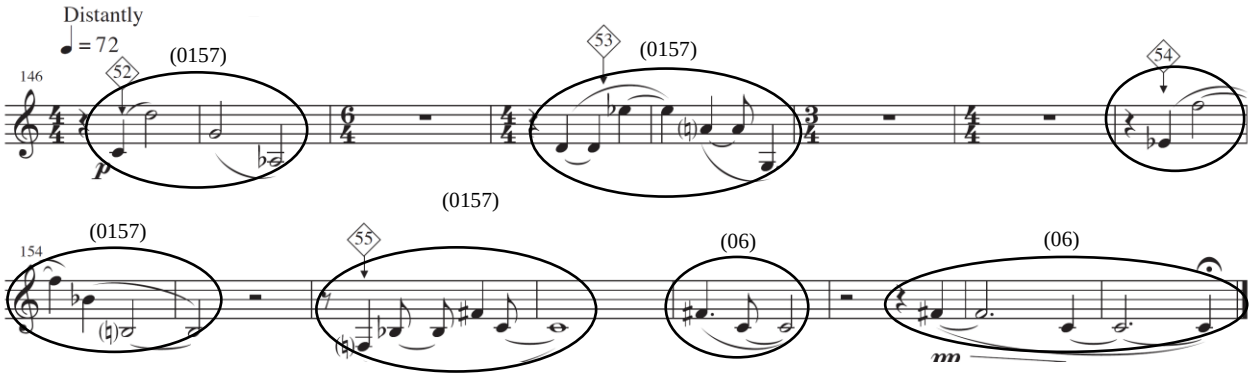
Figure 8 - *arioso/doubles* mm. 142-145, sets labelled



Measures 146-161 act as a coda to end the piece. Four separate (0157) tetrachord gestures are presented. This is fitting as the (0157) tetrachord was also the first sonority used at the beginning of the piece. Unlike in the beginning, here the (0157) tetrachords are clearly individual entities and do not combine into hexachords. However, if the (0157) from mm. 146-147 was combined with the (0157) from mm. 149-150, it would make a (012578) hexachord, which was the first hexachordal prime-form from the beginning of the piece. The same applies to the (0157)

tetrachords in mm. 153-157. It is as if the (012578) hexachord from the beginning is broken down into its tetrachord subsets. The final (0157) tetrachord in mm. 156-157 ends with the pitches F-sharp and C, which are a tritone apart. These pitches are presented as a tritone dyad twice in mm. 158-161 to end the piece. Perhaps the tritone is emphasized here because of its presence in both of the main (0157) and (0126) tetrachordal prime forms of the piece.

Figure 9 - *arioso/doubles* mm. 146-161, sets labelled



The electroacoustic sound files that make up the accompanying electronic part are played using a Max patcher created by Broening. Max is a computer program that allows for real-time audio manipulation, and patchers contain the specific commands and effects used to manipulate the audio files and inputs used in a particular composition. In the case of *arioso/doubles*, Max is used to allow the performer to trigger the onset of fifty-five separate sound files in real time. This strategy is notably different than electroacoustic works with fixed media. In fixed media electronics pieces, where the electronics are played on a compact disc, the timing of separate sounds cannot be changed, and the performer must follow the electronics carefully. This allows the performer very little room for rubato. The advantage of Broening's Max patcher is that it allows the performer agency in choosing the length of time between when separate sound files are played. In the score for arioso/doubles, Broening points out on which clarinet note each

sound file should be triggered.[6] The sound files are longer than necessary to allow the performer to take extra time between phrases if desired. The disadvantage of using triggered sound files in a Max Patcher over a fixed media electronic part is that, should the performer forget to trigger any of the sound files during the live performance, the electronics will fall behind the performer. If this occurs, the performer may need to trigger files at the wrong time to bring the clarinet and electronic parts back together. Because there are so many sound files that must be triggered at specific musical places, if the clarinetist forgets just a few triggers, the whole performance could be thrown off.

The electroacoustic sound files are typically extremely sustained and rich in reverb and echo effects. The audio sounds mainly clarinet-based. In pitch content, the electronic part typically imitates and occasionally foreshadows the pitch content of the clarinet part. As the electronics sustain certain pitches played by the clarinet, those pitches are blurred together to form a clustery harmonic backdrop. In addition, the electronic part often plays drones that add richness to the overall harmony. For the clarinetist, the most important portions of the electronic part to be aware of are the places where the electronics are directly imitating the clarinet line but at a slower pace. Here the clarinetist must follow the marked tempo and not try to play directly with the electronics. This direct imitation occurs at mm. 95-98, mm. 125-141, and mm. 146-155.[7] In *arioso/doubles*, the electronic part serves more of an accompaniment role rather than being an equal partner to the clarinetist, but the electronics are essential for establishing the ethereal and shimmery atmosphere of the piece.

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6. Broening, *arioso/doubles*.

7. Broening, *arioso/doubles*.

CHAPTER 2

FOLK SONGS

Eric P. Mandat (b. 1957) is a leading composer and performer of contemporary clarinet repertoire. Mandat studied clarinet performance at the University of North Texas (B.M.), the Yale School of Music (M.M.), and the Eastman School of Music (D.M.A.).[8] He is currently a Professor and Distinguished Scholar at Southern Illinois University Carbondale, where he has taught since 1981.[9] According to Mandat, he began composing clarinet music because, "…when I was playing clarinet, especially when I was getting involved in experimenting with extended techniques and playing some of those pieces, I found that the things I wanted to play weren't written."[10] Mandat's approach to composing with clarinet extended techniques is especially effective because, as a clarinetist, he can improvise and experiment with new techniques as he is composing. Therefore, he can test out which techniques, multiphonic combinations, and fingerings work well together and write music that is highly idiomatic for the clarinet.[11] He describes his compositional style as a synthesis of unconventional sounds, jazz rhythms, traditional forms, and "pitch organizations of traditional, non-Western music."[12]

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8. "Eric Mandat, Professor, Distinguished Scholar," Southern Illinois University School of Music, accessed Feb. 8, 2021, https://cola.siu.edu/music/faculty-staff/faculty/by-alpha/mandat.php.

9. "Eric Mandat," Southern Illinois University School of Music.

10. Gregory Oakes, "Eric Mandat's Style and Compositional Process for Solo Clarinet Music" (DMA thesis, University of Colorado, 2004), 7.

11. Oakes, 8.

12. Oakes, 9.

Eric Mandat wrote *Folk Songs* in 1986 while completing his Doctor of Musical Arts degree at Eastman.[13] Mandat started writing the third movement for his "Current Practices" class with Robert Morris, which explored post-tonal music through musicology and theoretical analysis. His assignment was to compose a piece using a limited collection of pitches. Although the third movement was not directly inspired by a specific style of folk music, Mandat learned from Morris that much of folk music is created from a very limited collection of pitches. Mandat borrowed this folk music idea of limited pitch material and adapted it to suit his own compositional voice. He decided to expand upon the piece by writing four additional movements, making the completed *Folk Songs* five movements long in total.[14]

Because this piece is scored for solo B-flat clarinet, all pitches will be named as written (sounding a whole step lower).

Movement I. "Spirited, as if from a distant Appalachian hill" was inspired by American Appalachian fiddle music. The form of the movement is very simple; essentially an ABCA form plus a coda. This movement is made up of primarily perfect fifths in order to emulate the open strings used in mountain music fiddling.[15] The challenging undulating multiphonics, some of them incorporating microtones, create a rich and interesting sonority that gives the movement its distinct character.

The A section from mm. 1-15 is in the key of F and has mostly alternating perfect twelfths and fifths between chalumeau register F3s and F4s underneath a clarion register C5

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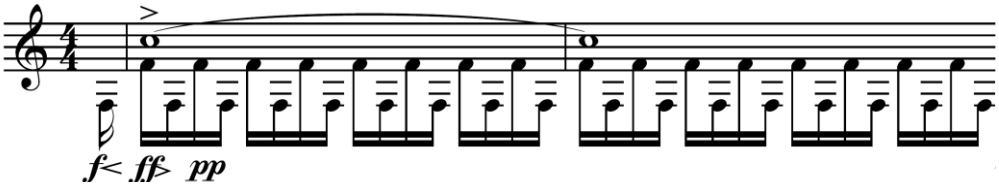
13. Eric P Mandat, *Folk Songs for solo B-flat clarinet*, revised edition, (Cirrus Music, 1986).

14. John Patrick Masserini, "The Compositional Techniques of Eric Mandat and an Analysis of Tricolor Capers and Folk Songs," (DMA diss., Michigan State University, 1999), 38.

15. Masserini, 39.

drone. Occasionally the pitches G4, a slightly flat A4, D4, and a slightly raised G4 interrupt the pattern. These interruptions become more and more frequent to add intensity before cadential material in mm. 12-15 with a microtonal flourish and sustained, non-undulating multiphonics.[16] Figure 10 illustrates the undulation and drone pattern used in this section.

Figure 10 - *Folk Songs* mvt. 1 mm. 1-2 multiphonic undulation



The B section from mm. 16-30 is in the key of d minor and continues the undulation plus drone pattern.[17] However, the pitch and interval content changes with a sustained D5 drone from the clarion register and undulating A4 and B-flat 4s in the chalumeau register. Sudden accented B half-sharp 4s, C# 5s, and Eb 5s are injected into the normal undulation pattern. The B section, like the A section, also ends with sustained multiphonics, but here each multiphonic moves slightly higher in pitch in order to add tension and transition into the C section.

The C section from mm. 31-36 is more animated than sections A and B. B-flat is the primary pitch-center. Here there are three different combinations of drones and undulating notes. Measure 31 begins with undulating D4s and B-flat 3s in the chalumeau register underneath an F5 drone in the clarion register. In beat 5 of m. 31 the pattern suddenly shifts to have an E-flat 4 drone in the chalumeau register and an alternating G5 and G half-sharp 5 undulation in the

16. Masserini, 40.

17. Masserini, 41.

clarion register. These two undulation plus drone combinations alternate throughout mm. 31-35. In m. 36 the pattern shifts to an undulation between A-flat 3 and C4 in the chalumeau register.

Measures 37-43 constitute a recapitulation of the original A section.

The coda lasts from mm. 44-50. The multiphonic from the end of m. 43 is held over. C5 is again the drone in the clarion register, but by opening and closing the right-hand first finger key instead of the side B-flat key, the undulation pattern now occurs between the pitches F4 and G4 (instead of F4 and F3 as it was in the A and A' sections). In the last three measures, the clarinetist needs to overblow to change the uppermost drone pitch to E-flat 6 instead of C5. This overblowing is very difficult and requires intense focus of the embouchure and airstream.

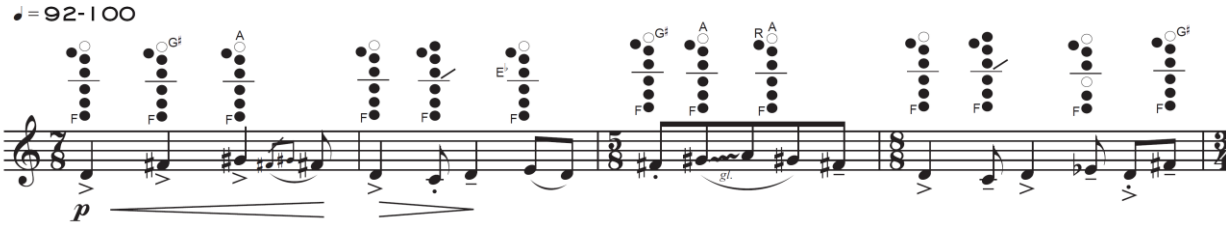
Movement II, "Heavily, with a fuzzy, unfocused, breathy tone," is characterized by many altered fingering notes and microtones. The altered fingerings defocus the tone and allow for the funky, fuzzy clarinet sound. Because most of the fingerings contain open tone holes in the upper joint of the instrument, it is difficult to execute them without producing multiphonics, which are not desired here. Keeping the note lengths short as indicated and the dynamic levels quiet helps to prevent unwanted multiphonics. The movement is in binary form with a coda.[18] The time signature also changes frequently by switching between even and odd meters with no definable pattern.

The A section lasts from mm. 1-21 and is dominated by the fuzz tone timbre and pitches in the chalumeau register. The melody is based on a whole tone sonority and symmetrical intervallic patterns. The central interval of the A section the minor third formed between D and

18. Masserini, 45.

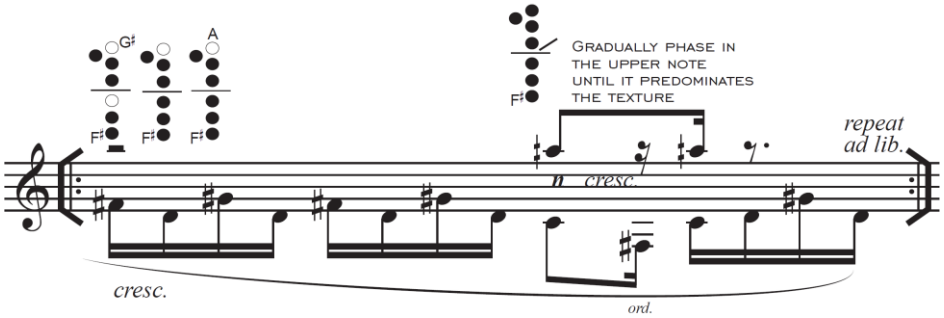
F-sharp.[19] These are the first two notes of the piece. In the first two measures, Mandat adds major seconds on both sides of this minor third, expanding the pitch collection to make the set [C, D, F-sharp, G-sharp], a (0268) set. In measure 2, Mandat also adds a E, which falls directly in the middle of this set intervallically as an axis and completes the main whole-tone collection, set [C, D, E, F-sharp, G-sharp], a (02468) set. Occasional notes a half-step away from pitches in this main collection are added as melodic embellishments, such as the A in m. 3.

Figure 11 - *Folk Songs* mvt. 2 mm. 1-4



There is a shift in mm. 21-23 as the melodic pattern from beat 3 of m. 19 through m. 20 is embellished and lengthened. In m. 23 the clarinetist gradually crescendos and allows clarion register A half-sharp 5s to creep in through overblowing. This forms a smooth transition into the B section.

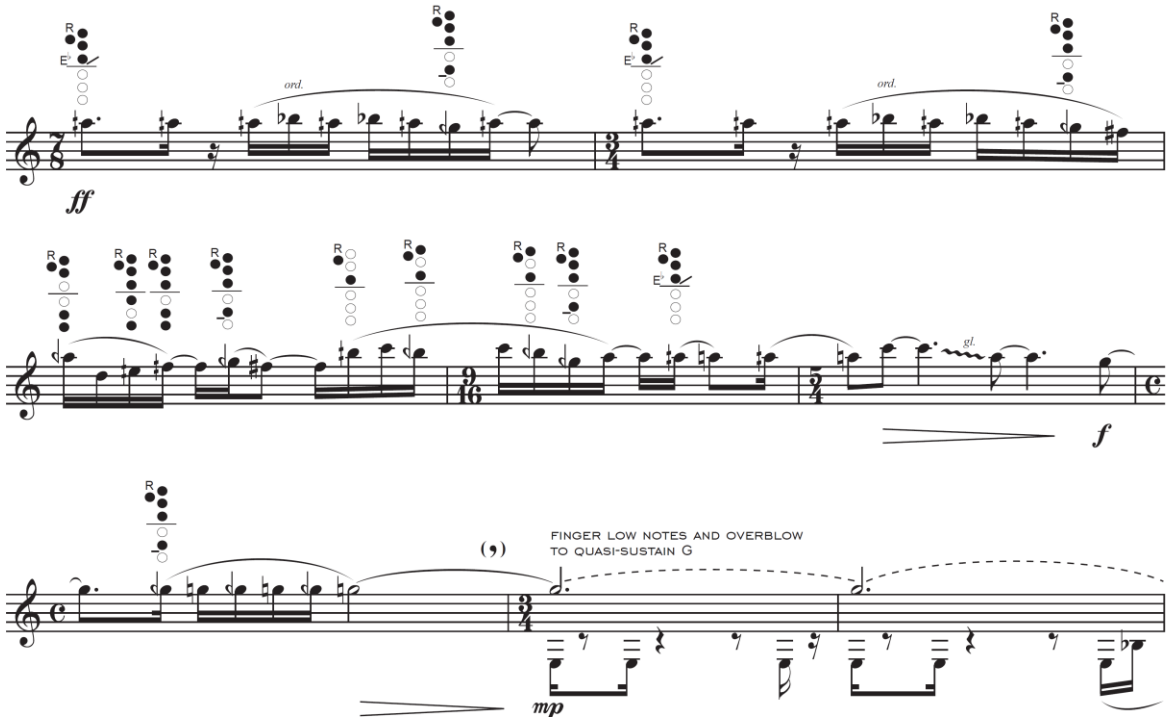
Figure 12 - *Folk Songs* mvt. 2 m. 23



19. Masserini, 45.

The B section from mm. 24-30 is characterized by loud dynamics and stays entirely in the clarion register. In the B section, the melodic patterns are based off of the intervals of quarter steps, half steps, and minor thirds.[20] At the loud dynamic, the fuzz tone is no longer possible, but microtonal note patterns keep the sound profile unusual.

Figure 13 - *Folk Songs* mvt. 2 mm. 25-32

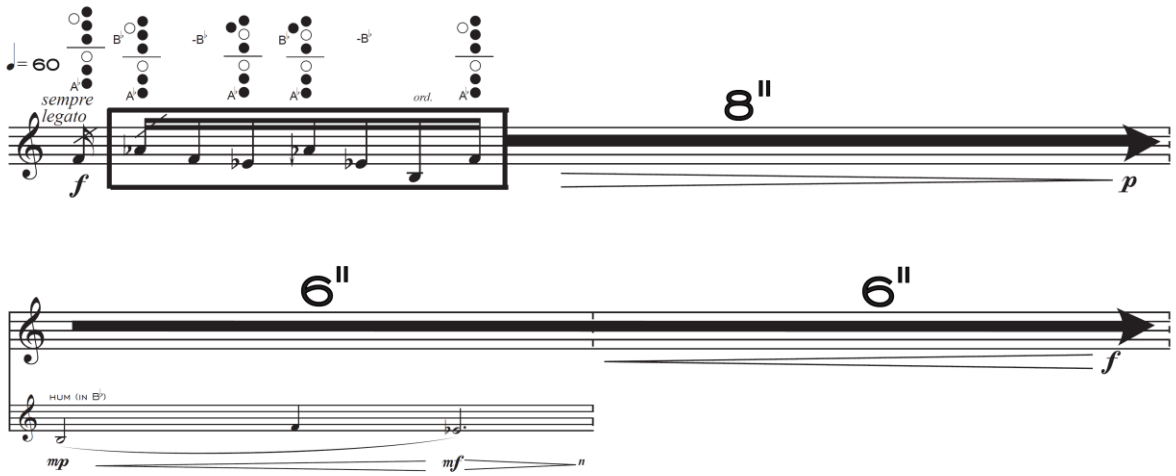


The coda, mm. 31-42 begins with a sustained G5 drone in the clarion register accompanied by a low-pitched groove in the chalumeau register. It is difficult to sustain the G5 once the register key is no longer depressed. This requires a very firm embouchure and compressed airstream. If the clarinetist cannot sustain the G5 all the way through m. 35, he/she should not try to bring it back once it fades. After the G5 goes away, the low-pitched groove continues independently through the end of the movement.

20. Masserini, 47.

Movement III “Expansive; as if hurtling through space” is in a ternary form.[21] It begins with rapidly repeating patterns with unusual, altered timbre fingerings that sometimes include microtones. While sustaining these rapid patterns, the clarinetist occasionally must hum sustained pitches at the same time. It is difficult to both hum and play and execute the unusual fingering patterns, so doing both of these tasks at the same time provides the clarinetist an extra challenge. The repeating played gesture is based off of a major second and major and minor thirds.[22] The hummed pitches in line 2 are all derived from the rapidly repeating pattern played by the clarinet.

Figure 14 - *Folk Songs* mvt. 3 page 1 lines 1-2



The first hummed pitch, B3, is the lowest pitch in the rapid pattern and is the easiest to aurally isolate and execute. The other hummed pitches of F4 and E-flat 4 can also be found in the repeating pattern, or the clarinetist can practice humming up a tritone from B3 to F4 and then down a whole step to land on the E-flat 4.

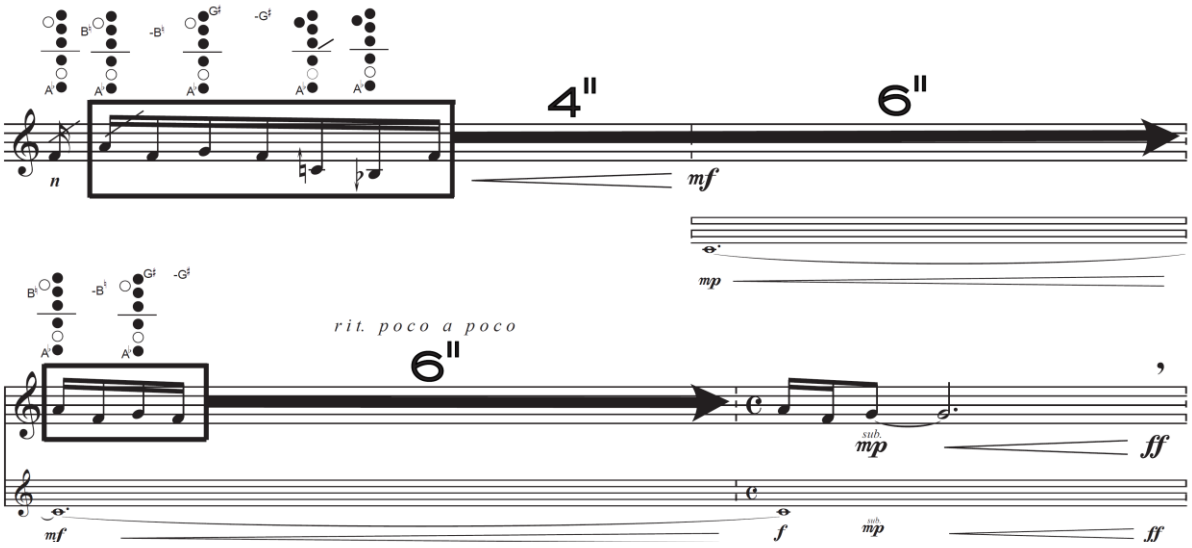
21. Masserini, 49.

22. Masserini, 50.

The second hummed gesture in line 3 is more difficult to hum because the hummed pitches are not present in the repeating gesture. The clarinetist may try to listen to the B3 again but think a half step below it to execute the B-flat 3. From there, the clarinetist can think down a whole step from B-flat 3 to A-flat 3 and down a tritone to D3. If the clarinetist's voice is not low enough to reach D3, leaping up to D4 is an acceptable alternative. The interval class sizes between the notes of the first hummed gesture are presented in retrograde in the second hummed gesture.

In line 4, a new repeating gesture emerges based on the same intervals as the first repeating gesture.[23] The clarinetist is required to hum and play at the same time again in lines 4-5, but here the clarinetist hums only one sustained pitch, C4. This C4 is easy to find as it is the fifth pitch in the boxed rapidly repeating pattern. In line 5, instead of the hummed pitches changing, the fingered pattern changes.

Figure 15 - *Folk Songs* mvt. 3 page 1 lines 4-5



23. Masserini, 50.

A shift occurs in page 1 line 6 through page 2 line 2 as the rapidly repeating patterns are replaced with multiphonics and microtonal trills. The intervallic focus on major seconds and minor thirds is preserved in this section within the separate upper and lower lines created by the multiphonics.[24]

Figure 16 - *Folk Songs* mvt. 3 page 1 line 6

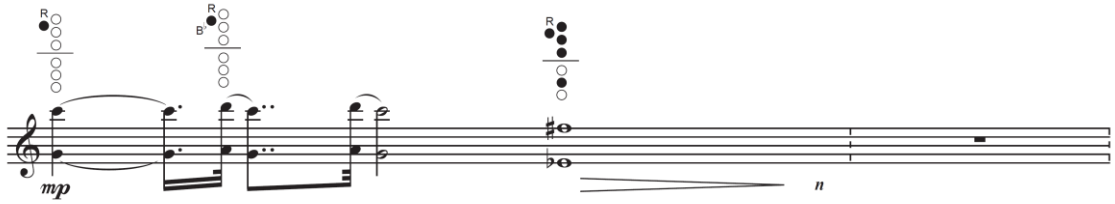
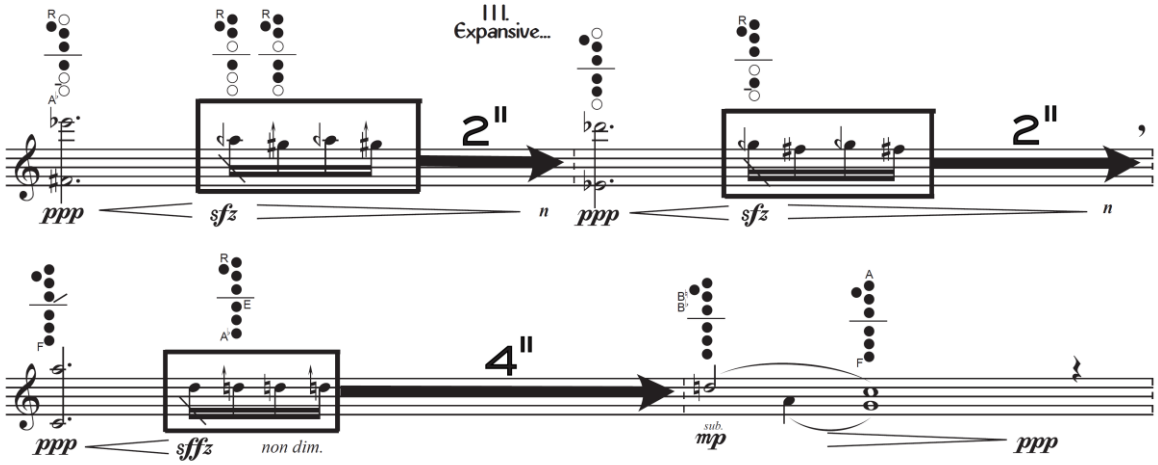


Figure 17 - *Folk Songs* mvt. 3 page 2 lines 1-2

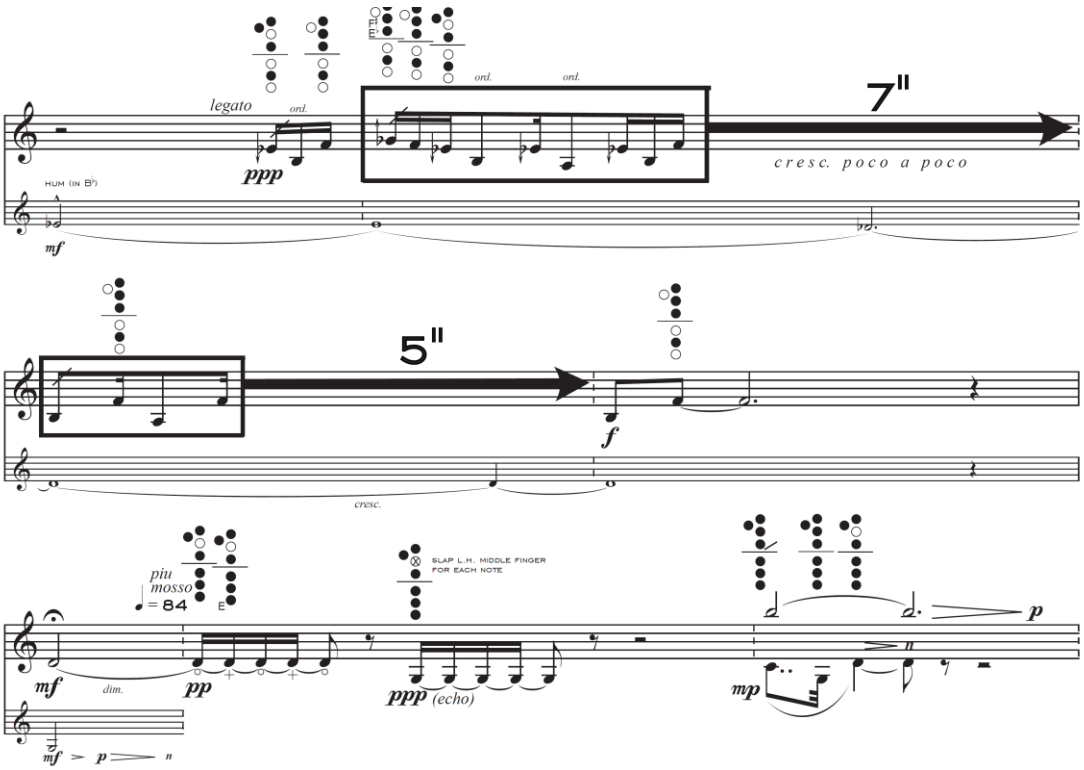


In page 2 lines 3-5 the hummed drones and rapidly repeating pattern texture returns. Finding the hummed pitches in lines 3-5 is especially difficult as none of them are sounded by the clarinet before they must be hummed. However, if the clarinetist can find the starting pitch of E-flat 4, he/she might find the other pitches by recognizing that the interval pattern of hummed

24. Masserini, 51.

pitches in page 2 is the same as the interval pattern in page 1 line 3. The pattern starts on E-flat 4, moves down a whole step to D-flat 4, then moves down a tritone to G3.

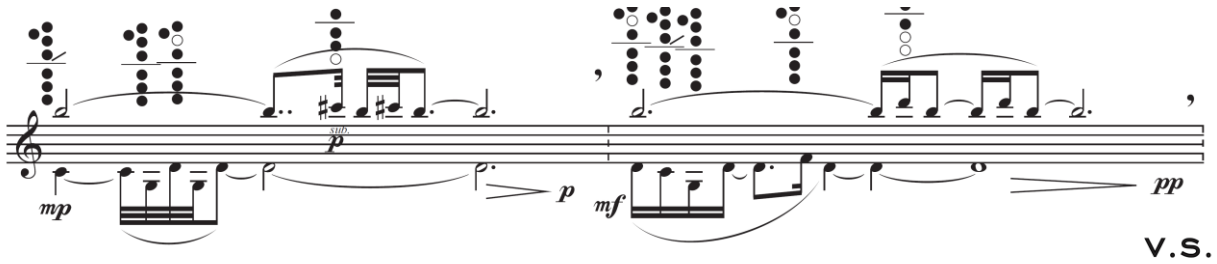
Figure 18 - *Folk Songs* mvt. 3 page 2 lines 3-5



The following section from page 2 line 5 through page 3 line 4 contains several quickly changing multiphonics and altered timbre flourishes. The moving lines alternate between the upper and lower lines. The modality is loosely based on the C pentatonic scale. Here Mandat continues to emphasize major seconds, minor thirds, and major thirds.[25]

25. Masserini, 53.

Figure 19 - *Folk Songs* mvt. 3 page 2 line 6



The "Earthy, funky" section beginning at page 3 line 5 again uses mainly altered timbre notes but also has several microtonal passages. The frequent glissandos and dynamic swells contribute to the funky feel, as well as the oftentimes clipped phrase endings. Here the interval content changes slightly. Major seconds are still emphasized, but the major thirds previously used are expanded to perfect fourths. A short bridge dominated by quarter tones leads into the ending.[26]

The ending section in page 4 lines 6-7 is a truncated return of the opening material. The microtonal trills in line 6 of page 4 are similar to those from lines 1 and 2 of page 2. Line 7 on page 4 resumes the rapidly repeating altered timbre texture from the first two pages.

In movement IV "With devotion, like a prayer" the clarinetist is instructed to "remove mouthpiece and barrel, and blow across the top of the upper joint, either like an end-blown flute, or like a transverse flute." This "fluting of the clarinet" is reminiscent of the Japanese *shakuhachi* flute. The movement is in a sectional binary form with an overarching pentatonic scale modality. Quarter tones, microtones, and glissandi are incorporated to imitate *shakuhachi*-like inflections.[27]

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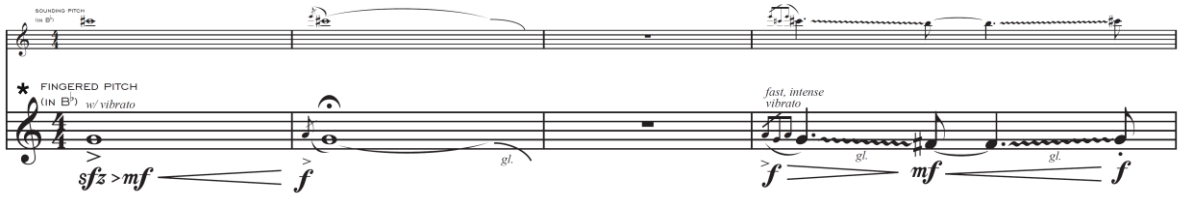
26. Masserini, 54.

27. Masserini, 57-58.

Because the acoustic properties of the clarinet change dramatically when using this "fluting" technique, the sounded pitches and fingered pitches are presented on separate staves.

Figure 20 - *Folk Songs* mvt 4 mm. 1-4 with double staff notation



Amy D. Simon and Gerard Yun give several strategies for imitating the style of *shakuhachi* music for the fourth movement of *Folk Songs* in their paper "Capturing Japanese aesthetic in Eric Mandat's 'Folk Songs', fourth movement."[28] Only the most crucial points will be summarized here. In *shakuhachi* music, the aesthetics and sound qualities of single tones are prioritized over phrasing and melodies. Therefore, tone quality should be the clarinetist's first priority. The authors emphasize changes in head position to switch between *meri* and *kari* tone qualities. *Meri* tones can be played by lowering the head position, and they tend to have a soft and breathy quality. *Kari* tones can be played by raising the head position and have a sharper, stronger sound. Incorporating breath sounds during louder passages may be appropriate. In *shakuhachi* music, although note duration values may be specifically notated, in practice durations are flexible and can be catered according to the breath of the performer. Phrases should be played within a single breath. Phrases should also be ended with the breath. In *shakuhachi* music, vibrato is produced through head motion rather than using the diaphragm or throat to manipulate the airstream. The authors recommend moving the head from side to side as if

28. Amy D. Simon and Gerard Yun, "Capturing Japanese aesthetic in Eric Mandat's 'Folk Songs', fourth movement," International Clarinet Association, May 1, 2018, accessed Dec. 1, 2020, https://clarinet.org/2018/05/01/capturing-japanese-aesthetic-in-eric-mandats-folk-songs-fourth-movement/.

nodding “no” to produce vibrato. The head can also be moved diagonally or in a circular motion if the clarinetist can execute these forms of vibrato effectively. Moving the head diagonally can also be used to create pitch bends. By incorporating these performance suggestions, the clarinetist can create an authentic *shakuhachi* style performance.

Movement V “Like a Flamenco dancer with St. Vitus Dance” was inspired by Charles Neidich’s performance of Stockhausen’s *In Freundschaft* that Mandat watched while he was a studying with Neidich at Eastman. Mandat said that Neidich was “playing like crazy, his eyes bulging out, and I thought that was the perfect time right before death.”[29] Neidich’s crazy playing led Mandat to choose the subject of St. Vitus Dance for the final movement of *Folk Songs*. St. Vitus dance, as explained by Mandat, was “this weird disease where you start twitching and progress until you die.”[30]

The movement begins with a fanfare-like introduction with the clarinetist’s bell in the air. The introduction emphasizes the pitches E, F, and G, which serve as pedal points throughout the movement.[31]

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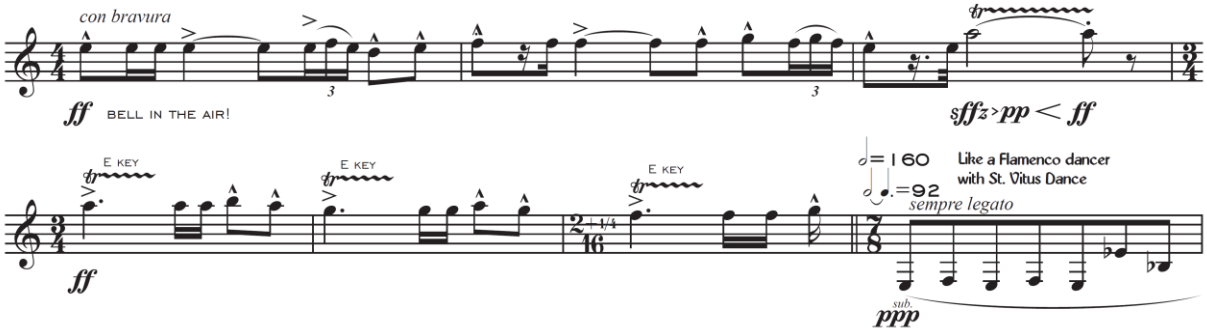
29. Rebecca Tout d’Alessio, “Eric Mandat (B. 1957): A Multiphonic Meditation on a Composer, Clarinetist, and Teacher,” (DMA diss., Arizona State University, 2012), 37.

30. Amanda Morrison, “Eric Mandat: His Musical Life, a Performer’s Perspective of ‘Preludes, Book 1’ and ‘Rrowzer!’ and a Descriptive Catalog of His Published Works (1980-2010),” (DMus diss., Florida State University, 2011), 58.

31. Masserini, “The Compositional Techniques of Eric Mandat,” 60.

Figure 21 - *Folk Songs* mvt. 4 mm. 1-7



The movement then proceeds in a rapid dance-like character with many wide interval leaps, dynamic swells, sudden accents, and clipped phrase endings that emulate the convulsing and twitching of St. Vitus dance victims. The need for circular breathing, the rapid tempo, and difficult fingering patterns make the movement extremely challenging. The movement is mainly in the Phrygian mode, and the local melodic material emphasizes the intervals of half steps, tritones, and major and minor sevenths.[32] The last section proceeds on for a page and a half with no breaks and requires circular breathing for a seamless execution. In the fourth to last measure, the clarinetist performs a prolonged trill with "wild and exaggerated swells and dimuendi, ad. lib."[33] Physical movements can be incorporated by the clarinetist in performance in order to communicate the feeling of convulsing right before death.

32. Masserini, 61.

33. Mandat, *Folk Songs for solo B-flat clarinet*.

CHAPTER 3

AN ILLUSTRATED ONTOGENY OF THE FLOWER SNARK

Carl Schimmel (b. 1975) is Associate Professor of Music Theory and Composition at Illinois State University. His music is "dense with literary and musical references, often humorous, and combines intensity of expression with a structural rigor influenced in part by his mathematics background." Throughout his career, Schimmel has received many awards including a Guggenheim Fellowship, Columbia University's Joseph Bearns Prize, and the Lee Ettelson Award. He has also received honors from various organizations including New Music USA, ASCAP, and SCI. He received his education at Duke University (Ph.D.), the Yale School of Music (M.M.), and Case Western Reserve University (B.A. in Mathematics and Music).[34]

Schimmel wrote *An Illustrated Ontogeny of The Flower Snark* in 2013 for clarinetist David Gresham and pianist John Orfe.[35] The piece depicts the growth of the J_3 subspecies of the flower snark. According to Wolfram *Mathworld*, "The flower snarks are a family of snarks discovered by (Rufus) Isaacs…" in 1975.[36] A snark is "a connected bridgeless cubic graph…with edge chromatic number of four."[37] The growth stages of the J_3 flower snark are shown in the

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34. Carl Schimmel, "Carl Schimmel, Composer, About," accessed Mar. 17, 2021, http://my.ilstu.edu/~cschimm/TEST/bio.html.

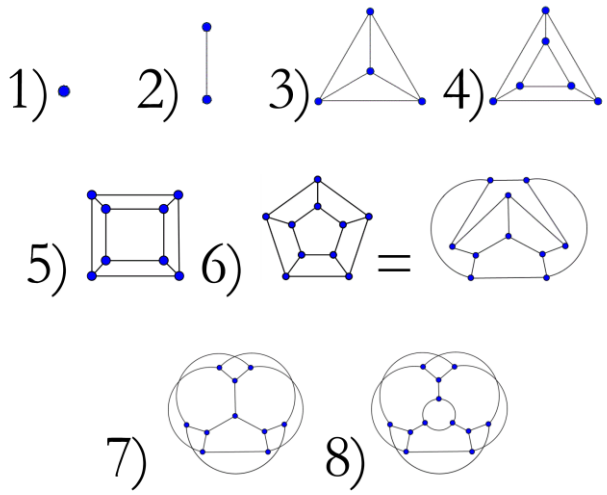
35. David Gresham (clarinet), "Faculty Recital Series: American Music for Clarinet," *School of Music Programs*, 372, 2014, https://ir.library.illinoisstate.edu/somp/372.

36. Eric W. Weisstein, "Flower Snark," From *MathWorld*--A Wolfram Web Resource, accessed Mar. 17, 2021, https://mathworld.wolfram.com/FlowerSnark.html.

37. Ed Pegg Jr. and Eric W. Weisstein, "Snark," From *MathWorld*--A Wolfram Web Resource, accessed Mar. 17, 2021, https://mathworld.wolfram.com/Snark.html.

figure below. Each stage in this growth is represented in each successive movement of *An Illustrated Ontogeny of The Flower Snark.*

Figure 22 - The growth stages of the J_3 flower snark subspecies[38]



An Illustrated Ontogeny of The Flower Snark is through-composed and segmented into eight connected movements played without breaks in between.[39] The name of each movement corresponds to the separate formations of the flower snark as it grows from a dot to its full formation. The names of the movements are “Dot”, “Line”, “Pyramid”, “Prism”, “Cube”, “Metamorphosis I”, “Metamorphosis II”, and “Flower Snark”. The shape of each flower snark formation is musically represented by the number of pitch classes present in the clarinet part in each movement. The number of clarinet pitch-classes is equal to the number of points in the form of the flower snark depicted in each movement. As the piece progresses, the pitch classes used in the previous movements are always retained as new pitch classes are introduced. The gradual

38. Gresham, “Faculty Recital Series: American Music for Clarinet.”

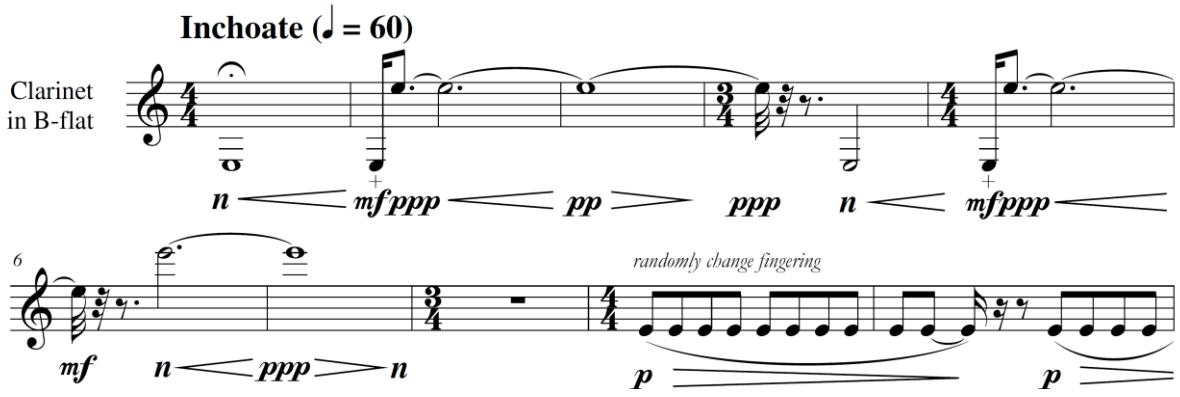
39. Carl Schimmel, *An Illustrated Ontogeny of the Flower Snark for Clarinet and Piano* (Possibly Music, 2013).

addition of pitch classes gives the piece a sense of constantly growing complexity. However, in the piano part the use of pitch is not as restricted as in the clarinet part.

Because this piece was written for clarinet and piano, here all pitches will be named at concert pitch.

The clarinet part in the first movement, “Dot”, contains only one pitch-class, D. Because there is only one pitch-class here, Schimmel creates musical variety in two ways. Firstly, the pitch D is used in four different octaves. Secondly, in some passages Schimmel instructs the clarinetist to randomly change fingerings of consecutively played D4s. This effect creates timbral variations to avoid monotony. This effect also creates an extremely subtle sense of pulsation. Note changes are much more subtle than articulating separate notes would allow. This changing-fingerings technique is used in several places in *An Illustrated Ontogeny of The Flower Snark.* Slap tongued staccato D3s in the clarinet part as well as plucked Ds in the piano may serve to represent the shape of the dot form of the flower snark.

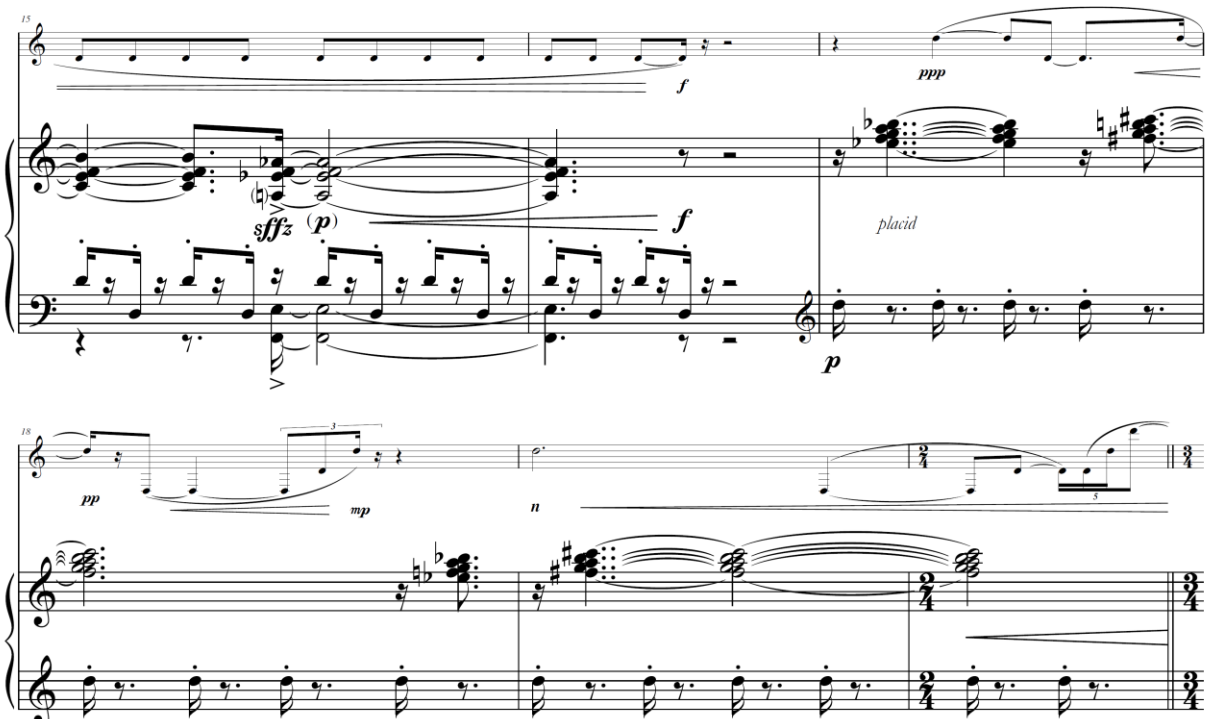
Figure 23 - Opening to “Dot” clarinet part



The piano part for “Dot” consists of an ostinato of repeated Ds in multiple registers. Alongside this ostinato, the piano plays a series of increasingly thickening clusters. Starting in m.

17, these clusters appear to be polychords consisting of a minor triad plus a major triad whose roots are one half-step apart.

Figure 24 - “Dot” score mm. 15-20



The second movement, “Line”, contains two pitch classes, D and E-flat, in the clarinet part. Arranged as a pitch-class set, these pitches spell a (01) dyad. Like the first movement, these pitches are used in all registers of the clarinet, and consecutive slurred notes of the same register and pitch class are played with different fingerings. The piano breaks away from the ostinato gesture in m. 25 and begins rapid highly chromatic gestures that rhythmically interlock with the clarinet part. Simultaneously, the piano continues playing sustained clusters that fall on downbeats.

The third movement, “Pyramid”, contains four pitch classes in the clarinet part. These pitch classes spell the set [D, E-flat, F, G-flat] with the prime form (0134). This is a symmetrical tetrachord. These pitch classes are arranged into ascending contour lines that become gradually

longer and span a wider registral space as the movement progresses. This movement is very difficult due to the fast-paced polyrhythms between the clarinet and piano. In mm. 46-51, the piano plays constant sextuplets against alternating sixteenth notes and quintuplets in the clarinet. The two instruments finally align rhythmically in mm. 52-54.

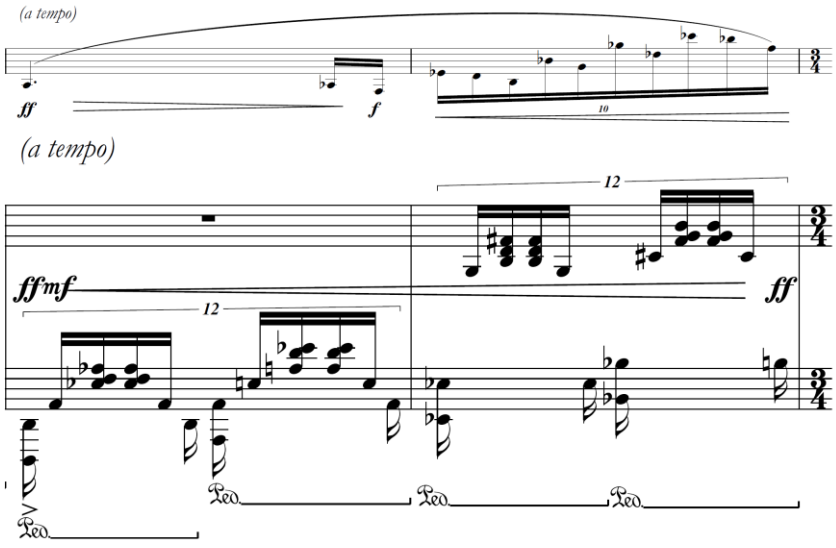
The clarinet part for "Prism" contains six pitch classes that spell the set [B-flat, B, D, E-flat, F, G-flat] with the prime form (013478). This is an asymmetrical hexachord. The rhythm again is very complex between the clarinet and piano parts, but starting in m. 62 the piano begins playing on-beat octave Ds that bring the feeling of pulse back into the piece.

The clarinet part for "Cube" contains eight pitch classes that spell the set [B-flat, B, D-flat, D, E-flat, F, F-sharp, A-flat] with the prime form (0134578t). This is an asymmetrical octachord. The beginning of "Cube" has a similar character to "Dot" with many long sustained low notes and the re-emergence of the changing-fingering technique on a string of repeated B's and D's. In "Cube" the piano part is again rhythmically regular with attacks on every beat. The piano part starts with only repeated D's in mm. 71-80. To change the piano's timbre, the pianist applies Blu-Tac to B3 and B-flat 4 in mm. 72. In m. 81 a low sustained B-natural is introduced, and in m. 85 a B-flat a major seventh above the B-natural is introduced. In m. 91 both the clarinet and piano parts change material. The piano plays only the pitch-class B-flat in a low register octave quarter note ostinato. The clarinet mainly avoids B-flats and plays many fast staccato sextuplet and 32nd note flourishes.

The clarinet parts for "Metamorphosis I" and "Metamorphosis II" contains ten pitch classes that spell the set [F, G-flat, G, A-flat, A, B-flat, B, D-flat, D, E-flat] with the prime form (012345689t). This is an asymmetrical decachord. In mm. 103-107 the clarinet part only contains the pitch classes D and E-flat, the (01) dyad from "Line". After m. 107 the other pitch classes are

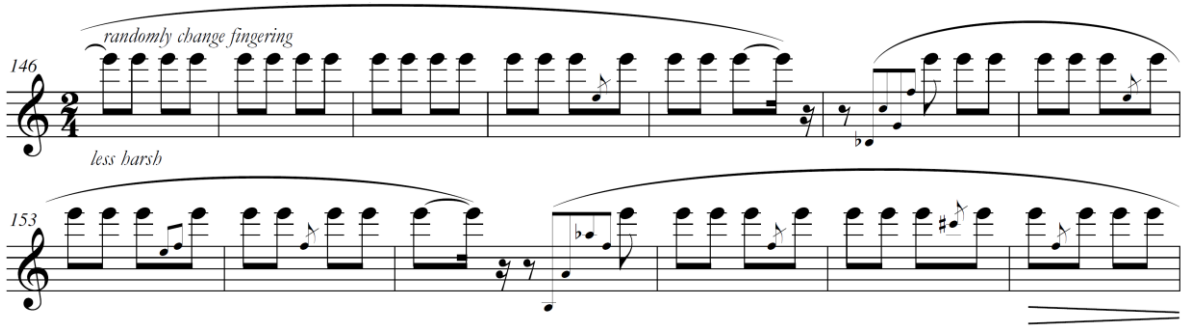
gradually introduced. The piano and clarinet parts in mm. 103-112 rhythmically align with sixteenth note gestures in both parts. However, in mm. 113-120 the piano plays ten-tuplets against twelve-tuplets (each played over the span of two beats) as the clarinet continues to emphasize sixteenth notes. This makes the pulse very difficult to define. The rhythm calms down slightly in mm. 122-128 as the piano stops playing ten-tuplets and continues twelve-tuplets against sixteenth notes in the clarinet. From mm. 129-134 the piano alternates between twelve-tuplets and eighteen-tuplets, but the twelve-tuplets become constant again in mm. 136-145. The main rhythmic difficulty for the clarinet in "Metamorphosis II" is aligning the ten-tuplet in m. 138 and nine-tuplet in m. 139 against the twelve-tuplets. It is tempting for the clarinet to try to play with the piano when the clarinet should play slightly slower than the piano instead. The piano establishes a sense of pulse with low pitched octave hits in mm. 137-138 that accentuate the beats one and two. Listening for those hits should help the clarinetist play with the correct timing.

Figure 25 - "Metamorphosis II" score mm. 137-138



In the final movement “Flower Snark” all twelve pitch classes are used, forming the fully chromatic collection. This is the only chromatic collection used in the entire piece except for the (01) dyad used in “Line”. It seems that Schimmel was deliberately avoiding chromatic collections until the very end of the piece. In addition, perhaps Schimmel chose the Flower Snark as the basis of this piece because its final form contains twelve points to correspond with the twelve pitch classes. Although all of the pitch classes are present, it is difficult to hear them all as only the pitch class D is repeated and emphasized in the clarinet and piano parts. The other pitch classes are only present in the clarinet part in the form of rapid grace-note flourishes that lead to and occasionally interrupt the repeated D eighth note pattern. In the clarinet part, D is only present in the altissimo register in the form of D6. All of the D6s are slurred together, and the distinction between separate notes is made through the random fingering-changing technique from “Dot”.

Figure 26 - Beginning of “Flower Snark” clarinet part



Due to the similarities between “Flower Snark” and “Dot”, it is clear that “Flower Snark” is a musical return to “Dot”. Another similarity between “Flower Snark” and “Dot” is the sustained clusters present in the piano part. In mm. 159-172 these clusters are comprised of a minor triad plus a major triad with roots one half-step apart. From beat 2 of m. 176 through the end the clusters are comprised of a [D, E-flat, G-flat, G, B-flat, B] hexatonic collection where the

E-flat, G, and B are prolonged after the D, G-flat, and B-flat are released. This means an E-flat augmented triad is sustained beyond the hexatonic collection. The last piano note is plucked. This is reminiscent of the plucked piano notes in “Dot”. The main difference between “Dot” and “Flower Snark” is the dynamic contour. “Dot” starts extremely softly and gradually increases in volume. “Flower Snark” starts loudly and gradually fades in volume.

CHAPTER 4

LAKE HURON SKETCHES

I wrote *Lake Huron Sketches* in 2019-2020 for solo clarinet. The complete score is provided in the appendix. My first semester at SIU Carbondale was the first time I had been living outside of Michigan, my home state, for a prolonged period of time. I found myself reminiscing about the landscapes from where I grew up, especially sites along the Lake Huron shoreline in Huron County, where I spent many summer days during childhood and young adulthood visiting family. I decided to write a collection of short clarinet pieces meant to depict familiar places and images from the shores of Huron County.

Because this piece is scored for solo B-flat clarinet, all pitches will be named as written (sounding a whole step lower).

The first movement "Point Aux Barques Pre-Thunderstorm" refers to Point Aux Barques park near Port Hope, Michigan. The park is on the lake shore but is usually unpopular with tourists due to its rocky rather than sandy shore. I often go biking there alone during prolonged visits at my grandparent's house. On the particular day that inspired the movement, I arrived at the park a short while before a thunderstorm was about to start. The foreboding yet majestic cloudscape over the lake inspired the atmosphere for this movement. The form of the movement is ABCA. I selected a series of gentle yet eerie multiphonics for the A section from mm. 1-16 that become increasingly complex and higher in pitch. The multiphonics are sustained yet forward moving to imitate the slow creeping in of the storm clouds. The final multiphonic blends into sustained and extremely high-pitched tones that begin the B section in mm. 17-22 and get increasingly louder until a fortissimo low E3 blasts in to imitate the foghorn of a faraway boat in mm. 23-25. Then the C section from mm. 26-34 begins with short gestures of low notes with

rapid air vibrato that start quietly and calmly at first. The gestures get progressively more intense with wider intervals until a final sustained G brings the passage to a halt. Then there is a reprise of the A section, which should be played at a faster pace than before to show the heightening chaos as the storm is about to begin.

The second movement “Whiskey Harbor Marshes” depicts another place where I like to bike to while visiting my grandparents. This site is even more remote than Point Aux Barques park. The area is said to be a place where smugglers brought in whiskey from Canada during prohibition, but now it is a marshy swampland that is only occasionally visited by recreational fishermen. Here the landscape is covered in tall reeds and grasses that block the view of the nearby lake. In the summer, frogs, toads, and grasshoppers can be seen leaping around in the mud, and many dragonflies and other insects fly around. The air is filled with the sounds of wildlife. My goal in writing “Whiskey Harbor Marshes” was to imitate the sounds of the wildlife inhabiting Whiskey Harbor using the clarinet. The overall form of the movement is a very simple ABCA form, like the first movement. The opening of mm. 1-15 combines a simple C major melody with a hummed drone. I originally envisioned this melody as what I call the “dragonfly theme”. The clarinet melody with several wide melodic leaps represents dragonflies quickly darting by, with the doppler effect changing the pitch of the noise produced by the dragonfly’s wings as it approaches and leaves the listener. The hummed drone represents the relatively constant backdrop of buzzing created by insects farther away from the listener. The B section from mm. 16-28 moves the focus away from the dragonfly and towards the wind and frogs. The opening gesture from mm. 16-19 represents the wind rushing through tall grasses and reeds. It is essentially a small repeated segment of the chromatic scale with dramatic dynamic swells that should be played with an airy tone. The multiphonic in m. 20 was chosen because it reminded

me of the sound of a croaking frog. The altered timbre fingering D4s in m. 20 are meant to emulate a frog ribbit. These three elements are intermingled throughout the rest of the B section. The C section from mm. 30-55 is performed on the demi-clarinet. The demi-clarinet is a modified clarinet where the mouthpiece is inserted into the lower-joint (the barrel and upper joint are removed). I have been attracted to the timbre of the demi clarinet for almost as long as I have been playing the clarinet. Creating a demi-clarinet is not possible with all clarinets, but I was not concerned with that since I wrote *Lake Huron Sketches* mainly for myself to perform. The intervals of consecutive fingerings are wider than intervals for consecutive fingerings on the normal clarinet; consequently, my pitch choices were limited. The beginning of the C section from mm. 30-36 is essentially an elaboration of the wind motive from the B section. Measures 38-46 contain a series of sustained multiphonics. There are only a few multiphonic options on the demi-clarinet, so again the limitations of the demi-clarinet determined my compositional choices. The first two multiphonics are both approximately perfect fifths. The third multiphonic is a minor sixth that I was able to produce by using the same fingering as the second multiphonic and covering part of the bell with the palm of my left hand to raise the upper pitch from B5 to C6. The C section ends in mm. 47-55 with a slightly elongated version of the same material from mm. 30-36. After the C section, the full clarinet is reassembled and the clarinet melody plus hummed drone material from the A section returns to end the movement.

The third movement “Seagulls Fight Over Food Scraps” was inspired by childhood memories of family picnics on the beach. Seagulls would often hang around people with food, hoping that some of them would throw food. I remember the seagulls violently fluttering about any thrown food to claim the scraps before the others could. Before writing this movement, to remind myself of the specific sounds of seagull cries, I watched a short YouTube video of

seagulls consuming an entire pizza in a few minutes.[40] I chose the upper clarion through altissimo register range because I heard the seagulls squawking in that approximate range in the YouTube video. The rhythms and mixed meters were inspired by the third movement of Stravinsky's *Three Pieces for Clarinet Solo*.[41] I do not think Stravinsky would mind my music borrowing from his, as he was quite the musical borrower himself.

The fourth movement "Waves at Port Crescent" was inspired by a beach my family often visits during the summers at Port Crescent State Park. When the wind is strong there, the waves are so turbulent that they can knock people wading in the water off-balance. I designed the shape of the main melodies with fluid and repetitive ascending and descending contours to imitate the shapes of waves. Some sections of the movement, such as mm. 9-12 and mm. 39-57, require overblowing to the fifth partial from third partial fingered notes. I chose the overblowing technique for two reasons. Firstly, the high pitch content helps create the chaotic feeling of being knocked over by waves that I was looking for. Secondly, the intervals between consecutive tone holes become smaller, which makes it easier to smear pitch boundaries and create a glissando-like effect. In the overblown sections, the actual pitches are unimportant as long as the written rising and fallen contour is executed. While the melodies throughout the movement are fluid and typically contain only small melodic intervals, as the movement progresses the registral span of melodic sections becomes progressively wider. The dynamic levels also become progressively louder and the tempo continuously increases throughout the course of the movement. Sudden quickly falling chromatic gestures and large upward glissandos represent especially intense

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30. TexasHighDef, "Seagulls Eat a Whole Pizza at The Beach," Oct 18, 2010, YouTube video, https://www.youtube.com/watch?v=dAFvwualXrs.

31. Igor Stravinsky, *Three Pieces for Clarinet Solo*, (London: Chester Music, 1993), 6-7.

waves. Many of the phrase endings are abrupt and sudden. The abrupt phrase endings serve two purposes: to provide a place of punctuation that allows the performer to breathe and to overwhelm the listener with a sudden silence as a swimmer would be overwhelmed by suddenly being knocked over by a strong wave. The movement ends with a jarringly loud and low E3, a nod to the foghorn sound from the first movement.

After the chaos of the third and fourth movements, the fifth movement "Sunset Port Austin Beach" ends the piece with tranquility. Like the first movement, the fifth movement begins with a series of sustained multiphonics, but here the multiphonics descend in pitch throughout the melodic line instead of ascending as they did in the first movement. Furthermore, the pitch continuously descends throughout the fifth movement. Measures 14-29 incorporate an unconventional and difficult to execute technique. Throughout the passage, the clarinetist is instructed to half hole the left hand first finger tone hole. When the perfect amount of space is left open in this tone hole, a shimmery harmonica-like timbre is produced. However, it is difficult to attempt this technique without either squeaking or grunting. In mm. 30-37, unconventional fingerings are used to produce a muted timbre, and some microtones are incorporated. The piece ends with a few tremolos between single tones and multiphonics.

CHAPTER 5

NEW YORK COUNTERPOINT

Steve Reich (b. 1936) has remained one of America's most influential composers for over half of a century. Reich has received many prestigious awards for his compositions including the Pulitzer Prize, the Praemium Imperial Award in Music, and two Grammys. He received his education at Cornell University, the Julliard School of Music, and Mills College (M.A.). Due to the repetitive nature of much of Reich's music, he is considered to be a minimalist composer alongside Phillip Glass and La Monte Young. He is famous for inventing unique methods of rhythmic manipulation in his music including his phasing technique in *Piano Phase*, rotating rhythmic patterns in *Clapping Music*, and metric ambiguity in *New York Counterpoint*. His music is influenced by many genres including western classical music, jazz, African drumming, Balinese Gamelan, and sacred Hebrew music.[42] According to Paul Hillier, "…Reich has built a language that fuses the heightened discourse of serious music with strong elements of the vernacular. His particular strength lies in having done so in a style that is uniquely and recognizably his own."[43]

Reich wrote *New York Counterpoint* for clarinetist Richard Stoltzman in 1985. Reich wrote *New York Counterpoint* for ten pre-recorded clarinet parts (six soprano B-flat clarinet parts, two bass clarinet parts, one part doubling soprano and bass clarinets), which he intended to all be played by the same performer. During the performance, the pre-recorded parts are played

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42. "Steve Reich biography," Steve Reich, accessed Mar. 20, 2021, https://www.stevereich.com/bio.html.

43. Steve Reich and Paul Hiller, *Writings on Music, 1965-2000* (New York: Oxford University Press, 2004), 3.

on speakers while the performer plays a separate part live. This separate live part interacts with the pre-recorded parts in various ways. Although *New York Counterpoint* can be played by a clarinet ensemble comprised of eleven performers, Reich's original intention was to have all parts performed by a single performer so that the audience would be enveloped in the characteristic sound of that performer.

Stoltzman was bewildered when he first saw the score. He says, "I looked at it and played it a little bit but I didn't have any idea what it was supposed to be." He says that when he started practicing the piece, his son thought he was playing a broken record. Stoltzman provides several suggestions for how to perform *New York Counterpoint*. Firstly, the rhythms should be played extremely accurately and in time so that when the separate parts are layered they fit well together. Stoltzman initially tried adding lots of his own inflections, but he says, "As soon as I put down the first clarinet track and then tried to add the second track, I found that I was making it really difficult because I had made little nuances in the first part which didn't work when it was exactly supposed to be with the second part, like accents or little tenutos or slight inflections." The only articulation markings in the score are some tenutos, which Stoltzman says should be interpreted as a "lean" on the note to which it applies. He also recommends taking time to warm up before recording so that intonation remains consistent and record the bass clarinet parts first. He decided to swing the eighth notes in the third movement. Finally, Stoltzman recommends adding a crescendo at the end of the third movement starting at rehearsal number 88 "to get the piece to conclude in a real big-band kind of way."[44]

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44. Richard Stoltzman, "Steve Reich's New York Counterpoint," *Richard Stoltzman, Clarinet* (blog), Jun. 27, 2020, http://www.richardstoltzman.com/blog/wrdsx6gpmf7wx8mcmh2pr5ckklhnpp.

According to Reich, *New York Counterpoint* borrows aspects from several of his previous pieces.

> *New York Counterpoint* is a continuation of ideas found in *Vermont Counterpoint* (1982), in which a soloist plays against a prerecorded tape of him- or her-self…The opening pulses ultimately come from the opening of *Music for 18 Musicians*. The use of interlocking melodic patterns played by multiples of the same instrument can be found in my earliest works such as *Piano Phase* and *Violin Phase*, both of which date from 1967. But in the nature of its patterns and their harmonic combination, and also in the faster rate of change, the piece reflects my more recent works, particularly *Sextet*.[45]

Because *New York Counterpoint* is scored for B-flat clarinets, all pitches will be discussed as written (sounding a whole step lower).

New York Counterpoint has three movements played without breaks in-between.[46] The first and third movements are fast, played at a tempo of 184 beats per minute. The second movement is at half of that tempo, 92 beats per minute. The time signature marking is ambiguous, 6/4=3/2. This means that in some places the twelve eighth notes in each measure are grouped into three groups of four (3/2), and in other places they are grouped into four groups of three (6/4). Furthermore, in some places it is either difficult or impossible to tell which of these two time signatures is in effect.

The first movement begins with a series of pulse chords of various lengths that fade in and out in the 6/4=3/2 time signature. The chords are referred to as "pulse chords" because, instead of sustained long tones, each chord tone is played through repeated and articulated eighth notes. These pulse chords last from the beginning through rehearsal number 8. As the last pulse chord fades out, clarinet 1 begins a new pattern characterized by large melodic leaps and

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45. Reich and Hiller, *Writings on Music*, 135.

46. Steve Reich, *New York Counterpoint for clarinet and tape or clarinet ensemble,* (Boosey & Hawkes, 1985).

syncopated off-beats. The live soloist begins at rehearsal 9 with a line that adds notes bit by bit until it reaches its full form and is taken over by the pre-recorded clarinet 2 part and looped. At rehearsal 15, the live clarinet begins building a pattern that is taken over by the pre-recorded clarinet 3 part and looped at rehearsal 18. At rehearsal 20, the live clarinet begins building the eventual clarinet 4 looped part at rehearsal 23. At rehearsal 25, the live clarinet begins building the eventual clarinet 5 looped part at rehearsal 29. At rehearsal 31, the live clarinet begins building the eventual clarinet 6 looped part at rehearsal 34. In summary, from rehearsal numbers 9-34, the live clarinet part plays the upcoming pre-recorded part before it appears. The overall effect is similar to what could be created with a live looper today. At rehearsal 36 there is a change as the live clarinet part begins playing its own distinct loops that is are not directly played by the pre-recorded parts. However, the live clarinet loops are constructed from a combination of pitches that are being played by several of the pre-recorded parts. In essence, the live clarinet is highlighting new composite lines created by the interactions of the pre-recorded parts. At rehearsal 37 the pre-recorded clarinets 7-10 begin playing pulse chords similar to the beginning of the movement. There is a brief harmonic shift at rehearsal 39 as the E-flat 6s are replaced with D6s in clarinets 1-3 and the C5s are replaced with B-flat 4s in clarinets 4 and 6. All other pitches in the loops are retained. In rehearsal 40 clarinets 1-6 return to their original looped patterns. The shift to the harmony from rehearsal 39 occurs again at rehearsal 42, and this new harmony is retained until the end of the movement. In this movement, clarinets 1-6 all have the same rhythm in their looped parts, but they are rhythmically displaced from each other.[47] Clarinets 1 and 4 are rhythmically together. Clarinets 2 and 5 are rhythmically together and are rhythmically displaced

47. Amandine Pras, François Féron, and Kaïs Demers, "The Pre-Production Process of New York Counterpoint for Clarinet and Tape Written by Steve Reich," *ResearchGate*, (2009): 3.

from clarinets 1 and 4 by five eighth notes. Clarinets 3 and 6 are rhythmically together and are rhythmically displaced from clarinets 1 and 4 by eight eighth notes.

The second movement is in 3/4 meter. Clarinets 7 and 8 begin with a homo-rhythmic counterpoint made up of mostly parallel tenths and some eleventhes at rehearsal 44. At rehearsal 45, clarinet 5 and the live clarinet enter together with a different homo-rhythmic counterpoint than clarinets 7 and 8. The lines of clarinet 5 and the live clarinet gradually become more complex. In the third measure of rehearsal 47, clarinet 2 picks up the live clarinet's part as the live clarinet fades out. Then at rehearsal 48, clarinet 6 and the live clarinet enter together in a new homo-rhythmic counterpoint that gradually builds in complexity. At rehearsal 51, clarinet 3 picks up the live clarinet line as the live clarinet fades out. At this point, there are 3 different pairs of homo-rhythmic contrapuntal lines. At rehearsal 53, the live clarinet begins playing a new line which is, like in the first movement, actually a composite line made from the interactions of the lines already being played by the pre-recorded parts. At rehearsal 54 clarinets 7-10 begin playing pulse chords again. There is no significant textural change for the rest of the movement except that the live clarinet part composite line changes a few times.

The third movement re-establishes the 6/4=3/2 time signature. Clarinets 7 and 8 begin in homo-rhythmic counterpoint. The live clarinet and clarinet 6 begin at rehearsal 62 with a different homo-rhythmic counterpoint. In the third measure of rehearsal 65, clarinets 2 and 3 enter with a new homo-rhythmic counterpoint as the live clarinet fades out with clarinets 6, 7, and 8. At rehearsal 66, the live clarinet begins playing in homo-rhythmic counterpoint with clarinets 2 and 3 as clarinets 4, 5, and 6 enter with another homo-rhythmic counterpoint. Actually the counterpoint between the live clarinet and clarinets 2 and 3 is the same as the counterpoint played by clarinets 4, 5, and 6 but played two eighth notes earlier. At rehearsal 67, clarinets 9

and 10, both bass clarinet parts, enter. Clarinets 9 and 10 play the same pitches in the same order but with different rhythms. From rehearsal 71-87, the key switches between four flats and four sharps every four measures. From rehearsal 73-77, the rhythmic displacement between imitative parts switches between a three and two eighth note displacement every two measures. From rehearsal 78-85, this switching occurs every four measures. The switching between different levels of rhythmic displacement creates the distinction between 6/4 and 3/2 meter, with a three eighth note displacement signaling 6/4 meter and a two eighth note displacement signaling 3/2 meter. Clarinets 9 and 10 stop playing at rehearsal 85. From rehearsal 86 onward the rhythmic displacement between imitative parts remains two eighth notes. Clarinets 3 and 6 stop playing at rehearsal 87. Presumably, this thinning of the texture is meant to create a temporary drop-off in energy before the climax at the end. At rehearsal 88, the key changes to five sharps and remains that way until the end. Clarinets 1 and 7 enter at rehearsal 89 as the pitch content moves higher than it has been during the entire piece with the introduction of F-sharp 6s in the live clarinet and clarinet 7 (which now imitates the live clarinet, clarinet 2 imitates clarinet 1). Rehearsal 90 moves even higher in register still to include G-sharp 6s and drive towards the ending.

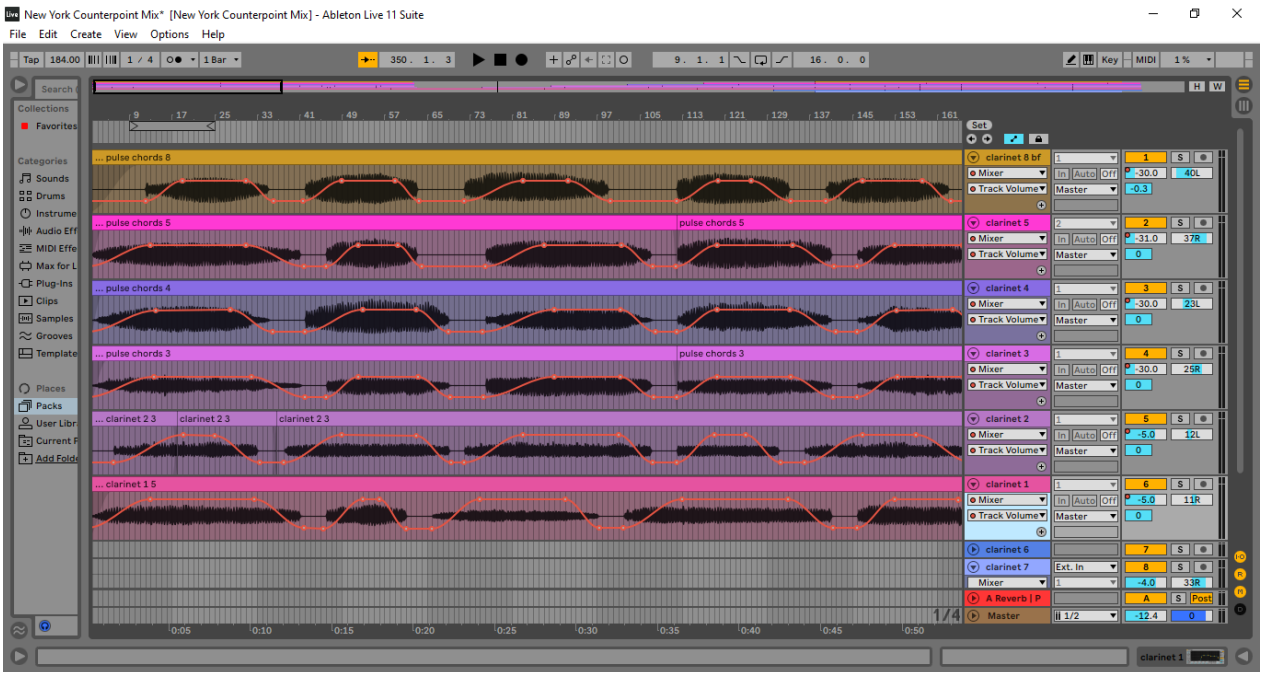
Throughout *New York Counterpoint*, the interaction between different written lines allows new, non-written lines to be perceived by the listener. The beauty of the piece is that, although it will sound similar with each listening, each time an audience member hears the piece he/she may hear different melodic lines. Furthermore, two people hearing the same performance may perceive different melodic lines from each other.[48]

48. Pras, Féron, and Demers, "The Pre-Production Process of New York Counterpoint," 2.

I recorded and mixed all of the parts for my performance of *New York Counterpoint*. I performed the B-flat soprano parts (Clarinets 1-8), and Gloria Orozco Dorado performed the bass clarinet parts (clarinet 8-10, clarinet 8 doubles soprano and bass clarinets). All of the parts were recorded with a large-diaphragm condenser microphone in mono in an acoustically dry environment. The microphone was placed close to the clarinet during recording (only a few feet away) to minimize ambient noise and room effects. Each part was recorded separately alongside a metronome for reference. Recorded samples were approximately 30 seconds to a minute long to avoid the need for frequent crossfades.

The piece was mixed in Ableton Live 11. A slight amount of artificial reverb was added using a return track to correct the dry room acoustics that the samples were recorded in. Each clarinet part was recorded into a separate track. All tracks were equalized in order to remove unwanted room effects and ambient noise. The volume levels of each track were adjusted to reflect dynamic markings in the score. This was especially crucial for sections including pulse chords. To make the fade in/fade out dynamic markings more dramatic, I started the volume level for each pulse chord track at negative 20 decibels, increased the volume to full level, and decreased the volume back to negative 20 decibels at the end of each chord. The timing for fade-ins and fade-outs was decided based on the length of crescendos and decrescendos in the score. I decided to use the volume automation technique in order to avoid the need to play very softly in the high range of the clarinet. It is difficult to play softly in the high range without causing intonation issues or slowing down the articulation speed. Figure 27 shows the volume automation of the pulse chords for the opening of *New York Counterpoint*.

Figure 27 - *New York Counterpoint* pulse chords volume automation in Ableton Live 11



In order to make the mix sound authentic and like a real clarinet ensemble, I decided not to use the warp and quantization features in Ableton Live and instead rhythmically line up parts by visually aligning important transients. For places where the rhythms did not line up properly, I spliced samples and dragged transients to the correct position. However, I decided to use this form of rhythmic correction sparingly to keep the recording from sounding quantized. Slight differences in attack speed and timing were allowed to remain. No pitch correction was performed. Instead, I regulated the pitch by tuning frequently during my recording sessions. Each track was given a different position in the stereo field through panning. Overall, the decisions I made in the recording process were chosen in order to preserve the authenticity of the sound and the integrity of the composition.

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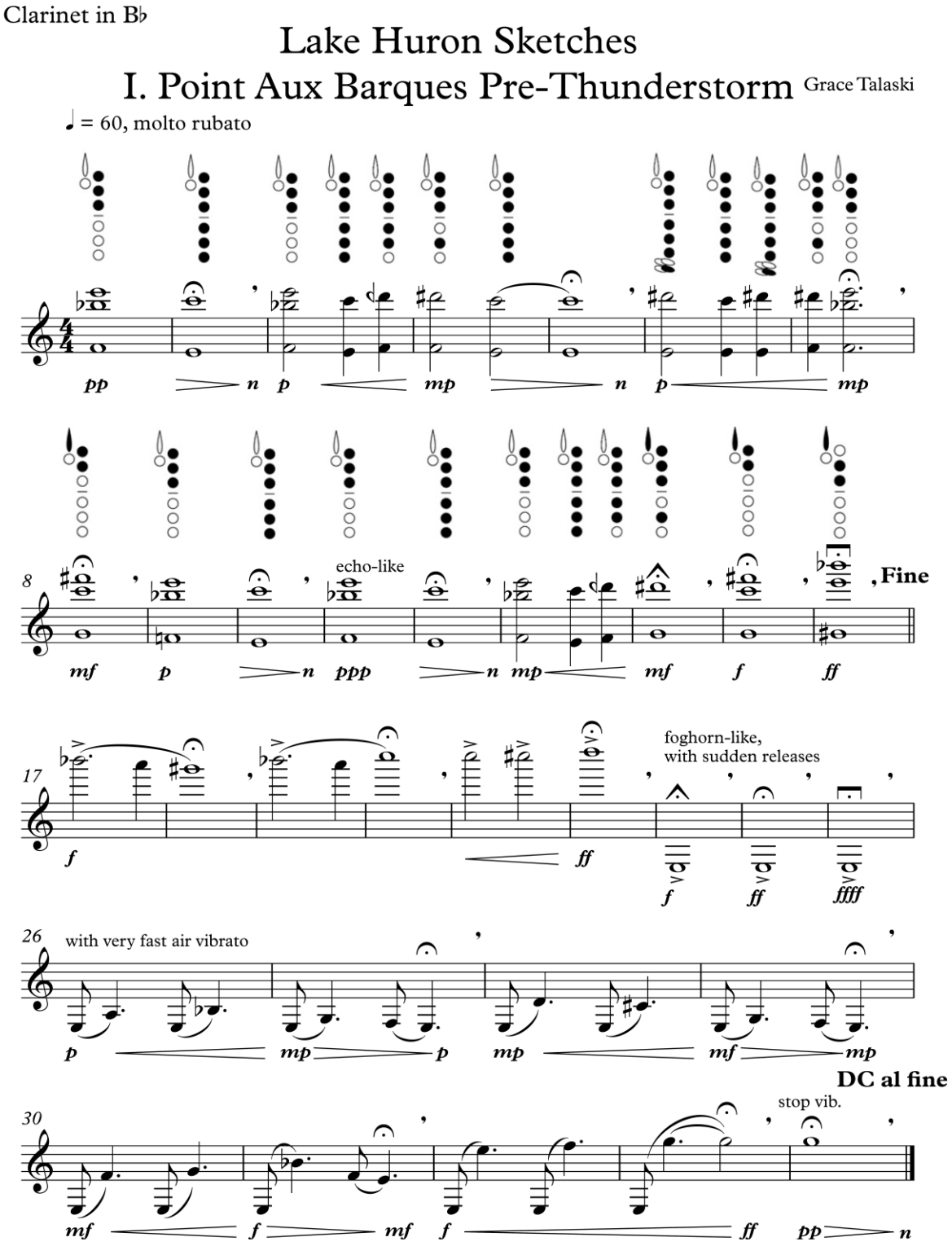
APPENDIX

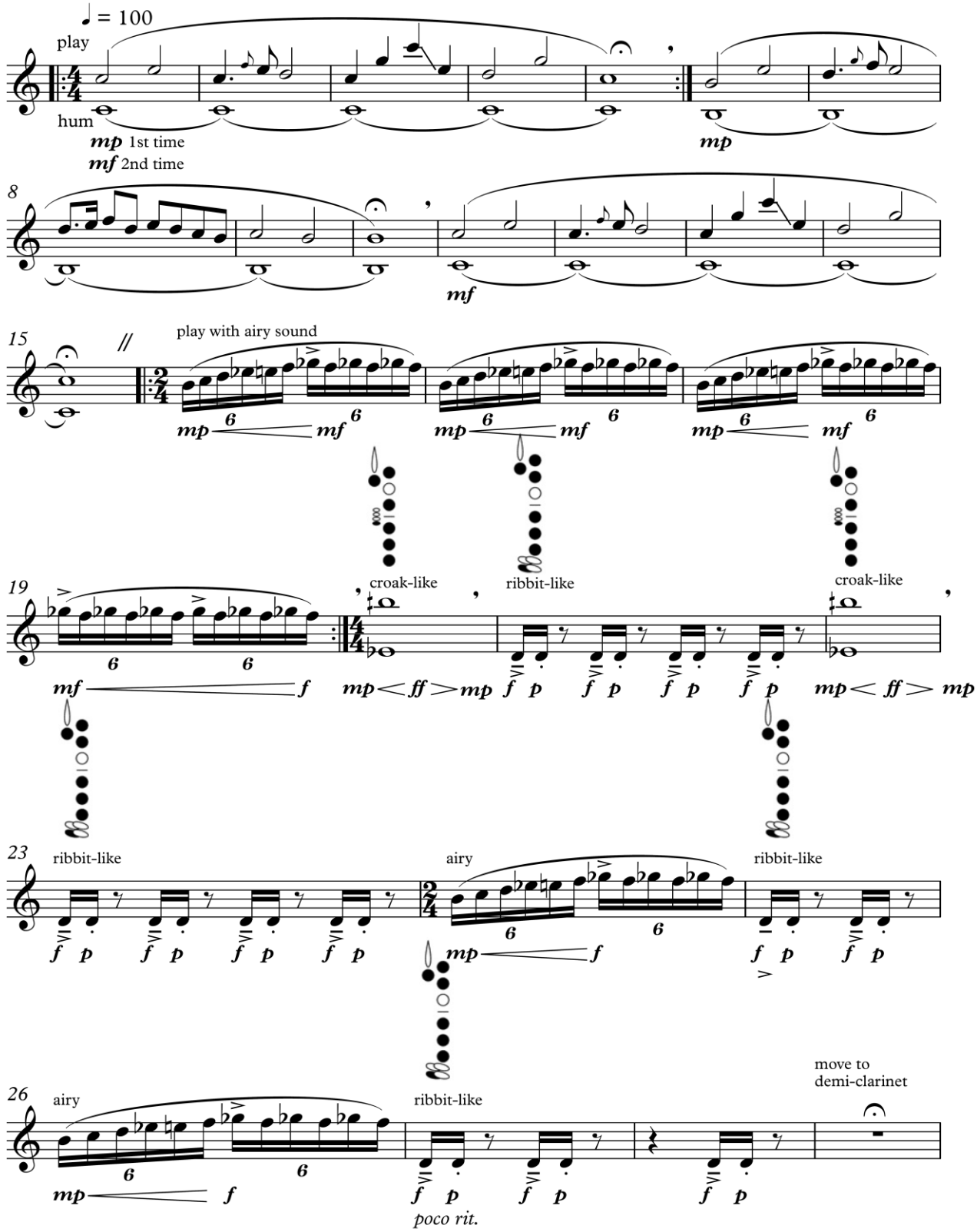
LAKE HURON SKETCHES COMPLETE SCORE

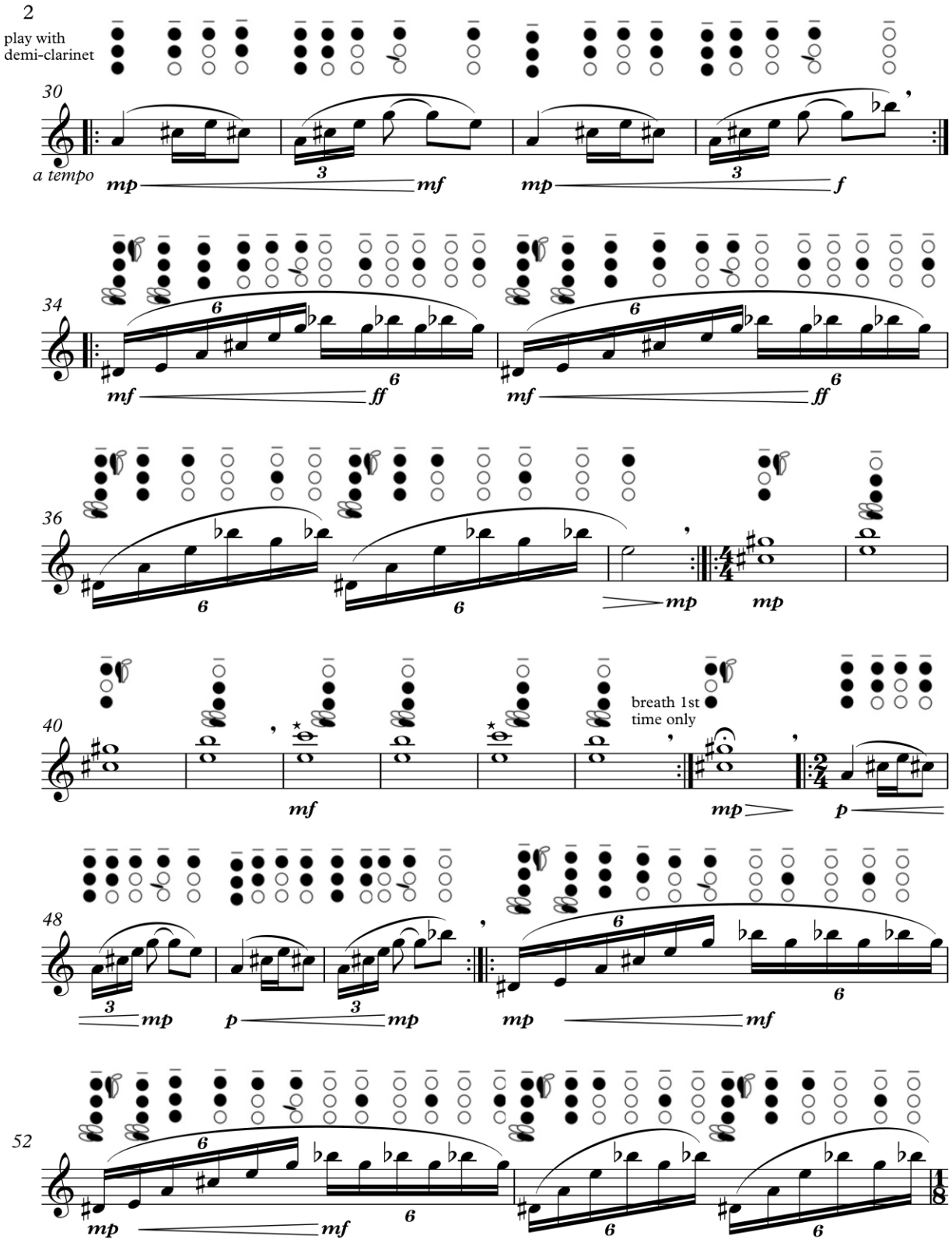


Clarinet in B♭

Lake Huron Sketches
II. Whiskey Harbor Marshes

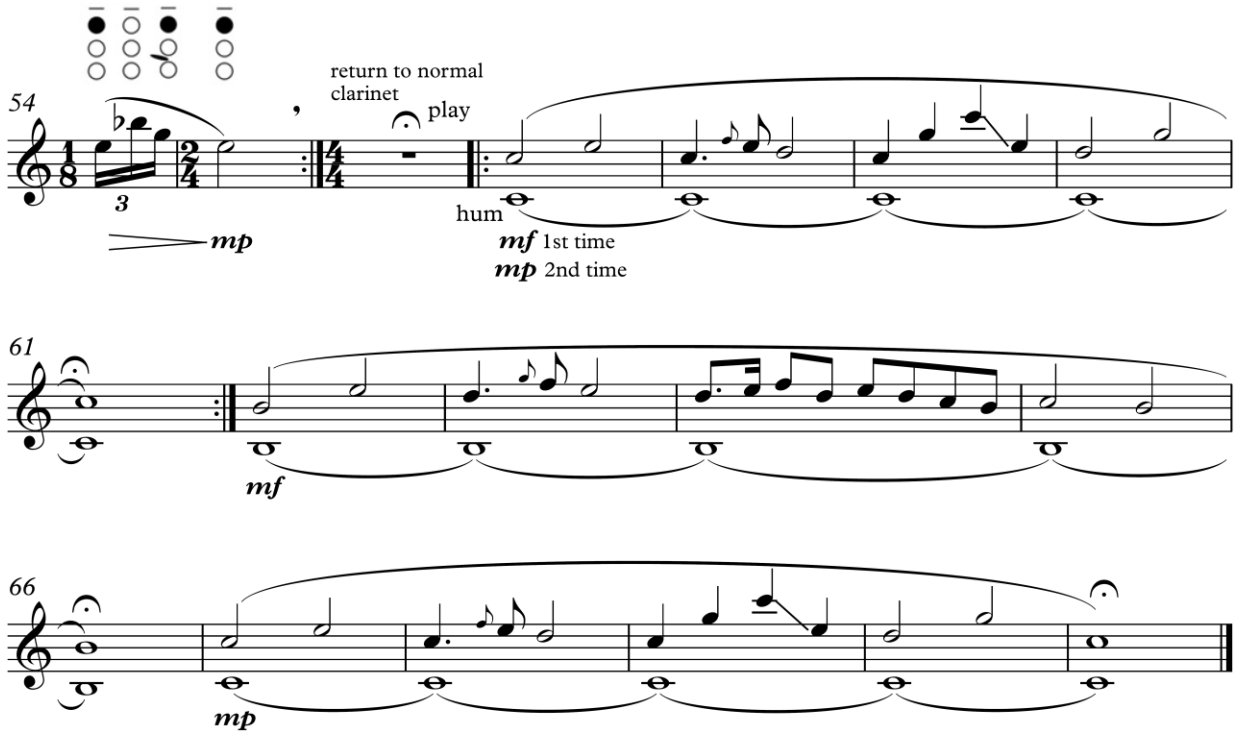
Grace Talaski





* Partially cover bell with palm of left-hand to produce pitches indicated.

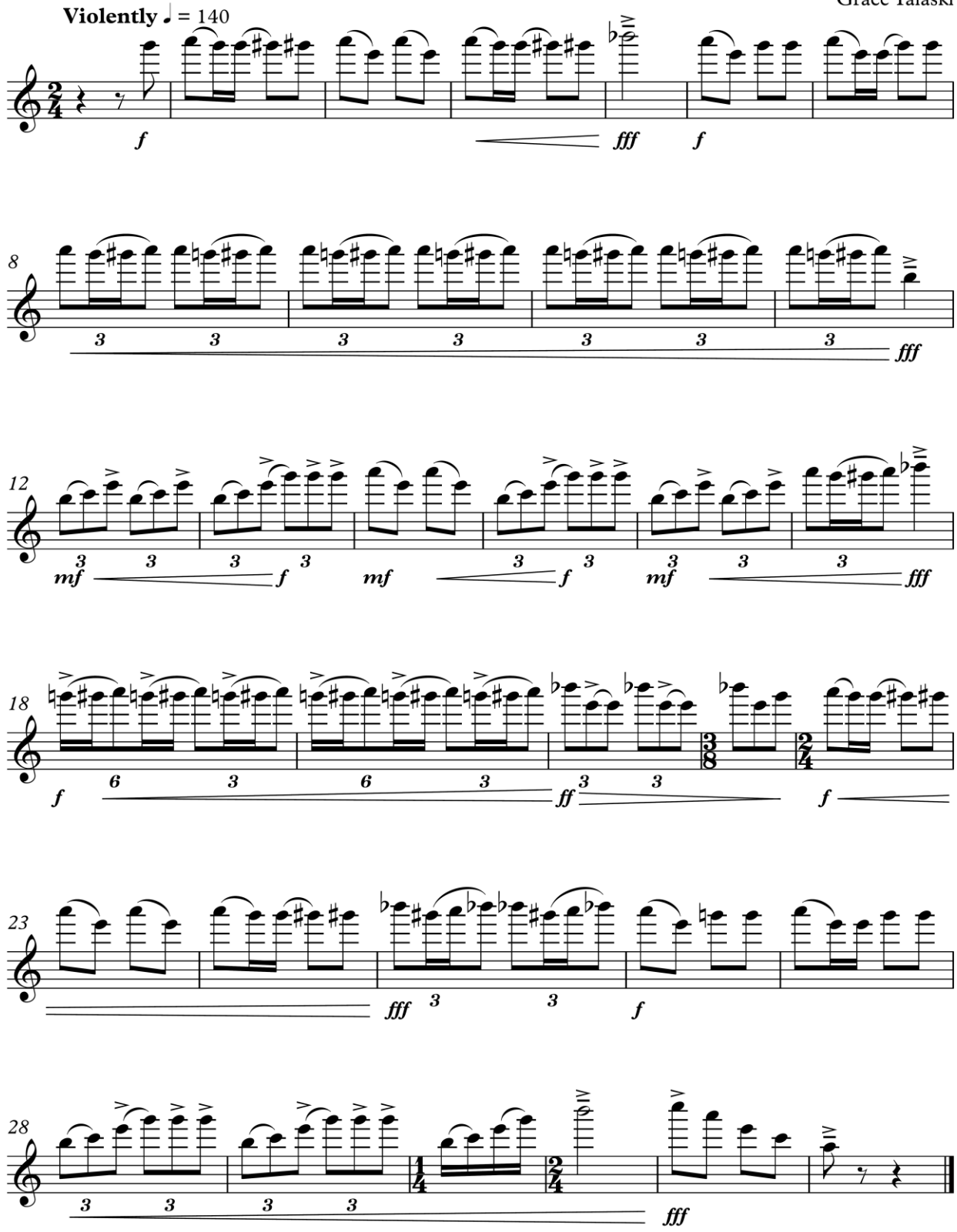
3


54
return to normal clarinet
play
hum
mf 1st time
mp 2nd time
mp
61
mf
66
mp

Lake Huron Sketches
III. Seagulls Fight Over Food Scraps

Clarinet in B♭

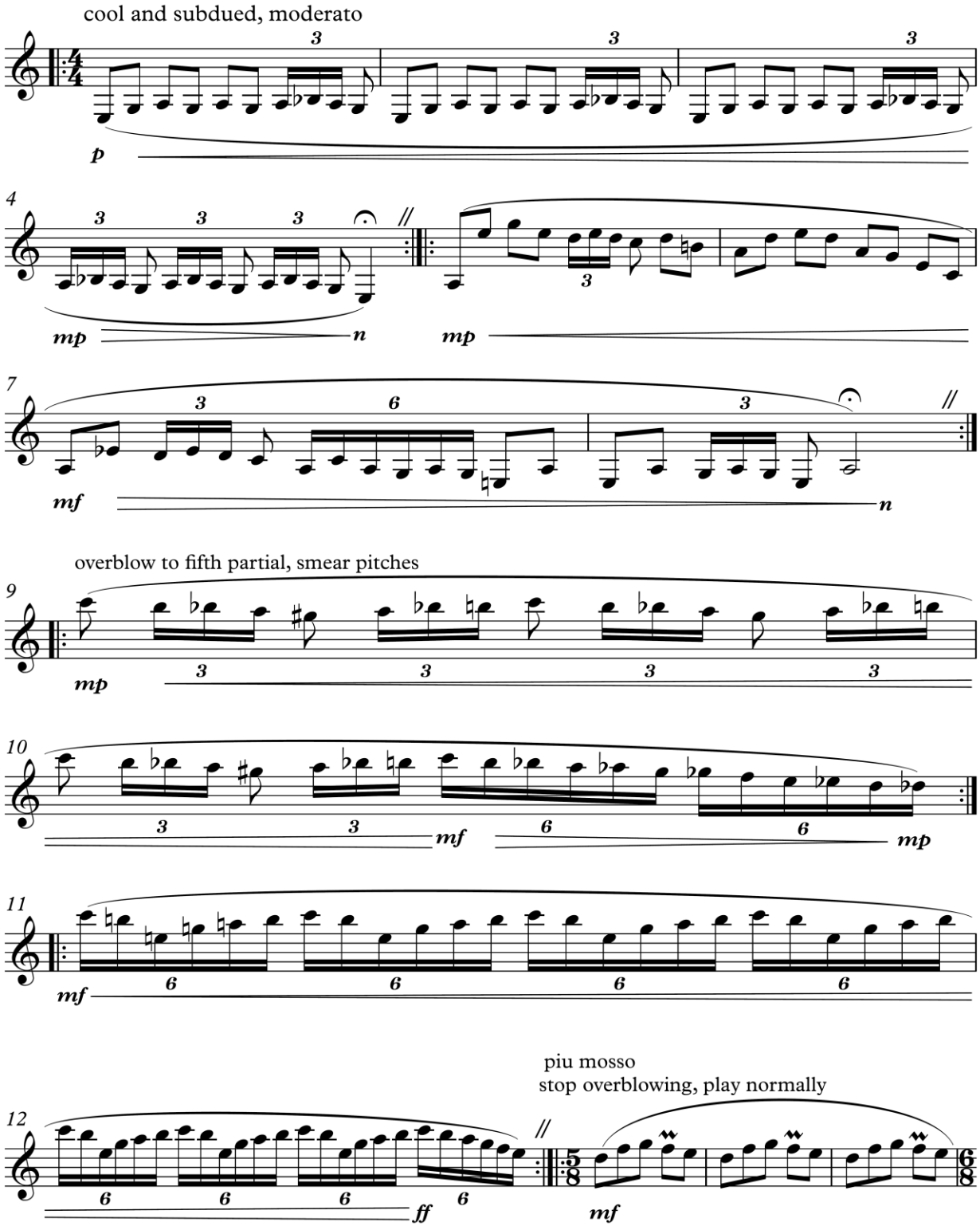
Grace Talaski



Clarinet in B♭

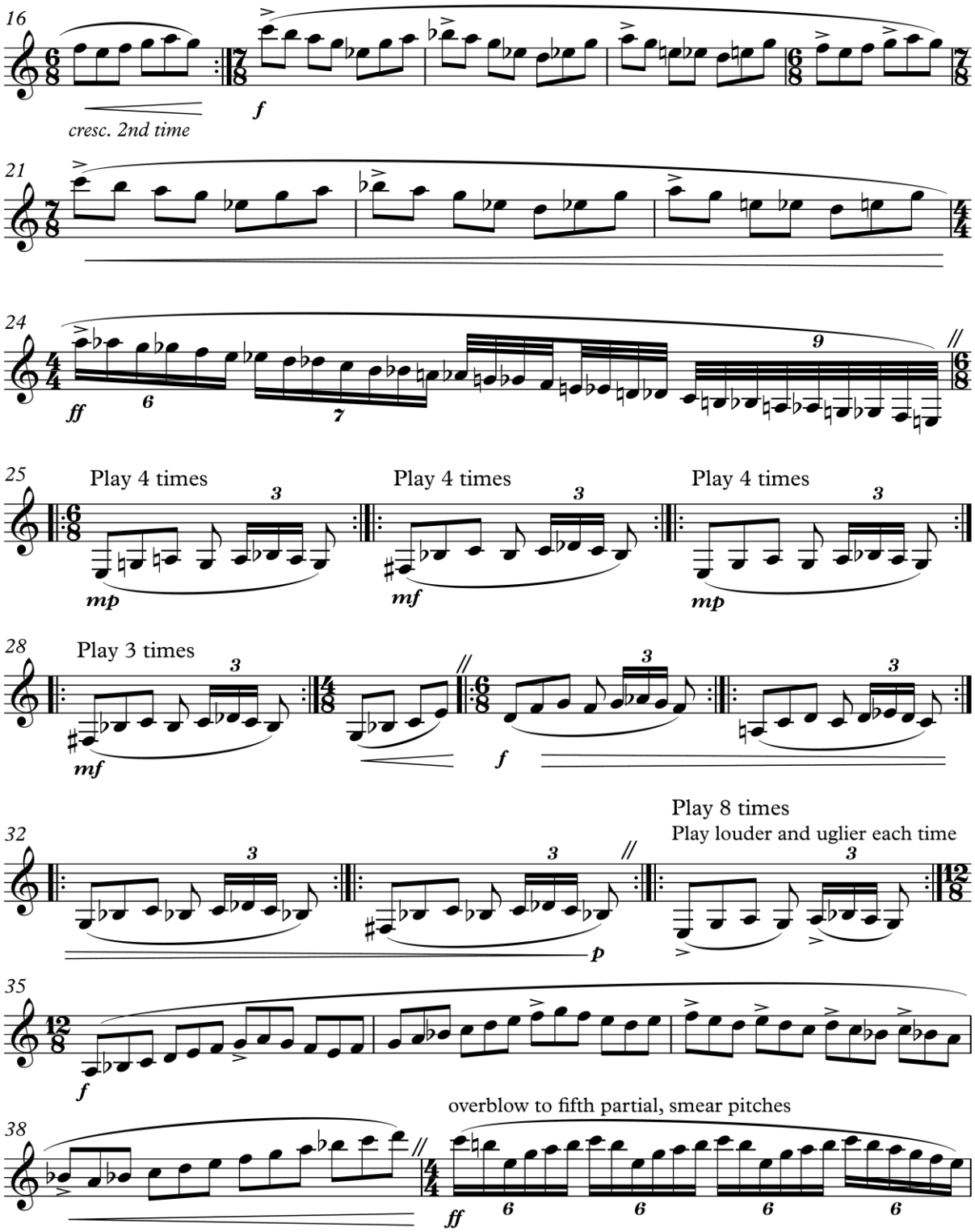
Lake Huron Sketches
IV. Waves at Port Crescent

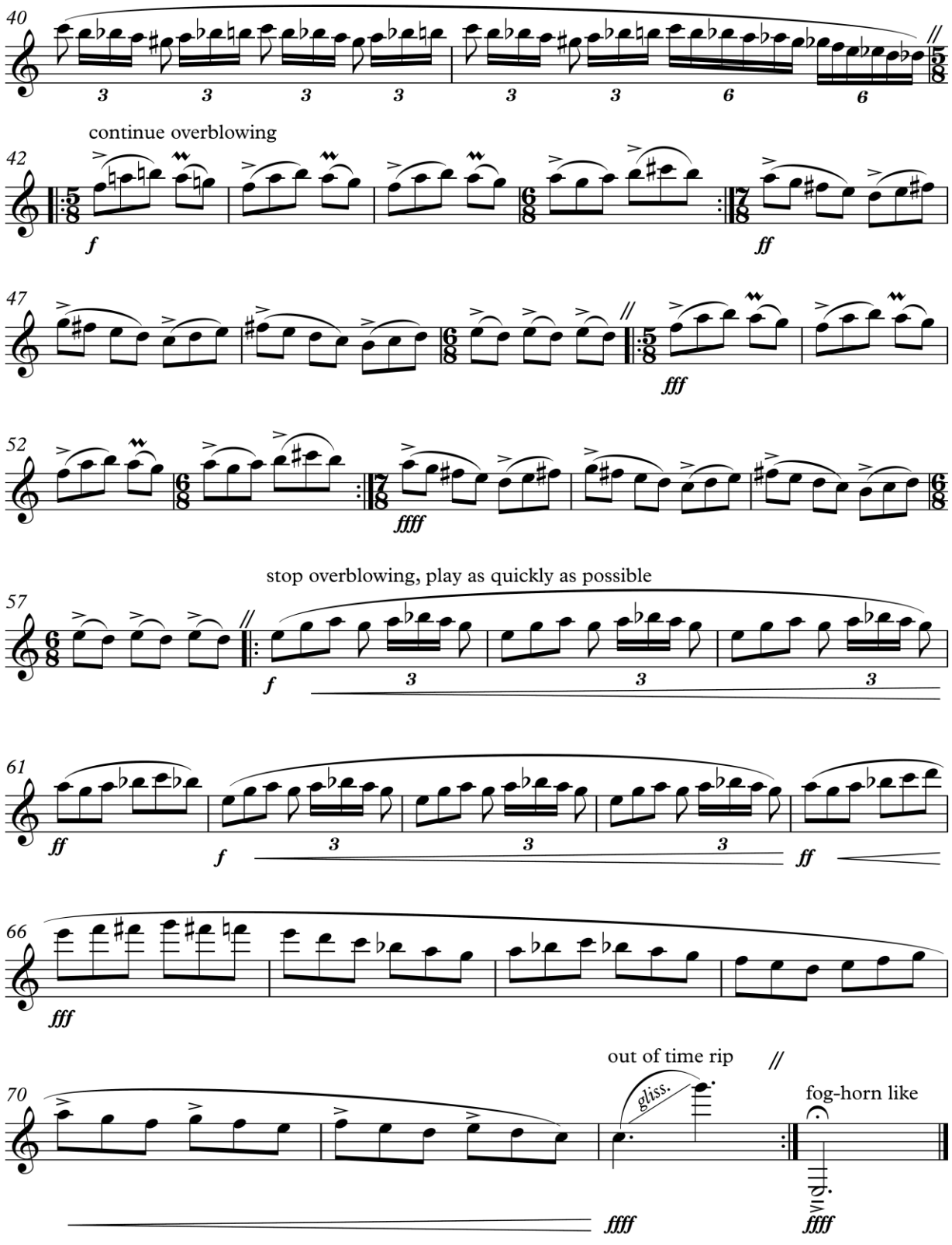
Grace Talaski



V.S.

Clarinet in B♭



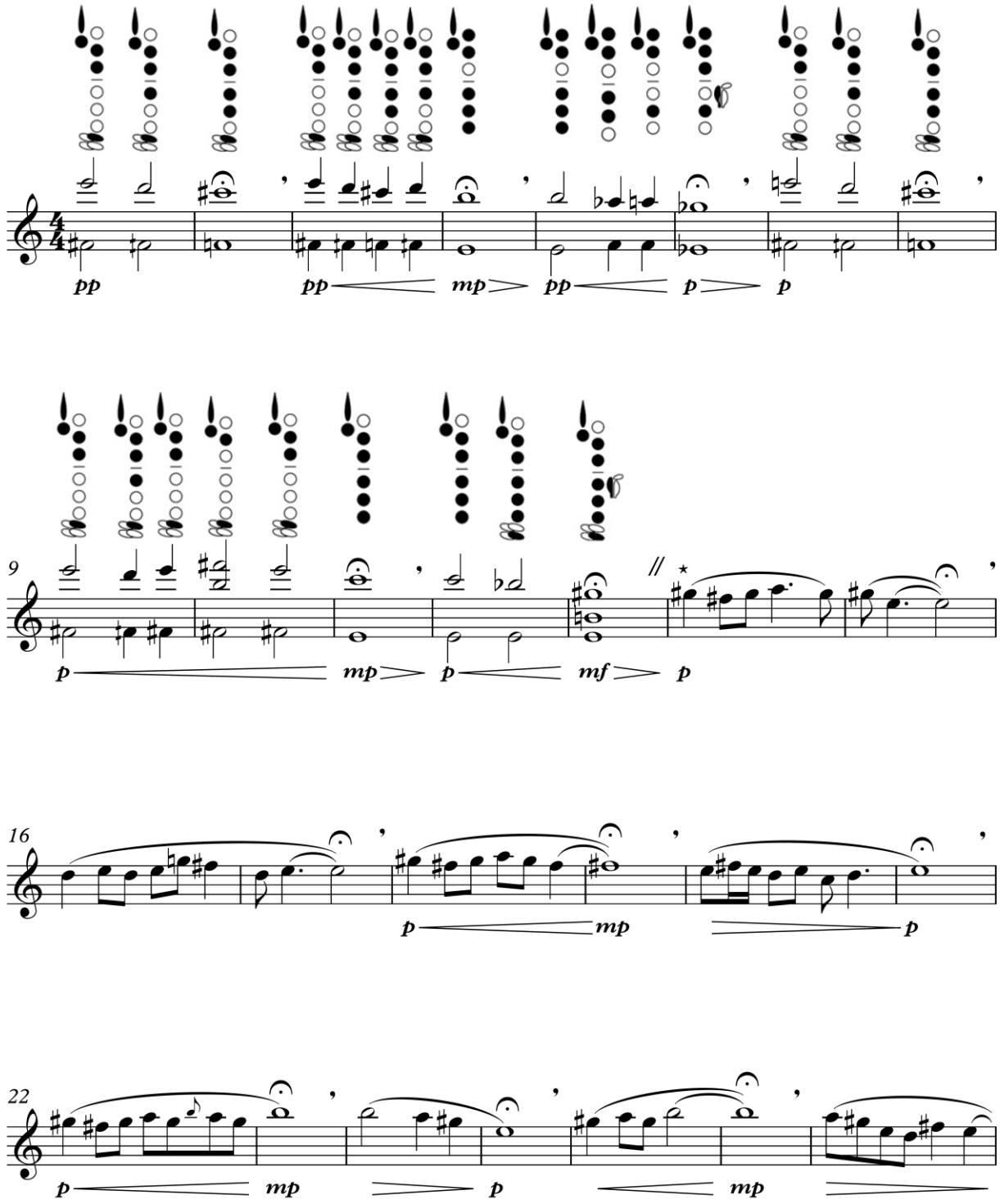

40
3 3 3 3 3 3 6 6
42
continue overblowing
f
ff
47
fff
52
ffff
57
stop overblowing, play as quickly as possible
f
61
ff
f
ff
66
fff
70
out of time rip
gliss.
fog-horn like
ffff
ffff

Clarinet in B♭

Lake Huron Sketches
V. Sunset Port Austin Beach

tranquilly, molto rubato ♩ = 60

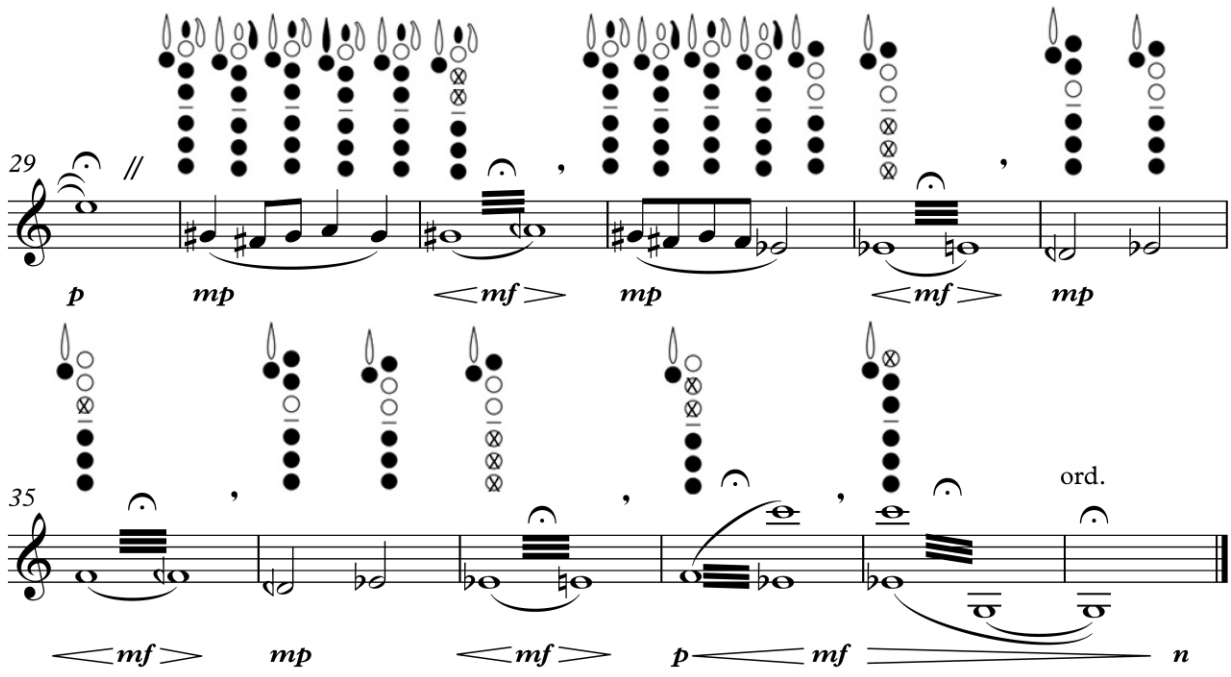
Grace Talaski



⋆ Optional left-hand first finger half-hole to produce a harmonica-like timbre for mm. 14-29

2

Clarinet in B♭



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