Mitya - Concerto for Clarinet

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Abstract

Mitya: Concerto for Clarinet is a composition for solo B♭ clarinet, large ensemble and electronics. The work is in three movements, each movement utilizing a different approach to extended just intonation in its pitch structure. The pitch structure of the first movement is designed around a single pitch, held by the clarinet soloist, which takes on a variety of just relationships in the harmony as other pitches change in relation to it. The second movement is a type of passacaglia which continuously modulates up a just major third at each repetition of the passacaglia theme. These untempered modulations cause the the harmony to move further and further away from equal temperament. The third movement features a tonal centre, in relation to which harmonies become progressively more complex. Throughout the piece, the electronics are used to help realize the mictrotonal harmonic structures by diffusing precisely tuned pitches for the intrumentalists to tune to.

Abstrait

Ce concerto pour clarinette, Mitya, est une composition pour clarinette solo, grand ensemble et électroniques. L'idée principale de la pièce est d'examiner trois conceptions harmoniques utilisant l'intonation juste étendu (gamme naturelle). Mitya est en trois mouvements. Chaque mouvement est défini par une tonalité et un système harmonique différent. Le premier mouvement a comme note centrale un La, joué par la clarinette pendant tout le mouvement. Les harmonies aparraissent et disparraisent autour de ce La, y conférant ainsi plusieurs fonctions harmoniques. Le deuxième mouvement est une passacaille dont le thème module à la tierce majeure naturelle ascendante à chaque itération. Ces modulations non-tempérées font que la musique s'éloigne progressivement du tempérament égale. Le troisième et dernier mouvement se concentre sur un Ré comme note centrale. En relation avec ce Ré, les harmonies deviennent de plus et plus complexes. Tout au long de la pièce, les électroniques servent à réaliser des structures harmoniques non-tempérées sur lesquelles les musiciens pourront accorder précisement leurs microtons.

Aknowledgments

Endless thanks to Brian Cherney for several years of guidance as a composition teacher and co-advisor for this thesis. Special thanks to Sean Ferguson, who also co-advised this thesis, for his guidance as well.

I would also like to acknowledge the clarinetist, Mark Bradley, for whom the composition was written and who has given the premier performance under the direction of Denys Bouliane and the Contemporary Music Ensemble of McGill on April 14, 2010.

I am also grateful for the financial support of the SSHRC Joseph-Armand Bombardier Canada Graduate Scholarships - Master's Scholarship,

Table of Contents

1.0 - Introduction

2.0 - Form

3.0 - Role of Soloist

4.0 - Role of Electronics

5.0 - Pitch Structure

    5.1 - Brief Introduction to Just Intonation

    5.2 - Pitch Structure Overview

    5.3 - Pitch Structure of Movement 1

    5.4 - Pitch Structure of Movement 2

    5.5 - Pitch Structure of Movement 3

        5.5.1 - Pitch Structure of Section V

        5.5.2 - Pitch Structure of Section VI

6.0 - Rhythmic Structure

    6.1 - Temporal Structure of Movement 1

    6.2 - Temporal Structure of Movement 2

    6.3 - Temporal Structure of Movement 3

        6.3.1 - Temporal Structure of Section V

        6.3.2 - Temporal Structure of Section VI

7.0 - Orchestration

8.0 - Conclusion

9.0 - Bibliography

1 — Introduction

Mitya: Concerto for Clarinet was composed for the Contemporary Music Ensemble of McGill in connection with the Digital Composition Studios of McGill as part of the student composer-in-residence programme at McGill University. It is approximately eighteen-and-a-half minutes long and is scored for solo B♭ clarinet, large ensemble and electronics. The ensemble's instrumentation is flute (doubling piccolo), oboe, B♭ clarinet, tenor saxophone, baritone saxophone, bassoon, horn, trumpet in C, trombone, tuba, solo B♭ clarinet, two percussionists, harp, two violins, viola, cello, contrabass, MIDI keyboard (77 or more keys). In addition, six loudspeakers are employed to diffuse the electroacoustic elements of the work.

The title of the concerto, *Mitya*, refers to a character in Tolstoy's *Anna Karenina*. As Kitty and Levin's son, Mitya is an important presence in the latter part of the novel from the moment of his conception through his infancy. The influence of Tolstoy can be found at a structural level: the first movement corresponds with the conception of the child, the second movement corresponds with pregnancy, and the third movement corresponds with infancy. By avoiding word painting as well as the desire to make the story evident through the music alone, the dramatic contour has been abstracted from its original contents. Since the music draws inspiration from Tolstoy's novel in a purely abstract way, I will discuss the piece in terms of its technical characteristics, without direct reference to the novel.

The central focus of this composition is the exploration of three different approaches to pitch structures. All three of these approaches reside within the framework of extended just intonation, which is defined in section 5.1. The pitch structure of the

first movement is designed around a single A5 pitch in the solo clarinet, which takes on a variety of harmonic identities as the tonal centre fluctuates. The second movement is a passacaglia that modulates up a just major third (5/4) with each iteration of the passacaglia theme[1]. This modulation of a just major third is slightly smaller than the major third found in equal temperament, which results in the tonal centres shifting a twelfth of a tone flat with each modulation (this process is shown in detail in figure 10). After six modulations, the theme is an entire semitone lower than it would have been in equal temperament, thus creating a meta-modulation[2]. The second movement begins with a G fundamental and modulates up a major third 18 times (3 meta modulations), ending on an E tonic. The third and final movement features a D tonal centre[3] throughout, which is used as the reference point for a quasi-functional harmonic system.

The formal, rhythmic and orchestrational features of *Mitya* have all been devised in relation to these three divergent approaches to pitch structure. Most notably, this holds true in relation to the large-scale form of the work: each of the three movements corresponds to one of the three approaches to pitch structure. Furthermore, the internal subsections and phrases of the movements are designed in such a way that interesting aspects and possibilities presented by pitch structure may be explored. In this way, all aspects of the work are closely related to pitch.

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[1] The term passacaglia has been chosen to describe the second movement because of the use of a bass ostinato. See: Silbiger, Alexander. 2001. "Passacaglia". *The New Grove Dictionary of Music and Musicians*, ed. S. Sadie and J. Tyrrell. London: Macmillan.

[2] The concept of meta-modulation is defined in section 5.5

[3] The term “tonal centre” is used due to the pervading sense of a tonic pitch and the semblance of a functional harmonic system in reference to that tonic pitch.

2 — Form

The Clarinet Concerto is in three movements, the second and third movements containing the subsections shown in figure 1. The first movement is the shortest, serving as an introduction to the longer second and third movements. The individual movements and sections are delineated primarily by the different tonal centres and divergent approaches to pitch and rhythm, as described in the introduction of the analysis. The different tonal centres outline a descent by tones and semitones down a fifth from A to D. By constructing the form in this way, the different approaches to pitch structure are clearly divided in time as well as pitch centre, supporting the comprehensibility of how these pitch structures are used in the work.

movement:	first	second	—	—	interlude	third	—
section:	I	II	III	IV	—	V	VI
measure number:	1	28	86	116	133	141	201
central pitch class:	A	G to F#	F# to F	F to E	E	D (Eb)	D
duration:	2’	4’	2’	1’	30”	3’	6’
duration relationship:	2x	4x	2x	x or y	— (y)	2y	4y

figure 1 — formal overview

The durations of the sections provide a proportionally related formal design that pivots around the temporal centre of the piece. This centre occurs during the brief interlude just before the opening of the third movement and functions as a structural pivot point. More specifically, if the interlude is not considered part of section IV, then the duration of section IV is related by doubling to the durations of sections I, II and III.

On the other hand, if the interlude *is* considered part of section IV, then the duration of section IV becomes related by doubling to the durations of sections V and VI. This proportionality is shown in the "duration relationship" row of figure 1 as a variable with a multiplier.

The smaller scale formal structures are shown in figures 2a-e. Figure 2a, 2b and 2c show the forms of each of the three movements, respectively. Figures 2d and 2e show a more detailed view of the form within the sections of the third movement (2c). The letters used to signify the sections in these figures apply only to one particular movement or section; the A section of figure 2a is not the same as the A section in 2b, 2c, etc. Further details regarding the nature of these forms are inextricably linked to pitch and rhythmic structures, and will be discussed in appropriate sections further on in the analysis.

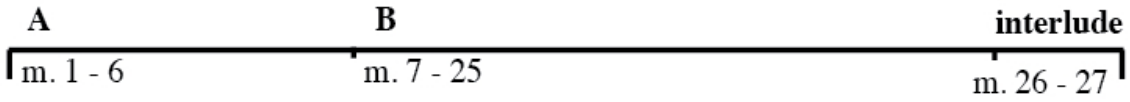

figure 2a - form of first movement

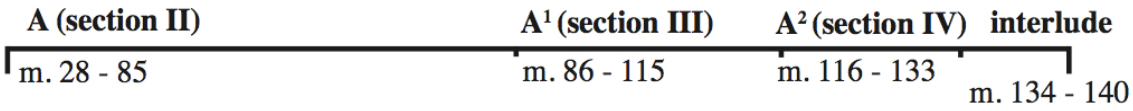

figure 2b - form of second movement

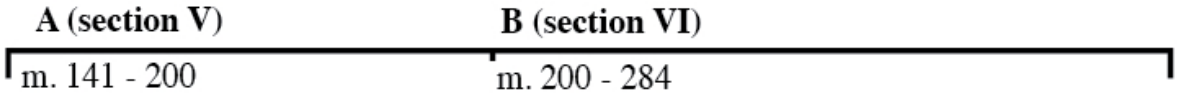

figure 2c - form of third movement

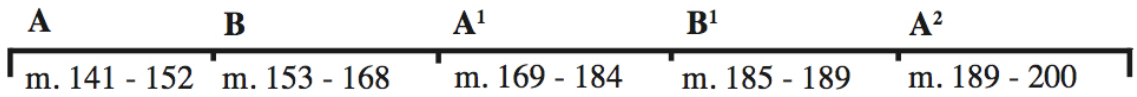

figure 2d - form of section V, third movement

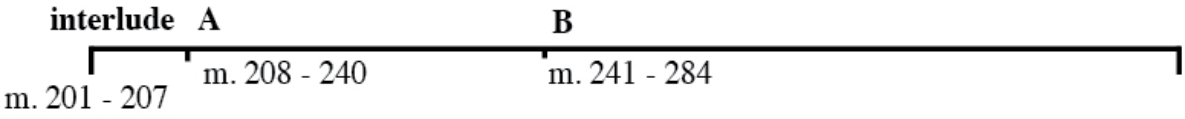

figure 2e - form of section VI, third movement

3.0 — Role of Soloist

Following the concerto tradition, the solo clarinet is featured in the foreground throughout the greater part of this work. The soloist plays nearly all of the time, often performing difficult passages involving microtonal material.

The perceived dominance of the soloist over the ensemble results from a number of compositional decisions regarding the treatment of pitch, rhythm, texture and loudness, all of which will be described in greater detail in the relevant sections of this analysis. The contrast between solo clarinet and ensemble is further enhanced by the live processing of the clarinet diffused through a loudspeaker, as described in the following section.

4.0 — Role of Electronics

The electronic component of the composition consists of both sound file diffusion as well as live processing of the solo clarinet. A total of six loudspeakers are utilized in the performance: four placed behind the ensemble, one placed behind the harp and one

placed near the soloist. Furthermore, a MIDI keyboard is used to trigger events in a max/MSP[4] patch programmed by the composer. These events, triggered by the MIDI keyboard, consist of either the diffusion of a preexisting sound file created previously in the studio, or a change in the real-time processing of the live performer. Furthermore, the conductor wears headphones in order to synchronize the second movement with a click track. Finally, one clip-on microphone is used to capture the sound of the solo clarinet for live processing and slight amplification. The placement of the electronic equipment is shown in figure 3, while figure 4 shows a screenshot of the Max/MSP patch.

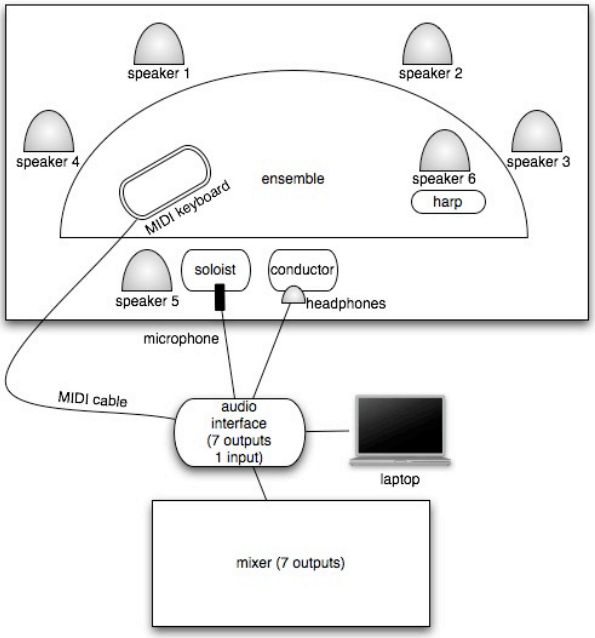

figure 3 — placement of electronic equipment in relation to the ensemble and soloist

[4] Miller Puckette et al. "Max/MSP v5.1.2." Cycling 74/IRCAM, 2008.

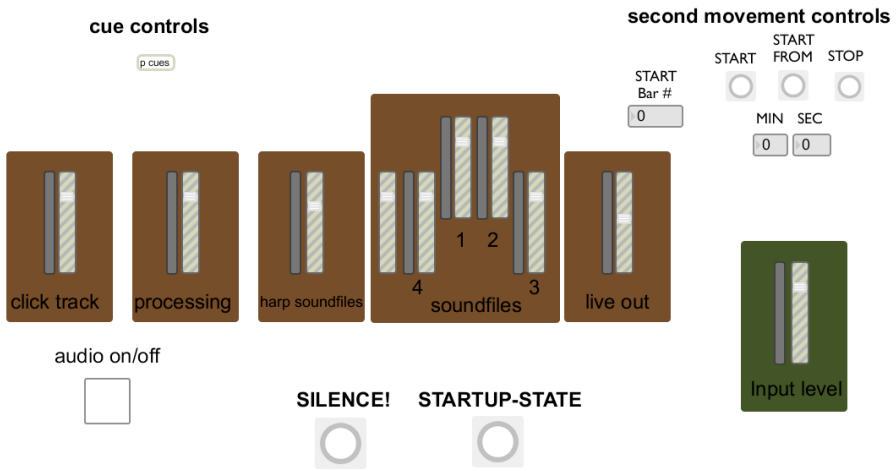

figure 4 — main window of the Max/MSP patch

The sonic nature of the sound files varies throughout the work. However, all the sound files, with one exception, share the characteristic of having been created using samples of acoustic instruments. These samples are then altered and sequenced using the computer programs Audiosculpt[5] and Logic Pro[6]. Audiosculpt was used to microtonally alter the pitch of the instrumental samples. For instance, the microtonal pitches of the second movement's electronic component (figure 12) were realized by transposing equal temperament clarinet samples to the desired microtonal pitch with a level of precision to the cent (hundredth of a semitone). These microtonally altered samples were then sequenced and mixed using Logic Pro. Similarly, the first movement also uses Audiosculpt to microtonally alter samples, which are then sequenced in Logic Pro; however, the samples used in the sound files of the first movement come from all of the instruments of the ensemble, not just the clarinet soloist. The one synthesized sound

[5] Bogaards, Niels. "Audiosculpt v2.6." Paris: IRCAM, 2006.

[6] Apple, inc. "Logic Pro v9.1.1" Apple, inc., 2010.

consists of a synthesized square-wave sample, which reinforces the bass line at mm. 196-200.

The loudspeaker placement, shown in figure 3, facilitates the blending of the diffused sounds with the live instrumentalists by placing them in close proximity. The four speakers behind the ensemble function simultaneously as an additional virtual instrumental choir as well as an augmentation of the instrumental choirs onstage. For example, throughout the second movement the sound files diffused through these four loudspeakers function as their own virtual instrumental choir due to their relatively homogenous timbre and prominence in the musical texture. Conversely, throughout the first movement these four loudspeakers simply reinforce the ensemble by diffusing samples of the same instruments in unison with members of the ensemble, thus augmenting the sound of the instruments rather than establishing a unique presence. Moreover, the electronics also aid the microtonal capabilities of the instrumental ensemble by providing precisely tuned pitches in the prerecorded sound files to which the instrumentalists can tune. For example, every note played by a member of the ensemble in the second movement doubles a pitch diffused through the loudspeakers. Similarly, throughout the first movement the loudspeakers diffuse the tonic and fifth of the chords being played by the ensemble, providing a reference point for the instrumentalists to tune their microtonal notes.

While the four loudspeakers behind the ensemble sometimes achieve an autonomous role, the loudspeakers placed near the harp and soloist function solely to augment the sound of the live instruments. The loudspeaker near the harp diffuses sound

files consisting of microtonally altered harp samples, which are triggered simultaneously with a note or chord played by the live harp. Examples of this technique can be found from measure 185 to 188 as well as from measure 207 to 234. The coupling of harp sample with live harp gives the impression that the harp is performing exact just intonation harmonies which would otherwise be extremely difficult to produce. Figure 5 shows an example of this coupling technique along with fractions showing the harmonic identity of the notes of the chord. These fractions represent just intonation harmonic relationships, and will be explained and discussed in section 5.1 of the analysis.

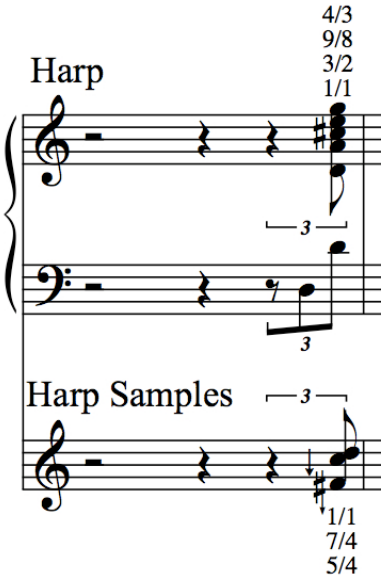

figure 5 - coupling of live harp with harp samples at measure 207

The speaker placed near the soloist diffuses only the digital processing of the solo clarinet in real time. The types of processing utilized in this work are ring modulation, delay and pitch shifting. These particular types of electronic manipulation constitute colorations of the sound source (the clarinet) and therefore would be unconvincing as

pre-recorded sound files. Overall, the processing is used sparingly and at a low enough dynamic level to blend with the live clarinet rather than assert an autonomous presence of electronic sound.

The technique of applying ring modulation to the clarinet bears a close relationship with the extended just intonation pitch structures (see section 5.1) used throughout the composition. Ring modulation is a signal-processing effect wherein two signals are multiplied, resulting in an output corresponding to the sum and difference of the frequencies present in each inputted waveform. In this composition, the live input of the clarinet is multiplied by a sine wave (single frequency). Following the definition of ring modulation provided above, if the frequencies in the signals being multiplied are related by a small integer ratio, the resulting frequencies in the output will also be related by small integer ratios. For example, the first instance of ring modulation in the composition, occurring from measures 3 through 4, modulates an A3 in the clarinet with a sine tone tuned to the just major third above (5/4), resulting in the sum and difference tones shown in figure 6. This calculation does not take into account the entire complex waveform of a clarinet tone; the ring modulation produced also includes a multitude of extremely quiet frequencies. However, the pitches shown in figure 6 are the most audibly present.

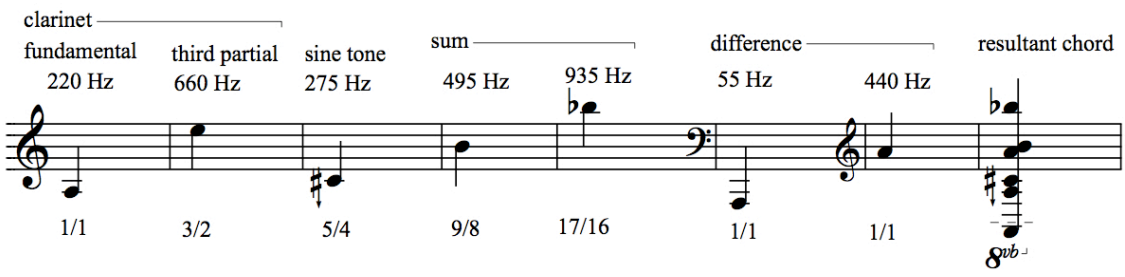

figure 6 — ring modulation processing at measures 3 through 4

5.0 — Pitch Structure

5.1 — Brief Introduction to Just Intonation

The pitch structures in the Clarinet Concerto are designed entirely in extended just intonation. A just interval may be defined as two pitches related in frequency by a ratio between two whole numbers that can be factored into values of 7 or less[7]; thus, their waveforms reinforce one another. Extended just intonation includes harmonic ratios of greater complexity; the more complex these ratios become, the less acoustically consonant they sound. Extended just intonation therefore represents acoustically pure intervals in contrast with equal temperament, which divides the octave into equal parts (usually 12), thereby facilitating the ability of keyboard and fretted instruments to play in all keys, but compromising the exact tuning of the intervals.

In this thesis, just intervals will be expressed as fractions with a solidus. For example, a just fifth would be written as 3/2. This fraction describes the ratio between two frequencies (interval); if the frequency of a pitch is multiplied by 3/2, the frequency corresponding to the product of this multiplication is a perfect fifth higher than the multiplied frequency. Although this method of notating just intervals as fractions is excellent for analytical purposes, performers are customarily provided with notes corresponding to exact pitches (rather than intervals). To notate these microtonal

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[7] This is a simplified definition of just intonation, more accurately described as 7-limit just intonation.

intervals within the framework of traditional Western notation, the microtonal accidentals, shown in figure 7, have been employed. Any pitch may be notated within 7 cents (hundredths of a semitone) using these accidentals.

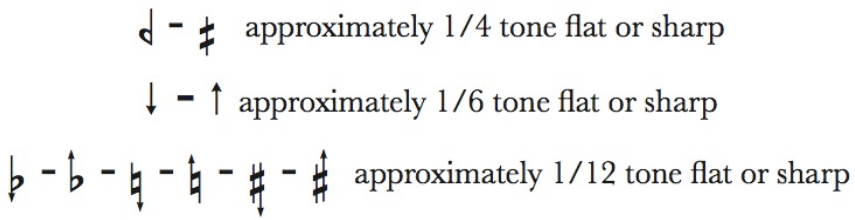

figure 7 — microtonal accidental nomenclature

The level of exactitude in specifying pitch in the accidentals shown in figure 7 has been informed by James Tenney's theory of harmonic perception and tolerance:

> "... pitches are represented ... and each is labeled according to its frequency ratio with respect to some reference pitch (1/1). Thus, the pitch one octave above the reference pitch is labeled 2/1, that a perfect fifth below a/a is labeled 2/3, etc. But since our perception of pitch involves some degree of approximation, these frequency ratios must be understood to represent pitches within a certain *tolerance range* — i.e., a range of relative frequencies within which some slight mistuning is possible without altering the harmonic identity of an interval. The actual magnitude of this tolerance range would depend on several factors, and it is not yet possible to specify it precisely, but it seems likely that it would vary inversely with the ratio-complexity of the interval. That is, the smaller the integers needed to designate the frequency ration for a given interval, the larger it's tolerance range would be." [8]

Tenney's claim that interval cognition occurs as a function of high-level neural processing that refers to acoustic consonance (interval ratio), rather than frequency,

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[8] James Tenney, "John Cage and the Theory of Harmony" *Soundings 13: The Music of James Tenney* SOUNDINGS Press, Santa Fe, 1984, page 22.

within a certain tolerance range is supported by numerous experiments and literature.[9] However, the magnitude of this tolerance range to intervallic identity is unclear, and likely to be different from person to person. To this end, I agree with composer Ben Johnston to the common sense notion that although there is a tolerance built into our cognition of interval, the more exact the tuning in performance, the higher the clarity of the harmonic relationship.[10]

5.2 — Pitch Structure Overview

As described in the introduction of this analysis, each movement of the composition utilizes a different approach to extended just intonation in its vertical and horizontal pitch structures. Furthermore, each section of the work focuses on a different central pitch class, as shown in figure 1. Taken together, these central pitch classes form a gradual descent of a perfect fifth, by tones and semitones, from A down to D. The ultimate D pitch centre defines an important point of arrival in the large-scale tonal design of the composition, marking a long awaited resolution to the tonic.

The three divergent approaches to pitch structure are unified by the limited number of possible just intervals, shown with D as the tonic (1/1) in figure 8. The most consonant just intervals, 3/2, 4/3, 5/4 and 6/5, have been bracketed and labeled in figure 8. This collection of pitches is treated as a mode that may be transposed according to the

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[9] B.W. White, "Recognition of distorted melodies" *American journal of psychology*, 1960, 73, 100-107 ; F. Attneave & R. Olson "Pitch as a medium: a new approach to psychophysical scaling" *American Journal of Psychology*, 1971, 84, 147-166 ; Diana Deutsch, *The Psychology of Music* (New York: Academic Press, 1982), 244-245.

[10] Ben Johnston, ed. Bob Gilmor, *Maximum Clarity and Other Writings on Music* (Urbana: University of Illinois Press: 2006).

pitch centre of a particular movement or section. For example, the final movement uses the mode as shown in figure 8, whereas the first movement, which has a pitch centre of A, uses the mode transposed to A. These particular fifteen pitch classes were chosen to both limit the number of intervallic relationships as well as provide a wide range of harmonic possibilities, from highly consonant dyads and chords to dense microtonal cluster chords of extreme dissonance.

Extended just intonation, used in this way, not only extends the range of consonant harmonies but also introduces new dissonances unobtainable in equal temperament. For example, the interval between the 9/8 and the 8/7 is roughly one-sixth of a tone and the interval between 16/9 and 6/5 is 40/27, which is almost completely inharmonic. Many more intervals of the mode (figure 8) exist between the clearly consonant and clearly dissonant ones. Regarding the nature of consonance and dissonance, Paul Hindemith points out that "no point can be determined at which consonance passes over into dissonance."[11] The hundred-and-thirteen possible interval classes in this mode (figure 8) represent a rough gradient from consonance to dissonance where many intervals are neither clearly consonant of dissonant, instead, they are somewhere between the two.

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[11] Paul Hindemith, Craft of musical composition, Vol. 1, translated by Arthur Mendel (New York: Schott Music, 1937) p. 85.

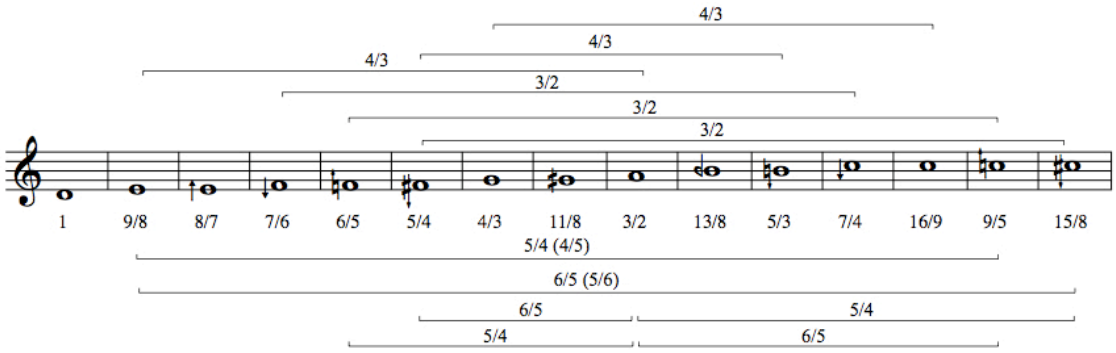

figure 8 — mode with just fourths, fifths and thirds bracketed

There are also two brief melodies that recur throughout the work in different forms. Figure 9 shows these two melodies in the tonic key of the piece (D), with a rhythm that reflects their general implementation in terms of durational proportion. The first instance of the first melody (figure 9a) occurs at measure 25 in the solo clarinet part. The second melody (figure 9b) corresponds to the seventh through eleventh partials of the harmonic series and is first introduced in a truncated form at measure 27 in the horn. The further use of these melodies will be discussed in later sections of the analysis.

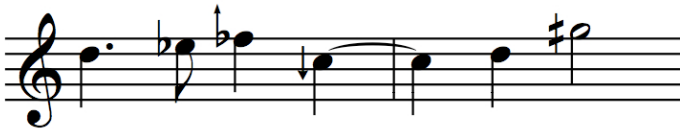

figure 9a — melody 1

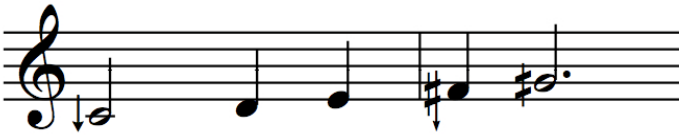

figure 9b — melody 2

5.4 Pitch Structure of Movement I

The first movement features an internal structure of a binary A-B form, shown in figure 2a. The A section is a short introductory phrase to the longer B section; the proportion of durations between the A and B sections parallels the durational proportions of the entire first movement in relation to the work as a whole. The A section consists of noise elements in the ensemble combined with long notes and brief melodic outbursts performed by the soloist. The A section is void of harmonic interaction, but suggests pitch classes D and A as possible tonal centres through held notes and scalar construction favouring consonant relationships with these two pitch classes. For example, the solo clarinet begins with a held D3 in the first measure which leads to a held A3 in measures 3-4. By focusing on D and A in the opening phrase, their importance in the work as a whole is initiated.

The first chord of the piece occurs at the opening of the B section on the downbeat of measure 7; this fortissimo tutti chord, spanning over six octaves, includes all fifteen pitch classes of the mode (figure 8) on A. The pitch content of this chord is shown in figure 10; although this chord includes the entire mode, the widely spaced A major triad in the lowest register of the chord, along with other spacing and registration choices, anchors the complex chord with a clearly perceptible A fundamental.

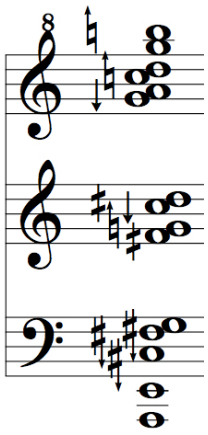

figure 10 — tutti chord at measure 7

The attack of this tutti chord at measure 7 marks the beginning of an A5[12] note in the solo clarinet, which is held through the entire B section of the first movement to measure 25. This long A functions as a point of reference throughout a series of rapid key changes; each of the fifteen pitch classes of the mode on A is reinterpreted as a temporary tonal centre, altering the harmonic function of the soloist's held A. The perception of these pitch classes as tonal centres (as opposed to a chord change) is strengthened by doublings at the octave or perfect fifth above in the electronics, along with complete major triads or dominant seventh chord doublings in the ensemble. The establishment of these tonal centres is also aided by the prominence of the temporary tonic pitches in the orchestration and dynamics. Figure 11 shows the pitches corresponding to the temporary tonal centres along with the relative harmonic function of an A pitch class. The held A5 in the clarinet returns in the final phrase of the

[12] In reference to middle C as C4.

composition from measure 261 through 284, the significance of which will be discussed in section 5.6.

measure number(s)	temporary pitch centre	harmonic function of A
7-8	A1	1 (tonic)
8-9	B3	16/9 (minor seventh)
9-10	B2 (31 cents sharp)	7/4 (just minor seventh)
10	C3 (33 cents flat)	12/7 (sharp major sixth)
10-11	C4 (16 cents sharp)	5/3 (just major sixth)
11-12	C#2 (14 cents flat)	8/5 (just minor sixth)
12-13	D3	3/2 (perfect fifth)
13-14	D4 (51 cents sharp)	16/11 (inverted just tritone)
14-16	E2	4/3 (perfect fourth)
16-17	F3 (41 cents sharp)	16/13 (neutral third)
16-17	F#4 (16 cents flat)	6/5 (just minor third)
17-18	G5 (31 cents flat)	8/7 (just large major second)
18-19	G2	9/8 (major second)
19	G3	10/9 (just neutral second)
19-20	G#4 (12 cents flat)	16/15 (just minor second)
20-25	A1	1 (tonic)

figure 11 — temporary pitch centres of the first movement

5.5 Pitch Structure of Movement II

A detailed reduction of the pitch structure of the second movement is shown in figure 12. As stated in the introduction of this analysis, the second movement is a

passacaglia that modulates up a just major third with every iteration of the passacaglia theme. The theme itself is a six-note descending line, wherein the sixth and final note pivots between the end of one theme and the beginning of the next. The harmonic identity of the pivot note is a 5/4 at the end of one iteration of the theme, which is reinterpreted as a 1/1 as the first note of the next iteration of the theme. In figure 12, each cycle of the theme is separated by a barline with the pivot note linking the themes together repeated on either side of the barline. The passacaglia theme repeats a total of eighteen times over the course of seven minutes.

Each iteration of the theme modulates so that the just major third (5/4) becomes the tonic (1/1). Since the 5/4 interval is fourteen cents flat of an equal temperament major third, the tonic note slides away from equal temperament with each modulation. In order to realign the tonal centre with an equal temperament note, the 5/4 has been slightly tempered from fourteen cents to seventeen cents flat of an equal temperament third. Normally, after three modulations up a major third, the tonal centre would return to the same pitch class it started from. However, three modulations of a just major third results in a tonal centre a quarter-tone lower than the pitch class it started from; after six cycles of the passacaglia theme, the tonal centre is a semitone lower than where it began. This gradual microtonal shift down by an equal temperament semitone will be referred to as a meta-modulation in this analysis. The meta-modulation describes a modulation that results from a cycle of other modulations. In summary, there are three layers of pitch movement: the constant descending surface movement of the theme, the continual

upwards modulation with each iteration, and the extremely slow downward shift of the meta-modulation.

A gradual expansion of range is embedded in the pitch structure of the second movement. The downward expansion of range is controlled by the passacaglia theme sometimes leaping up an octave at the pivot note and other times continuing its downward trajectory. Conversely, the contrapuntal lines gradually added to the pitch structure expand the range upwards, leading to a final range spanning from E1 to E7 to end the second movement (from measure 132 to 139).

The pitch structure is carried by sound files diffused from the four ensemble loudspeakers. The pitches in these sound files ensure an accurate realization of the pitches, which were tuned to the cent during the construction of the sound files. While the electronics carry the pitch structure, the ensemble and soloist have a number of auxiliary roles.

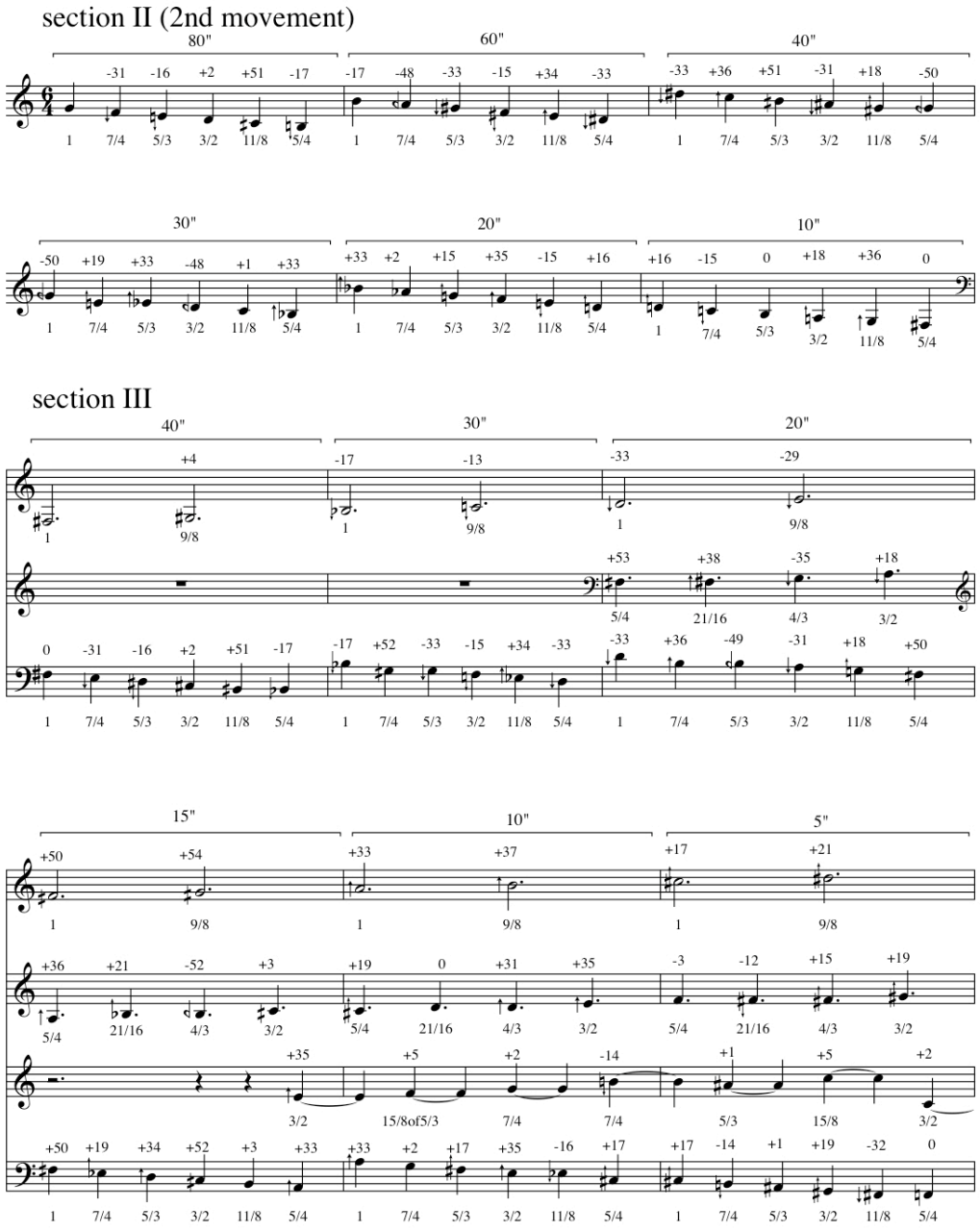

fig. 12 — structure of the second movement (sections II through IV)

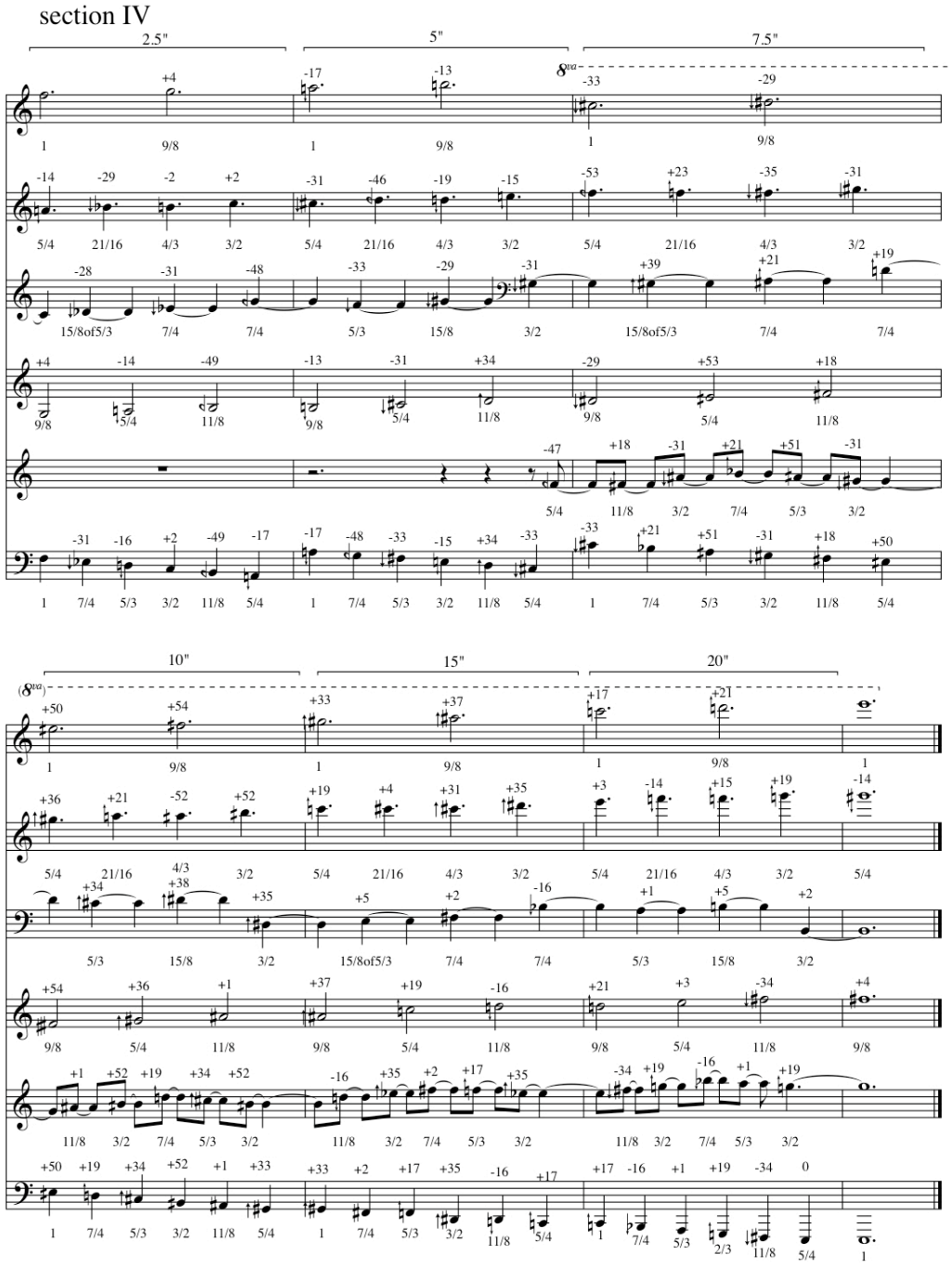

fig. 12 continued

The solo clarinet, ensemble clarinet, horn and contrabass perform melodic material, drawn mainly from the two melodies shown in figure 9, throughout the second movement. More specifically, the horn and contrabass perform transpositions of the second melody (figure 9b), beginning with the horn introducing a truncated form of the second melody at measure 27, which is repeated as contrabass harmonics at measure 32. The solo clarinet part draws primarily from the first melody (figure 9a) throughout the movement, gradually expanding in range to a high B6 at measure 134. The ensemble clarinet part echoes and responds to the solo clarinet part. The remaining members of the ensemble contribute to an accumulation of drone notes that double the pitches diffused through the loudspeakers.

The solo clarinet also performs many multiphonics throughout the second movement. These particular multiphonics were chosen because of their pitch content, which fits compellingly into the pitch structure of the second movement, as well as their ability to be played softly. The clarinet multiphonics function as a bridge between the diffused sound files and the melodic material of the clarinet, due to the similar timbral characteristics and pitch content.

5.6 Pitch Structure of Movement III

The entire third movement is rooted in D as the tonic (1/1). This tonal centre is treated like a key area in Western tonal music, insofar as there is a quasi-functional just intonation harmonic system in play. Each note of the mode, shown in figure 6, has been harmonized, resulting in the collections of pitch classes shown in figure 13. These

collections are treated like chords in a functional tonal system, with a number of additional properties and constraints. These properties and constraints have been implemented to increase the perceptibility of the harmonic structure as hierarchical, and therefore implying directionality. The most important of these constraints is that no chord may be inverted; the bass notes given on the bottom staff of figure 13 may not be inverted with any of the other notes of the chord. As these chords are far more complex than a triad or seventh chord, the identity of the chord would be altered beyond recognition upon inversion. To take a supporting example from the canon of Western music, the opening harmony of *Feuilles mortes* by Claude Debussy features a dominant flat-nine chord inverted so that the flat ninth is in the bass[13]. This inversion subverts the functionality of the chord by weakening its referentiality to the tonic note. Furthermore, the harmonic ambiguity of the opening chord of *Feuilles mortes* also results from the lack of a resolution according to the conventions of tonal music. Because the quasi-functional system used in *Mitya* is newly invented, it functions solely through its acoustical properties and lacks conventions and paradigms. Therefore, any chord change in the quasi-functional system lacks the possibility of a resolution according to convention. For this reason, inversion of the chords used in the third movement is prohibited.

While this strict restriction regarding inversion is applied to the bass note, any of the other pitch classes contained in the chords may be transposed to any octave, inverted or omitted. Furthermore, the tonic note may be added to any of the chords; this means

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[13] Claude Debussy, les preludes: deuzième livre, no. 2.

that each of the chords, shown in figure 13, may also include a D pitch class. This optional tonic is implemented to reinforce the tonal centre at particular moments in the music.

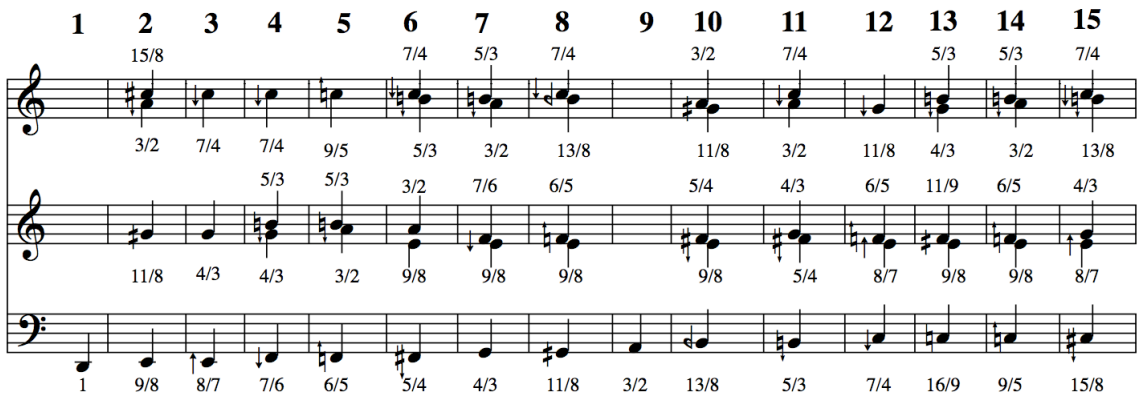

fig. 13 — chord structures of the third movement

This chart of chords (figure 13) numbers the chords, in order of the ascending bass note, from one to fifteen. Chords one and nine contain only a bass note, corresponding to the tonic and fifth of the mode respectively. These two bass notes carry with them a higher degree of acoustical consonance in relation to the other pitch classes of the mode by virtue of being the 1/1 and 3/2. When either of these pitch classes is employed as a bass note, any of the other pitches in the mode may be used in the harmony. In other words, chords one and nine contain all of the pitch classes of the mode.

One example of the utilization of the quasi-functional harmonic system in the third movement can be found from mm. 208-32. This phrase features a slow-moving chord progression, orchestrated for the string quartet in a polyphonic texture featuring a

large amount of surface movement. Figure 14 shows the chord progression as well as the expanding range of this passage. A second musical layer, which features the solo clarinet with various other instruments performing slowly rising microtonal clusters, is superimposed on the string quartet texture.

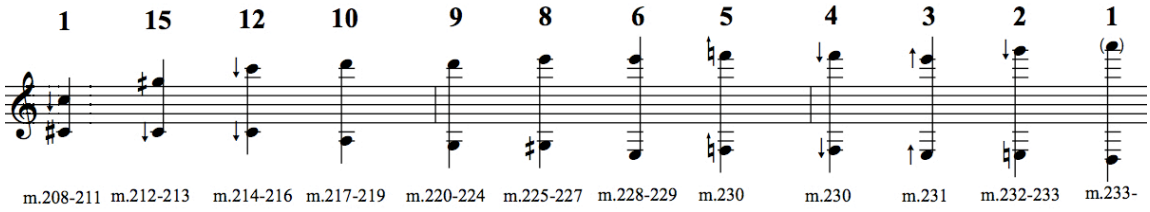

figure 14 — reduction of string texture from measure 208 to measure 232

At the end of the string quartet passage, the texture of the string quartet is transferred to the wind instruments, from mm. 235-41, to end this subsection of the work. During these measures, the melody, shown in figure 9a, is played by the solo clarinet. This occurrence of the melody from mm. 236-39 is the most prominent version since measure 25 of the first movement. This version of the melody is played in a chordal/homorhyhmic texture with the second percussion and string quintet, while the woodwinds hold a static chord.

The following phrase, mm. 241-66, maintains the tonic chord throughout while introducing a new melody. This melody is shown in figure 15 with a rhythm that reflects its general use in the composition. This melody is a descending scale made up of the pitch classes most directly related to the harmonic series of D contained in the mode given in figure 6.

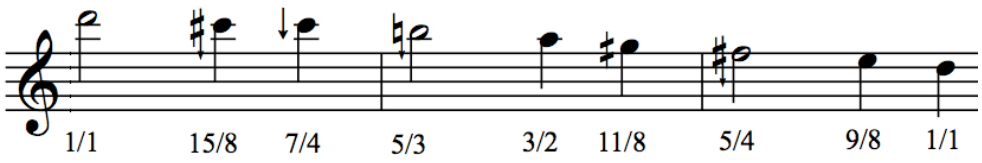

figure 15 — melody featured from measure 241 to 266

The phrase from mm. 241-66 remains on the tonic chord throughout and features a gradual accumulation of pitches and instrumental forces. The pitches accumulate by way of the superimposition of different transpositions of both the melody (figure 13) as well as a short loop, mimicking a IV-V-I bass note progression. This IV-V-I loop first begins in violin one at measure 240; by the end of the section, the loop is performed in the keys of D, G and A simultaneously with different rhythmic values. The oboe, flute and percussion 1 perform the IV-V-I loop in G, with a rhythmic cycle lasting seven eighth-notes, from mm. 251-63. The ensemble clarinet, bassoon and trumpet perform the IV-V-I loop in D, with a ten quarter-note rhythmic cycle (mm. 248-64). Finally, the tenor sax, baritone sax and horn play the IV-V-I loop in the key of A, with an eight quarter-note rhythmic cycle.

The held A5 drone in the solo clarinet from the B section of the first movement returns in mm. 171-73, mm. 200-206 and as the final note of the composition from mm. 261-84. This held note constitutes an important recurring element that refers the listener back to the beginning of the work. The A5 drone has shifted from a tonic (1/2) function in the first movement to a perfect fifth (3/2) function in the third movement. The held A5

allows for the large-scale harmonic movement of A to D, which occurs over the course of the entire work, to be more clearly perceived by referring back to the first movement.

6.0 — Rhythmic Structure

6.1 — Rhythmic Structure of Movement I

The first movement avoids regularity of both pulse and harmonic rhythm. A clear sense of pulse is avoided through multiple drone notes containing regular pulsations at different speeds simultaneously. There are three distinct layers of pulsation in the drones: sixteenth notes, quintuplet sixteenths and sextuplets. The pulsations never begin or end on the quarter-note downbeat and therefore do not coincide with one another or articulate a regular pulse.

The sense of irregularity on the larger level of harmonic rhythm is created by constantly altering the rate of harmonic change. Two rhythmic impulses anticipate a third, where the anticipated time between the third and second impulses is equal to the time between the between first and second. Once this third impulse fulfills the anticipation, a pulse has been established. In the first movement, no three articulations are evenly spaced in time, creating a sense of rhythmic stasis.

6.2 — Rhythmic Structure of Movement II

The second movement uses a large-scale formal structure with self-similar properties; the sectional durations, phrase durations and surface rhythms bear the closely related proportional structures. These self-similar structures are in the form of a series of durations

that accelerate and decelerate by way of doubling or halving the durational values. In this way, the rhythmic structure of the second movement is further paralleled by the large scale formal design of the entire work, as shown in figure 1, which is also constructed by doubling and halving durations.

The second movement contains the three sections shown in figure 2b, each of which contains six iterations of the passacaglia theme. As discussed in section 5.6, six iterations of the passacaglia theme result in the meta-modulation of one equal temperament semitone down. These three sections have durations of four minutes, two minutes and one minute respectively. The durations of the internal phrases, corresponding with iterations of the passacaglia theme, are shown in figure 16. These durations are also shown in figure 11 alongside the pitch structure. Within these phrases, the passacaglia theme has a rhythm paralleling the section and phrase durations. Figure 17 shows the rhythmic structure of section III, which can be found in the score from measure 86 to 116.

section:	total duration	divided phrase durations
section II	4’	80” + 60” + 40” + 30” + 20” + 10”
section III	2’	40” + 30” + 20” + 15” + 10” + 5”
section IV	1’	2.5” + 5” + 7.5” + 10” + 15” + 20”

figure 16 — phrase durations in the second movement

phrase	total duration	division into sub-phrases
one	40”	13” + 11” + 8” + 5” + 3”
two	30”	10” + 8” + 6” + 4” + 2”
three	20”	8” + 5.5” + 3.5” + 2” + 1”
four	15”	5” + 4” + 3” + 2” + 1”
five	10”	4” + 2.5” + 1.5” + 1.33” + .66”
six	5”	2” + 1.33” + .91” + .5” + .25”

figure 17 — rhythmic structure of the phrases within section III

6.3 — Rhythmic Structure of Movement III

The rhythmic structure of the third and final movement contains two subsections; these subsections are shown as sections five and six in the context of the formal design of the work in figure 1. A more detailed view of their forms is given in figures 2d and 2e respectively. Each of these two sections contain distinct approaches to temporal structure.

6.3.1 — Rhythmic Structure of Section V

The rhythmic activity of section V is based on the cyclic rhythmic structures found in Hindustani music. The opening of the third movement, from mm. 141-81, features a repeating sixteen quarter-note cycle. This cycle is articulated every four quarter-notes (the downbeats of the 4/4 measures) by the percussion section. All four instruments play on the first beat of the cycle, then decrease by one with each new attack, as shown in figure 18. This rhythmic cycle occurs a total of seven times in the form shown in figure 18, from mm. 141-169.

quarter-note beat	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
gong	X				X				X				X			
bass drum	X															
timpani D3	X				X				X							
timpani A3	X				X											

figure 18 - marking the structure of the rhythmic cycle in section V

The rhythmic cycle is hierarchical, suggesting convergence to the first beat of the cycle and structural prominence on beats five, nine and thirteen. This sense of hierarchy provided by the percussion section is reinforced by the remainder of the ensemble, which performs phrases ending with fortissimo accented chords on the first beats of the second and fifth cycles at mm. 145-53 respectively. Superimposed with the sixteen beat cycle, notes in the first percussion and the harp attack every seven beats. These attacks begin at measure 141 and continue until measure 168, when an attack finally coincides with the first beat of the sixteen beat rhythmic cycle.

In the fifth iteration of the rhythmic cycle, beginning at measure 153, secondary rhythmic structures begin to interact with the sixteen-beat cycle. These new structures are implemented as brass chords, first appearing at measure 155, that repeat at regular intervals. Like the seven beat cycle of the harp and first percussion described above, these accented brass chords produce rhythmic tension by suggesting a pulse that differs from the pulse established by the sixteen-beat cycle. This rhythmic tension is then resolved by the two distinct pulsations coinciding on the first beat of the sixteen-beat cycle. This process continues to measure 169 and is shown in figure 19.

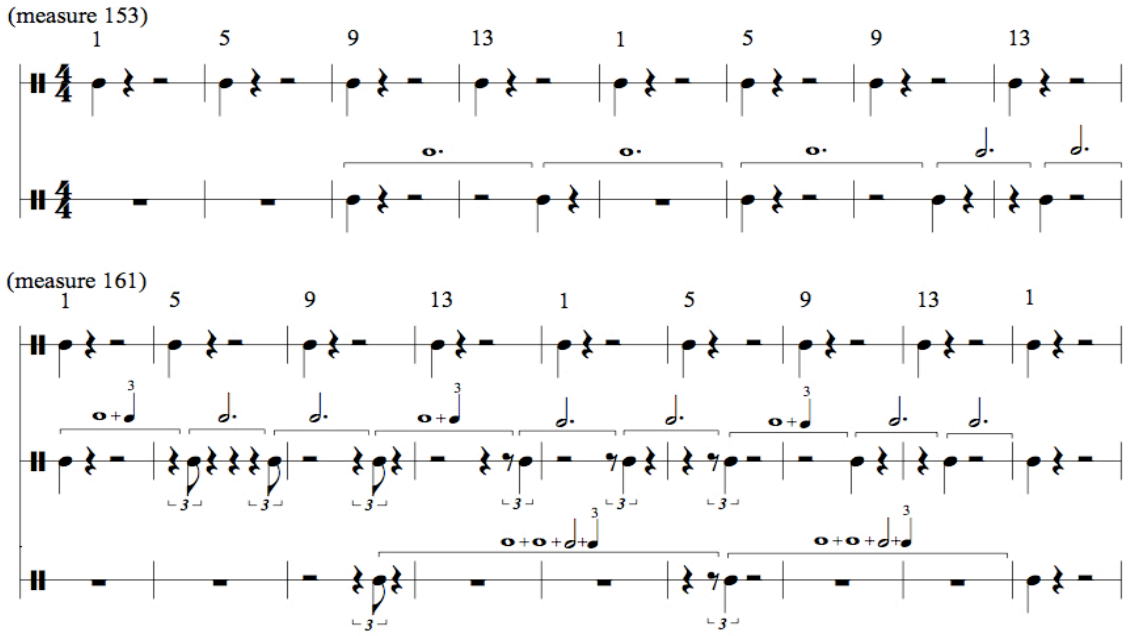

figure 19 — rhythmic structure from measure 153 to measure 169

At measure 185, the sixteen-beat cycle is transformed into a constantly changing cycle of irregular values. This new, irregular cycle maintains a close connection with the sixteen-beat cycle regarding the use of the percussion section.

6.3.2 — Rhythmic Structure of Section VI

The final section of the piece can be further divided into an A-B form, as shown in figure 2e. Section A, from measure 201 to 241, treats rhythm in a similar way to the first movement: a regular pulse is avoided in both the surface rhythms as well as the harmonic rhythm. The main points of interest in terms of rhythm during the B section are the superimposed rhythmic loops discussed in section 5.3 of this analysis.

7.0 — Orchestration

Several orchestrational elements have been discussed in earlier sections of this analysis, particularly regarding the role of the soloist and electronics in sections 3 and 4 of the analysis respectively. However, many orchestrational decisions integral to the composition remain undiscussed. For example, in many sections of *Mitya*, the ensemble clarinet functions as an extension of the solo clarinet. For example, throughout the second movement the ensemble clarinet extends the solo clarinet part in two ways. Firstly, the ensemble clarinet often connects the phrases of the solo clarinet notes, sustaining the soloist's line through rests. This bridging technique can be found for the first time at mm. 30-33, where the ensemble clarinet sustains a D4, passed from the solo clarinet, as the soloist rests. Secondly, the ensemble clarinet serves as a shadow to the solo clarinet, an example of which is shown in figure 20. In this example, the ensemble clarinet performs a slower, quieter repetition of the soloist's line simultaneously. These two functions of the ensemble clarinet continue to be implemented throughout the third movement as well, most notably at mm. 155-69 and mm. 202-208.

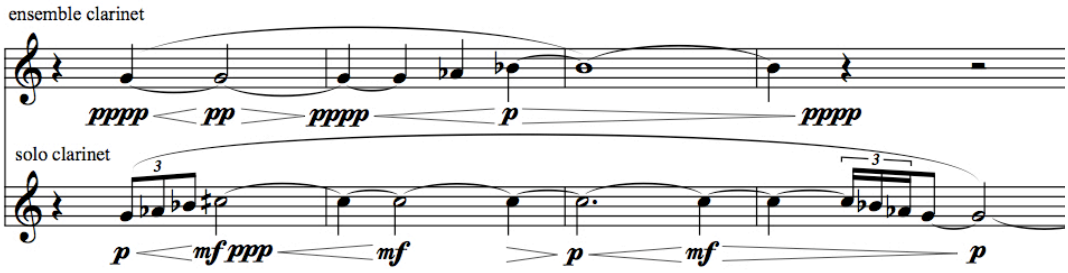

figure 20 — "shadowing" effect in the ensemble clarinet (mm. 37-40)

Orchestrational choices and noise elements (sounds without fundamental pitch) are used to help articulate the different levels of structure in the second movement. The noise elements are found in the cymbals of the percussionists, air blown through brass instruments and woodwind instruments as well as pitchless tremolo bowing in the string section, excluding the contrabass. In the second half of each phrase, these noise elements fade in and out. The proportion of crescendo to decrescendo of the noise elements is 3:2, giving each sub-phrase the form shown in figure 21. Once more, figure 21 shows an accelerating structure, contributing to the recursive properties of the movement.

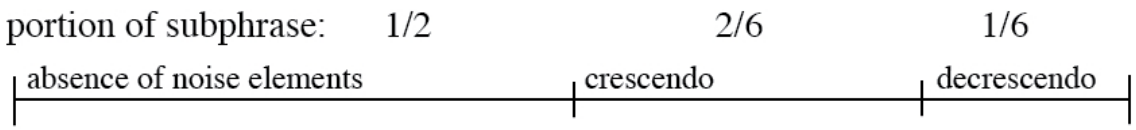

figure 21 — structure of the noise elements in second movement sub-phrases

As the second movement progresses, the string portion of the noise elements develops into pitched material. In section III (the second section of the second movement), beginning at measure 85, the strings maintain the rhythmic function, as show in figure 18, while introducing pitch content in the form of tremolo notes. Finally, in section IV, the noise elements are completely removed from the texture and the strings play sustained tones.

8.0 — Conclusion

In *Mitya: Concerto for Clarinet,* three distinct approaches to pitch structure, unified by a limited number of just intervals, are explored. These three divergent approaches are utilized to convey a broad range of musical expression within a highly unified and clearly delineated form. The challenge of performing an intensely microtonal work such as this is immense. The utilization of electronics, particularly in the second movement, greatly aided this challenge.

This composition demonstrates that rich harmonic possibilities may be drawn from the infinite gradient of acoustical consonance to dissonance that extended just intonation represents. Furthermore, the nature of this composition regarding the three approaches to pitch structure leaves many paths to be explored in future compositions.

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MITYA

Concerto for Clarinet

for solo B♭ clarinet, chamber orchestra and electronics

Taylor Brook

2010

Score in C

Instrumentation

flute (+ piccolo)
oboe
B♭ clarinet
tenor saxophone
baritone saxophone
Bassoon

horn
trumpet in C (cup, straight and harmon mutes)
trombone (cup, straight and harmon mutes)
tuba

solo B♭ clarinet

2 percussion:
I - 3 sizzle cymbals
I - 3 suspended cymbals
I - vibraphone
I - almglocken (A3, D4, E4, A4 and B4)
I - crotale (G6 only)
I - lion's roar
I - bass drum
I - pitched gongs (D3 and A3)
II - almglocken (B3, C#4, F#4 and G#4)
II - 3 sizzle cymbals
II - pitched gongs (E3, A3 and D4)
II - 3 timpani (32", 29" and 26")
II - wine glass (D5)
II - tubular bells

harp

2 violins
viola
cello
contrabass

MIDI keyboard (77 or more keys)
electronics (see performance instructions for details)

Concert Notes

Mitya, a clarinet concerto by Taylor Brook, was composed in partial fulfilment of the Master's of Music degree at McGill University, under the supervision of Brian Cherney and Sean Ferguson. Mitya is dedicated to the clarinetist Mark Bradley.

The title of this clarinet concerto is a reference to Kitty and Levin's son in Leo Tolstoy's Anna Karenina. In the final chapters of the novel, Tolstoy describes the process of conception, pregnancy, birth and infancy from the perspective of the father. Simply put, the emotional state of the father, Levin, moves from confusion and fear to understanding and acceptance.

In addition to informing the composition on a purely abstract level, I also used passages of the novel to develop the large-scale form and structure of the work. By avoiding word painting and the desire to make the story evident through the music alone, I have abstracted the dramatic contour from its original contents. I am interested in the derivation of musical form and structure from strong physical and emotional experiences such as the conception and birth of a child in the hope that these nearly universal and life-altering experiences may speak to an innate human emotionality. Perhaps, also, the act of artistic creation can be understood as a life-giving activity in which one's creation will go on to have a life of its own.

Mitya has three movements, performed without breaks. Each movement is defined by a different tonal centre and approach to harmony. The first movement focuses on the note A5 as a point of reference, played by the clarinet throughout the movement. As this A holds, harmonies fade in and out around it, giving the held note several different harmonic functions. The second movement is a passacaglia, which modulates up a just major third with every cycle of the passacaglia theme. Because of the unusual modulations, the tonality of the second movement slides further and further away from equal temperament as the theme repeats. The final movement features a clear D pitch centre throughout, with many different harmonies changing in reference to the D using a quasi-functional harmonic system.

Partition en “do”

Instrumentation

flûte (piccolo)
hautbois
clarinette en B♭
tenor saxophone
baritone saxophone

basson (contrebasson)

double cor
trompette en C (cup mute, straight mute et harmon mute)
trombone (cup mute, straight mute et harmon mute)
tuba

clarinette en B♭ solo

2 percussion:
I - 3 sizzle cymbals
I - 3 cymbals sospendu
I - vibraphone
I - almglocken (A3, D4, E4, A4 et B4)
I - crotale (G6 seulement)
I - lion’s roar
I - grosse caisse
I - pitched gongs (D3 et A3)
II - almglocken (B3, C#4, F#4 et G#4)
II - 3 sizzle cymbals
II - pitched gongs (E3, A3 et D4)
II - 3 timpani (32”, 29” et 26”)
II - verre à vin (D5)
II - carillons

harpe

2 violons
alto
violoncelle
contrebasse

clavier MIDI (77 clés au moins)
electroniques (voyez les instructions d’interprétation pour details)

Notes de programme

Ce concerto pour clarinette, *Mitya*, a été écrit pour ma Maîtrise en Musique à l’Université McGill, sous la direciton du compositeur Brian Cherney. *Mitya* est dédiée au clarinetiste Mark Bradley.

Le titre, *Mitya*, vient du nom du fils de Kitty et Levin dans le roman de Leo Tolstoy, *Anna Karenina*. L’inspiration principale est le processus de naissance, c’est-à-dire de le conception jusqu’à la jeune enfance. Mais ce processus est vu à partir de la perspective du père, Levin, tel que décrit par Tolstoy dans les derniers chapîtres de son roman. Les expériences de Levin concernant la naissance de son fils, Mitya, débutent avec la peur et la confusion, et se terminent par la compréhension et l’acceptation.

En plus de servir de source d’inspiration émotive pour la pièce, le concept de naissance a également été utilisé pour en créer la structure. Mon intention n’était pas de faire une pièce où l’histoire est évidente, mais plutôt d’extraire d’expériences émotionnelles très fortes, telle la naissance d’un enfant, des structures et des formes musicales. Après tout, l’acte de création artistique ne peut-il pas être vu aussi comme la naissance d’un enfant?...

En ce qui concerne la construction de la musique, Mitya est en trois mouvements ininterrompus. Chaque mouvement est défini par une tonalité et un système harmonique différent. Le premier mouvement a comme note centrale un La, joué par la clarinette pendant tout le mouvement. Les harmonies aparraissent et disparraisent autour de ce La, y conférant ainsi plusieurs functions harmoniques. Le deuxième mouvement est une passacaille dont le thème est modulé d’une tierce majeure juste avec chaque itération. Ces modulations font que la musique s’éloigne progressivement du tempérament égale. Le troisième et dernier mouvement se concentre sur un Ré grave avec, au dessus, plusieurs variations harmoniques.

notation and performance instructions

microtonality and just intonation

Although there are many microtones in this work, much of the harmony is quite consonant. The microtones are used to approximate just intervals, therefor small adjustments should be made by ear to play these intervals perfectly in tune. I advise to listen for the root of the chord (when present) in order to understand your particular role in the harmony.

The following acccidental nomenclature is also used to approximate exact pitches:

𝅀 - ♯ approximately 1/4 tone flat or sharp

↓ - ↑ approximately 1/6 tone flat or sharp

𝄬 - 𝄭 - 𝄳 - 𝄲 - 𝄰 - 𝄯 approximately 1/12 tone flat or sharp

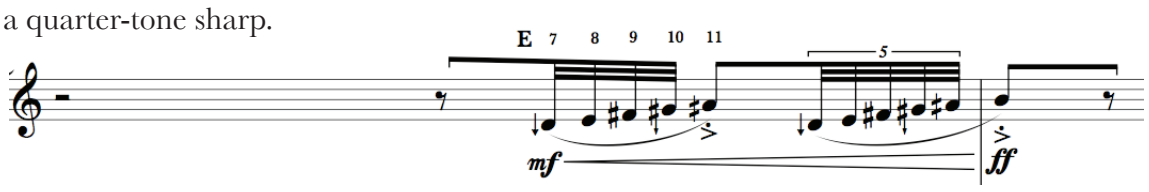
The accidentals showing the twelfth-tone (one sixth of a semitone) alterations should be thought of as extremely small inflections of the pitch. This minute alteration in pitch equals the difference between the just major third (the fourth harmonic, accessible on any string or brass instrument) and the equal temperament major third. Wind players need not use alternate fingerings for these pitches, instead they should inflect the pitch slightly as performers must do in tonal music performance practice when tuning the third of a chord. In other words, it is best to treat the notes with these accidentals as if they required a slight inflection for the sake of good tuning.

The sixth-tone (one third of a semitone) alteration equals the difference between the seventh harmonic and the equal temperament minor seventh. In other words, the seventh harmonic is a sixth-tone flat of the equal temperament minor seventh. This difference may be demonstrated by sounding the seventh harmonic on the fourth string of the cello; the pitch of this harmonic will be a sixth-tone flat of an equal temperament B-flat.

The quarter-tone alteration should be precisely halfway between the equal tempered pitches. The quarter-tone alteration can be heard at the 11th partial of the harmonic series, which is exactly halfway between the perfect fourth and the tritone.

The most important thing to keep in mind is that the goal of these microtones is often to realize acoustically consonant harmonies; if the performer can recognize their role in the harmony, this will ensure optimal tuning of the microtones.

This excerpt from the score indicates for the horn player use the partials of an E. As shown in the excerpt below, these partials are written as a number above the notes. The seventh partial is a sixth-tone flat, the tenth a twelfth-tone flat and the eleventh a quarter-tone sharp.



notation

dotted line - Signifies a gradual change from the marking at the beginning of the dotted line to what is marked at the end. The dotted line is used both for tempo changes as well as playing techniques. For example, if you find in your part an “ord” marked with a dotted line leading to “alto sul tasto” then it should be executed as a gradual movement of the bow from the ordinary playing position to the alto sul tasto position for the duration between the beginning of the dotted line and the end.

Glissandi must be performed for the entire duration of the note.

ø - niente - (A dynamic approaching silence.)

⌀ - dampen symbol

fast as possible - (Play given notes as rapidly as possible.)

quasi gliss - (The passage marked doesn’t require rythmic accuracy, but should be more gestural.)

notation et instructions d'interprétation

intonation juste et les microtones

Bien qu'il y ait beaucoup de microtons dans cette œuvre, une grande partie de l'harmonie est tout à fait consonante. Les microtons sont employés pour appoximer les intervalles naturels. Pour cette raison, de petites modifications devraient être faites à l'oreille pour se rapprocher le plus possible des intervalles naturels. Je vous conseille d'écouter la fondamentale de l'accord (lorsque présente) et de comparer votre note afin de comprendre son rôle dans le cadre d'une harmonie naturelle.

Les symboles suivant sont untiliser pour approximer les hauteurs:

𝅘𝅥 - ♯ aux environs d'un 1/4 ton bas ou haut

↓ - ↑ aux environs d'un 1/6 ton bas ou haut

♭ - 𝄬 - ♮ - 𝄮 - ♯ - 𝄯 aux environs d'un 1/12 ton bas ou haut

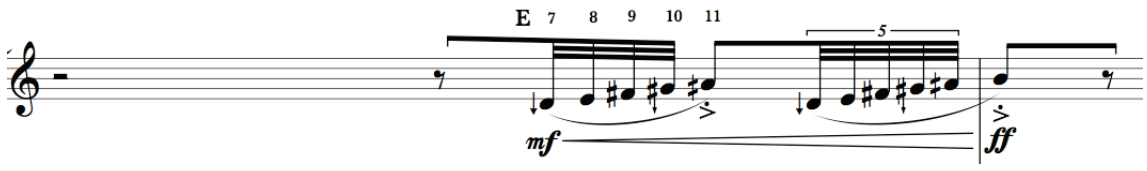
Les symboles qui signifient les modifications par un douzième de ton (un sixième d'un demi-ton) peuvent être traités comme une inflexion extrêmement miniscule. Cette alteration miniscule est égale à la différence entre la tièrce majeure juste et la tièrce majeure en tempérament égal. Les jouers des vents n'ont pas besoin d'utiliser une doigté inhabituel pour ces notes; ils peuvent infléchir les notes légèrement, comme on le fera naturellement en jouant la tièrce d'un accord dans la musique tonale. Autrement dit, il est préférable de traiter les notes avec ces signes accidentels comme si elles étaient des notes «réguliers» qui n'exigeaient qu'une petite infléxion pour être bien accordées.

L'alteration d'un sixième de ton égale la différence entre le septième partiel et le septième mineur en tempérament égal. Autrements dit, le septième partiel est un sixième de ton plus bas que la septième mineur en tempérament égal. La différence peut être démontrer en jouant le septième partiel sur la quatrième corde du violoncelle; l'hauteur qui en résulte est un sixième de ton plus bas que le Si bémol sur un instrument tempéré.

L'alteration d'un quart de ton doit être exactement mi-chemin entre les demi-tons de tempérament égal. Le quart de ton peut-être entendu à la onzième partial, qui est exactement mi-chemin entre le quatrième et le triton.

C'est important de savoir que la fonction des mictrotons est souvent de réaliser des accords consonant, donc si le joueur peux identifier leur rôle dans l'accord, l'accordage plus ou moins exact en résultera.

Cet extrait de la partition indique que le joueur du cor dois utiliser les partiels d'un Mi, démontrés par les chiffres au dessus des notes. Le septième partiel est un sixième de ton plus bas que le Ré tempéré, le dixième partiel un douxième de ton plus bas que le Sol dièse tempéré, et l'onzième partiel un quart de ton plus haut que le La bécarre.



notation

pointillé - Le pointillé indique une modification progressive entre l'indication initiate et l'indication ciblée. Le pointillé est utilisé pour les changement de tempo ainsi que pour les techniques d'exécutions. Par exemple, si vous trouvez dans votre partition l'indication "ord" avec un pointillé à l'indication "alto sul tasto", vous devez graduellement déplacer l'archet de la position "ord" à la position "alto sul tasto" pendant la durée entière du pointillé.

Les glissandi doivent être exécutés pour la durée entière de la note.

ø - niente - (Une nuance qui s'approche du silence.)

⌀ - étouffer

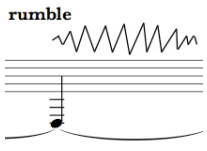
fast as possible - (Notes joués le plus vite possible.)

quasi gliss - (Le passage indiqué n'exige pas l'exactitude rhythmique, mais devrait être plus gestuel.)

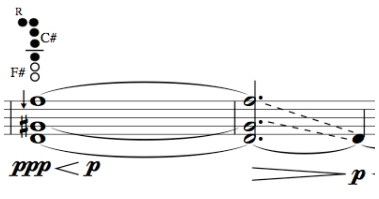
B♭ clarinet soloist

Λ - tounge accent

≻- breath accent

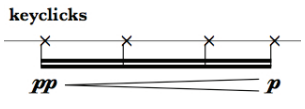


rumble - (create an intense tremolo-type sound by either oscillating the back of the tounge rapidly or shaking the clarinet)

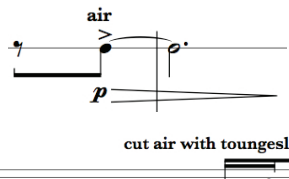


gradually remove upper partials - (this is written above some multiphonics, indicating that the multiphonic should gradually shift into the fundamental as a regular note)

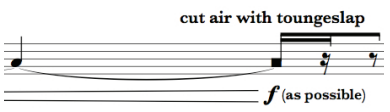
winds



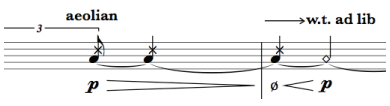
keyclick - (press keys down forcfully without blowing through the instrument to make a percussion noise.)



air - (Blow through the instrument to make an air noise.)



cut air with toungeslap - square notehead - (suddenly stop the flow of air into the instrument with the tounge in a forcefull manner, not only suddenly stoping the note, but also making a percussive noise with the tounge.)

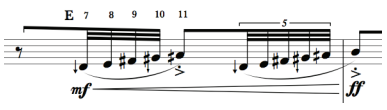


aeolian - aeolian tone - (pitched air, for the flute only.)
w.t ad lib. - whistle tones ad lib - (produce any whistle tones over the given fundamental, written as a diamond notehead. For the flute only.)

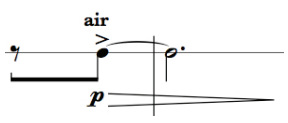
Λ - tounge accent

≻- breath accent

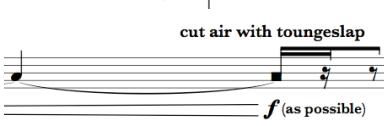
brass



The horn is asked to play certain partials in their uncorrected tuning, this is notated by the fundemental note name and partial number written above the notated pitch.



air - (Blow through the instrument to make an air noise.)



cut air with toungeslap - square notehead - (suddenly stop the flow of air into the instrument with the tounge in a forcefull manner. This technique will not only stop the note, but also produces a percussive noise.)

hand bend - (Horn only - Bend the pitch by gradually inserting or removing your fist from the bell of the horn.)

Λ - tounge accent

≻- breath accent

strings

Natural harmonics are notated as a small circle above the sounding pitch. Harmonics written on pizzicato notes should be played more forcefully than normal pizzicatto notes in order to bring out the bell-like timbre.

ord. - ordinario

s.t. - sul tasto - (Bow over the end of the fingerboard.)

a.s.t. - alto sul tasto - (Bow 5-7 centimetres up the fingerboard.)

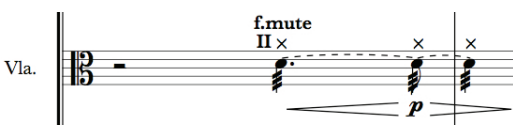
s.p. - sul ponticello - (Bow close to the bridge.)

a.s.p. - alto sul ponticello - (Bow so that part of the hair is on the bridge and part is on the string, thereby producing a quiet but harsh sound. This technique will often silence the fundamental pitch of the string.)

c.v. - con vibrato

s.v. - senza vibrato

full bows throughout - (play using the entirety of the bow, resulting on variable bow speed dependant on the bow markings.)



f.mute - fingered mute - (Mute the open string(s) with your left hand while bowing normally so that only pitchless noise is produced.An “X” is written above each notehead to signify this technique.)

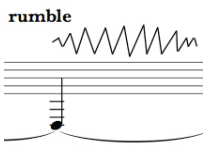
percussion

Never dampen any of the instruments unless the dampen symbol is notated.

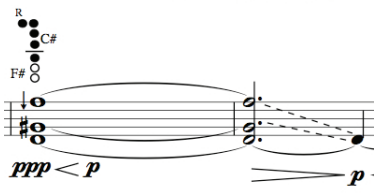
soliste B♭ clarinette

Λ - accent de la langue

≻- accent du souffle

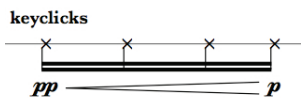


rumble - (produisez un type de son tremolo intense par un movement vite avec l'arrière de la langue ou par secouant la clarinette.)

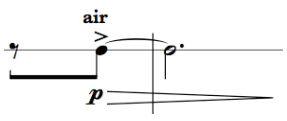


gradually remove upper partials - (cette phrase, qui apparait au dessus de quelque multiphoniques, indique que le multiphonique doit se transformé (ou se «résoudre») peu à peu à la hauteur fondementale.)

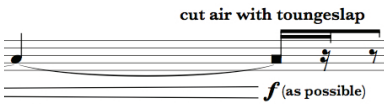
vents



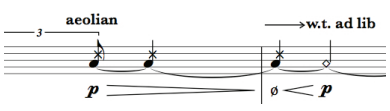
keyclick - (Appuyez les Clés avec puissance sans soufle pour produire un bruit percussif.)



air - (Soufflez dans l'instrument pour produire un bruit de souffle uniquement.)



cut air with toungeslap - note carrée - (interrompre le passage du souffle dans l'instrument d'un coup sec en utilisant la langue avec puissance. Cette téchnique ne fait qu'arrêter le son, mais produit aussi un bruit percussif.)

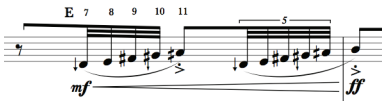


aeolian - aeolian tone - (souffle avec ton, pour la flôte seulement)
w.t ad lib. - whistle tones ad lib - (produisez les "whistle tones" avec le fondementale donné, ecrit comme une note en losange. Pour le flôte seulement)

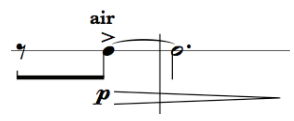
Λ - accent de la langue

≻- accent du souffle

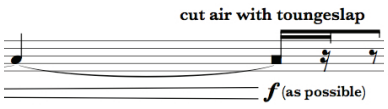
cuivres



Le cor doit jouer certains partiels naturellement faux, indiqué par la fondamentale avec le nombre du partiel desiré au-dessus la note.



air - (Soufflez dans l'instrument pour produire un bruit de souffle.)



cut air with toungeslap - note carrée - (interrompre le passage du souffle dans l'instrument d'un coup sec en utilisant la langue avec puissance. Cette téchnique ne fait qu'arrêter le son, mais produit aussi un bruit percussif.)

hand bend - (Cor seulement - modifier la justesse en insérant ou en retirant votre main de la cloche du cor.)

Λ - accent de la langue

≻- accent du souffle

cordes

Les harmoniques naturelles sont notées avec un petit cercle au-dessus de la note. Les harmoniques pour pizzicato devraient être jouées avec plus de force que des notes normales de pizzicatto afin de reproduire un timbre de cloche.

ord. - ordinario

s.t. - sul tasto - (Jouer sur la touche.)

a.s.t. - alto sul tasto - (Jouer le plus haut possible sur la touche, très près des doigts de la main gauche.)

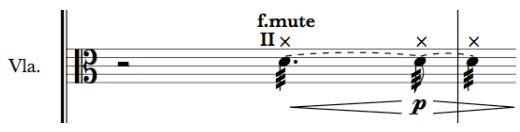
s.p. - sul ponticello - (Jouer près du chevalet.)

a.s.p. - alto sul ponticello - (Jouer preque sur le chevalet. Souvent, cette technique oblitérera la fondamentale de la corde.)

c.v. - con vibrato

s.v. - senza vibrato

full bows throughout - (Jouez avec l'arc entier, et qu'il fasse rapidité de l'arc variable qui dépend sur les indications de l'arc.)

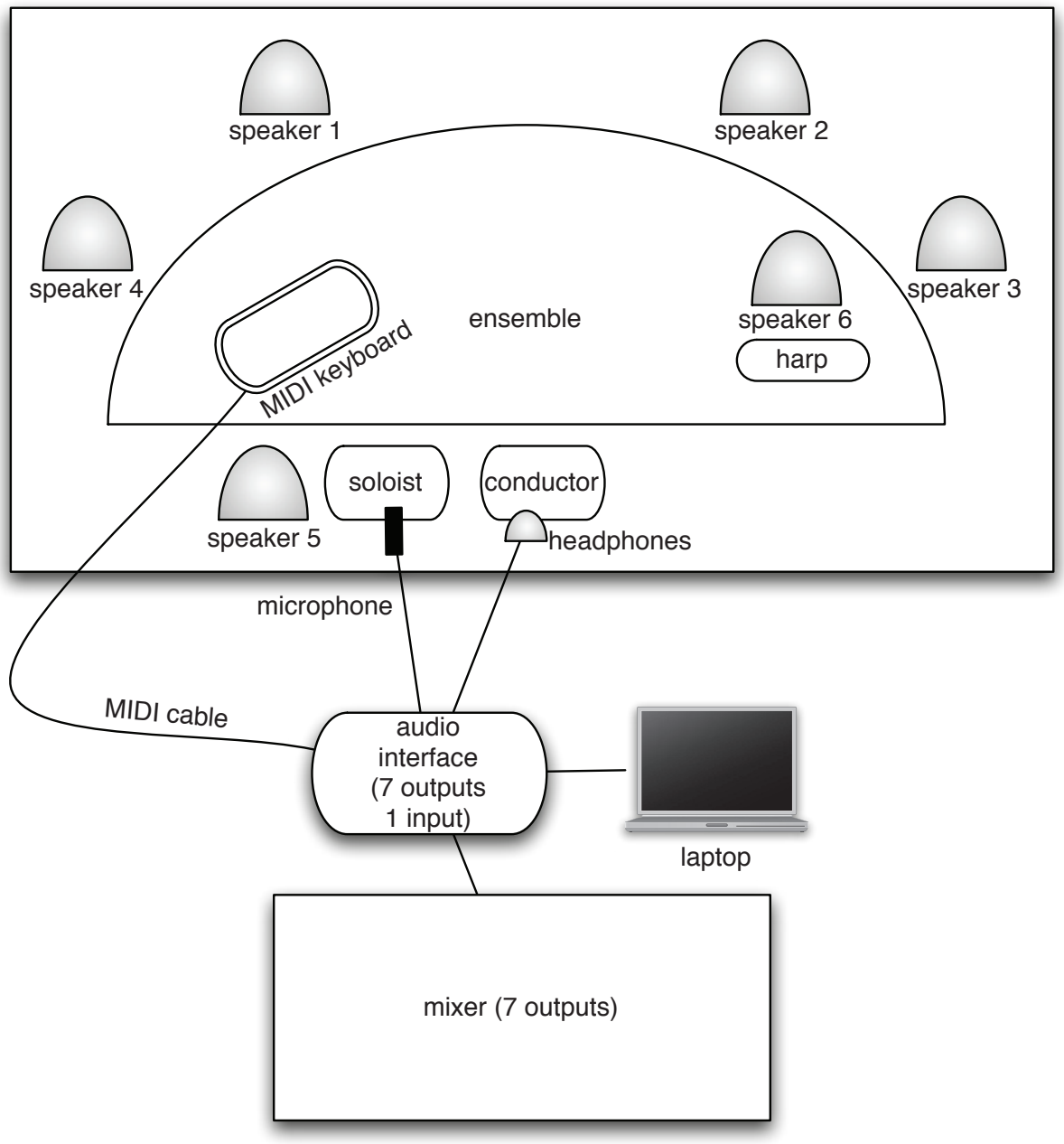


f.mute - fingered mute - (Etouffer les cordes ouvertes avec la main gauche tout en jouant normalement de façon à ce que seulement le bruit soit produit. Il y a une "x" au-dessus de chaque note pour signifiér cette technique.)

percussion

Ne jamais étouffer les instruments à moins que le symbole d'étouffement soit écrit.

staging and electronics



electronics

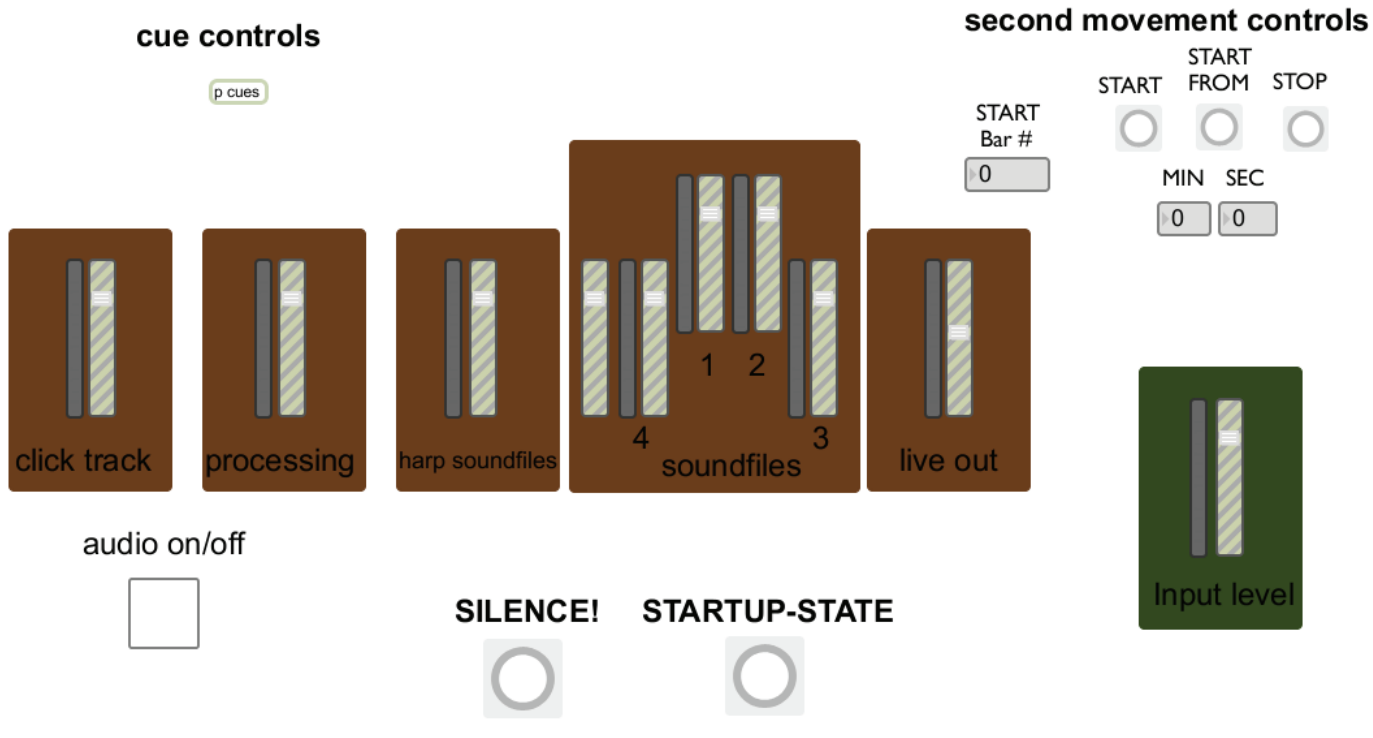
For realizing the electronic component of this piece, the exact technical details, a Max/MSP patch as well as all necessary soundfiles are contained on an accompanying DVD.

This composition requires the following equipment:

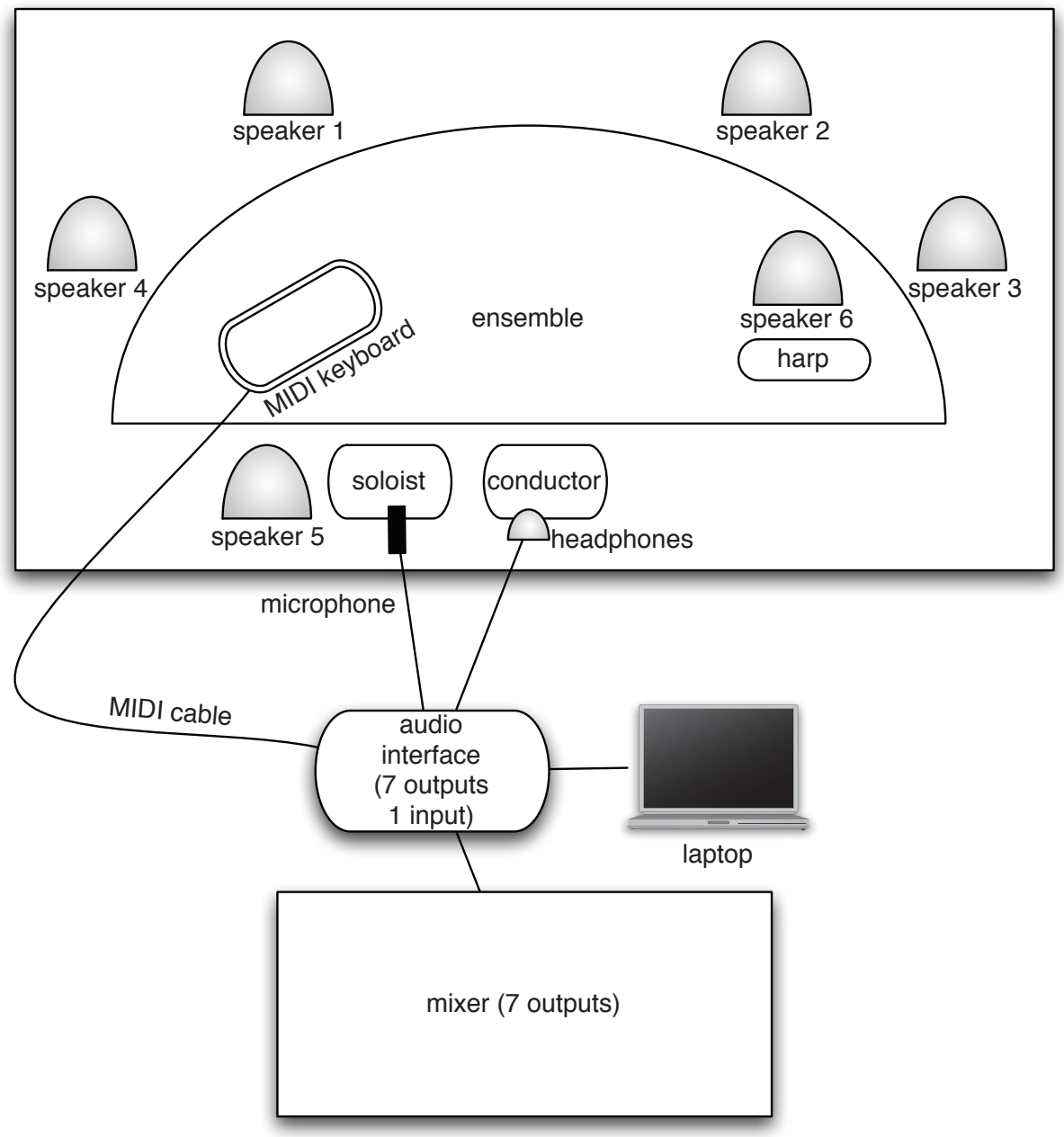
- 1 speaker placed in close proximity to the clarinet soloist
- 1 speaker placed just behind the harp, ideally played into the soundboard of the harp
- 4 speakers behind the ensemble, raised at least five feet high so that they may project sound over the musicians into the hall
- 1 clarinet microphone (preferably a condensor clip-on mic)
- 1 MIDI drumpad for the second percussionist
- computer running max/MSP 5.0 or higher
- an audio interface with a minimum of 1 input and 7 outputs
- 1 set of headphones to be used by the conductor for the clicktrack in the second movement

note: Only the clarinet soloist needs to have a microphone; the output of the clarinet microphone is sometimes processed live by the max/MSP patch. Otherwise, the electronic component is entirely soundfile diffusion.

MAX/MSP patch



mise en scène et électroniques



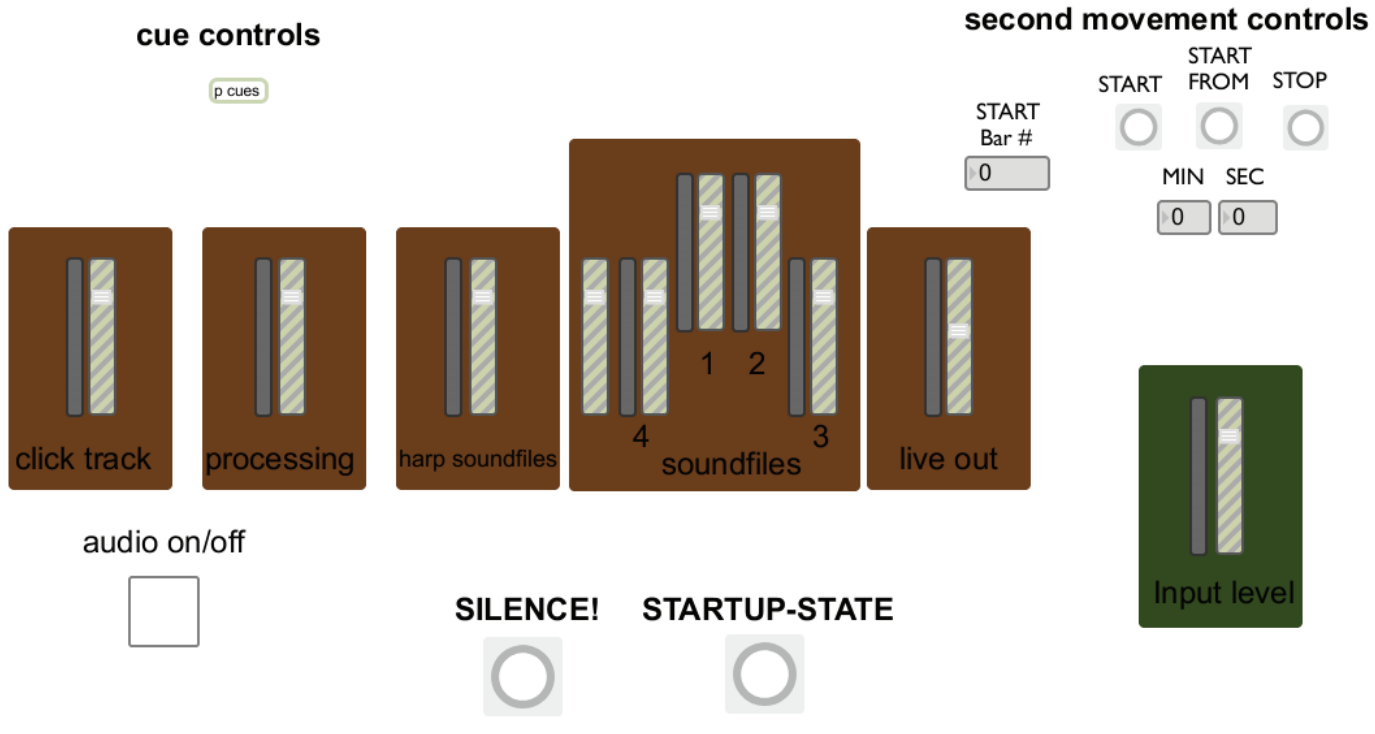
electroniques

Quand à la realisation de la partie éléctronique, des instructions détaillés, un programme Max/MSP et tout les échantillions nécessaire sont incluts sur le DVD qui accompagne la partition.

Cette pièce exige l'équipment suivant:
- 1 haut-parleur placé proche du concertiste
- 1 haut-parleur placé un peu en arrière de la harpe, idéalement orienté pour qu'il joue dans corp de la harpe
- 4 haut-parleur en arrière de l'ensemble, surélevé d'au moins 1.5 metres pour que le son de se propage dans la salle, au dessus des musiciens.
- 1 microphone pour la clarinette (idéalement du type «condensor clip-on»)
- 1 clavier MIDI à 77 clés
- un ordinateur avec max/MSP 5.0 ou après
- une interface audio avec un minimum de une entrée et sept sorties
- écouteurs pour le chef d'orchestre pour le «clicktrack» dans la deuxième partie.

Seulment la clarinette solo a besoin d'un micro; les autres instruments n'ont pas besoin d'amplification. Le son de la clarinette est parfois transformé par max/MSP; plus souvent, les électroniques servent à déclencher des échantillons.

MAX/MSP patch



Mitya

Concerto for Clarinet

Taylor Brook

♩ = 42

Flute
Oboe
Clarinet in B♭
Tenor Sax.
Baritone Sax.
Bassoon

keyclicks

aeolian

Horn in F
Trumpet in C
Trombone
Tuba

♩ = 42

Solo Clarinet in B♭

rumble

Percussion 1

ALMGLOCKEN two-tone marimba mallets

Percussion 2

PITCHED GONGS

Harp

D C B / E F♭ G A

♩ = 42

Violin 1
Violin 2
Viola
Cello
Bass

f.mute

pizz.

MIDI keyboard

cue 1

[ambient, with noise elements]

Electonics

3

Fl.
keyclicks
aeolian
w.t. ad lib
aeolian
w.t. ad lib
aeolian
norm.

Ob.
(continuous key noise)

B♭ Cl.
(continuous key noise)

T. Sx.
(continuous key noise)

B. Sx.
(continuous key noise)

Bsn.
(continuous key noise)

Hn.
air (finger "la")

C Tpt.
air (finger "la")

Tbn.
air (finger "la")

Tuba
air (finger "la")

B♭ Cl. solo
[RINGMOD]

Perc. 1
ALMGLOCKEN
top — bottom — top
take 3 SIZZLE CYMBALS
wooden drumsticks

Perc. 2
(gongs)

Hp.

Vln. 1
norm.
pizz.
gliss harmonics (pitches approximate, rhythm exact)

Vln. 2

Vla.
norm.
pizz.

Vlc.
norm.

Cb.
arco

MIDI keys

El.

6

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

cut air with tongueslap
air (finger "re")
air (finger "la")
flz.
norm.
(as possible)
(sizzle cymbals)
(gongs)
take VIBRAPHONE (with bow)
f.mute
arco
pizz.
gliss harmonics
a.s.p.
ord.
cue 2

8

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

VIBRAPHONE
arco

Perc. 1

(gongs)

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

cue 3

cue 4

cue 5

cue 6

El.

11

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(vibraphone)
Perc. 1
(gongs)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

MUTE
HARMON MUTE (stem in)
(*close pad with 2)
cue 7
cue 8
cue 9
cue 10

15

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
HARMON MUTE (stem in)
Tbn.
MUTE
Tuba
B♭ Cl. solo
(vibraphone)
Perc. 1
(gongs)
Perc. 2
Hp.
MUTE (leather)
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
cue 11
cue 12
cue 13
cue 14
El.

19

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

w.t. ad lib
[RING MOD]
(vibraphone)
take 4 CYMBALS
(gongs)
fast as possible
A - A♭
I
II
MUTE (leather)
a.s.t.
cue 15
cue 16
cue 17

23

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

Perc. 1

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

UNMUTE

G

[END RING MOD]

[SOFT DELAY]

(gongs)

take 3 SIZZLE CYMBALS
and TUBULAR BELLS

a.s.t.

ord.
pizz.

arco

cue 18

click track begins (conductor only)

28 II ♩ = 60

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba

B♭ Cl. solo

II ♩ = 60

(gradually remove upper pitches)

(*close pad with 2)

Perc. 1
Perc. 2

4 CYMBALS

BELLS + 3 SIZZLES

Hp.

II ♩ = 60

Vln. 1
Vln. 2
Vla.
Vlc.
Cb.

f.mute

MIDI keys

cue 19

click track (conductor only)

etc. . .

[CLARINET MULTIPHONIC]

El.

(CLARINET-LIKE TIMBRE)

36

half aeolian

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

A♭ (G)

(partial hand bend)

(cymbals)

(sizzles + bells)

42

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

(cymbals)

Perc. 1

(sizzles + bells)

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

48

Fl.

Ob.

B♭ Cl.

pppp

pppp pp

T. Sx.

B. Sx.

Bsn.

Hn.

p

C Tpt.

p

Tbn.

air

p

Tuba

air

p

B♭ Cl. solo

ø

mf pp mf pp mf ppp

ppp

(cymbals)

Perc. 1

ppp p

ppp p

(sizzles + bells)

Perc. 2

ppp p

pp p

ppp pp p

Hp.

ppp p

F♭ - F♯

Vln. 1

norm. II

pppp p

f.mute II

p

Vln. 2

p p

f.mute II

p

Vla.

norm. II

pppp p p

f.mute II

p

Vlc.

II

p p

f.mute II

p

Cb.

p

pppp mp

MIDI keys

El.

55

Fl.

Ob.

B♭ Cl.

pppp

pppp mf pppp mp

T. Sx.

pppp mp pppp

B. Sx.

Bsn.

A♭(G) norm.

7 8 9 10 11 (partial hand bend)

Hn.

pp p pppp

air

p

C Tpt.

p

Tbn.

p

Tuba

p

B♭ Cl. solo

p ppp mp pp mf pppp ppp p ppp pppp f pp

(cymbals)

Perc. 1

ppp p ppp p

(sizzles + bells)

Perc. 2

ppp p ppp p

Hp.

Vln. 1

I II

p

Vln. 2

II

p

norm. II

pppp p

Vla.

norm. III

pppp p

f.mute II

p

norm. II

p

Vlc.

p

norm. I

pppp p

Cb.

II

pppp p

MIDI keys

El.

63

Fl.

Ob.

B♭ Cl.

pppp mp

T. Sx.

B. Sx.

Bsn.

Hn.

A
norm.
7 8 9 10 11
ppp p

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

R F
mf ppp ppp p
mf pppp
pppp mf p mp pp mf
R
slide r.h. first finger
R R
pppp pppp

(cymbals)

Perc. 1

ppp p
ppp p
ppp p
ppp

(sizzles + bells)

Perc. 2

ppp p
ppp p
ppp pp p
pp

Hp.

Vln. 1

p
f.mute
I II
p
II III
p
p
II III
p

Vln. 2

f.mute
II
p
II III
p
p

Vla.

f.mute
II
p
p

Vlc.

f.mute
II
p
p
I II
p

Cb.

III V
ppp
p
ppp

MIDI keys

El.

70

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

air

(cymbals)

(sizzles + bells)

norm.

II III IV

77

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(cymbals)
Perc. 1
(sizzles + bells)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

air
norm.
f.mute

83

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

norm.
air
F#
(cymbals)
(sizzles + bells)

87

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

(partial hand bend)
(cymbals)
(sizzles + bells)
norm.
s.t.
s.p.
F♯ - F♮
E♮ - E♯

92

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(cymbals)
Perc. 1
(sizzles + bells)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

96

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(cymbals)
Perc. 1
(sizzles + bells)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

102

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(cymbals)
Perc. 1
(sizzles + bells)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

air
norm.
s.t.
s.p.

107

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(cymbals)
Perc. 1
(sizzles + bells)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

112

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(cymbals)
Perc. 1
(sizzles + bells)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

116

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
(partial hand bend)
C Tpt.
Tbn.
remove MUTE
Tuba
remove MUTE
B♭ Cl. solo
take LION'S ROAR
Perc. 1
take TIMPANI
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
norm.
MIDI keys
El.

120

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

REMOVE MUTE

125

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

p pppp
p pppp
p ppp
p ppp
remove MUTE
[DELAY]
f p f mf fp mf p mf p f
ord. s.p. (s.p.) ord. REMOVE MUTE
arco

129

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

Perc. 1

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

senza vib. molto vib. senza vib.
(ord.) s.p. ord.

Cb.

MIDI keys

El.

133

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

LION'S ROAR

TIMPANI

138

take PICCOLO

click track ends

Fl.

Ob.

B♭ Cl.

vib.

T. Sx.

B. Sx.

Bsn.

Hn.

(finger trill)

C Tpt.

Tbn.

Tuba

rip down through partials

B♭ Cl. solo

[END DELAY]

(lion's roar)

take BASS DRUM and GONGS

Perc. 1

(timpani)

Perc. 2

Hp.

D C B♭ / E♭ F♭ G A

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

[HARP]

30

141

III ♩ = 102

PICCOLO

Picc.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

D 4

III ♩ = 102

[RINGMOD]
[SLIGHT PITCH SHIFTING]

B♭ Cl. solo

BASS DRUM and GONGS

Perc. 1

(timpani)

Perc. 2

Hp.

A - A♭

III ♩ = 102

III

Vln. 1

I
II

Vln. 2

II
III

Vla.

I
II

Vlc.

II
III

Cb.

MIDI keys

cue 20

El.

144

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

pppp
fff
p
ff
finger trill
MUTE
ppp
(gongs and bass drum)
mf
mp
(timpani)
f
fp
A♭ - A♮
scratch
fff

146

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

p fp mf mp

[end RING MOD and PITCH SHIFT]

(gongs and bass drum)

(timpani)

B♭ - B♮
E♭ - E♮

ppp

s.p. (s.p.) ord. (ord.)

I III

fff

149

ACCEL(POCO A POCO)

Picc.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

ACCEL(POCO A POCO)

B♭ Cl. solo

(gongs and bass drum)

Perc. 1

(timpani)

Perc. 2

Hp.

ACCEL(POCO A POCO)

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

152

♩ = 116

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba

STRAIGHT MUTE
STRAIGHT MUTE
2nd position (A fundamental)

♩ = 116

B♭ Cl. solo

[QUIET DELAY]

(gongs and bass drum)

Perc. 1
Perc. 2

(timpani)

Hp.

♩ = 116

Vln. 1
Vln. 2
Vla.
Vlc.
Cb.

ord.

bow as necessary

MIDI keys

cue 21

[sound mass with rapid movement]

El.

154

Picc.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

(gongs and bass drum)

Perc. 1

(timpani)

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

158

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

pppp mp pppp
ppp mf ppp
p
mf f
fast as possible
fp
(gongs and bass drum)
(timpani)
[END QUIET DELAY]
cue 22

162

ACCEL(POCO A POCO)

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba

ACCEL(POCO A POCO)

B♭ Cl. solo

(gongs and bass drum)

Perc. 1

(timpani)

Perc. 2

Hp.

ACCEL(POCO A POCO)

pizz.

Vln. 1
Vln. 2
Vla.
Vlc.
Cb.

MIDI keys

El.

166

♩ = 132

Picc.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

remove MUTE

remove MUTE

remove MUTE

♩ = 132

B♭ Cl. solo

(gongs and bass drum)

Perc. 1

(timpani)

Perc. 2

Hp.

D C♯ B / E F♯ G A

♩ = 132

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

arco

MIDI keys

El.

171

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(gongs and bass drum)
Perc. 1
(timpani)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

176

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
[RING MOD]
(gongs and bass drum)
Perc. 1
(timpani)
Perc. 2
Hp.
C♯ - C♮
poco s.p.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
cue 23
El.

181

Picc.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
[END RING MOD]
(gongs and bass drum)
Perc. 1
(timpani)
Perc. 2
Hp.
Vln. 1
poco s.p.
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

184

take FLUTE

Picc.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

lip down

B♭ Cl. solo

(gongs and bass drum)

Perc. 1

(timpani)

Perc. 2

Hp.

F♯ - F♮

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

pizz.

MIDI keys

cue 24

cue 25.1

cue 25.2

cue 25.3

cue 25.4

cue 25.5

cue 25.6

cue 25.7

El.

[HARP]

[sound mass with rapid movement]

187

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

(gongs and bass drum)

Perc. 1

(timpani)

Perc. 2

Hp.

pedal slide

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

harmonic gliss (rhythm approx.)

MIDI keys

cue 25.8

cue 25.9

cue 25.10

cue 25.11

El.

191

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

FLUTE

(repeat as fast as possible until measure 193 downbeat)

D

(gongs and bass drum)

(timpani)

C♯ - C♮
E♭ - E♮

(s.p.) ord.

ord.

ord.

s.p.

s.p.

s.p.

195

RIT

Fl. Ob. B♭ Cl. T. Sx. B. Sx. Bsn. Hn. C Tpt. Tbn. Tuba

B♭ Cl. solo

RIT

(gongs and bass drum)

Perc. 1

(timpani)

Perc. 2

Hp.

RIT

Vln. 1 Vln. 2 Vla. Vlc. Cb.

MIDI keys

cue 26 cue 27.1 cue 27.2 cue 27.3 cue 27.4 cue 27.5

[CLARINET-LIKE TIMBRE]

El.

[SQUARE-WAVE SYNTH TIMBRE]

200 ♩ = 66 RIT ♩ = 44

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba

B♭ Cl. solo

(gongs and bass drum)
take VIBRAPHONE (with bow)
Perc. 1
(timpani)
take WINE GLASS
Perc. 2

Hp.

MUTE (leather)
Vln. 1
Vln. 2
Vla.
Vlc.

bow as neccessary
II
Cb.

MIDI keys
cue 27.6

[CLARINET-LIKE TIMBRE]
fade out from highest to lowest note
[CLARINET MULTIPHONIC]
[sound mass with rapid movement]
El.

206

Fl.

Ob.

B♭ Cl.

ppp p p p 3 p p 3 p p pppp

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

ppp p p p 3 p p pppp

VIBRAPHONE
arco

Perc. 1

pp mp pp mp

WINE GLASS
with two-tone yarn marimba mallets

Perc. 2

pppp p pppp

Hp.

p 3 3 pp

MUTE
full bows throughout
s.t.

Vln. 1

3 pppp

MUTE
full bows throughout
s.t.

Vln. 2

6 3 pppp pp p

MUTE
full bows throughout
s.t.

Vla.

5 3 pppp mp

MUTE
full bows throughout
s.t.

Vlc.

3 3 pppp mp pp p pp

Cb.

pp

MIDI keys

3 cue 28

[HARP]

3 p

El.

209

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

(vibraphone)

Perc. 1

(wine glass)

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

212

Fl.

Ob.

B♭ Cl.

pppp

T. Sx.

p *pppp*

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

p *pp* *p* *ppp* *pppp* *mp* *ppp* *mp* *pppp*

(**vibraphone**)

Perc. 1

ppp *p* *ppp* *p*

(**wine glass**)

Perc. 2

Hp.

Vln. 1

(**s.t.**) ord. IV s.t.

p *ppp* *ppp* *p* *ppp* *pppp* *pp*

s.p. s.t.

Vln. 2

p *pp* *p* *pppp* *pp* (**s.t.**) s.p. s.t. *p* *pp*

Vla.

(**s.t.**) ord. (**ord.**) poco s.p. s.t.

p *pp* *mp* *pppp* *p* *pp* *p* *pp* *p*

Vlc.

pp

Cb.

p *pp*

MIDI keys

cue 29

El.

[CLARINET]

p *p* *p*

215

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

pppp mf ppp

(vibraphone)

Perc. 1

ppp p ppp

(wine glass)

Perc. 2

Hp.

mp

Vln. 1

p pp p pp p ppp pp

ord. III

Vln. 2

p ppp p ppp p ppp s.t. pp

Vla.

ppp p ppp p ppp

ord. III

Vlc.

ppp ppp p ppp

ord. I

Cb.

MIDI keys

cue 30

[HARP]

mp

El.

217

Fl.

Ob.

B♭ Cl.

pppp *pp* *pppp*

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

mp *ppp* *pppp*

(vibraphone)

Perc. 1

p *ppp* *p*

(wine glass)

Perc. 2

pppp *p* *pppp*

Hp.

mp

Vln. 1

(s.t.) s.p. s.t.

p *pp*

Vln. 2

(s.t.) s.p. s.t.

p *pp*

Vla.

s.t.

pp

(s.t.) s.p. s.t.

p *pp*

Vlc.

s.t.

pp *p* *pp*

p

Cb.

p *pp*

MIDI keys

cue 31

El.

219

Fl.

Ob.

B♭ Cl.

p *pppp*

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

mfp *mf* *ppp* *mf* *ppp*

(vibraphone)

Perc. 1

ppp *p* *ppp* *p* *ppp*

(wine glass)

Perc. 2

p *pppp* *p* *pppp*

Hp.

mp *mp* *p*

Vln. 1

III ord. s.p. ord. III s.t.

p *pp* *p* *pp* *mp* *mp* *ppp* *mp* *pp*

Vln. 2

s.p. s.t.

p *ppp* *mp* *mp* *ppp* *mp* *ppp* *pp*

Vla.

(s.t.) s.p. (s.p.) s.t.

mp *pp* *p* *pp*

Vlc.

ord. I II s.t.

pp *mp* *mp* *ppp* *pp* *p* *pp*

Cb.

MIDI keys

cue 32 cue 33 cue 34

[HARP]

El.

mp *mp* *p*

222

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

(vibraphone)

Perc. 1

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

224

Fl.

Ob.

B♭ Cl.

ppp

T. Sx.

ppp

B. Sx.

ppp

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

6

mp pp mf

(vibraphone)

Perc. 1

p

ppp

(wine glass)

Perc. 2

p

Hp.

Vln. 1

3

mp pp mp

(s.t.) s.p. s.t.

Vln. 2

p pp mf

pp

Vla.

3

mp pp

mp pp

Vlc.

3

(s.t.) s.p. s.t.

p pp mf

pp

Cb.

MIDI keys

cue 35

cue 36

[BOWED VIBRAPHONE]

El.

p

ppp

227

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

(vibraphone)

Perc. 1

(wine glass)

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

cue 37

cue 38

[HARP]

[CLARINET]

El.

230 **ACCEL**

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

ACCEL

B♭ Cl. solo

mf *ppp*

mf ppp

(**vibraphone**)

Perc. 1

ppp *p*

(**wine glass**)

Perc. 2

Hp.

ACCEL

Vln. 1

pp *mp* *pp*

Vln. 2

mp *pp*

Vla.

Vlc.

p *pp* *p* *pp* *p* *pp*

Cb.

p *pp*

MIDI keys

cue 39 **cue 40** **cue 41**

mp

El.

232 ♩ = 56

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

mp
pppp
quasi gliss (rhythm approx.)
D
p
trigger down, lower 4th position (D fundamental)
lip down
f
mp
f
ff
(vibraphone)
ppp
mp
ppp
f
(wine glass)
mp
pppp
mf
pppp
mp
mf
ord. III
ord. I
pp
mf
f
ppp
gliss harmonics
cue 42
cue 43

235

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

cantabile

(wine glass)

gliss harmonics

(high as possible)

s.t.

238

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(vibraphone)
Perc. 1
(wine glass)
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

harmonic gliss.
flz.
REMOVE MUTE

241

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

13

Hn. *ff*

C Tpt. *ff*

Tbn. *ff*

Tuba *ff*

B♭ Cl. solo *fp* *mf* *p* *mf* *p* *mfp* *f* *mf* *pp* *mf* *p*

(vibraphone)

take VIBRAPHONE and CROTALES

Perc. 1 *f*

(wine glass)

Perc. 2 *mp* *pp*

Hp. *ff*

III IV c.v. ord. *fff* *p* s.v. *mf* c.v. *p* s.v. c.v. *f* *mf* s.v. *p* c.v. *mf* s.v. *p*

Vln. 1

ord. pizz. *ff*

arco gliss harmonics III *mp*

Vln. 2

ord. pizz. *ff*

arco gliss harmonics II *mp*

Vla.

ord. pizz. *ff*

arco gliss harmonics I *mp*

Vlc.

(8va) *ff*

arco gliss harmonics I *mp*

Cb.

8va

cue 44

MIDI keys

[BASSOON-LIKE TIMBRE] *p*

El.

245

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

Perc. 1

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

(partial hand bend)

STRAIGHT MUTE

(wine glass)

c.v. s.v. c.v. s.v.

(ord.) s.p. s.p. ord.

pizz.

pizz.

250

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
VIBRAPHONE and CROTALES
norm. (non-arco)
Perc. 1
Perc. 2
Hp.
(ord.)- - s.p. - - ord.
(ord.)- - s.p. - - - - - ord.
s.p. - - - - ord.
8va
Vln. 1
II ⟶
arco
Vln. 2
Vla.
pizz.
Vlc.
Cb.
MIDI keys
El.

255

POCO ACCEL

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba

POCO ACCEL

B♭ Cl. solo

(vibes + crotales)

Perc. 1
Perc. 2
Hp.

POCO ACCEL

(8va)

Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

64

259

♩ = 66

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

♩ = 66

B♭ Cl. solo

(vibes + crotales)

Perc. 1

Perc. 2

Hp.

♩ = 66

(8va)

Vln. 1

(ord.)

s.p.

ord.

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

262

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

remove MUTE

lip down

[GROWING DELAY]

(vibes + crotales)

take ALMGLOCKEN
4 two-tone marimba mallets

ALMGLOCKEN

(wine glass)

let strings rattle (thunderstrike)

D C B♯ / E F♭ G A

(ord.) s.p.

s.p. ord. s.p. ord.

I II ord.

II III ord.

arco II III

I II I II etc.

II III II III etc.

(gliss on III)

cue 45

266

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

ff

mp

tr

(**almglocken**)

Perc. 1

(**wine glass**)

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

ppp

Vlc.

ppp

Cb.

ppp

MIDI keys

El.

271

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

lip down

tr

ff

p

f

(**almglocken**)

Perc. 1

(**wine glass**)

Perc. 2

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

276

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

[END DELAY]

B♭ Cl. solo

ffff

pp

(almglocken)

Perc. 1

(wine glass)

Perc. 2

mp

Hp.

f

f

pizz.
III

Vln. 1

arco

I II I II etc.

p *ff*

(gliss on II)

f

pizz.
III

Vln. 2

II III II III etc.

(gliss on III)

arco

p *ff*

mf

pizz.
II

Vla.

II III II III etc.

(gliss on III)

arco

p *ff*

II I II III II I II III

mf

Vlc.

II III II III etc.

(gliss on III)

p *ff*

III II I II III II I II etc.

mf

Cb.

II III II III etc.

(gliss on III)

p *ff*

mf

MIDI keys

El.

278

Fl.

Ob.

B♭ Cl.

T. Sx.

B. Sx.

Bsn.

Hn.

C Tpt.

Tbn.

Tuba

B♭ Cl. solo

(almglocken)

Perc. 1

(wine glass)

Perc. 2

take ALMGLOCKEN
4 two-tone marimba mallets

Hp.

Vln. 1

Vln. 2

Vla.

Vlc.

Cb.

MIDI keys

El.

D

mf

mp

f

p

ff

I II etc.

III II etc.

III II I II etc.

II III

II I etc.

etc.

280

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
Perc. 1
Perc. 2
Hp.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
El.

mf
fff
p
ffp
ff
(**almglocken**)
cresc.
ALMGLOCKEN
ppp **cresc.**

282

Fl.
Ob.
B♭ Cl.
T. Sx.
B. Sx.
Bsn.
Hn.
C Tpt.
Tbn.
Tuba
B♭ Cl. solo
(almglocken)
Perc. 1
(almglocken)
Perc. 2
Hp.
L.V.
Vln. 1
Vln. 2
Vla.
Vlc.
Cb.
MIDI keys
cue 46
El.