Altered Audiation : Perspectives in Sound and Notation

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Music

in

Composition

Department of Music

University of Alberta

Abstract

The Western classical system of musical notation is a powerful and flexible tool, one of proud heritage and expressive complexity.

My interest has been to expand and reconfigure this tool to express and benefit my personal compositional interests. I aim to retain enough familiarity wherein performers are able understand and interpret my music accurately and expressively. Through personal experiments and analysis of other composer's scores, I can make intuitive decisions for how and why I alter, expand, and eliminate notational conventions within my own musical works.

I have experimented with additions and reductions to the number staff lines and staves, eliminated certain key elements such as meter and precise pitch by replacing them with my own inventions, composed works with both graphic and text based elements, and at times broken all the rules of musical notation by removing the very necessity of musical interpretation from the score.

Acknowledgements

I thank my family for supporting me during my studies and travels, and believing in me throughout this adventure. A special thanks to my Mother and Father, who have always been there for me through thick and thin. Their constant support has enabled me to become the musician I dreamed of being so long ago.

I would also like to recognize the many artists and friends I have worked with in Edmonton and elsewhere during my graduate studies. Our conversations and collaborations have changed my oeuvre in ways I never expected. I cherish our work, especially that which I experienced at Art Farm in 2014 collaborating with Katie Kroko, Team Weird, and Compost Haven. I wish there were space and time in this body of work to recognize the many things we created and experienced.

I would also like to thank my inspiring professors Mark Hannesson, Scott Smallwood, and Howard Bashaw for their constant support and insight. I discovered a wondrous new world of music and unforeseen outlets for creativity during my studies with them, and will always cherish the incredible breadth of ideas and perspectives they have shared with me.

A special thanks to all the performers and Andriy Talpash who helped enable my music by performing, conducting, and providing me with critical feedback. Other thanks to the Music Department at the University of Alberta for supporting me in more ways that I can remember. Without the many facilities and the financial support, I would not have been able to accomplish everything I have during my masters studies.

And last but not least, thanks to Merciful Omnipotent Poseidon, who chose not to destroy me and all the other maple scented fellows and femmes I have grown to care so much about since arriving in the Great White North. May we stop agitating his ozone based antiperspirant with our sinful carbonization.

Table of Contents

External Supplementary Files

Andrew_Israelsen_External_Files.zip

This archive contains several folders, each presented below. It is assumed through the remainder of the body of this thesis that external files are to be found in their named folder in this archive.

Andrew_Israelsen_Chamber_Works

Contains recordings of *Karayn: An Edifice of Emptiness* and *Septick: Adumbrations of Solution and Fragmentation* for listening and pleasure. Performer's names and date of premiere performances are provided in the respective scores.

Andrew_Israelsen_Pigeons_Maxproject

Contains a Max/MSP v6 project file and its associated patches, media, and code for the virtual instruments used for the performance and programming of *Pigeons*.[1] *Pigeons_Overview.maxpat*, *performance.maxpat*, and *singleSample.maxpat* are readily patched examples of how to use the various subpatches included in *Pigeons*. To execute *Pigeons* you will need Max/MSP v6 or higher with the Gen~ utilities. All patches can be accessed by opening *Pigeons.maxproj*.

Andrew_Israelsen_Pigeons_Recordings

This folder contains five audio files recorded from the virtual instruments of *Pigeons*. *recordings_overview.txt* contains a brief summary of each recording along with the name of the patch and preset number that was implemented. The folder *screenshots* contains captured images of *performance.maxpat*, *Pigeons_Overview.maxpat*, and *singleSample.maxpat*.

1 See **Appendix A** (pg 82) for more information on Max/MSP and **Glossary** (pg 84) for terminology.

Andrew_Israelsen_Picnic_Sketch

Contains the Processing v2.0 sketches and source images to process and render .png image files from scanned drawings for *Picnic* within the subfolder *picnic_v1_1*.[2] *Picnic*'s score pages can be rendered anew by opening *Picnic_v1_1.pde* via Processing. Instructions to use these sketches are included in the form of comments within the code. A user will need to gain some familiarity with Processing and *Picnic_v1.pde* and its related sketches to render their own versions of *Picnic*.

Andrew_Israelsen_Picnic_png02-11

Contains 1,536 .png images rendered via *Picnic_v1_1.pde* for performance and audio synthesis. These files are named randomly, and their names additionally classify whether they were processed via the "text" or "drawing" conditionals within the sketch. These are the score pages for *For the Number of Man (+ 1)*.

Andrew_Israelsen_Picnithyzer

Picnithyzer.pd is a sample based synthesizer coded in Pure Data.[3] It uses twelve score pages from *Picnic* that have been converted into .wav files using the audio editor Audacity.[4] Designed for use with a MIDI controller, the audio produced by *Picnithyzer.pd* is one interpretation of how to perform *Picnic*. All patches and .wav files are included in the folder *Picnithyzer_Pd*. A recorded improvisation using *Picnithyzer.pd*, the interpreted score page, and a brief .txt file describing performance are included in the folder *Recording*.

2 See **Appendix A** (pg 82) for more information on Processing and **Glossary** (pg 84) for terminology.
3 See **Appendix A** (pg 82) for more information on Pure Data and **Glossary** (pg 84) for terminology.
4 See **Appendix A** (pg 83) for more information on Audacity.

Introduction

I truly enjoy the challenge of creating my own unique methods for notating music. Few things are as fascinating to me as creating a score which represents the structures and sounds I imagine while composing. My scores become a vehicle for audiation; the imagination and perception of sound within one's own thoughts and experiences. I believe a score that closely represents its sound or compositional process brings performers and listeners closer to the nature of the music.

I find my experiments and studies in notation necessary to my music, because the traditional system is ineffective at representing the musical ideas I am most interested in – flexibility, unpredictability, timbre, and perspective.

Flexibility and unpredictability are nested in my passion for improvisation and my fascination with chance and randomness. I often use improvisation as a tool while composing my music. I also enjoy leaving elements of the final score to the decided by the performer. This gives the composition a life of its own, asking the performer for their technical skills, musical consideration, and imaginative ear.

I relate sound and perspective; both arise from my interest in experimentation and the possibility of conveying meaning in music. I seek to create a strong link between the idea that inspires the music and the sounds heard. This arose in my early creative process as a desire to compose musical stories – sound tracks for film or video games, programmatic compositions, or by constructing acoustic soundscapes. In all of these guises, I was taking the listener to different acoustic locations or offering them knowable characters via motive.

My recent and more mature works address perspective in a new way. I choose interesting states of being, locations, or relationships to address in the composition. What is the sound of music buried and decayed over days and years? How can one compose musical statues and shadows? What happens when the music becomes more about thinking than performing?

Karayn: an Edifice of Emptiness and *SEPTICK: Adumbrations of Solution and Fragmentation* are examples of how I relate notation and narrative to sound and include elements of performer choice. Both are directly tangible scores which provide a clear road map

for their interpretation, yet still have elements that are incompletely defined. *Pigeons* is an electronic work that manipulates audio signals through a series of modules and sound generators. The included patches are designed to be easily rearranged and reusable in new iterations or projects – I openly invite others to reuse these tools I developed for my own personal use. *Picnic* flirts with the edge of imperceptibility, allowing infinite new iterations of the score and by having no single definitive approach for interpretation or performance practice. Performer(s), ensembles, and viewers are able make their own version of *Picnic* using software. This software allows a rendition of the score to contain hundreds or thousands of pages. Performers are invited to conceive their own interpretation and methods for performing *Picnic*. Two interpretations of *Picnic* are included in this body of work – *For the Number of Man (+ 1)* and *Picnithyzer*.

Each composition is presented with a brief discussion of its methods and materials. Both *Picnic* and *Pigeons* provide recorded examples of their execution and interpretive possibilities.

Chapter 1

Karayn: an Edifice of Emptiness for String Quartet

Synopsis of Methods

Karayn features a relationship of two types of musical cells: melody and shadows. These cells are in an antecedent consequent relationship where shadows follow melody. This pairing formulates the individual sections and overarching structure of the composition. Each of the individual sections is marked by a solid bar line and a rehearsal letter. These sections and their cells expand and contract. The overarching structure of the music is a composite of two macro cells – both considered melody – and a final cell of shadow.

Several musical interests are at the heart of the composition; an extended playing staff, specific control of left and right hand techniques, and a microtuned chordmode.

The extended playing staff relates to the right hand and use of the bow. A second three line staff has been added above the conventional five line staff for each of the four strings instruments. This upper staff indicates relative position of the bow on the string. Also given are linear directions of travel that determine how the player bows the strings. Depth and rate of vibrato is controlled with condensing or expanding wavy lines. Together the two extended notation systems provide a visualization of instructions without excessive use of written text in the score.

The microtuned chordmode was inspired by the just tuning of the overtone series based on a fundamental of C. Several of these overtones are available as natural harmonics of the string quartet. These harmonics are used often. Some desired microtunings are more difficult to perform, and were composed via use of artificial harmonics by creating new 6^{th} partial overtones. Some just tuned notes are fingered by the performers, but approximations of quarter tones or third tones are given. The performer is allowed to approximate this altered tuning as they feel capable or comfortable.

The just tuned chordmode is derived from C Lydian Dominant, the mode I feel most closely represents the pitch content of overtone series. A limited set of pitches was taken from this collection as the primary pitch material of the composition. This collection acts as both a vertical and horizontal unit – a mode and chord symbiotic. Various harmonic tensions are utilized, both with microtuned clusters and the addition of pitches to the chordmode.

KARAYN

an edifice of emptiness

for String Quartet

Andrew Scott Israelsen

KARAYN

an edifice of emptiness

for String Quartet

SCORE

Premiered by Guillame Tardif, Daniel Gervais, Charles Pilon, Amy Nicholson
Conducted by Andriy Talpesh at Convocation Hall, University of Alberta
on 15 April, 2014

Andrew Scott Israelsen

KARAYN

an edifice of empitness
for string quartet

for my mother, Susan

Cycles of emptiness and shadows; a lone voice drifts amidst the whispers. Ebb and flow, the cycles expand and contract; stretching, breathing, dying.

Shadows coalesce into statues, and the lone voice tenses, pulling away. Frustration.
Struggling, attempting flight.

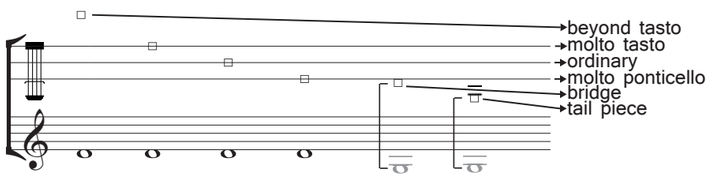
Transformed, the lone voice becomes the shadow, the emptiness. Dissipation.

KARAYN was composed in 2013 during my masters studies at University of Alberta, and was heavily influenced by field recordings of graveyards. **-Andrew Israelsen**

Notes for the performers

Double Staff Layout

Two staves are used when necessary to express the material to be performed.



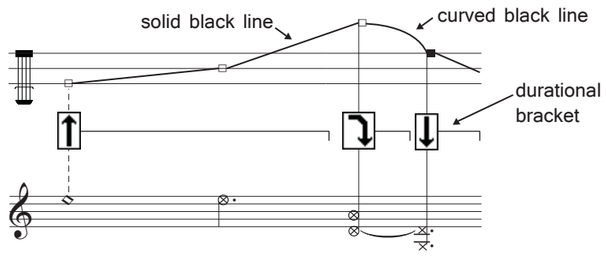
The top staff is the three lined **modification staff.** Each line of the **modification staff** indicates a location for the bow on the strings of the instrument, as depicted in the diagram above. This staff is notated with ■ and □ noteheads. White heads indicate rhythmic value of a half note and longer, and black heads indicate values of a dotted quarter note or shorter.

Brackets are used in conjunction with grey notes in the conventional playing staff to indicate the when bowing on the bridge and the tailpiece. When bowing on the bridge, the string is also given in the playing staff. The bow is often directed to go beyond molto tasto towards the nut of the instrument. This direction is indicated with note heads above the top line of the **modification staff.**

The bottom five line staff is the conventional playing staff; all rhythms, pitches, and sounds to be performed are notated here.

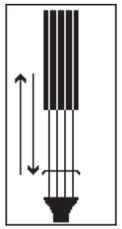
Bowing Indications

Several varieties of bow direction are utilised throughout the score; including **vertical bowing, transformational bowing,** and **circular bowing.** The various bowings are indicated with arrows in black boxes between the **modification staff** and the playing staff. A **durational bracket (** ⌐¬ **)** is provided to indicate how long the bowing effect is utilized. **Solid black lines** in the **modification staff** indicate direction and rate of the bow stroke.

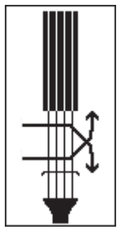


Bowing Indications Continued

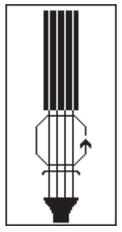
Vertical Bowing travels between the bridge and the fingerboard as illustrated to the right. The bow should be placed on the string at the balance point, and should not move in the conventional direction. Distance and rate of travel are relative to lines in the modification staff. Often combined with tremelo.
A airy bow stroke that sounds grittier and crunchier with crescendo.



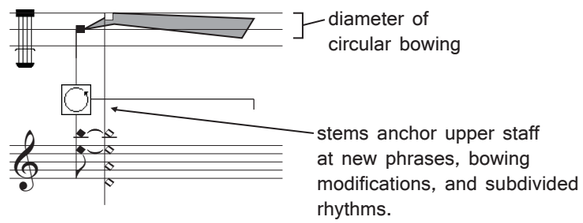
Transformational Bowing travels between the bridge and the fingerboard as illustrated to the right. The bow moves both vertically and horizontally across the string in a swooping motion, relative to curved lines in the modification staff.
Sounds raspy and full, a bow stroke that transforms normal tone and raspy noise.



Circular Bowing travels equally vertical and horizontal, as illustrated in the diagram to the right. The diameter of the bowed circle is designated by the modification staff. See example below.
A gyrating and crunching bow stroke that fades in and out of timbral focus.



Scratch Tone is indicated by a **z** on the stem of the note in the playing staff. Dramatically increase bow pressure and energy. **Scratch tone** is often combined with other bowing modifiers such as **Transformational** and **Vertical bowing.**

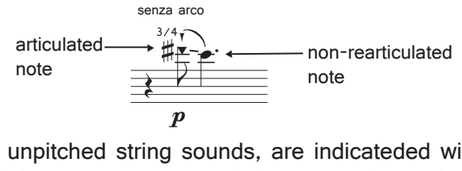


Left Hand Indications

Vibrato is not to be used unless indicated with **vib.** and a wavy line. Vibrato rate and width change relative to the wavy line; Width and rate may change within the same wavy line. Examples are provided below.

Wide moderate rate		Tight moderate rate	
Wide fast rate		Tight very fast rate	
Wide very slow rate		Tight slow rate	
A wide moderate rate becoming a tight moderate rate			

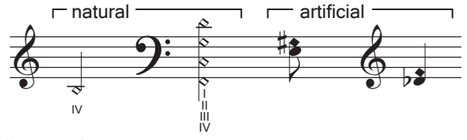
Senza Arco is indicated with a trianglar notehead. Hammer the string against the fingerboard with the fingertip. All notes connected to an initial senza arco by a slur are to be performed sequentially without rearticulation.



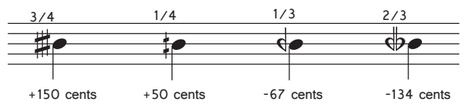
Muffled, or unpitched string sounds, are indicateded with an × notehead for quarter notes and shorter, and an ⊗ for half notes and longer. Half depress the string at roughly one third length of the fingerboard from the nut with the palm or fingers. All **muffled** strings are notated at their equivelant open string pitch.

○ Is used to above the playing staff indicate the end of **muffled** sounds. Pitches after this symbol should be fingered normally.

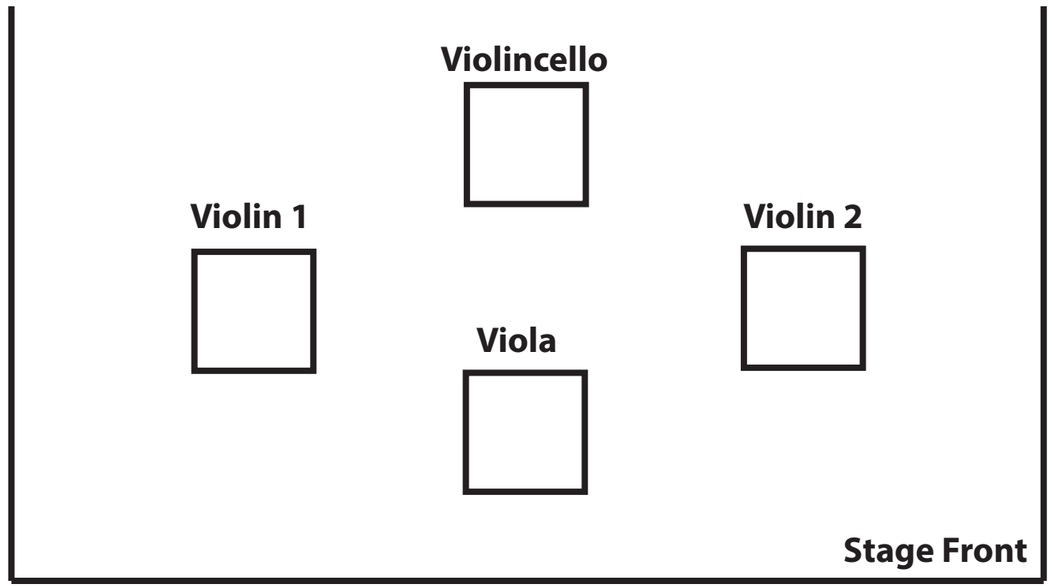
Harmonics are indicated with diamond note heads, wether they are natural harmonics or artificial harmonics. Natural harmonics indicate string number in roman numerals, where artificial harmonics provide the fingered fundamental and harmonic.



Various **microtunings** are used throughout the music. The following are the accidentals used for each tuning. The most accurate tunings possible are desired, close approximations of the following tunings are allowed.



Staging



The viola should stand or sit at the front center of the ensemble. The first and second violin should be placed left and right, respectively to the viola, with the violincello in the back and center of the ensemble.

Score Format

The music is composed in series of cells and sections. Each cell is an individual measure, and are separated with dashed barlines. A section is marked with a rehearsal letter and a solid barline. Formal sections are marked with double barlines.

The mensurations of a cell are given at the top and center of the page as a number and a quarter note.

There are two staves for each performer; a modification staff of three lines and a playing staff of five lines. The modification staff is only present when required.

KARAYN

an edifice of emptiness
for String Quartet

Andrew Scott Israelsen

2013

A

B

7/4 (♩=52) 4/4 4/4 5/4 7/4 4/4 (♩=48)

Violin I

arco arco senza arco vib. arco

pp p mp pp

Violin II

arco arco senza arco vib.

III IV pp p mp p

Viola

l.v. l.v. l.v. vib.

pp p pp p mp pp

Violoncello

arco senza arco vib. arco arco

p pp mp IV pp ppp

C

D

E

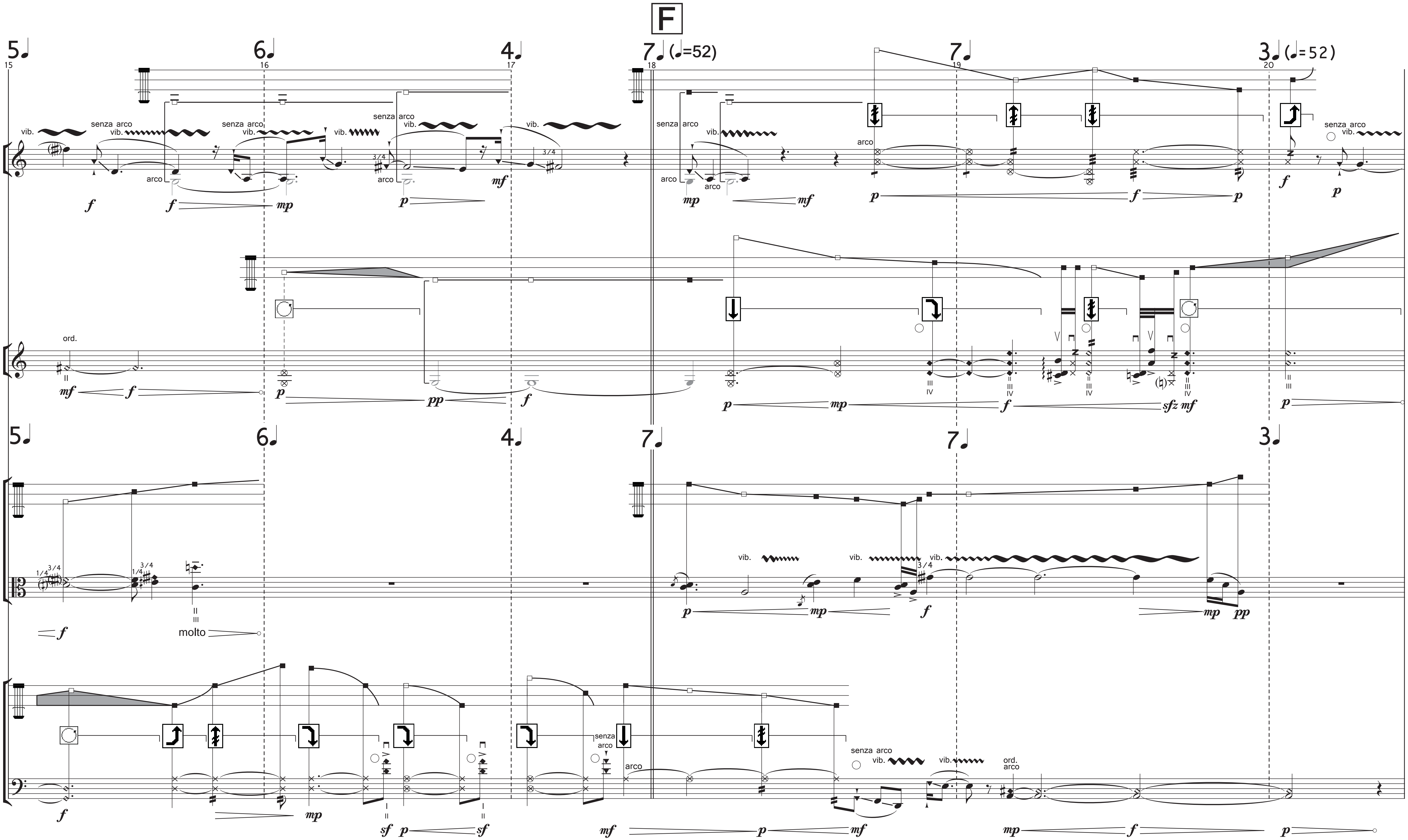
5♩(♩=52) 5♩ 6♩ 4♩ 4♩(♩=48) 7♩ 7♩ 7♩(♩=52)

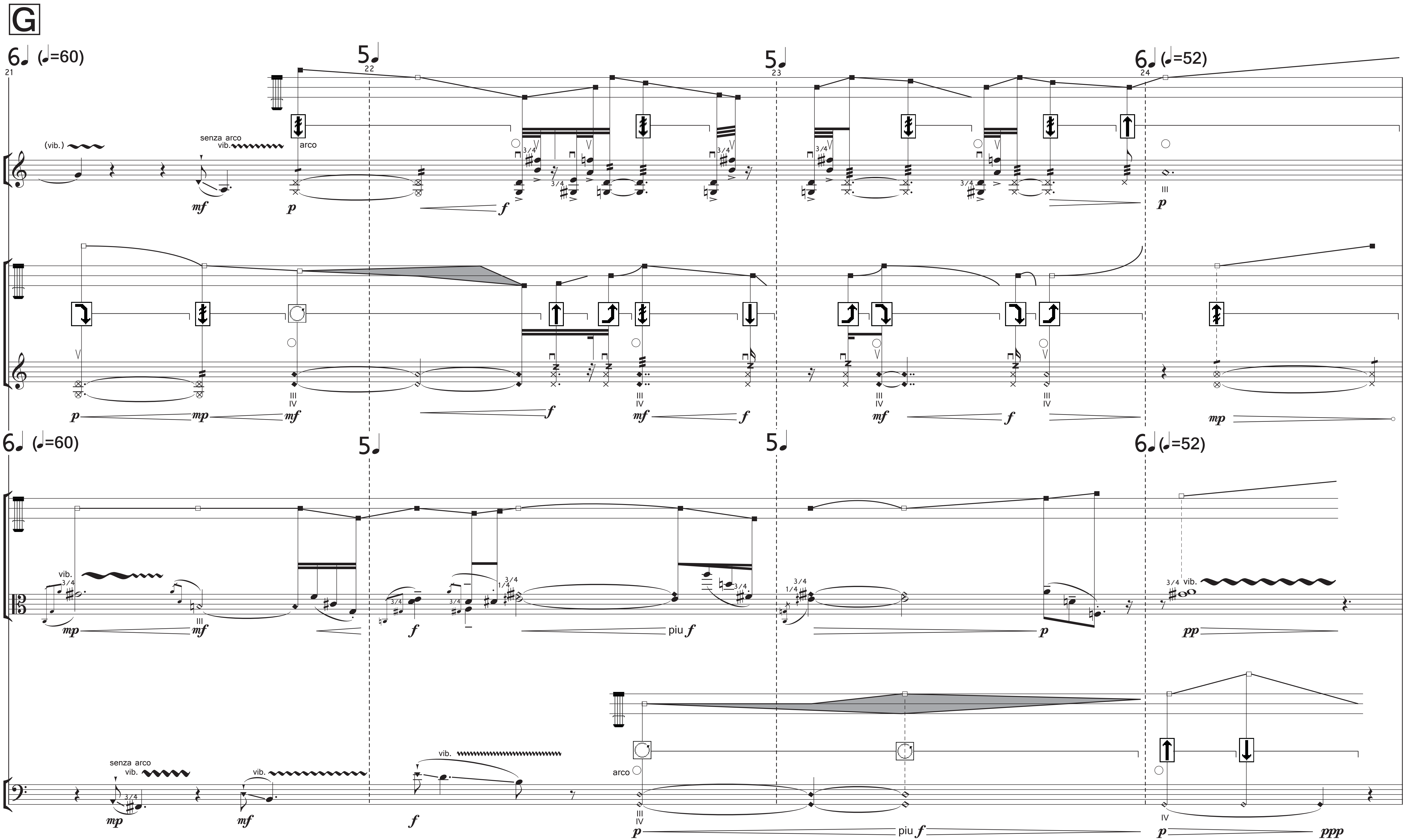
senza arco ord. arco arco ord. senza arco vib.

arco ord. senza arco vib. arco senza arco vib.

5♩(♩=52) 5♩ 6♩ 4♩ 4♩(♩=48) 7♩ 7♩ 7♩(♩=52)

l.v. senza arco vib. arco


F
5♩
6♩
4♩
7♩ (♩=52)
7♩
3♩ (♩=52)
15
16
17
18
19
20
vib.
senza arco
arco
ord.
3/4
1/4
molto
f
mp
mf
p
pp
sfz
sf


G
6♩ (♩=60)
5♩
5♩
6♩ (♩=52)
(vib.)
senza arco
vib.
arco
mf
p
f
mp
III
IV
piu f
pp
ppp
1/4
3/4

H

6♩ (♩=60) 5♩(♩=66) 6♩ (♩=72) 3♩ (♩=52)

25 26 27 28

p f mp f piu f fp

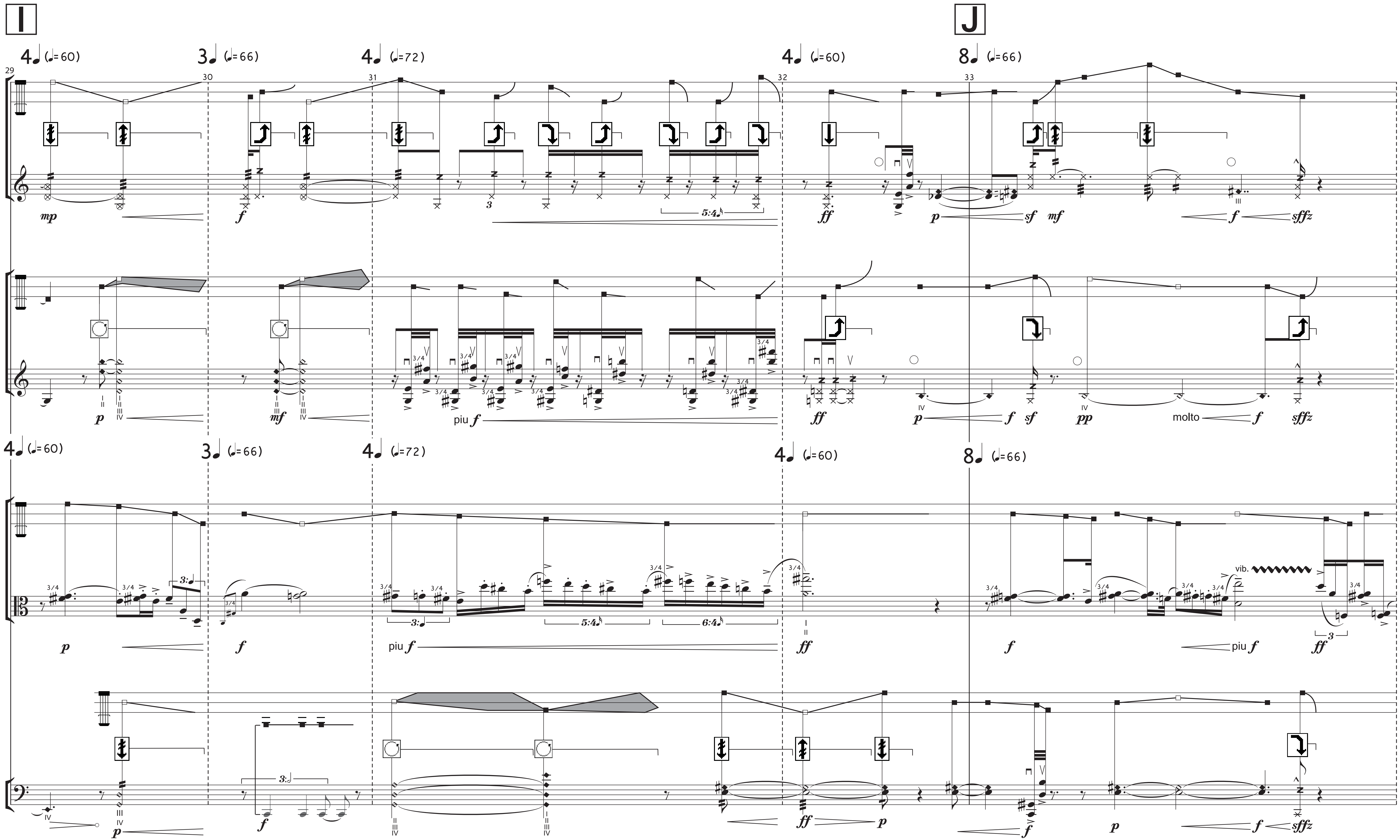
p mp mf f mp f piu f p

6♩ (♩=60) 5♩(♩=66) 6♩ (♩=72) 3♩ (♩=52)

vib. vib. vib. vib. vib.

p molto mf f piu f ff mp

p mf f f ffp ord.


I
J
4♩ (♩=60)
3♩ (♩=66)
4♩ (♩=72)
4♩ (♩=60)
8♩ (♩=66)
29
30
31
32
33
mp
f
ff
p
sf
mf
sffz
piu f
pp
molto
vib.
5:4
6:4
3:4

K

5 (♩= 72) 3 (♩= 80) 6 (♩= 60) 8 (♩= 42)

34 35 36 37

3 p ff 5:4 5:4 fff ord. p

ff 5:4 6:4 6:4 fff ord. p

5 (♩= 72) 3 (♩= 80) 6 (♩= 60) 8 (♩= 42)

f 5:4 6:4 vib. vib. piu f ff 6:4 7:4 8va vib. fff pp flautando ppp

5:4 6:4 piu f mf ff 5:4 6:4 7:4 fff ord. p

L

with mute

pp

flautando

ppp

with mute

pp

flautando

1/3

ppp

(8)

flautando

ppp

1/3

1/3

p

pp

ppp

with mute

sounding

1/3

2/3

IV

p

Chapter 2

SEPTICK: Adumbrations of Solution and Fragmentation

Synopsis of Methods

SEPTICK was conceived as a challenge to create a musical and poetic interpretation of the chemical and physical processes of decomposition which occur within a septic tank. Two musical germs – a rhythm and a melody – became the ideal material to decompose. The rhythmic germ was reduced to three durations, and the melodic germ a gesture of pitches. Many further rules and limitations for the composition were decided upon using the number seven as ways to develop and reuse these two germs.

The septet is re-orchestrated into several divisions throughout the composition; three movements use the full ensemble, and the remaining four movements divide the septet into smaller groups of four, three, five, and two. The movements can be re-ordered based on rules presented in the Performance Notes.[5]

Within each movement, different resolutions of duration and time are utilized. *Sludge* is the most accurate time-wise, composed with conventional measurations and beat per minute tempi. The remaining six movements use a continuum line and proportional durations given in seconds. This establishes a flexibility of durations, entrances, and releases of each acoustic event. Each movement, except for *Sludge*, is grouped in different fragments or multiples of seven seconds. These durations form small cells and larger measures, creating micro and macro structures within individual movements.

Three proportional rhythmic durations are used in each movement: long, short, and very short. Most of the movements focus on two or three of these proportional durations and their order. Each uniquely utilizes these rhythmic germs at different levels of the music – duration of cells, musical gestures, and the relation of larger sections. *Sludge* uses these durations at several rates of rhythm in the Horn, Violins, and Cello. The grouping of long – very short – short is the original state of the rhythmic germ.

Each movement features a set of seven pitches or pitch limits (wherein all possible pitches between the limits are included). *Eruption* has seven pairs of pitch limits at the lowest and highest possible pitch of each instrument, and *Indifferent Purities* has two overlapping sets of seven pitches which form a chromatic scale.

5 See **Septick: Adumbrations of Solution and Fragmentation** (pg 24-25)

There is a wide variety of timbres in *SEPTICK* conceived and organized by assigning each instrument seven types of gestures or colours. Movements combine these gestures and colours, or trade them between instruments. *Translucent Shadows* is an example where the strings are asked to blow across the bridge of their instruments and perform senza arco or golpee strikes; actions derived from the breath and key click sounds otherwise assigned to the winds.

SEPTICK preserves a few fragments of standard notation. Most obvious is *Sludge*, which has very few changes to conventional practice. The remaining six movements utilizes the five line staff as little as possible – only for the assigning of a pitch to a sound or gesture. Otherwise, the entirety of the piece is represented by line drawings, three rhythmic values, and a collection of symbols for various different sounds such as breathing, singing, harmonics, key clicks, and golpee strikes.

SEPTICK

adumbrations of solution and fragmentation

for septet

flute, clarinet in Bb, horn in F,
2 violins, viola, and cello

Andrew Scott Israelsen

SEPTICK

adumbrations of solution and fragmentation

for septet

flute, clarinet in Bb, horn in F,
2 violins, viola, and cello

Premiered by Guillame Tardif, Daniel Gervais (violins), Charles Pilon (viola),
Amy Nichols (cello), Bill Damur (flute), Rob Spady (clarinet), and Shamilla Ramnawaj (horn).
Conducted by Andriy Talpash at Convocation Hall, University of Alberta
on 15 April, 2014

composed by
Andrew Scott Israelsen

SEPTICK

adumbrations of solution and fragmentation

for septet

flute, clarinet in Bb, horn in F,
2 violins, viola, and cello

composed by

Andrew Scott Israelsen

Come below to earthen folds
where dreams decay forgotten,
beauty now a tepid mem'ry,
distended shadows swirl.

Here where darkness holds
the tendrils always cling,
whisp'rings listless, listless.

Of what once was,
what ne'er will be again,
for only saliency and
dissolution,
where turbid shadows rule.

SEPTICK is composed of seven parts; three movements for septet and three interludes and a codetta for smaller fractions of the ensemble. Only two movements of SEPTICK are ordered concretely, the remaining five movements can occur in any order before or after that pair.

SEPTICK uses a variety of restrictions to produce a wide range of elements. Almost every movement is limited to seven pitches, and those that do not adhere are composed of ranges of pitches represented by line drawings.

There are three primary rhythmic durations that are manipulated throughout; long, short, and very short. Time within SEPTICK is rarely exact, rather gestures and figures are notated on a time line, and durations of a given sound are proportional to the time frame it occurs within.

2014

Score Ordering and Performance

SEPTICK is composed of seven movements; three of which utilize the full septet, and the remaining four use smaller divisions of the ensemble. Not all the movements are given a specific order. **Eruption** and **Dissolution** are always performed one after the other, respectively. The remaining five movements can be performed in any order before or after the **Eruption** - **Dissolution** pair.

Ordering of these movements can be predetermined by the performers or by random chance. It is not necessary to announce the order of the movements or list individual movement names in the concert program, but it may be done if desired.

Consider each movement an immediate segue to the next. There should be as little space as possible between movements. Some orderings of the movements may work better than others to acheive fluidity in transitions.

For the Conductor :

If SEPTICK is being conducted, it should be known the score has been bound in three sections. First are the core septet movements **Viscosity** and **Sludge**. Second are the interludes **Translucent Shadows, Indifferent Purities,** and **Sunken Saliency**. Lastly are concretely paired movements **Eruption** and **Dissolution.** These two movements should always be performed as a pair.

Suggestions to deal with the variable ordering of movements include the use of bookmarks or post-it notes to mark each movement for quick page turns and visible order.

Time, the Continuum, and Limit Boxes

The primary medium of notation is the **Continuum**, a single horizontal grey line that proceeds through the entirety of a movement. This line can be broken into seconds, cells, and measures.

Temporal Durations :

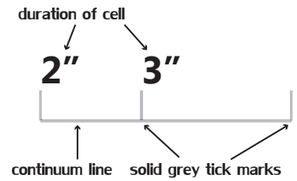
Time is always measured in seconds except in the movement **Sludge**, where standard measures and rhythms are used. All durational rhythmic values are proportional to the indicated number of seconds in a given cell of time.

All cells are marked with grey **tick marks** or black **measure lines**. The resolution of seconds in a cell is variable. High resolution cells will mark every second with **dashed grey tick marks** inbetween **solid grey tick marks**. Many cells have lower resolution in seconds, and only utilize **solid grey tick marks**. See the examples 1 and 2 to the right.

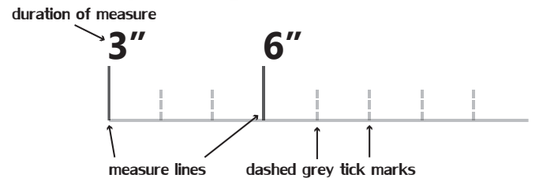
All attacks and releases of sounds in SEPTICK are flexible and fluid, unless noted with tutti. Performers should do their best to interpret the proportional length of sounds and gestures relative to the current **cell's** durtation in seconds.

Temporal Durations Continued :

Example 1 : low resolution cells



Example 2 : high resolution cells



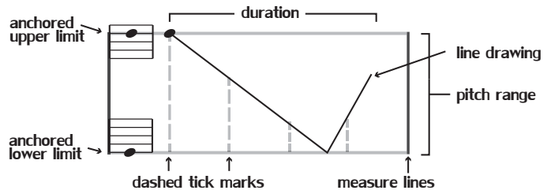
Limit Boxes :

The secondary medium for notation is the **Limit box. Limit boxes** are measured with **dashed tick marks** for each second. **Limit boxes** act either as a graph for pitch limit line drawings or as anchors for simultaneous pitches and sounds.

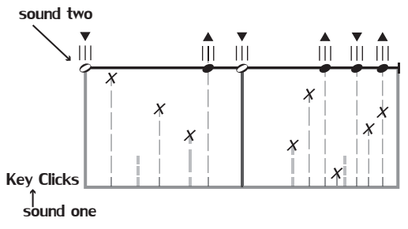
The upper and lower grey lines of the **limit boxes** are where anchors for pitches or sounds are assigned. Line drawings are used within the **limit box** to show indeterminate motion of pitch between the upper and lower limits assigned at the anchors. The line that extends from a notehead acts as both pitch value and duration. See example 3 below. See **Sunken Saliency** or **Eruption** for more examples.

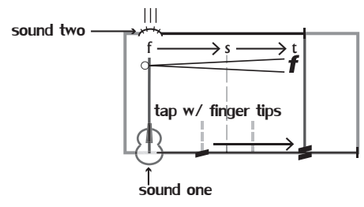
Sometimes the **limit boxes** are used to assign concurrent actions. The upper and lower lines are each assigned a pitch or sound. This pitch or sound occurs on its assigned line until a new pitch or sound is assigned. See example 4 and 5 below. See **Translucent Shadows** for more examples.

Example 3 : a pitch based limit box



Example 4 and 5 : sound based limit boxes





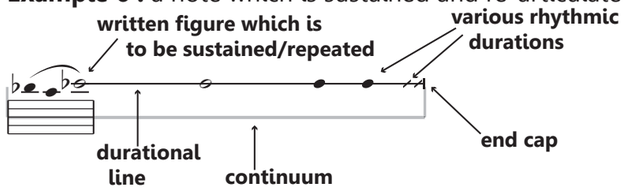
Notation Legend

The **Durational Line :**

This extends a notated pitch or sound and implies the sustaining or repetition of that figure. A rhythmic duration appearing on the **durational line** implies a re-articulation of the figure from which it extends (or legato pulse if slurred). The end of the **line** is indicated with a perpendicular **end cap** or a new note. If a **line** ends with an arrow, it implies the gesture continues onto the next page or system.

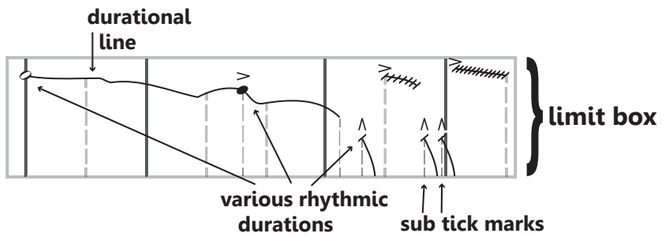
Accidentals apply only to the note they immediately preceed and any rearticulations of that note as indicated on the **durational line.** An accidental on an upper or lower limit (see below) awlays carries through until a new limit is assigned. In **Sludge**, accidentals carry through the measure.

Example 6 : a note which is sustained and re-articulated at various durations



In **Limit Box** sytems there are no **end caps** to signify the end of a figure. The **durational line** extends from a sound and its end is indicated by white space or a new sound. **Limit Boxes** also use **sub tick marks** to clarify when a gesture does not align with a mensurated second.

Example 7 : a note which is sustained and re-articulated and is followed by a new gesture



Proportional **rhythmic durations :**

- A long duration
- A short duration
- A very short duration

Extended Techniques :

tr An uneven trill. Undulate notes, the lower note is always longer than the higher note. Trills speed up or slow down as indicated in the score. See **Indifferent Purites**.

For **Winds** only :

Exhale through the instrument.

Exhale across/over the mouthpiece.

Inhale through the instrument.

Inhale across/over the mouthpiece.

Rapid succession of inhalation and exhalation through instrument.

or or Flutter tongue. Less than three bars indicates constant triple or double tonguing.

\+ Slap tongue or tongue pizz (clar./flute). Commonly indicated with **slap!** for clarity.

⊕ Tongue ram (flute only). Cover mouthpiece with embouchure and tongue pizz simultaneously with key pops. The resultant pitch should be a minor seventh lower than the written pitch.

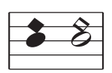
Jet whistle (flute only).

Hummed or sung pitch (square noteheads). Hum/sing simultaneous to fingered pitch. Hummed pitches are notated transposed to Bb for clarinet and F for Horn. The sung pitches are often pure intervals of an octave or a fifth, and can be transposed up or down an octave. Horn Only: Often the horn is directed to hum and play with other techniques such as flutter tongue or a mute. Feel free to reduce simultaneous techniques as necessary to prodce the best possible sound.

X Key click (clar. only) Indicates an individual key click.

For **Strings** only :

Snap pizzicato.

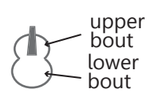


An artificial harmonic (diamond noteheads). Lower pitch is the fingered fundamental, upper pitch the overtone.

Bow on the wood of the bridge while fingering indicated pitch. Bow at such an angle that the string is partially excited.

senza arco Articulate the indicated pitch by tapping the string against the fingerboard with the left hand only.

Blow across the bridge. Shape the air stream with the indicated phoenemes. Specific dynamics are provide for this effect.



golpee (X noteheads) Strike the body of the instrument in the indicated manner and location.

Septet Movements

Tepid Viscosity

Sludge

Ⓐ

4" 3" 4" 3" 2" 2" 3" 2" 2" 3" 2" 2" 3" 2" 2" 3"
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

flute

clarinet in Bb

horn in F

violin 1
tasto
poco vib. → no vib.
pont.
pp mp p pp

violin 2
pont. → p
pont. → p
pont. → pp
pont. → p
pont. → mp

viola
pont.
poco vib. → molto tasto
ppp mp
pont.
poco vib. → m. tasto
ppp mp
ord.
ppp

violoncello
tasto
ppp pp
p

B

C

4″ 17 | 3″ 18 | 2″ 19 | 2″ 20 | 3″ 21 | 4″ 22 | 3″ 23 | 4″ 24 | 3″ 25 | 2″ 26 | 2″ 27 | 3″ 28 | 2″ 29 | 2″ 30 | 3″ 31

fl.

ord.

p *mp* *p*

clar.

ord. *p* *p*

poco vib. no vib. ord. *p* *mp*

f. hrn.

vln. 1

poco vib. tasto molto vib. no vib. pont. spicc. ord.

pp *mp* *pp* *mf* *mf* *mp*

vln. 2

ord. pont. spicc. ord. *mp* *pp* *mf*

tasto poco vib. molto vib. *pp* *mp* *ppp*

vla.

pont. poco vib. tasto molto vib. *mp* *pp* *mp*

ord. pont. *mp* *ppp*

vlc.

ord. spicc. pont. *pp* *mp* *pp*

D

E

4″ 3″ 4″ 3″ 2″ 2″ 3″ 2″ 2″ 3″ 2″ 2″ 3″ 2″ 2″ 3″

32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47

fl.

mf mp mf f pp p p

clar.

p pp mf p mp mf f p pp

f. hrn.

ord. mf f mp pp ord. p mp

vln. 1

pont. spicc. pont. pp f pp mf pont. pp

vln. 2

spicc. ord. sim. p f p f

vla.

vlc.

F

2″ 2″ 3″ 2″ 2″ 3″ 2″ 2″ 3″ 2″ 2″ 3″ 2″ 2″ 3″ 2″ 2″ 3″

48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65

fl.

clar.

f. hrn.

ord. ord.

vln. 1

(pont.) spicc. pont. pont. spicc.

vln. 2

ord. spicc. ord. spicc. pont. spicc.

vla.

bow ad lib.

vlc.

molto vib. scratch tasto no vib. pont.

poco vib. scratch pont no vib.

2″ 66 | 2″ 67 | 5″ 68 | 2″ 69 | 3″ 70 | 2″ 71 | 5″ 72 | 2″ 73 | 8″ 74

fl.
pp
pp

clar.

f. hrn.
mp p pp

vln. 1

vln. 2
pont. spicc.
p
pont. spicc.
p

vla.
bow ad lib.
pp
ppp

vlc.
molto vib. no vib.
pont.
p fp

dur 3′ 18″

♩ = 63

3♩

A

flute

clarinet in Bb

horn in F

violin 1

violin 2

viola

violoncello

p mp

**) all multiphonics should sound closest possible to written pitches and fingering.

mf

pp mp p mf mp pp mf pp

gliss.

p

B

fl.

clar. in Bb

hrn. in F

vln. 1

vln. 2

vla.

vlc.

9 10 11 12 13 14

19/o

f sffz ff sffz

f mf sffz f mp

f f p mp pp

f f p pp

f ff p pp

spicc.

f 6 6 sffz ff sffz

gliss.

f p

C

D

15 16 17 18 19 20 21 22 23 24

fl.

clar. in Bb

hrn. in F

vln. 1

vln. 2

vla.

vlc.

long

mp p pp ppp

gliss.

l.v.

mf sfz

E

F

25 26 27 28 29 30 31 32 33 34

fl.

clar.
in Bb

hrn.
in F

vln. 1

vln. 2

vla.

vlc.

f *sffz*

p *mp* *mf* *f* *mf* *sffz*

<*p*> *p* <*mp*> *p* <*mf*> *mp* *f*

pp

pp *p* *f*

spicc.

f 6 6 *sffz*

gliss.

p *f*

21/o

23/o

G

poco rall.

35 36 37 38 39

fl.

ff sfffz

clar. in Bb

f f ff sffz ff sffz

hrn. in F

f ff fff p

vln. 1

ff sfffz p pp

vln. 2

ff fff sfffz p

vla.

ff sfffz

vlc.

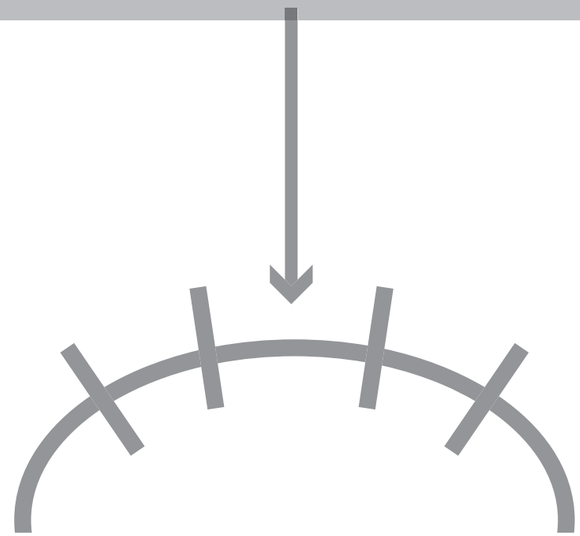
gliss.

ff sffz f p

poco rall.
𝅗𝅥 = 41
long
lunga
fl.
clar. in Bb
hrn. in F
vln. 1
vln. 2
vla.
vlc.
40
41
42
43
44
45
46
47
48
49
mp
p
pp
ppp
decresc.

dur. 2'30"

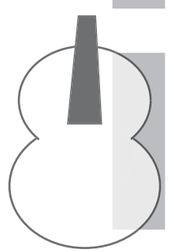
The Interludes



Translucent Shadows
for Flute, Clarinet in Bb, Violin 2, and Viola

Sunken Saliency
for Violin 1, Horn in F, and Violoncello

Indifferent Purities
for Clarinet in Bb and Viola



= 1″

A B C

5″ 3″ 4″ 3″ 2″ 3″ 4″ 4″ 4″ 2″ 3″

1 2 3 4 5 6 7 8 9 10 11 12

flute

tutti staccatissimo
f
whistle tone
whistle tone
f > p
mp
f
whistle tone

clarinet in Bb

tutti staccatissimo
slap!
f
fp
mp
tutti staccatissimo
slap!
f
fp

violin 2

tutti staccatissimo
pizz
f
f s f
f s f
tutti
golpée
knuckle
f
rub finger tips
mp
f
f
p
mf

viola

tutti staccatissimo
pizz
f
golpée
knuckle
mp
f s f
f s f
f s t f
tutti
col legno tratto
1/2 hair
f
senza arco
p
mf
cl. tratto
1/2 hair
senza arco
f s f
f
p

Ⓓ Ⓔ

3″ 3″ 3″ 3″ 2″ 3″ 3″ 3″ 3″ 8″ 4″ 9″

13 14 15 16 17 18 19 20 21 22 23 24

fl.

whistle tone whistle tone ord. tutti tutti

f > p f > p mp p f sfz sfz ff sffz sfz

clar. in Bb

tutti staccatissimo slap!

tutti

mp mp mf f sfz sfz

p fp **)

vln. 2

tutti staccatissimo pizz

tutti col legno battuto

rub finger tips tap w/ finger tips

mf f > p f p f sfz p f sfz mf ff f

vla.

col legno tratto 1/2 hair

tutti cl. tratto 1/2 hair

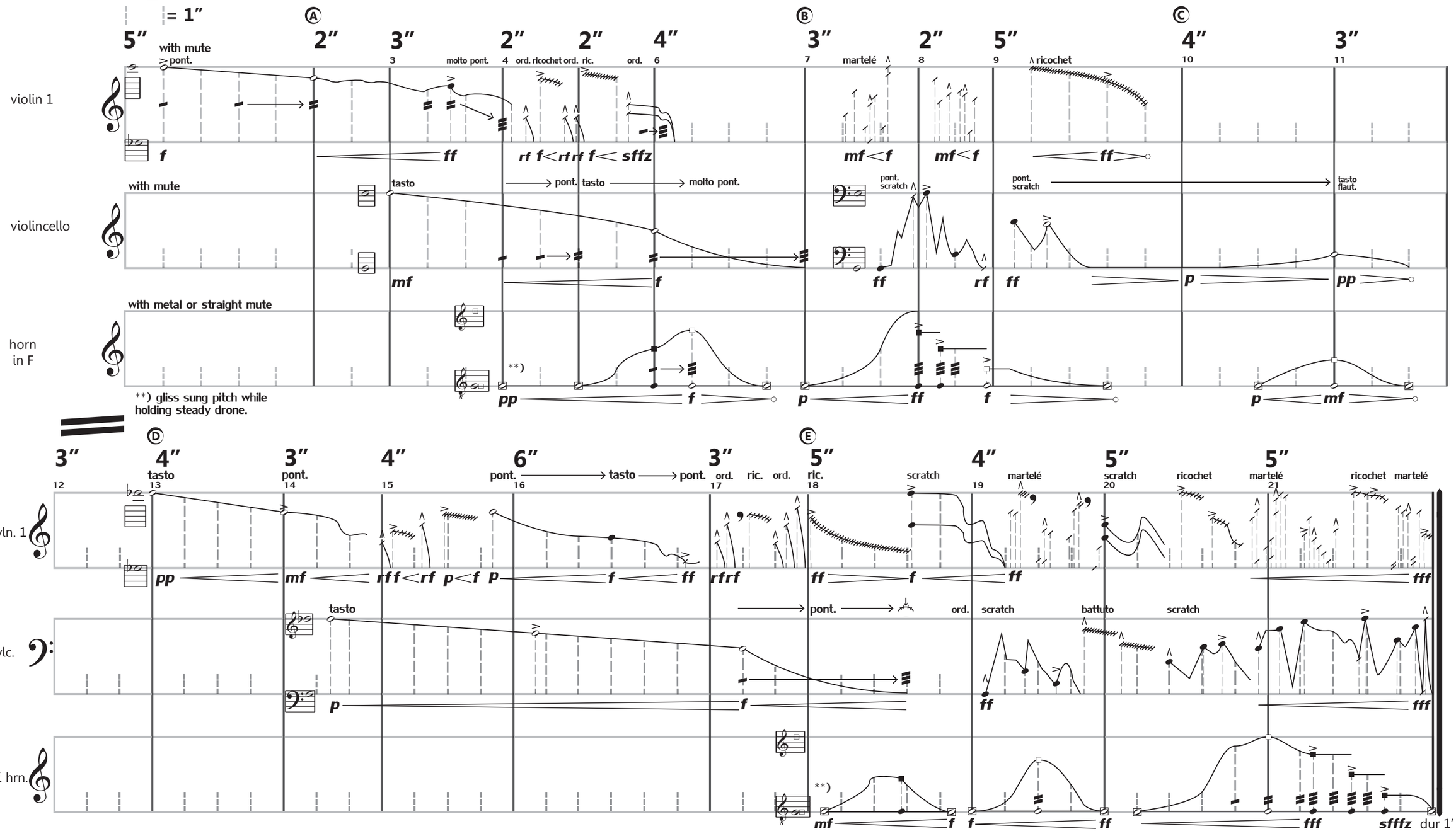
tutti staccatissimo senza arco

senza arco knuckle

mp mf f ff sffz sfz f

dur 1′ 28″

**) all multiphonics should sound closest possible to written pitches and fingering.


= 1″
Ⓐ
Ⓑ
Ⓒ
5″ 2″ 3″ 2″ 2″ 4″ 3″ 2″ 5″ 4″ 3″
3 4 6 7 8 9 10 11
violin 1
with mute
pont.
molto pont.
ord. ricochet ord. ric. ord.
martelé
ricochet
violincello
with mute
tasto
pont.
tasto
molto pont.
pont. scratch
pont. scratch
tasto flaut.
horn in F
with metal or straight mute
**)
**) gliss sung pitch while holding steady drone.
Ⓓ
Ⓔ
3″ 4″ 3″ 4″ 6″ 3″ 5″ 4″ 5″ 5″
12 13 14 15 16 17 18 19 20 21
vln. 1
tasto
pont.
pont. tasto pont.
ord. ric. ord.
ric.
scratch
martelé
scratch
ricochet
martelé
ricochet martelé
vlc.
tasto
pont.
ord.
scratch
battuto
scratch
f. hrn.
**)

dur 1′ 17″

clarinet in Bb

viola

clar.

vla.

clar.

vla.

**) extend cl. with knees to slightly bend pitch, slowly release bell through gesture.

dur. 1' 43"

Eruption and Codetta

a. Eruption
for Septet

b. Dissolution
for Flute, Horn in F, Violin 1, Violin 2, and Violoncello

eruption

tergidity for septet

= 1″ 2″ 2″ 2″ 2″ 2″ 2″ 2″ 2″ 2″ 2″ 2″ 2″ 2″ 2″

2 3 4 5 6 7 8 9 10 11 12 13 14

flute

∞ screaming!

f ff f ff f f ff f fff

clarinet in Bb

slap ord. slap ord. slap ord. slap ord. slap

f ff ff f ff f ff f fff

horn in F

∞ alarming

f ff f ff f ff f ff fff

violin 1

∞ spicc. molto pont.

f ff f ff f ff f ff fff

violin 2

∞ aggressive crunchy → scratch aggressive crunchy (ord.) → scratch aggressive crunchy (ord.) → scratch martele

f ff f ff f ff f fff

viola

∞ scratch poco pont.

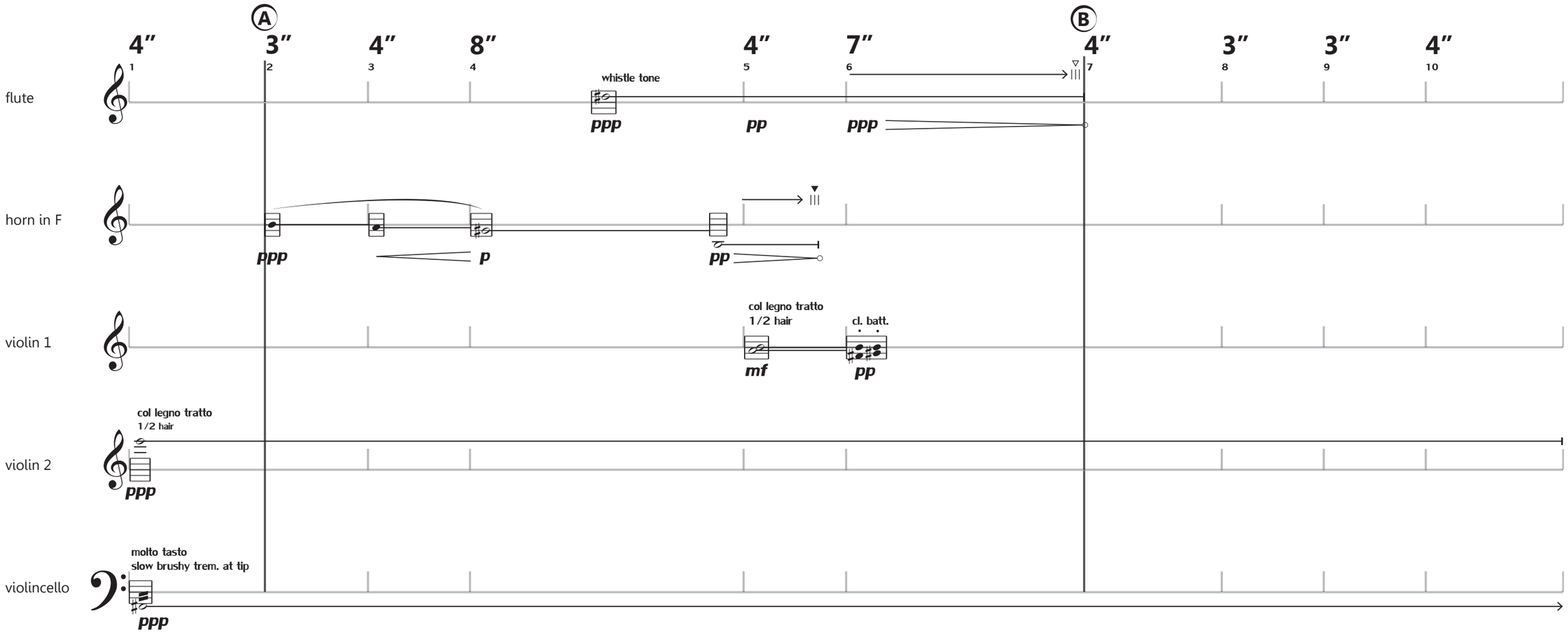
f ff f ff f ff fff

violoncello

∞ pizz. scratch cl. pizz. batt. arco scratch pizz. arco scratch cl. batt. pizz. arco scratch pizz. cl. batt. pizz. arco scratch

f ff f ff f ff f ff fff

dur 28″


A
B
4″ 3″ 4″ 8″ 4″ 7″ 4″ 3″ 3″ 4″
1 2 3 4 5 6 7 8 9 10
flute
whistle tone
ppp
pp
ppp
horn in F
ppp
p
pp
violin 1
col legno tratto
1/2 hair
cl. batt.
mf
pp
violin 2
col legno tratto
1/2 hair
ppp
violincello
molto tasto
slow brushy trem. at tip
ppp

Ⓒ Ⓓ

4″ 3″ 3″ 4″ 7″ 3″ 10″ 8″

11 12 13 14 15 16 17 18

fl. whistle tone whistle tone

ppp pp

f. hrn. ppp p pp pp

vln. 1 col legno tratto cl. batt. cl. batt.

mf pp ppp

vln. 2 col legno tratto 1/2 hair cl. tratto 1/2 hair

ppp pppp

vlc. molto tasto slow brushy trem. at tip

ppp pppp

dur 1′22″

Chapter 3

Pigeons

Overview of Virtual Instrument

Pigeons is a collection of patches for Max/MSP v6.1 and its Gen~ utilities.[6] The patches are described in *Pigeons_Overview.maxpat* found within the folder *Andrew_Israelsen_Pigeons_Maxproject.* Each individual patch has comments on its function and use.

The goal of *Pigeons* was to create a small collection of modular Gen~ and Max/MSP subpatches that use sample rate digital signal processing to modify audio signals. The separate patches within *Pigeons* can be taken and used in new audio projects, or easily reorganized into a new instrument for improvisation, performance, experimentation, or composition.

Several virtual instruments have been pre-designed within *Pigeons,* including *Pigeons_Overview.maxpat, performance.maxpat,* and *singleSample.maxpat*. Each of these example patches provide a different audio signal flow, and have different strengths and weaknessnes in regards to performance, flexibility, and synthesis.

Several recordings of the different virtual instruments programmed for *Pigeons* are included in the folder *Andrew_Israelsen_Pigeons_Recordings.* This archive also has screenshots of the various virtual instruments and a text file outlining what patches and parameters were used for performance and recording.

6 See **Appendix A** (pg 82) for more information on Max/MSP and **Glossary** (pg 84) for terminology.

Chapter 4

Picnic

Synopsis of Methods

Picnic is a compositional system for rumination and consideration. It is an infinitely reproducible score generated from hand drawn works which are then processed through custom image rendering software. The result is a work of limitless scale – from one page to thousands – a cacophony of imagery inspired by rune art, puzzles, black magic, absurdity, and altered consciousness.

Picnic eschews revision of materials; every drawing and thought composed has been subsumed – front and back – into a computer for digital processing. It is the sum of all of its parts that have ever been, including errors and successes.

No instructions or performance notes are included with *Picnic.* Rather, these materials were added to the aggregate of source images to be processed and obfuscated anew. There are some consistent traits that embody many of the source images of *Picnic* which include but are not limited to: fragmented notation, obfuscated notation, line drawings, small geometric shapes, poetry, writings, lyrics, and puzzles.

Picnic can be newly recomposed by anyone who desires to do so. There are no demands on how it should be performed. It does not require musical performance. It can be printed or viewed digitally. *Picnic* is determined by the personal interpretation of whomever approaches it. Two interpretations of *Picnic* are provided within this document and its external files.

The *Picnic_v1_1.pde* sketch

Score pages for *Picnic* are rendered and saved from source images using the *Picnic_v1_1.pde* sketch and its associated sketches found in the folder *Andrew_Israelsen_Picnic_Sketch.* These rendering algorithms were coded and developed using Processing 2.0.[7]

Picnic_v1_1.pde loads each source image individually and renders it into a new 720x720 pixel .png image. The sketch is currently able to produce any number of images with either a random image selection method or an iterative image selection method. Each rendered image

7 See **Appendix A** (pg 82) for more information on Processing and **Glossary** (pg 84) for terminology.

is the result of algorithms that colorize, scale, locate, layer, rotate, and filter the source image. The methods of digital manipulation were inspired by the variety of means used to create the source images (e.g: paper size, writing utensil, symbols drawn on the page), and the resulting aesthetics of errors including ink bleeding through the various writing materials. Aspects of how *Picnic_v1_1.pde* produces new images can be controlled by the user by modifying certain variables in the code.

A version of *Picnic_v1_1.pde* with more rendering flexibility, new rendering algorithms, a GUI, and external sketches for generating .PDF files is currently in development. Once completed users will not have to interact directly with the code for *Picnic_v1_1.pde,* which dramatically simplifies the creation of new versions of *Picnic*. The final sketches will be compiled as an application that is distributed under Creative Commons licensing for use by performers, musicians, or anyone else who wishes to work with *Picnic*. It will be made available for download on the Internet along with being hosted as readily copyable code.

Picnithyzer

Picnithyzer is a virtual instrument composed in Pure Data as one way to interpret and perform *Picnic*.[8] Twelve .png images from the folder *Andrew_Israelsen_Picnic_png02-11* were randomly selected and converted into .wav audio files using the program Audacity.[9] These sound files are loaded as samples into the *Picnithyzer.pd* patch included in the folder *Picnithyzer* within *Andrew_Israelsen_Picnithyzer*.

This patch and its abstractions are designed for use with a MIDI keyboard or controller. This is a twelve voice polyphonic patch. For each MIDI key pressed a new sound file is selected as the audio source. The patch is also scalable allowing the total number of sound files to be increased or decreased. Fewer soundfiles would give the performer more predictable sonic control of the virtual instrument, but would also limit the variety of textures available. So too can the total number of simultaneous voices be increased or decreased.

Picnithyzer.wav is included in the folder *Recording,* and is an improvisation which

8 See **Appendix A** (pg 82) for more information on Pure Data and **Glossary** (pg 84) for terminology.
9 See **Appendix A** (pg 83) for more information on Audacity.

features sounds generated via *Picnithyzer.pd*. The file *picnithyzer_notes.txt* briefly explains the means used to interpret *Picnic* during this improvisation. The score page *dd_11-11_67057401.png* was interpreted during this performance, and is also included in the folder *Recordings*.

For the Number of Man (+ 1)

For the Number of Man (+ 1) is a brief set of four instructions written as a possible way to interpret *Picnic*. It asks for the 1,536 image files included in *Andrew_Israelsen_Picnic_png02-11* as its score. The focus of *For the Number of Man (+ 1)* is to present *Picnic* as an installation of musicians within a space seeking something unseen and unknowable – and possibly making sound in the process.

This performance is scheduled for 14 April, 2015 at the University of Alberta. It will be a sextet of trumpet, horn, trombone, tuba, piano, and percussion led by a conductor.

There are several core ideas to *For the Number of Man (+ 1)* that I personally feel are linked to the source images of *Picnic* – ritual, obfuscation, and mis-identification. The instructions also leave many decisions and elements of the performance to the ensemble.

The performers are asked to adopt several rituals and seek out certain states of mind in sections 1, 2, and 3. The rituals are intended to allow the performers opportunities to challenge their normal behaviors and to replace the conventional music rehearsal process. These actions include mindful consideration, the development of a ritual totem, and engaging new ideas that would normally be considered outlandish or absurd. Section 3 is written to help focus the performers on possible salient symbols or ideas underlying *Picnic*.

Section 4 outlines the nature of the performance. First, the performers must conceal their identity. Masks will be provided. Each performer will sacrifice their totem and then hide themselves from the audience and shadows within the performance space. Several hovels of various materials have been constructed to give the performers a place to hide from watching eyes and listening ears. Restraint, stillness, and thoughtfullness are the focus of their remaining instructions.

For the Number of Man

(+ 1)

a. israelsen 2015

1.

Distribute 1,536 pages of *Picnic* amongst yourselves.

These are sacred relics,
handle each with the greatest of care.

View these relics as little as possible,
if at all,
before the appointed time of summoning.

2.

Before the appointed time of summoning,
perform the following to focus and nuture your chakras:

Educate yourself on Outsiders,
Magicians,
that which is Paranormal,
Fear,
Spirituality,
or the ever listening ears of the Global Order
(Secret Government).

Find an otherwise meaningless pocket-sized object.
Keep it with you at all times,
hidden from even those you love dearly.

Share with it your dreams,
keep it under your pillow
and in your conciousness.
Discover six words which to speak unto it,
daily.

Imbue it with your self;
this is your Totem,
and you are its Body and
Spirit.

3.

Consider the following:

silence
what is seen
what is hidden
nothing
circle
square
triangle
line
the audible
your thoughts
your voice, only as you hear it
your voice, as refined in solitude, and perceived with public scrutiny
.

4.

Upon arrival at the place and appointed time of summoning:

Conceal your identity.

Give your most secret Totem to the Bearded Giant,
that even they who watch from above may see you in your sacrifice.

Hide yourself from shadows.
Hide yourself from others,
those that wear no masks,
those that walk in plain sight
-
those without understanding.

Ruminate upon the sacred relics,
a feast for eyes,
mind,
and soul.

A reward for your patience,
your restraint,
your sacrifice.

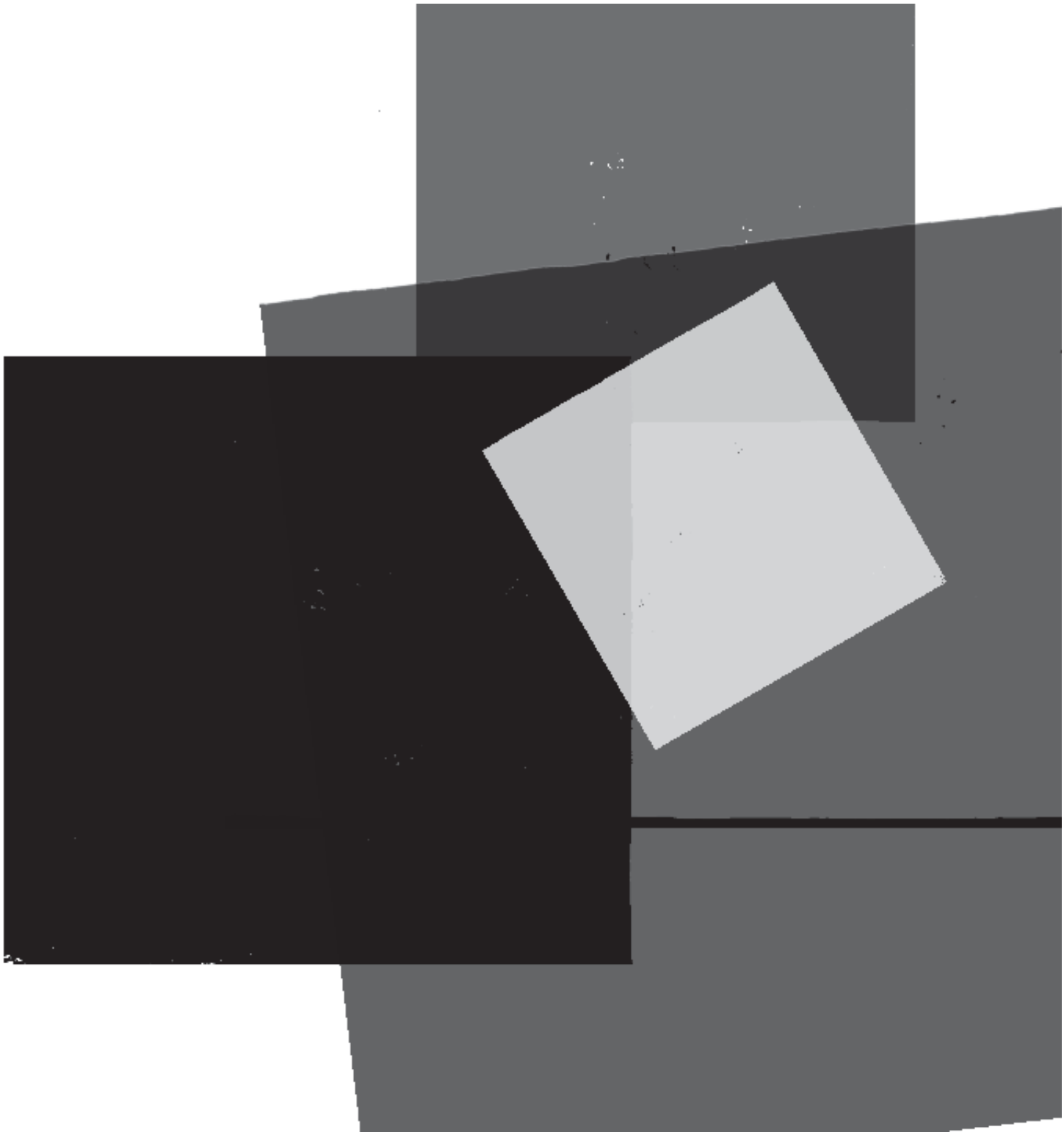
Consider those energies both hidden and apparent,
those energies which surround you,
those which listen
unyielding
.

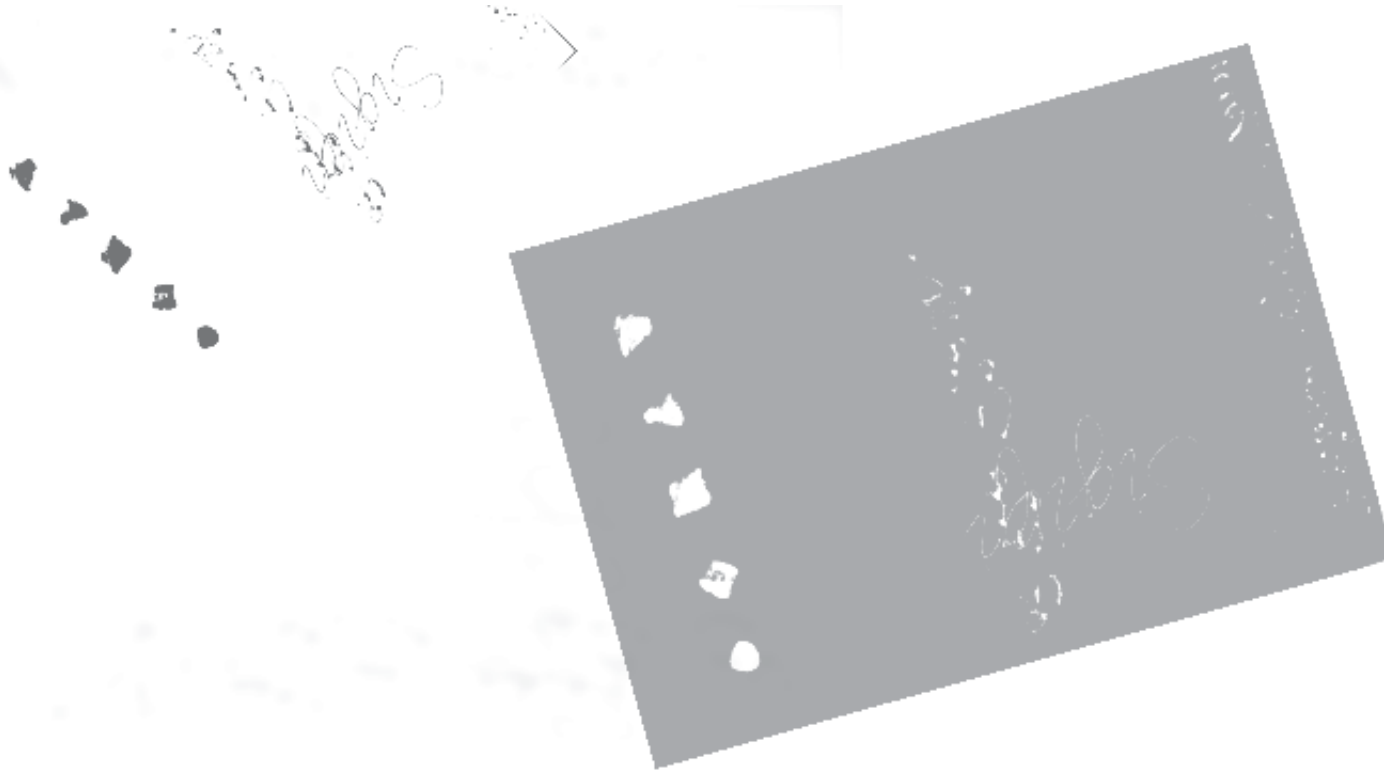
Do you hear them?
What will they hear of you?
Is it more than breathing?
Stillness?

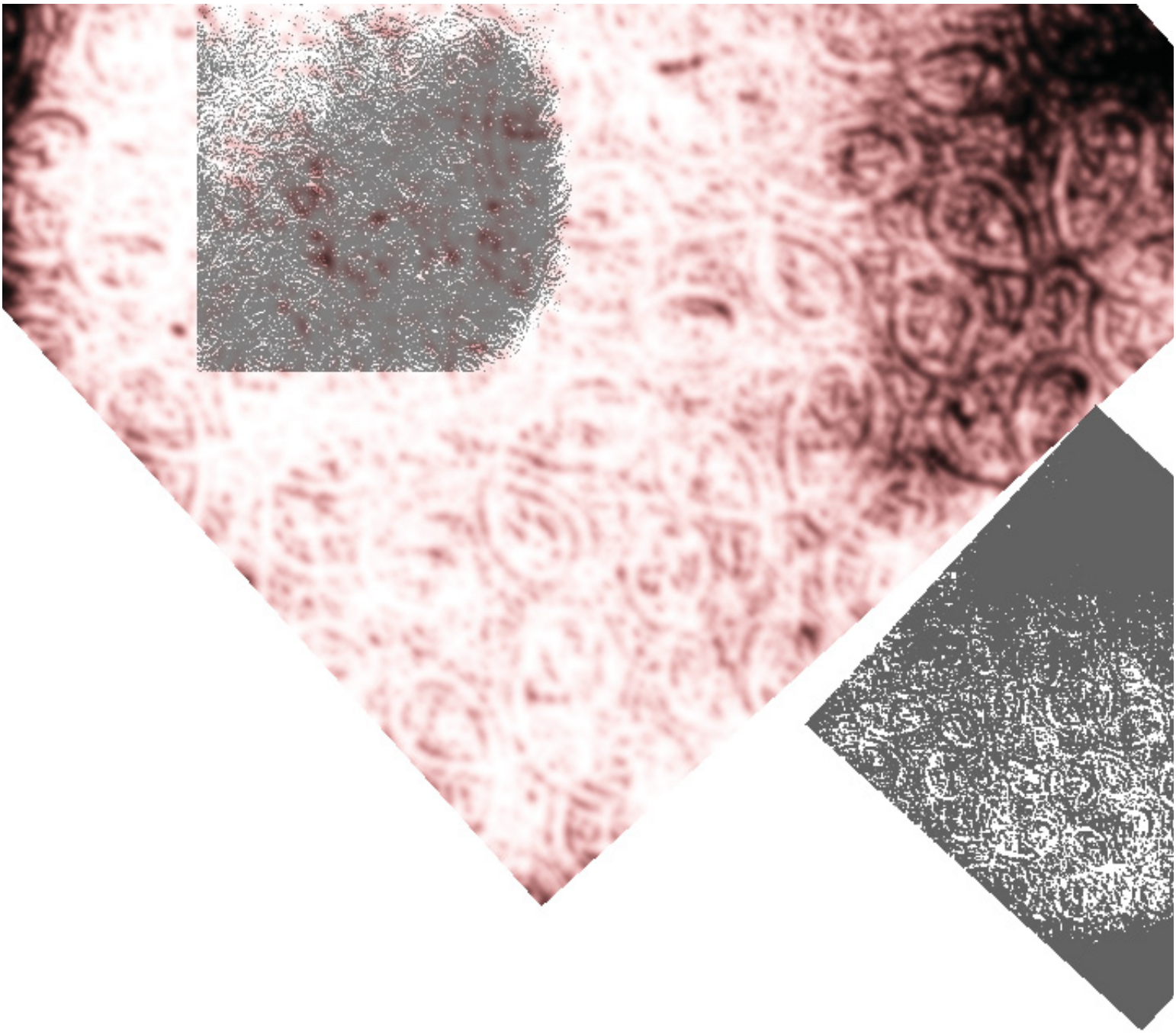
Forget not the Bearded Giant,

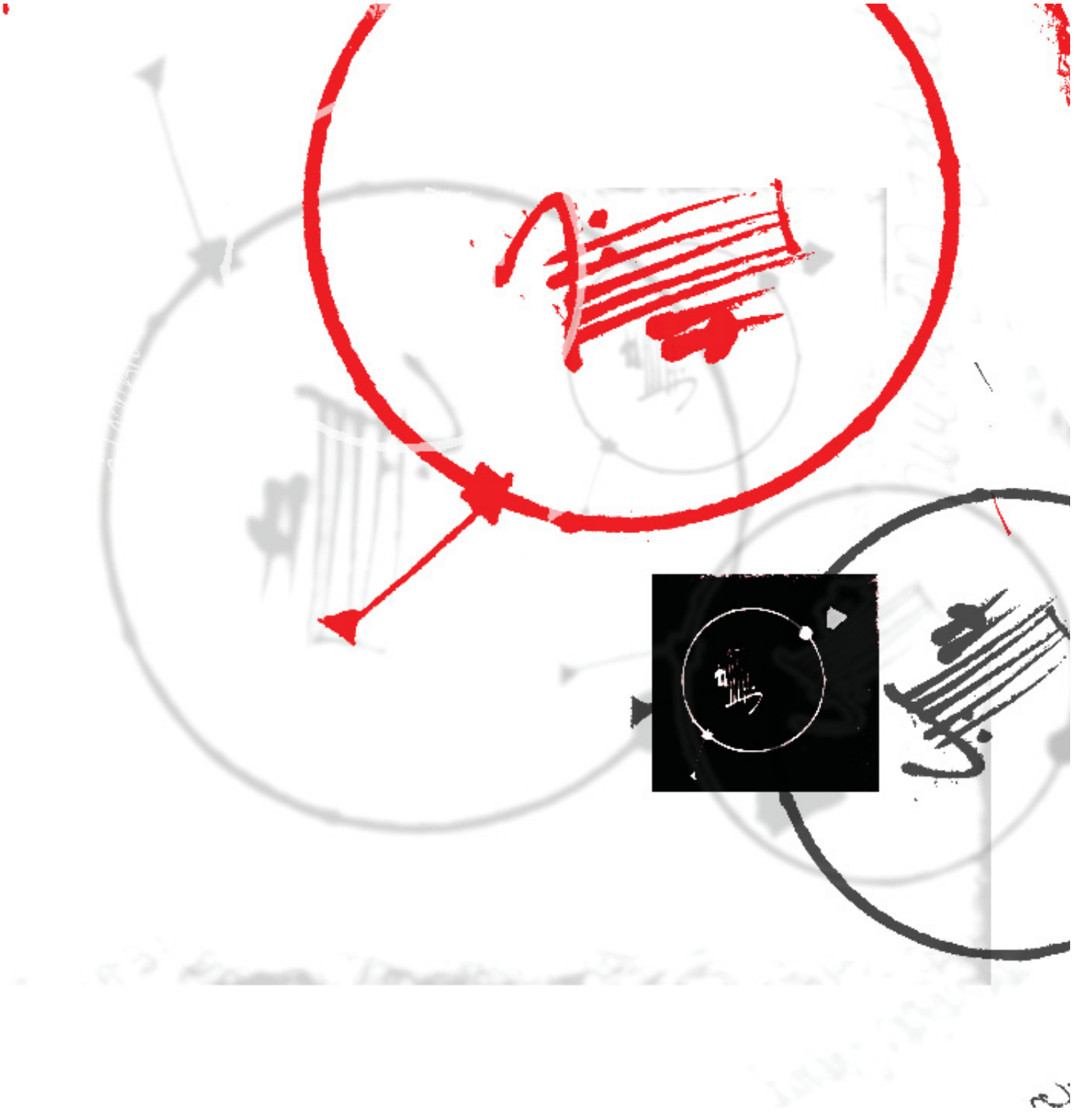
Keeper of Time.

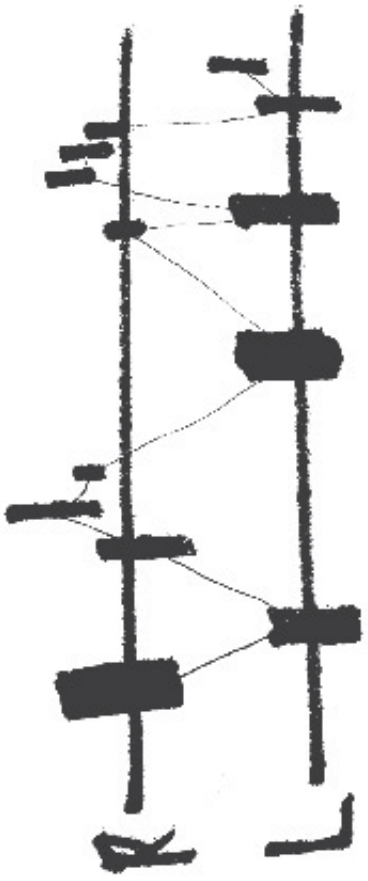
Score Excerpts of *Picnic*

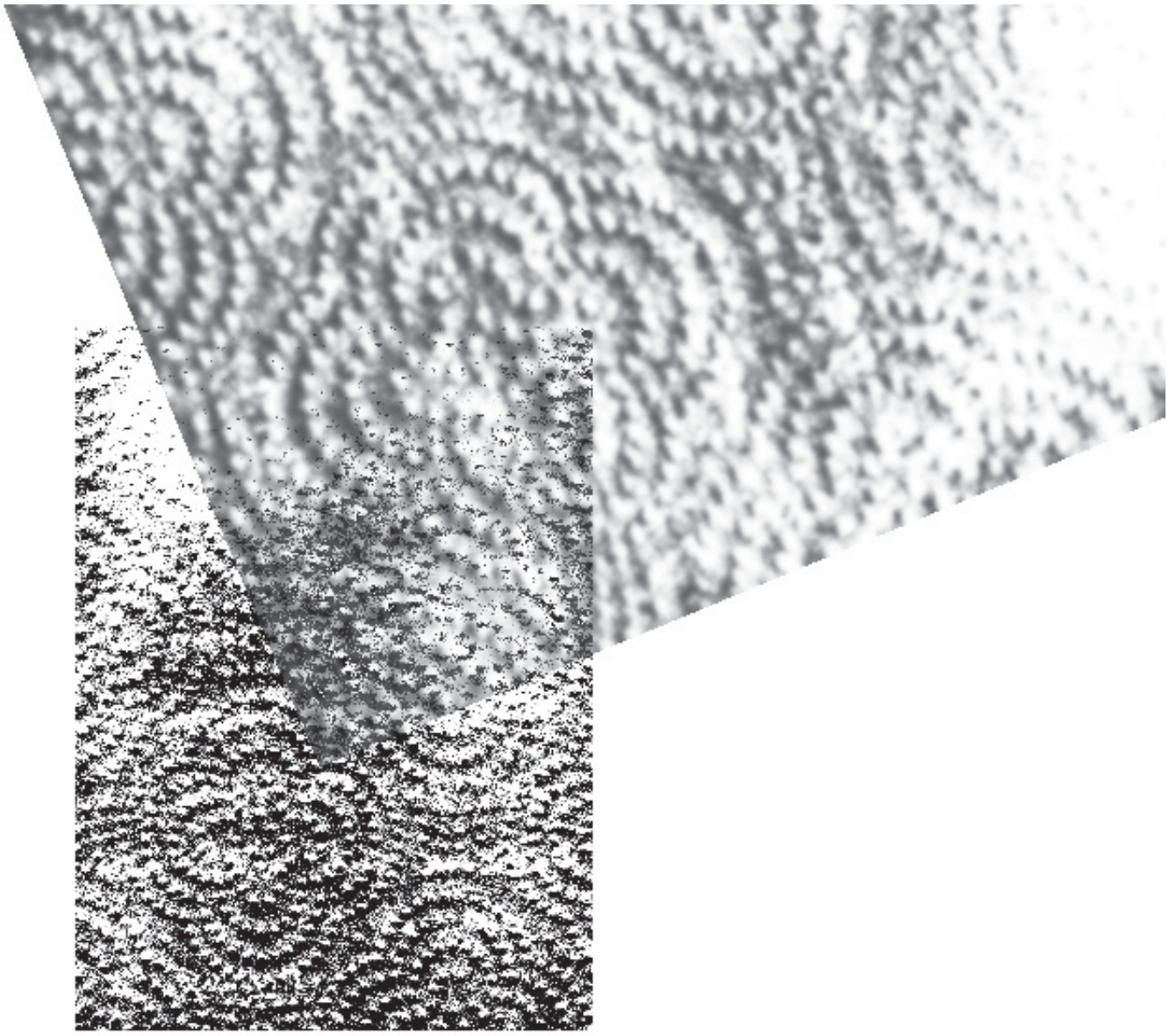


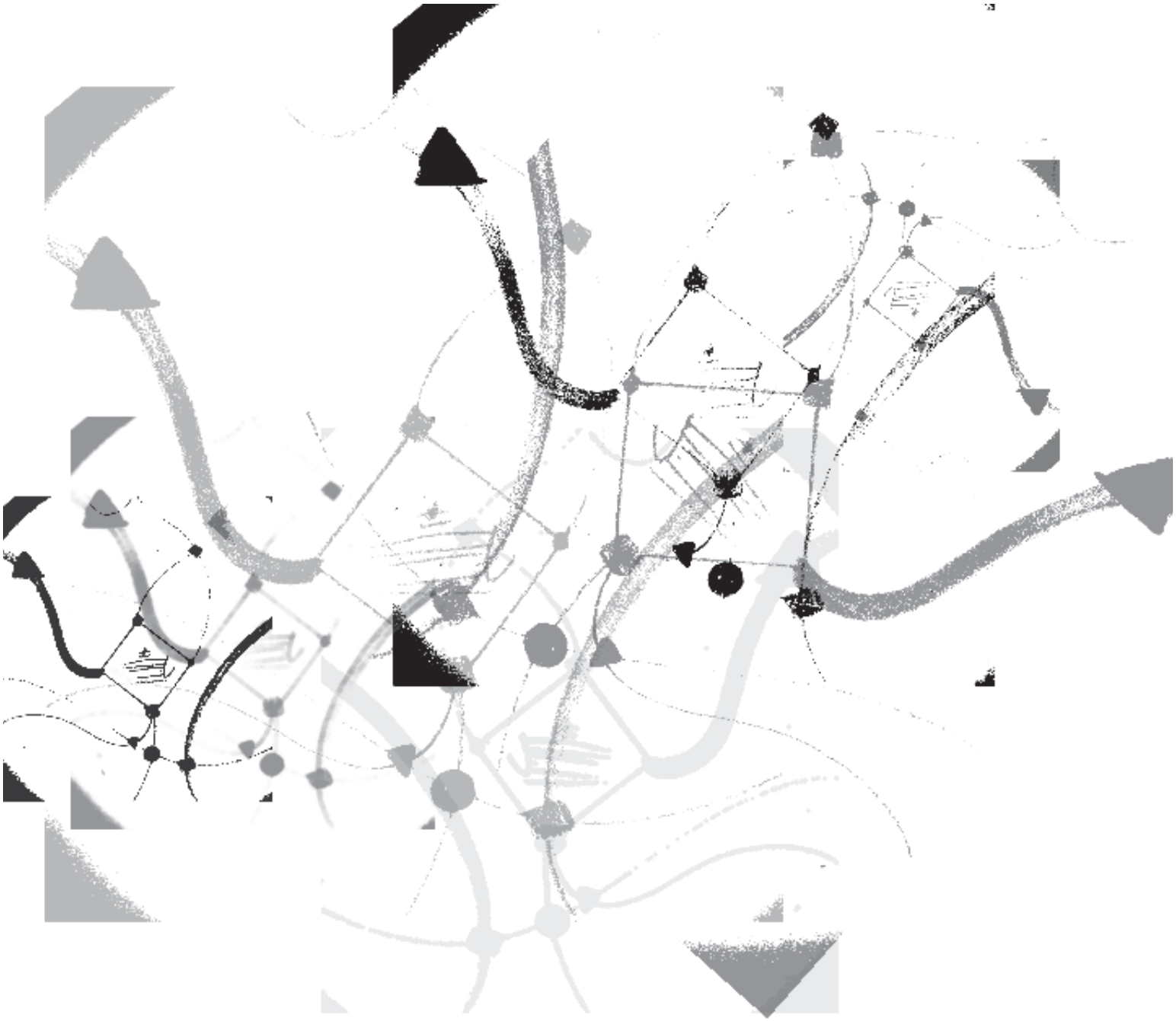


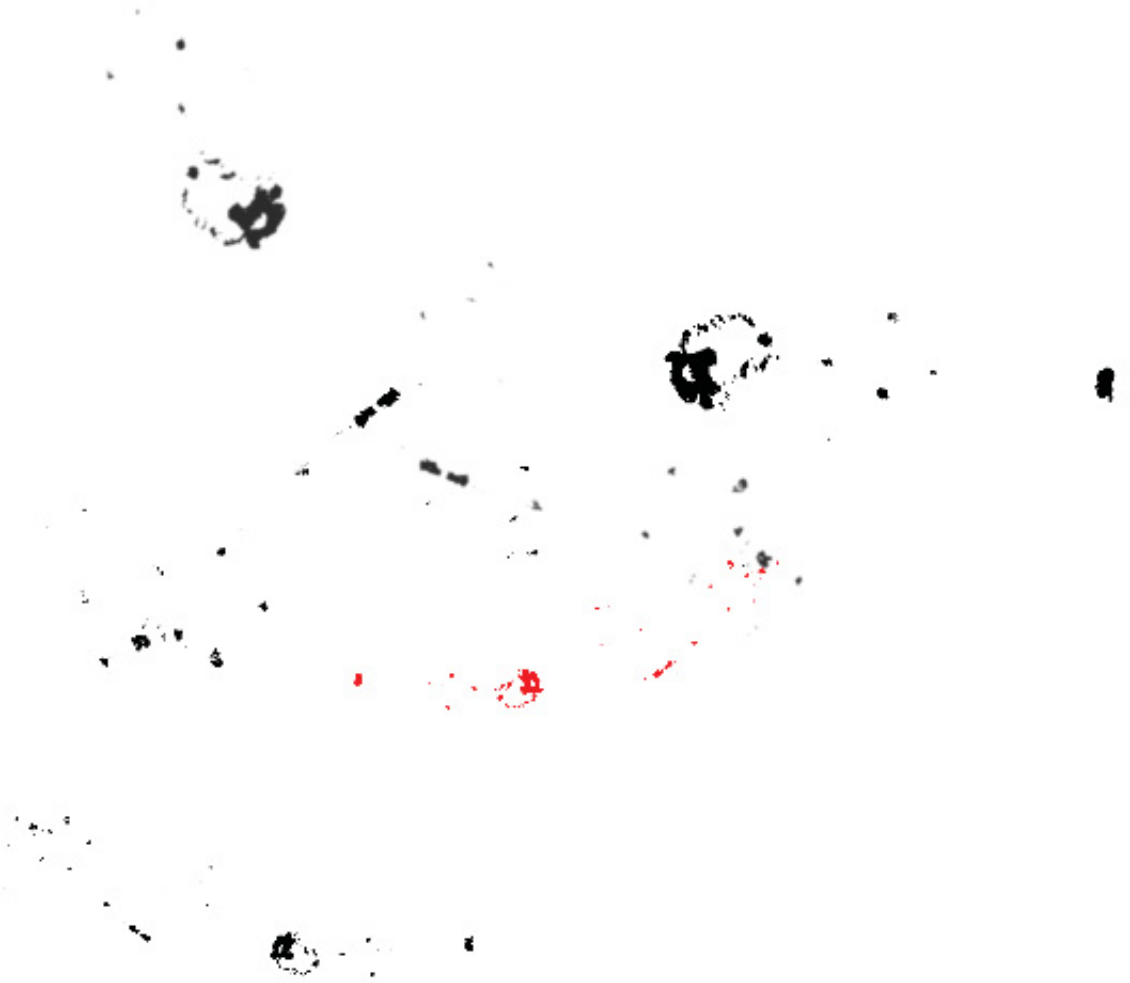


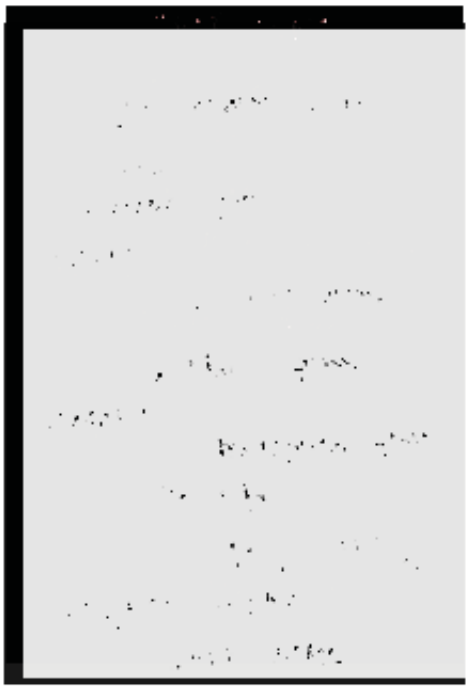


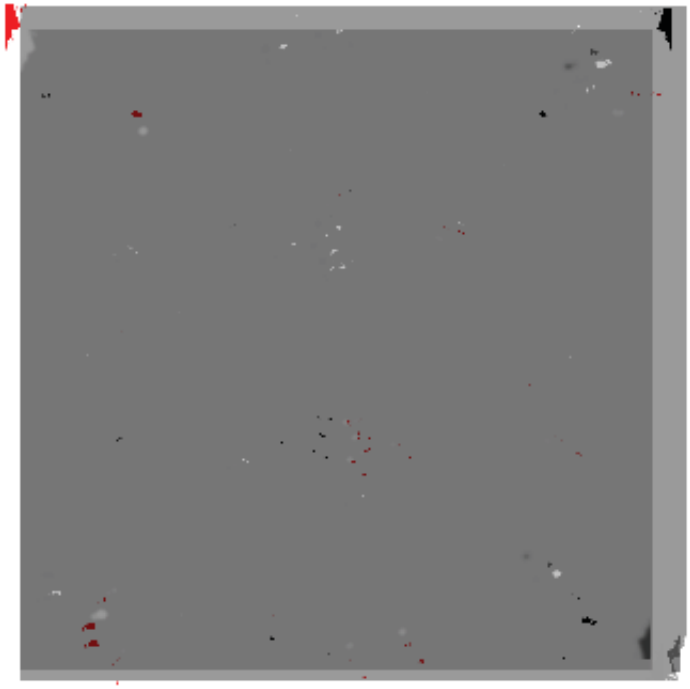


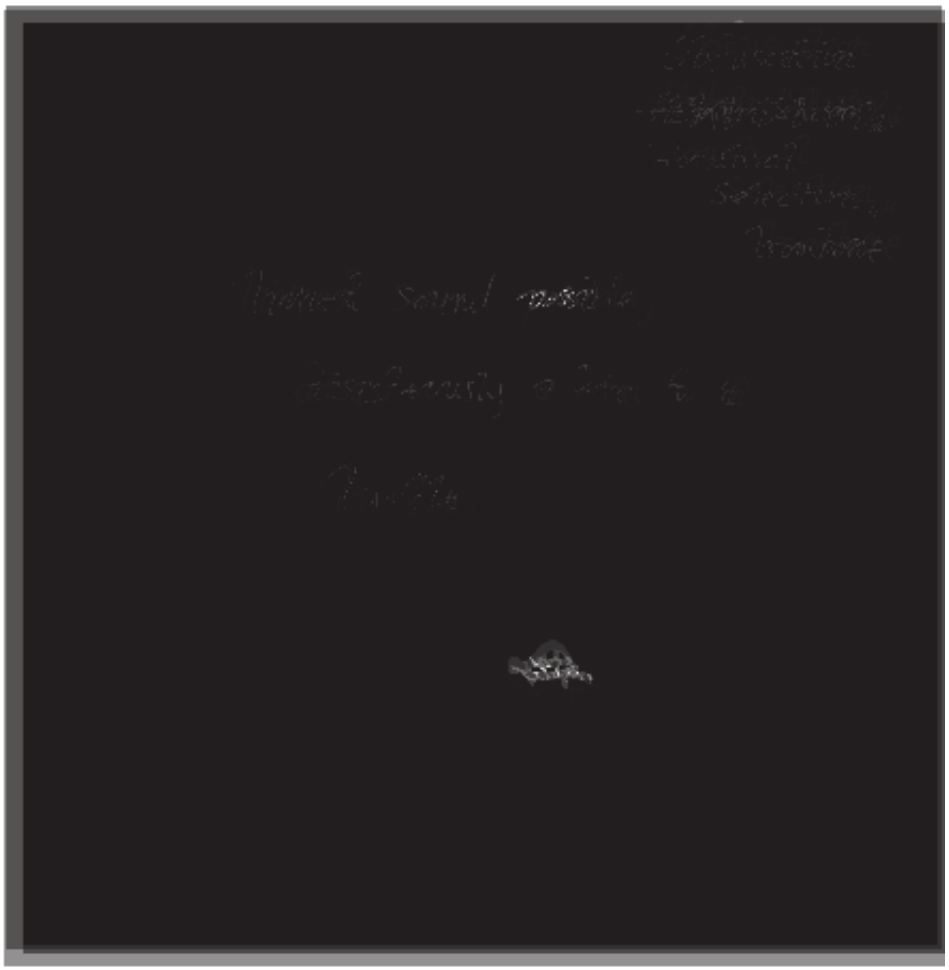












Appendix A: Software Overview

The following information are descriptions based on personal experience with the various software. Greater detail can be found at each software distributor's website.

Max/MSP and Gen~
cycling76.com

Max/MSP is a graphical programming language for sonic and visual art. Max features a GUI and uses objects, subpatches, and abstractions connected with patchcords within a window called a patch to code. Max/MSP is proprietary software available for Mac OS or Windows, and a demo is available for use. Max/MSP v6.1 or higher and Gen~ are required to utilize the *Pigeons* virtual instruments.

Processing v2.0+
processing.org

Processing is a Java based development environment and programming language for the visual arts. It is open source and available for GNU/Linux, Mac OS, Windows, and many other operating systems.

Pure Data
puredata.info

Pure Data is a graphic dataflow programming language for audio and visual projects. Code is written using objects, patches, and abstractions connected with cords on a window called a canvas. It is available in two versions – Pd Vanilla or Pd Extended – which run on GNU/Linux, Mac OS, Windows, and many other operating systems. Either version of Pure Data will run the included external files for *Picnic*. I personally suggest Pd Extended.

Audacity

audacity.sourceforge.net

Audacity is digital audio editing software. It is capable of recording, converting, manipulating, and generating audio files. It has the added benefit of being able to read essentially any digital file as audio. Audacity is free software available for GNU/Linux, Mac OS, Windows, and many other operating systems.

Glossary

Abstraction – A Max/MSP or Pure Data patch referenced within a given window or canvas. It is a separate file refered to from a main patch, and often contains blocks of code that are reused multiple times in a given patch.

Canvas – The organizing window that contains Pure Data patches, objects, and abstractions.

Gen~ - A collection of digital signal processing objects and code for Max/MSP v6.1 and higher. Features sample accurate processing and machine level code.

GUI – Graphical User Interface.

Object – A visual piece of code within Max/MSP or Pure Data which performs a specific function. These objects range from storing numbers and variables to generating audio signals. Objects are connected by lines called cords or patchcords.

Patch – a window of object oriented code for Max/MSP or Pure Data. Both programs use a main patch that either contains all the necessary subpatches and objects, or references external files via abstractions.

Project File – An organizing file for Max/MSP. This file takes care of file dependency and loads all necesary patches, code, images, and media needed for a given program.

Sketch – A script of code used within Processing. Multiple sketches can be associated using Processing's tab system. These tabs are automatically called and displayed in the development environment when the sketch is opened.

Subpatch – A Max/MSP or Pure Data patch contained within a parent patch.