

Through a Glass, Darkly

for Saxophone Quartet and Computer

Benjamin R. Fuhrman

Circa Twenty Five Minutes

Preface

To perform *Through a Glass, Darkly*, the latest version of Max/MSP or the Max/MSP runtime is required. The free runtime environment and the demo of the full version of Max/MSP can both be downloaded from <http://cycling74.com/downloads/> - either will work.

Additionally, a keyboard foot pedal, while not strictly necessary, is highly recommended to cue the computer parts. As they are not widely available, a fifth person can be used to manually cue the computer using any key on a computer keyboard. However, if you would like to create your own pedal, a tutorial is available on the Cycling '74 website at <http://cycling74.com/2007/10/16/making-connections-building-a-usb-footswitch/>. Pedals can also be purchased from the composer for a nominal fee.

Finally, two speakers and a mixer are required for the performance. The speakers should be placed on either side of the stage, roughly at the same height as the performers.

Notation

While the saxophone parts adhere to the conventions of standard musical notation, the following symbols are used in the graphical representation of the computer part. As there are literally hundreds of events occurring simultaneously in some portions of the computer part, I have created a graphical representation of only the most audibly prominent portions of the computer part using the following symbols to help the performers orient themselves in the piece.

█	Bell Tone	❀	Small Sonic Events
⊗	Drum Sound	≡	String Tone
↙ ↘	Glissandi	—	Sustained Tone
~~~~	Moving Lines	○	Vocal Sound
◎	Resonant Note	●	Water Drop
●	Single Note	□	Wood Block

The *cues* line is intended to be performed by the Alto 1 performer using a footpedal. However, if that is impractical, a fifth person can be used to cue the computer. A pedal is not strictly necessary as any key on the computer keyboard, can be used to trigger the cues.

Additionally, as the decision was made to play from scores due to the complexity of the piece, all multiphonic fingerings have been removed in favor of “K” numbers in order to make the scores as legible as possible. These correspond to the multiphonic fingerings in Daniel Kientzy’s *Les Sons Multiples aux Saxophones*. The number next to the K in the score indicates which fingering diagram should be used for a particular saxophone, so that **K51** in an alto saxophone would indicate alto diagram 51 in the Kientzy book. The fingerings are also included (with K numbers) in Appendix 1.



# Appendix 1

## Saxophone Multiphonic Chart

The chart displays multiphonic fingerings for three saxophones (Alto, Tenor, Baritone) across three staves of five-line music. Fingerings are indicated by numbers above or below the notes, and multiphonics are labeled with boxes like K14, K16, K45, etc.

**Alto Sax.**

- K14: 1, 2, 3 Bb, 4, 5 Ta, 7
- K16: 1 C2, 2, 3 Bb, 4, 5
- K45: 1, 2, 3 B, 4, 5 Tf, 6
- K51: 1, 2, 3 B, 4, 6 Tc, 7
- K57: 1, 2, 3 B, 4, 5, 6
- K79: 1, 2, 3 C#, 4, 6 C3, 7

**Tenor Sax.**

- K13: 1, 1, 2, 2, 3 Bb, 3 Bb, 4 C5, 5 C5, 6, 6, 7 Tf, 7
- K15: 1, 2, 3 Bb, 5 Tc, 6, 7
- K43: 1, 1, 1, 2, 2, 2, 3 Bb, 3 B, 3 C#, 4 C3, 4 C3, 4 C3, C5, C5, C5
- K56: 1, 2, 3 C1, 3 Bb
- K72: 1, 2, 3 B, 4, 5, 6

**Baritone Sax.**

- K7: 1, 2, 3 Bb, 4, 5, 6
- K8: 1, 2, 3 Bb, 4, 5, 7
- K23: 1, 2, 3 A, 5 C3, 6
- K24: 1, 2, 3 A, 4 C3, 5, 6
- K28: 1, 2, A, 4 C3, 5, 7
- K49: 1, 2, 3 B, 5, 6 (Eb), 7

Due to the fact that many multiphonics are rather temperamental and can be impossible to play depending on the equipment used, it is also possible to substitute any of the notated multiphonics with the following fingering in order to achieve the timbral effect desired.

1  
2  
3  
5  
6  
7



## **Appendix 2**

### Footnotes

Footnotes are indicated in the score at the first instance of a technique that needs additional explanation. All similar instances should be performed in the same manner.

**‡1:** All glissandi should be performed vocally (through oral cavity and embouchure changing), as much as possible. Where they cannot be performed vocally, they should be performed as chromatic, fingered glissandi.

**‡2:** Begin this glissando immediately, performing it as smoothly as you possibly can.

**‡3:** Extremely wide vibrato, up to a quarter tone on either side of the indicated note.

**‡4:** Begin subtone, gradually meld to regular tone by the time you reach measure 81.

**‡5:** Begin subtone, gradually meld to regular tone by the time you reach measure 184.



# Program Notes

I really struggled with the title for *Through a Glass, Darkly*. Trying to come up with a title that describes the ideas present in a piece of modern music is difficult, but in this instance it was compounded by the symbolism and history of the chosen title in regards to the allusions to both religion and other works that use the same title, or any of the numerous variants on it. It does not reference any work with a similar title, and while the title is taken from First Corinthians 13:12, it cannot be overstated that this is not a religious piece. However, the verse and its interpretation as an allegory for the difference between perception and reality accurately describe the central compositional focus of this piece: the juxtaposition of both real and unreal sounds, and the listener's interpretation of these sounds.

By real sounds, I mean anything created through an instrument, or any other identifiable, recorded sound used. At the same time, unreal sounds refers to any sound that has either been generated solely through computer or synthesizer programming, or through the extensive editing of an existing real sound until it bears absolutely no relation to any easily identifiable audio phenomena. The intersection of these sounds, and the way in which they react with the pitch collection [C, Eb, F, F#, Ab, B], present as a subset of the pitch collections used in each movement, forms the basis of the piece, exploring the ideas of perception and reality under changing conditions.

*Reflections/Refractions* introduces the idea of the interplay of real and unreal sounds immediately. It also deals with the idea of kinetic versus potential energy – specifically as a reflection on my mental process while composing – large periods of slow brooding and stagnation giving way to periods of rapid and chaotic development of ideas. As the chaotic sections increase and develop, the computer parts begin to take on a more ordered state, allowing for the development of large scale formal divisions in the form of an arc, before returning to the pensive nature of the opening statements and dissolving into nothingness.

This movement uses the Shatt 'Arbān scale [C, D, Eb, F or F#, G, Ab, B], with the addition of C# as a punctuation to the slower portions. This scale was chosen as the heavy emphasis on the half-step within it functions as a representation of the tension present in my composition and revision period.

*The Lens (In Memoriam)* focuses primarily on the use of real sounds transformed into unreal sounds. However, there is a much darker subtext to this movement that deserves to be addressed. The opening section of Justin Cronin's novel *The Passage* is titled "The Worst Dream in the World," a title that serves as an apt description of the background of this movement, as the day I began working on it, I was informed of the death of a friend of my parents. While not entirely unexpected, it was still a bit of a shock.

While I had always envisioned a slow, chorale-like movement as a contrast for the extreme tempo shifts of the other movements, I began to rethink of the movement as a funerary dirge, using the natural tendencies of the dyads in the octatonic scale to suggest leading-tone-esque tensions, particularly in the opening "death" motive (mm. 1 – 2), and in the "questioning" motive (mm. 20 – 21). I then began to work contrapuntally, weaving these motives, and their permutations, with dissonant lines, creating the dirge.

To this, I added a central, contrasting section based on the melody of the *Agincourt Carol* (now functioning as the bass), written by an anonymous 15th English composer after the Battle of Agincourt. The

selection of this piece as the basis of the section was due to the close relationship between the octatonic collection and the pitch collection used in the carol. The resulting contrast between sections gave the overall movement a brief, hopeful note, serving to lighten the tension of the dissonance without resolving it.

Unfortunately, things got worse.

The day I finished the draft score, I received an email informing me of the extremely unexpected death of a friend's father. In light of this, while working on the revisions, I began to see the central, carol-based section as inappropriately lightening the tension of the outer sections. With that in mind, I decided to rework the section, adapting the carol to fit the D-based octatonic scale [D, Eb, F, F#, Ab, A, B, C] by moving notes not in the pitch collection to their nearest neighbor. Additionally, feeling guilty for not being able to attend either funeral, I decided to create the bulk of the computer part in the outer sections out of the published obituaries of the two people whose deaths framed the creation of the draft score. The result is a much darker movement, with little or no dissipation of the tension present until the very end.

The final movement, *Fractures\Distortions* returns to the overarching idea of reality versus perception in terms of real and unreal sounds. In addition to the juxtaposition of real and unreal sounds, in this case computer generated sounds and heavily edited samples recorded at the Colorado State University music building, the idea of slow-fast duality from the first movement is also present in the finale. However, in this movement the slow sections take on the form of a double canon in reference to the sampled conversations of several Colorado State University students complaining about the difficulty of their counterpoint assignment to write a single canon that were used in the creation of this movement. This is contrasted to the "Agitated" and "Fast" sections of the movement which depict the hustle and bustle of the hallways in the CSU music building, and the larger fast-paced campus experience while using a set of unreal sounds created through manipulation of recordings taken at the CSU music building, and other sounds generated solely through computers.

Further influencing this movement, and indeed the entire piece, is my re-reading of Bulgakov's *The Master and Margarita*, and the idea of nested and interconnected narratives occurring at and within different planes of the global narrative. While in the novel, this is used to link characters from within Soviet Russia, an insane asylum, and characters in a novel written by one of the asylum's inmates, in this movement, it takes the form of segmented formal divisions that never quite resolve until their final iterations. Within this structure, further unifying gestures are used, such as the 7/8 measure in the "Agitated" section outlining the inverse of the basic rhythm in the 5/4 section (dotted quarter and half becomes half and dotted half), moving to a harmonic focus that anticipates the switch to the double canons, and also preparing the audience for the staggered multiphonic effect that concludes the movement.

This final movement uses a superset of the C and F Blues scales [C, Eb, F, F#, G, Ab, Bb, B] that was chosen due to my experiences sampling around the CSU campus, and the subsequent recordings of players using the Blues scale that were transformed and used in the computer part of the movement.

This work has been supported in part by ART342, a non-profit foundation providing residency opportunities for artists in Fort Collins, Colorado. For more information, visit [www.art342.org](http://www.art342.org)

-Benjamin R. Fuhrman  
December 1, 2010.



All conditioned phenomena  
Are like a dream, an illusion, a bubble in a stream, a shadow,  
Ephemeral like dew or a flash of lightning;  
Thus should we perceive and understand them.

-Adapted from the conclusion of the *Diamond Sūtra*



*To the H₂ Quartet.*



Transposed Score

# Through a Glass, Darkly

## I: Reflections/Refractions

Benjamin R. Fuhrman

September - December 2010

**Pensive**  $\text{♩} = 44$

Cues

Baritone Sax.

Computer



## I: Reflections/Refractions

**2 Pensive** ♩ = 44

3

Cues

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

30

7

ff

p

mp

9

subtone

fp

p

mp

p

mp

‡2: Begin this glissando immediately,  
performing it as smoothly as you  
possibly can.

**3 Energetic, metronomic** ♩ = 142

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

46

10

fp

subtone

fp

‡2 subtone

ff

ord.

mf

‡2 subtone

ord.

‡2 mf subtone

ff

mf

‡2 subtone

ff

mf

46

## 4 Chaotically ♩ = 142

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

**#3:** Extremely wide vibrato, up to a quarter tone on either side of the indicated note.

13

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

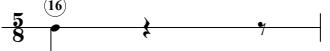
## 5 Metronomic ♩ = 142

15

A. Sx. 1: Measures 94-100. The part consists of six staves of music. Measure 94 starts with eighth-note pairs followed by sixteenth-note patterns. Measure 95 features sustained notes with dynamics *sfs*. Measures 96-97 show eighth-note pairs. Measure 98 includes a dynamic *K16*. Measures 99-100 feature eighth-note pairs with dynamics *K14*, *K51*, *K57*, and *K51*. Measure 100 concludes with a dynamic *K10*. The score includes performance instructions like "Gradually transition from no vibrato to wide QT vibrato" and "sustained notes".  
T. Sx.: Measures 94-100. The tenor saxophone part consists of sustained notes with dynamics *sfs* and *fff*.  
B. Sx.: Measures 94-100. The bass saxophone part consists of eighth-note pairs.  
Comp.: Measures 94-100. The accompaniment part features a rhythmic pattern of eighth-note pairs and sixteenth-note groups.

## I: Reflections/Refractions

6

**6** Chaotically ♩ = 142

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

108

K79

K57

K45

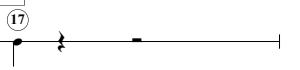
K14

K13

Wide QT Vibrato

K24

108

**7** Pensive ♩ = 44

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

117

Growl →

fp

Growl →

fp

p

f

Growl →

fp

mf

Growl →

fp

mf

(18)

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

126

8 Energetic, frantic  $\text{♩} = 142$

(19)

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

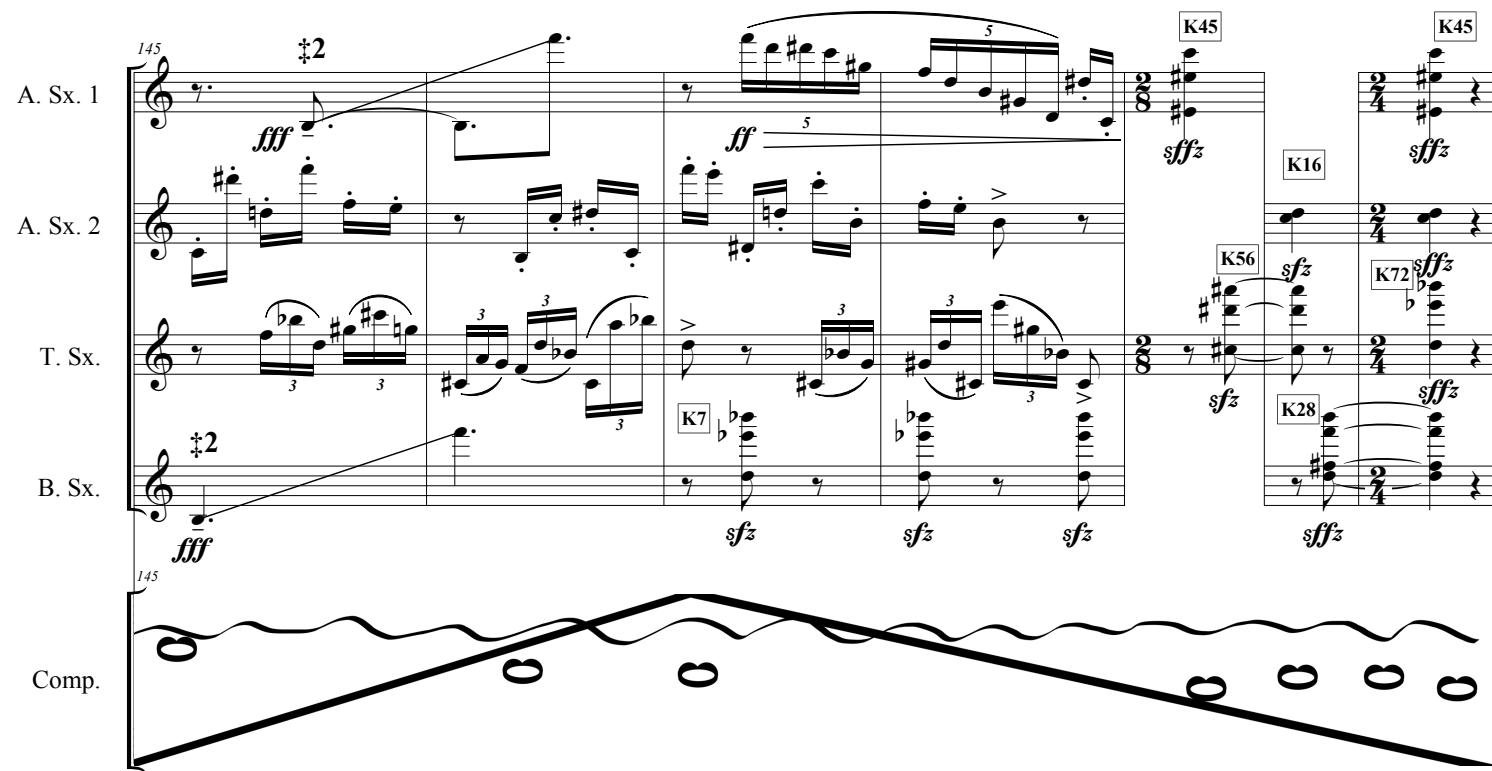
134

## I: Reflections/Refractions

## 9 Pensive ♩ = 44

20

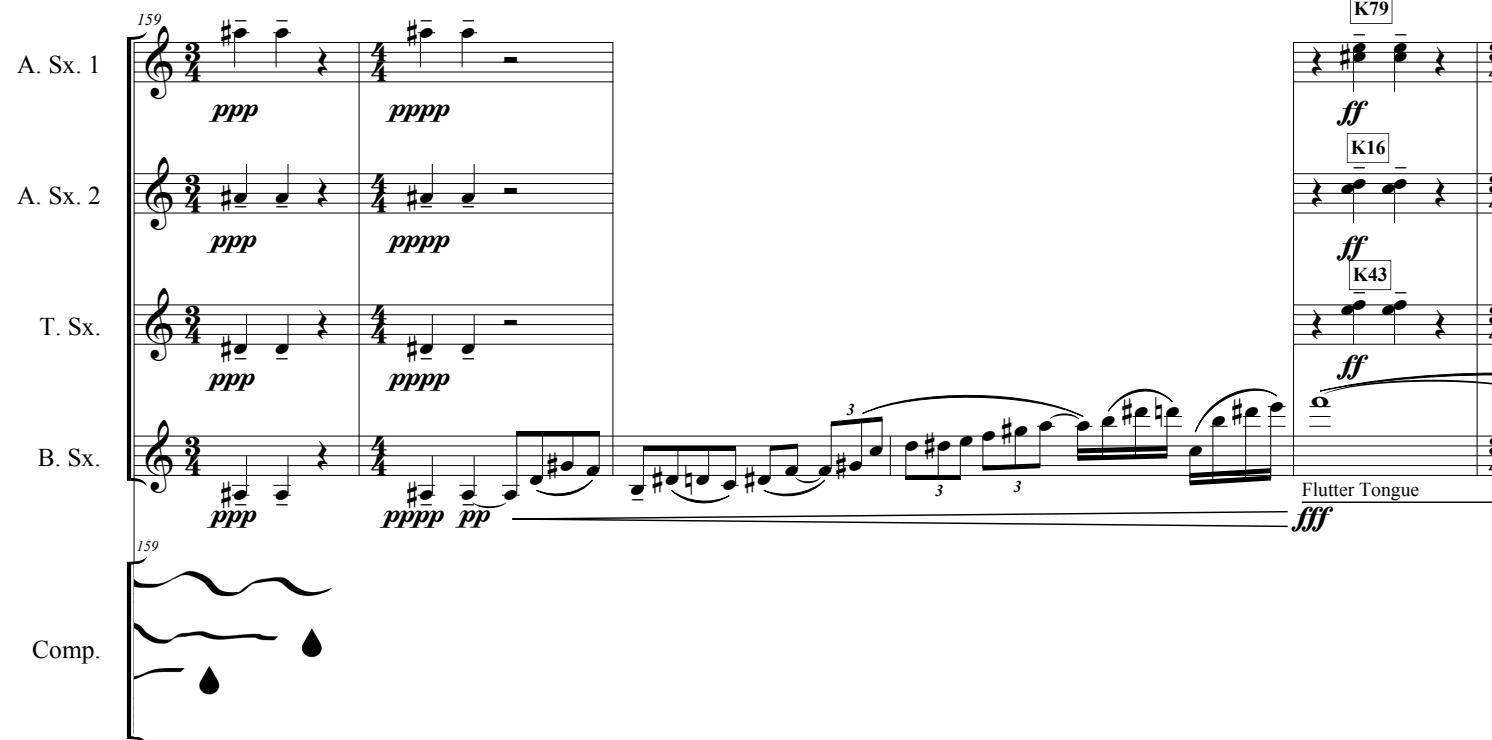
1



## 10 Energetic, chaotic ♩ = 142

22

Growl



(23)

A. Sx. 2

T. Sx.

Comp.

**11** Pensive ♩=44

## II: The Lens (In Memoriam)

**Soto voce, rubato**  $\text{♩} = 58$

Baritone Sax.

*subtone*

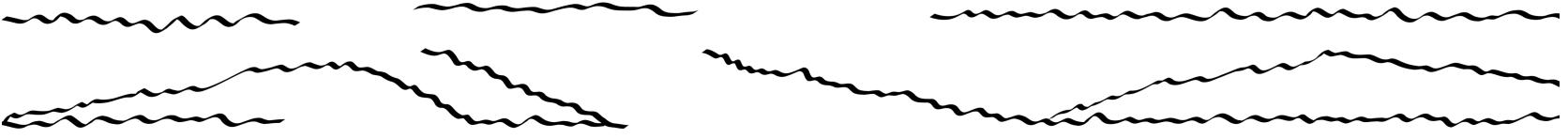
*pppp*

*subtone*

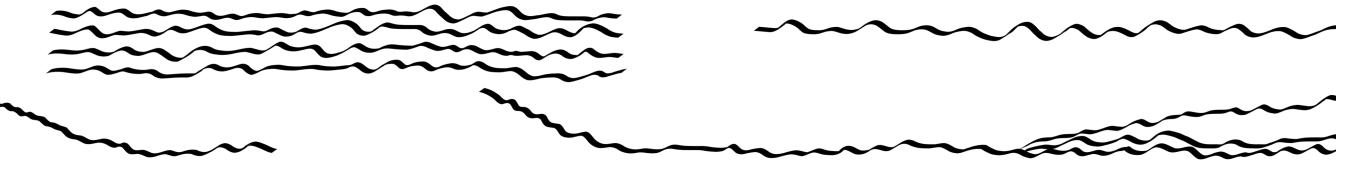
*pppp*

## 1 Dirge, suffocating ♩ = 58

22



45



## II: The Lens (In Memoriam)

12

2 Moderate  $\text{♩} = 66$ 

66

(4) (5) (6)

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

(7) (8) (9) (10)

90

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

107

(11)      (12)      (13)

A. Sx. 1  
A. Sx. 2  
T. Sx.  
B. Sx.

Comp.

**3 Dirge, suffocating  $\text{♩} = 58$**

(14)      (15)

A. Sx. 1  
A. Sx. 2  
T. Sx.  
B. Sx.

Comp.

## II: The Lens (In Memoriam)

14

141

(16) (17)

A. Sx. 1  
A. Sx. 2  
T. Sx.  
B. Sx.

Comp.

141

159

(18) (19)

A. Sx. 1  
A. Sx. 2  
T. Sx.  
B. Sx.

subtone

Soto voce, rubato  $\text{♩} = 36$

Comp.

159

### III: Fractures\Distortions



40

A. Sx. 1

A. Sx. 2

T. Sx.

*Growl*

B. Sx.

Comp.

Subdued ♩ = 76

(6)

(7)

G.P.

46

A. Sx. 1

A. Sx. 2

T. Sx.

*Growl*

B. Sx.

Comp.

## III: Fractures\Distortions

18 2 Fast ♩ = 132

Cues

55

A. Sx. 1

T. Sx.

B. Sx.

Comp.

3 Hymn-like ♩ = 76

‡4: Begin subtone, gradually  
meld to a normal tone by the  
time you reach measure 81.

61

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

Cues

(10)

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

75

4 Fast  $\text{♩} = 132$

(11)

#3: Extremely wide vibrato,  
up to a quarter tone on either  
side of the indicated note.

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

90

subtone

mf      p      pppp

subtone

mf      p      pppp

subtone

mf      p      pppp

subtone

ff

#3 Wide QT Vibrato

ord.      f      5      5      5      5      5      5

ord.      f      5      5      5      5      5      5

ord.      f      5      5      5      5      5      5

K72

ff

3

s $f_z$  K8 s $f_z$  s $f_z$

fff

90

(12)

100

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

106

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

Cues

(13)

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

112

**5 Agitated**  $\text{♩} = 194$

14

A. Sx. 1

A. Sx. 2

Comp.

118

### III: Fractures\Distortions

**6** Fast ♩ = 132

15



Musical score for orchestra and composition section. The score includes parts for A. Sx. 1, A. Sx. 2, T. Sx., B. Sx., and Comp. The score consists of two systems of music. The first system starts at measure 131 and ends at measure 132, featuring woodwind entries and dynamic markings like *fff*, *pp*, *ppp*, *mf*, and *ord.*. The second system begins at measure 132 and continues through measure 133, with dynamic markings including *ffff*, *pp*, *ppp*, *mf*, *ord.*, *subtone*, and *ff*. The composition section features wavy lines and dots representing sound waves or noise.

Musical score for orchestra and composition, page 147. The score includes parts for A. Sx. 1, A. Sx. 2, T. Sx., and B. Sx. The composition part at the bottom features a wavy line with black dots representing rain, with a diagonal line indicating it should end at measure 147.

(16)

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

$\sharp$ 5: Begin subtone, gradually  
meld to a normal tone by the  
time you reach measure 184.

7 Hymn-like  $\text{♩} = 76$

(17)

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

**8** Fast ♩ = 132

Musical score page 19, featuring two staves of music for a single instrument. The top staff is in 5/4 time, key of A major (two sharps), dynamic *ord.*, and consists of six measures. The first measure contains a single note with a fermata. The second measure has a grace note and a sixteenth-note pattern. The third measure shows a sixteenth-note pattern with a fermata. The fourth measure features a sixteenth-note pattern with grace notes. The fifth measure contains a sixteenth-note pattern with grace notes. The bottom staff is in 2/4 time, key of A major (two sharps), dynamic *fff*, and consists of five measures. The first measure has a sixteenth-note pattern with grace notes. The second measure has a sixteenth-note pattern with grace notes. The third measure has a sixteenth-note pattern with grace notes. The fourth measure has a sixteenth-note pattern with grace notes. The fifth measure has a sixteenth-note pattern with grace notes. The score concludes with a wavy line and a dashed line at the bottom.

200

A. Sx. 1 K16 K51

A. Sx. 2

T. Sx.

B. Sx.

Comp.

(20)

207

A. Sx. 1 K16 K45 K51 K16

A. Sx. 2

T. Sx.

B. Sx.

Comp.

(21)

213

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

ffff

ffff

ffff

ffff

9 Agitated  $\text{♩} = 194$

(22)

219

A. Sx. 1

A. Sx. 2

T. Sx.

B. Sx.

Comp.

ff

ff

ff

K51

ffff

K45

K72

ffff

K49

ffff